Interactive System Productivity Facility
(ISPF)

User's Guide Volume II

z/OS Version 1 Release 10

SC34-4823-00

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Note
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First Edition (March 2001)

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Preface

This book provides reference and usage information for programmers who develop applications with ISPF. It also provides conceptual and functional descriptions of ISPF.

About This Book

This book contains two parts.

The first part provides information about using ISPF options 0–10.

The second part contains the appendixes and provides:

- Descriptions of the SuperC and Search-For programs
- Descriptions and examples of the SuperC output listing formats.

Who Should Use This Book

This book is for application programmers using ISPF. Users should be familiar with coding CLISTs, REXX EXECs, or programs in the MVS environment.

What Is in This Book

Chapter 1. Settings (Option 0), describes the ISPF Settings panel and related pop-up windows. In previous releases of ISPF, the information in this chapter was contained in the *ISPF Dialog Management Guide and Reference*.

Chapter 2. View (Option 1), describes how Browse (Option 1) allows you to display source data and listings stored in ISPF libraries or other partitioned or sequential data sets. In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 3. Edit (Option 2), describes how Edit (Option 2) allows you to create, display, and change data stored in ISPF libraries or other partitioned or sequential data sets. In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 4. Utilities (Option 3), describes the different functions for library, data set, and catalog maintenance. In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 5. Foreground (Option 4), describes how Foreground (Option 4) allows ISPF to run the foreground processors. In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 6. Batch (Option 5), describes how Batch (Option 5) allows ISPF to run the batch processors. In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 7. Command (Option 6), describes Command (Option 6), and how ISPF allows you to enter TSO commands, CLISTs, and REXX EXECs on the Command

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line of any panel and in the **Line Command** field on data set list displays. In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 8. Dialog Test (Option 7), describes how to use Dialog Test (Option 7) for testing both complete ISPF applications and ISPF dialog parts, including functions, panels, variables, messages, tables, and skeletons. In previous releases of ISPF, the information in this chapter was contained in the *ISPF Dialog Management Guide and Reference*.

Chapter 9. Library Management Facility (Option 8), describes the LM Facility (Option 8) and the Library Management Facility (LMF). In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 10. IBM Products (Option 9), describes the other IBM products that are supported as ISPF dialogs. In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 11. SCLM (Option 10), provides an overview of the SCLM product. In previous releases of ISPF, the information in this chapter was contained in the *ISPF/PDF Guide and Reference*.

Chapter 12. ISPF Object/Action Workplace (Option 11), describes the Workplace option (Option 11).

Appendix A. SuperC Reference, provides information about the SuperC return codes, process options, update data set control options, and process statements. Appendix B. SuperC Listings gives you information to help interpret the listings that SuperC creates. In previous releases of ISPF, the information in these appendixes was contained in the *ISPF/PDF Guide and Reference*.

Appendix B. SuperC Listings, describes and displays the kinds of listings you can produce using SuperC. The sample listings shown are for illustration purposes only. They are not intended to be exact replicas because printouts of ISPF listings vary according to the kind of printer you are using. In previous releases of ISPF, the information in this appendix was contained in the *ISPF Dialog Management Guide and Reference*.

Summary of Changes

z/OS V1R1.0 ISPF contains the following changes and enhancements:
- ISPF Product and Library Changes
- ISPF Dialog Manager Component Changes
- ISPF PDF Component Changes
- ISPF SCLM Component Changes
- ISPF Client/Server Component Changes

ISPF Product Changes

Changes to the ZENVIR variable. Characters 1 through 8 contain the product name and sequence number in the format *ISPF x.y*, where x.y indicates:
- <= 4.2 means the version.release of ISPF
- = 4.3 means ISPF for OS/390 release 2
- = 4.4 means ISPF 4.2.1 and ISPF for OS/390 release 3
- = 4.5 means ISPF for OS/390 Version 2 Release 5.0
- = 4.8 means ISPF for OS/390 Version 2 Release 8.0
- = 5.0 means ISPF for OS/390 Version 2 Release 10.0
- OR
- = 5.0 means ISPF for z/OS Version 1 Release 1.0

The ZENVIR variable is used by IBM personnel for internal purposes. The x.y numbers DO NOT directly correlate to an ISPF release number in all cases. For example, as shown above, a ZENVIR value of 4.3 DOES NOT mean ISPF Version 4 Release 3. NO stand-alone version of ISPF exists above ISPF Version 4 Release 2 Modification 1.

The ZOS390RL variable contains the ISPF release on your system.

The ZISPFOS system variable contains the level of ISPF code that is running as part of the operating system release on your system. This might or might not match ZOS390RL. For this release, the variable contains **ISPF for OS/390 Version 2 Release 10.0**.

New system variables:

ZBDMAX
BDISPMAX value

ZBDMXCNT
Count of current displays in batch mode session

ZPANELID
Name of currently displayed panel

ZSCREENI
Logical screen data

ZSCREENC
Cursor position within the logical screen data

The ISRDDN utility is now documented in the ISPF User's Guide.

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ISPF DM Component Changes

The DM component of ISPF includes the following new functions and enhancements:

- Additional support for panel process:
  - Support added for ″verify data set name with filter, (DSNAMEF)″.
  - Support added for ″verify data set name with filter with member, (DSNAMEFM)″.
  - Support added for ″verify data set name with quotes and parentheses, (DSNAMEPQ)″.
  - Support added for ″verify name with filter, (NAMEF)″.
  - Support added for ″verify specific constants within a variable, (PICTCN, string)″.
  - Support added for ″verify international format date, (IDATE)″.
  - Support added for ″verify standard date, (STDDATE)″.
  - Support added for ″verify Julian date, (JDATE)″.
  - Support added for ″verify Julian standard date, (JSTD)″.
  - Support added for ″verify international time, (ITIME)″.
  - Support added for ″verify standard time, (STDTIME)″.
  - Support added for NOJUMP attribute keyword.
  - Support added to allow INTENS(NON) on LI, LID, VOI and LEF attribute types.
  - Update)HELP section processing to support variables for keyword values and two new keywords MSG(message-name) and PASSTHRU.
- Support added for STKADD keyword on LIBDEF service.
- New QBASELIB service to query base libraries.
- Add Panel Id to CUAATTR utility.
- Add support for starting a new screen or application from the ISPF Task List panel.
- Add support for command CMDE which provides ability to expand command line if more room is required for the command.
- Add support to allow ISPF panel exits to be written in REXX.
- Add support for ZSCREENI and ZSCREENC variables to retrieve data from the logical screen at the cursor position.
- Add a field to the ISPF configuration table for the default language.
- Add fields to the ISPF configuration table to allow customization of the ISPF temporary data sets.
- Add a field to the ISPF configuration table for the default ISPF panel used when invoking ISPF.
- Pass the screen name to the SELECT Service Start and End and DISPLAY Installation exits.
- Update various ISPF messages with additional information. For example, a better message will be displayed when the user's profile is out of space, and the data set name and abend code will be added to the error message displayed as a result of an abend when opening a data set.

ISPDTLC enhancements:

ISPDTLC changes include new invocation options, new tags, and new tag. attributes as ISPF extensions to the Dialog Tag Language.

General improvements:

- A new option has been added to the interactive invocation panel, the DISPLAY(W) option check interval. This option controls the display frequency of a control panel for the DISPLAY and DISPLAYW options. The control panel choices are to continue, cancel the DISPLAY(W) option, or change the interval for the display of the control panel.
- New tags:
  - GENERATE
  - TEXTLINE
  - TEXTSEG
- Remove obsolete OS/2 DM compatibility and ISPF DTL extension messages for OS/390 V3.
- Add support for Tutorial selection panel ZSEL generation via ACTION tags.
- Revise member list processing to behave more like SUPERC by leaving the ″S″ code in the member selection field. Members can be deselected by removing the ″S″ before using PF3 to run the requested members.
- REQ70311 - Provide a user cancel/reset for the DISPLAY and DISPLAYW invoke options. A new panel - ISPCP08 - will display every nn (1 default) panels to allow the user to cancel or continue the display processing.
- Expand the interactive panel to 16 DTL source files.
- Expand the HELP attribute on tags for field level help to support the ISPF enhancement for MSG(message-ID) and PASSTHRU. HELP values can be: NO, YES, help-panel-name, *message-id, %varname, or *%varname. The ″*″ prefix defines a message-id.

New or changed tag attributes:

Tag name	**Attribute update**
ATTR	Add ATTN
CHECKI	Add support for ″VER(&variable, DSNAMEF)″ Add support for ″VER(&variable, DSNAMEFM)″ Add support for ″VER(&variable, DSNAMEPQ)″ Add support for ″VER(&variable, NAMEF)″ Add support for ″VER(&variable, PICTCN, ...)″ Add support for ″VER(&variable, IDATE)″ Add support for ″VER(&variable, STDDATE)″ Add support for ″VER(&variable, JDATE)″ Add support for ″VER(&variable, JSTD)″ Add support for ″VER(&variable, ITIME)″ Add support for ″VER(&variable, STDTIME)″
CHOFLD	Add ATTRCHAR and CAPS Support HELP for: YES, *message-id, *%varname
CHOICE	Add AUTOSEL Support HELP for: YES, *message-id, *%varname
CMDAREA	Add CAPS, NOJUMP, and SCRCAPS Support HELP for: YES, *message-id, *%varname Support SCRVHELP for: YES, *message-id, *%varname
DA	Add HELP and SCRCAPS Support SCRVHELP for: YES, *message-id, *%varname
DTACOL	Add VARCLASS, REQUIRED, and CAPS

Tag name	Attribute update
DTAFLD	Add ATTRCHAR, CAPS, and NOJUMP Support HELP for: YES, *message-id, *%varname Support DISPLAY=NO on CUA output fields
FIG	Add NOSKIP
GRPHDR	Add INDENT
LI	Add NOSKIP
LINES	Add NOSKIP
LP	Add NOSKIP
LSTCOL	Add CAPS and DISPLAY Support HELP for: YES, *message-id, *%varname
LSTFLD	Add SCRCAPS Support HELP for: YES, *message-id, *%varname
MSG	Add FORMAT Support HELP =*
MSGMBR	Add WIDTH
PANEL	Add ERRORCHECK
SELFLD	Support TYPE=TUTOR Support HELP for: YES, *message-id, *%varname
XMP	Add NOSKIP

ISPF PDF Component Changes

The ISPF PDF component contains the following new functions and enhancements:

- An Edit settings dialog is now available via the EDSET and EDITSET primary commands as well as from the Edit_Setting pulldown choice when editing data. This enables the user to change:
  - the line that Edit positions the target of a FIND, CHANGE or EXCLUDE command.
  - whether or not the Editor always scrolls the target of a FIND, CHANGE, or EXCLUDE command to the target line specified.
  - the user session initial macro, a macro to be run whenever an edit session is started.
  - the maximum storage allowed for Edit.
  - Confirm Cancel/Move/Replace.
  - Preserve VB record length.
- The Edit COMPARE command will now compare your current Edit session against another data set without requiring a SAVE.
- The Edit COMPARE parameter SESSION or * will compare your current Edit data against the data saved on disk.
- The Edit COMPARE command can be issued while editing an uncataloged data set to compare members within the same data set.
- The new MEMLIST service provides an interface into ISPF option 3.1, providing all the built-in commands available from option 3.1.

- A new option in the ISPF Configuration Table dialog provides the automatic creation of a ++USERMOD for the configuration data.
- The new DSINFO service will return information about a specified data set in dialog variables.
- The Editor will no longer append a 1 character blank to variable length records that are 8 bytes in length.
- An ISPF Configuration option was added to disallow wildcards in the high level qualifier of option 3.4.
- The SuperC utility now supports an ALLMEMS option to enable compares of all members including alias entries without member selection.
- The primary and secondary quantity for the SuperC LIST and UPDATE data sets can be configured.
- Allow use of the SYSOUT field when doing a local print from option 3.6.
- Add an OPTION(DELETE) to the LMMDISP service to delete a member of the displayed list.
- Update the edit macro command DATASET to also return the data set from which the member being edited was found.
- Add a new dialog service called VIIF (View Interface service) which provides View function for the EDIF environment.
- Add an edit macro command LINE_STATUS which indicates whether a line of data has been changed during the edit session, and if so, how.
- Add additional keywords that can be specified in the expiration date field when creating a data set to indicate permanent retention: 9999, NEVER, NOLIMIT and PERM.
- Add a new option in the ISPF Configuration Table dialog to allow disabling all ENQ displays. This option indicates whether or not users should be able to see who has existing data set ENQs when they press the help key or when they use the ISRDDN utility.
- The LMINIT service specified with the DDNAME parameter will now handle DDNAMEs with up to 16 concatenated data sets. The DATAID generated by the LMINIT can then be passed to services such as EDIT and BROWSE to process members in any of the 16 data sets.

ISPF SCLM Component Changes

The ISPF SCLM component contains the following new functions and enhancements:

- Additional/modified SCLM Services:
  - An AUTHCODE service to update authorization codes has been added.
  - A NEXTGRP service to return the promote target for a given group.
  - The MIGRATE service will now allow the DATE/TIME of the member to be set by the caller.
  - The MIGRATE service will now be supported via the FLMLNK interface.
  - The MIGRATE service has a new report output and associated specification on the service call (default is to go to the terminal).
  - The FLMCMPLB macro has been deleted. Any projects using FLMCMPLB currently must be recoded to use: FLMSYSLB dsn,INCLS=COMPOOL.
- Additional exit points have been added:
  - At edit start and when the SPROF command is invoked.
  - When data is saved (Edit SAVE, Migrate, etc.).

  - After the NOTIFY step of a DELETE.
  - After the VERIFY step of a DELETE.
  - After the VERIFY step of a BUILD.
- The Versioning Utility will now allow a SuperC COMPARE of versions to be done.
- The Versioning Utility will capture output members, in addition to editable types.
- Workstation commands can now be used from translators running during a PROMOTE in batch mode.
- SCLM will now display dates in 4-character year format.
- The NRETRIEV command is now supported for SCLM.
- Added the ability to specify separate VERCOUNT values for each group/type combination.
- Additional samples:
  - A sample interface into ServiceDesk for z/OS to show how a change management system can be integrated into SCLM.
  - An Edit autoflagger to automatically flag changed lines.
  - A versioning delete sample.

ISPF Client/Server Component Changes

The ISPF Client/Server Component enables a panel to be displayed unchanged (except for panels with graphic areas) at a workstation using the native display function of the operating system of the workstation. ISPF manuals call this "running in GUI mode."

There are no changes to the ISPF Client/Server for this release.

ISPF User Interface Considerations

Many changes have been made to the ISPF Version 4 user interface to conform to CUA guidelines. If you prefer to change the interface to look and act more like the Version 3 interface, you can do the following:

- Use the CUAATR command to change the screen colors
- Use the ISPF Settings panel to specify that the TAB or HOME keys position the cursor to the command line rather than to the first action bar item
- Set the command line to the top of the screen by deselecting ***Command line at bottom*** on the ISPF Settings panel
- Set the primary keys to F13–24 by selecting 2 for Primary range on the Tailor Function Key Definition Display panel
- Use the KEYLIST OFF command to turn keylists off
- Use the PSCOLOR command to change point-and-shoot fields to blue.
- Change the DFLTCOLR field in the PDF configuration table ISRCONFG to disable action bars and or edit highlighting

ISPF Migration Considerations

When migrating to OS/390 V2R8.0 or higher for the first time, you must convert your ISPF customization to the new format. Refer to the section entitled ***The ISPF Configuration Table*** in the *ISPF Planning and Customizing manual.*

When migrating from one version of ISPF to another, you must be sure to reassemble and re-link the SCLM project definition.

Note: If you are migrating to z/OS V1R1.0 from OS/390 V2R10.0, there are no migration actions necessary. If you are migrating to z/OS V1R1.0 from a prior release of OS/390, follow the migration actions for OS/390 V2R10.0.

ISPF Profiles

Major changes were made to the ISPF profiles for ISPF Version 4.2 and OS/390 Version 1 Release 1.0 ISPF. The profiles for ISPF Version 3 and the profiles for OS/390 ISPF are not compatible. If you are moving back and forth between an ISPF Version 3 system and OS/390 V1R1.0 or higher system, you must run with separate profiles. Profiles for OS/390 V1R1.0 and higher are compatible with each other.

Year 2000 Support for ISPF

ISPF is fully capable of using dates for the year 2000 and beyond. All of your existing applications should continue to run (some may need minor changes, as explained below) when the year 2000 comes. The base support for the year 2000 was added to OS/390 Version 1 Release 2.0, but the same level of support is available for ISPF Version 3.5, ISPF Version 4, and OS/390 Version 1 Release 1.0 as well. To get support for the earlier versions, be sure that your system has the correct APARs installed. All ISPF APARs that add or correct function relating to the year 2000 contain the YR2000 identifier in the APAR text. You should search for these APARs to ensure you have all the function available.

What function is included?

- ISPF Dialog variable ZSTDYEAR now correctly shows the year for dates past 1999. Earlier versions always showed the first 2 characters of the year as 19.
- A new ISPF dialog variable (ZJ4DATE) is available for Julian dates with a 4–digit year.
- An ISPF Configuration Table field enables PDF to interpret 2 character year dates as either a 19xx or 20xx date. The default value is 65. Any 2-character year date whose year is less than or equal to this value is considered a 20xx date, anything greater than this value is considered 19xx. To see what value has been set by the ISPF Configuration Table, use the new ZSWIND variable.
- New parameters in the LMMSTATS service (CREATED4 and MODDATE4) for specifying 4-character year dates. All existing parameters still exist and you can continue to use them. If both the 2-character year date parameters (CREATED and MODDATE) and the 4-character year date parameters (CREATED4 and MODDATE4) are specified, the 2-character versions are used.
- Dialog variables ZLC4DATE and ZLM4DATE have been added.
  - You ***can*** set them before making an LMMREP or LMMADD call. Do this to specify a 4-character *created* or *last modified* date to set in the ISPF statistics.
  - They ***are*** set by LMMFIND, LMMLIST and LMMDISP to the current value of the created and last modified dates in the ISPF statistics.

What might need to change? Some minor changes to your existing ISPF dialogs might be necessary, especially in ISPF dialogs that use the Library Access Services to manipulate ISPF member statistics.

- For those services that accept both 4-character year dates and 2-character year dates, you can specify one or the other. If you specify both, the 2-character year date is used to avoid affecting existing dialogs. When the 2-character year date is

used, the configuration table field mentioned above is used to determine whether the date should be interpreted as 19xx or 20xx.

- ISPF will not necessarily show 4-character dates in all circumstances but it will process them correctly. For example, a member list might only display 2-character year dates but will sort those dates in the proper order.
- SCLM stores dates past the year 1999 in a new internal format. If an accounting file contains dates in this new format, it cannot be processed by a system without year 2000 support. Accounting files without dates past 1999 can be processed with or without the year 2000 support.
- No conversion of the LMF control file is necessary.

What's in the z/OS V1R1.0 ISPF library?

You can order the ISPF books using the numbers provided below.

z/OS V1R1.0 ISPF

Title	Order Number
z/OS V1R1.0 ISPF Dialog Tag Language Guide and Reference	SC34-4824-00
z/OS V1R1.0 ISPF Planning and Customizing	GC34-4814-00
z/OS V1R1.0 ISPF User's Guide Volume I	SC34-4822-00
z/OS V1R1.0 ISPF User's Guide Volume II	SC34-4823-00
z/OS V1R1.0 ISPF Services Guide	SC34-4819-00
z/OS V1R1.0 ISPF Dialog Developer's Guide and Reference	SC34-4821-00
z/OS V1R1.0 ISPF Reference Summary	SC34-4816-00
z/OS V1R1.0 ISPF Edit and Edit Macros	SC34-4820-00
z/OS V1R1.0 ISPF Library Management Facility	SC34-4825-00
z/OS V1R1.0 ISPF Messages and Codes	SC34-4815-04
z/OS V1R1.0 ISPF Software Configuration and Library Manager Project Manager's and Developer's Guide	SC34-4817–00
z/OS V1R1.0 ISPF Software Configuration and Library Manager Reference	SC34-4818-00
Entire library Bill of Forms	SBOF-8570

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Elements and Features in z/OS

You can use the following table to see the relationship of a product you are familiar with and how it is referred to in z/OS Version 1 Release 1.0. z/OS V1R1.0 is made up of elements and features that contain function at or beyond the release level of the products listed in the following table. The table gives the name and level of each product on which a z/OS element or feature is based, identifies the z/OS name of the element or feature, and indicates whether it is part of the base or optional. For more compatibility information about z/OS elements see *z/OS Planning for Installation, GC28-1726*

Product Name and Level	**Name in z/OS**	**Base or Optional**
BookManager BUILD/MVS V1R3	BookManager BUILD	optional
BookManager READ/MVS V1R3	BookManager READ	base
MVS/Bulk Data Transfer V2	Bulk Data Transfer (BDT)	base
MVS/Bulk Data Transfer File-to-File V2	Bulk Data Transfer (BDT) File-to-File	optional
MVS/Bulk Data Transfer SNA NJE V2	Bulk Data Transfer (BDT) SNA NJE	optional
IBM OS/390 C/C++ V1R2	C/C++	optional
DFSMSdfp V1R3	DFSMSdfp	base
DFSMSdss	DFSMSdss	optional
DFSMShsm	DFSMShsm	optional
DFSMSrmm	DFSMSrmm	optional
DFSMS/MVS Network File System V1R3	DFSMS/MVS Network File System	base
DFSORT R13	DFSORT	optional
EREP MVS V3R5	EREP	base
FFST/MVS V1R2	FFST/MVS	base
GDDM/MVS V3R2 • GDDM-OS/2 LINK • GDDM-PCLK	GDDM	base
GDDM-PGF V2R1.3	GDDM-PGF	optional
GDDM-REXX/MVS V3R2	GDDM-REXX	optional
IBM High Level Assembler for MVS & VM & VSE V1R2	High Level Assembler	base
IBM High Level Assembler Toolkit	High Level Assembler Toolkit	optional
ICKDSF R16	ICKDSF	base
ISPF V4R2M1	ISPF	base
Language Environment for MVS & VM V1R5	Language Environment	base
Language Environment V1R5 Data Decryption	Language Environment Data Decryption	optional

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Product Name and Level	Name in z/OS	Base or Optional
MVS/ESA SP V5R2.2		
BCP	BCP or MVS	base
ESCON Director Support	ESCON Director Support	base
Hardware Configuration Definition (HCD)	Hardware Configuration Definition (HCD)	base
JES2 V5R2.0	JES2	base optional
JES3 V5R2.1	JES3	base
LANRES/MVS V1R3.1	LANRES	base
IBM LAN Server for MVS V1R1	LAN Server	base
MICR/OCR Support	MICR/OCR Support	base
OS/390 UNIX System Services	OS/390 UNIX System Services	base
OS/390 UNIX Application Services	OS/390 UNIX Application Services	base
OS/390 UNIX DCE Base Services (OSF DCE level 1.1)	OS/390 UNIX DCE Base Services	base
OS/390 UNIX DCE Distributed File Services (DFS) (OSF DCE level 1.1)	OS/390 UNIX DCE Distributed File Services (DFS)	optional
OS/390 UNIX DCE User Data Privacy	OS/390 UNIX DCE User Data Privacy	optional
SOMobjects Application Development Environment (ADE) V1R1	SOMobjects Application Development Environment (ADE)	base
SOMobjects Runtime Library (RTL)	SOMobjects Runtime Library (RTL)	base
SOMobjects service classes	SOMobjects service classes	
Open Systems Adapter Support Facility (OSA/SF) R1	Open Systems Adapter Support Facility (OSA/SF)	base
MVS/ESA RMF V5R2	RMF	optional
OS/390 Security Server	Resource Access Control Facility (RACF) • DCE Security Server • OS/390 Firewall Technologies • Lightweight Directory Access Protocol (LDAP) Client and Server • Open Cryptographic Enhanced Plug-ins (OCEP)	optional
SDSF V1R6	SDSF	optional
SMP/E	SMP/E	base
	Softcopy Print	base
SystemView for MVS Base	SystemView for MVS Base	base
IBM TCP/IP V3R1	TCP/IP	base
• TCP/IP CICS Sockets	• TCP/IP CICS Sockets	• optional
• TCP/IP IMS Sockets	• TCP/IP IMS Sockets	• optional
• TCP/IP Kerberos	• TCP/IP Kerberos	• optional
• TCP/IP Network Print Facility (NPF)	• TCP/IP Network Print Facility (NPF)	• optional
• TCP/IP OS/390 Communications Service IP Applications	• TCP/IP OS/390 Communications Service IP Applications	• optional • optional
• TCP/IP OS/2 Offload	• TCP/IP OS/2 Offload	
TIOC R1	TIOC	base
Time Sharing Option Extensions (TSO/E) V2R5	TSO/E	base

Product Name and Level	Name in z/OS	Base or Optional
VisualLift for MVS V1R1.1	• VisualLift Run-Time Environment (RTE) • VisualLift Application Development Environment (ADE)	• base • optional
VTAM V4R3 with the AnyNet feature	VTAM	base
3270 PC File Transfer Program V1R1.1	3270 PC File Transfer Program	base

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Chapter 1. Settings (Option 0)

The Settings option allows you to display and change a variety of ISPF parameters at any time during the ISPF session. Changes remain in effect until you change the parameter again, and ISPF saves them from session to session.

This chapter explains how to use the fields on the ISPF Settings panel and the action bar choices. Some of the things you can specify are:

- Terminal characteristics
- Default options for processing the ISPF list and log data sets
- Function key assignments
- Placement of command lines
- List data set characteristics
- GDDM graphic print parameters
- Keylist modifications
- Dialog Test option
- Default colors
- Values of CUA panel elements
- Point-and-shoot color and highlight changes
- ENVIRON command options.

This facility can be started from any command line with the SETTINGS command, from the **Settings** choice on the Menu pull-down on any action bar where it is available, or by selecting option 0 on the ISPF Primary Option Menu. Typically, the Settings facility should be included as an option on an application's primary option menu or as a choice on a pull-down on an application's primary option menu.

If you select option 0 on the ISPF Primary Option Menu, the panel shown in Figure 1 is displayed.

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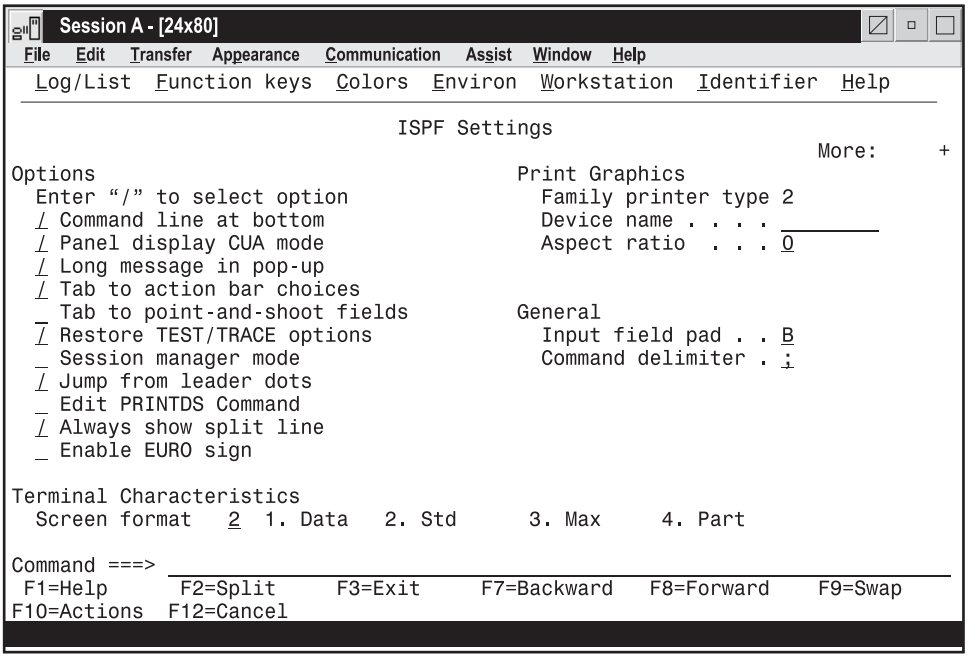

Figure 1. ISPF Settings Panel (ISPISMMN)

ISPF Settings Panel Fields

The former ISPF Parms panels have been consolidated into fewer panels so that you can view most of the settings at the same time, rather than having to search for related information on a number of panels. The ISPF Settings panel contains settings formerly addressed by options 0.1 (Terminal Characteristics), 0.4 (Display Characteristics), 0.6 (Print Graphics Parameters), and 0.9 (Dialog Test Option), as well as new display characteristic settings.

Figure 1 shows the initial defaults. The display or the field-level help indicates the allowable alternatives for these defaults. The values shown in Figure 1 are for an ISPF session in the English language. The corresponding panel displayed for a non-English session is similar, but the accepted terminal types can be different.

Select Options

Use a slash to select the following options:

- Command line at bottom
- Panel display CUA mode
- Long message in pop-up
- Tab to action bar choices
- Tab to point-and-shoot fields
- Restore TEST/TRACE options
- Session Manager mode
- Jump from leader dots
- Edit PRINTDS Command
- Always show split line
- Enable EURO sign (currency symbol).

Blank out the slash to deselect an option; each option is described below.

Command line at bottom

Specifies that the command line is to appear at the bottom of each logical screen. If you have specified that the panel should be displayed in CUA mode, the command line placement defaults to the bottom.

Notes:

1. The default is to have the command line placement at the bottom. However, if your current application profile table specifies ASIS, the default does not override it.
2. If you deselect this field, the command line appears as specified in the panel definition statements. Unless indicated in the panel definition, it appears at the top of the panel.

When you select the Command line at bottom option, the following changes take place:

- The command line moves to the last line of the logical screen or the line above the function keys depending on the CUA mode setting (see Table 1 on page 8).
- Each line that follows the command line shifts up one line.
- The long message overlays the line above the new command line location.

  If the command line for a table display panel has been moved to the bottom and if no alternate placement has been specified for the long message line, the line directly above the repositioned command line is reserved (left blank) for the display of long messages. Otherwise, if you enter erroneous data on that line, a long message could overlay that data.
- In general, the display location of the function key definitions depends on several variables.
  - If the panel display mode CUA option is not selected, and the KEYLIST option is set to OFF, the function key definitions display on the lines immediately above the long message line.
  - If the panel display mode CUA option is on, and the KEYLIST option is set to OFF, the function key definitions display below the long message line.
  - If the KEYLIST option is set to ON, and the panel definition does not contain a)Panel statement, the positioning of the function keys depends on the CUA mode setting.
  - If the KEYLIST option is set to ON, and the panel definition contains a)Panel statement, the positioning of the function keys is below the long message line.

  If the Panel display CUA mode option is not selected, an exception to this situation occurs when an alternate placement for the long message line has been specified using the LMSG keyword on the)BODY header statement. Under these circumstances, the function key definitions display immediately above the command line.

If a conflict occurs between the placement of the function key definition lines and those that are to display long messages, short messages, and/or commands, the function keys will not overlay the command line, the line containing the long or short message field, or any line above one of these fields. Because of this condition, function key definition lines cannot appear at all on some screens.

When using the GDDM interface to display panels, the position of a graphics field does not change if the command line moves to the bottom of the screen.

In split-screen mode, if the top screen specifies the Command line at bottom option, the command line is moved to the line directly above the split line, and the long message line overlays the line above the command line. Because the placement setting is stored in the application profile pool, the setting for each logical screen is the same unless a user is running different applications in each screen.

Panel display CUA mode

Specifies that panels be displayed in CUA mode. This selection affects how the long message line, command line, and function keys are displayed, as described in Table 1.

Table 1 summarizes how the command, long message, and function key area appear on the panel depending on whether or not you select the Panel display in CUA mode option. Note that the table uses the system default to position the long message field. An alternate long message field is not defined using the LMSG keyword on the)BODY header statement.

Table 1. CUA Mode Effect on Panel Display

Panel Characteristic	CUA mode selected	CUA mode not selected
Command line at bottom	Long message line Command line Fn=name	PF n=name Long message line Command line
Command line at bottom deselected	Title/short message Command line Long message line ⋮ Fn=name	Title/short message Command line Long message line ⋮ PF n=name

Table 2 summarizes the effect of CUA mode on the top-row-displayed indicator.

Table 2. CUA Mode Effect on Top-Row-Displayed Indicator

CUA Mode	Rows	Top-Row-Displayed Message	Message ID
YES	ALL	Row x to z of y	ISPZZ102
YES	SCAN	Row x From y	ISPZZ103
NO	ALL	Row x of y	ISPZZ100
NO	SCAN	Row x of y	ISPZZ100

Long message in pop-up

Specifies that long messages will be displayed in a pop-up window, regardless of the .WINDOW setting in the message source.

Tab to action bar choices

Specifies that you want to use the Tab key to move the cursor among the action bar choices.

Note: You cannot use the Tab key for this purpose if you are running in GUI mode.

Tab to point-and-shoot fields
Specifies that you want to use the Tab key to move the cursor through the point-and-shoot fields on a panel.

Note: You cannot use the Tab key for this purpose if you are running in GUI mode.

Restore TEST/TRACE options
When you select Dialog Test facility (option 7), certain TEST and TRACE options are established that can be different than those specified during ISPF start up. If you select Restore TEST/TRACE options, the TEST or TRACE values are restored to the ISPF call values when you exit dialog test. If you deselect the field, the TEST or TRACE values are not restored when you exit dialog test.

For more information about dialog test, see Chapter 8. Dialog Test (Option 7).

Session Manager mode
Enter a slash to indicate that the Session Manager should handle any line mode output from the processing program.

Jump from leader dots
Enter a slash to enable the ISPF jump function from field prompts that have leader dots (. . or ...). Field prompts that have the ==> will always have the jump function enabled.

If the application developer defines the NOJUMP(ON) attribute keyword on a specific input field, this disables the ″Jump from leader dots″ and takes precedence over the selected Settings ″Jump from leader dots″ or the configuration table setting of ″YES″ for ″Jump from leader dots″.

Edit PRINTDS Command
Enter a slash to intercept the local print request to allow you to modify the statement before the PRINTDS command begins. See the **Editing the PRINTDS Command**section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for additional information.

Always show split line
Specifies that the split line in split screen mode, as seen on a 3270 display, should always be shown. The default for this option is that the option is selected. By deselecting this option, the split line does not display when the screen is split at the top or the bottom of the screen.

Enable EURO Sign
Enter a slash to enable the EURO sign (currency symbol). Your terminal or emulator must support the EURO sign for this option to work.

Terminal Characteristics

The Terminal Characteristics portion of the ISPF Settings panel allows you to specify values for the following terminal characteristics:
- Screen format
- Terminal type.

Each of these characteristics is described below.

Screen format
Specification of screen format applies to 3278 Model 5 (or 3180 set to a mode that emulates the 3278 Model 5) and 3290 terminals only. ISPF ignores screen format for other types of terminals.

Data Format is based on data width (for a 3278 Model 5 only).
Std Format is always 24 x 80 characters.
Max Format is always 27 x 132 characters.
Part Format uses hardware partitions (3279 only).

Note: If you are in an Edit session or you are using the EDIT service, ISPF will not allow you to change the screen format.

Terminal type

Specify a valid terminal type. If you are using a terminal emulator, select the type of terminal that is being emulated (more than likely, a 3278 or 3278*x*).

Specification of a terminal type allows ISPF to recognize valid (displayable) characters. You should keep in mind that the terminal type value that you specify to ISPF might not be the actual terminal type. For example, if your terminal is a 3279, you specify 3278 because a 3279 terminal has the same character set as a 3278. The keyboard character sets for the specified terminal and the actual terminal are always compatible.

The terminal type designations in the text of this book are often the value to be specified to ISPF rather than the actual terminal type.

For a list of ISPF-supported terminal types, refer to *ISPF Planning and Customizing* For specific information about the type value to specify to ISPF for each supported terminal, start Help from the ISPF Settings panel.

You can also select a terminal type by using the ISPTTDEF program, as described in *ISPF Dialog Developer's Guide and Reference*

This panel can also include one or more of the following installation-dependent options for terminal type:

3277KN 3277 Katakana terminals
3278CF 3278 Canadian French terminals
3278KN 3278 Katakana terminals.

A 5550-3270 Kanji emulation Version 3 terminal has the same character set as a 3278 Katakana terminal, so you should specify 3278KN as the terminal type. Also, because the 5550 running with the Japanese 3270PC/G Version 3 or 3270 PC Version 5 has the same character set as a 3278 Katakana terminal, in either case you should specify 3278KN as the terminal type.

Print Graphics Parms

The Print Graphics Parms portion of the ISPF Settings panel allows you to specify the following to GDDM:

- Family printer type
- Device name
- Aspect ratio.

Each of these parameters is described below:

Family printer type

This parameter has a default value of 2, which cannot be changed.

Device name

VTAM* node name of the physical printer to which graphic display output is to be routed. This name is supplied by the installation's system programmer.

Aspect ratio

How the graphics aspect ratio (relationship to displayed screen image) is to appear on the printed output. Aspect ratio can be either of the following:

0 Preserves the aspect ratio of the graphic area as displayed (Figure 2). In other words, the ratio of the graphic area width to its height is the same on the printed document (Figure 3 on page 12) as in the displayed view. Zero is the default value. Figure 3 shows how the graphic in Figure 2 would appear if the PRINTG command were issued with an aspect ratio of 0.

1 Preserves the positional relationship between the graphic and the alphanumeric characters outside the graphics area. In other words, the printed graphic (Figure 4 on page 12) aligns horizontally with characters outside the graphics area the same as it (the printed graphic) aligns in the displayed image.

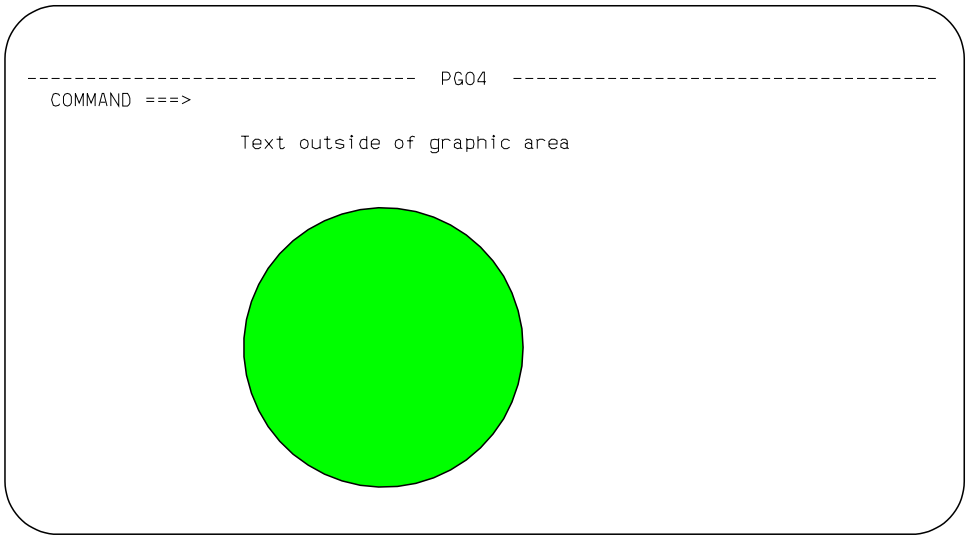

Figure 2. Screen Containing Graphics to Be Printed Using PRINTG

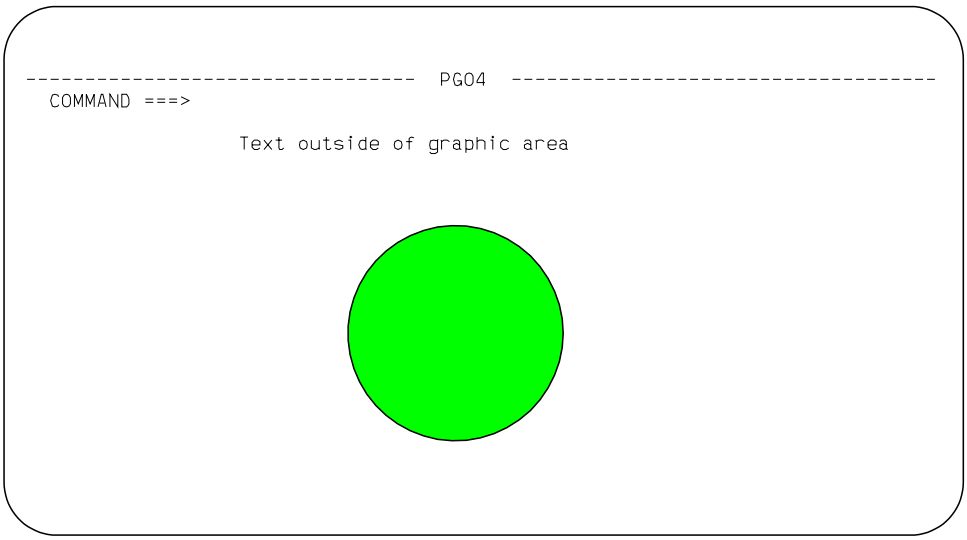

Figure 3. Example of Using Aspect Ratio Parameter 0

Figure 4 shows how the graphic in Figure 2 would appear if the PRINTG command were issued with an aspect ratio of 1.

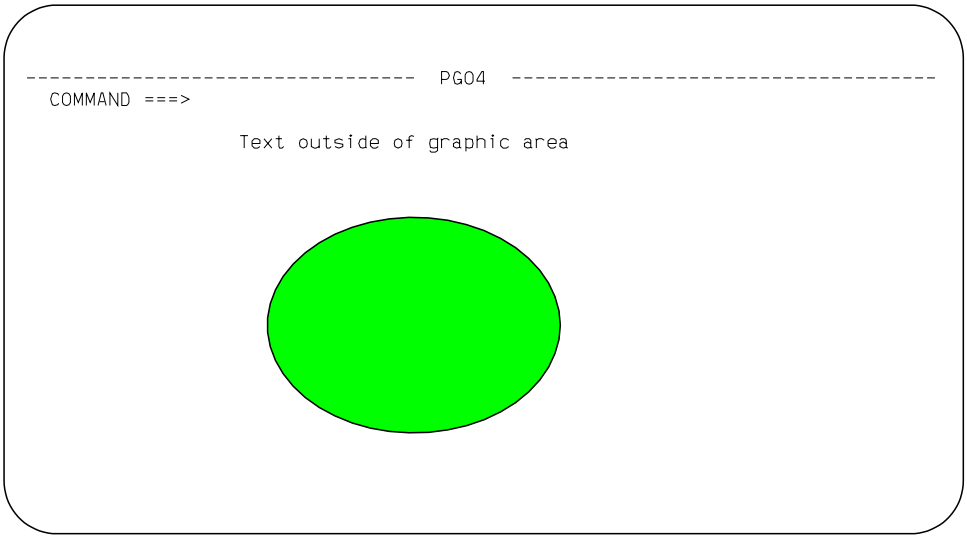

Figure 4. Example of Using Aspect Ratio Parameter 1

General

The General portion of the ISPF Settings panel allows you to specify values for the following:

- Input field pad
- Command delimiter.

Input field pad

Specifies a pad character that controls the initial padding of blank (unfilled) panel input fields, including the selection panels, but not the data portion, of an Edit display. Within Edit, you control null or blank padding with Edit commands.

The pad character specified can be a B (blank), N (nulls), or any special (non-alphanumeric) character.

Note: When you are running in GUI mode, blank pad characters will be displayed as nulls in order to avoid the need to delete blank characters when replace mode is not available.

Command delimiter

You can stack commands on the command line by separating them with a delimiter. The default delimiter, the semicolon, can be changed using this option. Alphanumeric characters, the period (.), and the equal sign (=) are not valid command delimiters. Stacking allows you to enter, for example:

```
===> FIND DEPT;HEX ON
```

which finds the characters DEPT and then displays the file at that point in hexadecimal mode.

The system variable for the delimiter is ZDEL. For more information about ZDEL, refer to the *ISPF Dialog Developer's Guide*.

ISPF Settings Panel Action Bar

The ISPF Settings panel action bar choices function as follows:

Log/List

The Log/List pull-down offers you the following choices (see "Specifying Log and List Defaults and Characteristics (The Log/List Action Bar Choice)" on page 15 for more information):

1. **Log Data set defaults**. Displays the Log Data Set Defaults panel.
2. **List Data set defaults**. Displays the List Data Set Defaults panel.
3. **List Data set characteristics**. Displays the List Data Set Characteristics panel.
4. **JCL...** Displays the Log and List JCL pop-up.

Function keys

The Function keys pull-down offers you the following choices (see "Working with Function Keys and Keylists (The Function Keys Action Bar Choice)" on page 21 for more information):

1. **Non-Keylist PF Key settings**. Displays the PF Key Definitions and Labels panel.
2. **Keylist settings...** Displays the Keylist Utility for ISP pop-up.
3. **Tailor function key display**. Displays the Tailor Function Key Definition Display panel.
4. **Show all function keys**. Changes the function key display. This will be an unavailable choice if you are currently showing all function keys.
5. **Show partial function keys**. Changes the function key display. This will be an unavailable choice if you are currently showing a partial list of function keys.
6. **Remove function key display**. Removes function keys from your screen. This will be an unavailable choice if you are currently not showing function keys.

7 **Use private and shared**. Equivalent to using the KEYLIST PRIVATE command.

8 **Use only shared**. Equivalent to using the KEYLIST SHARED command.

9 **Disable keylists**. Disables keylists. This choice is not available if you are currently running with keylists disabled.

10 **Enable keylists**. Enables keylists. This choice is not available if you are currently running with keylists enabled.

Colors The Colors pull-down offers you the following choices (see "Changing Default Colors (The Colors Action Bar Choice)" on page 35 for more information):

1 **Global colors...** Displays the Global Color Change Utility panel.

2 **CUA Attributes...** Displays the CUA Attribute Change Utility panel.

3 **Point-and-Shoot...** Displays the CUA Attribute Change Utility panel, positioned on the Point-and-Shoot panel element.

Environ

The Environ pull-down offers you the following choices (see "Specifying ISPF ENVIRON Settings (The Environ Action Bar Choice)" on page 42 for more information):

1 **Environ settings...** Displays the ISPF ENVIRON Command Settings panel.

Workstation

The Workstation pull-down offers you the following choices (see "Specifying Workstation Parameters (The Workstation Action Bar Choice)" on page 43 for more information):

1 **Workstation connection...** Displays the Initiate GUI Session panel.
2 **GUI panel settings...** Displays the GUI Settings panel.
3 **Workstation Tool Integration...** Displays the tool integration panel.
4 **Download ISPF C/S Component...** Displays the download panel.
5 **Disconnect from the Workstation...** Disconnects from the workstation.

Identifier

The Identifier pull-down offers you the following choices (see "Displaying Screen Name, Message Identifiers, and Panel Identifiers (The Identifier Action Bar Choice)" on page 52 for more information):

1 **Message identifier...** Displays the Message Identifier pop-up.
2 **Panel identifier...** Displays the Panel Identifier pop-up.
3 **Screen Name...** Displays the Screen Name pop-up.

Help The Help pull-down offers you the following choices:

1 Settings
2 Options
3 Terminal characteristics
4 Print Graphics parameters
5 General
6 Log/List action bar
7 Function keys action bar
8 Color action bar
9 Environ action bar

10 Workstation action bar
11 Identifier action bar

Specifying Log and List Defaults and Characteristics (The Log/List Action Bar Choice)

The Log/List pull-down on the ISPF Settings panel action bar (see Figure 5) allows you to specify the log and list data set defaults that are used when you terminate ISPF by issuing the RETURN or END command or by entering an X on the ISPF Primary Option Menu command line.

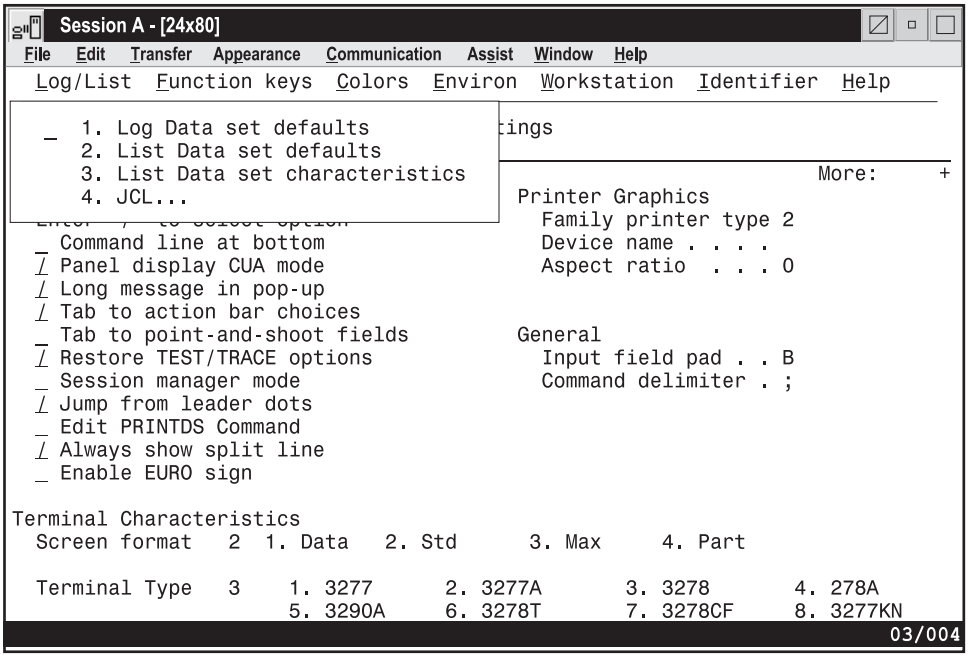

Figure 5. Log/List Pull-Down on the ISPF Settings Panel Action Bar (ISPISMMN)

The defaults can also be used when you issue the LOG or LIST command. You may specify the characteristics of the records to be contained in the list data set when it is defined.

Log Data Set Defaults

When you select Log Data set defaults... from the Log/List pull-down on the ISPF Settings panel action bar, the panel shown in Figure 6 on page 16 is displayed.

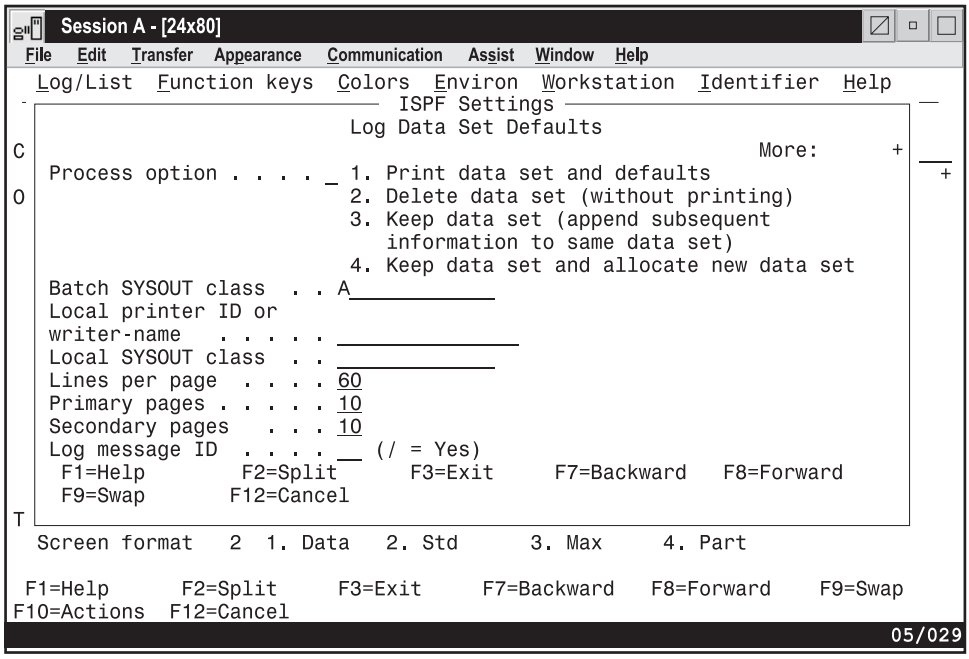

Figure 6. Log Data Set Defaults Panel (ISPISML1)

The initial defaults are listed in Table 3.

Table 3. Log Data Set Defaults

Parameter	Log Data Set
Local printer ID	none
Lines per page . . .	60
Primary pages . . .	10
Secondary pages . .	10

Local printer ID or writer name
Enter the name that your installation has assigned to an IBM 328x type of printer or the name of the external writer program. The default is blank. If you enter a name in this field, be sure to leave the Batch SYSOUT class field empty.

Lines per page
Normal values for lines per page are:

60 When printing 6 lines per inch
80 When printing 8 lines per inch.

Lines per page can range from 1–999. ISPF uses this value to determine when to cause a page eject if the eject control is not provided by the dialog; for example, when the dialog issues a LIST service request without the CC keyword specified.

Primary/Secondary pages
Primary/secondary allocation parameters are specified in terms of the anticipated number of pages of printout. These values are automatically converted by ISPF to the appropriate number of blocks prior to allocating space for the log data set.

If you modify the primary/secondary allocation parameters after the data set has been allocated, the new values take effect the next time you start ISPF. The log data set is allocated the first time you perform some action that results in a log message, such as saving edited data or submitting a batch job.

Note: Specify a primary allocation of zero to prevent allocation and generation of the log.

Log Message ID

If you select the Log Message ID option, the message ID is automatically added to the long message text written in the LOG data set.

If you request default processing options for the log data set, the following rules apply:

- If you specify Print data set and delete (1), you must also specify a Batch SYSOUT class and job statement information. If you specify Print data set and delete for both log and list, you can specify different Batch SYSOUT classes, but only one job is submitted for printing both data sets.
- If you specify routing to a local printer, you must specify a Local printer ID or writer name, and Batch SYSOUT must be blank. You can also enter a Local SYSOUT class if one is defined.

If you do not follow these rules or do not specify default processing options, primary option X or the RETURN command causes the final termination panel to be displayed.

List Data Set Defaults

When you select List Data set defaults... from the Log/List pull-down on the ISPF Settings panel action bar, the pop-up shown in Figure 7 is displayed.

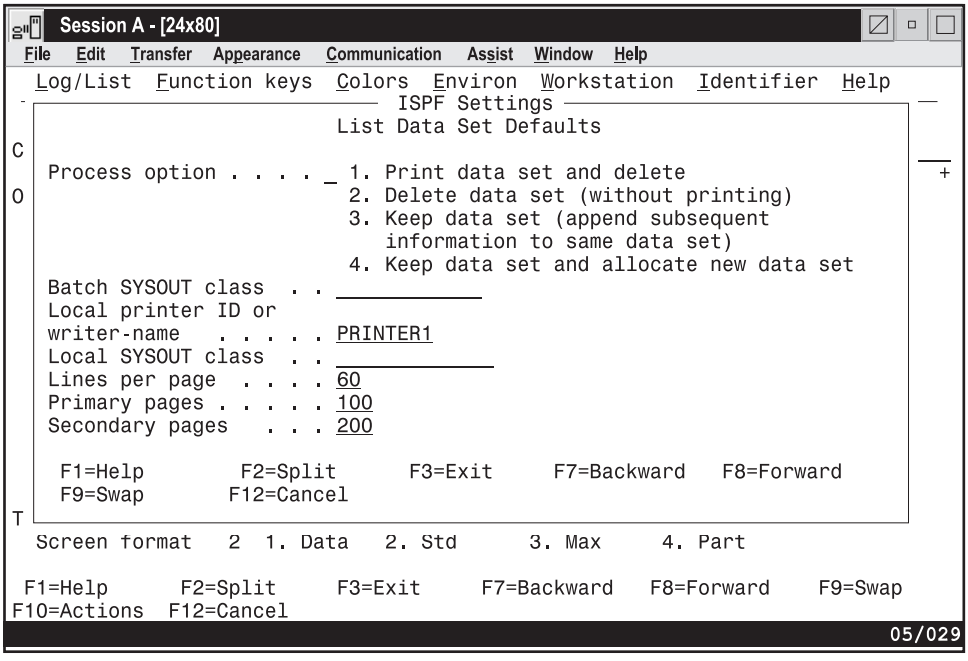

Figure 7. List Data Set Defaults Panel (ISPISML2)

The initial defaults are listed in Table 4.

Table 4. List Data Set Defaults

Parameter	List Data Set
Local printer ID	none
Lines per page . . .	60
Primary pages . . .	100
Secondary pages . .	200

Local printer ID
Enter the name that your installation has assigned to an IBM 328x type of printer or the name of the external writer program. The default is blank. If you enter a name in this field, be sure to leave the Batch SYSOUT class field empty.

Lines per page
Normal values for lines per page are:
60 When printing 6 lines per inch
80 When printing 8 lines per inch.

Lines per page can range from 1–999. ISPF uses this value to determine when to cause a page eject if the eject control is not provided by the dialog; for example, when the dialog issues a LIST service request without the CC keyword specified.

Primary/Secondary pages
Primary/secondary allocation parameters are specified in terms of the anticipated number of pages of printout. These values are automatically converted by ISPF to the appropriate number of blocks prior to allocating space for the list data set.

If you modify the primary/secondary allocation parameters after the data set has been allocated, the new values take effect the next time you enter ISPF. The list data set is allocated the first time you request a print function or a dialog issues a LIST service request.

If you request default processing options for the list data set, the following rules apply:

- If you specify Print data set and delete (1), you must also specify a Batch SYSOUT class and job statement information. If you specify Print data set and delete for both log and list, you can specify different Batch SYSOUT classes, but only one job is submitted for printing both data sets.
- If you specify routing to a local printer, you must specify a Local printer ID or writer name, and Batch SYSOUT must be blank.

If you do not follow these rules or do not specify default processing options, primary option X or the RETURN command causes the final termination panel to be displayed.

After reviewing or changing the parameters on this panel, enter the END command to return to the previous menu.

List Data Set Characteristics

When you select List Data set characteristics... from the Log/List pull-down on the ISPF Settings panel action bar, the panel shown in Figure 8 on page 19 is displayed to allow you to specify the characteristics of the records to be contained in the list

data set when it is defined. You can specify the record format, the logical record length, and the line length to be printed. When the characteristics are reset, their new values take effect at once unless the list data set has already been allocated. In that case, the new values are used for the next list data set allocation. These values are saved in your user profile, which ISPF automatically builds and maintains across sessions.

Specifications for logical record length and line length values can affect truncation of lines written to the list data set by a LIST service request. See the description of the LIST service in *ISPF Services Guide* for more information.

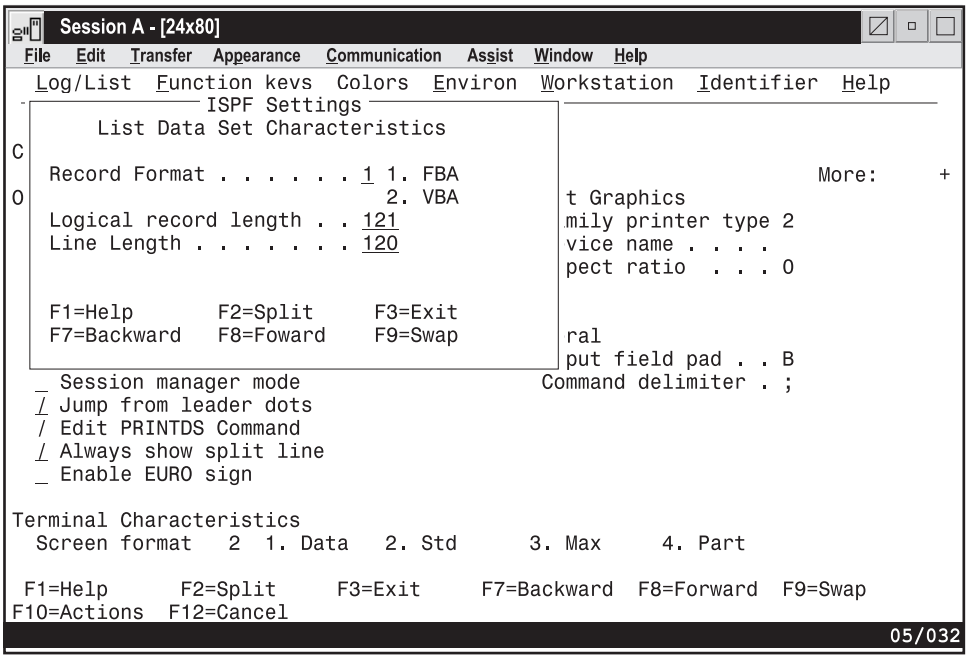

Figure 8. List Data Set Characteristics Panel (ISPISML3)

The fields on this panel are described below:

Record Format

The record format specifies the format and characteristics of the records in the list data set. The allowable record formats are:

FBA Fixed-length records that contain ANSI-defined printer control characters

VBA Variable-length records that contain ANSI-defined printer control characters.

The default setting is FBA.

Logical Record Length

The logical record length specifies the length, in bytes, of fixed-length records or the maximum length allowed for variable-length records. The default value is 121. This value represents one ANSI-defined control character and 120 bytes of data to be printed.

Line Length

The line length specifies the length of the logical line to be printed. If the specified line length is greater than the logical record length of the list data set, data is truncated. The range of allowable lengths is from 80 bytes to 160 bytes. The default value is 120.

The information supplied by the parameters allows for the printing of panels whose line lengths would not otherwise be supported by the available printing facilities.

For example:

- If a panel to be printed is 160 bytes wide but printing capabilities allow only 132 bytes, you should specify:
  RECFM FBA or VBA
  Line Length 130
  LRECL 132 (allows for two ANSI-defined control characters).

  The first page of output would contain the first 130 bytes of the panel. The second page would contain the last 30 bytes. This technique is referred to as the *cut and paste* method of printing.
- If a panel to be printed is 132 bytes wide and the printer supports this line length, you should specify:
  RECFM FBA or VBA
  Line Length 132
  LRECL 133 (allows for one ANSI-defined control character).

  The entire panel would be printed on one page of output.
- If a panel to be printed is 80 bytes wide, ISPF uses the default values for the LIST parameters. The entire panel would be printed on one page of output.

JCL

When you select JCL... from the Log/List pull-down on the ISPF Settings panel action bar, the pop-up shown in Figure 9 is displayed to allow you to specify up to four default job statements to be used for printing a log or list data set.

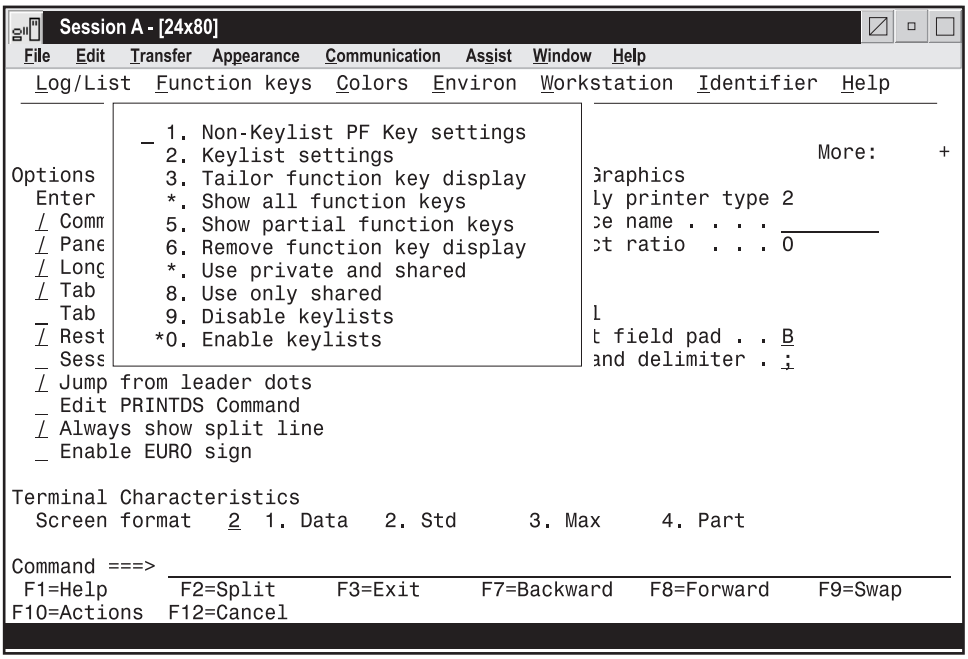

Figure 9. Log and List JCL Panel (ISPISMLJ)

Working with Function Keys and Keylists (The Function Keys Action Bar Choice)

The Function keys pull-down on the ISPF Settings panel action bar (see Figure 10 on page 22) allows you to define function keys and to create, edit, delete, and view keylists.

Nearly all panels in ISPF have associated keylists, although specific keylists typically serve numerous panels. There are several keylists used in the ISPF product panels. These keylists all start with the characters ISR. In addition, ISPF contains some keylists that start with the characters ISP. They are not used in any ISPF product panels, but can be used by an application if needed. Keylists are used when an application panel contains a)PANEL statement.

To accommodate both users who require CUA-compliant keylists and those who prefer to use the traditional ISPF function key assignments, F1–F12 are assigned CUA-compliant values, and F13–F24 are assigned traditional ISPF values. Therefore, the user who runs in default mode (ZPRIKEYS set to UPP; also see "Tailor Function Key Definition Display" on page 33) can retain the traditional key settings.

Note: Function keys in Edit are not CUA-compliant and are documented in *ISPF Edit and Edit Macros*

The KEYS and KEYLIST commands have been modified to benefit the user as well. When KEYS is issued from a panel that is not using a keylist, the PF Key Definitions and Labels panel is displayed, which allows you to change the ZPF variable settings, as in previous versions of ISPF. However, if the keys command is issued from a panel with an *active* keylist, the associated Keylist Utility panel Change panel is displayed.

The user can also control the use of keylists associated with panels using the KEYLIST command. By specifying KEYLIST OFF, the user causes ISPF to ignore the keylist in all logical screens running under the application ID from which the KEYLIST OFF command was issued, and use the ZPF variables for controlling function keys. The KEYLIST ON command (the default) causes ISPF to recognize the preeminence of keylists again. KEYLIST ON and OFF are equivalent to the Enable and Disable keylist choices on the Function keys pull-downs discussed in "Keylist Settings" on page 26.

ISPF Default Keylist

ISPKYLST is the ISPF default keylist. If you do not specify a keylist to be associated with a panel using the KEYLIST attribute on the PANEL tag (DTL) or using the)PANEL statement, ISPF uses the keys defined for ISPKYLST to display in the function area of the panel when it is displayed. The key settings and forms for ISPKYLST are as shown in Table 5.

Table 5. ISPKYLST Key Settings

Key	Command	Form
F1	HELP	Short
F2	SPLIT	Long
F3	EXIT	Short
F9	SWAP	Long
F12	CANCEL	Short
F13	HELP	Short
F14	SPLIT	Long

Table 5. ISPKYLST Key Settings (continued)

Key	Command	Form
F15	EXIT	Short
F21	SWAP	Long
F24	CANCEL	Short

ISPF Default Keylist for Help Panels

You can specify a keylist to be associated with a help panel by using the keylist attribute on the HELP tag (DTL) or by using a)PANEL statement in your panel definition. If you do not specify a keylist, ISPF uses the keys defined for ISPHELP to display in the function area of the help panel when it is displayed. The key settings and forms for ISPHELP are shown in Table 6.

Table 6. ISPHELP Key Settings

Key	Command	Form
F1	HELP	Short
F2	SPLIT	Long
F3	EXIT	Short
F5	EXHELP	Short
F6	KEYSHELP	Short
F7	UP	Long
F8	DOWN	Long
F9	SWAP	Long
F10	LEFT	Long
F11	RIGHT	Long
F12	CANCEL	Short

Figure 10 shows the Function keys pull-down on the ISPF Settings panel action bar. Each pull-down choice is described following the panel.

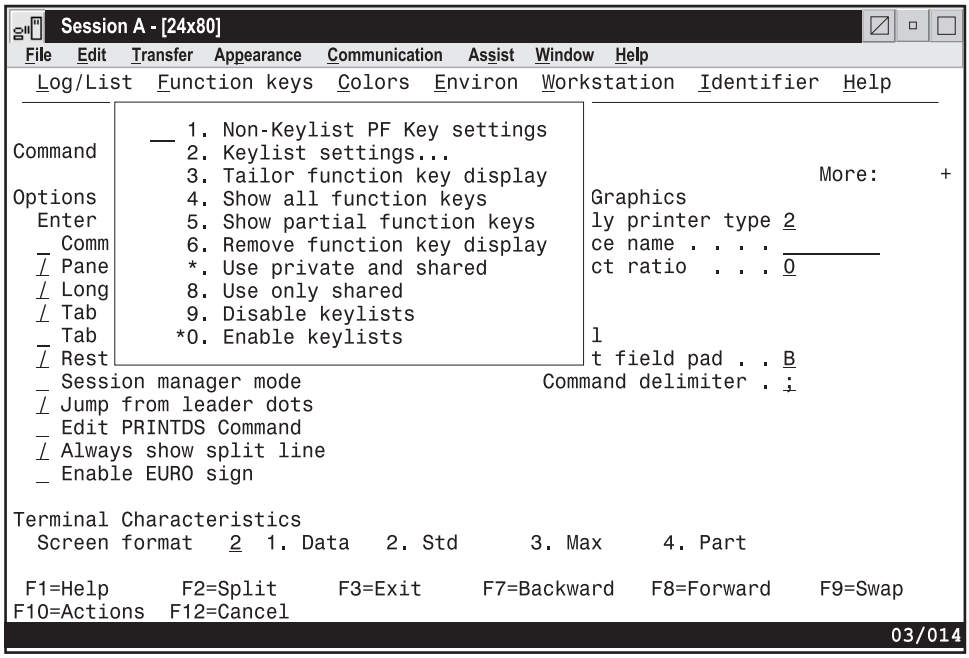

Figure 10. Function Keys Pull-Down on the ISPF Settings Panel Action Bar (ISPISMMN)

Non-Keylist PF Key Settings

When you select Non-Keylist PF key settings from the Functions keys pull-down on the ISPF Settings panel action bar, the PF Key Definitions and Labels panel shown in Figure 11 is displayed. If you enter the KEYS command on the command line of any panel, the system displays one of two panels:

- If you are not using keylists (that is, keylists are disabled) or if there is no keylist associated with the panel from which you enter the KEYS command, the PF Key Definitions and Labels panel shown in Figure 11 is displayed.
- If you are using keylists (that is, keylists are enabled) and there is a keylist associated with the panel from which you enter the KEYS command, the Keylist Change panel shown in Figure 17 on page 29 is displayed.

If you define your application panels using panel definition statements, use the PF Key Definitions and Labels - Primary Keys panel shown in Figure 11 to assign function keys and associated labels to ISPF commands.

Note: See "Keylist Settings" on page 26 to find out how to assign function keys that are associated with a keylist.

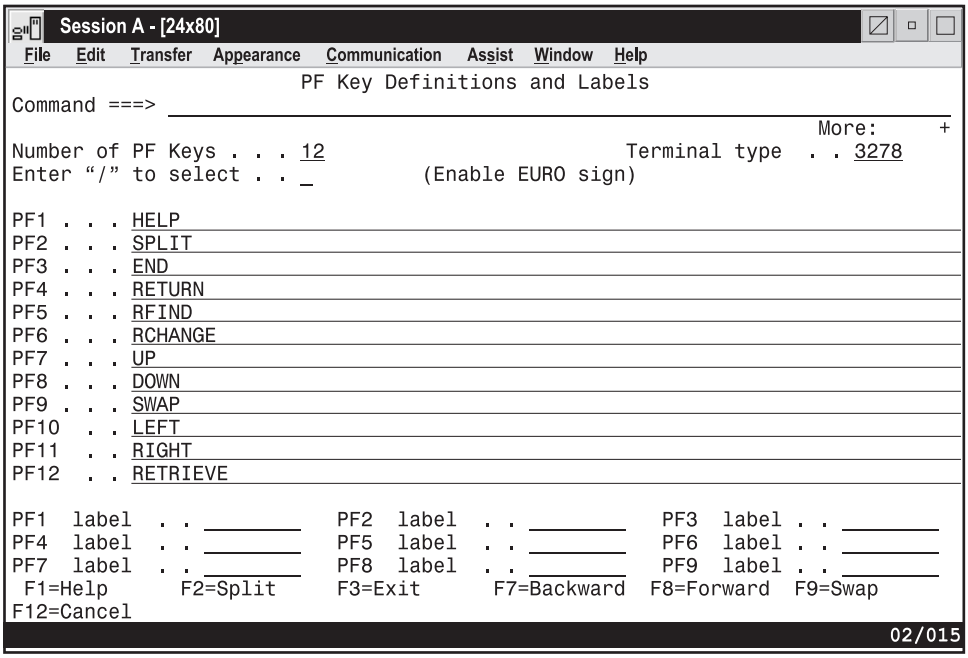

Figure 11. PF Key Definitions and Labels Panel (ISPOPT3D)

Note: The panel in Figure 11 is the panel that is displayed for terminals with 12 function keys. For terminals with 24 function keys, the first panel displayed shows the *primary* keys (F1–F12). When you press the Enter key, ISPF displays a panel showing the *alternate* keys (F13–F24). To alternate between the two panels, press the Enter key.

You can assign function keys to system commands, such as HELP or END, to commands that are meaningful within a particular function or environment, such as the Edit FIND and CHANGE commands, and to line commands, such as the Edit or dialog test I or D commands.

Settings (Option 0)

Before changing function key assignments, verify the terminal type and the number of function keys (12 or 24). The specified terminal type must be one of the following:

Table 7. Terminal Types

1.3277	2.3277A	3.3278	4.3278A
5.3290A	6.3278T	7.3278CF	8.3277KN
9.3278KN	10.3278AR	11.3278CY	12.3278HN
13.3278HO	14.3278IS	15.3278L2	16.BE163
17.BE190	18.3278TH		

Note: The 5550 is run with the Japanese 3270PC V5 or 3270PC/G V3 emulation program. The terminal type, set by the ISPF Settings panel, is set to 3278KN.

You can define or change a function key function simply by equating the key to a command. For example:

```
PF9 . . . CHANGE ALL ABC XYZ
PF12  . . PRINT
```

In the example, F9 has been equated to an Edit command, and F12 has been equated to the system-defined PRINT command.

If you enter a blank for any function key definition, the key is restored to its ISPF default.

A function key definition beginning with a colon (:) is treated as a special case. The colon is stripped off, and the command to which the key is equated is inserted in the first input field on the line at which the cursor is currently positioned.

A function key definition beginning with a greater-than sign (>) is another special case. It causes the command to be passed to the dialog regardless of whether or not the command appears in the command tables. This feature provides compatibility with SPF, in which Edit and Browse commands were defined with a greater-than sign. When an ISPF function is executing, do not press the RESET key and then attempt to enter information or use a function key, because the results are unpredictable.

The label fields shown in Figure 11 on page 23 allow you to specify user-defined labels for the displayed representations of function key definitions. This provides for displaying meaningful words of eight characters or fewer, rather than the first eight, possibly meaningless, characters of a lengthy function key definition.

If a label is not assigned, the definitions displayed for that function key consist of the first eight characters of the function key definition.

If the label value is BLANK, the function key number and the equal sign display, but the value portion of that function key definition displays as actual blanks. This label might be used if, for example, a function key is not defined or if it is meaningless to the user, but the dialog developer wants each function key number to appear sequentially in the function key definition lines.

No function key information, not even the number, appears if the label value for that key is NOSHOW.

Figure 12 shows how the function key panel can be used to assign definitions and labels. In this example, F4 has been equated to a TSO data management command, while F12 has been equated to a command that requests job submission. Labels for several function keys are defined as well.

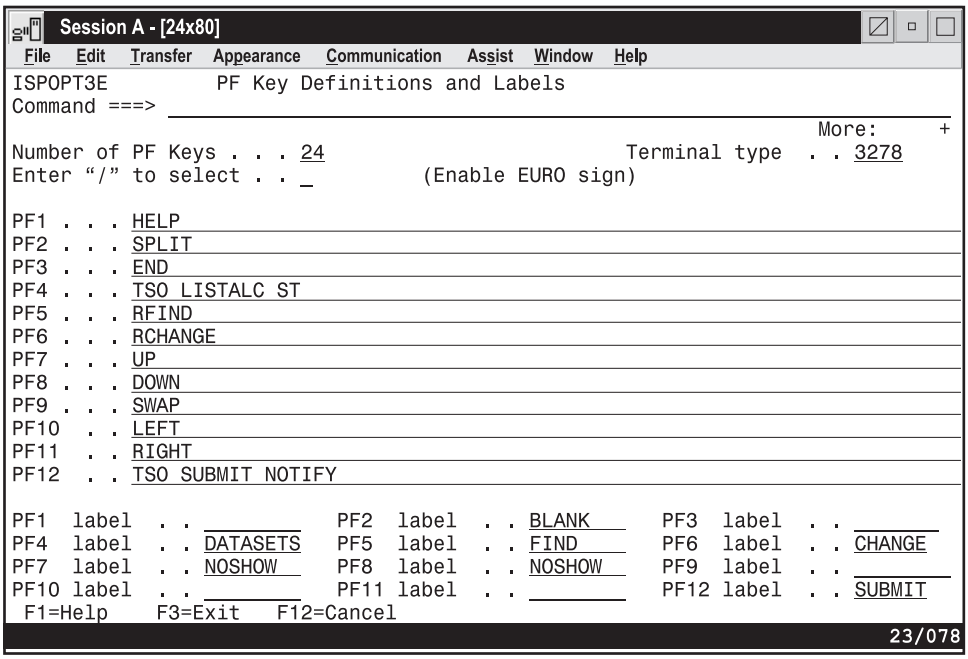

Figure 12. Using the PF Key Definitions and Labels Panel (ISPOPT3E)

Figure 13 shows the function key settings that are displayed on a panel when defined using the key definitions and labels in Figure 12.

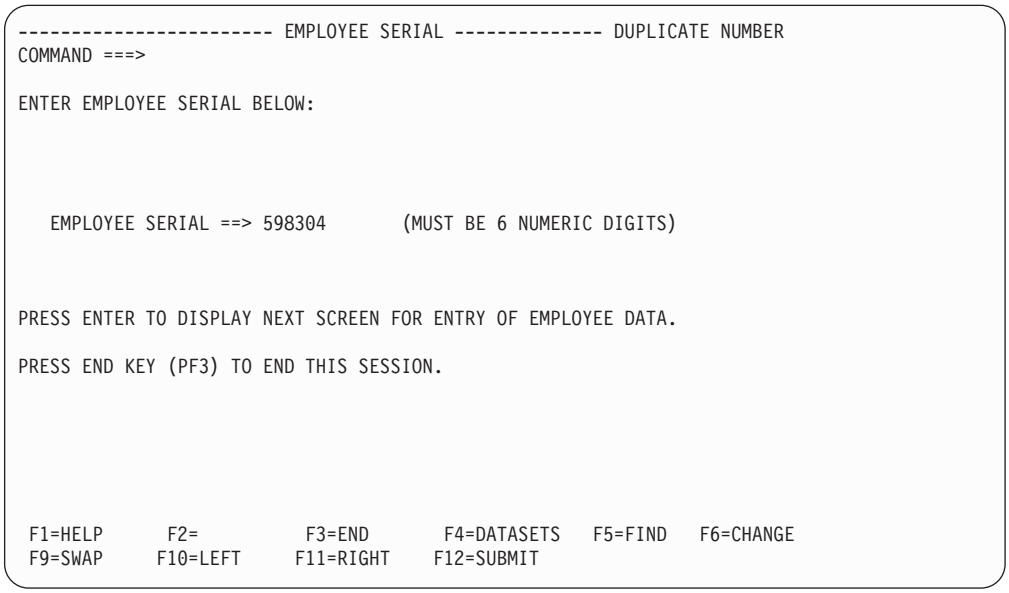

Figure 13. Example Screen with Function Key Definition Lines

Keylist Settings

To create or change a keylist associated with your panels, or to refer to or delete a keylist help panel from your keylist, select the **Keylist settings...** choice from the Function keys pull-down on the ISPF Settings panel action bar, or enter the KEYLIST command. The first panel displayed is similar to Figure 14. If you Enter the KEYS command from a panel that uses a keylist, the keylist change panel for the keylist active on the original panel is displayed.

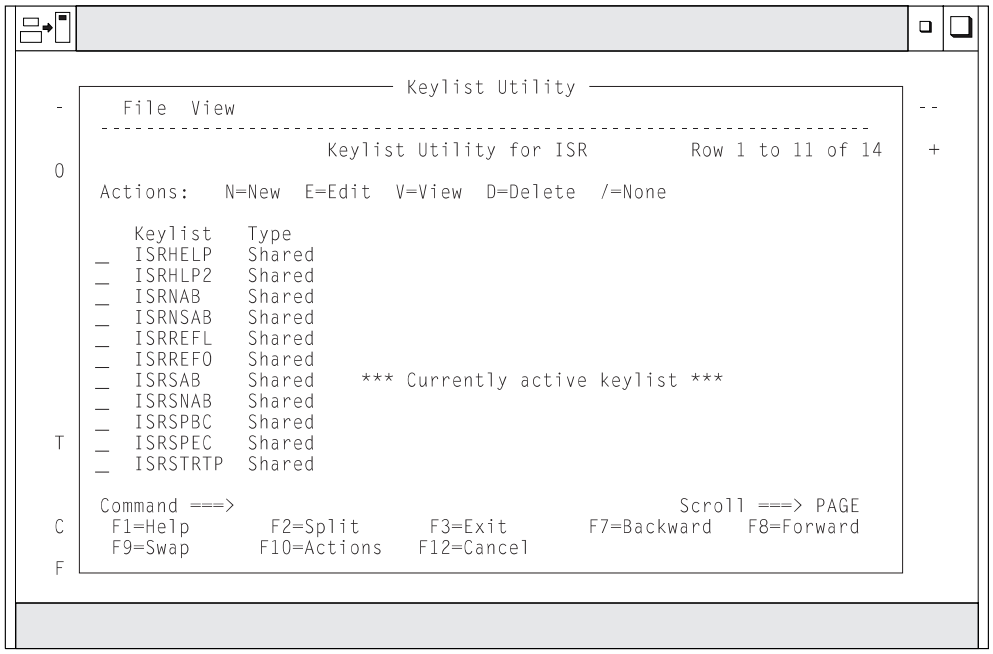

Figure 14. Keylist Utility Panel (ISPKLUP)

In Figure 14, ISPHELP, ISPHLP2, ISPNAB, ISPSAB, ISPSNAB, ISPTEST, ISRHELP, ISRNAB, and ISRNSAB have already been created for application ISR. ISPSAB, the currently active keylist, and ISPSNAB are keylists for the keylist utility panels. ISPKYLST is the ISPF default keylist for any DTL application panel or any panel defined with a)PANEL section that does not have a keylist defined. ISPHELP is the ISPF keylist for help panels created using DTL or using a)PANEL section.

The application ID is shown on the title line of the panel (ISR in Figure 14) and defaults to the application ID of the keys table in which the keylist was found when the KEYLIST command was entered. You can specify the keylist application ID on the)PANEL statement, or, if using DTL, it can be specified when you call the ISPF conversion utility using the KEYLAPPL option on the ISPDTLC command. If the panel does not specify an application ID, ISPF searches the currently executing application's keys table for a keylist that has the same name as the name specified on the PANEL tag. If the keylist is not found, and the current application ID is not ISP, ISPF searches the ISP application.

The column marked Type indicates whether a keylist is shared or is a private copy. For information about the KEYLIST SHARED and KEYLIST PRIVATE commands, see the **Keylist**entry in the **ISPF System Commands** table, found in the ***Using Commands, Function Keys, and Light Pen or Cursor Selection*** chapter of the *ISPF User's Guide Volume I*. Shared keylists are created by the ISPF DTL Conversion Utility. They cannot be deleted by the keylist utility. If a shared keylist is modified by the keylist utility, it is saved as a private keylist copy in *xxxx*PROF table, where

xxxx is the application ID. The keylist utility now shows the keylist as a private copy. If you have issued the KEYLIST SHARED command, you can still modify a keylist, but you cannot see the changes reflected in the function keys until the KEYLIST PRIVATE command is issued.

Note: The keylist utility is meant for users to modify function keys for their own use. To define function keys for all users of an application or for site-wide use, the definitions in the Dialog Tag Language should be modified and a new xxxxKEYS table should be generated.

The Keylist Utility panel action bar choices function as follows:

File Allows you to create, edit, view, or delete keylists, or exit the keylist utility. When you select File, the pull-down shown in Figure 15 is displayed.

View Enables you to display another set of keylists. When you select View, the pull-down shown in Figure 20 on page 32 is displayed.

File Pull-Down: To create, edit, view, or delete a keylist:

- Use a slash in the Select column to select a keylist from those displayed, then select the appropriate choice from the File pull-down.

OR

- Select a keylist from those displayed using one of the following actions: N(New), E(Edit), V(View), or D(Delete). If you use N(New), you are prompted for the name of the keylist you are about to create.

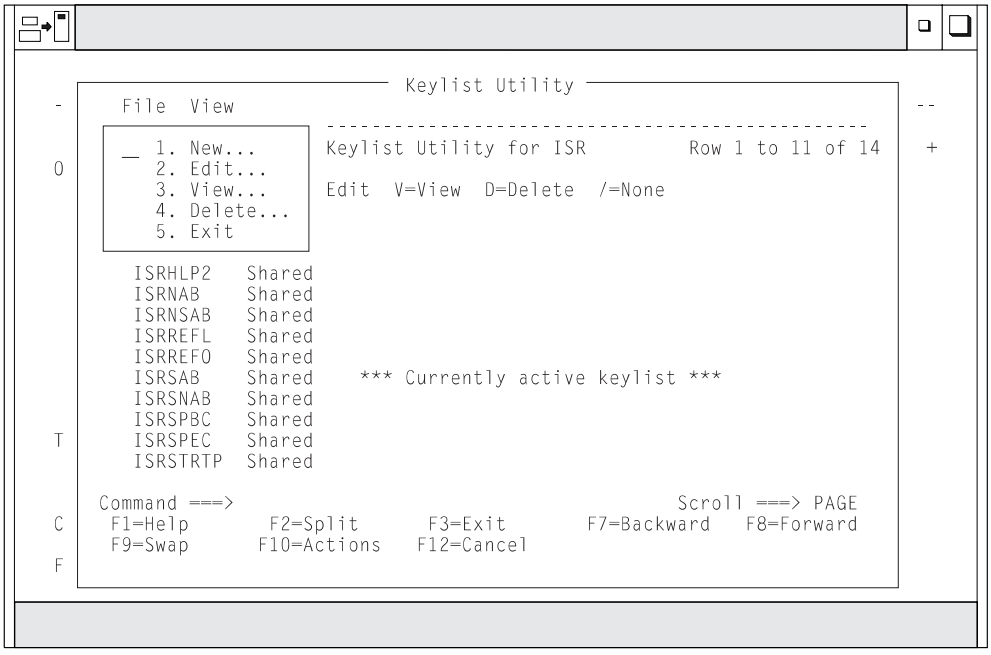

Figure 15. Keylist Utility with File Action Bar Pull-Down (ISPKLUP)

The choices on the File pull-down function as follows:

New To create a keylist, enter the keylist name when prompted. You are prompted after selecting New from the File pull-down, or after typing N next to any displayed keylist and pressing Enter. The screen shown in Figure 16 on page 28 is displayed.

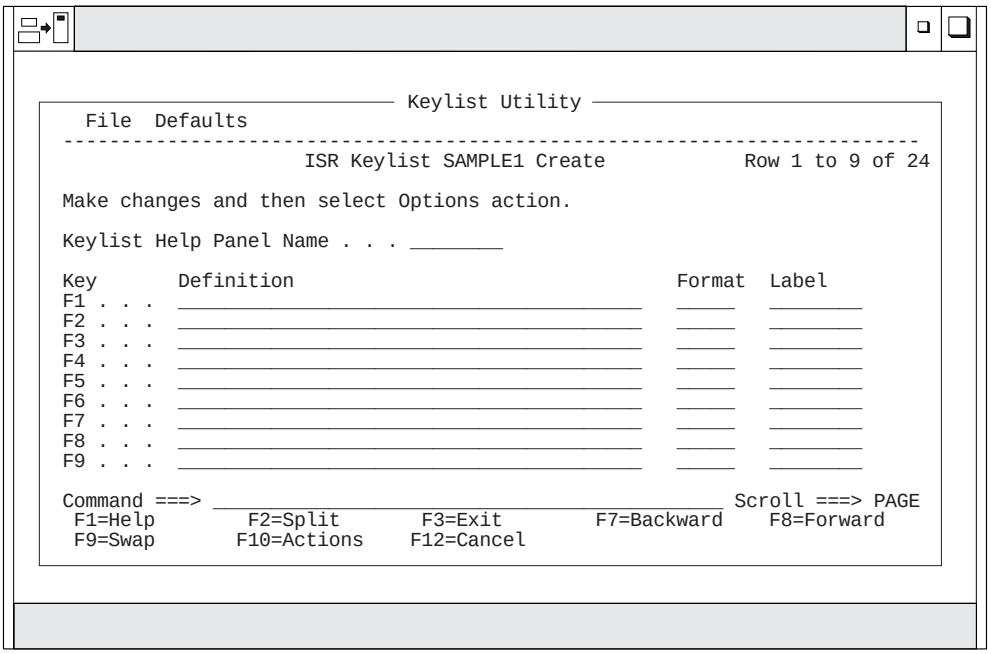

Figure 16. Keylist Create Panel (ISPKLUCR)

The Keylist Create panel action bar choices function as follows:

File The File pull-down offers the following choices:

1 **Cancel**. Cancels the creation of this keylist and returns to the Keylist Utility panel.

2 **Save and Exit**. Saves the keylist and returns to the Keylist Utility panel.

Defaults

The Defaults pull-down offers you the choice of the five default key settings described in Table 8.

Table 8. Default Key Settings

Condition	Key Setting
No defaults	No values are filled in.
Non-scrollable, no action bar	The following values are set: F1 HELP F2 SPLIT F3 EXIT F9 SWAP F12 CANCEL
Scrollable, no action bar	The following values are set: F1 HELP F2 SPLIT F3 EXIT F7 BACKWARD F8 FORWARD F9 SWAP F12 CANCEL

Table 8. Default Key Settings (continued)

Condition	Key Setting
Non-scrollable, with action bar	The following values are set: F1 HELP F2 SPLIT F3 EXIT F9 SWAP F10 ACTIONS F12 CANCEL
Scrollable, with action bar	The following values are set: F1 HELP F2 SPLIT F3 EXIT F7 BACKWARD F8 FORWARD F9 SWAP F10 ACTIONS F12 CANCEL

If you are creating a keylist on a terminal defined to have 24 keys, the 13–24 keys are set the same as the 1–12 keys. For example, F13 is automatically set the same as F1. HELP, EXIT, ACTIONS, and CANCEL all have display format SHORT. SPLIT, UP, DOWN, and SWAP have display format LONG.

Edit To edit the key definitions, display formats, and labels for a keylist, enter the keylist name when prompted. Select a keylist with a slash and select Edit from the File pull-down, or type E next to a keylist name and press Enter. The screen shown in Figure 17 is displayed, showing the existing values.

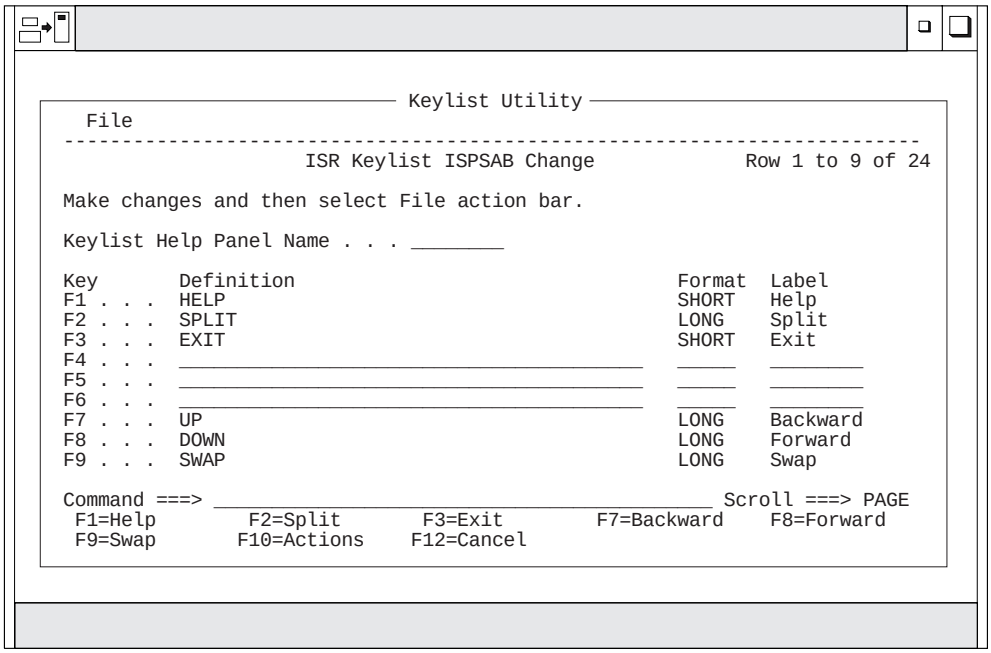

Figure 17. Keylist Change Panel (ISPKLUCH)

The Keylist Change panel action bar choice functions as follows:

File The File pull-down offers the following choices:

1 **Cancel**. Cancels the changes to this keylist and returns to the Keylist Utility panel.

2 **Save and Exit**. Saves the changes to this keylist and returns to the Keylist Utility panel or the panel from which you issued the KEYS command.

The following fields appear on the Keylist Utility Change panel:

Row x to x of xx
Indicates that you must scroll the panel to access the remaining label definitions.

Keylist Help Panel Name
To refer to a help panel from this keylist, enter the help panel name in this field in the following format:
- Must be 1-8 characters
- First, or only, character must be A–Z or a–z
- Remaining characters, if any, must be A–Z, a–z, 0–9

To remove a help panel name from a keylist, replace the help panel name with blanks.

Definition
If a display format or a label is specified, a definition must also be specified. Any definition is valid.

Format
The only valid display formats are:

LONG
The default. Indicates that the key label should be displayed in the function key area when the FKA command is toggled to the first cycle after OFF.

SHORT
Indicates that the key label should be displayed in the function key area when the FKA command is toggled to the first or second cycle after OFF. A key will display more often in the function key area if it is given the SHORT display format.

NO Indicates that the key label should never be displayed in the function key area, regardless of the FKA command toggle cycle.

Label Any label is valid. If the **Label** field is left blank, it will default to the definition. This will happen only if the field is blank. If the **Label** field is not blank and the definition is changed, the **Label** field will not change automatically.

View To view a keylist, but not modify it, enter the keylist name when prompted. Select the keylist with a slash, then select View from the File pull-down, or type V next to the keylist name displayed and press Enter. The screen shown in Figure 18 on page 31 is displayed.

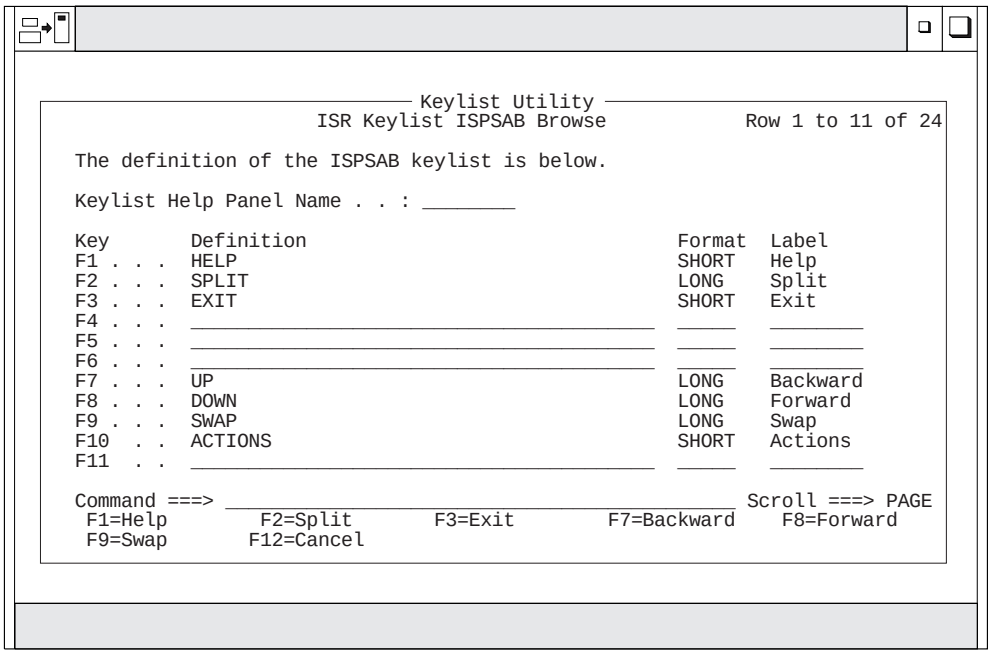

Figure 18. Keylist Utility View Panel (ISPKLUB)

If you select View, the help panel name, key definitions, display formats, and labels are displayed but cannot be changed.

Delete To delete a private copy of a keylist, enter the keylist name when prompted. Select the keylist with a slash, then select Delete from the File pull-down, or type D next to the keylist name displayed and press Enter. The Delete Keylist Confirmation pop-up shown in Figure 19 on page 32 is displayed.

Note: Shared keylists can only be deleted using the Dialog Tag Language.

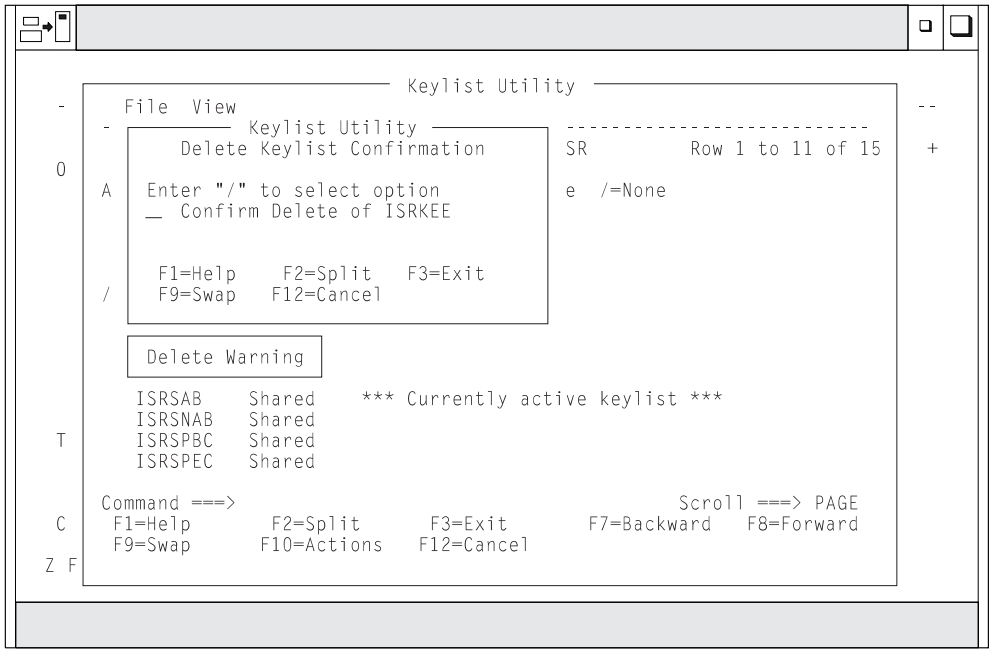

Figure 19. Keylist Utility with Delete Keylist Confirmation Pop-Up (ISPKLUP)

Use caution when deleting a keylist from an application that is currently running. If you delete a keylist that is required by a panel in the application, an error message appears and the panel does not display.

Exit Select Exit from the File pull-down to exit the keylist utility.

View Pull-Down: To display another set of keys on the Keylist Utility panel, select View on the action bar. An example of the View pull-down is shown in Figure 20.

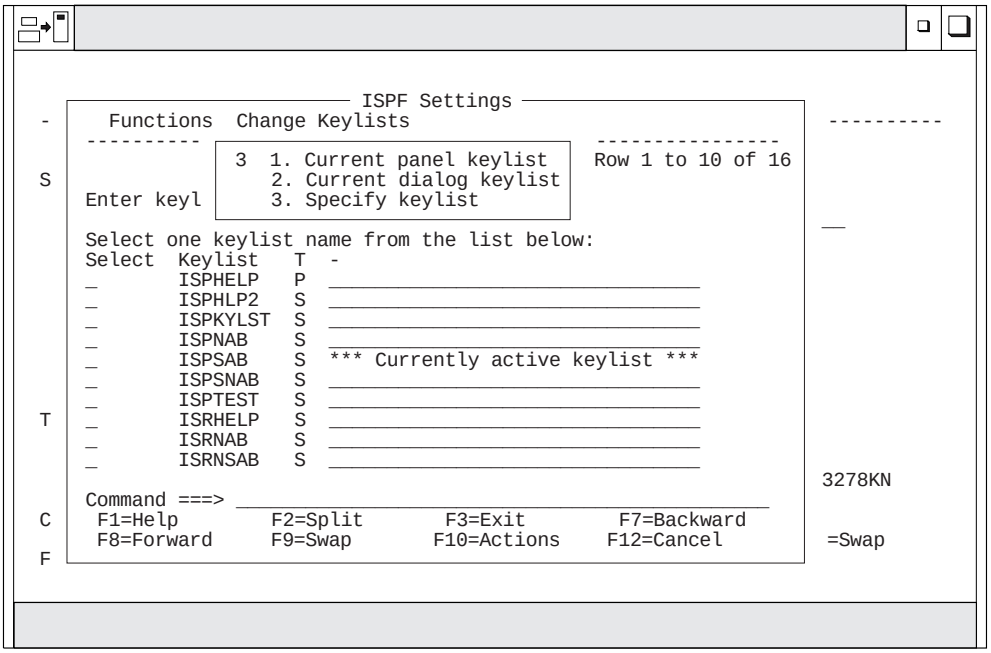

Figure 20. Keylist Utility with View Action Bar Pull-Down (ISPKLUP)

The View pull-down choices function as follows:

By current panel keylist
Displays the list of keys related to the current panel.

By current dialog keylist
Displays the list of keys related to the dialog currently running.

Specify keylist
Displays the list of keys for another application.

Tailor Function Key Definition Display

The Tailor Function Key Definition Display panel (shown in Figure 21) allows you to change the format of the function key definition lines that are displayed at the bottom of the screen. To display this panel, do one of the following:

- Select the Tailor function key display... choice from the Function keys pull-down.
- Issue the PFSHOW TAILOR command from any command line.

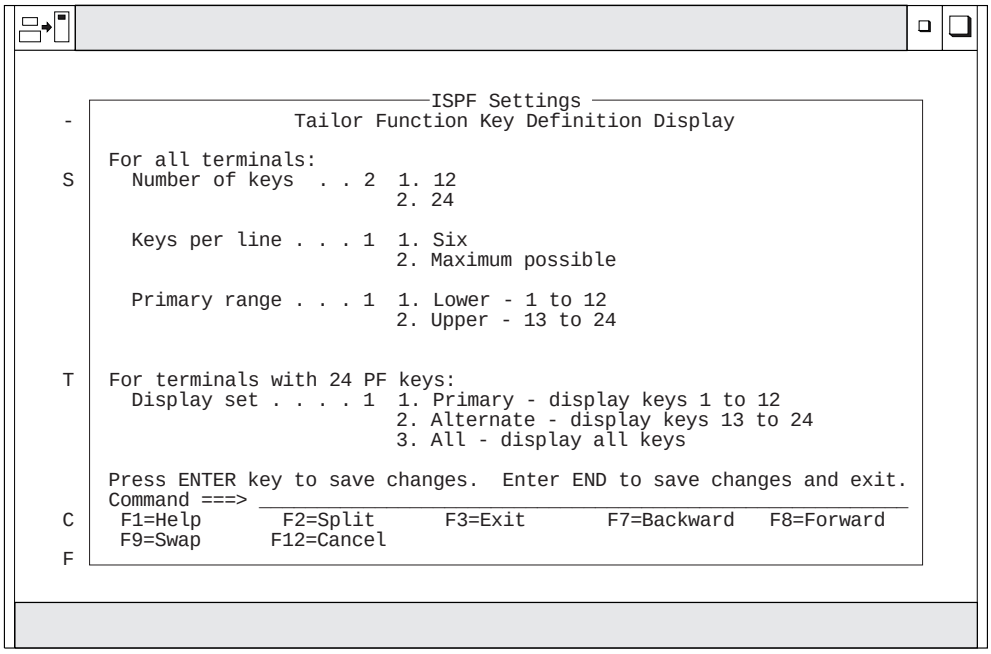

Figure 21. Tailor Function Key Definition Display Panel (ISPOPFA)

From the Tailor Function Key Definition Display panel you can set the following function key parameters:

Number of keys
The number of function keys you specify controls the particular set of function key definitions currently in use.

ISPF automatically determines the terminal type, screen size, and number of function keys:

- If the screen size is greater than 24 lines, but the terminal type specified implies a maximum of 24 screen lines, ISPF sets the terminal type to 3278.
- If you press a function key higher than 12, but the value specified for the number of function keys on your terminal is 12, ISPF sets the terminal type to 3278 and the number of function keys to 24.

ISPF cannot determine the terminal type or number of function keys in the following cases:

- If you switched between a 3277 and 3278 Model 2, both of which are 24-line terminals
- If you switched from a terminal with 24 function keys to a terminal with 12 function keys.

In these cases, you must inform ISPF of the terminal type and number of function keys you are using. Otherwise, ISPF uses an incorrect character set and invalid function key definitions.

ISPF automatically sets, or changes, the number of function keys in the following cases:

- If you specify 3277, ISPF initializes the number of keys to 12.
- If you specify 3278, ISPF initializes the number of keys to whatever was stored from the user's last ISPF session. If no number is stored from a prior session, the number of keys is initialized to 12.
- If you press a function key higher than 12, ISPF sets the number of keys to 24. ISPF cannot set the number of keys to 24 for the 3278T terminal.

Keys per line
You can specify the number of keys per line to be displayed on the function key definition lines. Six or Maximum possible can be specified, indicating either six keys or the maximum possible keys. Six ensures consistency across all panels. Maximum possible can save space on crowded panels. The Maximum possible option is forced when you select the Panel display CUA mode option on the ISPF Settings panel.

Primary range
You can specify that the primary key range be:
Lower Primary keys are F1–F12.
Upper Primary Keys are F13–F24.

The default value is lower.

Display set
For terminals with 24 function keys, you can choose to display only the primary set of function keys (F1–F12, the default range), the alternate set of function keys (F13–24), or all 24 keys. Your display choices depend on which range you specify for the Primary range option. For terminals with 12 function keys, this setting is ignored.

The Function Keys Pull-Down

The Function keys pull-down provides choices that enable you to display the function keys in various forms.

Choices For Changing PF Key Definitions

You can change the PF Keys that you have defined by using one of the first three choices on the Function Keys pull-down. Choosing **Non-keylist PF Key settings** calls the PF Key Definitions and Labels panel, where you can assign PF keys to ISPF commands, and label them. This choice is like using the KEYS command.

Choosing **Keylist settings...** from the pull-down is like using the KEYLIST command, and the **Tailor Function Key Display** choice calls up the Tailor Function Key Definition Display panel.

Choices For Showing PF Keys on the Display Screen

By selecting **Show all function keys**, **Show partial function keys**, or **Remove function key display**, you can specify that ISPF use the long form of function key display, the short form of function key display, or no function keys, respectively.

Each of these pull-down choices has an equivalent PFSHOW and FKA command associated with it. The commands operate as toggles; the pull-down choices become unavailable if they are the current setting.

Table 9 on page 35 explains the relationship between the pull-down choices and their related command combinations.

Table 9. Displaying Forms of the Function Keys

Pull-down Choice	Command Equivalent	Result
Show all function keys	PFSHOW PFSHOW ON FKA FKA ON	Long setting; all available function keys displayed. This is the default setting.
Show partial function keys	PFSHOW (2nd time issued) FKA (2nd time issued) FKA SHORT*	Short setting; a partial listing of the function keys displayed.
Remove function key display	PFSHOW (3rd time issued) PFSHOW OFF FKA (3rd time issued) FKA OFF	No function keys displayed. If PFSHOW or FKA is issued for a 4th time, the display returns to the long, or ON, setting.
Note: * The FKA SHORT command can be issued at any time to invoke the short setting.		

Choices for Determining Who Can Use Your PF Keylist

The Function keys pull-down has two choices that are equivalent to the KEYLIST PRIVATE and KEYLIST SHARED commands:

Use private and shared
: Causes ISPF to use the keylist defined as private (equivalent to the KEYLIST PRIVATE command). Private is the default. It is unavailable if it is the current setting.

Use only shared
: Causes ISPF to use the keylist defined as shared (equivalent to KEYLIST SHARED). It is unavailable if it is the current setting.

Choices for Enabling Keylists

The Function keys pull-down has two choices that are equivalent to the KEYLIST ON and KEYLIST OFF commands:

Enable keylists
: Causes ISPF to use the keylist defined with the panel (equivalent to the KEYLIST ON command). Enable keylists is the default. It is unavailable if it is the current setting.

Disable keylists
: Causes ISPF to ignore the keylist defined with the panel (equivalent to KEYLIST OFF). It is unavailable if it is the current setting.

Changing Default Colors (The Colors Action Bar Choice)

The Colors pull-down on the ISPF Settings action bar provides access to the Global Color Change Utility and the ISPF CUA Attribute Change Utility, respectively,

along with the Point-and-shoot Color Change panel. When in GUI mode, the choice starts the Global GUI Color Change Utility.

Both utilities operate much as they have in previous releases of ISPF; the point-and-shoot capability is new in Version 4. See the **Point-and-Shoot Text Fields** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for an introduction to the point-and-shoot feature.

Figure 22 shows the Colors pull-down on the ISPF Settings panel action bar. Each pull-down choice is described following the panel.

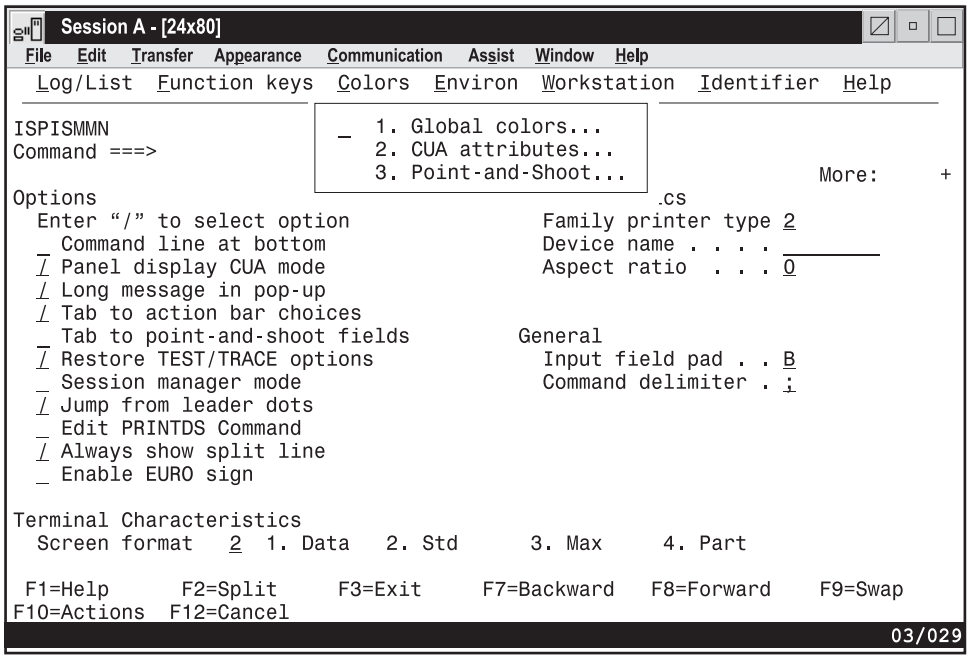

Figure 22. Colors Pull-Down on the ISPF Settings Panel Action Bar (ISPISMMN)

Global Colors

For ISPF-supported seven-color terminals, ISPF provides the Global Color Change Utility (on the host) and the Global GUI Color Change Utility (on the workstation) to allow you to globally change the current colors ISPF uses for display.

To invoke the utility appropriate for your environment, do one of the following:
- Select the Global colors... choice from the Colors pull-down.
- Issue the ISPF system command COLOR from any ISPF command line.

ISPF displays the Global Color Change Utility panel shown in Figure 23 on page 37 if you are running in host mode; it displays the Global GUI Color Change Utility panel shown in Figure 24 on page 38 if you are running in GUI mode.

Global Color Change Utility: From the panel shown in Figure 23 on page 37, you can change the ISPF-defined default colors.

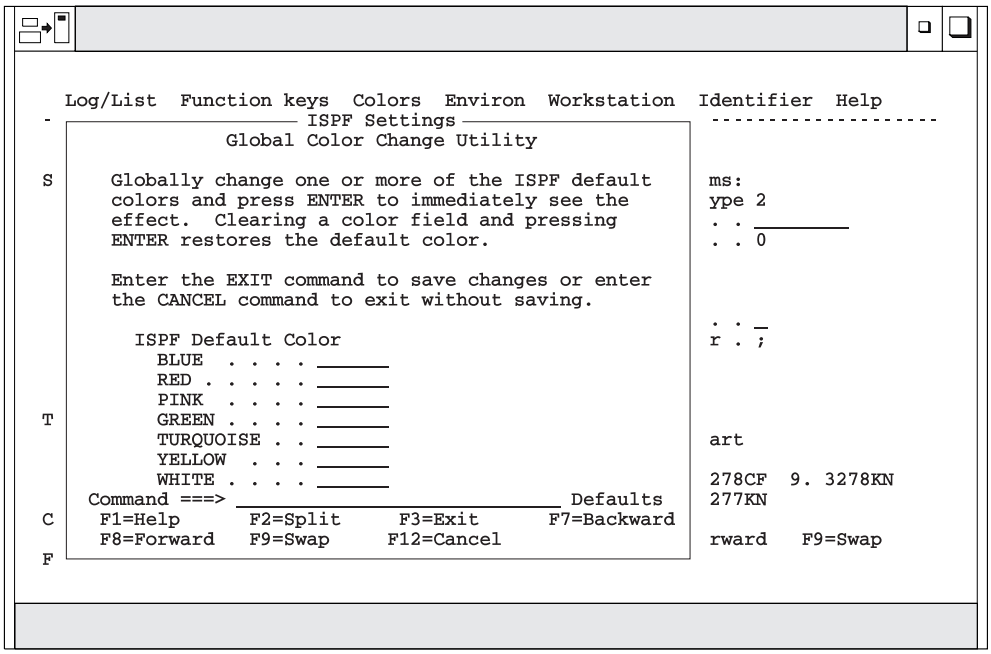

Figure 23. Global Color Change Utility Panel (ISPOPT10)

Enter a new value in the color field beside the ISPF-defined default color to be changed. The following are the valid color choices:

RED
PINK
GREEN
YELLOW
BLUE
TURQ
WHITE.

Note: You can restore the defaults by selecting the **Defaults** point-and-shoot field located at the end of the panel command line or by clearing a color field and pressing Enter.

Color changes are reflected on the panel display immediately after you press Enter. If you change red to blue by using the ISPF Global Color Change Utility, any panel element attributes defined as red change to blue on the next display. For example, if you enter:

```
RED . . . . . blue____
```

all panel element attributes with the color red change to blue on the next display. In the Global Color Change Utility table, if a field is blank and you press Enter, the ISPF-defined default color is restored.

The EXIT command ends the Global Color Change Utility function and saves global color changes in the ISPSPROF system profile table. The CANCEL command ends the Global Color Change Utility function and restores the global color definitions as they were before the utility was invoked.

Changes to the globally defined colors affect all logical screens whether they are displayed directly by ISPF or whether ISPF has requested that GDDM perform the

display. Line mode output, fields, and graphics that the dialog has placed on the screen using direct calls to GDDM are not affected by global color changes.

Field-level help is available for all input fields on the ISPF Global Color Change Utility panel.

Global GUI Color Change Utility: If you have set up the GUI interface, you can change its colors. From the Global GUI Color Change Utility panel shown in Figure 24, you can map each of the seven host colors to one of 16 workstation colors:

Host Colors	Workstation Colors
RED	BLACK
PINK	DARK BLUE
GREEN	DARK GREEN
YELLOW	DARK CYAN
BLUE	DARK RED
TURQ (turquoise)	DARK MAGENTA
WHITE	BROWN
	LIGHT GRAY
	DARK GRAY
	LIGHT BLUE
	LIGHT GREEN
	LIGHT CYAN
	LIGHT RED
	LIGHT MAGENTA
	YELLOW
	WHITE

Note: Avoid mapping to colors that are the same color as the panel background because the data will not be visible. For example, white text on a white background will not be visible.

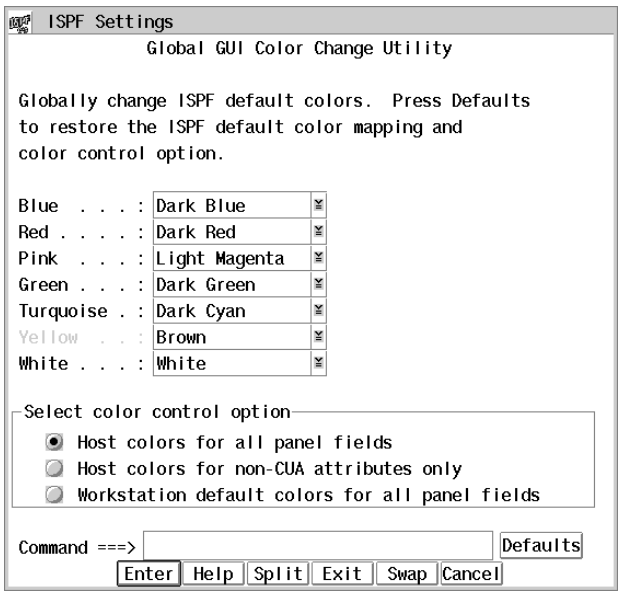

Figure 24. Global GUI Color Change Utility Panel (ISPOPTG1)

This panel provides three options for mapping host colors:

1 **Host colors for all panel fields**. Any colors that you remap affect all panel fields.

2 **Host colors for non-CUA attributes only**. Any colors that you remap affect only panel fields with non-CUA attributes.

3 **Workstation default colors for all panel fields**. Remapping colors will have no effect.

The display will reflect any color changes made immediately when you press Enter.

Note: If a field uses a non-CUA attribute without a color specified, ISPF does not specify a color for the field and the field defaults to the 3270 default color on the host. That same field defaults to the workstation default color when it is displayed on the workstation, even if **Host colors for all panel fields** is selected.

Remapping Host Colors: From the Global GUI Color Change Utility panel, select a drop-down list button corresponding to one of the seven host colors, and ISPF displays the drop-down list on the panel, as shown in Figure 25.

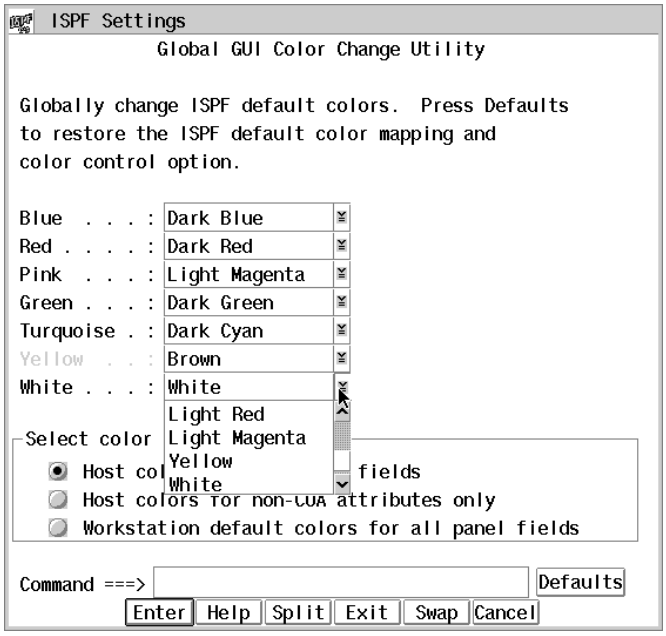

Figure 25. Color Change Panel With Drop-Down List

From the drop-down list, select one of the 16 workstation colors to map to the host color you selected. For example, if you select the workstation color light magenta to map to the host color red, any panel element attributes defined as red change to light magenta on the next display.

The EXIT command terminates the Global GUI Color Change Utility and saves any global color changes in the ISPSPROF system profile table. The CANCEL command terminates the Global GUI Color Change Utility and restores the global color definitions to the values that were in effect before the utility was invoked.

Changes to the globally defined colors affect all logical screens. Background panels and split screen panels are not immediately affected; the color change does not occur until the panels are redisplayed.

CUA Attributes

ISPF provides the CUA Attribute Change Utility to allow you to change the default values of panel colors, intensities, and highlights for panel element attributes. See the *ISPF Dialog Developer's Guide and Reference* for a description of TYPE values for CUA panel element attributes.

To invoke the ISPF CUA Attribute Change Utility, do one of the following:

- Select the CUA attributes... choice from the Colors pull-down.
- Issue the ISPF system command CUAATTR from any ISPF command line.

The CUA Attribute Change Utility panel shown in Figure 26 is displayed. This is a scrollable panel that contains the current values for CUA panel element attribute colors, intensities, and highlights.

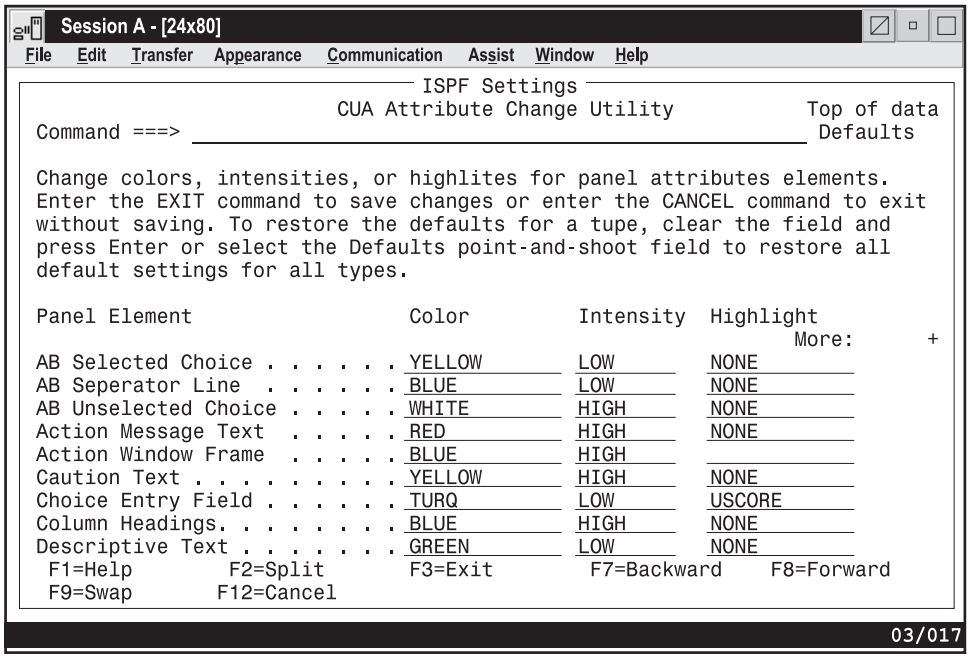

Figure 26. CUA Attribute Change Utility Panel (ISPOPT11)

You can change the default values by typing over the existing values in the table with new values. Table 10 on page 41 shows valid change values:

Notes:

1. You can restore the defaults by selecting the **Defaults** point-and-shoot field located at the end of the panel command line or by clearing a color field and pressing Enter.
2. The Active Window Frame panel element, formerly on the Screen Display Characteristics panel, has been moved to this panel.

Table 10. Valid CUA Attribute Change Values

Color Choices	Intensity Choices	Highlight Choices
RED	HIGH	NONE
PINK	LOW	BLINK
GREEN		REVERSE
YELLOW		USCORE
BLUE		
TURQ		
WHITE		

In the CUA Attribute Change Utility table, if a field is left blank and Enter is pressed, the field defaults to the ISPF provided CUA-defined default value. Changes made to AB Selected Choice, AB Unselected Choice, Action Message Text, Function Keys, Informational Message Text, and Warning Message Text take effect immediately. Changes to other panel elements are reflected in the next panel display. The values of the panel colors, intensities, and highlights are saved across ISPF invocations in your ISPF system profile table, ISPSPROF. The changes to the panel element values affect all logical screens.

The CUA Attribute Change Utility affects only ISPF's CUA-defined attribute keywords. For example, the CUA Attribute Change Utility does not override the following panel element attribute:

```
% TYPE(OUTPUT) COLOR(RED)
```

Color changes made using the ISPF Global Color Change Utility override changes made using the ISPF CUA Attribute Change Utility. For example, you can use the Global Color Change Utility and change red to blue. You might then use the CUA Attribute Change Utility and change normal text to red. Normal text will display as blue.

Field-level help is available for all input fields on the CUA Attribute Change Utility Panel.

The ISPF-supported CUA-defined default values for the panel element attributes are listed in *ISPF Dialog Developer's Guide and Reference*

Point-and-Shoot

The Point-and-Shoot panel element on the CUA Attribute Change Utility panel (shown in Figure 27 on page 42) allows you to adjust the color, intensity and highlighting of point-and-shoot fields.

See the **Point-and-Shoot Text Fields** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for an introduction to the point-and-shoot feature.

To display this panel, positioned on the Point-and-Shoot panel element, do one of the following:

- Select the Point-and-Shoot... choice from the Colors pull-down.
- Issue the ISPF system command PSCOLOR from any ISPF command line.

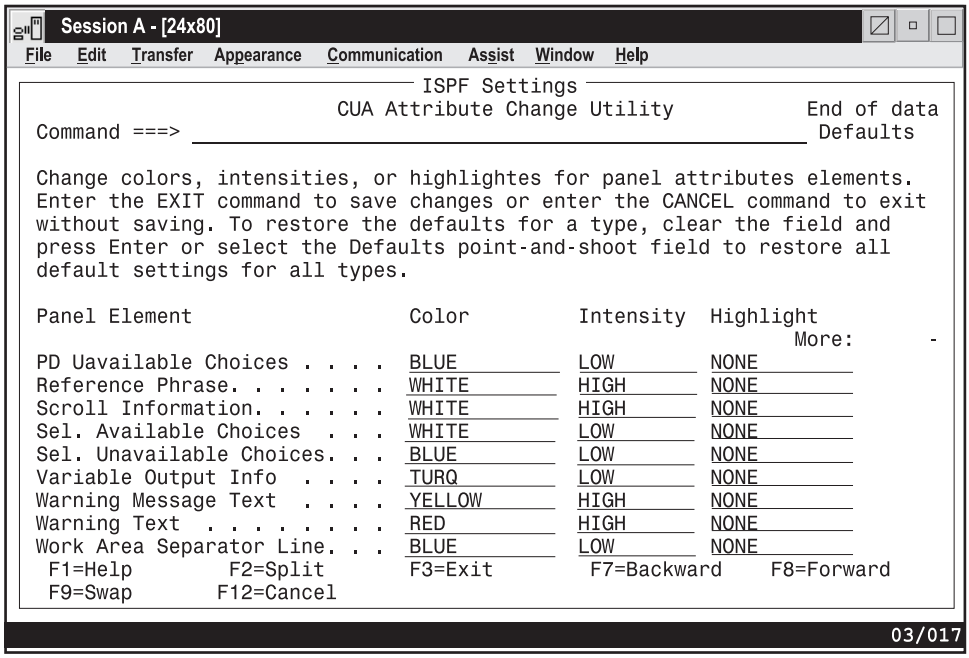

Figure 27. CUA Attribute Change Utility Panel Positioned on the Point-and-Shoot Panel Element (ISPOPT1X)

To change any of the three attributes, type over the existing values. The changes are reflected on the next panel displayed after you exit this panel. Table 11 shows valid change values:

Table 11. Valid Point-and-Shoot Change Values

Color Choices	Intensity Choices	Highlight Choices
RED	HIGH	NONE
PINK	LOW	BLINK
GREEN		REVERSE
YELLOW		USCORE
BLUE		
TURQ		
WHITE		

Specifying ISPF ENVIRON Settings (The Environ Action Bar Choice)

Figure 28 on page 43 shows the ISPF ENVIRON Command Settings panel from which you can choose parameter options for the ENVIRON command. To display this panel, do one of the following:

- Select the Environ choice on the ISPF Settings panel action bar.
- Issue the ISPF system command ENVIRON from any ISPF command line.

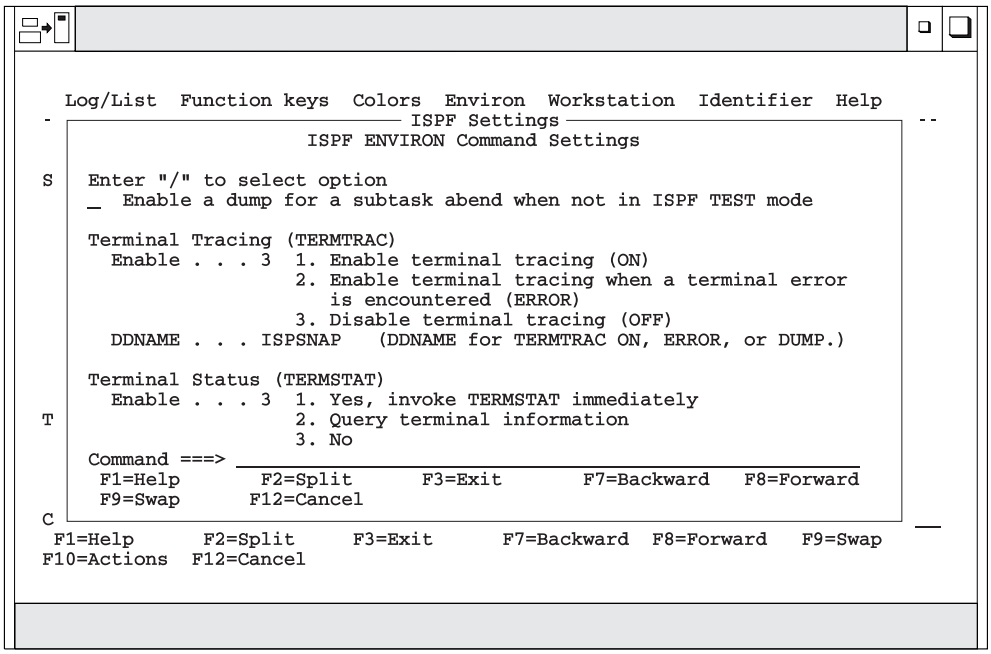

Figure 28. ISPF ENVIRON Settings Panel (ISPENVA)

The panel text provides an overview of the command and its parameters. For a complete description of the ENVIRON command and its parameters, see *ISPF Dialog Developer's Guide and Reference*

Specifying Workstation Parameters (The Workstation Action Bar Choice)

Figure 29 on page 44 shows the Workstation pull-down menu on the ISPF Settings panel action bar.

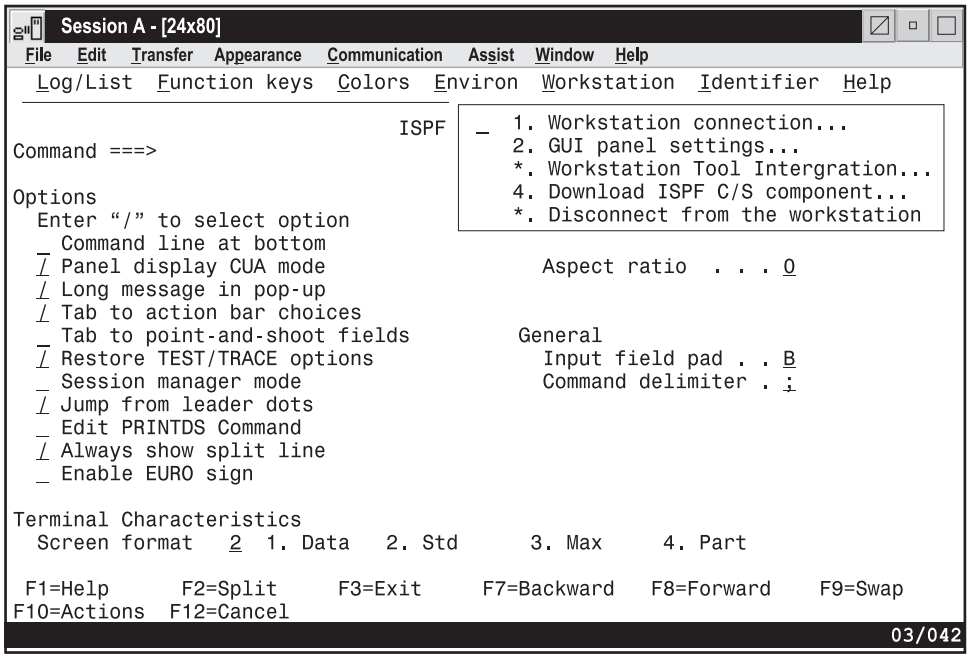

Figure 29. GUI Pull-Down on the ISPF Settings Panel Action Bar (ISPISMMN)

From this pull-down you can start a GUI session, specify GUI panel settings, configure the Workstation Tool Integratin dialog, download the ISPF C/S component, and disconnect from the workstation.

Workstation Connection

When you select ***Workstation connection*** from the Workstation pull-down, one of two events can occur. Either the **Initiate Workstation Session** panel is displayed, or ISPF might tell you that a newer version of the Workstation Agent code is available (if your system programmer has not disabled this feature).

If your current Workstation Agent code does not match the latest level available, the **Client/Server Component Update** panel appears, as shown in Figure 30 on page 45.

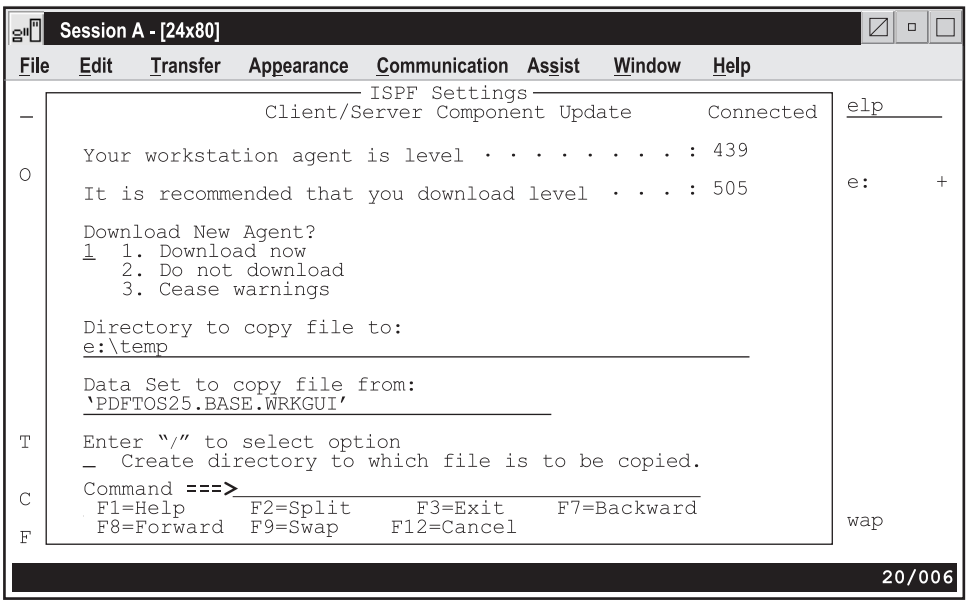

Figure 30. Client/Server Component Update Panel (ISPDTVD1)

From this panel, you can download the latest WSA or continue to use your current WSA, and even tell ISPF not to notify you again if your WSA does not match the latest available. Under the ***Download New Agent?*** field, you can specify one of three choices:

Download now

The download copies an installation program for the latest level of the WSA. You must specify the directory to copy the program into in the *Directory to copy file to:* entry field. If you want to create a new directory (one that does not already exist on your workstation) for the file, you can enter a slash mark (/) in the *Create directory to which the file is to be copied* field. The *Data Set to copy file from:* entry field should already be initialized by your system programmer. If it is not, you must specify the host data set that holds the latest WSA installation program. For example, 'SYS1.ISP.SISPGUI'.

After downloading the installation program for the WSA, you must end your ISPF/GUI connection, terminate your old Workstation Agent, and run the installation program to install the new one.

Do not download

You might want to download the new WSA later. If so, select *Do not download*. ISPF does not download the new installation program at this time, but will prompt you again the next time you start a GUI session. Of course, you can always download the agent yourself with the Client/Server Component download function of the ISPF Utilities panel at any time. See "Download Data Set to Workstation Utility (Option 3.7)" on page 167 for more information.

Cease warnings

ISPF does not download the agent installation program ***and*** you will not be notified again that your current WSA does not match the latest available on the host until an even higher level is available. That is, if you currently run level 433 and you have asked to Cease warnings at level 440, ISPF will not notify you again until at least level 441 is available.

Upon successful download of the new agent, the panel in Figure 31 appears. This panel gives you the option to end your GUI session and begin the installation immediately (by choosing option 1), or continuing your present session and installing the new Workstation Agent at a later time. See "Download Data Set to Workstation Utility (Option 3.7)" on page 167 for more information.

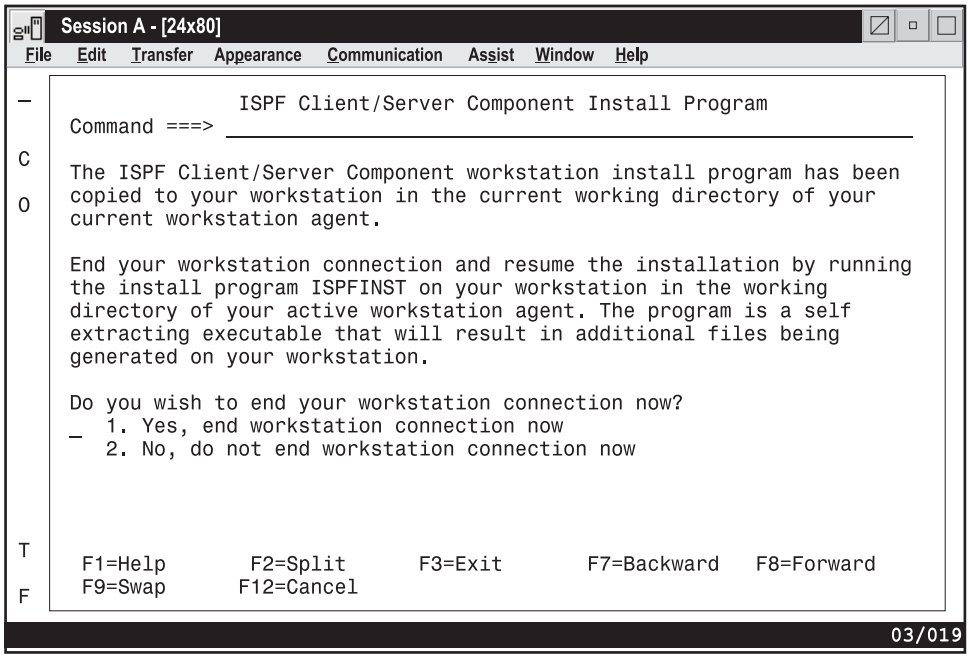

Figure 31. Client/Server Component Install Program Panel (ISPWSD0A)

If your Workstation Agent code matches the latest level available, the Initiate Workstation Connection panel appears, as shown in Figure 32 on page 47.

Notes:

1. Before you can start a workstation session from this panel, you must have completed the following tasks:
   - Successful installation and initialization of TCP/IP or APPC.
   - Successful installation of the ISPF Workstation Agent component. See the appendix called **Installation Considerations for the Client/Server** in the *ISPF User's Guide Volume I*, and "Download Data Set to Workstation Utility (Option 3.7)" on page 167 for additional information.
   - Initialization of the ISPF WSA component.

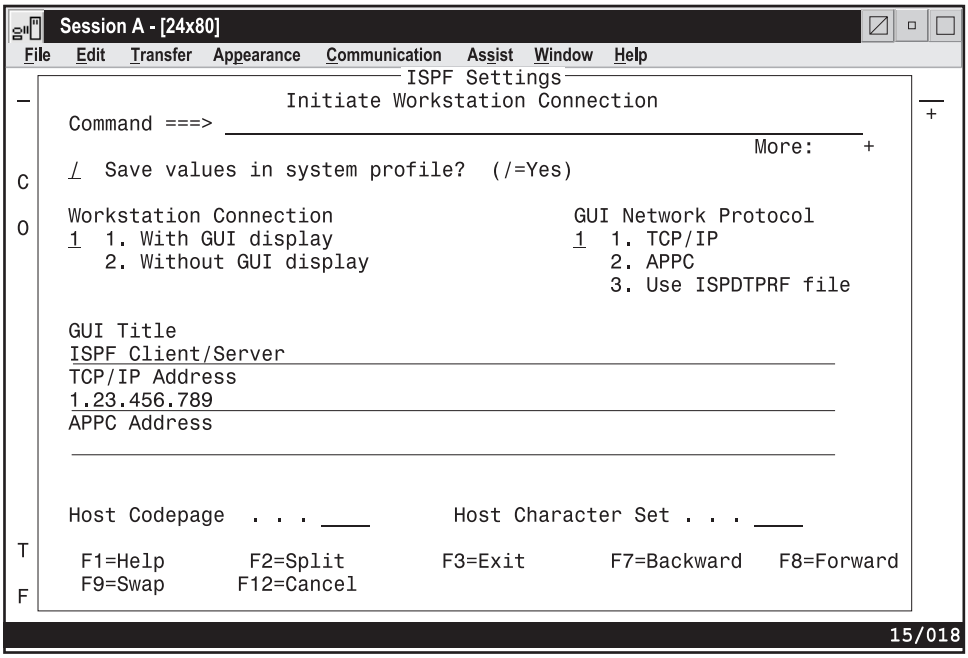

Figure 32. Initiate Workstation Connection Panel (ISPISMGI) part 1

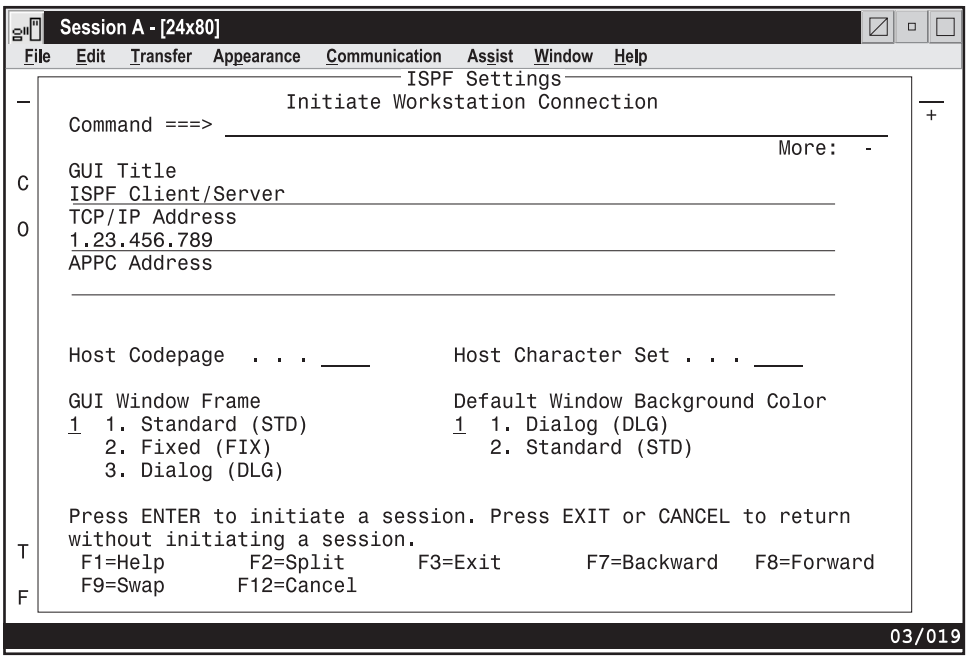

Figure 33. Initiate Workstation Connection Panel (ISPISMGI) part 2

2. When you complete the fields shown in Figure 32 and press Enter, the next screen displayed will be in GUI mode. Unless your system has been set up to bypass it (see "The System Register Panel" on page 179), the next panel is the WSA connection panel.

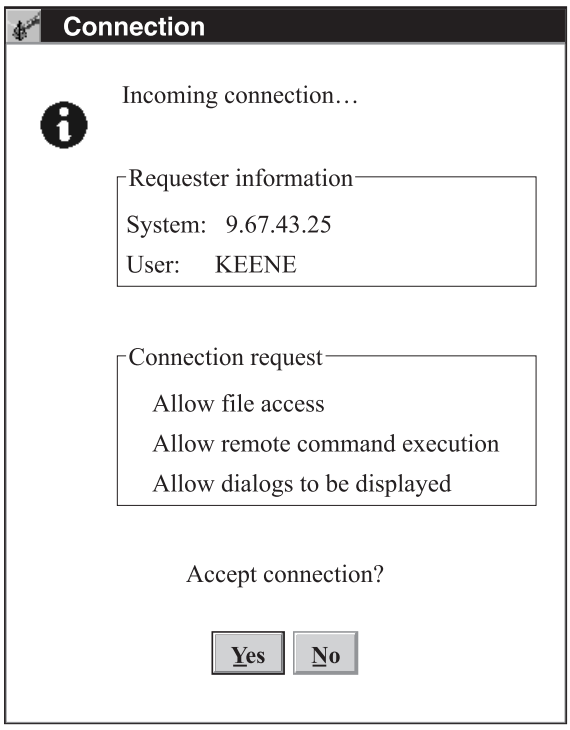

Figure 34. WSA Connection Panel

This panel indicates the requestor and the type of connection requested. Click on **Yes** to accept the connection as described, or **No** to reject the connection.

The Initiate Workstation Session panel allows you to specify that you want to start a GUI session. Starting a GUI session from this panel if you are in split screen mode or 3290 partition mode is not supported. If you select Workstation connection, you must specify the information in the following fields, as appropriate:

Save values in system profile?
The default for this setting is YES. Any changes to this field are saved in the user's system profile.

Workstation connection
Allows you to specify one of the following types of connections for your workstation session:

With GUI display
A GUI interface is provided for this session.

Without GUI display
A standard ISPF type of interface is provided for this session.

GUI Network Protocol
The type of network you use to connect the workstation to the host: TCP/IP or APPC.

You can also select the third option **Use ISPDTPRF file**, to specify that ISPF get your network address from the file allocated to DD ISPDTPRF. The file can be sequential or a member of a PDS, and it can be fixed blocked (FB) or variable blocked (VB). Each line of the file should be formatted as follows: `userid WORKSTAT protocol_id:network_address`, where:

userid
user's TSO userid

protocol_id
network protocol identifier, either ***ip*** for TCP/IP or ***lu*** for APPC.

network_address
workstation address

For example, KEENE WORKSTAT ip:9.45.202.69.

GUI Title
The title you want displayed in the window frame of your GUI session. This value will be used if dialog variable ZWINTTL or ZAPPTTL is not found.

TCP/IP Address
The workstation's IP address. Required if you specified TCP/IP in the **GUI Network Protocol** field. TCP/IP address prompt is point-and-shoot text. If selected, a pop-up window is displayed containing the last five addresses saved in the system profile.

A TCP/IP address can be in dotted decimal format or in domain name format. Dotted decimal format is a sequence of decimal numbers separated by periods, for example, **9.87.654.321**.

A TCP/IP address in domain name format consists of one or more domain qualifiers separated by periods. The minimum specification for addresses within the same domain is a TCP/IP host name, for example, **jsmith**. The fully-qualified domain name for *jsmith* is formed by appending the appropriate subdomain name and root domain name to *jsmith*, such as **jsmith.raleigh.ibm.com**. To use domain naming, a domain name server must be active and providing domain name resolution for domain names within your TCP/IP network. The domain name server address is determined by the value of the **NSINTERADDR** statement in the TCP/IP configuration data set. ISPF must be able to locate the TCP/IP configuration data set as described in the **TCP/IP Requirements Detail** section of the ***Configuring Communications for the ISPF Client/Server*** appendix of the *ISPF User's Guide Volume I*.

APPC Address
The workstation's APPC network name. Required if you specified APPC in the **GUI Network Protocol** field. APPC address prompt is point-and-shoot text. If selected, a pop-up window is displayed containing the last five addresses saved in the system profile.

An APPC address can be in fully-qualified LU name format or in symbolic destination name format. A fully-qualified LU name format consists of a network identifier and an LU name, separated by a period. For example, **USIBMNR.NRI98X00** is a fully-qualified LU name.

An APPC address in symbolic destination name format consists of a 1- to 8-character name such as **JSMITH**. The symbolic destination name must be defined as a *DESTNAME* and the corresponding fully-qualified LU name must be defined as the associated *PARTNER_LU* in the APPC/MVS side information.

Host Codepage
The host codepage value used in translating data from the host to the workstation. This value **must** be specified with a *Host Character Set* value if it is to be used. If only one, or neither, of these values is specified, the

values from the terminal query are used. If your terminal or emulator does not support codepages, the CODEPAGE and CHARSET parameter values on the ISPSTART command are used. If the ISPSTART values are not specified, the default codepage and character set is ENGLISH.

Host Character Set
The host character set value used in translating data from the host to the workstation. This value **must** be specified with a *Host Codepage* value if it is to be used. If only one, or neither, of these values is specified, the values from the terminal query are used. If your terminal or emulator does not support codepages, the CODEPAGE and CHARSET parameter values on the ISPSTART command are used. If the ISPSTART values are not specified, the default codepage and character set is ENGLISH.

GUI Window Frame
Allows you to specify one of the following types of window frames for your GUI session:

1 **Standard (STD)**. A GUI window frame that can be resized and that has max/min buttons.

2 **Fixed (FIX)**. A GUI window frame that has a min button but cannot be resized.

3 **Dialog (DLG)**. A GUI window frame that cannot be resized and that does not have max/min buttons.

Note: Pop-up panels will always be displayed in dialog window frames.

Default window background color
Select the background color:

Dialog (DLG)

Standard (STD)

GUI Panel Settings

When you select ***GUI panel settings...*** from the Workstation pull-down, the GUI Settings pop-up window is displayed, as shown in Figure 35 on page 51.

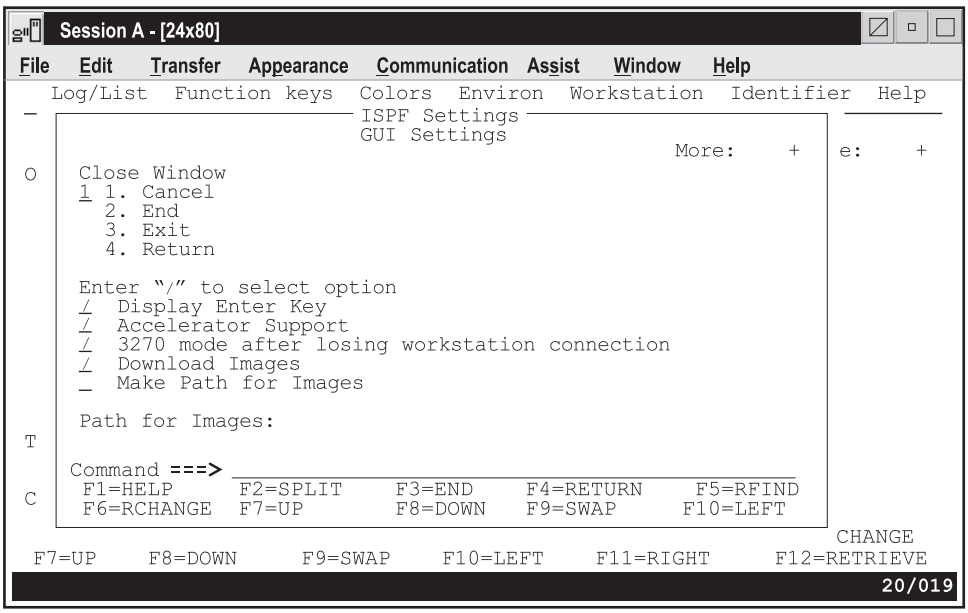

Figure 35. GUI Settings Pop-Up (ISPISMGS)

The GUI Settings pop-up window allows you to specify the following GUI parameters:

Close Window
Allows you to specify that one of the following commands be processed when you close a GUI window:
- CANCEL
- END
- EXIT
- RETURN.

Display Enter Key
Select this field to display an Enter push button at the bottom of all GUI panels.

Accelerator Support
Select this field to use accelerator keys in this session.

3270 mode after losing workstation connection
Select this field if you want the ISPF session to continue in the 3270 emulator session rather than abend with code 989 when the workstation connection is lost while running in GUI mode.

Download Images
Select this field to download images *from* the host library defined to ddname ISPILIB, *to* the workstation image path. If you are not running ISPF in GUI mode, this setting is ignored.

Make Path for Images
Select this field to have ISPF create the image path you specify, when the image path you specify does not already exist on the workstation.

Path for images
In GUI mode, this field enables you to specify a workstation path for images. The image path can be 244 characters long with no imbedded blanks. The image path you specify must follow the accepted path notation

for whichever operating system you are using. If you do not specify an image path, ISPF puts the image requested into the workstation's working directory.

Workstation Tool Integration

When you select ***Workstation Tool Integration*** from the Workstation pull-down, the Workstation Tool Integration Configuration dialog starts. See **The ISPF Workstation Tool Integration Program** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for more information.

Download ISPF C/S Component

When you select ***Download ISPF C/S Component...*** from the Workstation pull-down, the Client/Server component dialog starts. See "Download Data Set to Workstation Utility (Option 3.7)" on page 167 for more information.

Disconnect from the Workstation

When you select ***Disconnect from the workstation*** from the Workstation pull-down, the Workstation Disconnect Confirmation dialog starts. From the dialog you have the choice of **YES** to disconnect, or **NO** which cancels the disconnect request.

Displaying Screen Name, Message Identifiers, and Panel Identifiers (The Identifier Action Bar Choice)

Screen Name

You can specify that you want to display the screen name in one of two ways:

- Select the Screen name choice from the Identifier pull-down on the ISPF Settings panel action bar.
- Issue the ISPF system command SCRNAME ON.

Note: If you have selected to display the panel ID, the screen name does not display.

If you select the default setting for screen name, this value controls the default setting for the screen name. When ISPF intitializes a screen, the setting of the screen name is initialized to this value.

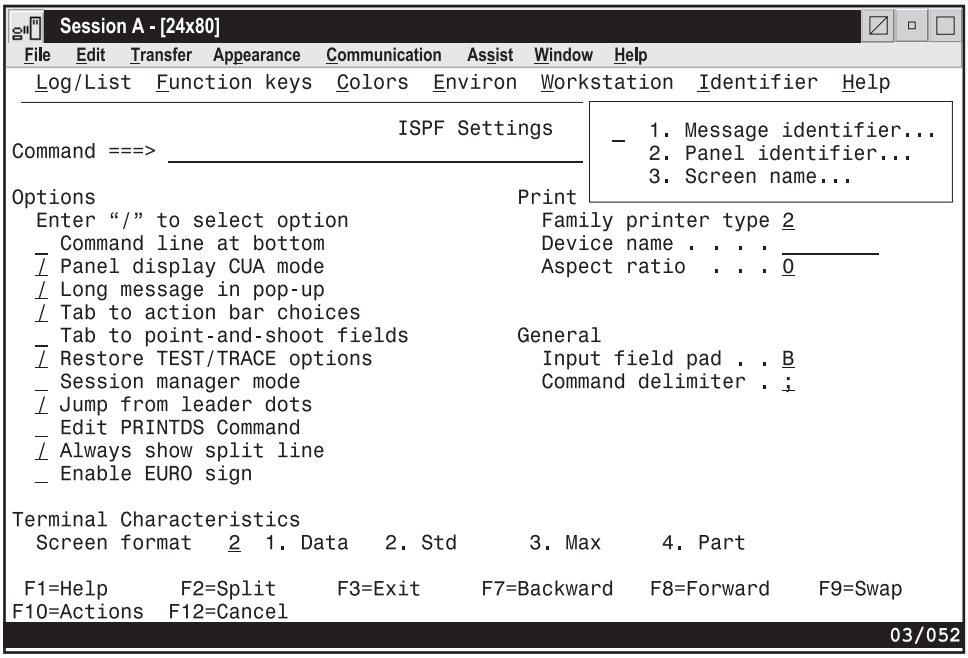

Figure 36. Identifier Pull-Down on the ISPF Settings Panel Action Bar (ISPISMMN)

Message Identifier

You can specify that you want to display message identifiers in one of two ways:

- Select the Message identifier choice from the Identifier pull-down on the ISPF Settings panel action bar, as shown in Figure 36.
- Issue the ISPF system command MSGID ON.

When you select Message identifier... from the Identifier pull-down, the Message Identifier panel is displayed, as shown in Figure 37 on page 54.

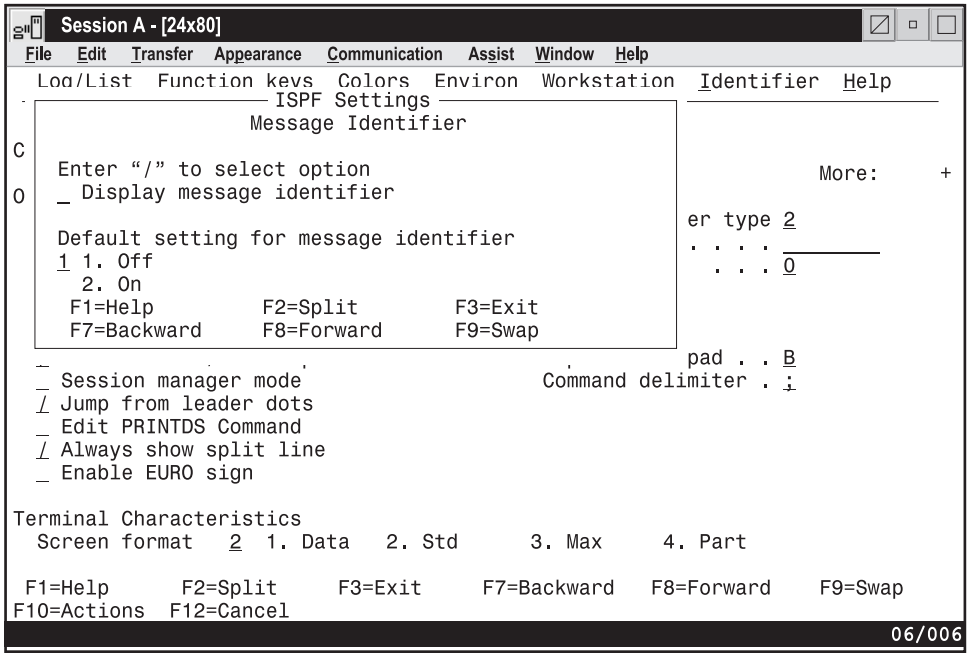

Figure 37. Message Identifier Panel (ISPISMMI)

If you select the Display message identifier option, the message identifier is set to On. Deselect this choice (or issue the MSGID OFF command) to set the message identifier to Off.

Note: This setting is temporary and will not be retained across ISPF sessions.

If you select the default setting for message identifier, this value controls the default setting for the message identifier. When ISPF intitializes a screen, the setting of the message identifier is initialized to this value.

Figure 38 on page 55 shows an error message on the ISPF Settings panel displayed with the message identifier set to on.

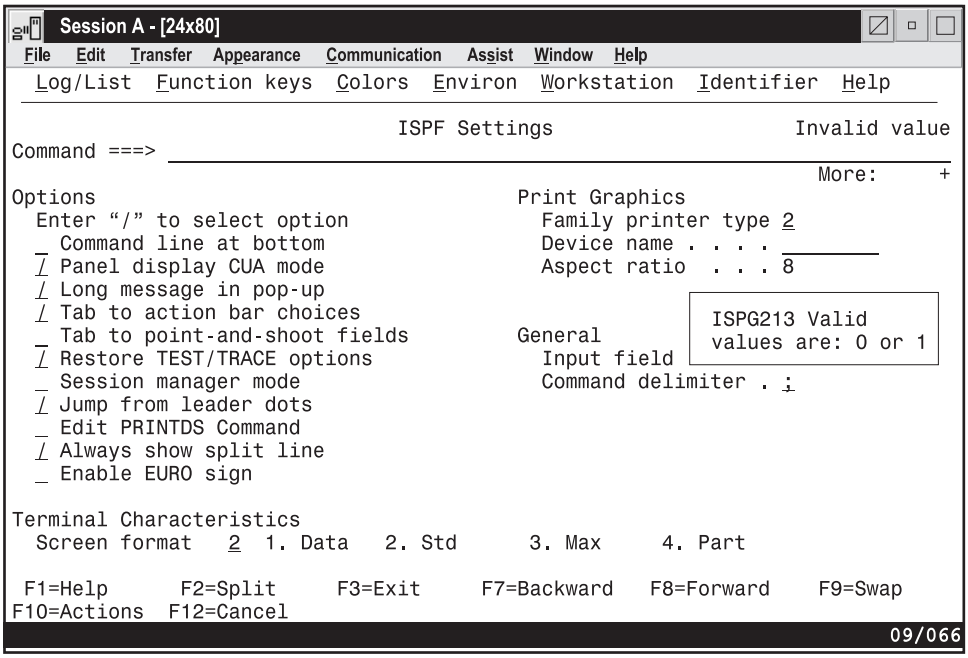

Figure 38. Panel Displayed with the Message Identifier Set to On

Panel Identifier

You can specify that you want to display panel identifiers in one of two ways:

- Select the Panel identifier choice from the Identifier pull-down on the ISPF Settings panel action bar, as shown in Figure 36 on page 53.
- Issue the ISPF system command PANELID ON.

When you select Panel identifier... from the Identifier pull-down, the Panel Identifier panel is displayed, as shown in Figure 39 on page 56.

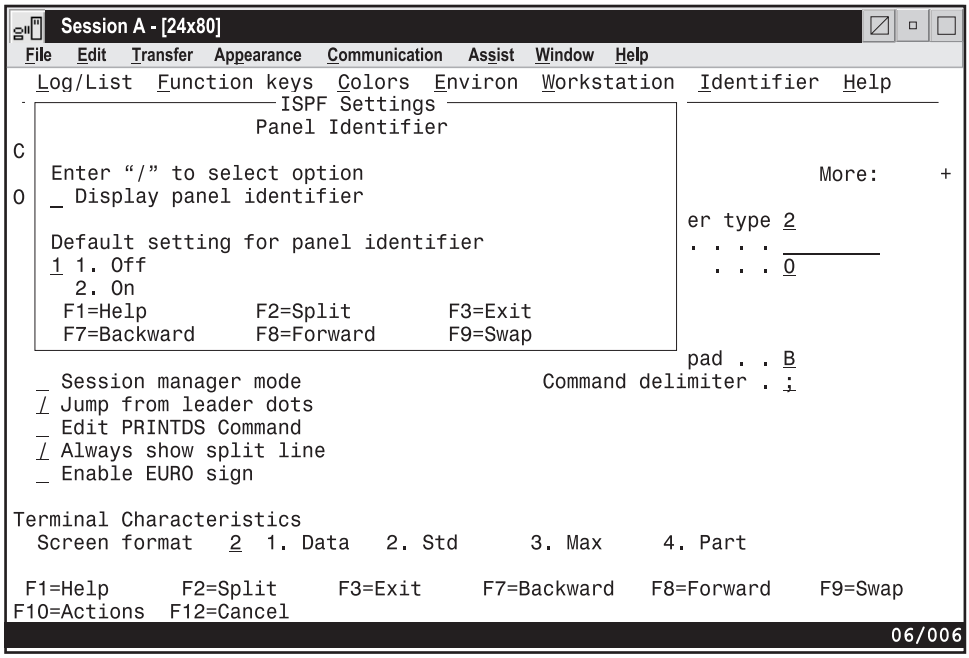

Figure 39. Panel Identifier Panel (ISPISMPI)

If you select the Display panel identifier option, the panel identifier is set to On. Deselect this choice (or issue the PANELID OFF command) to set the panel identifier to Off.

Note: This setting is temporary and will not be retained across ISPF sessions.

If you select the default setting for panel identifier, this value controls the default setting for the panel identifier. When ISPF intitializes a screen, the setting of the panel identifier is initialized to this value.

Figure 40 shows the ISPF Settings panel displayed with the panel identifier set to On.

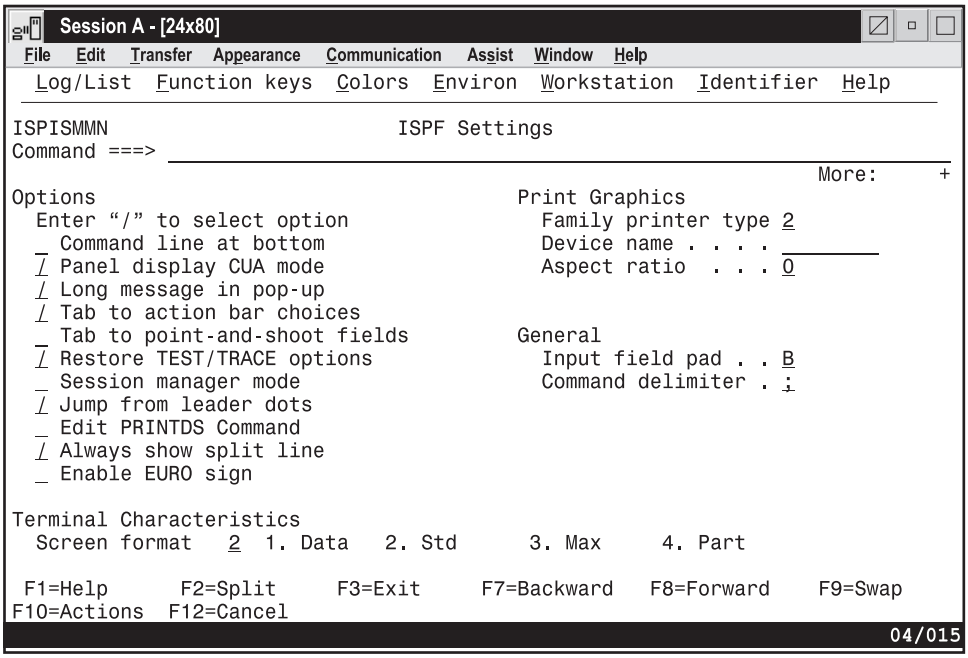

Figure 40. Panel Displayed with the Panel Identifier Set to On

Chapter 2. View (Option 1)

The View option (1) displays the View Entry Panel shown in Figure 41 on page 60 to enable you to view or browse source data and listings stored in ISPF libraries or other partitioned or single-volume or multivolume sequential data sets.

View Allows you to use all Edit line commands, primary commands, and macros to manipulate the data.

View functions exactly like Edit, with the following exceptions:

- **SAVE primary command**. When you enter the SAVE command, ISPF issues a message that you must use the CREATE command to save any data you have changed.
- **END primary command**. When you enter the END command, ISPF terminates the View function; no data changes are saved.

Browse

Allows you to use the Browse primary commands described in "Browse Primary Commands" on page 63 to manipulate data.

ISPF is shipped with View enabled. You can disable View, thus allowing only Browse, by modifying the ISPF Configuration Table. You must set the keyword **IS_VIEW_SUPPORTED** to *NO*. For more information, see the section called ″ISPF Configuration Table″ in the *ISPF Planning and Customizing* manual.

You can view or browse data that has the following characteristics:

- Record Format (RECFM):
  - Fixed, variable (non-spanned), or undefined

    Note: If you try to view a data set with RECFM=U, the Browse function is substituted.
  - Blocked or unblocked
  - With or without printer control characters
- Logical Record Length (LRECL):
  - For fixed-length records, up to 32 760 characters

    Note: For view only, the *minimum* record length is 10 characters.
  - For variable-length records, up to 32 756 characters.

    Note: For view only, the *minimum* record length is 14 characters.
- VSAM data
  - VSAM data can be browsed if the ISPF Configuration table has been customized to enable VSAM support.

    Note: When the ISPF Configuration table is customized to enable VSAM support (that is, VSAM_BROWSE_ENABLED or VSAM_VIEW_ENABLED are set to ″YES″), the default value for VSAM_BROWSE_COMMAND or VSAM_VIEW_COMMAND is ″DITTO VB /″.

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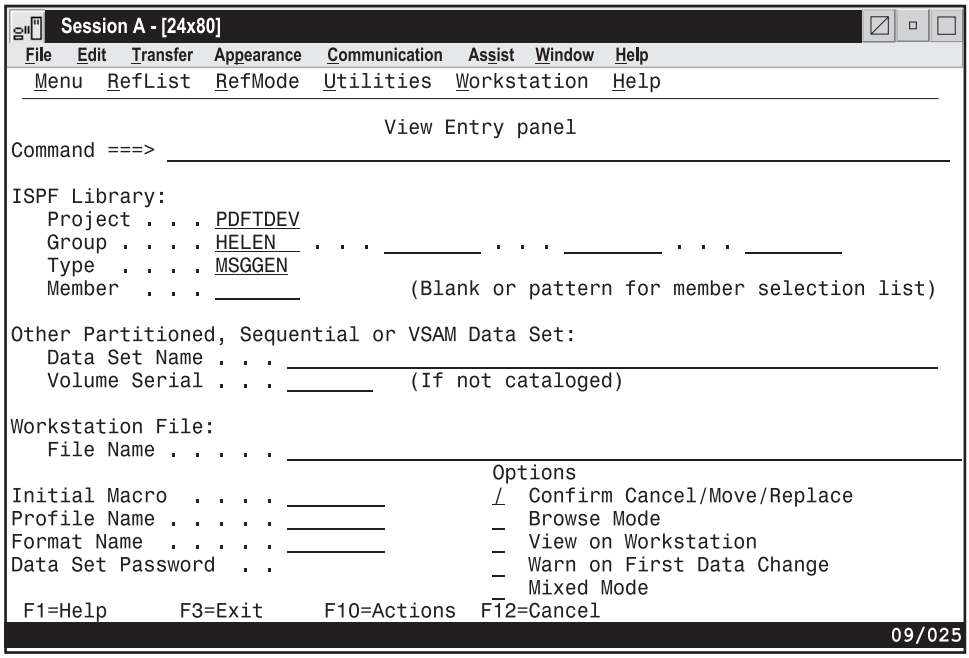
Session A - [24x80]
File Edit Transfer Appearance Communication Assist Window Help
Menu RefList RefMode Utilities Workstation Help
View Entry panel
Command ===>
ISPF Library:
Project . . . PDFTDEV
Group . . . . HELEN . . . .

8 Display modes - View
9 Tabbing - View
10 Automatic recovery - View
11 Edit profiles
12 Edit line commands
13 Edit primary commands
14 Labels and line ranges - View
15 Ending a view session
16 Types of Data Sets - Browse
17 Browse display screen format
18 Assigning Browse labels
19 Browse commands
20 Terminating Browse
22 Index

View Entry Panel Fields

The ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* contains information about all the fields on the View Entry Panel except the following:

Initial Macro
You can specify an Edit macro to be processed before you begin viewing your sequential data set or any member of a partitioned data set. This initial macro enables you to set up a particular environment for the View session you are beginning.

If you leave the **Initial Macro** field blank and your Edit profile includes an initial macro specification, the initial macro from your Edit profile is processed.

If you want to suppress the processing of an initial macro in your Edit profile, enter NONE in the **Initial Macro** field.

Profile Name
You can specify a profile name to override the default Edit profile.

Format Name
Contains the name of a format definition, which is used to view or browse a formatted data set.

Browse Mode
Specifies that you want to browse the data set using the Browse function. This function is useful for large data sets and data sets that are formatted RECFM=U.

Confirm Cancel/Move/Replace
Specifies that you want ISPF to display a confirmation panel whenever you issue a Cancel, Move, or Replace command.

Mixed Mode
Specifies that you want to view or browse unformatted data that contains both EBCDIC and DBCS characters.

View on Workstation
Specifies that you want to view the data on your workstation. This option requires a workstation connection to be used.

Warn on First Data Change
Specifies that you want ISPF to warn you that changes cannot be saved in View. The warning is displayed when the first data change is made.

Browsing a Data Set

If you select Browse Mode on the View Entry Panel, ISPF displays either a member selection list or a Browse data display. See the **Using Member Selection Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* if you need information about displaying a member list.

Notes:

1. If you specify a volume serial on the View Entry Panel, you can browse a single volume of a non-SMS multivolume data set.
2. For information about browsing libraries that are controlled using LMF, refer to *ISPF Library Management Facility* For information about browsing libraries that are controlled using SCLM, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*.

A Browse data display is shown in Figure 42.

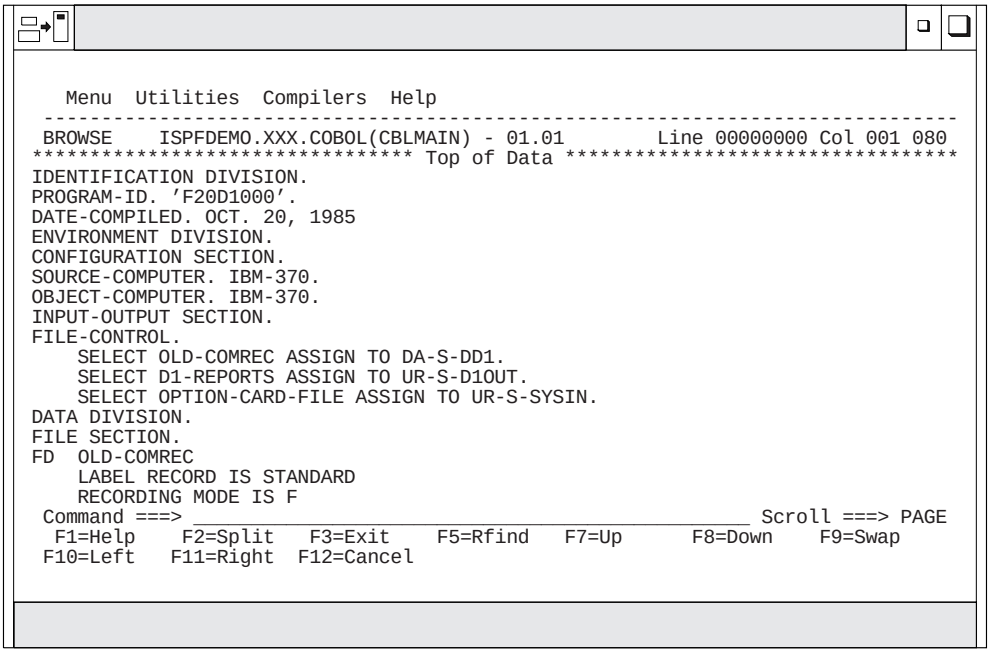

Figure 42. Browse - Data Display (ISRBROBA)

Each character in the data that cannot be displayed is changed on the display to either a period or a character that you have specified. Using the DISPLAY command, you can specify whether printer carriage-control characters are to be treated as part of the data, and thus displayed.

During Browse, four-way scrolling is available through the scroll commands. You can also use the FIND and LOCATE commands to scroll to a particular character string, line number, or symbolic label.

Whenever you enter a command, such as FIND or one of the scroll commands, that puts the cursor under a character string in the data set, ISPF highlights that character string. This highlighting occurs whether you type the command on the command line and press Enter or press a function key that the command is assigned to.

Ending Browse

To end a Browse data display, use the END command. This returns you to the previous panel, which is either a member list display or the View Entry panel. If a member list is displayed, the name of the member you just browsed is at the top of the list. You can select another member from the list or enter the END command again to return to the View Entry Panel.

When the View Entry Panel is displayed again, you can select another data set or member, or you can use the END command to return to the ISPF Primary Option menu.

Browse Primary Commands

You can prefix any BROWSE command with an ampersand to keep the command displayed on the command line after the command has been processed. This technique allows you to repeat similar commands without reentering the data. For example, if you enter:

```
Command ===> &FIND ABCD
```

the command is displayed after the string has been found, which allows you to then change the operand and issue another FIND command.

Browse provides 10 functions, described in the following sections, each of which is controlled by a command that you can type on the command line:

BROWSE	Browsing recursively
COLUMNS	Identifying columns
DISPLAY	Controlling the display
EDIT	Editing a member
FIND	Finding character strings
HEX	Displaying data in hexadecimal format
LOCATE	Locating lines
RESET	Removing the column-identification line
SUBMIT	Submitting browse data as a job stream for background execution
VIEW	Viewing a member.

BROWSE—Browsing Recursively

The BROWSE command allows you to browse another member of the same data set. It also allows you to browse any other data set without ending your current Browse session.

The BROWSE command has the following syntax:

BROWSE [*member*]

where:

member

An optional member of the ISPF library or other partitioned data set that you are currently browsing. You may enter a member pattern to generate a member list.

For example, if you were browsing a member of library ISPFDEMO.XXX.COBOL, you could enter the following command to display the panel shown in Figure 42 on page 62:

```
BROWSE CBLMAIN
```

If you do not specify a member name, the Browse Command - Entry Panel is displayed.

You end a nested Browse session the same way you would a normal one. When you end the nested Browse session, the current Browse session resumes.

COLUMNS—Identifying Columns

You can use the COLUMNS command to provide a temporary indication of where columns occur on the panel. This command displays a column-identification line on the first line of the data area. The command has the following syntax:

COLUMNS [ON | OFF]

where:

ON The default. Displays the column-identification line.

OFF Removes the column-identification line from the display.

Note: You can also remove the column-identification line by entering the RESET command.

An example of the column-identification line is shown in Figure 43. The digits on the identification line show the tens positions: 1 shows column 10, 2 shows column 20, and so forth. The plus signs (+) show the fives positions (columns 5, 15, 25, and so forth.)

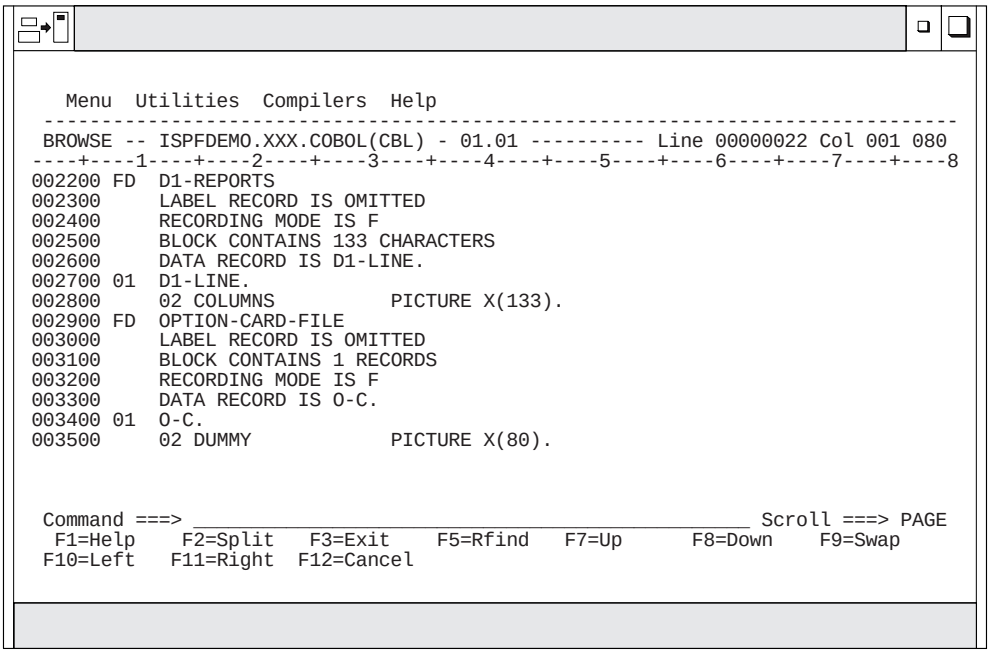

Figure 43. Browse - Column-Identification Line (ISRBROBA)

DISPLAY—Controlling the Display

The DISPLAY command allows you to display carriage control characters and characters that cannot normally be displayed. It has the following syntax:

DISPLAY {*char*} **{NOCC | CC}**

You must enter at least one operand, but you can enter them in any order. If you enter only one operand, the other operand retains its current value.

where:

char The character you want to use to represent characters that cannot be displayed on the screen. It can be a single character, or a single character enclosed in apostrophes (') or quotation marks ("). If you specify a blank as the character, you must enclose it in apostrophes or quotation marks.

CC Shows that carriage control characters are to be displayed and are to be considered part of the data.

NOCC
Shows that carriage control characters are not to be displayed and are not to be considered part of the data.

Both operands are stored in your user profile and are in effect whenever you are using Browse. You need to reenter the DISPLAY command only if you want to change one of the operands.

The first settings for display mode are period (.) and NOCC, but the carriage control character status has no effect if the data that you are browsing has no carriage control characters.

The following examples show three different ways to enter the DISPLAY command:

- To use blanks to represent characters that cannot be displayed, enter:
  ```
  DISPLAY " "
  ```
- To use a vertical bar (|) to represent characters that cannot be displayed, enter:
  ```
  DISPLAY |
  ```
- To suppress the display of carriage control characters, enter:
  ```
  DISPLAY NOCC
  ```

EDIT—Editing a Member

The EDIT command allows you to edit another member of the same data set. It also allows you to edit any other data set without ending your current Browse session.

The EDIT command has the following syntax:

EDIT [*member*]

where:

member
An optional member of the ISPF library or other partitioned data set that you are currently browsing. You may enter a member pattern to generate a member list.

For example, if you were browsing a member of library ISPFDEMO.XXX.COBOL, you could enter the following command to display the panel shown in Figure 42 on page 62:

```
EDIT CBLMAIN
```

If you do not specify a member name, the Edit Command - Entry Panel is displayed.

You end a nested Edit session the same way you would a normal one. When you end the nested Edit session, the current Browse session resumes.

FIND—Finding Character Strings

The FIND command allows you to find a specified character string. The syntax of the FIND command is:

```
FIND string [NEXT ] [CHARS] [col-1 [col-2]]
            [ALL  ] [PREFIX]
            [FIRST] [SUFFIX]
            [LAST ] [WORD ]
            [PREV ]
```

Note: FIND as a Browse command, shown here, has the same syntax as FIND as an Edit command, except the optional X/NX/EX and line range operands are not included.

where:

string
Required operand. The character string you want to find.

NEXT | ALL | FIRST | LAST | PREV
Optional operands that define the starting point, direction, and extent of the search. NEXT is the default.

CHARS | PREFIX | SUFFIX | WORD
Optional operand. Operands that set the conditions for a character string match. CHARS is the default.

col-1 and col-2
Optional operands. Numbers that identify the columns the FIND command is to search.

You can separate the operands with blanks or commas and you can type them in any order, but *col-2*, if typed, must follow *col-1*.

Specifying Find Strings: The string operand specifies the characters to be found. For examples of different string formats, refer to the description of the FIND command in *ISPF Edit and Edit Macros*

The default is not to differentiate between uppercase and lowercase characters when searching. Except for the character (C) string, differences between uppercase and lowercase strings are ignored. For example, this command:

```
FIND ALL 'CONDITION NO. 1'
```

successfully finds any of the following:

```
CONDITION NO. 1
Condition No. 1
condition No. 1
condition no. 1
```

Omitting String Delimiters:

Generally, you enter the strings without delimiters. For example, to find all occurrences of ABC, enter:

```
FIND ALL ABC
```

Using String Delimiters: You must use delimiters if a string contains imbedded blanks or commas, or if a string is the same as a command keyword. You delimit strings with either apostrophes (') or quotation marks ("). For example, to find the next occurrence of `every one`, enter:

```
FIND 'every one'
```

The FIND command does not find the apostrophe or quotation mark string delimiters.

Note: The Browse FIND command does not work with a search argument that contains the command delimiter, even if string delimiters are used. You can specify a hexadecimal search string or use ISPF Option 0 to change the command delimiter to a different character.

Starting Point, Direction, and Extent of Search: You can control the starting point, direction, and extent of the search by using one of the following operands:

NEXT The scan starts at the first position after the current cursor location and searches ahead to find the next occurrence of the string. NEXT is the default.

ALL The scan starts at the top of the data and searches ahead to find all occurrences of the string. A message in the upper-right corner of the screen shows the number of occurrences found. The second-level message that is displayed when you enter the HELP command shows which columns were searched.

FIRST The scan starts at the top of the data and searches ahead to find the first occurrence of the string.

LAST The scan starts at the bottom of the data and searches backward to find the last occurrence of the string.

PREV The scan starts at the first position before the current cursor location and searches backward to find the previous occurrence of the string.

If you specify FIRST, ALL, or NEXT, the direction of the search is forward; pressing the RFIND function key (F5/17) finds the next occurrence of the designated string. If you specify LAST or PREV, the direction of the search is backward; pressing the RFIND function key finds the previous occurrence of the string. The other optional operands remain in effect, as specified in the last FIND command. These operands include CHARS, WORD, PREFIX, SUFFIX, and *col-1*, *col-2*.

The search proceeds until one or all occurrences of the string are found, or until the end of data is found. If the string is not found, one of the following actions takes place:

- If the FIND command was entered on the Command line, a `NO` *`string`* `FOUND` message is displayed in the upper-right corner of the screen.
- If the FIND command was repeated using the RFIND command, either a `BOTTOM OF DATA REACHED` message or a `TOP OF DATA REACHED` message is displayed, depending on the direction of the search. When these messages appear, you can press the RFIND function key again to continue the search by wrapping to the top or bottom of the data. If the string is still not found anywhere in the data, a `NO` *`string`* `FOUND` message is displayed.

Conditions for Character String Matches: The operands CHARS, PREFIX, SUFFIX, and WORD control the conditions for a successful match with the string based on whether the data string begins and/or ends with a non-alphanumeric

character; that is, a special character or a blank. You can abbreviate PREFIX, SUFFIX, and CHARS to PRE, SUF, and CHAR, respectively.

In the following illustration, the underscored strings would be found and the non-underscored strings would be ignored:

```
CHARS 'DO'  - DO DONT ADO ADOPT 'DO' +ADO (DONT) ADO-
PREFIX 'DO' - DO DONT ADO ADOPT 'DO' +ADO (DONT) ADO-
SUFFIX 'DO' - DO DONT ADO ADOPT 'DO' +ADO (DONT) ADO-
WORD 'DO'   - DO DONT ADO ADOPT 'DO' +ADO (DONT) ADO-
```

If you do not specify an operand, the default is CHARS.

Using Text Strings: Text strings are processed exactly the same as delimited strings. They are provided for compatibility with prior versions of the product.

Using Character Strings: A character string, which may be used as a string operand in a FIND command, requires that the search be satisfied by an exact character-by-character match. Lowercase alphabetic characters match only with lowercase alphabetic characters and uppercase alphabetic characters match only with uppercase.

For example:

```
FIND C'XYZ'
```

would find the characters XYZ only if they were in uppercase, while:

```
FIND C'xyz'
```

would find the characters xyz only if they were in lowercase.

If you specify a text string that contains any SO or SI characters, the string is considered a character string.

Using Picture Strings: A picture string used as a string operand in a FIND command allows you to search for a particular type of character, without regard for the specific character involved. You can use special characters within the picture string to represent the type of character to be found, as follows:

String	Meaning
P'='	Any character
P'¬'	Any nonblank character
P'·'	Any nondisplayable (invalid) character
P'#'	Any numeric character (0–9)
P'-'	Any nonnumeric character
P'@'	Any alphabetic character (uppercase or lowercase).

String	Meaning
P'<'	Any lowercase alphabetic character
P'>'	Any uppercase alphabetic character
P'$'	Any special character (not alphabetic or numeric).

If an APL or TEXT keyboard is being used, the following additional character can be used in a picture string:

P' ⍰ '	Any APL-specific or TEXT-specific character
P'_'	Any underscored alphabetic APL character and delta.

Only the special characters listed above are valid within a picture string, but the string can include alphabetic or numeric characters that represent themselves.

A DBCS subfield cannot be specified as the subject of a picture string for the FIND command.

Examples of picture strings:

P'###'
: A string of 3 numeric characters

P'¬ ¬'
: Any 2 nonblank characters separated by a blank

P'·' Any nondisplayable character

P' #' A blank followed by a numeric character

P'#AB'
: A numeric character followed by 'AB'.

Examples of FIND commands using picture strings:

FIND P'·'
: Find next nondisplayable character

FIND P'¬' 72
: Find next nonblank character in column 72

F P' ¬' 1
: Find the next line with a blank in column 1 followed by a nonblank.

When you use the special characters '=' or '·' and a nondisplayable character is found, a hexadecimal representation is used in the confirmation message that appears in the upper-right corner of the screen. For example:

```
FIND P'··'
```

could result in the message CHARS X'0205' FOUND.

Column Limitations: The *col-1* and *col-2* operands allow you to search only a portion of each line, rather than the complete line. These operands, which are integers separated by a comma or by at least one blank, show the starting and ending columns for the search. The following rules apply:

- If you specify neither *col-1* nor *col-2*, the search continues across all columns within the current boundary columns.
- If you specify *col-1* without *col-2*, the string is found only if it starts in the specified column.
- If you specify both *col-1* and *col-2*, the complete string, not just part of it, must be within the specified columns.

Using RFIND: The RFIND command, which is usually assigned to the F5/17 key, allows you to repeat the previous FIND command without retyping it. Therefore, you can use this command to find successive occurrences of the string specified in the last FIND command. You can also use the RFIND command to return to the top of your data and continue searching when the BOTTOM OF DATA REACHED message appears. If you enter the RFIND command on the Command line instead of using a function key, you must position the cursor to the desired starting location before pressing Enter.

If you specify a 1-byte hexadecimal string as the FIND string and the string is found at the second byte of a double-byte character set (DBCS) character, hardware sets the cursor to the first byte of the character. If you then request RFIND, the

same data is found again. To find the next occurrence of the string, you must move the cursor to the next character position before requesting RFIND again.

HEX—Displaying Data in Hexadecimal Format

The HEX command causes data to be displayed in hexadecimal format. The syntax of the command is:

HEX [ON | OFF] [VERT | DATA]

You can specify the operands in any order:

where:

ON Turns hexadecimal mode on. This is the default.

OFF Turns hexadecimal mode off.

VERT
Valid only when hexadecimal mode is ON. This is the default. Figure 44 on page 71 shows how VERT causes the hexadecimal representation to be displayed vertically, two rows per byte, under each character.

DATA
Valid only when hexadecimal mode is ON. Figure 45 on page 71 shows how DATA causes the hexadecimal representations to be displayed as a string of hexadecimal characters, two per byte. Since the hexadecimal string is twice the length of the data string, it consumes two rows. If you omit this operand, VERT is assumed.

When using browse and placing the cursor anywhere within the record, SCROLL UP positions the data where the cursor is located as the last complete line record on the display. A complete line record consists of the standard character form line, two hexadecimal character lines, and a separator line.

For example, the following command would display the hexadecimal notation vertically:

```
HEX VERT
```

Three lines are displayed for each source line. The first line shows the data in standard character form. Figure 44 on page 71 shows the next two lines with the same data in vertical hexadecimal representation. A separator line is displayed between the two representations to make it easier for you to read the data.

To display the hexadecimal notation horizontally, use this command:

```
HEX DATA
```

Figure 45 on page 71 shows the next two lines with the same data in DATA hexadecimal representation.

You can use the FIND command to find invalid characters or any specific hexadecimal character regardless of the setting of hexadecimal mode. Refer to the syntax for picture strings and hexadecimal strings under the description of the FIND command in *ISPF Edit and Edit Macros*

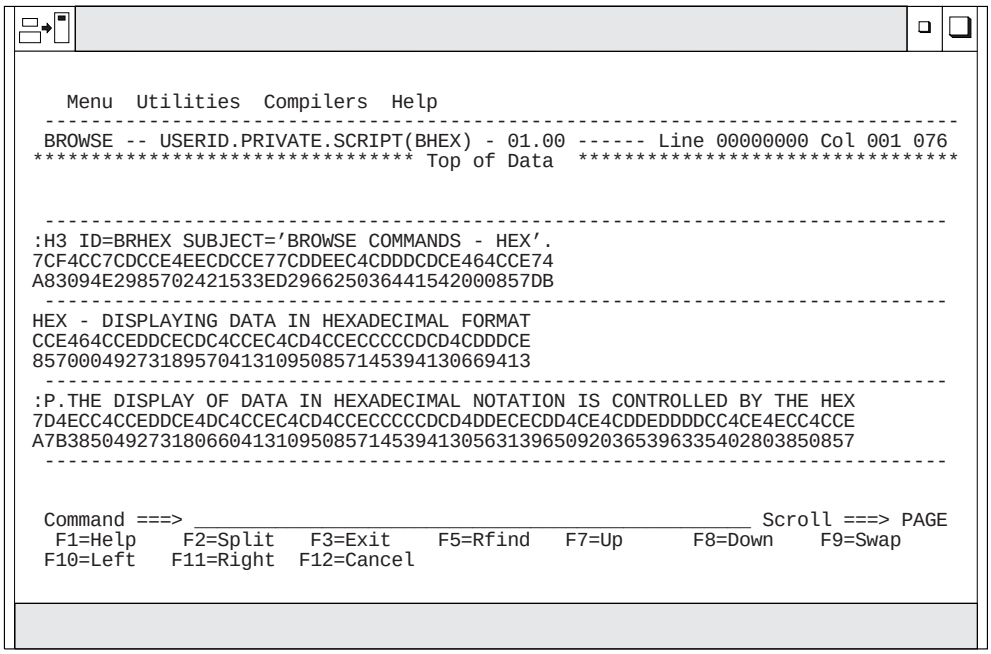

Figure 44. Browse Hexadecimal Display - Vertical (ISRBROBA)

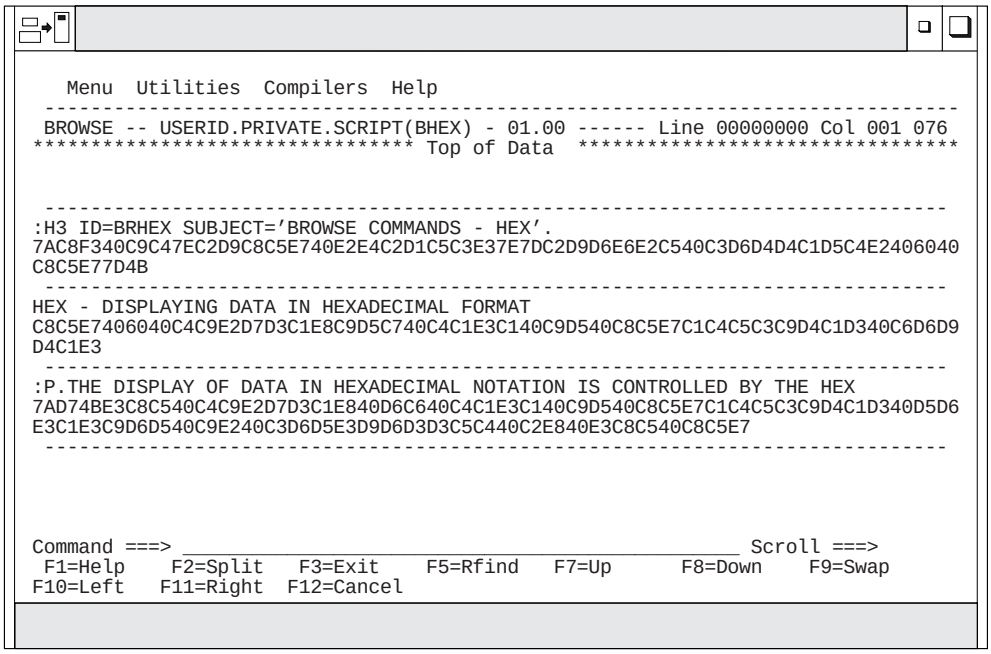

Figure 45. Browse Hexadecimal Display - Data (ISRBROBA)

LOCATE—Locating Lines

Use the LOCATE command to bring a particular line to the top of the display. You can identify the line by either its relative line number or a previously defined label.

During Browse, the current position of the screen window is shown by the line/column numbers in the upper-right corner of the screen. The line number refers to the first line of data following the two header lines, and shows the

relative position of that line in the data. The `Top of Data` message is treated as relative line zero. You must enter either a line number or a label as an operand.

LOCATE {*line-number* | *label*}

where:

line-number
A numeric value of up to 8 digits that shows the position of the line from the beginning of the data. The line number is displayed in the upper-right corner.

label
Defined by scrolling to the top of the screen the line with which you want to associate the label. You then type the label on the command line in the form:

```
.ccccccc
```

For example, to find line 18463, you could enter the following command:

```
LOCATE 18463
```

ISPF then moves line 18463 to the top of the screen. You can assign a label to it by entering:

```
.label
```

The label is a period followed by up to seven characters that can be displayed, except the comma and the space. It is treated as an internal symbol and is equated to the top line on the screen. You are required to specify the period when you define the label. The next time you want to find this line, you can enter:

```
LOCATE .label
```

The period is usually optional when you use it as an operand in a LOCATE command. However, if the first character in the label is a number, you must specify the period to distinguish the label from a line number.

The latest assignment of a label overrides any previous assignments. You can assign several labels to the same line. Labels are not retained when you leave the Browse option.

RESET—Removing the Column-Identification Line

The RESET command removes the column-identification line that you can display by using the COLUMNS command. This command has no operands. An example of the column-identification line is shown in Figure 43 on page 64.

SUBMIT—Submitting a Job Stream

The SUBMIT command is used to submit a job stream that is being browsed. If the data set being browsed is modified and saved by another user or by the same user on another screen, the SUBMIT command will submit the updated data set, not the copy being browsed. The TSO SUBMIT command is invoked directly to submit the job stream, so the data set has to be fixed-record format with a record length of 80.

Note: The Browse SUBMIT command is not supported if the underlying data is packed.

VIEW—Viewing a Member

The VIEW command allows you to view another member of the same data set. It also allows you to view any other data set without ending your current Browse session.

The VIEW command has the following syntax:

VIEW [*member*]

where:

member
An optional member of the ISPF library or other partitioned data set that you are currently browsing. You may enter a member pattern to generate a member list.

For example, if you were browsing a member of library ISPFDEMO.XXX.COBOL, you could enter the following command to display the panel shown in Figure 42 on page 62:

```
VIEW CBLMAIN
```

If you do not specify a member name, the View Command - Entry Panel is displayed.

You end a nested View session the same way you would a normal one. When you end the nested View session, the current Browse session resumes.

Chapter 3. Edit (Option 2)

The Edit option (2) allows you to create, display, and change data stored in ISPF libraries or other partitioned or single-volume or multivolume sequential data sets with the following characteristics:

- Record Format (RECFM):
  - Fixed or variable (non-spanned)
  - Blocked or unblocked
  - With or without printer control characters
- Logical Record Length (LRECL):
  - From 10 to 32 760, inclusive, for fixed-length records
  - From 14 to 32 756, inclusive, for variable-length records.
- VSAM data
  - VSAM data can be edited if the ISPF Configuration table has been customized to enable VSAM support.

    Note: When the ISPF Configuration table is customized to enable VSAM support (that is, VSAM_EDIT_ENABLED is set to ″YES″), the default value for VSAM_EDIT_COMMAND is ″DITTO VE /″.

If you have made a connection to the workstation, you can also specify a workstation file name, for example **C: \AUTOEXEC.BAT**, on the Edit Entry Panel. Or you can specify which environment (host or workstation) should be used to edit a data set. With these options, one of four editing situations can occur:

- Edit a host data set on the host
- Edit a host data set on the workstation
- Edit a workstation file on the host
- Edit a workstation file on the workstation.

Edit a Host Data Set on the Host

The editor searches the ISPF libraries in the designated order to find the member and copy it into working storage. If you specified a nonexistent member of an ISPF library, a new member is created with the specified name.

When you save the edited member, the editor places or replaces it in the first ISPF library in the concatenation sequence, regardless of which library it was copied from.

Edit a Host Data Set on the Workstation

The editor searches the ISPF libraries in the designated order to find the member and copy it into working storage. The data set name is converted to a workstation file name, and that name is appended to the workstation's current working directory. The host data set is transferred to the workstation, and the working file is then passed to the user's chosen edit program.

When you finish the edit session, the working file is transferred back to the host and stored in the first ISPF library in the concatenation sequence.

Note: There are file names that are reserved or restricted depending on the workstation operating system. An attempt to edit a file name that is reserved or restricted by your operating system might cause your

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workstation operating system or host system to hang. See your workstation operating system documentation to learn restricted or reserved file names.

Edit a Workstation File on the Host

The editor searches the workstation files to find the desired file and copy it into working storage. The workstation file name is converted to a host data set name, and, if greater than 44 characters, it is truncated to be 44. The workstation file is transferred to the host, where you can edit it.

When you finish the edit session, the working file is transferred back to the workstation and stored.

Note: There are file names that are reserved or restricted depending on the workstation operating system. An attempt to edit a file name that is reserved or restricted by your operating system might cause your workstation operating system or host system to hang. See your workstation operating system documentation to learn restricted or reserved file names.

Edit a Workstation File on the Workstation

This edit proceeds as it normally does on your workstation.

Note: There are file names that are reserved or restricted depending on the workstation operating system. An attempt to edit a file name that is reserved or restricted by your operating system might cause your workstation operating system or host system to hang. See your workstation operating system documentation to learn restricted or reserved file names.

Editing a Data Set

When you select the Edit option, the Edit Entry Panel shown in Figure 46 is displayed.

```
Session A - [24x80]
File  Edit  Transfer  Appearance  Communication  Assist  Window  Help
  Menu  RefList  RefMode  Utilities  LMF  Workstation  Help
                              Edit Entry Panel

 ISPF Library
    Project . . .  PDFTDEV
    Group . . . .  ROSEMARY . . . ________ . . . ________ . . . ________
    Type  . . . .  MSGGEN
    Member  . . .  ________      (Blank or pattern for member selection list)

 Other Partitioned, Sequential or VSAM Data Set:
    Data Set Name . . .  ____________________________________________
    Volume serial . . .  ______   (If not cataloged)

 Workstation File:
    File Name . . . . .  ____________________________________________________
                                          Options
 Initial Macro  . . . .  ________         /  Confirm Cancel/Move/Replace
 Profile Name . . . . .  ________         _  Mixed Mode
 Format Name  . . . . .  ________         _  Edit on Workstation
 Data Set Password  . .                   _  Preserve VB record length

Command ===> ____________________________________________________________
 F1=HELP     F2=SPLIT    F3=END    F4=RETURN    F5=RFIND    F6=RCHANGE
 F7=UP       F8=DOWN     F9=SWAP  F10=LEFT     F11=RIGHT   F12=RETRIEVE
                                                                  07/028
```

Figure 46. Edit Entry Panel (ISREDM01)

Edit Entry Panel Action Bar

The Edit Entry Panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList
See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

RefMode
See the **Personal List Modes** section of the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral list modes.

Utilities
See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

LMF If LMF is installed on your system, you can edit-lock a member of a controlled library that is part of a concatenation sequence, but only if the member does not exist in your private library. Specify one of the following values for **LMF**:

1 **Lock - Never**. Tells ISPF not to edit-lock the member and to retain this value for future Edit sessions.

2 **Lock - No**. Tells ISPF not to edit-lock the member, but to change this value to YES for the next Edit session.

3 **Lock - Yes**. Tells ISPF to edit-lock the member. The member is locked under your user ID.

Edit-locking is important for two reasons:

- Keeping other users from accessing that member while you are editing it.
- Promoting the member back to the controlled library when you have finished editing it. If you do not edit-lock the member, you cannot promote it.

If you save any changes you made while editing the member, it remains locked in your private library. The version of the member stored in the controlled library remains unchanged until you promote the one in your private library. If you leave Edit without saving the changes, they are lost.

Conditions When LMF Locking Is Ignored

ISPF ignores the 3 (Yes) value in the **LMF Lock** field if:

- The LMF control file (ISRCFIL) is not allocated, which means the **LMF Lock** field has no meaning to ISPF.
- A member in your private library has the same name as the controlled library member that you want to edit-lock. Here, you can either rename, move, or delete the private library member.
- The member is controlled by SCLM only.

Conditions When LMF Locking Causes Errors

The following conditions can cause an error if you specify 3 (Yes) in the **LMF Lock** field:

- The libraries are not concatenated in the proper sequence.
- The library controls are not active.
- The member you want to edit-lock is locked with another user's user ID.
- The member is controlled by both LMF and SCLM.

Even if an error condition keeps you from locking a member, you can still edit it. Just remember that you cannot promote it back to the controlled library afterwards. ISPF displays a panel that gives you a choice between pressing Enter to edit the member or entering the END command if you decide not to edit.

For complete information about the Edit option, refer to *ISPF Edit and Edit Macros* For information about using the SCLM Edit option to lock data sets or members, refer to the *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

Workstation
Configure ISPF workstation tool integration.

Help The Help pull-down offers you the following choices:

1 General
2 Type of Data Sets
3 Edit entry panel
4 Member selection list
5 Display screen format
6 Scrolling data
7 Sequence numbering
8 Display modes
9 Tabbing
10 Automatic recovery
11 Edit profiles
12 Edit line commands
13 Edit primary commands
14 Labels and line ranges
15 Ending an edit session
16 Appendices
17 Index

Edit Entry Panel Fields

You can specify a concatenated sequence of up to four ISPF libraries, but the libraries must have been previously allocated to ISPF with the Data Set utility (3.2).

The fields on this panel are:

Project The common identifier for all ISPF libraries belonging to the same programming project.

Group The identifier for the particular set of ISPF libraries; that is, the level of the libraries within the library hierarchy.

You can specify a concatenated sequence of up to four existing ISPF libraries.

The editor searches the ISPF libraries in the designated order to find the member and copies it into working storage. If the editor does not find the member in the library, it creates a new member with the specified name.

When you save the edited member, the editor places or replaces it in the first ISPF library in the concatenation sequence, regardless of which library it was copied from.

Type The identifier for the type of information in the ISPF library.

Member The name of an ISPF library or other partitioned data set member. Leaving this field blank or entering a pattern causes PDF to display a member list. Refer to *ISPF User's Guide* if you need information about entering a pattern.

Data Set Name

Any fully-qualified data set name, such as 'USERID.SYS1.MACLIB', or VSAM data set name. If you include your TSO user prefix (defaults to user ID), you must enclose the data set name in apostrophes. However, if you omit the TSO user prefix and apostrophes, your TSO user prefix is automatically added to the beginning of the data set name.

If you specify a VSAM data set name, ISPF checks the Configuration table to see if VSAM support is enabled. If so, the specified tool is invoked. If VSAM support is not enabled, an error message is displayed.

Volume Serial A real DASD volume or a virtual volume residing on an IBM 3850 Mass Storage System. To access 3850 virtual volumes, you must also have MOUNT authority, which is acquired through the TSO ACCOUNT command.

Workstation File:

If you have made a connection to the workstation, you can specify a workstation file name, for example **C: \AUTOEXEC.BAT**, in this field.

Initial Macro You can specify a macro to be processed before you begin editing your sequential data set or any member of a partitioned data set. This initial macro allows you to set up a particular editing environment for the Edit session you are beginning. This initial macro overrides any IMACRO value in your profile.

If you leave the **Initial Macro** field blank and your edit profile includes an initial macro specification, the initial macro from your edit profile is processed.

If you want to suppress an initial macro in your edit profile, type `NONE` in the **Initial Macro** field. See 'Initial Macros' and 'IMACRO–Specify an Initial Macro' in the *z/OS V1R1.0 ISPF Edit and Edit Macros, SC34-4820* manual for more details.

Profile Name The name of an edit profile, which you can use to override the default edit profile. See the description in 'What is an Edit Profile' in the *z/OS V1R1.0 ISPF Edit and Edit Macros, SC34-4820* manual.

Format Name The name of a format definition or blank if no format is to be used.

Data Set Password
The password for OS password-protected data sets. This is not your RACF* password.

Confirm Cancel/Move/Replace
When you select this field with a "/", a confirmation panel displays when you request one of these actions, and the execution of that action would result in data changes being lost or existing data being overwritten.

- For MOVE, the confirm panel is displayed if the data to be moved exists. Otherwise, an error message is displayed.
- For REPLACE, the confirm panel is displayed if the data to be replaced exists. Otherwise, the REPLACE command functions like the edit CREATE command, and no confirmation panel is displayed.
- For CANCEL, the confirmation panel is displayed if any data changes have been made, whether through primary commands, line commands, or typing.

  Note: Any commands or data changes pending at the time the CANCEL command is issued are ignored. Data changes are "pending" if changes have been made to the displayed edit data, but no interaction with the host (ENTER, PF key, or command other than CANCEL) has occurred. If no other changes have been made during the edit session up to that point, the confirmation panel is not displayed.

Preserve VB record length
When you select this field with a "/", it specifies that the editor store the original length of each record in variable length data sets and when a record is saved, the original record length is used as the minimum length for the record. The minimum length can be changed using the SAVE_LENGTH edit macro command. The editor always includes a blank at the end of a line if the lenght of the record is zero or eight.

Mixed Mode When you select this field with a "/", it specifies that the editor look for shift-out and shift-in delimiters surrounding DBCS data. If you do not select it, the editor does not look for mixed data.

Edit on Workstation
You can select this option to use your workstation as the editing environment for whichever host data set or workstation file you want to edit.

Note: Double-Byte Character Set Support

The ISPF editor supports DBCS alphabets in two ways:

- Formatted data where DBCS characters are in the column positions specified in the format definition created with the Format Utility (option 3.11)
- Mixed characters delimited with the special shift-out and shift-in characters.

  If you are using mixed mode and the record length of a data set is greater than 72 bytes, there is a possibility that a DBCS character might encroach on the display boundary. Here, PDF attempts to display the other

characters by replacing an unpaired DBCS character byte with an SO or SI character. If there is a possibility that the replaced SO or SI character was erased, the line number of the line is highlighted. If you change the position of the SO and SI characters on the panel, or if you delete the SO and SI characters entirely, the DBCS character on the boundary is removed to keep the rest of the data intact.

Edit (Option 2)

Chapter 4. Utilities (Option 3)

The Utilities option (3) provides a variety of functions for library, data set, and catalog maintenance, each of which is described in a section of this chapter. The Utility Selection Panel is shown in Figure 47.

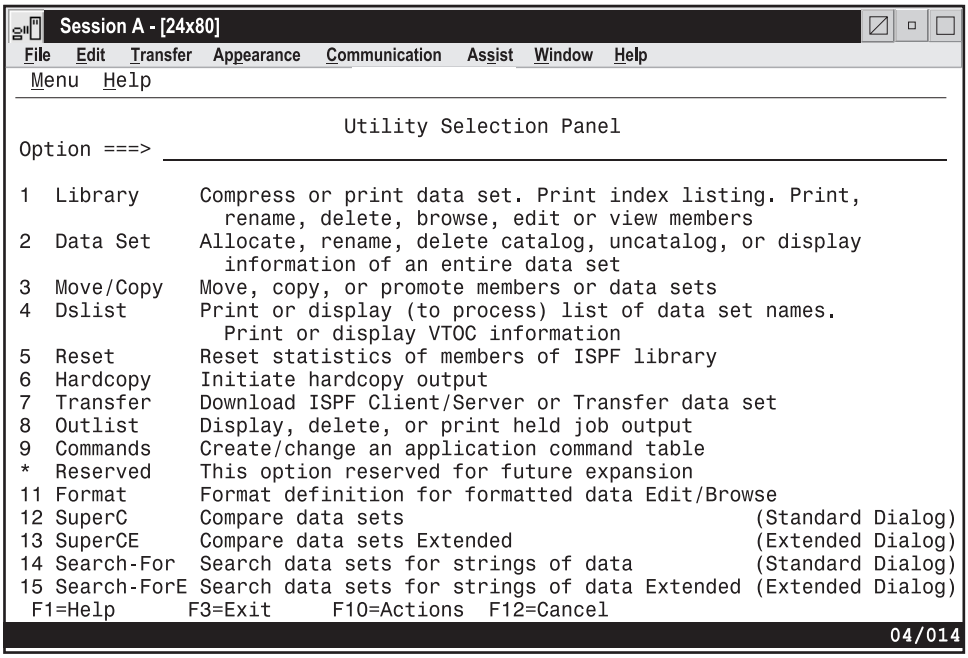

Figure 47. Utility Selection Panel

Utility Selection Panel Action Bar

The Utility Selection Panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Help The Help pull-down offers you the following choices:

1 Library
2 Data Set
3 Move/Copy
4 Data Set List
5 Reset Statistics
6 Hardcopy
7 Transfer
8 Outlist
9 Commands
10 Format
11 SuperC
12 SuperCE
13 Search-For
14 Search-ForE
15 Appendices
16 Index

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Note: The reference to promoting members or data sets shown in option 3 (Move/Copy) on this preceding panel applies to LMF. For information about promoting members with SCLM, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

Library Utility (Option 3.1)

When you select this option, a panel is displayed (Figure 48) that allows you to specify a data set and an action to be performed. The Library utility is intended primarily for maintenance of partitioned data sets. However, the print index listing (X), print entire data set (L), data set information (I), and short data set information (S) functions also apply to sequential data sets.

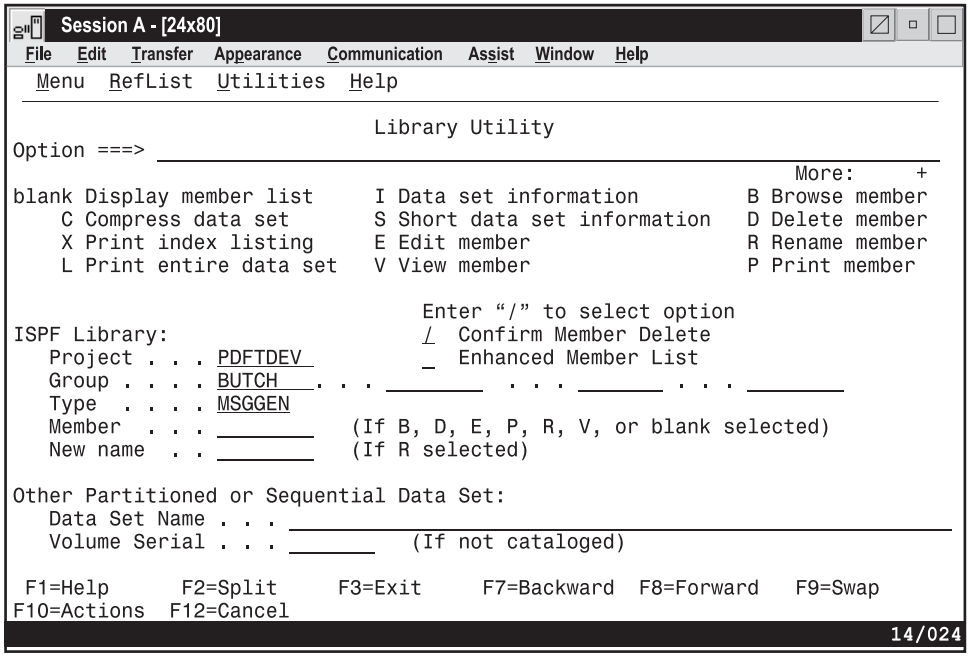


Figure 48. Library Utility Panel (ISRUDA1)

Library Utility Panel Action Bar

The Library Utility panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList

See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

Utilities

See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 Compressing a partitioned Data Set
2 Printing an Index listing
3 Printing an entire Data Set
4 Printing a member of a partitioned Data Set

5 Renaming a member of a partitioned Data Set
6 Deleting a member of a partitioned Data Set
7 Browsing a member of a partitioned Data Set
8 Editing a member of a partitioned Data Set
9 Viewing a member of a partitioned Data Set
10 Displaying a member list
11 Displaying Data Set Information
12 Appendices
13 Index

Library Utility Panel Fields

All the fields on the Library Utility panel, with the exception of the **New name** field, are discussed in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*. The **New name** field is required when option R (rename member) is chosen; the field must contain the new member name. See "R — Rename Member" on page 95 for more information about this option.

Library Utility Options for Data Sets

The following sections describe the options shown on the left side of the Library Utility panel shown in Figure 47 on page 83. These options are used to work with data sets.

Blank — (Display Member List)

If you leave the **Option** field blank, you must specify a partitioned data set. ISPF displays a member list when you press Enter. See the **Using Member Selection Lists** and **Library and Data Set List Utility Line Commands** sections of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.

Notes:

1. The column headers on a member list display (with the exception of Rename) are point-and-shoot sort fields.
2. If you enter a slash in the one-character or nine-character command field, the Member List Commands pop-up window shown in Figure 49 on page 86 is displayed so that you can select the command you want to use.
3. The one-character or nine-character line command field is a point-and-shoot field. If you select the line command field beside a member name, the Member List Commands pop-up window shown in Figure 49 on page 86 is displayed so that you can select the command you want to use. In addition, you can enter commands (TSO, etc.) directly in the nine-character field.
4. You can *chain* the P, R, D, V, E, and B commands; that is, you can select multiple members from a member list for various processing tasks. Use the CANCEL command (from a View, Browse, or Edit session) to break the chain and return to the member list.

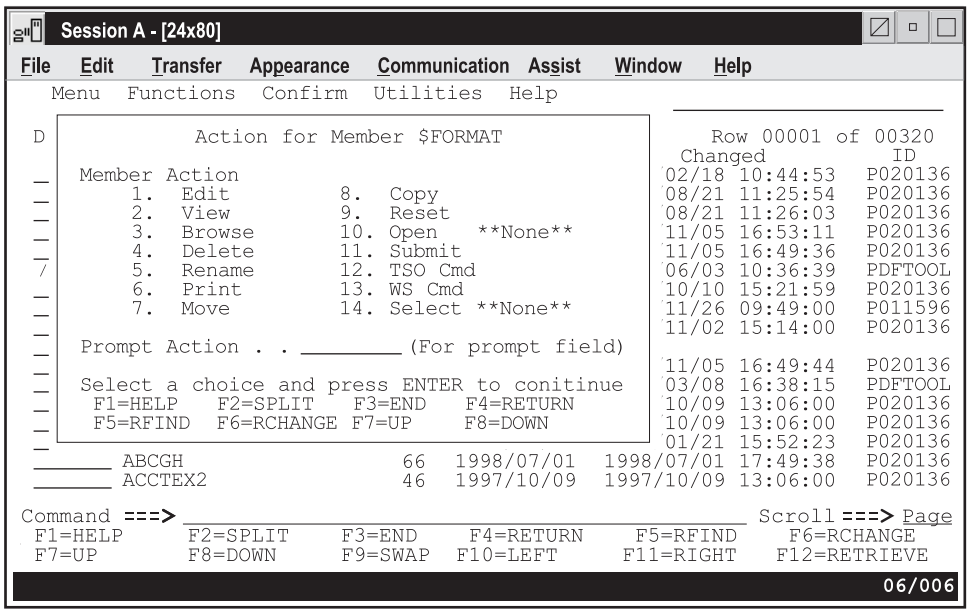


Figure 49. Member List Commands Pop-Up Window (ISRCMLEP)

C — Compress Data Set

If you select option C, you can specify any partitioned data set. The compress function is not valid for a PDSE. The compress is accomplished by calling either of the following:

- The IEBCOPY utility
- An optional compress request exit routine, which can be specified by your installation.

Using this option can change an existing data set allocation to *exclusive*.

ISPF allocates the IEBCOPY SYSUT3 and SYSUT4 data sets as one (1) primary cylinder, one (1) secondary cylinder. If this is not sufficient for your compress request, these DDNAMES can be preallocated.

X — Print Index Listing

If you select option X, you must specify either a DASD-resident sequential or partitioned data set. The index listing is recorded in the ISPF list data set. For a partitioned data set, the index listing includes general information about the data set followed by a member list. For a sequential data set, the index listing includes general information only. See *ISPF Dialog Developer's Guide and Reference* for examples of the index listing format for source libraries and load libraries.

Notes:

1. A volume serial is not allowed for multivolume data sets using option X.
2. If ISPF was entered in TEST mode, the listing also includes TTR data for each member of the data set. This data is the track and record address, where the members reside on the volume.

L — Print Entire Data Set

If you select option L, you must specify either a DASD-resident sequential or partitioned data set. The allowable data set characteristics are the same as for Browse, except that data sets with a logical record length greater than 300 characters are not printed. Also, the data should not contain any printer control characters. Use the Hardcopy utility (option 3.6) to print data sets that contain

printer control characters. A source listing of the complete data set (including all members of a partitioned data set), preceded by an index listing, is recorded in the ISPF list data set.

Notes:

1. A volume serial is not allowed for multivolume data sets using option L.
2. The page-numbering format of the ISPF list data set is `PAGE: XX of YY`. The `YY` value is calculated using the data set member's current size statistic. When the member's current size is larger than the actual member size, the result is `PAGE: XX of YY`, where `YY` is a page number greater than the last value of `XX`. When the size statistic is smaller than the actual member size, the result is `PAGE: XX of YY`, until the actual size number `XX` exceeds `YY`. Then the result is `PAGE: XX`, until the end of the member is processed.

I — Data Set Information

If you select option I, the location, characteristics, and current space utilization of the specified data set are displayed. The format ISPF uses to display data set information when Data Facility Product (DFP) Version 3 Release 2 is not installed or available, or when the Storage Management Subsystem is not active, is shown in "U — Uncatalog Data Set" on page 107. See "Information for Managed Data Sets" on page 89 to see how ISPF displays data set information when these products are installed, available, and active.

For sequential data sets, options I and S display the same information. For multivolume data sets, options I and S display current allocation and utilization values that represent totals from all volumes used. You may not enter a volume serial when you are requesting information on a multivolume data set.

The space for data sets allocated in blocks is calculated as if all of the tracks, including the last one, contain only full blocks of data. Any partial "short" blocks are ignored.

Note: The information shown for the current space utilization is the actual data that the data set contains, based on the number of allocation units (blocks, tracks, bytes, megabytes, and so on) that have been written. For a data set allocated in units other than tracks and cylinders, it does not include the unused portion of a track that is only partially filled. For example, if a data set allocated in bytes with blocksize of 600 has one block written to a device with a track size of 1000, 600 bytes of data are written and the remaining 400 bytes cannot be used by a different data set. A track is the smallest possible unit of physical allocation to a data set on DASD. ISPF reports 600 bytes used while other products (such as ISMF) report 1000 bytes used. ISPF reports the space occupied by data in the data set. ISMF reports the space used by this data set that is not available for use by another data set. The difference is a relative indication of the effectiveness of the block size used when the data set was created.

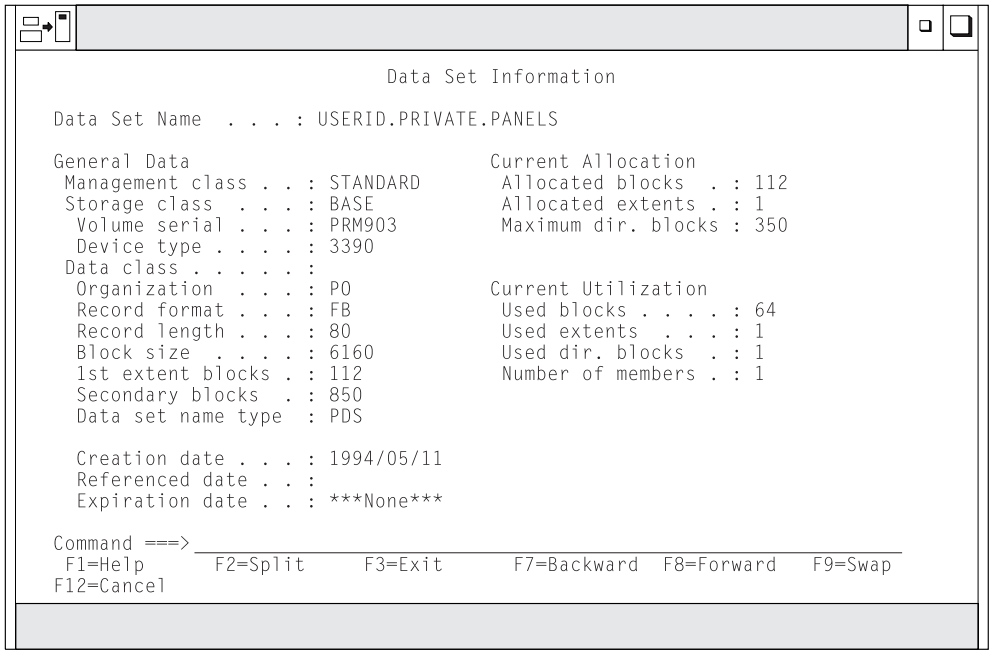


Figure 50. Data Set Information (ISRUAIP)

If the volume serial is followed by a plus (for example, HSM016+), the data set spans multiple volumes. Press Enter to display a list of all allocated volumes that have been used, as shown in Figure 51.

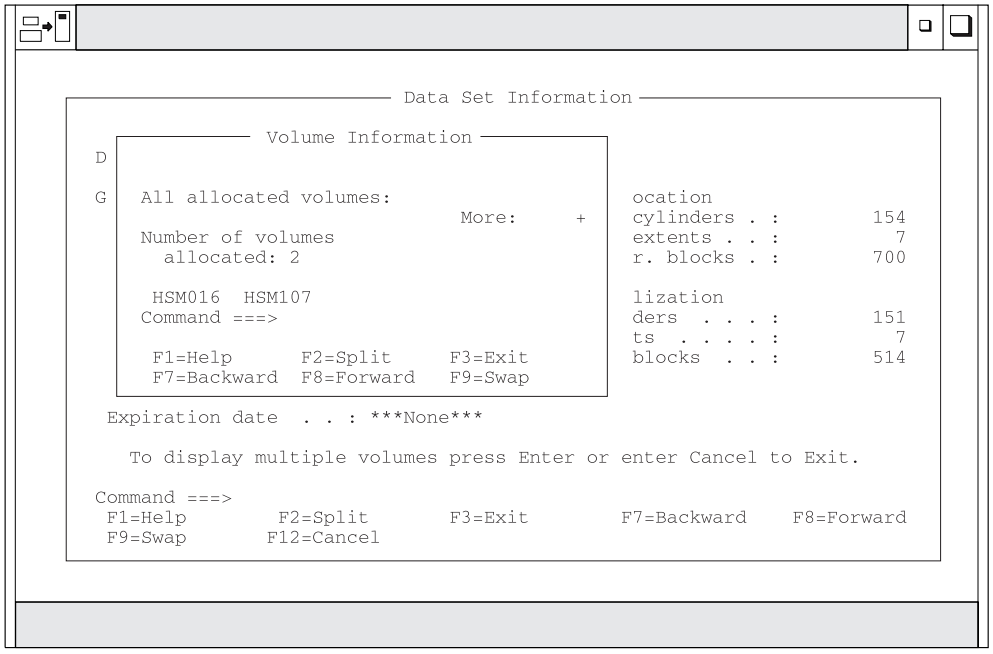


Figure 51. Volume Information for a Multivolume Data Set (ISRUAMVI)

The **Allocated units** and **Used units** fields can vary, depending on the value that was specified in the **Space units** field when you allocated the data set. For example, the preceding panel shows what the Data Set Information panel would look like if the data set was allocated by specifying Cylinders in the **Space units** field.

Information for Managed Data Sets: The Library Utility option I (Figure 52) displays information for data sets that reside on Storage Management Subsystem Volumes (also called managed data sets) when:

- Data Facility Product (DFP) Version 3 Release 2 or later is installed and available.
- Storage Management Subsystem is active.
- Directory block information is available.

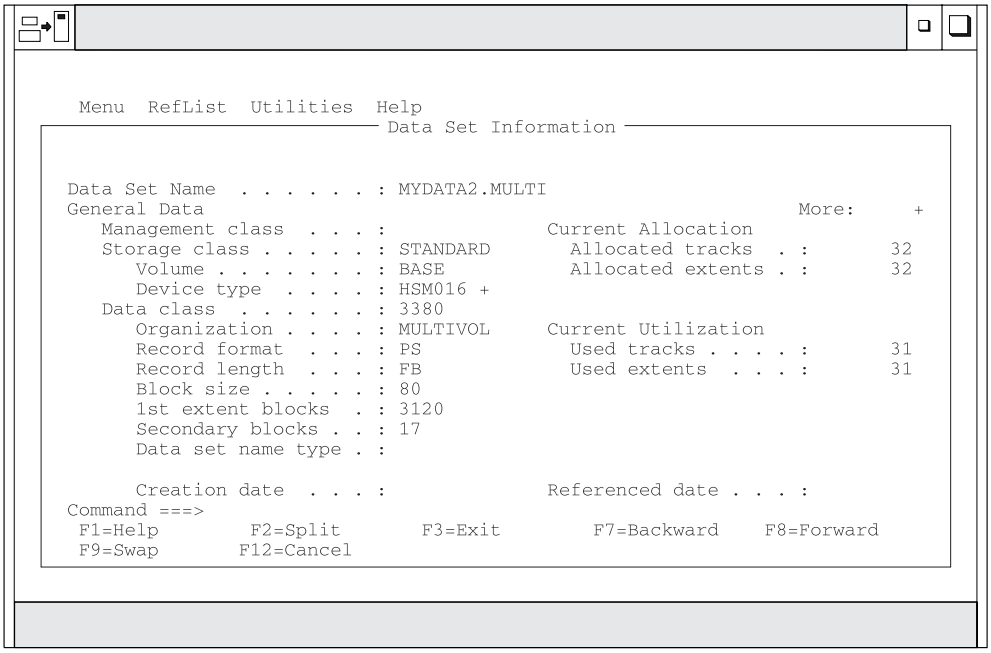


Figure 52. Data Set Information for Managed Data Sets (ISRUAISE)

If the volume serial is followed by a plus (for example, HSM016+), the data set spans multiple volumes.

Note: SMS-managed multivolume data sets will not display a plus unless data has been written past the first volume.

Press Enter to display a list of all allocated volumes as shown in Figure 53 on page 90.

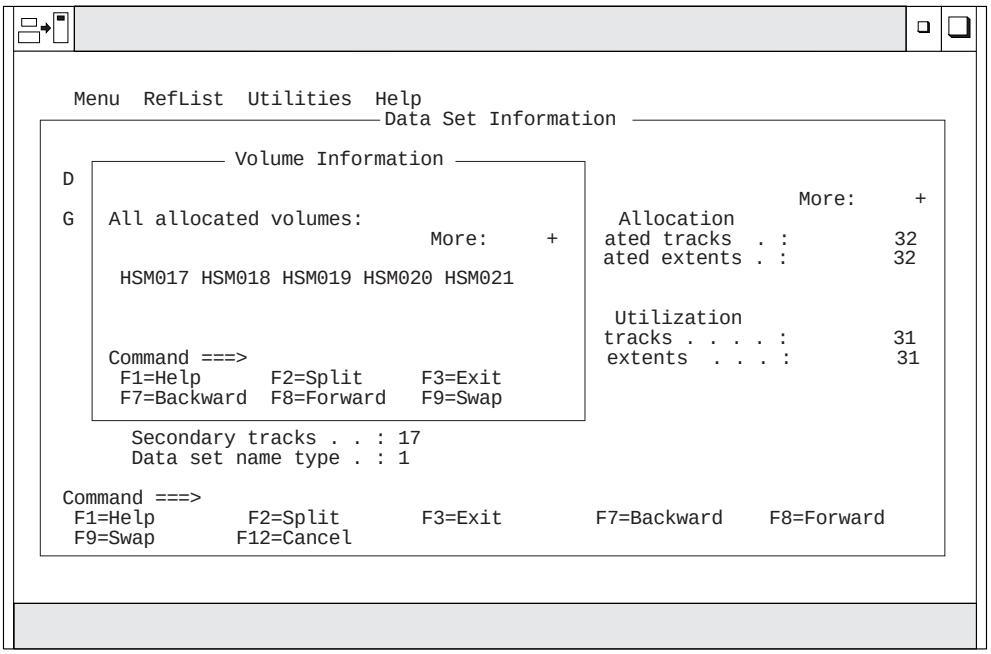


Figure 53. Volume Information for a Managed Multivolume Data Set (ISRUAMVI)

The major difference between this information and the information that is displayed for data sets on non-managed volumes is the addition of the following classes:
- Management class
- Storage class
- Data class.

If directory block information is not available, the Data Set Information panel shows a value of `0 *` for the **Maximum dir. blocks**, **Used dir. blocks**, and **Number of members** fields. The asterisk beside the zero refers you to a note on the panel, which states that the directory is unavailable.

If the data set is a PDSE, the **Data set name type** field is `LIBRARY` and the **Maximum dir. blocks** field is `NOLIMIT`. Because the used blocks, used extents, and used directory blocks are not applicable to a PDSE, the Data Set Information panel replaces these values with **Used pages** and **% utilized** (Figure 54 on page 91). Other values that can appear in the **Data set name type** field are:
- HFS - MVS Hierarchical File System data set
- EXTENDED - DFP Striped data set.

Note: When a PDSE data set is created, it sets aside five pages. This may cause a significant *% utilized* for a small data set.

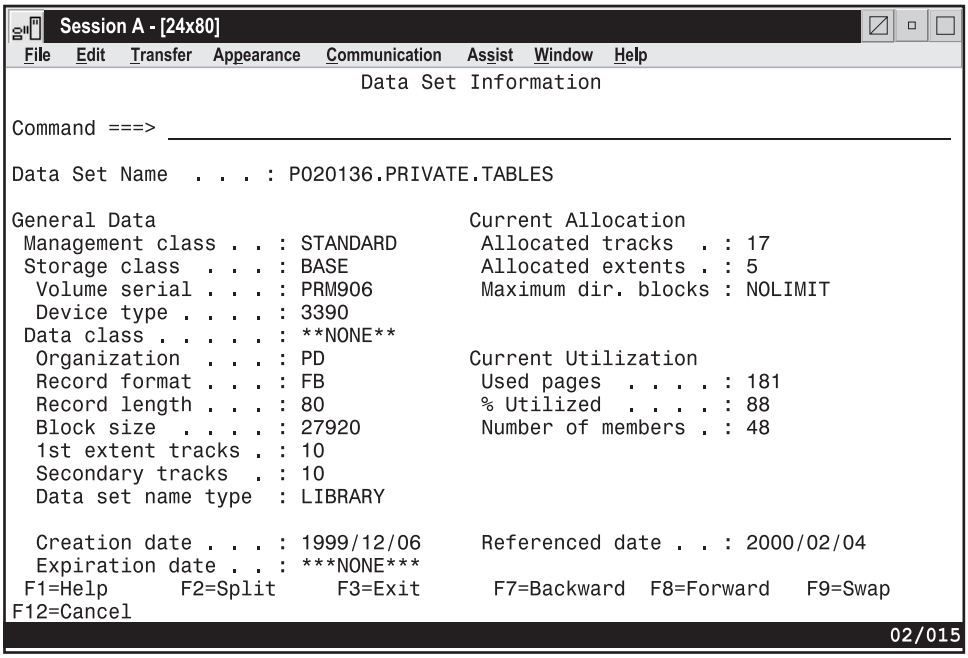


Figure 54. Data Set Information for PDSE Managed Data Sets (ISRUAISE)

S — Short Data Set Information

If you select option S, information about the selected data set appears. The information displayed by option S is the same information displayed by option S of the Data Set utility (option 3.2), but it differs from option I in two respects. Information for partitioned data sets, when displayed by option S, lacks the number of maximum and used directory blocks, and the number of members. For sequential data sets, options I and S display the same information. You may not enter a volume serial when you are requesting information on multivolume data sets.

The space for data sets allocated in blocks is calculated as if all of the tracks, including the last one, contain only full blocks of data. Any partial “short” blocks are ignored.

Note: The information shown for the current space utilization is the actual data that the data set contains, based on the number of allocation units (blocks, tracks, bytes, megabytes, and so on) that have been written. For a data set allocated in units other than tracks and cylinders, it does not include the unused portion of a track that is only partially filled. For example, if a data set allocated in bytes with blocksize of 600 has one block written to a device with a track size of 1000, 600 bytes of data are written and the remaining 400 bytes cannot be used by a different data set. A track is the smallest possible unit of physical allocation to a data set on DASD. ISPF reports 600 bytes used while other products (such as ISMF) report 1000 bytes used. ISPF reports the space occupied by data in the data set. ISMF reports the space used by this data set that is not available for use by another data set. The difference is a relative indication of the effectiveness of the block size used when the data set was created.

Figure 55 shows a short format example of data set information for a partitioned data set. This is the short format ISPF uses to display data set information when Data Facility Product (DFP) Version 3 Release 2 or later is not installed or available, or when the Storage Management Subsystem is not active. See “Short Information for Managed Data Sets” to see how ISPF displays data set information when these products are installed, available, and active.

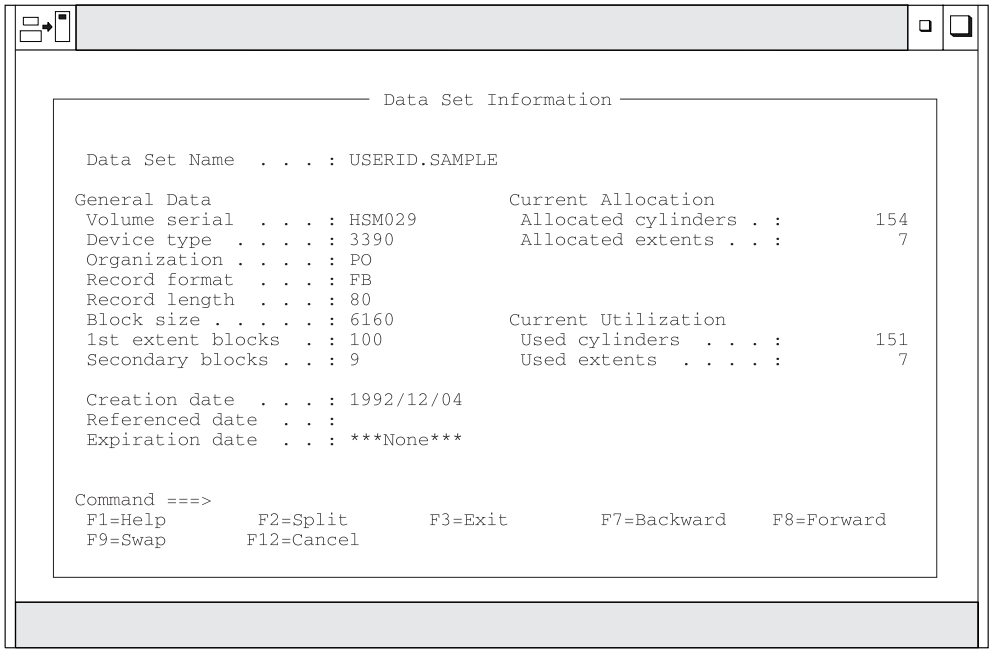


Figure 55. Short Data Set Information (ISRUAIP)

The **Allocated units** and **Used units** fields can vary, depending on the value that was specified in the **Space units** field when you allocated the data set. For example, Figure 55 shows what the short format of the Data Set Information panel would look like if the data set was allocated by specifying CYLS in the **Space units** field.

Short Information for Managed Data Sets: The Library Utility option S displays information (Figure 56 on page 93) for data sets that reside on Storage Management Subsystem volumes (also called managed data sets) when:

- Data Facility Product (DFP) Version 3 Release 2 or above is installed and available
- Storage Management Subsystem is active.

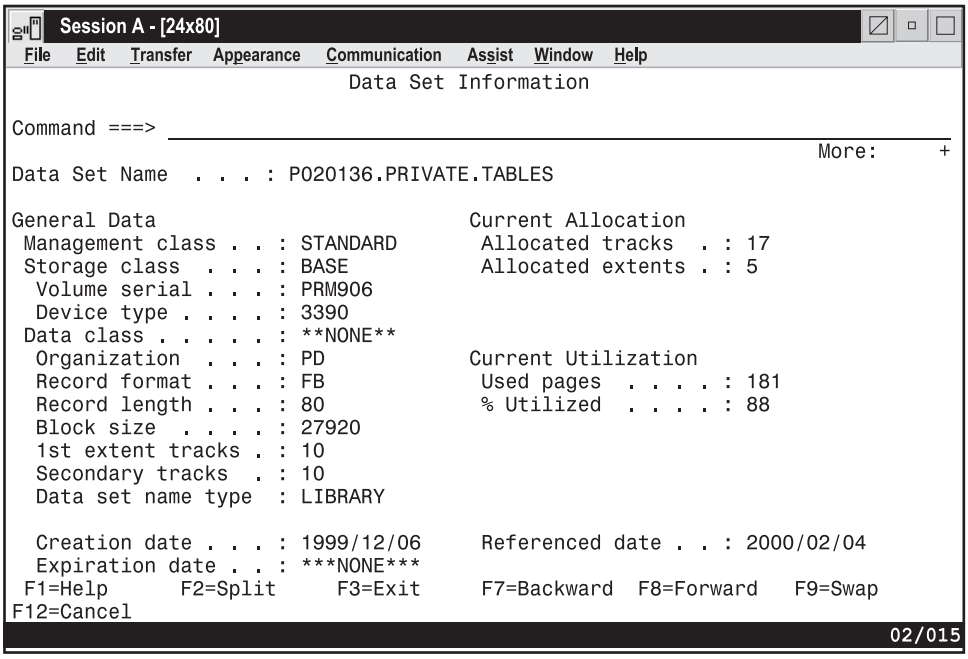


Figure 56. Data Set Information (Short) for Managed Data Sets (ISRUAISE)

The major difference between this information and the information that is displayed for data sets on non-managed volumes is the addition of the following classes:

- Management class
- Storage class
- Data class.

If the data set is a PDSE, the **Data set name type** field is `LIBRARY`. Because the used blocks and used extents are not applicable to a PDSE, the Data Set Information panel replaces these values with **Used pages** and **% Utilized** (Figure 57 on page 94). Other values that can appear in the **Data set name type** field are:

- HFS - MVS Hierarchical File System data set
- EXTENDED - DFP Striped data set. When the Data Set Name Type is EXTENDED, the **SMS Compressible** field indicates if the data set is compressible or not (YES or NO).

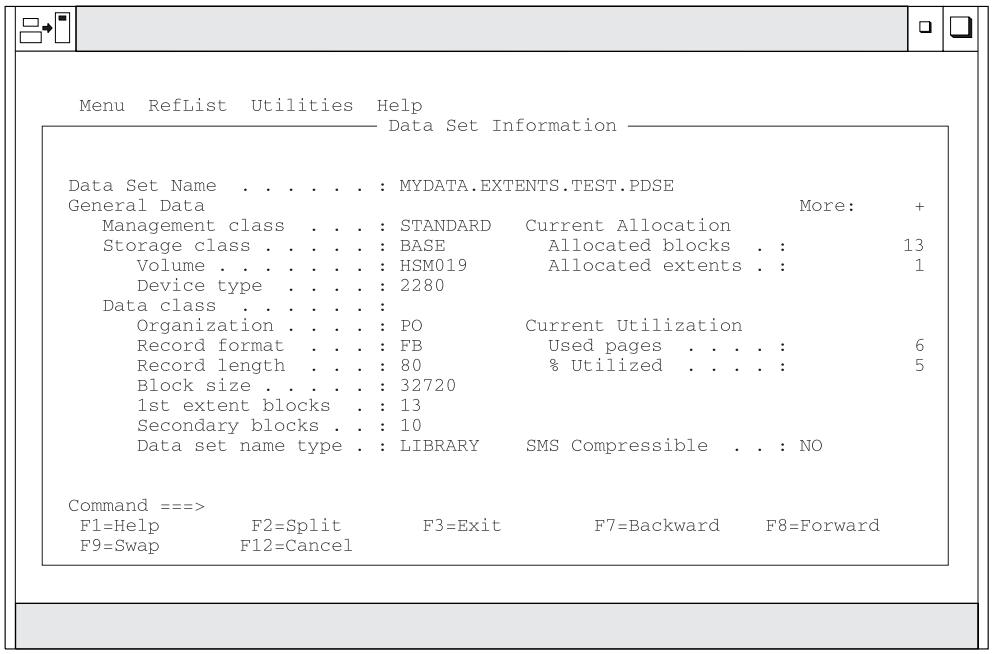


Figure 57. Data Set Information (Short) for a PDSE (ISRUAISE)

Library Utility Options for Members

The following sections describe the options shown on the right side of the Library Utility panel shown in Figure 47 on page 83. These options are used to work with members.

Notes:

1. You can *chain* these commands; that is, you can select multiple members from a member list for various processing tasks. Use the CANCEL command (from a View, Browse, or Edit session) to break the chain and return to the member list.
2. With an enhanced member list, you can enter other commands. See "M — Display Member List" on page 148.

B — Browse Member

If you select option B, you must specify a partitioned data set and a member name. The specified member is displayed in Browse mode. You can use all the Browse commands. When you exit Browse, the Library Utility panel reappears.

C — Copy Member

If you select option C, the copy prompt panel appears where you must specify a partitioned data set and member name for the new member. When you exit Copy, the Library Utility panel reappears.

D — Delete Member

If you select option D, you must specify a partitioned data set and member name. Option D prevents you from deleting a PDS member that any user is currently editing.

If you have selected **Confirm Member Delete** on the Library Utility panel (ISRUDA1), then you are asked to confirm your intention to delete this member.

E — Edit Member
If you select option E, you must specify a partitioned data set and member name. The specified member is displayed in Edit mode. You can use all EDIT commands. When you exit Edit, the Library Utility panel reappears.

G — Reset Member
If you select option G, the reset prompt panel displays, where you enter the data set and member name. When you exit, the Library Utility panel reappears.

M — Move Member
If you select option M, the move prompt panel displays, where you enter the data set and member name. When you exit, the Library Utility panel reappears.

P — Print Member
If you select option P, you must specify a partitioned data set and a member name. A source listing of the member is recorded in the ISPF list data set.

Note: If any members are to be printed, the data set characteristics must conform to those for the L option.

R — Rename Member
If you select option R, you must specify a partitioned data set and member name. You must also specify a new member name in the **New name** field. Option R prevents you from renaming a member currently being edited by you or another user.

T — TSO Command for Member
If you select option T, the TSO command prompt panel appears, where you can enter the TSO command to be run for the member.

V — View Member
If you select option V, you must specify a partitioned data set and member name. The specified member is displayed in View mode. You can use all EDIT commands. When you exit View, the Library Utility panel reappears. See the ***View (Option 1)*** chapter of the *ISPF User's Guide Volume I* for additional information.

W — WS Command for Member
If you select option W, the WS command prompt panel appears, where you can enter the WS command to be run for the member.

Data Set Utility (Option 3.2)

When you select this option, a panel is displayed (Figure 58 on page 96) that allows you to specify a data set and an action to be performed.

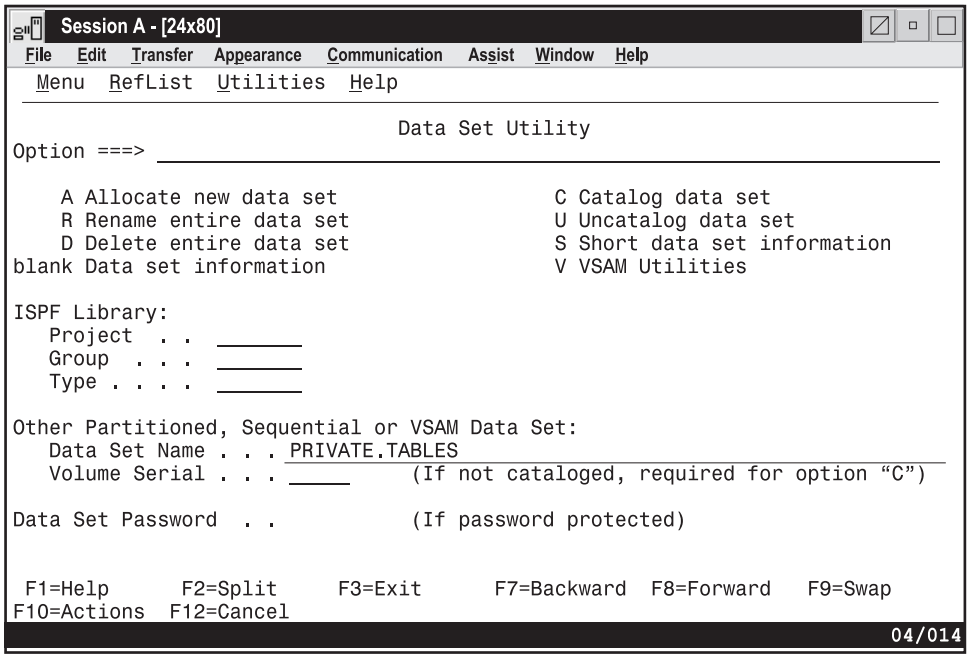


Figure 58. Data Set Utility Panel (ISRUDA2S)

Data Set Utility Panel Action Bar

The Data Set Utility panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList

See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

RefMode

See the **Personal List Modes** section of the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral list modes.

Utilities

See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 Allocating a new partitioned or sequential Data Set
2 Renaming an entire Data Set
3 Deleting an entire Data Set
4 Displaying Data Set information
5 Cataloging a Data Set
6 Uncataloging a Data Set
7 VSAM Utilities
8 Appendices
9 Index

Data Set Utility Panel Fields

All the fields on the Data Set Utility panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*. For option A you can specify any DASD-resident sequential or partitioned data set. For the other options, you can specify any DASD-resident data set that is not VSAM. You can get short information on a VSAM data set.

Data Set Utility Options

The following sections describe the options shown on the Data Set Utility panel.

A — Allocate New Data Set

Use option A to allocate a new data set with or without the Storage Management Subsystem classes (management class, storage class, and data class). A data set that is allocated on a volume that is managed by the Storage Management Subsystem(SMS) is called a ***managed*** data set. A data set that is allocated on a volume that is *not* managed by the SMS is called a ***non-managed*** data set.

To use option A you must do the following:

1. Enter one of the following:
   - An ISPF library name in the **Project**, **Group**, and **Type** fields
   - Another partitioned or sequential data set name in the **Data Set Name** field.

   See the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* if you need help entering the ISPF library name or the data set name.
2. If you entered an ISPF library name, the value in the **Volume Serial** field is ignored. However, if you entered another data set name, you can specify the volume on which to allocate the data set in the **Volume Serial** field. You should not enter a volume serial if you want to do one of the following:
   - Use the authorized default volume.
   - Enter a generic unit address in the **Generic unit** field on the Allocate New Data Set panel.

   See the **Volume Serials** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about volume serials.
3. If your ISPF libraries and data sets are password-protected, enter the password in the **Data Set Password** field. See the **Data Set Passwords** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about data set passwords.

   Note: You cannot assign a password to a managed data set. Therefore, the Data Set Password field is ignored when you allocate a managed data set.
4. Press Enter.

A panel appears to enable you to specify data set allocation values. The panel that appears depends upon the ALLOWED_ALLOCATION_UNITS keyword value in the ISPF configuration table. When ALLOWED_ALLOCATION_UNITS is not 'A' the panel shown in this figure appears (Figure 59 on page 98).

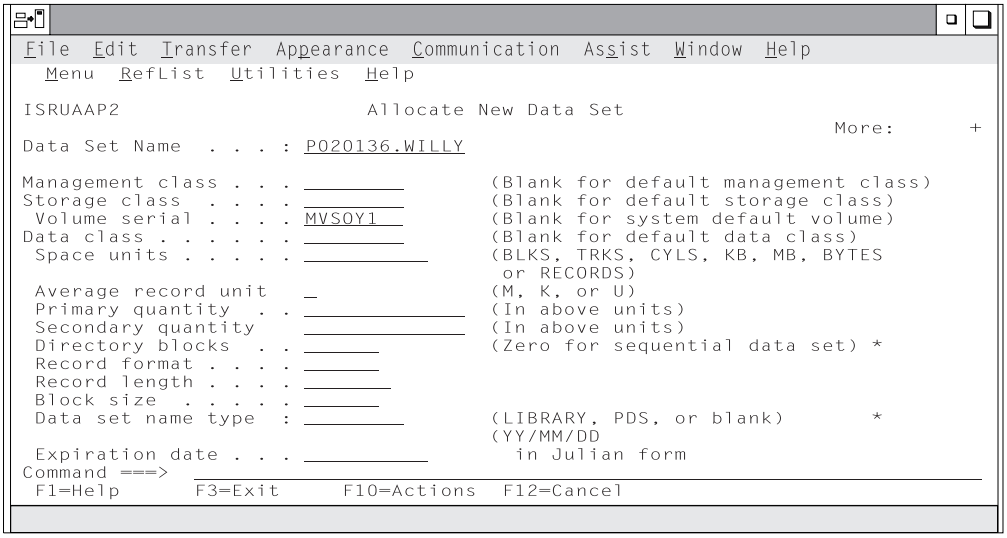


Figure 59. Allocate New Data Set Panel (ISRUAAP2)

Otherwise, this panel appears(Figure 60).

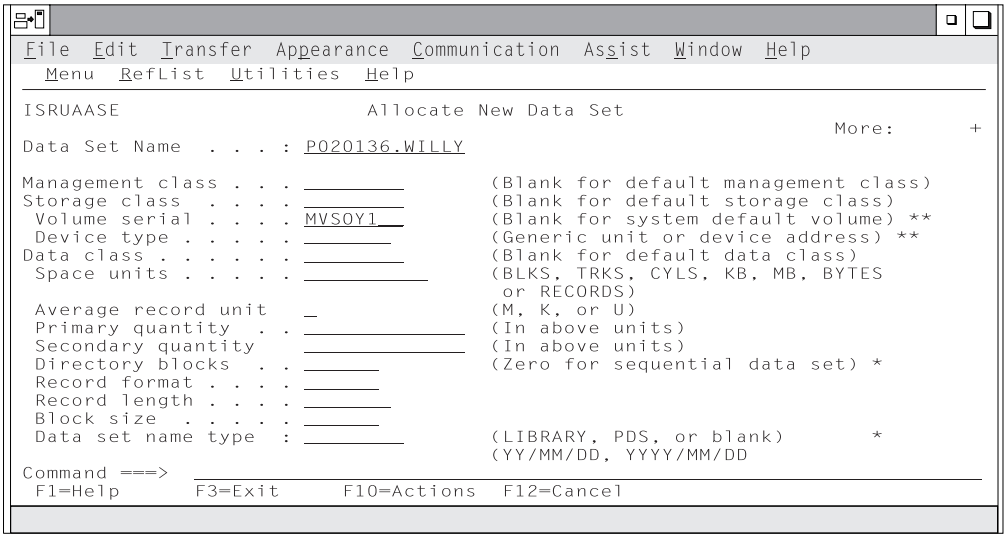


Figure 60. Allocate New Data Set —Managed Data Set Support Panel (ISRUAASE)

When you press Enter with this panel displayed, the new data set is allocated and cataloged. Entering the END command returns you to the previous panel without allocating the data set.

An optional installation exit, the data set allocation exit, can control all data set creation, deletion, allocation, and deactivation done directly by ISPF. This does not include allocations done by ISPF, the TSO ALLOCATE command, or other TSO commands. Refer to *ISPF Planning and Customizing* for more information about the data set allocation exit.

Your installation must use the Data Facility Product (DFP) or DFSMS to define the values that you enter in the **Management class**, **Storage class**, and **Data class** fields. If you have no specific requirements, you can leave these fields blank. However, you should be aware that your installation may provide default

management, storage, and data classes. These defaults would take effect if you leave any of the class fields blank and may even override any classes that you specify.

Management class
Used to obtain data management-related information (migration, backup, and retention criteria, such as expiration date) for the data set allocation.

If you have no specific management class requirements, you can leave this field blank. However, you should be aware that your installation may provide a default management class. This default may even override any management class that you specify.

Storage class
Used to obtain the storage-related information (volume serial) for the data set allocation. Any volume serial that you enter in the **Volume serial** field is ignored unless the storage class that you use includes the Guaranteed Space=Yes attribute (useful if you are allocating multivolume data sets).

Data class
Used to obtain the data-related information (space units, primary quantity, secondary quantity, directory block, record format, record length, and data set name type) for the allocation of the data set.

Default values are provided for the fields in Figure 59 on page 98, except for expiration date, based on which of the following occurred most recently:
- What you last entered on this panel
- The last display data set information request (options 3.1, 3.2, or 3.4).

You can type over the displayed defaults if you want to change them. The following is a list of the fields on this panel and their definitions:

Volume serial
This field is one that you probably will not need to use very often. It is not required and is usually ignored by the Storage Management Subsystem. You should not enter a volume serial if you want to do one of the following:

- Use the authorized default volume.
- Enter a generic unit address in the **Generic unit** field.
- Use the volume specified by the storage class you are using.

When a storage class is used, your installation and the SMS assume joint responsibility for determining the volume on which the data set is allocated. The SMS enables the installation to select the volumes that are eligible to contain the data set. It then chooses one of those volumes and allocates the data set. The SMS's volume choice is based on:
- storage requirements
- the amount of space a volume has available.

Note: ISPF does not support tape data sets.

Generic unit
The generic unit address for the direct access volume that is to contain the data set, such as 3380, 3390, and so forth. This field overrides the **Volume Serial** field on the Data Set Utility panel. Therefore, you should leave this field blank if you want to do one of the following:
- Use the authorized default volume
- Enter a volume serial in the **Volume serial** field.

Notes:

1. Leave both the **Volume serial** and **Generic unit** fields blank to allow ISPF to select an eligible volume. Eligibility is determined by the unit information in your user entry in the TSO User Attribute Data Set (UADS) or the TSO segment of RACF.
2. At some installations, you are limited to eligible volumes even when an explicit volume serial is specified. At other installations you can specify any mounted volume. This is an installation option.
3. To allocate a data set to a 3850 virtual volume, you must also have MOUNT authority, gained by using the TSO ACCOUNT command or by using the RACF PERMIT command for the TSO AUTH general resource class.
4. If you are allocating an SMS data set, you can enter either an installation defined group name or a generic device type in the Generic unit field, but not a specific device number.

Space units

Any of the following:

Track Shows that the amounts entered in the primary and secondary quantity fields are expressed in tracks.

Cylinder
Shows that the amounts entered in the primary and secondary quantity fields are expressed in cylinders.

Block Shows that the amounts entered in the primary and secondary quantity fields are expressed in blocks.

Megabyte
Shows that the amounts entered in the primary and secondary quantity fields are expressed in megabytes.

Kilobyte
Shows that the amounts entered in the primary and secondary quantity fields are expressed in kilobytes.

Byte Shows that the amounts entered in the primary and secondary quantity fields are expressed in bytes.

Records
Shows that the amounts entered in the primary and secondary quantity fields are the average number of records of the size specified by the block size field.

Note: **Space units** allows the shortest unique abbreviation for each attribute; for example, T for TRKS, C for CYLS, K for KB, and M for MB, BY for BYTE, R for RECORDS, and BL for BLKS.

Average record unit

Shows the unit used when allocating average record length. **U** specifies single-record units (bytes). **K** specifies thousand-record units (kilobytes). **M** specifies million-record units (megabytes). The default value is U.

Primary quantity

The primary allocation quantity in tracks, cylinders, blocks, megabytes, kilobytes, bytes, or records, as shown in the **Space units** field. This number can be zero for sequential data sets, but must be greater than zero for PDSs. Also, if the primary quantity is zero, the secondary quantity must be greater than zero.

Secondary quantity
The secondary allocation quantity in tracks, cylinders, blocks, megabytes, kilobytes, bytes, or records, as shown in the **Space units** field. This quantity is allocated when the primary quantity is insufficient.

Directory blocks
Enter one of the following:

- For partitioned data sets, you must specify the number of directory blocks. Each 256-byte block accommodates the following number of directory entries:
  - Data sets with ISPF statistics: 6
  - Data sets without ISPF statistics: 21
  - Load module data sets: 4–7, depending on attributes
- For sequential data sets, set this field to zero.

Record format
Any valid combination of the following codes:

F Fixed-length records.
V Variable-length records.
U Undefined format records.
B Blocked records.
A ASA printer control characters.
M Machine code printer control characters.
S Standard (for F) or spanned (for V); use only with sequential data sets.
T Track-overflow feature.

Notes:
1. You must enter either F, V, or U.
2. You can specify S and T, but ISPF does not otherwise support them.

Record length
The logical record length, in bytes, of the records to be stored in the data set.

Block size
The block size, also called *physical record length*, of the blocks to be stored in the data set. Use this field to specify how many bytes of data to put into each block, based on the record length. For example, if the record length is 80 and the block size is 3120, 39 records can be placed in each block.

Note: The record length and block size are verified to be consistent with the record format, as defined in *OS/VS2 MVS Data Management Services Guide* If you need to use non-standard characteristics, use the TSO ALLOCATE command.

Expiration date
Allows you to protect valuable data by specifying a date, in your national language, when the data set may be deleted. If you try to delete an unexpired data set, ISPF displays two panels: a Confirm Delete panel, followed by a Confirm Purge panel. See “D — Delete Entire Data Set” on page 108 for more information about deleting unexpired data sets.

An expiration date is not required, but if you enter one it should be in one of the following formats:

YY/MM/DD, YYYY/MM/DD
Date shown in year, month, and day, or your equivalent national format. The maximum expiration date allowed is:

- 99/12/31 for a 2-digit year
- 2155/12/31 for a 4-digit year.

YY.DDD, YYYY.DDD
Date shown in Julian format, such as 86.045 for February 14, 1986. The maximum expiration date allowed is:
- 99.365 for a 2-digit year
- 2155.365 for a 4-digit year.

You can specify a DDD value of up to 366 if the YY or YYYY value represents a leap year.

DDDD
The number of days, starting with the creation date, after which the data set can be deleted. DDDD has a range of 0 to 9999.

PERM, NOLIMIT, NEVER, 9999
Specifying any of the above values causes ISPF to translate it into a value of **1999.365**. This is treated by ISPF as permanent retention.

Note: When specifying an expiration date beyond 99/12/31, you must use the 4 character year format. For example, specify 2000/06/21 instead of 00/06/21.

Allocate Multiple Volumes
Allows you to allocate sequential data sets that span multiple volumes. ISPF supports a maximum of 59 volumes. Place a slash in this field and press enter to display a panel similar to the one shown in Figure 61.

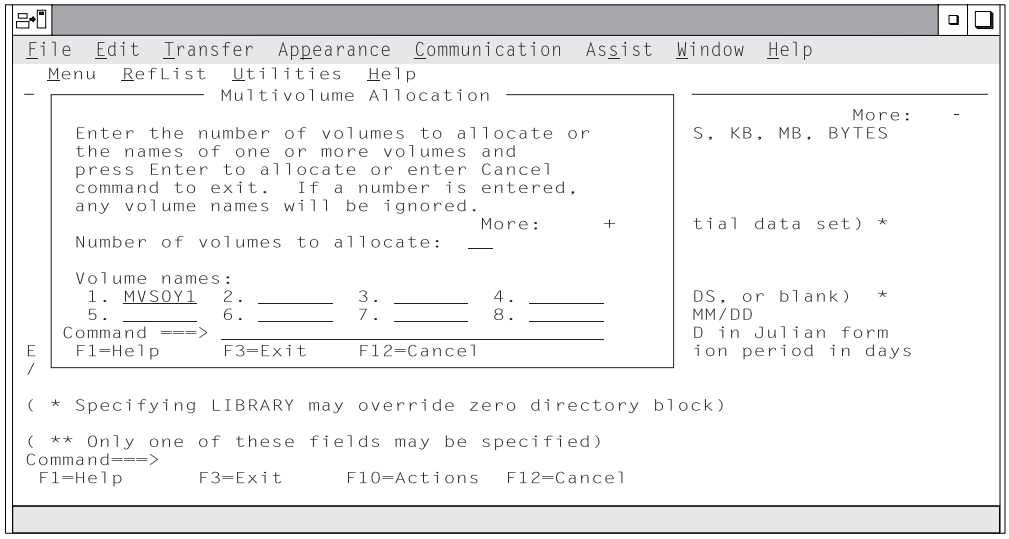


Figure 61. Multivolume Allocation Panel (ISRUAMV)

This panel allows you to specify up to 59 volumes. Note the following:

- Although the volume input fields are numbered consecutively, you may enter volume names in any of the fields.
- The volume that you enter in the **Volume serial** field on the Allocate New Data Set panel will be placed in the first field of the Multivolume Allocation panel.
- If you enter only one volume, standard data set allocation is invoked.

- If you enter a number in the **Number of volumes to allocate** field, any volume names left in the name fields are ignored, and might or might not be the volumes the data set is allocated to.
- When displaying information about a multivolume data set, depending on your system setup, all volumes might not be shown until they have been accessed.

Allocation Errors

ISPF attempts to recognize inconsistent attributes for partitioned and sequential data sets before allocating them. However, the Allocation Error panel (Figure 62) appears when conditions that ISPF has no control over allow the allocation of such a data set. These conditions are caused by:

- A data class that specifies inconsistent attributes
- Attributes entered on the Allocate New Data Set panel that create inconsistency by overriding other attributes specified by the data class.

The reference to data set promotion in Figure 62 and in the following text applies to LMF.

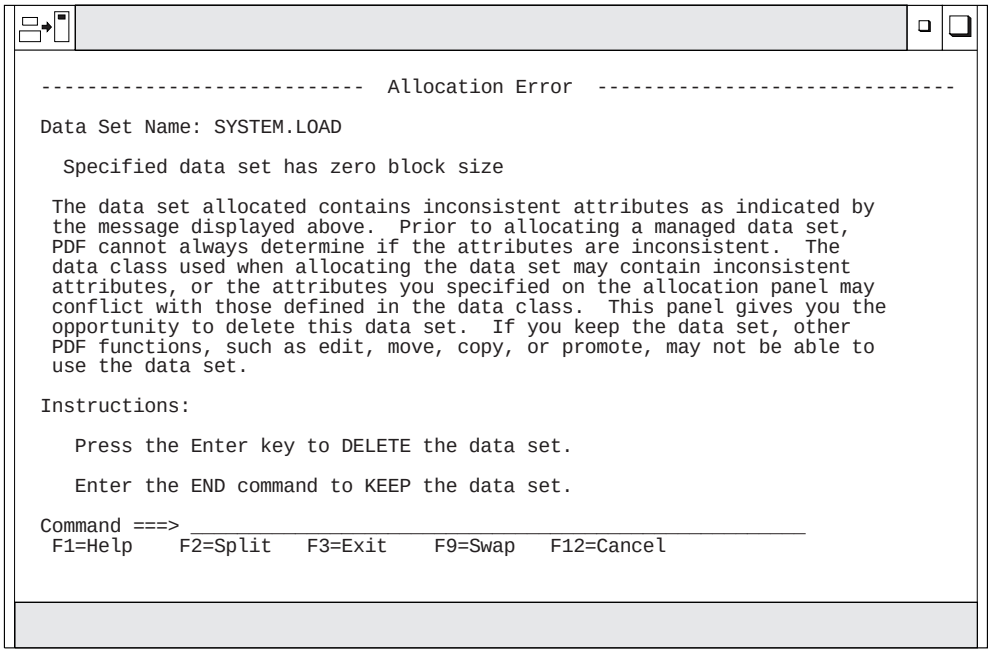


Figure 62. Allocation Error Panel (ISRUADCS)

For information about allocation errors and how they affect data set promotion when using SCLM, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

The term *inconsistent attributes* refers to incompatible values that have been specified for one or more of the following:

- Space units
- Primary quantity
- Secondary quantity
- Directory blocks
- Record format
- Record length
- Block size.

For example, if you allocate a data set with an undefined record format (RECFM=U) and a block size of zero (BLOCKSIZE=0), certain ISPF functions and services cannot use the data set. These functions and services include:

- Move, copy, promote, and LMF functions
- LMMOVE, LMCOPY, LMPROM, and LMINIT services.

However, when either the linkage editor or the IEBCOPY utility has been called, these functions and services determine the best block size for the data set. Then, when the data set has a block size greater than zero, the ISPF functions and services listed above can be used.

The Allocation Error panel gives you the opportunity to delete such a data set because other ISPF functions, such as View (option 1) and Edit (option 2), may not be able to use it.

The sample panel (Figure 62 on page 103) shows this error message example:

```
Specified data set has zero block size
```

Press Enter to delete the data set or enter the END command to keep the data set.

C — Catalog Data Set

If you select option C, the specified data set is cataloged. For this option, you must specify the volume serial on which the data set resides, regardless of whether the data set is specified as project, library, and type, or as another data set name. The data set must reside on the specified volume.

The preceding instructions for cataloging data sets do not apply to data sets that reside on Storage Management Subsystem volumes. These data sets are automatically cataloged when you allocate them. They cannot be cataloged by using option C.

R — Rename Entire Data Set

If you select option R, a panel appears to allow you to enter the new data set name (Figure 63 on page 105).

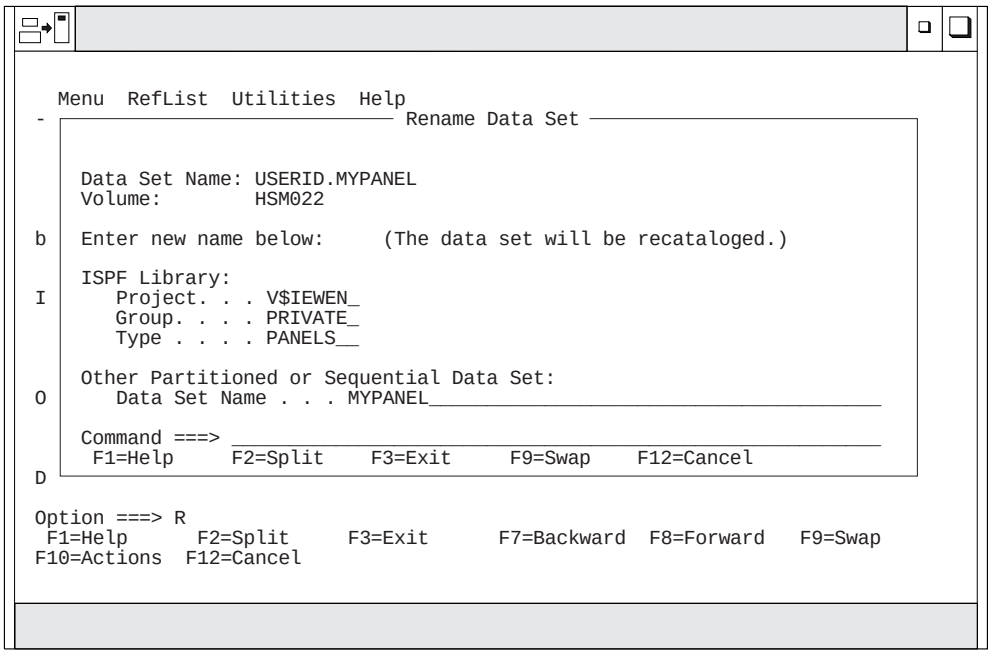


Figure 63. Rename Data Set Panel (ISRUARP1)

Type the new data set name and press Enter to rename, or enter the END command to cancel. Either action returns you to the previous panel.

If you specify a volume serial for a data set to be renamed, ISPF checks to see whether the data set is cataloged on that volume. If it is, the Rename panel prompts you to specify whether to recatalog the data set. The displayed default for that field is YES. If you specify a volume serial and the data set is not cataloged, it remains uncataloged after you rename it. If a volume serial is not specified, the data set is recataloged to the new data set name and the old data set name is uncataloged.

Notes:
1. ISPF does not rename VSAM data sets or password-indicated data sets.
2. A volume serial is not allowed for multivolume data sets using Rename.

Renaming GDG Data Sets: Generation Data Group (GDG) data sets can only be renamed to something other than GDG names. Trying to rename GDG data sets to a different generation or version number can cause deletion of your GDG data set or group of GDG data sets.

Renaming Managed Data Sets: When you rename a data set that resides on a Storage Management Subsystem volume, you cannot specify a volume serial in the **Volume Serial** field. Both the cataloged entry and the VTOC entry are renamed.

Rename Processing with RACF: The normal order of processing when ISPF is asked to rename a data set is as follows:
1. The new data set name is cataloged using SVC 26
2. The data set is renamed using SVC 30
3. The old data set name is uncataloged using SVC 26

There are three occasions, however, when ISPF will deviate from this order of processing:

- If the data set is a System Managed (SMS) data set, the update of the catalog (both cataloging the new name and uncataloging the old name) is handled by the operating system when the SVC 30 is issued. In this case, ISPF does not issue either of the SVC 26 requests.
- If the data set is an uncataloged data set, no catalog update will be done. The data set is renamed using the SVC 30 only.
- If the data set is cataloged, but the user specified both the data set name and volume, panel ISRUARP2 is displayed. The user has the option of specifying whether the catalog processing should be done. If the user indicates (via a NO in the **Reply to uncatalog the data set** field) that no catalog processing should be done, only the SVC 30 is used to rename the data set. If the reply is YES, the SVC 30 as well as both SVC 26 requests are issued.

If an error is encountered during a rename request, an attempt is made to return the data set to its original name, and to reset the catalog entries to their original status (remove the new name from the catalog and leave the old name in the catalog).

The above order of processing is being used to minimize the possibility that an uncataloged data set will result if an error is encountered during the rename process. Errors may be encountered due to certain combinations of RACF data set profiles and user access to the group(s) under which those data set profiles fall. When an error occurs, the user receives a message indicating the status of the data set name, and of the catalog entries.

Refer to the *RACF Security Administrators Guide* or equivalent documentation for your security package, to determine the authorization levels required for each of these operations. The user will require authorization to first catalog the new data set name, then rename the data set, and then uncatalog the old data set name. This will require adequate authorization to any discrete and/or generic data set profiles involved and to the catalog(s) involved. Be aware that a discrete data set profile is renamed when the data set is renamed.

Renaming with Expiration Dates: If the data set has an expiration date in its catalog entry, the expiration date is not propagated forward to the new catalog entry. The new catalog entry must be updated manually to specify the new expiration date. Use the TSO ALTER command or a similar function to do this.

If you select this option, a panel appears to remind you of the situation (Figure 64 on page 107).

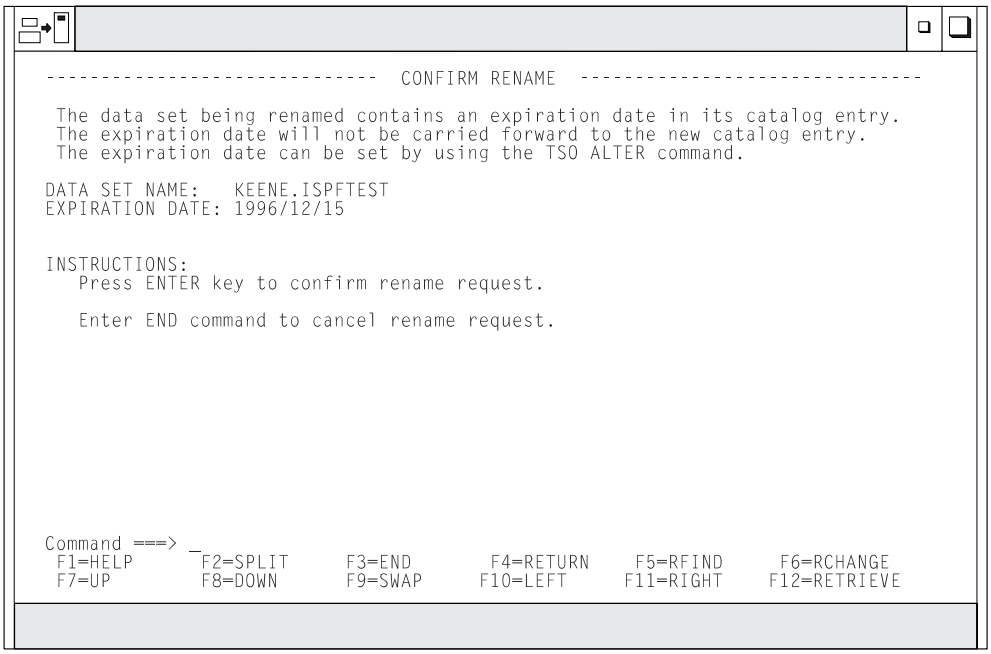


Figure 64. Rename Data Set Panel (ISRUARC1)

As directed by the panel, do one of the following:
- Press enter to confirm the rename request
- Enter the END command to cancel the rename request

U — Uncatalog Data Set

If you select option U, the specified data set name is uncataloged. There is no need for the specified data set to be allocated or for the volume on which it resides to be mounted. If the catalog entry being removed contains an expiration date, the following confirmation panel is displayed:

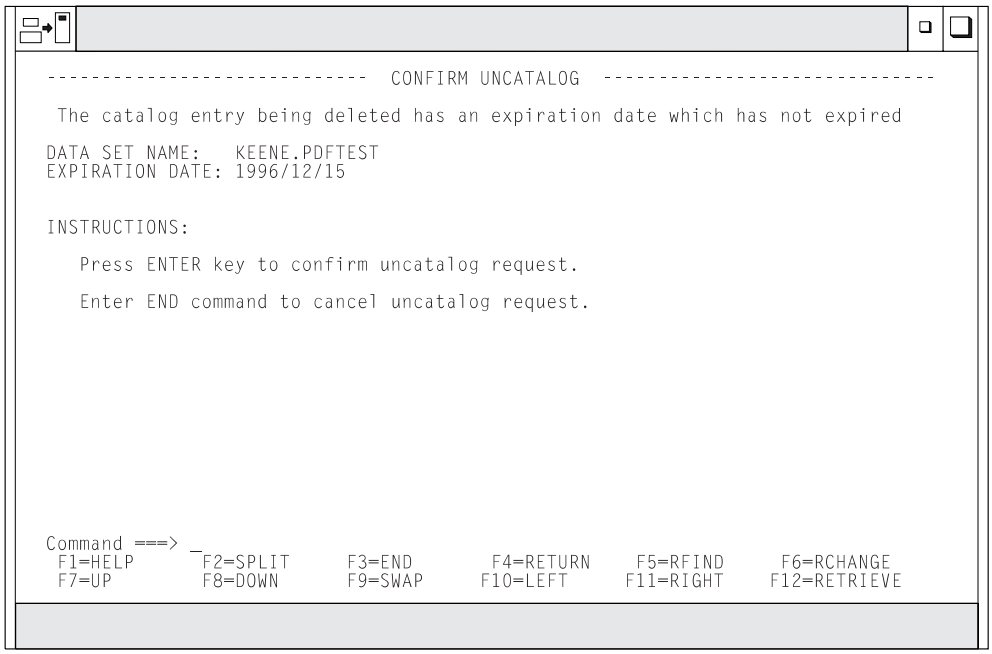


Figure 65. Uncatalog Data Set Panel (ISRUACC1)

As directed on the panel, do one of the following:
- Press enter to confirm uncatalog request
- Enter the END command to cancel the uncatalog request

Note: Uncatalog is not allowed for multivolume data sets.
You cannot use option U to uncatalog a data set that resides on a Storage Management Subsystem volume. However, the system uncatalogs these data sets when you delete them, which is done by using option D of either the Data Set utility (option 3.2) or the Data Set List utility (option 3.4).

D — Delete Entire Data Set

If you select option D, a confirmation panel is displayed (Figure 66 on page 109) so you can make sure you did not select this option by mistake.

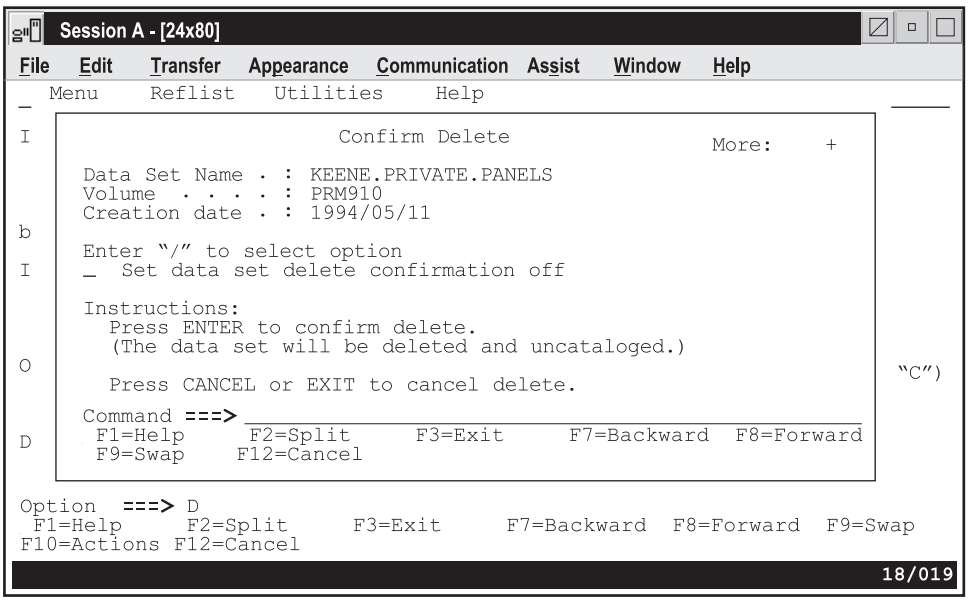


Figure 66. Confirm Delete Panel (ISRUADC1)

If you specify a volume serial for the data set to be deleted, ISPF checks to see whether the data set is cataloged on that volume. If so, the Confirm Delete panel prompts you to specify whether to uncatalog the data set. The displayed default is YES. If no volume serial is specified, and the data set does not have an expiration date, the data set is deleted and uncataloged.

Notes:

1. ISPF does not delete password-protected data sets or data sets allocated with an esoteric device type.
2. A volume serial is not allowed for multivolume data sets using Delete.

As directed on the panel, do one of the following:

- Press Enter to confirm the data set deletion.
- Enter the CANCEL or EXIT command to cancel. This action returns you to the previous panel.

If the data set has an expiration date that has not expired, ISPF displays a Confirm Purge panel (Figure 67 on page 110) after the Confirm Delete panel.

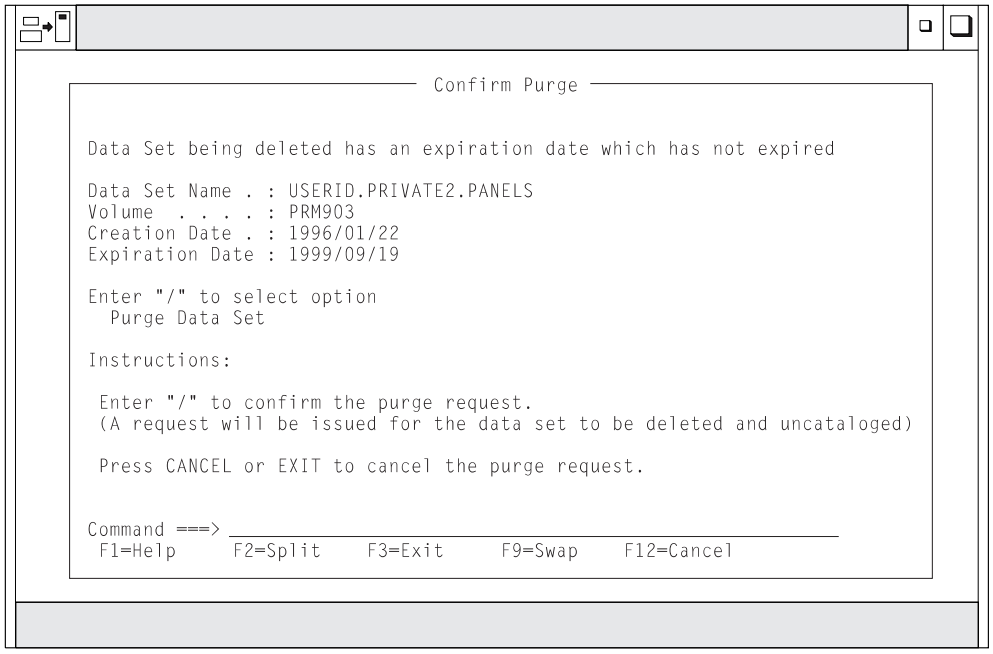


Figure 67. Confirm Purge Panel (ISRUADC3)

Use a slash to select Purge Data Set if you want ISPF to purge the data set. The statement that is enclosed in parentheses on the Confirm Purge panel shows whether the data set to be purged will be uncataloged.

When you delete a data set, the volume name is compared to the volume name in the configuration table. If the names match, the command specified in the configuration table is used in place of the ISPF delete processing. This lets you delete migrated data sets without first causing them to be recalled.

Delete Processing with RACF: If the data set is an SMS data set, it is deleted using SVC 29. The update of the catalog entry is handled by the operating system.

If the data set is not an SMS data set and either it is not cataloged or the user indicates on panel ISRUADC2 (panel ISRUADC2 is shown if the volume is supplied) that it is not to be uncataloged, it is deleted using SVC 29.

If the data set is not an SMS data set and it is cataloged and/or the user indicates on panel ISRUADC2 (panel ISRUADC2 is shown if the volume is supplied) that it is to be uncataloged, the following process is followed.
1. The data set is deleted using SVC 29 (SCRATCH).
2. The data set is uncataloged using SVC 26.

This order of processing is being used to minimize the possibility of encountering errors which result in uncataloged data sets. Some combinations of RACF generic and discrete data set profiles and user access to the group(s) under which those profiles fall can cause this process to fail. If an error is encountered in this process the user is notified via a message of the status of the data set and catalog entries.

Refer to the *RACF Security Administrators Guide* or equivalent documentation for your security package, to determine the authorization levels required for each of these operations. The user will require authorization to first delete the data set and then uncatalog the data set name. This will require adequate authorization to any

discrete and/or generic data set profiles involved and to the catalog(s) involved. Be aware that a discrete data set profile is deleted when the data set is deleted.

S — Data Set Information (Short)

If you select option S, information about the selected data set is displayed. The information displayed by option S is the same information displayed by option S on the Library Utility panel (option 3.1). See "S — Short Data Set Information" on page 91 for more information and Figure 55 on page 92 for an example. To return to the previous panel, press Enter or enter the END command.

The space for data sets allocated in blocks is calculated as if all of the tracks, including the last one, contain only full blocks of data. Any partial "short" blocks are ignored.

Note: The information shown for the current space utilization is the actual data that the data set contains, based on the number of allocation units (blocks, tracks, bytes, megabytes, and so on) that have been written. For a data set allocated in units other than tracks and cylinders, it does not include the unused portion of a track that is only partially filled. For example, if a data set allocated in bytes with blocksize of 600 has one block written to a device with a track size of 1000, 600 bytes of data are written and the remaining 400 bytes cannot be used by a different data set. A track is the smallest possible unit of physical allocation to a data set on DASD. ISPF reports 600 bytes used while other products (such as ISMF) report 1000 bytes used. ISPF reports the space occupied by data in the data set. ISMF reports the space used by this data set that is not available for use by another data set. The difference is a relative indication of the effectiveness of the block size used when the data set was created.

See "Short Information for Managed Data Sets" on page 92 to learn more about the data set information that is displayed for managed data sets.

Blank — (Data Set Information)

If you leave the **Option** field blank, information about the selected data set is displayed. The information displayed is the same information displayed by option I on the Library Utility panel (option 3.1). See "I — Data Set Information" on page 87 for more information and "U — Uncatalog Data Set" on page 107 for an example. To return to the previous panel, press Enter or enter the END command.

Notes:

1. For multivolume data sets, options I and S display current allocation and utilization values that represent totals from all volumes used.
2. You may not enter a volume serial when you are requesting information on a multivolume data set.

The space for data sets allocated in blocks is calculated as if all of the tracks, including the last one, contain only full blocks of data. Any partial "short" blocks are ignored.

Note: The information shown for the current space utilization is the actual data that the data set contains, based on the number of allocation units (blocks, tracks, bytes, megabytes, and so on) that have been written. For a data set allocated in units other than tracks and cylinders, it does not include the unused portion of a track that is only partially filled. For example, if a data set allocated in bytes with blocksize of 600 has one block written to a device with a track size of 1000, 600 bytes of data are written and the remaining

400 bytes cannot be used by a different data set. A track is the smallest possible unit of physical allocation to a data set on DASD. ISPF reports 600 bytes used while other products (such as ISMF) report 1000 bytes used. ISPF reports the space occupied by data in the data set. ISMF reports the space used by this data set that is not available for use by another data set. The difference is a relative indication of the effectiveness of the block size used when the data set was created.

See "Information for Managed Data Sets" on page 89 for information about the data set information that is displayed for managed data sets.

V — VSAM Utilities

Use option V to create the IDCAMS commands to define, delete, and list catalog information for VSAM data sets. Before the command is issued, you will be allowed to edit it in an ISPF Edit session. The command will process in the foreground.

Note: The VSAM utilities function builds a command that is syntactically correct; the utility does not do any compatibility checking of the fields used to build the command.

When you select option V, the panel shown in Figure 68 is displayed.

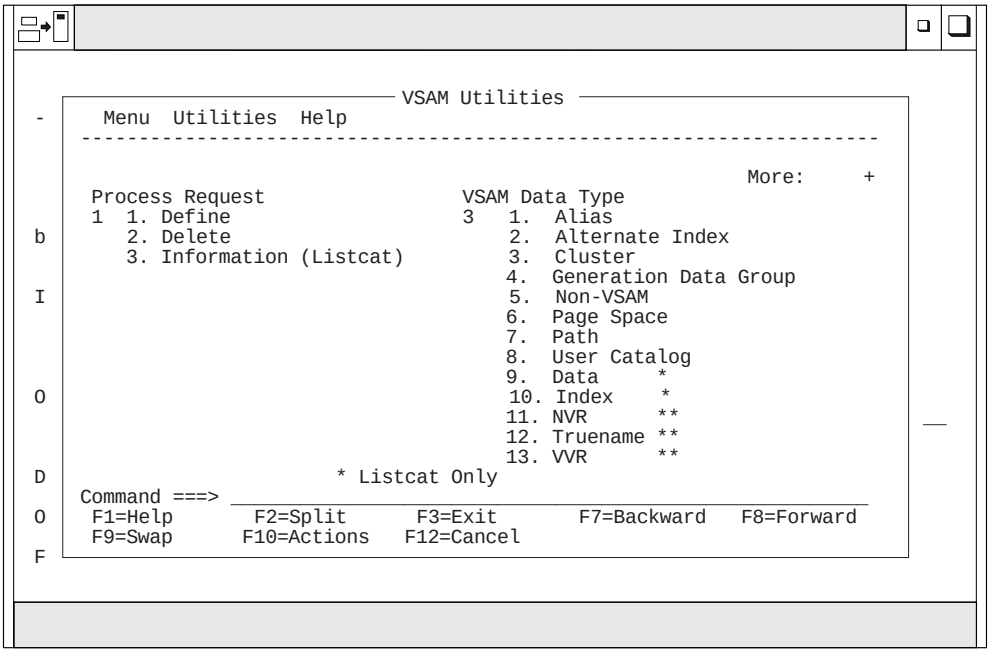


Figure 68. VSAM Utilities Panel (ISRUVSAM)

VSAM Utilities Panel Action Bar: The VSAM Utilities panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities
See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 VSAM Utilities
2 Profile Data Set
3 Get
4 Save
5 Change
6 Appendices
7 Index

VSAM Utilities Panel Fields: There are two fields on the VSAM Utilities panel:

Process Request
Required field. Indicates what is going to be done to the VSAM data set:

1 **Define**. Process an IDCAMS define request

2 **Delete**. Process an IDCAMS delete request against one or more data sets.

3 **Listcat**. Process an IDCAMS list catalog request.

VSAM Data Type
Required field. Indicates what kind of data set is to be defined, deleted or listed:

1 **Alias**. Define, delete, or list an alternate name for a non-VSAM data set or a user catalog

2 **Alternate Index**. Specify that an alternate index is to be defined, deleted, or listed or that an alternate index entry is to be recataloged

3 **Cluster**. Specify that a cluster is to be defined, deleted, or listed or that a cluster entry is to be recataloged

4 **Generation Data Group**. Specify that a generation data group entry is to be defined, deleted, or listed

5 **Non-Vsam**. Specify that a non-VSAM, non-SMS-managed data set is to be defined, deleted, or listed

6 **Page Space**. Specify that a page space is to be defined, deleted, or listed

7 **Path**. Specify that a path is to be defined, deleted, or listed or that a path entry is to be recataloged

8 **User Catalog**. Specify that a catalog is to be defined, deleted, or listed

9 **Data**. List data level information (Listcat request only)

10 **Index**. List index level information (Listcat request only)

11 **NVR**. Delete an SMS-managed non-VSAM volume record entry (Delete request only)

12 **Truename**. Delete the truename entry for a data or index component of a cluster or alternate index or the name of an alternate index (Delete request only)

13 **VVR**. Delete an unrelated VSAM volume record entry (Delete request only).

Example Usage – Defining a Cluster: To define a cluster, on the VSAM Utilities panel, type 1 in the **Process Request** field and 3 in the **VSAM Data Type** field. The Define Cluster panel is displayed as shown in Figure 69.

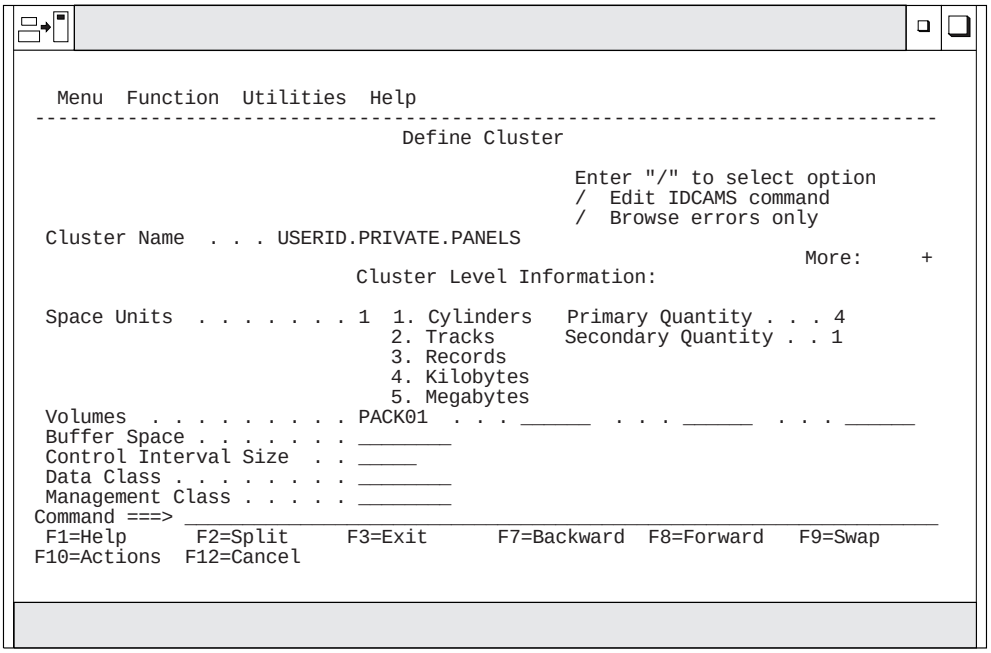


Figure 69. Define Cluster Panel (ISRUVPC3)

Notes:

1. Select the Edit IDCAMS command option to edit the IDCAMS command that this process generates before the command is issued. If you do not select this option, the command will be issued when you press Enter.
2. Select the Browse errors only option to browse the output from IDCAMS only when a non-zero return code is returned by IDCAMS.

Fill in the required fields or use a VSAM profile data set as described in "Building a VSAM Profile Data Set" on page 115. When you press Enter, the screen shown in Figure 70 on page 115 is displayed.

Note: If you try to use a profile that was defined for a different request type (for example, Generation Data Group), you will receive a *Type mismatch* error.

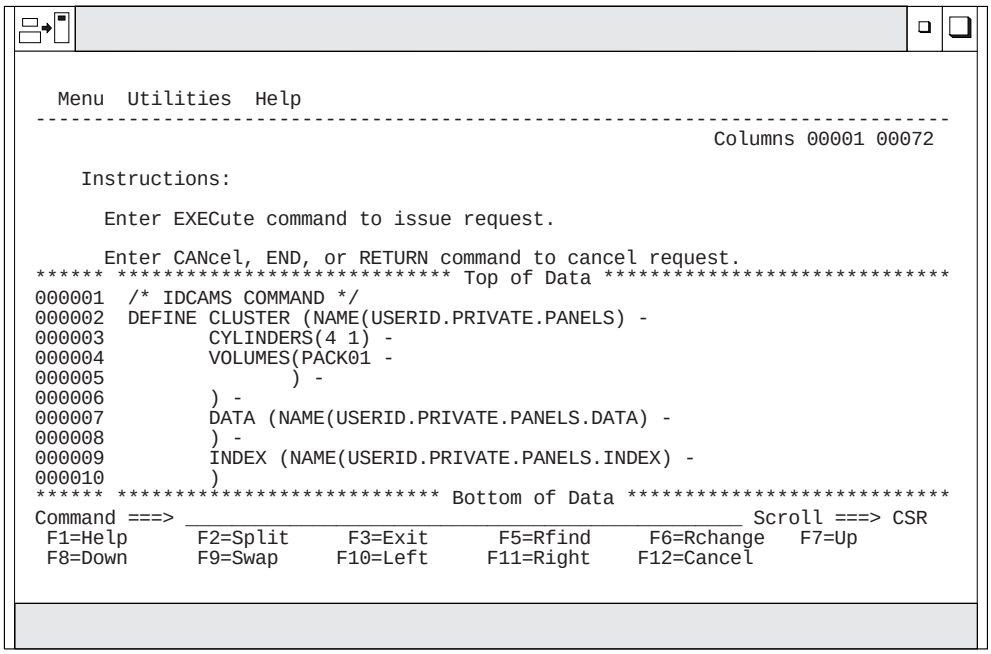


Figure 70. Editing the IDCAMS Command (ISRUVEDT)

When you are ready to process the command, type `EXEC` on the Command line and press Enter. If the command processes with a non-zero return code, the panel shown in Figure 71 is displayed.

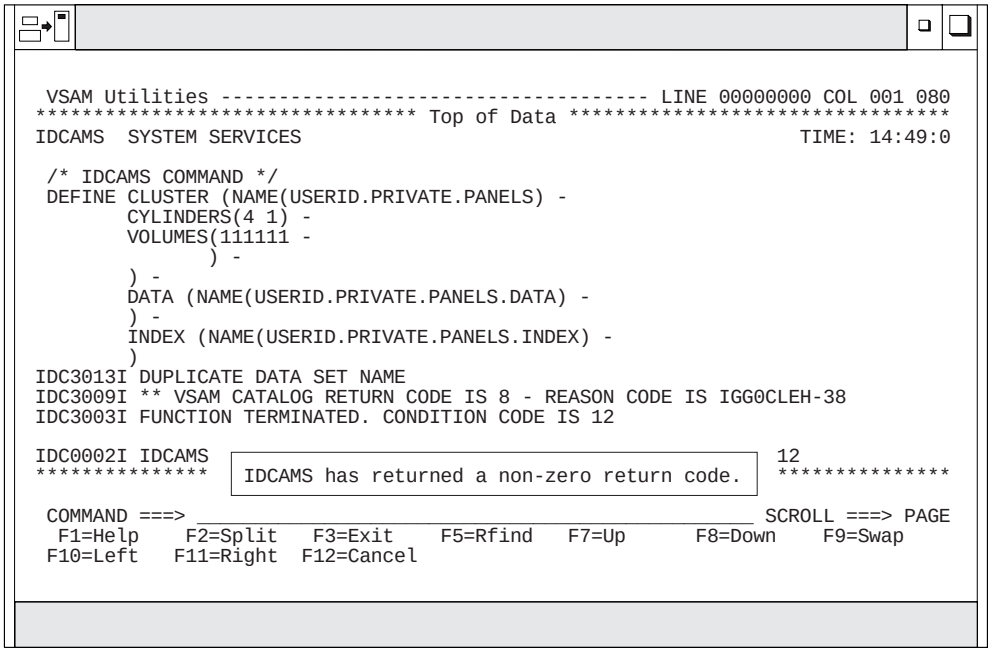


Figure 71. Browsing IDCAMS Errors (ISRUVBRO)

Press F3 to return to the panel shown in Figure 70, make the necessary changes, and resubmit the command.

Building a VSAM Profile Data Set: You can build a VSAM profile data set, each member of which can be used to store input fields on a VSAM input panel for

later retrieval to the same panel. If you try to use a profile that was defined for a different request type (for example, Generation Data Group), you will receive a *Type mismatch* error.

When you have filled in a VSAM input panel, select the Save to Profile choice from the Functions pull-down on the input panel action bar as shown in Figure 72.

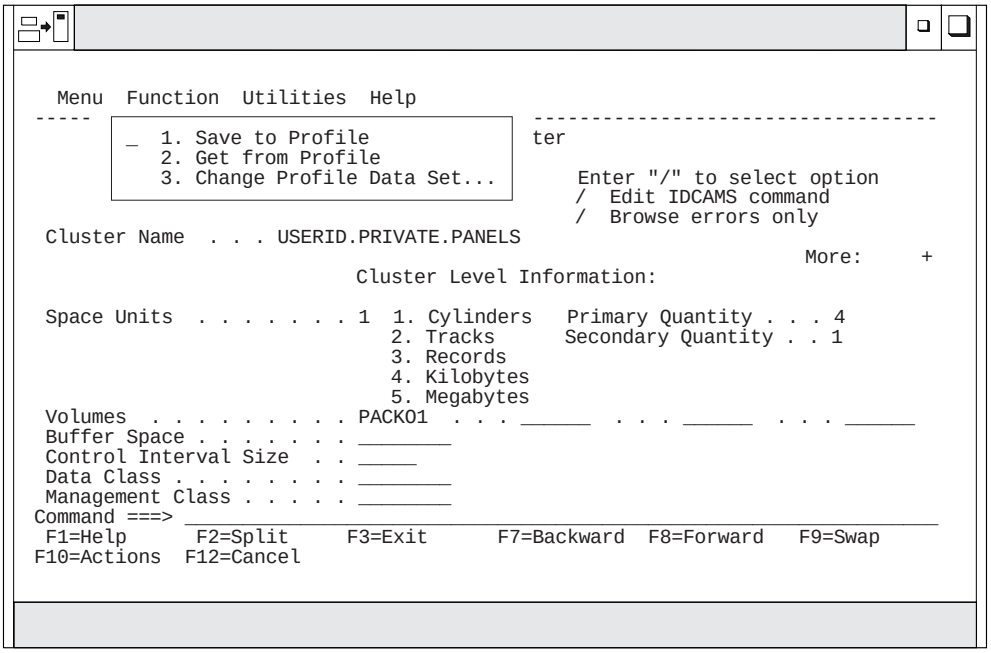


Figure 72. Functions Pull-Down on a VSAM Input Panel (ISRUVPC3)

ISPF displays a panel that allows you to assign a name to the profile data set member, as shown in Figure 73 on page 117.

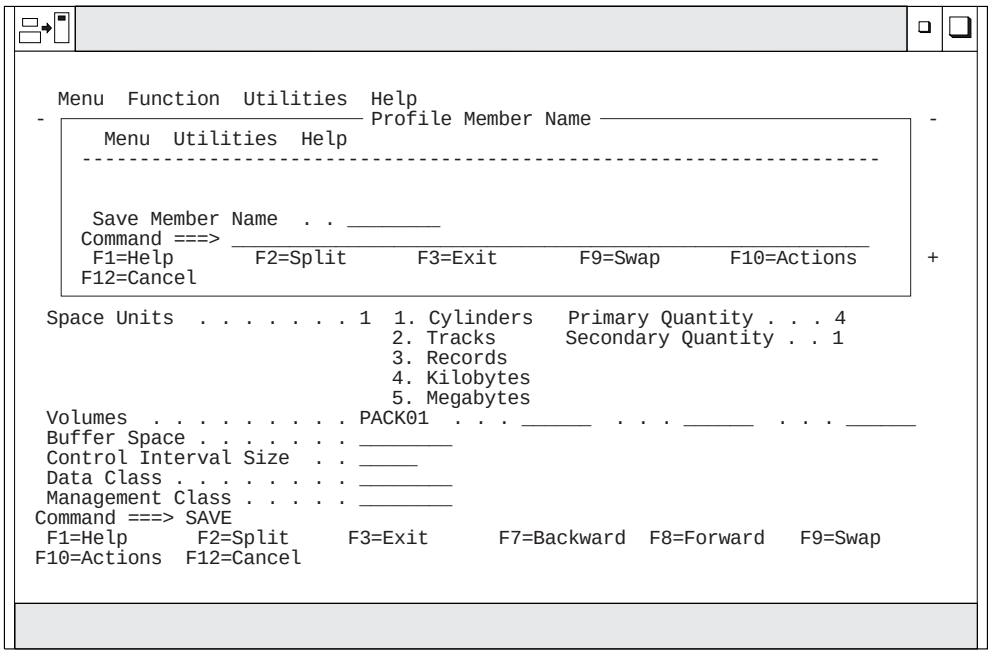


Figure 73. Profile Member Name Panel (ISRUVSAV)

Type in the member name. When you press Enter, the data set will be created for you (variable blocked, LRECL 203, PDS).

Using a VSAM Profile Data Set: When you have displayed a VSAM input panel, select the Get from Profile choice from the Functions pull-down on the input panel action bar to display the panel shown in Figure 74.

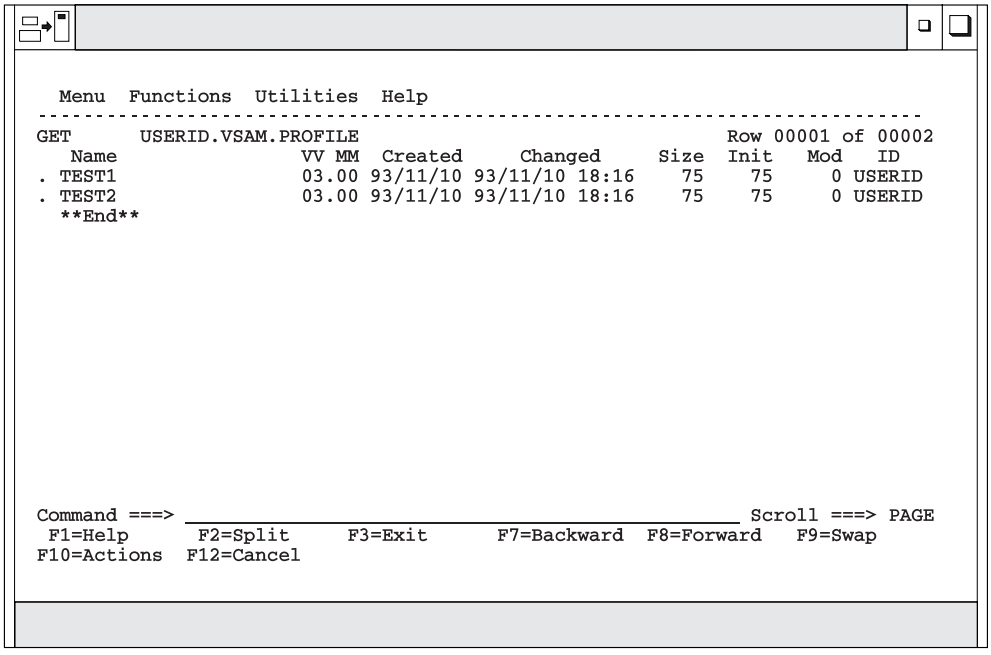


Figure 74. Using a VSAM Profile Data Set (ISRVMLGT)

When you select a profile and press Enter, the fields on the entry panel will fill with the values stored in the profile data set member.

Changing the VSAM Profile Data Set: To change the name of the active VSAM profile data set, select the Change Profile Data Set... choice from the Functions pull-down on an input panel action bar to display the panel shown in Figure 75.

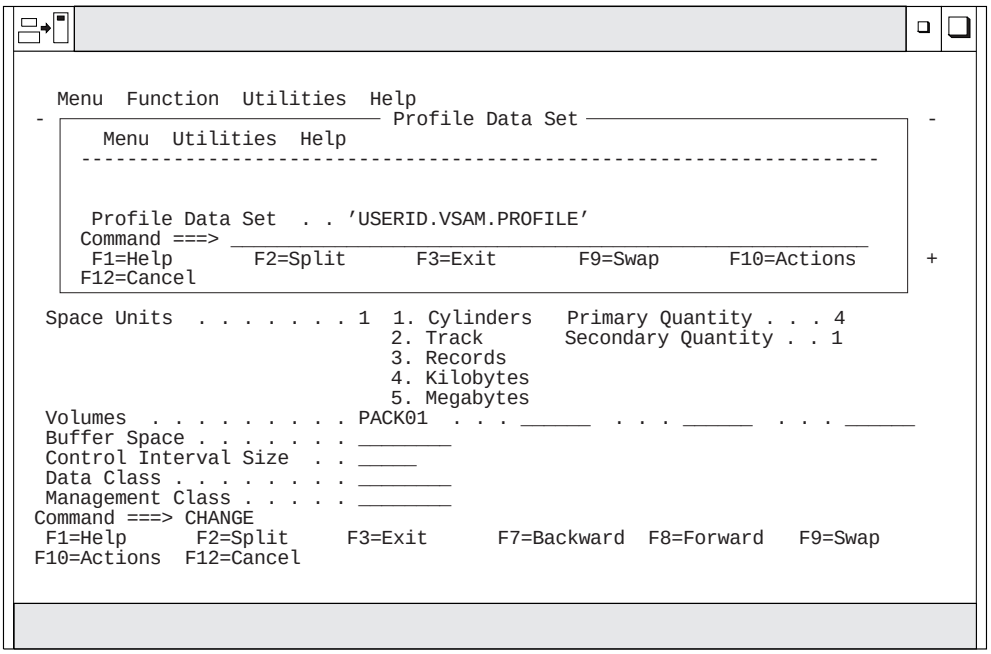


Figure 75. Panel for Changing the Name of the VSAM Profile Data Set (ISRUVGET)

You may type the name of a different profile data set. When you press Enter, the data set is created if it does not exist, and this data set becomes the active profile data set.

Move/Copy Utility (Option 3.3)

When you select this option, a panel is displayed (Figure 76 on page 119) that allows you to specify the "From" data set (and member if it is partitioned) and an option to be performed. The Move/Copy Utility prevents you from moving or copying a PDS member that you or another user is currently editing.

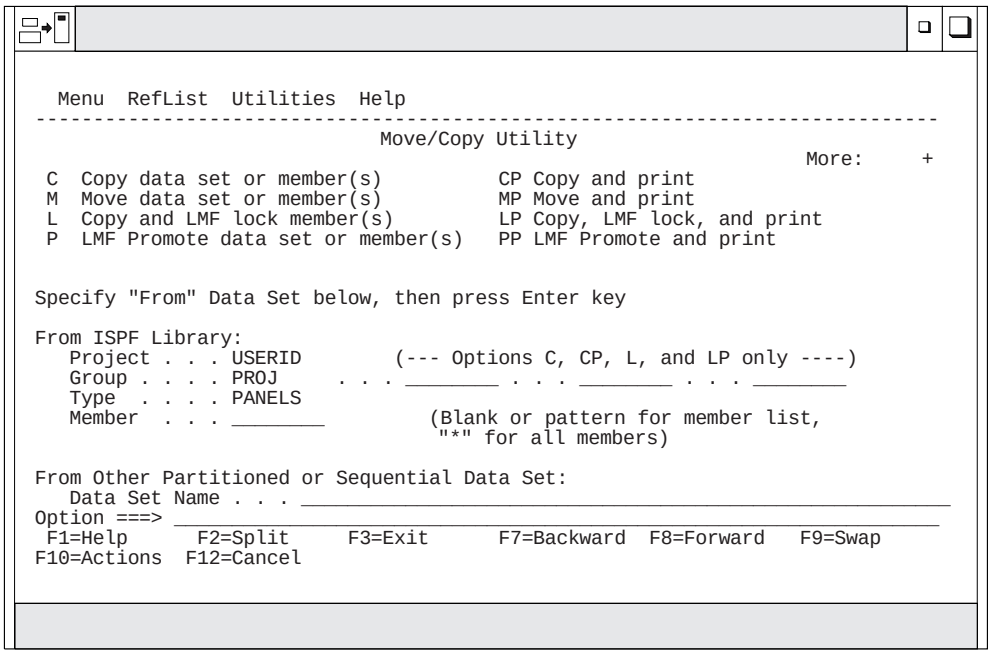


Figure 76. Move/Copy Utility Panel (ISRUMC1)

Move/Copy Utility Panel Action Bar

The Move/Copy Utility panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General
2 Function of the Move/Copy Utility
3 How to fill in the Move/Copy panel
4 Move/Copy member selection list
5 Allowable Data Set characteristics
6 Move/Copy rules
7 Copy/Lock Utility
8 Promotion Utility
9 Appendices
10 Index

Move/Copy Utility Panel Fields

All the fields on the Move/Copy Utility panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*. On this panel, you specify the data set that you want to copy, move, lock, or promote. This is called the "From" data set.

If you request a member list or specify an asterisk (*) in the **Member** field on the "From" panel, ISPF does not display a **Member** field on the "To" panel. See the **Member Selection List Commands** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* if you need information about primary and line commands that are available for the Move/Copy utility member list display.

LMF library controls are required for the "From" library or data set when using options L and LP, and for the "Target" library or data set when using the P and PP options. You can copy, move, lock, or promote load modules stored in partitioned data sets with undefined record formats, but you cannot print them.

The deletion of any member because of a move or promotion is recorded in your ISPF log data set, if allocated. For a promotion, the deletion is also recorded in the LMF activity log if an activity log is requested by the project administrator.

Note: For information about locking and promoting members with SCLM, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

When you complete the panel and press Enter, ISPF displays another panel that is determined by the option you selected. This panel allows you to specify the "To" or "Target" data set or controlled library. Both the "From" and "To" or "Target" data sets must already exist. If the "Target" data set does not exist the user is prompted to see if the data set should be allocated. Choices are to allocate the "Target" data set using the characteristics of the "From" data set as a model, or to allocate the new data set by specifying the characteristics for it. This function can be suppressed through the ISPF Configuration table. If it is suppressed, an allocate request for a non-existent data set fails.

Move/Copy Utility Options

The following sections describe the options shown on the Move/Copy Utility panel.

C and CP — Copying Data Sets

When you use the C and CP options, ISPF provides library concatenation support. This support allows you to specify up to four input libraries as the "From" data set. The libraries are searched from left to right as they are entered on the panel. The member to be copied, which is either specified in the **Member** field or selected from a member list, is copied from the first library in which it is found.

If you select C or CP, the panel shown in Figure 77 on page 121 is displayed. This panel allows you to specify the "To" data set—the library or data set name that you want the copied data stored under.

Note: The Move/Copy utility does not support the following:

- Supplying a volume serial when attempting to copy a multivolume data set
- Copying unmovable data sets (data set organization POU or PSU).

C — Copy Data Set or Member(s): Use option C to copy a data set. You can specify either a DASD-resident sequential or partitioned data set for both the "From" or "To" data sets. The "From" data set is not deleted.

CP — Copy and Print: Use this option as you would use option C, except source listings are recorded in the ISPF list data set, as follows:

- If the “To” data set is partitioned, a listing of each new or replaced member is recorded.
- If the “To” data set is sequential, a listing of its complete contents is recorded.

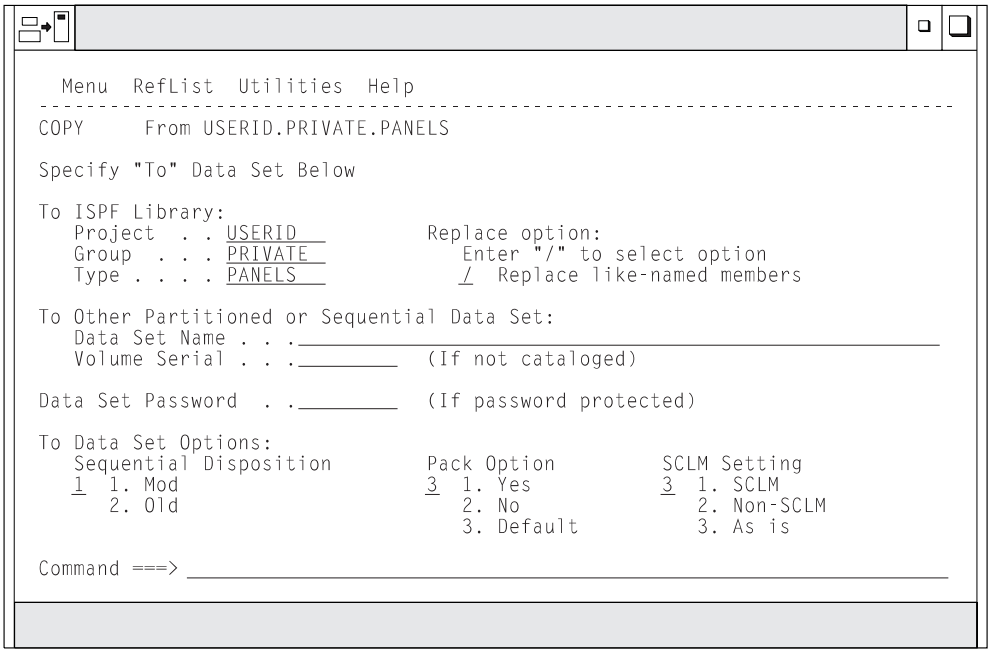


Figure 77. Move/Copy Utility - “To” Panel for Copying (ISRUMC2B)

All the fields on the Move/Copy Utility “To” panels for copying data sets are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except the following To Data Set Options fields:

Sequential Disposition
If the “To” data set is sequential, enter:

1 To add the “From” data set to the end of the “To” data set (Mod).

2 To replace the “To” data set's entire contents with the contents of the “From” data set (Old).

If the “From” data set consists of several members of an ISPF library or a partitioned data set to be moved or copied to a sequential data set, the members are written to the “To” data set one after another. The “To” data set disposition (Old or Mod) controls only the beginning location of the “To” data set after the copy or move is completed.

Pack Option
To indicate how the data is to be stored in the “To” data set, enter:

1 If you want the data in the “To” data set to be packed.

2 If you do not want the data in the “To” data set to be packed.

3 If you want the data to be stored in the same format in the “To” data set as it is in the “From” data set.

If you are copying data to a sequential data set with disposition of MOD, you cannot mix packed and unpacked data, nor can you copy multiple packed members.

The technique used to pack data is an internal algorithm used only by ISPF. If the data is packed, attempts to access or process the data outside ISPF can cause unwanted results. Refer to the description of the PACK primary command in *ISPF Edit and Edit Macros* for more information.

SCLM Settings
The SCLM setting is a bit that ISPF uses to determine what type of edit the file last had performed upon it.

1 SCLM
This bit is ON to specify that the last edit of this file was under SCLM control.

2 Non-SCLM
This bit is ON to specify that the last edit of this file was under control of something other than SCLM.

3 As-is
This bit is ON to specify that this operation leaves the current setting unchanged.

Replace like-named PDS members
Select this option to allow replacement of a member in the "To" data set with a like-named member in the "From" data set.

M and MP — Moving Data Sets

When you use the M and MP options, ISPF does not provide library concatenation support. You can specify up to four input libraries as the "From" data set. However, only the first library in the sequence is searched. Therefore, the member to be moved, which is either specified in the Member field or selected from a member list, is moved only if it is found in the first library. However, the other three library names remain on the panel and can be used with the C, CP, L, and LP options.

If you select M or MP, the panel shown in Figure 78 on page 123 is displayed. This panel allows you to specify the "To" data set—the library or data set name that you want the moved data stored under.

Note: The Move/Copy utility does not support the following:

- Supplying a volume serial when attempting to copy a multivolume data set
- Copying unmovable data sets (data set organization POU or PSU).

M — Move Data Set or Member(s): Use option M to move a data set. You can specify either a DASD-resident sequential or partitioned data set for both the "From" or "To" data sets.

Option M causes data sets to be deleted after they have been successfully moved to the "To" data set, as follows:

- If the "From" data set is partitioned, the selected members are deleted from it.
- If the "From" data set is sequential, the complete "From" data set is deleted.

MP — Move and Print: Same as option M, except source listings are recorded in the ISPF list data set, as follows:

- If the "To" data set is partitioned, a listing of each new or replaced member is recorded.
- If the "To" data set is sequential, a listing of its complete contents is recorded.

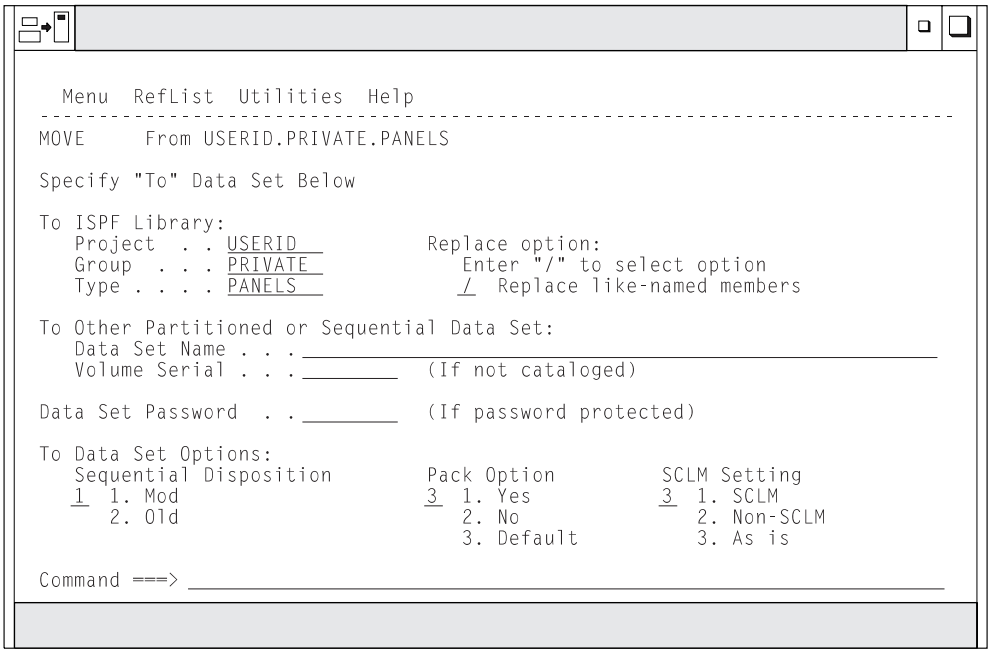


Figure 78. Move/Copy Utility - "To" Panel for Moving (ISRUMC2B)

All the fields on the Move/Copy Utility "To" panels for moving data sets are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except the following To Data Set Options fields:

- Sequential Disposition
- Pack Option
- SCLM Settings
- Replace like-named PDS members.

See "C and CP — Copying Data Sets" on page 120 for descriptions of these fields.

L and LP — Copying and Locking Data Sets

When you use the L and LP options, ISPF provides library concatenation support. This support allows you to specify up to four input libraries as the "From" data set. The libraries are searched from left to right as they are entered on the panel. The member to be locked, which is either specified in the **Member** field or selected from a member list, is locked from the first library in which it is found.

Note: The following information about locking members applies to LMF. For information about locking members with SCLM, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

If you select L or LP, the panel shown in Figure 77 on page 121 appears. This panel allows you to specify the "To" data set—the library or data set name that you want the copied data set stored under.

The differences between using these options and using the C and CP options are:

- The "From" data set must be a controlled library member.
- L and LP lock the "From" member with your ID before copying it. No one else can change the member in the controlled library until you promote it.

The L and LP options are discussed thoroughly in *ISPF Library Management Facility* These options apply only to data sets controlled by the Library Management Facility (LMF).

L — Copy and LMF Lock Member(s): Use option L to copy data from a controlled library and lock the member in the controlled library. You can specify:

- A DASD-resident controlled library member for the "From" data set. The "From" data set is not deleted.
- A DASD-resident ISPF library or sequential data set for the "To" data set.

LP — Copy, LMF Lock, and Print: Same as option L, except source listings are recorded in the ISPF list data set, as follows:

- If the "To" data set is partitioned, a listing of each new or replaced member is recorded.
- If the "To" data set is sequential, a listing of its complete contents is recorded.

P and PP — Promoting Data Sets

When you use the P and PP options, ISPF does not provide library concatenation support. You can specify up to four input libraries as the "From" data set. However, only the first library in the sequence is searched. Therefore, the member to be promoted, which is either specified in the **Member** field or selected from a member list, is promoted only if it is found in the first library. However, the other three library names remain on the panel and can be used with the C, CP, L, and LP options.

Note: The following information applies to LMF. For information about promoting members with SCLM, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

Select P or PP to do one of the following:

- Promote from a private library into an entry-level controlled library.
- Promote a member from an entry-level library into the next library in the hierarchy, as determined by the project administrator.
- Free a previously-locked member of a controlled library.

If the "From" library is a private library, once you enter P or PP and the "From" library or data set name, the panel shown in Figure 79 on page 125 appears. This panel allows you to specify the "Target" controlled library—the library that will receive the member.

If the "From" library is a controlled library, no "Target" is displayed because the project administrator has already specified where the member is to be promoted.

Notes:

1. The promote options apply only to data sets controlled by the Library Management Facility (LMF).
2. Promote exits can be called before and after members are promoted if the library administrator specified any exits when defining the library controls.These promote exits, along with the options and the promotion process, are discussed thoroughly in *ISPF Library Management Facility*

P — LMF Promote Data Set or Member(s): Use option P to promote a data set into a controlled library. The "From" data set can be sequential, but the "Target" data set must be a controlled ISPF library.

The selected members are deleted from the "From" data set after they have been successfully copied to the "To" data set.

PP — LMF Promote and Print: Same as option P, except a source listing of each new or replaced member is recorded in the ISPF list data set.

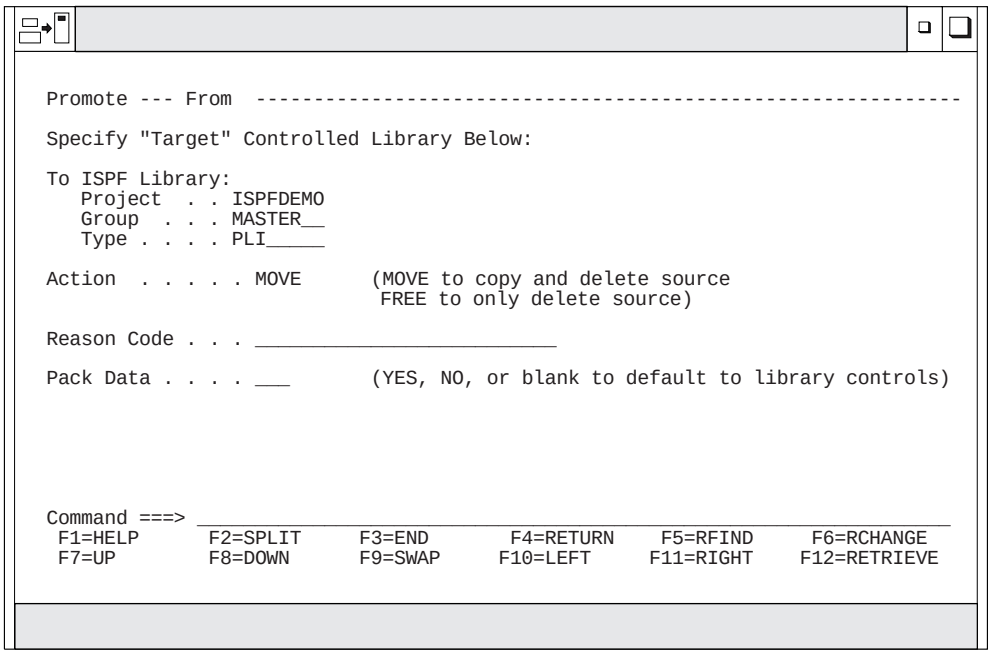


Figure 79. Move/Copy Utility - "Target" Panel for Promoting (ISRLUP01)

All the fields on the Move/Copy Utility "Target" panel for promoting data sets are explained in the***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except for the following:

Action

This field specifies whether a normal promotion of the member is to occur, or the member is to be made available for update. You can specify the latter action if you want to make the member available to others without promoting it. The specified actions are:

MOVE

Promotion that moves the member to the target library and deletes it from the private library. The member becomes available for update, which means it is no longer locked by your user ID.

FREE Makes the member available, no longer locked by your user ID. The member is not moved to the target library, but is deleted from the private library.

Reason Code

The information in this field will be written to the activity log. This is a 26-character field that you can use for tracking, testing in a user exit, or for any other purpose.

Pack Data

You can use this field to override the library control. If the data is packed (or unpacked) when promoted into an entry-level library, it remains packed (or unpacked) throughout each later promotion.

Enter one of the following in the Pack Data field:

YES Tells ISPF to pack (compress) the data set before promoting it.

NO Tells ISPF not to pack the data set before promoting it.

blank Leaving this field blank defaults to the packed data library control specification.

Using the Move/Copy Utility without Load Modules

Note: The following promote information applies to LMF. For information about promoting members that are not load modules with SCLM, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

For any move, copy, or promote operation that does not involve load modules, the following rules apply:

- Record formats (RECFM) and logical record lengths (LRECL) for the two data sets need not be alike. When necessary, data is truncated or padded on the right with blanks to accommodate different record lengths.
- For promote:
  - If the record format is fixed, the logical record lengths must be the same. The block sizes may be different, but the block size of each data set must be a multiple if its logical record length.
  - If the record format is variable, the record length of the target data set must be equal to or larger than the record length of the source data set. The block sizes need not be the same, but the block size of each data set must be consistent with its logical record length.
- The data to be moved, copied, or promoted is not renumbered or changed in any way, except for possible truncation, padding, or packing as noted above. Printer control characters, if present, are treated as data.
- Library statistics or other user data in directory entries are not changed when moving or copying between partitioned data sets.
- Partitioned data set members with user TTRs cannot be moved, copied, or promoted.

Using the Move/Copy Utility with Load Modules

Note: The following promote information applies to LMF. For information about promoting members that are load modules with SCLM, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

For a move, copy, or promote of load modules, the following rules apply:

- Both data sets must be partitioned and must have an undefined record format (RECFM=U).
- Load modules that were created for planned overlay cannot be moved or copied.
- The print option, if specified, is ignored.
- If the "To" library is LLA-managed, it must be in NOFREEZE mode.
- For Promote, no reblocking occurs. The block size of the "To" data set must be equal to or larger than the block size of the "From" data set. The logical record length (LRECL) is ignored.

  For Move or Copy, reblocking can be done for load modules only, and is done by using the IEBCOPY COPYMOD function. Whether or not the load module is

reblocked depends on the block sizes for the “To” and “From” data sets, as well as the value of the **USE_IEBCOPY_COPY_OR_COPYMOD_OPTION** and **WHEN_TO_USE_IEBCOPY** keyword settings in the ISPF Configuration table (see the ISPF Planning and Customizing for more information about the table).

– If the WHEN_TO_USE_IEBCOPY setting is 0, IEBCOPY is only used:
  - When copying from a data set with a larger block size to a data set with a smaller block size.
  - When a PDSE has been specified in the ″From″ data set concatenation or as the ″To″ data set.
– If the WHEN_TO_USE_IEBCOPY setting is 1, IEBCOPY is always used to copy load modules.
– If the WHEN_TO_USE_IEBCOPY setting is 2, IEBCOPY is only used when a PDSE has been specified in the ″From″ data set concatenation or as the ″To″ data set.
– If the WHEN_TO_USE_IEBCOPY setting (as described above) indicates that IEBCOPY should be used, the following rules apply when determining whether to reblock or not:
  - When the USE_IEBCOPY_COPY_OR_COPYMOD_OPTION setting is **1**:
    • If the “To” and “From” block sizes are the same, no reblocking occurs. ISPF uses IEBCOPY COPY.
    • If the “To” block size is larger than the “From” block size, no reblocking occurs. ISPF uses IEBCOPY COPY.
    • If the “To” block size is smaller than the “From” block size, reblocking occurs. ISPF uses IEBCOPY COPYMOD.
  - When the USE_IEBCOPY_COPY_OR_COPYMOD_OPTION setting is **2**:
    • If the “To” and “From” block sizes are the same, no reblocking occurs. ISPF uses IEBCOPY COPY.
    • If the “To” block size is larger than the “From” block size, reblocking occurs. ISPF uses IEBCOPY COPYMOD.
    • If the “To” block size is smaller than the “From” block size, reblocking occurs. ISPF uses IEBCOPY COPYMOD.
– When the USE_IEBCOPY_COPY_OR_COPYMOD_OPTION setting is **3**:
  - Reblocking occurs. ISPF uses IEBCOPY COPYMOD.

• If IEBCOPY is used to process the copy, ISPF allocates the following:

zprefix.zuser.SPFnnn.IEBCOPY	IEBCOPY SYSPRINT data set
SYSIN	IEBCOPY SYSIN data set
SYSUT3 and SYSUT4	IEBCOPY work data sets

The SYSPRINT data set is deleted upon completion of the copy if no errors are encountered. Otherwise, it is not deleted to enable you to diagnose errors. The SYSIN, SYSUT3, and SYSUT4 data sets are temporary data sets that use VIO if available, and are freed upon completion of the copy. All allocations use the value of ISPF Configuration table keyword PDF_DEFAULT_UNIT as the unit. The SYSUT3 and SYSUT4 data sets are allocated as one primary cylinder, one secondary cylinder. If this is not sufficient for your move/copy request, these DDNAMES can be preallocated. If they are preallocated, ISPF does not free them on completion of the copy.

Moving, Copying, or Promoting Alias Entries

Alias entries can be moved or copied from one partitioned data set to another under the following conditions:

• If the ″To″ library is LLA-managed, it must be in NOFREEZE mode
• If ISPF is not using IEBCOPY:

  - After the move or copy is successfully completed for the main member or members, then the alias entry or entries can be copied.
  - From a member list:
    - When the main member or members are selected first, are not renamed, and are successfully moved or copied, then the alias entry or entries can be copied if they are selected without leaving the member list.
    - If the target data set is a PDSE, alias entries cannot be copied.
- If IEBCOPY is being used:
  - The method described above for copying when not using IEBCOPY will also work when using IEBCOPY. In addition, if all main members and aliases are selected at the same time they are processed by the same invocation of IEBCOPY and are copied correctly.
  - If the target data set is a PDSE, alias entries must be selected and processed together with the main member.

In all other cases for move and copy (and always for promote), you can select alias names, but they are not preserved as aliases in the "To" data set; that is, the members to which they refer are moved or copied, and the alias entries are stored in the "To" data set with the alias flags turned off.

Member List Processing When Using IEBCOPY

When copying load modules using the IEBCOPY interface, all selected members are processed as a group. This means that the processing does not stop on the first failure but will attempt to process all selected members before the member list is redisplayed. The Prompt field will be updated to indicate the result for each individual member.

No error message is displayed if one or more members is not processed successfully because members may have failed for different reasons. Reselecting a member and processing it individually will display a specific error message if the processing for that member fails again. The following values can appear in the prompt field:

***COPIED**	Member was copied or copied/locked successfully
***MOVED**	Member was moved successfully
***REPL**	Member was replaced in the output library (Moved or Copied)
***NO DATA**	Member was not found in the input library or BLDL error
***INUSE-I**	ENQ failed on input member
***INUSE-O**	ENQ failed on output member
***NO-COPY**	Member was not copied successfully
***MIXED**	You are attempting to mix load and non-load data
***NO-DEL**	The delete step failed on a Move request
***NO-REPL**	Member exists in the output library and replace not requested
***NO-LOCK**	LMF lock failed on Copy/Lock request
***ALIAS**	Member is a PDSE Program Object alias and cannot be copied individually. It will be copied when the main member is copied.

Data Set List Utility (Option 3.4)

When you select this option, the Data Set List Utility panel (Figure 80) is displayed. You can either display or print lists of ISPF libraries, data sets, or volume table of contents (VTOC) information.

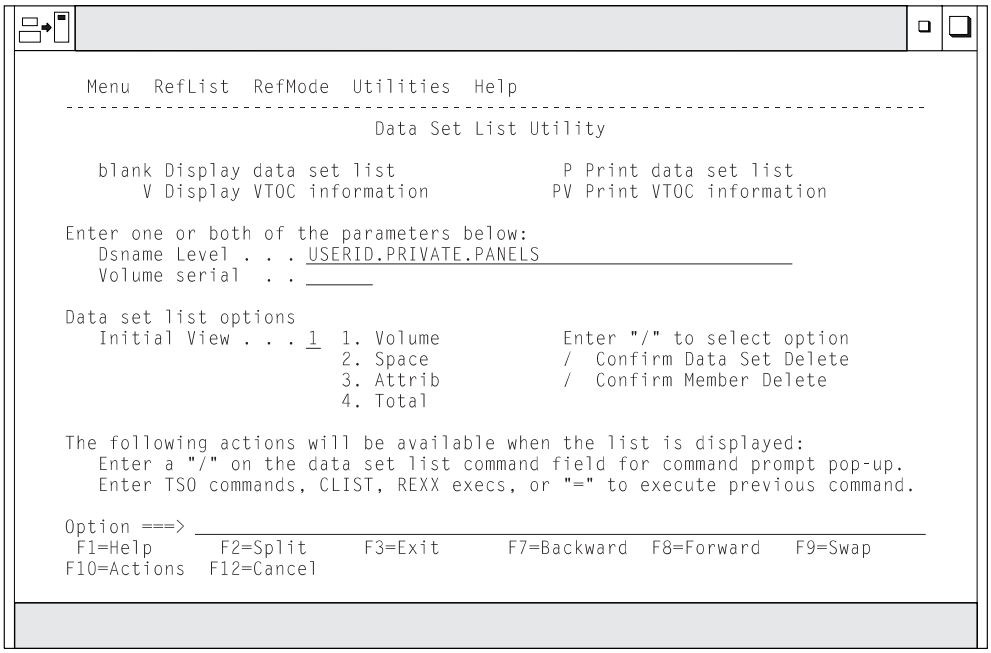


Figure 80. Data Set List Utility Panel (ISRUDLP)

Data Set List Utility Panel Action Bar

The Data Set List Utility Panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

Note: When you use a referral list from within the Data Set List Utility, the following functions are performed before the referral list is processed:

- The quotes are removed from the data set name.
- The value in ZPREFIX is added preceding the non-quoted data set name if the first qualifier is not ZPREFIX.
- The member name is removed.

RefMode See the **Personal List Modes** section of the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral list modes.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General
2 Displaying a Data Set list
3 Printing a Data Set list
4 Display/Print VTOC information
5 Appendices
6 Index

Data Set List Utility Panel Fields

The fields on this panel are:

Dsname Level

This field is used to specify the level or levels of any data set that you want ISPF to list or print for you. An optional installation exit, called the data set list (DSLIST) exit, can control whether a data set name should appear in the list. Refer to *ISPF Planning and Customizing* for more information about this exit.

Note: ISPF does not support tape data sets.

When you specify the Dsname Level, you are defining the level qualifiers for the data set names to be included in the list. Therefore, in Figure 80 on page 129, the value USERID represents the first level of a data set name. For example, an ISPF library has a three-level name: project, group, and type.

ISPF retains the information you put in this field and displays it the next time you use this panel.

Except for the first level, you can specify the level qualifiers fully, partially, or use defaults. Do not enclose the value in the **Dsname Level** field in quotes.

Asterisks and percent signs may be used to filter the list of data sets that is displayed. For ICF catalog lists and volume lists, asterisks and percent signs may be used in the high level qualifier. Asterisks may be used anywhere in a qualifier, not just in the first and last positions. However, one qualifier must be at least partially qualified.

A single asterisk by itself indicates that at least one qualifier is needed to occupy that position. A single asterisk within a qualifier indicates that zero or more characters can occupy that position. A double asterisk by itself indicates that zero or more qualifiers can occupy that position. A double asterisk is invalid within a qualifier.

In this example, all data set names with SYS1 as the first qualifier and at least one other qualifier will be listed.

```
SYS1.*
```

In this example, all data set names with SYS1 as the first qualifier will be listed.

```
SYS1 or SYS1.**
```

In this example, all data set names that have a qualifier of *clist* and are in catalogs that you have authority to will be listed. A VTOC list will contain all data set names that have a qualifier of clist.

```
**.CLIST
```

Notes:

1. If you enter a high-level qualifier of '*' or '**', ISPF displays a pop-up window to warn you that the search will be for all catalogs on the system and will take time. If there are many catalogs, this search could take a considerable amount of time. You can press Enter to continue the search, or you can enter Cancel or End from the pop-up window to cancel the search. Please be aware that if you have mount authority, a catalog search with '*' or '**' as the high-level qualifier can require that volumes be mounted for the catalogs to be searched.
2. The ISPF Configuration table contains a selectable option to disallow the use of the '*' or '%' in the high level qualifier.

Note:

A single percent sign indicates that any one single alphameric or national character can occupy that position. One to eight percent signs can be specified in each qualifier. The following example is valid for Dsname Level:

```
AAA%*.B*%%%B.C
```

In this example, the list will contain all data sets that start with AAA and one or more other characters, have a second qualifier that starts and ends with B and has at least three other characters between the B's, and have a third qualifier of 'C' are listed. The list will contain entries from catalogs that you have authority to. A VTOC list will contain entries that match the above characteristics.

In the following example, the list will contain all data sets that start with SYS and one other character, such as SYS1 or SYS2. If you enter a SYS% alias for a SYS1 data set as the Dsname Level (SYSP as a single qualifier), you see SYSP as an ALIAS because this single qualifier is an alias for SYS1. If you enter SYSP and another qualifier (SYSP.PARMLIB), no data set names are found that match. The data set names pointed to by the SYS% alias can be listed using SYS1 and a volume.

```
SYS%
```

PRO**CT is not valid as a data set name level because a double asterisk (**) is not valid in the middle of a qualifier.

Alias names that match the specified Dsname Level will be displayed as the alias name itself. The volume field for all alias names will contain the characters '*ALIAS' to indicate this. Real names that match the Dsname Level will also be displayed.

If you enter ISPFTEST as a Dsname Level and you have real data set names that start with ISPFTEST and aliases for those real names that start with ISPFTEST, you would see a list of this format:

```
ISPFTEST.BASE.CLIST                      TSOPK1
ISPFTEST.BASE.CLIST.ALIAS                *ALIAS
ISPFTEST.BASE.SOURCE                     TSOPK1
ISPFTEST.BASE.SOURCE.ALIAS               *ALIAS
```

A VSAM cluster entry is flagged in the volume field as '*VSAM*'. A VSAM path entry is flagged in the volume field as '*PATH*'.

Note: If you are using a version of DFP equal to, or greater than 3.2, then your list might contain duplicate entries. Option 3.4 does not verify the list that is returned by catalog services, it only formats and displays it. Therefore, it can

contain more entries than you expect and it might contain entries that do not match the Dsname Level. If a VSAM cluster matches the Dsname Level, all parts of the cluster are listed even if the data and index portions do not match the Dsname Level.

When a multicluster (key-range) data portion of a VSAM cluster is displayed on a catalog list, no information is shown except for the volume and device. The information comes from the VTOC and the catalog name does not match the VTOC name. When using a VTOC list the information is displayed.

Volume Serial

Use this field to specify the volume serial whose VTOC is to be used by ISPF to display or print a list of data set names or VTOC information. ISPF retains the information you put in this field and displays it the next time you use this panel.

If you want to display a list of only the data sets that reside on a particular volume, leave the **Dsname Level** field blank and enter the volume serial in the **Volume** field.

Initial View

Use this field to tell ISPF which view of the data set list you would like to see. ISPF retains the information you put in this field and displays it the next time you use this panel.

All the scroll commands are available from these displays and function normally, except for the LEFT and RIGHT commands. These commands switch from one view to another, because the panels used to show the different views are connected, as if they formed a ring. Each time you enter the RIGHT command, another view is displayed in the sequence shown in Figure 81, starting from the current view. Each time you enter the LEFT command, another view is displayed in reverse sequence.

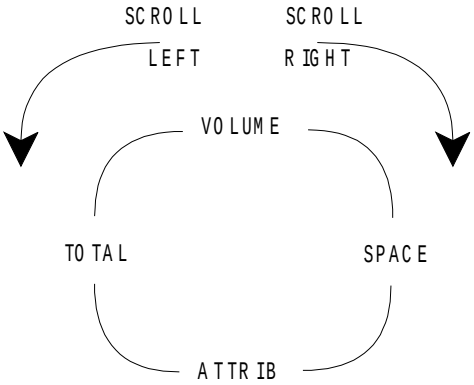


Figure 81. Sequence of Data Set List Display Views

If you enter the RIGHT command with the Total view in the sequence displayed, ISPF displays the Volume view. If you enter the LEFT command with the Volume view displayed, ISPF displays the Total view. The available views are:

1. Volume

The Volume view shows a data set list that contains data set names and the volumes on which they reside. Figure 83 on page 135 shows a typical data set list display using the Volume view.

2. Space

The Space view shows a data set list that contains data set names, tracks, percentages used, extents, and devices. Figure 84 on page 137 shows a typical data set list display using the Space view.

3. Attrib

The Attributes view shows a data set list that contains data set names, data set organizations, record formats, logical record lengths, and block sizes. Figure 85 on page 137 shows a typical data set list display using the Attributes view.

Note: For each of the above, the list is sorted by data set name. See the list under Figure 86 on page 138 for descriptions of the fields shown on this panel.

4. Total

The Total view shows a data set list that contains all the information displayed by the Volume, Space, and Attributes views, plus the created, expired, and referred dates. Figure 86 on page 138 shows a typical data set list display using the Total view. The list is sorted by data set name and has two lines per data set. See the list under the figure for descriptions of the fields shown on this panel.

Confirm Data Set Delete

This field controls whether the Confirm Delete panel appears when you are using the D (delete data set) line command from the displayed data set list or the TSO DELETE command. Use a slash to select this option.

If you select this option, ISPF displays the Confirm Delete panel (Figure 66 on page 109), giving you an opportunity to change your mind and keep the data set. If you try to delete an unexpired data set, the Confirm Purge panel (Figure 67 on page 110) is displayed following the Confirm Delete panel. Follow the directions on the panel to either confirm or cancel the data set purge.

Attention:

If you deselect the option and the data set is deleted, it cannot be retrieved.

See “D — Delete Data Set” on page 150 for more information about the D line command.

Confirm Member Delete

This field controls whether the Confirm Member Delete panel appears when you are using the D (delete) command for a member in displayed data set list. Use a slash to select this option.

If you select this option, ISPF displays the Confirm Member Delete panel (Figure 82 on page 134), giving you an opportunity to change your mind and keep the member.

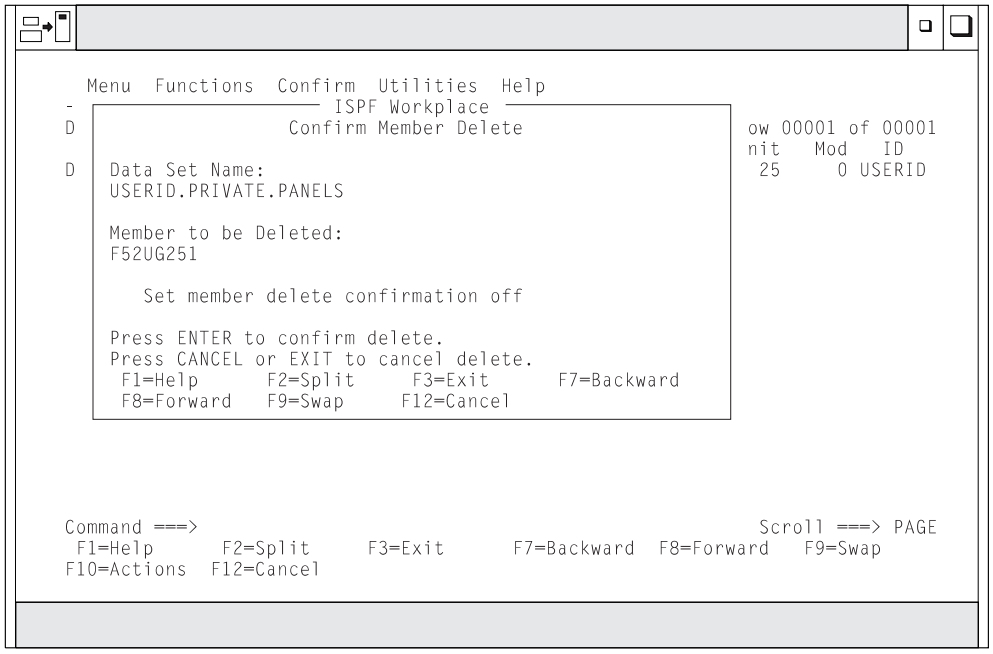


Figure 82. Confirm Member Delete Panel (ISRUDELC)

Data Set List Utility Options

The following sections describe the options shown on the Data Set List Utility panel.

Blank Display Data Set List

Leave the Option line blank to display a data set list. Also, you must do the following:

1. Enter one or more data set name level qualifiers in the **Dsname Level** field. See "Dsname Level" on page 130 for more information.
2. Enter a volume serial in the **Volume** field if you want ISPF to create a data set list from the VTOC. If you leave this field blank, the list is created from the catalog. See "Volume Serial" on page 132 for more information.
3. In the **Initial View** field, enter the view of the data set list—Volume, Space, Attributes, or Total—that you want to see first. Examples of these views are shown in Figure 83 on page 135, Figure 84 on page 137, Figure 85 on page 137, and Figure 86 on page 138, respectively.
4. Enter a slash (/) in the **Confirm Delete** field to tell ISPF to display a confirmation panel if you enter the D (delete data set) line command or the TSO DELETE command. See ""Confirm Delete Request"" on page 133 for more information.
5. Enter a slash (/) in the **Confirm Member Delete** field to tell ISPF to display a confirmation panel if you enter the D (delete) command for a member in a data set list.
6. Press Enter to display the data set list, as shown in Figure 83 on page 135.

Note: If a plus displays after the volume serial (for example, HSM020+) on a list obtained from the catalog, the data set spans multiple volumes. Information displayed about that data set by selecting Information or Short Information or by using the Space or Total view will represent the total amounts across all used volumes.

When a VTOC list is displayed and a multivolume data set is included on that volume, there will not be an indicator that this data set spans multiple volumes, and the information on a space or total view will be for that volume only. The information displayed on a VTOC list is only information obtained from the VTOC of that volume. When the multivolume data set is selected for information or for short information, the space information will be for all volumes that the data set spans.

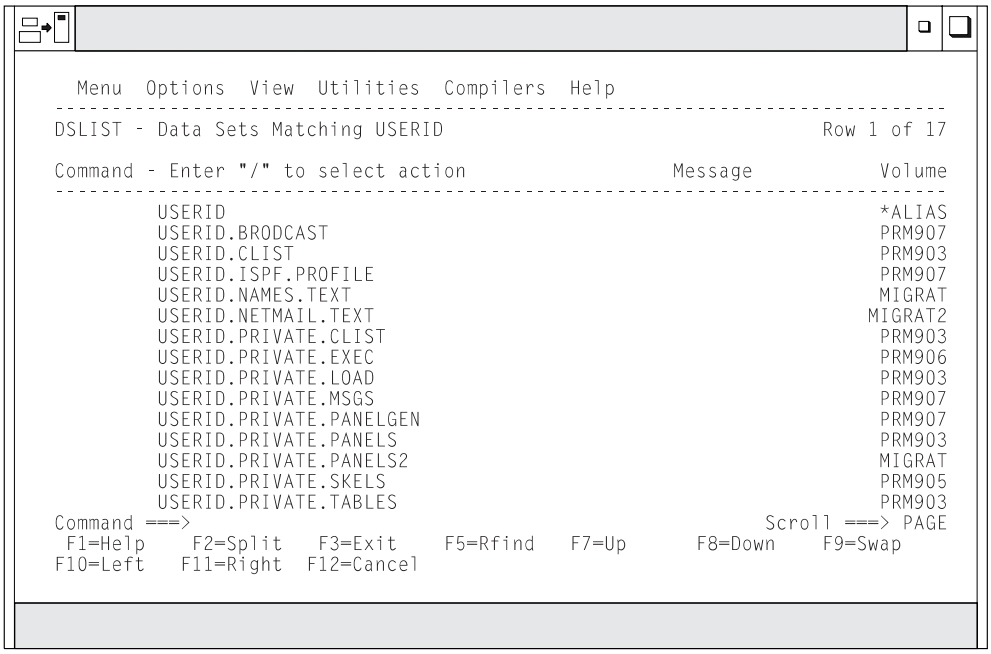


Figure 83. Data Set List - Volume View (ISRUDSL0)

Data Set List Panel Action Bar: The Data Set List panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Options

The Options pull-down offers the following choices:

DSLIST Settings...

The settings to control the behavior of the data set list display. Options are:

- Display Edit/View entry panel

  Note: If this field is selected and a workstation Edit request is initiated when no valid workstation connection exists, ISPF indicates on the Edit/View entry panel that no connection exists and treats the request as a host Edit request.
- Update ON (Reference lists)
- List pattern for MO,CO,RS actions
- Show status for MO,CO,RS actions
- Confirm Member delete
- Confirm Data Set delete

- Do not show expanded command
- E,V,B enhanced member list

  Selecting this choice causes the enhanced member list to be used when the E,V, or B commands are used. De-selecting this choice causes traditional member list processing to occur.

Refresh List
Refresh the display of the data set list.

Append to List...
Select a Personal data set list to append to the existing DSLIST. The DSLIST is rebuilt, including the data sets or data set name levels from the personal list selected.

Note: The APPEND is based on the selected personal data set list. If an entry in the list is not quoted, your TSO prefix is added as the first level of the data set name. If the entry contains a member, the member is ignored. Duplicate personal list entries are ignored. If the entry contains a volume and **Include volume on retrieve** is selected on the Referral List settings panel, a VTOC search is used instead of the catalog. A catalog search is recommended for best performance. A volume should be used only if the data set is not cataloged.

Enter the DSLIST primary command REFRESH on the DSLIST display panel to erase all appended personal lists.

Save List
Saves the data set list to a file.

Reset Resets the data set list.

View The View pull-down offers the following choices:

Note: The current setting will be shown as an unavailable choice; that is, it will display in blue (the default) with an asterisk as the first digit of the selection number (if you are running in GUI mode, the choice will be *grayed*).

1 **Volume** Changes the display to the Volume view, as shown in Figure 83 on page 135.

2 **Space** Changes the display to the Space view.

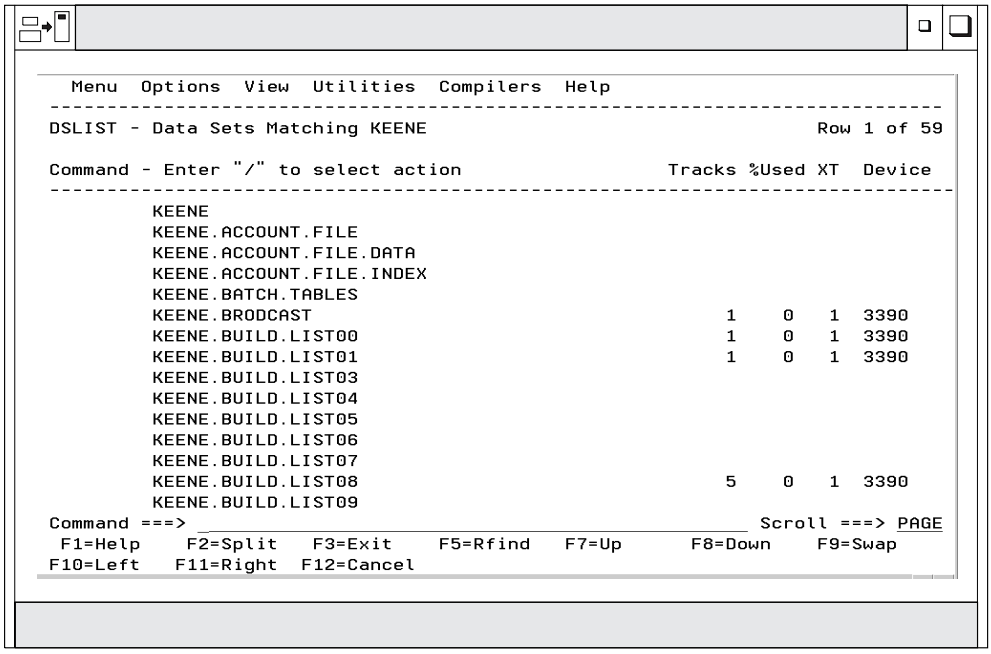


Figure 84. Data Set List - Space View (ISRUDSL0)

3 **Attributes** Changes the display to the Attributes view.

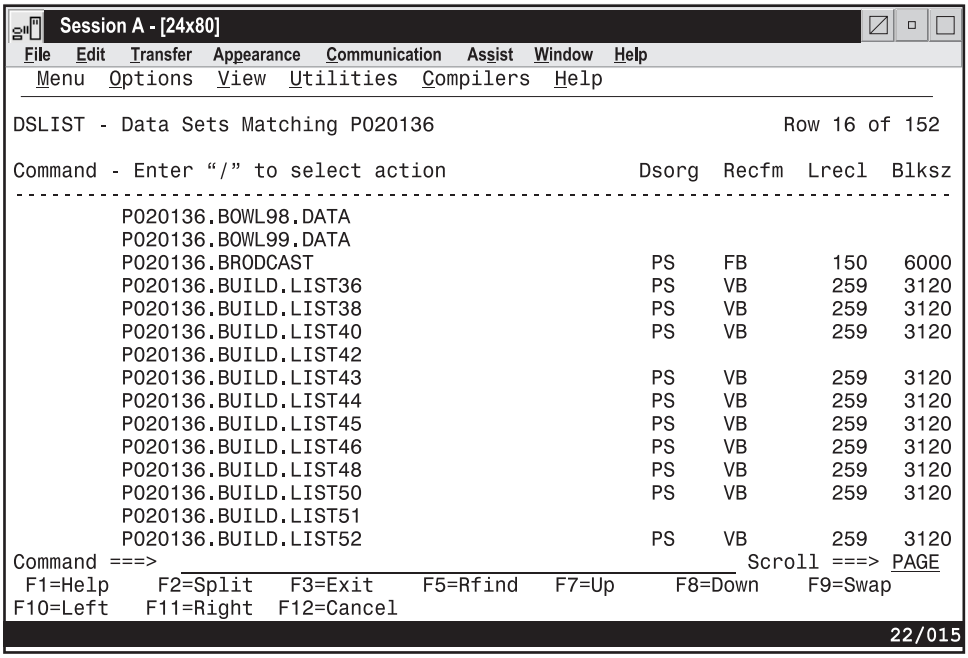


Figure 85. Data Set List - Attributes View (ISRUDSL0)

4 **Total** Changes the display to the Total view.

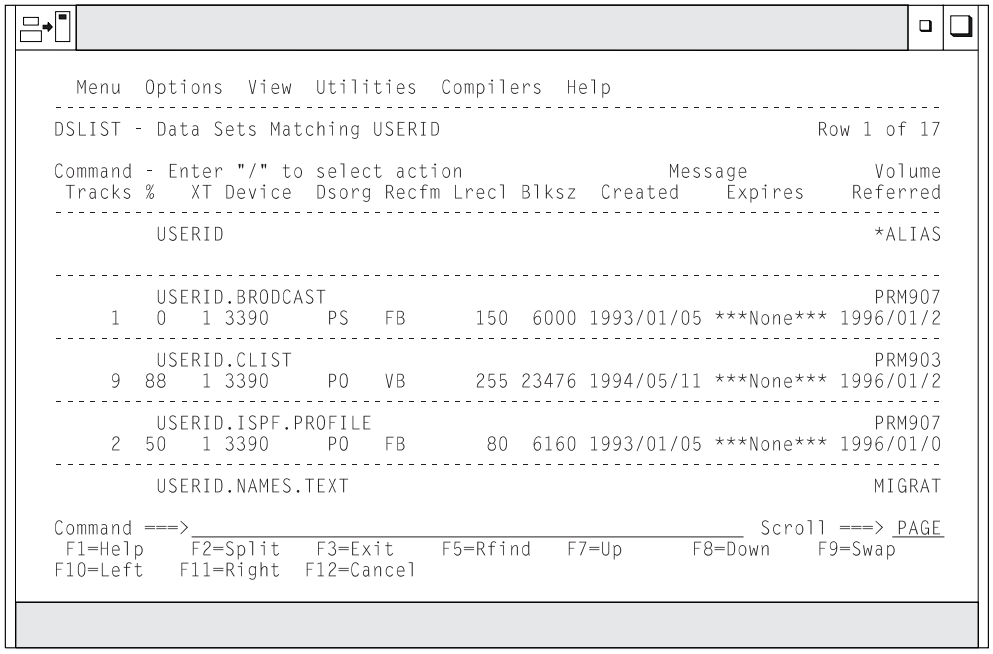


Figure 86. Data Set List - Total View (ISRUDSL0)

You can sort the views by focusing on the following fields. These choices are also available on the View pull-down:

5 **By name**
6 **By Message**
7 **By Volume**
8 **By Dsorg**
9 **By Recfm**
10 **By Lrecl**
11 **By Blksz**
12 **By Tracks**
13 **By Percent Used**
14 **By Extents**
15 **By Device**
16 **By Creation date**
17 **By Expiration date**
18 **By Referenced date**
19 **By Volume indicator**.

Utilities

See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Compilers

The Compilers pull-down offers you the following choices:

1 **Foreground Compilers**. Displays the Foreground Selection Panel.

2 **Background Compilers**. Displays the Batch Selection Panel.

3 **ISPPREP Panel Utility...** Displays the Preprocessed Panel Utility panel.

4 **DTL Compiler...** Displays the ISPF Dialog Tag Language Conversion Utility panel.

Help The Help pull-down offers you the following choices:

1 General
2 Description of ISPF-supplied line commands
3 Using the "/" character to represent a quoted Data Set name
4 Format of the displayed list
5 Available primary commands when the list is displayed
6 Appendices
7 Index

Data Set List Panel Fields: The following fields can appear on the data set list panels. The fields displayed will vary depending on the view that you select.

Command
Field used to enter a line command, TSO command, CLIST, or REXX EXEC when displaying a data set list. See "Blank Display Data Set List" on page 134 for more information.

Name Data set name, as in the VTOC or catalog.

Message
This field is initially blank. However, after you carry out an operation on a data set using one of the built-in line commands listed on the Data Set List Utility panel, a message appears in this field showing the last function used on that data set. The line commands and the messages that appear when they are used are shown in Table 12.

Table 12. Line Commands and Messages

Line Command	Message	Line Command	Message
B	Browsed	C	Cataloged
E	Edited	U	Uncataloged
D	Deleted	P	Printed
R	Renamed	PX	Index Printed
I	Info - I	M	Member List
S	Info - S	Z	Compressed
F	Free Completed	=	Message shown for last command entered.
V	Viewed	RA	Refadd
CO	Copied	MO	Moved
RS	Reset	RA	Add data set to personal dslist.
X	— 1 lines not displayed	NX	no message
NXF	no message	NXL	no message

If you enter a TSO command, CLIST, or REXX EXEC on the Command line, a default message appears in the Message field. The message you see depends on the results of the TSO command, CLIST, or REXX EXEC and has the following format:

```
XXXXXXXX  RC=#
```

where:

XXXXXXXX The command entered

The return code.

Note: See "Data Set List Utility Line Commands" on page 146 for a description of the Data Set List Utility line commands.

Volume
Volume serial number.

Multivol
Indicates more than one volume or a migration level in the following manner:

+ (plus sign)
More than one volume

1 Migrated to disk

2 Migrated to tape

Tracks Number of tracks allocated to the data set.

% Percentage of allocated tracks used, expressed in whole numbers, not rounded. If any track is used, the minimum percentage is 1. If the data set is a PDSE, the % refers to the percentage of allocated pages used.

Note: See "F — Free Unused Space" on page 151 for information about freeing track space manually.

XT Number of extents allocated to the data set.

Device
Device type on which the volume that contains the data set is mounted.

Dsorg One of the following data set organizations. In the definitions of these data set organizations, *unmovable* means the data set contains absolute addresses instead of relative addresses. These data sets are not moved to any other DASD storage location during read/write operations.

PS Sequential
PS-E Sequential Extended
PSU Sequential unmovable
PO Partitioned
POU Partitioned unmovable
PO-E Partitioned extended
DA Direct
DAU Direct unmovable
IS Indexed sequential
ISU Indexed sequential unmovable
VS VSAM
VS-E VSAM Extended
blank None of the preceding data set organizations.

Recfm Record format specified when the data set was allocated. See "A — Allocate New Data Set" on page 97 for more information about record formats.

Lrecl Logical record length, in bytes, specified when the data set was allocated.

Blksz Block size, in bytes, specified when the data set was allocated.

Blksize
Block size, in bytes, specified when the data set was allocated.

Created
Creation date in the national format.

Expires
Expiration date in the national format, specified when the data set was allocated. If no expiration date was specified, ***None*** is displayed. If a "never expire" date (1999/12/31 or its equivalent) is specified, ***Perm*** is displayed. See "A — Allocate New Data Set" on page 97 for more information about expiration dates.

Referred
Date, in the national format, that this data set was last accessed.

Actions You Can Take from the Data Set List Panel: The following sections describe actions you can take from the Data Set List panel.

Line Commands: Line commands can be entered in the Command field to the left of the data set names. See "Data Set List Utility Line Commands" on page 146 for definitions of these line commands.

TSO Commands, CLISTs, and REXX EXECs: Besides the ISPF-supplied line commands, you can also enter TSO commands, CLISTs, and REXX EXECs that use a fully-qualified data set name as an operand. You can type over the field containing the data set name to enter commands that require more space than is provided in the **Command** field. ISPF determines the end of the command by scanning the **Command** field and the field containing the data set name from right to left. The first character found that differs from the original is considered to be the last character of the command. Therefore, it is best to enter a blank after the last character of your command if it extends into the field containing the data set name.

TSO commands, CLISTs, and REXX EXECs entered are invoked using the ISPF SELECT CMD service. Variable names starting with an ampersand (&) are evaluated by ISPF. If you want the underlying command processor to see the ampersand you must specify 2 ampersands. For example:

```
DEF NONVSAM(NAME(/) DEVT(0000) VOLUME(&&SYSR2))
```

Note: If the TSO command, CLIST, or REXX EXEC issues a return code greater than or equal to 8, processing stops and an error message is displayed.

Using the Slash (/) Character: If a command, CLIST, or REXX EXEC requires the data set name in a position other than the first operand or if other operands are needed, you can use the slash (/) character to represent the quoted data set name. If no operands are specified after the command, ISPF uses the name of the data set being acted on as the command's first operand.

To specify a member of a partitioned data set, enclose the member name in parentheses immediately following the / character. You can use this format with the V (view data set), B (browse data set), E (edit data set), and M (display member list) line commands. For information about these line commands, see "Data Set List Utility Line Commands" on page 146.

You may find it helpful to call the SHOWCMD primary command before using the slash (/) for the first time. After you call SHOWCMD, a special Data Set List Utility panel appears each time you enter a line command, TSO command, CLIST, or REXX EXEC on a data set list display. The panel shows you the command you entered and how ISPF expanded, and thus interpreted, that command. See "SHOWCMD Command" on page 156 for more information about and an example of the SHOWCMD primary command.

The following rules apply to substituting the slash (/) character for a data set name. Each rule is followed by one or more examples that prove the rule by using either a CLIST or a line command.

In each example, the data set being acted on is USER.TEST.DATA, which always appears, either completely or partially, in uppercase. However, the CLIST or line command is typed in lowercase to differentiate between the CLIST or line command and USER.TEST.DATA when this data set name is either completely or partially typed over.

Each example also shows:

Original
The line as it appears before the CLIST or line command is entered.

As typed
The line as it appears after the CLIST or line command is typed.

After The line as it appears after the CLIST or line command is expanded to show the placement of quotes and data set name substitution for the slash (/) character.

1. You can type over the data set name. Expanded commands can contain a maximum of 255 characters and are converted to uppercase. The following example shows how rule 1 would apply if you typed `%clist1 da(/)`:

```
(Original)           USER.TEST.DATA
(As typed)  %clist1 da(/).TEST.DATA
(After)     %CLIST1 DA('USER.TEST.DATA')
```

2. The data set name substitution character (/) is replaced with the quoted, fully-qualified data set name if the character following the / is not a number, letter, or national character. The following example shows how rule 2 would apply if you typed `%clist2 / newdate(1986/03/15)`:

```
(Original)           USER.TEST.DATA
(As typed)  %clist2 / newdate(1986/03/15)
(After)     %CLIST2 'USER.TEST.DATA' NEWDATE(1986/03/15)
```

3. If a slash (/) is followed immediately by a member name in parentheses, the ending quote for the data set is placed after the closing parenthesis that follows the member name. The following example shows how rule 3 would apply if you typed `%clist3 da(/(xyz))`:

```
(Original)           USER.TEST.DATA
(As typed)  %clist3 da(/(xyz)).DATA
(After)     %CLIST3 DA('USER.TEST.DATA(XYZ)')
```

4. If the first operand is the unquoted data set name as it appears in the list, quotes are added around it or after a closing parenthesis following a member name. The following example shows how rule 4 would apply if you typed `b` (the B (browse) line command) and added member `(abc)`:

```
(Original)           USER.TEST.DATA
(As typed)  b        USER.TEST.DATA(abc)
(After)     B 'USER.TEST.DATA(ABC)'
```

5. If the line command does not have any operands or if the data set name has not been substituted as specified by either rule 3 or rule 4, the quoted, fully-qualified data set name is added to the end of the line command. The following example shows how rule 5 would apply if you typed `%clist4 user.test.fortran`:

```
(Original)           USER.TEST.DATA
(As typed)  %clist4 user.test.fortran
(After)     %CLIST4 USER.TEST.FORTRAN 'USER.TEST.DATA'
```

The following example shows how rule 5 on page 142 would apply if you typed `%clist4 'user.test.fortran'`. The purpose of this example is to show that if you enclose the CLIST operand in quotes, ISPF still puts quotes around the data set name being acted on. The results are the same.

```
(Original)          USER.TEST.DATA
(As typed)  %clist4 'user.test.fortran'
(After)     %CLIST4 'USER.TEST.FORTRAN' 'USER.TEST.DATA'
```

The following example shows how rule 5 on page 142 would apply if you typed `%clist5 member1(abc)`. The purpose of this example is to show that the results do not change if the CLIST operand contains a member name enclosed in parentheses.

```
(Original)          USER.TEST.DATA
(As typed)  %clist5 member1(abc)ATA
(After)     %CLIST5 MEMBER1(ABC) 'USER.TEST.DATA'
```

TSO Command/CLIST/REXX EXEC Variables: If you use a TSO command, CLIST, or REXX EXEC, ISPF puts the variables described in Table 13 in the shared pool for the TSO command, CLIST, or REXX EXEC to use.

Table 13. TSO Command/CLIST/REXX EXEC Variables (Output)

Variable Name	Description	Length in Characters
ZDLCMD	Line command	
ZDLXSTAT	Exclude status	
ZDLMVOL	Volume indicator	
ZDLDSN	Data set name	44
ZDLVOL	Volume	6
ZDLDEV	Device type	8
ZDLDSORG	Data set organization	4
ZDLRECFM	Data set record format	5
ZDLLRECL	Data set logical record length	5
ZDLBLKSZ	Data set block size	5
ZDLSIZE	Data set size in tracks	6
ZDLUSED	Percentage of used tracks	3
ZDLEXT	Number of extents used	3
ZDLDSNTP	Data set name type	8
ZDLCDATE	Creation date	10
ZDLEDATE	Expiration date	10
ZDLRDATE	Date last referenced	10
ZDLCONF	Delete confirmation (Y | N)	1
ZDLLCMD	Expanded line command	255

Table 13. TSO Command/CLIST/REXX EXEC Variables (Output) (continued)

Variable Name	Description	Length in Characters
ZDLCAT	Cataloged status; one of the following:	(1)
	0 Data set is cataloged on volume ZDLVOL.	
	2 Data set is cataloged on a volume other than ZDLVOL and is uncataloged on volume ZDLVOL.	
	4 Data set is uncataloged on volume ZDLVOL.	
	6 Data set is not cataloged on any volume and is uncataloged on volume ZDLVOL.	
	8 Data set is not available on volume ZDLVOL. This status is returned for data sets that have been either migrated or deleted.	

A TSO command, CLIST, or REXX EXEC can set the following variables and place them in the shared pool to communicate with the Data Set List utility (option 3.4).

Table 14. TSO Command/CLIST/REXX EXEC Variables (Input)

Variable Name	Description	Length in Characters
ZDLNDSN	New data set name to appear in list	44
ZDLMSG	Message to appear in list	16
ZDLREF	Refresh data set information; Y | N	1

P — Print Data Set List

Use option P to print a data set list. You must:

1. Enter one of the following:
   - One or more data set name level qualifiers in the **Dsname Level** field and a volume serial in the **Volume** field. The list will contain all data sets for the specified levels and volume. Only the specified volume is searched. See "Dsname Level" on page 130 and "Volume Serial" on page 132 for more information.
   - One or more data set name level qualifiers in the **Dsname Level** field, but leave the **Volume** field blank. The list will contain all data sets for the specified levels that are cataloged.
   - A volume serial in the **Volume** field, but leave the **Dsname Level** field blank. The list will contain only the data sets on the specified volume. Only the specified volume is searched.

   Note: All data set lists are formatted the same when they are printed. Therefore, values entered in the **Initial View** field have no effect when you use option P.
2. Press Enter to print the data set list. The data set list is stored in the ISPF list data set.

V — Display VTOC Information

Use option V to display VTOC (volume table of contents) information. The List VTOC utility (formerly option 3.7) has been removed from ISPF. Options V and PV perform the function formerly provided by this utility.

To use option V, you must do the following:

1. In the **Volume** field, specify the volume serial for which you want ISPF to display information.

   Note: VTOC information is formatted the same, whether displayed or printed. Therefore, values entered in the **Initial Display View** field have no effect when you use option V.

2. Press Enter to display the VTOC information.

   Note: The **Dsname Level** field is not applicable for the V or PV command. Only the **Volume** field is relevant.

Figure 87 shows an example of a VTOC display.

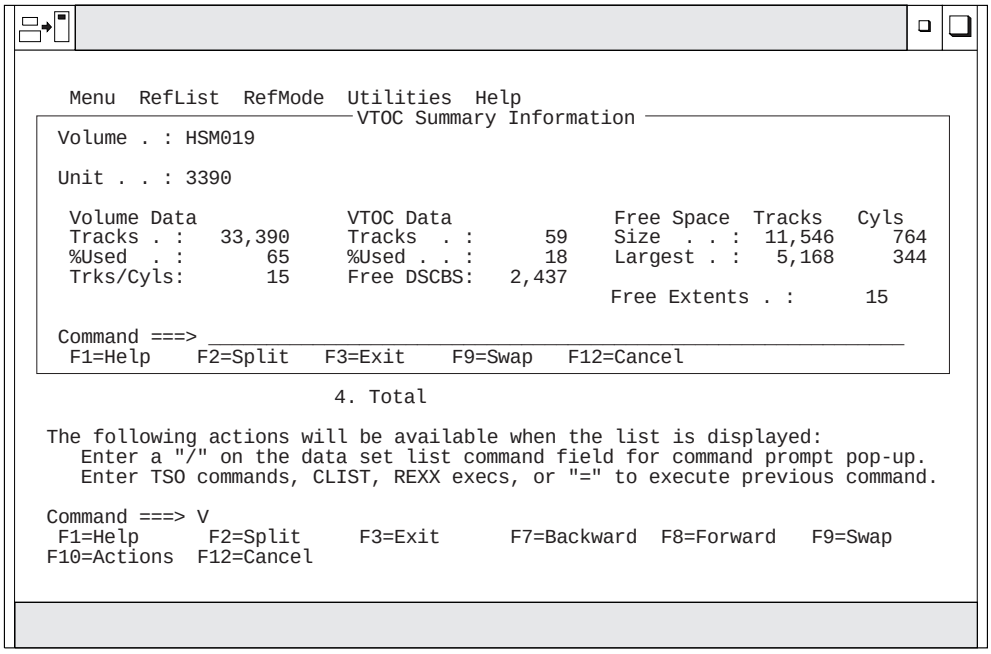


Figure 87. VTOC Summary Information Panel (ISRUDSLV)

Track values do not include the remaining alternate tracks for the volume. The free space track values are the number of tracks for the free cylinders plus any additional free tracks.

The fields shown on the VTOC Summary Information panel are:

Unit Shows the type of DASD device the volume is on, such as 3330, 3350, 3380, and so forth.

Volume Data
Describes general information about the volume:

Tracks Total tracks on the volume.

%Used
Percentage of total tracks or pages not available for allocation.

Trks/Cyls
Number of tracks per cylinder for this volume.

VTOC Data
Describes general information about the VTOC on the volume:

Tracks Total tracks allocated to the VTOC.

%Used
Percentage of allocated tracks or pages used by data set control blocks (DSCBs).

Free DSCBS
Number of unused DSCBs.

Free Space
Describes the free space available for data set allocation on the volume under the headings Tracks and Cyls, showing:

Size Total number of free tracks and cylinders.

Largest
The largest number of contiguous free tracks and cylinders.

Free Extents
The number of free areas with free cylinders.

PV — Print VTOC Information

Use option PV to print VTOC information. The List VTOC utility (formerly option 3.7) has been removed from ISPF. Options V and PV perform the function formerly provided by this utility.

To use option PV, you must do the following:

1. Blank out the **Dsname Level** field.
2. In the **Volume** field, specify the volume serial for which you want ISPF to print information.

   Note: VTOC information is formatted the same, whether displayed or printed. Therefore, values entered in the **Initial View** field have no effect when using option PV.
3. Press Enter to print the VTOC information. The VTOC information is stored in the ISPF list data set.

   Note: The **Dsname Level** field is not applicable for the PV or V command. Only the **Volume** field is relevant.

Data Set List Utility Line Commands

After you display a data set list by leaving the **Option** field blank, you can enter a line command to the left of the data set name. You can also enter TSO commands, CLIST names, or REXX EXEC names. The slash (/) character, which can be used with TSO commands, CLISTs, and REXX EXECs, can also be used with the V (view data set), B (browse data set), E (edit data set), and M (display member list) line commands to specify a member name or a pattern. You can type over the field containing the data set name to enter commands that require more than the space provided. For more information about using this symbol, see “Using the Slash (/) Character” on page 141. For more information about member name patterns, see

the description under the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*.

Line commands that are valid for aliases may be used with any alias data sets that are listed. Uncatalog, delete, and rename commands are not valid for alias data sets. A line command such as 'B' for browse or 'I' for information will display the real name of the data set.

The **Command** field and the field containing the data set name fields make up a single point-and-shoot field. If you enter a slash in the **Command** field or if you select any part of the combined point-and-shoot field, the Data Set List Actions pop-up shown in Figure 88 is displayed so that you can select the command you want to use.

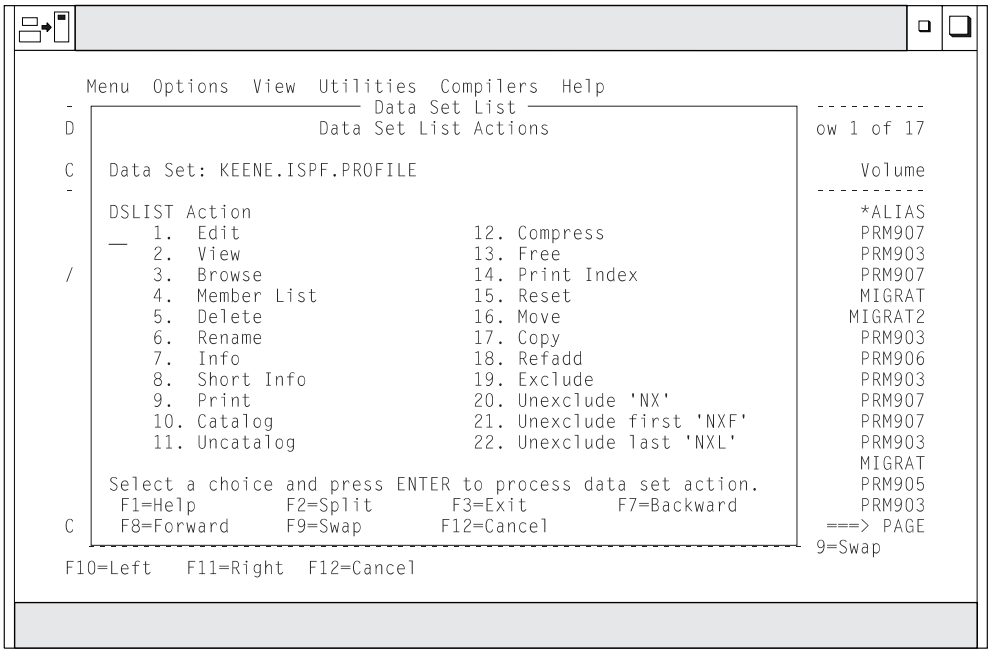


Figure 88. Data Set List Commands Pop-Up (ISRUDABC)

E — Edit Data Set

For the E command, the processing is similar to selecting the Edit option (2) and entering the library or data set name on the Edit Entry Panel, except that mixed mode is the assumed operation mode.

Note: Multivolume data sets do not support the **Volume Serial** field for the Edit command.

If you select a library or other partitioned data set, an Edit member list is displayed. See the **Using Member Selection Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.

The E line command uses the values from a prompt panel to specify items including the initial macro, profile name, panel name, format, mixed mode, and workstation editing. These values are stored in the profile and are used on subsequent edits.

To change these values, use the **DSLIST settings...** panel on the data set list **Options** pull-down. Check both the "E,V,B enhanced member list" and the "Display Edit/View entry panel" options. The prompt panel is always shown when you edit a sequential file, or when you directly edit a member of a partitioned data set. When you are using a member list you can force the display of the panel by placing a slash mark (/) in the **Prompt** field next to the member you select.

If the editor appears to be invoking an unexpected initial macro, or it appears to be using an unexpected profile, follow the process above to check the values on the prompt panel.

V — View Data Set

For the V command, the processing is similar to selecting the View option (1) and entering the library or data set name on the View Entry Panel. If you have set your DSLIST options to not show the edit/view entry panel:

- Mixed mode is the assumed operation mode.
- You cannot specify a data set format, an edit profile, or an initial macro.

Note: Multivolume data sets do not support the **Volume Serial** field for the View command.

If you select a library or other partitioned data set, an Edit member list is displayed. See the **Using Member Selection Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.

B — Browse Data Set

For the B command, processing is the same as if you specify Browse Mode from View (option 1), except that mixed mode is the assumed operation mode and you cannot specify a data set format. To browse a data set with mixed mode off, you must use the View option; deselect **Mixed Mode** and select **Browse Mode** on the View Entry Panel. If you enter the B line command beside an ISPF library or other partitioned data set, a Browse member list is displayed. See the **Using Member Selection Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.

Note: From a catalog list, multivolume data sets do not support the **Volume Serial** field for the Browse command.

M — Display Member List

For the M command, a member selection list of a partitioned data set is displayed. This member list provides an expanded Line Command field in the area to the left of the list. The Line Command field in other member lists has room for only one character, unless the browse, view, or edit *enhanced* member list is selected.

From the member list, you can use the same primary commands and line commands that are valid for Library utility (option 3.1) member selection lists. See the **Using Member Selection Lists** and **Library and Data Set List Utility Line Commands** sections of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.

Notes:

1. From a VTOC list, you can browse a single volume of a multivolume non-SMS data set.

2. You can *chain* the line commands; that is, you can select multiple members from a member list for various processing tasks. Use the CANCEL command (from a View, Browse, or Edit session) to break the chain and return to the member list.

You can also enter TSO commands, CLISTs, or REXX EXECs in the Line Command field. If you enter a line command other than B (browse), D (delete), E (edit), R (rename), C (copy), M (move), G (reset), J (submit), or P (print), ISPF interprets it as a TSO command, CLIST, or REXX EXEC.

The command is selected with the quoted, fully-qualified data set name and member added to it, such as:

```
COMMAND 'DSN(MEMBER)'
```

See "TSO Commands, CLISTs, and REXX EXECs" on page 141 for more information.

Note: If the TSO command, CLIST, or REXX EXEC issues a return code greater than or equal to 8, processing stops and an error message is displayed.

Figure 89 shows an example of a member list with statistics and an expanded Line Command field.

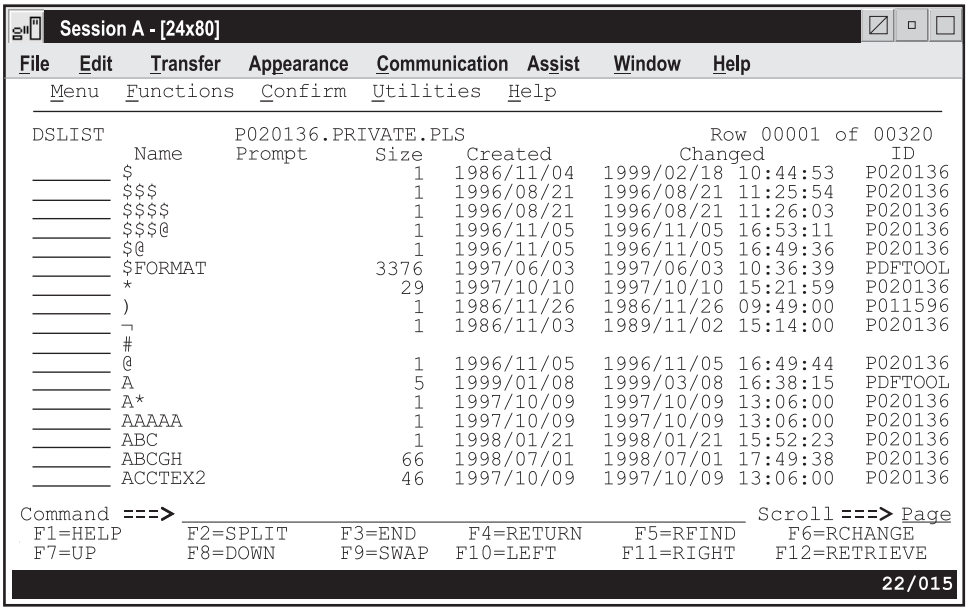


Figure 89. Member List Display - Expanded Line Command Field (ISRUDSM)

Figure 90 on page 150 shows load module library statistics with an expanded Line Command field.

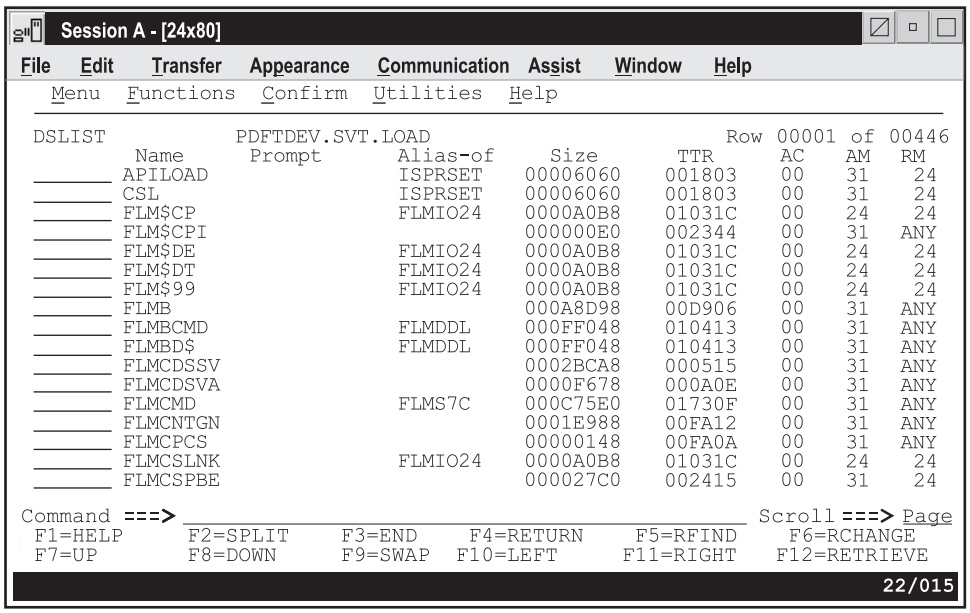


Figure 90. Load Module Library Display - Expanded Line Command Field (ISRUDSM)

D — Delete Data Set

For the D command, the processing is the same as if you had selected option D from the Data Set utility (option 3.2) without specifying a volume serial. This command deletes and uncatalogs the entire data set.

Note: Delete is not allowed for multivolume data sets from a VTOC list.

If you select the Confirm Delete option on the Data Set List Utility panel, the Confirm Delete panel (Figure 66 on page 109) is displayed to allow you to continue or cancel the operation. If you are trying to delete an unexpired data set, the Confirm Purge panel (Figure 67 on page 110) is also displayed.

When you delete a data set the volume name is compared to the volume name in the configuration table. If the names match, the command specified in the configuration table is used in place of the ISPF delete processing. This allows you to delete migrated data sets without first causing them to be recalled.

R — Rename Data Set

For the R command, the processing is the same as if you had selected option R from the Data Set utility (option 3.2). The Rename Data Set panel (Figure 63 on page 105) is displayed to allow you to specify the new name.

Note: Rename is not allowed for multivolume data sets from a VTOC list.

See “R — Rename Entire Data Set” on page 104 and “Renaming Managed Data Sets” on page 105 for more information.

I — Data Set Information

For the I command, the processing is the same as if you had selected option I from the Library utility (option 3.1) or left the **Option** field blank with the Data Set utility (option 3.2). See “I — Data Set Information” on page 87 and “Information for Managed Data Sets” on page 89 for more information.

Note: For multivolume data sets, options I and S display current allocation and utilization values that represent totals from all volumes used.

S — Information (Short)

For the S command, the processing is the same as if you had selected option S from the Library utility (option 3.1) or the Data Set utility (option 3.2). See "S — Short Data Set Information" on page 91 and "Short Information for Managed Data Sets" on page 92 for more information.

P — Print Data Set

For the P command, the processing is the same as if you had selected option L from the Library utility (option 3.1). This command formats the contents of a source data set for printing and records the output in the ISPF list data set. It also produces an index listing, which appears at the beginning of the output.

Note: The Print command is not allowed for multivolume data sets from a VTOC list.

C — Catalog Data Set

For the C command, the processing is the same as if you had selected option C from the Data Set utility (option 3.2). See "C — Catalog Data Set" on page 104 for more information.

Note: Multivolume data sets are always cataloged.

U — Uncatalog Data Set

For the U command, the processing is the same as if you had selected option U from the Data Set utility (option 3.2). See "U — Uncatalog Data Set" on page 107 for more information.

Note: The U command is not supported for multivolume data sets.

Z — Compress Data Set

For the Z command, the processing is the same as if you had selected option C from the Library utility (option 3.1). This command recovers wasted space that was formerly occupied by deleted or updated members and is now available for use again. You do not need to compress a PDSE. If you use the Z command on a PDSE, the data is not reorganized.

The Z command calls either the IEBCOPY utility or the compress request exit routine. Refer to *ISPF Planning and Customizing* for more information.

F — Free Unused Space

For the F command, space that is not being used by the data set is released. For example, if a data set is allocated with 100 tracks but is only using 60 tracks, the F command releases the 40 tracks that are not being used.

Note: The F command is not supported for multivolume data sets.

However, if the data set has been allocated with CYLS (cylinders) specified as the space units, only the tracks beyond the last cylinder used are freed. For example, if a data set occupies 1.2 of 3 allocated cylinders, the F command frees all tracks beyond the last used cylinder, leaving 2 cylinders allocated.

PX — Print Index Listing

For the PX command, the processing is the same as if you had selected option X from the Library utility (option 3.1). The index listing is recorded in the ISPF list

data set. You can also use the short form *H* for this command. See "X — Print Index Listing" on page 86 for more information.

Note: The Print command is not allowed for multivolume data sets from a VTOC list.

RS — Reset

For the RESET command, a panel is displayed that prompts you to reset or delete ISPF statistics, and to enter a new user ID, version number, or modification level. You can also use the short form *G* for this command.

MO — Move

For the MOVE command, a panel is displayed that prompts you for a library or data set name for the *to* data set. You can also use the short form *O* for this command.

Note: The MO and CO line commands do not preserve the alias relationship between 2 load modules copied in the same interaction. The alias member is copied as a new member.

CO — Copy

For the COPY command, a panel is displayed that prompts you for a library or data set name for the *to* data set. You can also use the short form *Y* for this command.

Note: The MO and CO line commands do not preserve the alias relationship between 2 load modules copied in the same interaction. The alias member is copied as a new member.

RA — RefAdd

For the REFADD command, you are provided with an interface to referral lists, where you can add a data set and a volume to a Personal Data Set List. You can also use the short form *A* for this command.

X — Exclude Data Set

For the EXCLUDE command, one data set from a data set list is excluded from the list.

NX — Unexclude Data Set

For the Unexclude command, one data set, or a set of data sets that have been excluded from a data set list are re-shown.

NXF — Unexclude First Data Set

For the UNEXCLUDE FIRST command, the first of a set of excluded data sets is re-shown.

NXL — Unexclude Last Data Set

For the UNEXCLUDE LAST command, the last of a set of excluded data sets is re-shown.

= — Repeat Last Command

For the = command, the most recently used line command is repeated. This command is most helpful when the same TSO command, CLIST, or REXX EXEC is to be called for more than one data set in a data set list. For example, suppose you have a CLIST named TESTABC and two data sets named USER.DATA1 and USER.DATA2. To run the CLIST with the two data sets consecutively from a data set list, you could:

1. Type `TESTABC` in the Command field beside USER.DATA1.

2. Type = in the Command field beside USER.DATA2.
3. Press Enter.

This procedure saves keystrokes because you type the CLIST name only once and you press Enter only once.

Data Set List Utility Primary Commands

Primary commands are available when you use the Data Set List utility. These commands, which you enter on the command line, are:

- APPEND
- CONFIRM
- DSLIST
- EXCLUDE
- FIND and RFIND
- LC
- LOCATE
- REFRESH
- RESET
- SAVE
- SHOWCMD
- SORT
- VA, VS, VT, and VV

The following sections describe these commands, which are shown in alphabetical order.

APPEND Command

The APPEND primary command appends additional data sets an existing displayed DSLIST. Use the following format:

APPEND [*list name* **| DSname level]**

You can use the APPEND command with no parameters to get a list of your personal data sets. Then select the one you want to append to the current list.

If you give a *list name* with the command, the list given is appended.

By specifying *DSname level* as a parameter, you can use the resulting list to select which list to append to the current one. For example, entering **APPEND Userid.C*** gives you a list of all personal lists that begin with C as the second-level identifier. Then you can select the one to append.

By specifying *DSname level* in quotes, data sets beginning with the DSname level are appended to the data set list.

CONFIRM Command

The CONFIRM primary command controls display of the Confirm Delete panel. Use the following format:

CONFIRM [ON | OFF]

You can use the following operands with the CONFIRM command:

ON Tells ISPF to display the Confirm Delete panel when you enter the D (delete data set) line command or TSO DELETE command. This is the default setting.

OFF Tells ISPF not to display the Confirm Delete panel.

For example, the following command would tell ISPF not to display the Confirm Delete panel:

```
CONFIRM OFF
```

EXCLUDE Command

The EXCLUDE primary command excludes data sets from a list based on a character string. Use the following format:

```
EXCLUDE [character string]
           [ALL  ] [PREFIX]
           [NEXT]  [CHARS]
           [FIRST] [SUFFIX]
           [LAST ] [WORD  ]
           [PREV ]
```

You can use the following operands with the EXCLUDE command:

character string
Tells ISPF which data set to exclude from the list.

ALL Tells ISPF to exclude every data set in the list.

NEXT | FIRST | LAST | PREV
Operands that define the starting point, direction, and extent of the lines to exclude.

PREFIX | CHARS | SUFFIX | WORD
Operands that set the conditions for a character string match.

For example, the following command tells ISPF to exclude a data set that includes BILBO3 in the name from a list:

```
EXCLUDE BILBO3
```

FIND and RFIND Commands

The FIND primary command finds and displays a character string within the data set name. Use the following format:

```
FIND string [NEXT]  [CHARS]
            [ALL  ] [PREFIX] [X]
            [FIRST] [SUFFIX] [NX]
            [LAST ] [WORD  ]
            [PREV ]
```

For example, the following command would tell ISPF to find all occurrences of the character string ELSE:

```
FIND ELSE ALL
```

The operands **X** and **NX** can be used to limit your search to excluded (X) or unexcluded (NX) data sets.

For more information about the operands used with this command, see "FIND—Finding Character Strings" on page 66. NEXT and CHARS are the default operands.

ISPF automatically scrolls to bring the character string to the top of the list. To repeat the search without reentering the character string, use the RFIND command.

Note: RFIND search starts from the second data set in the list. It is not cursor-sensitive.

LC Command

The LC primary command invokes the color change utility from the command line of a data set list display, as shown in Figure 91.

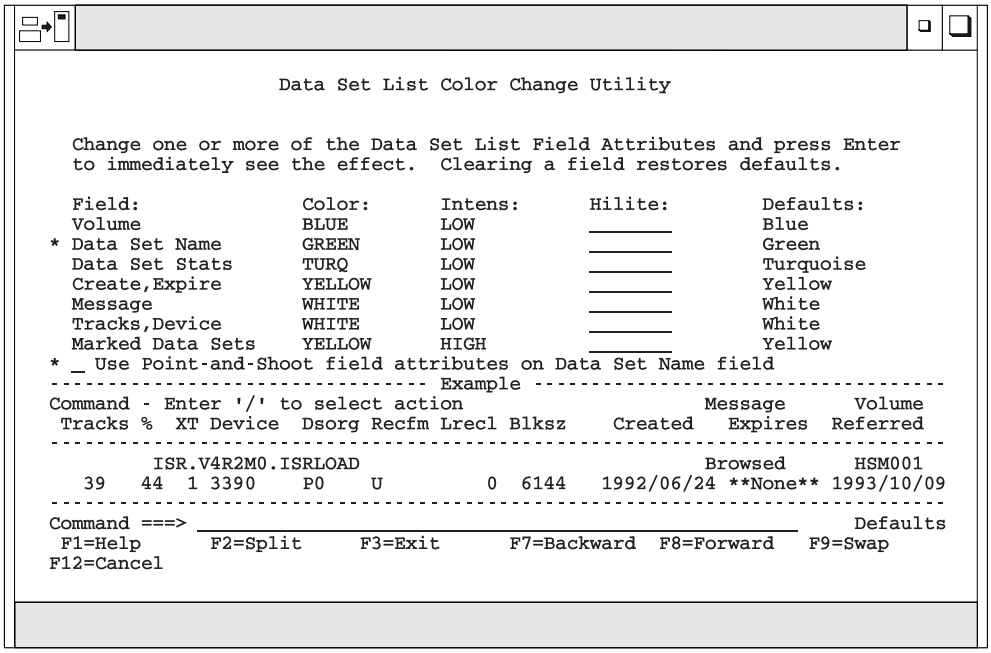


Figure 91. Data Set List Color Change Utility Panel (ISRDLCP)

LOCATE Command

The LOCATE primary command scrolls the list of data sets based on the field on which the data set list is sorted, as described under "SORT Command" on page 158. Use the following format:

LOCATE *lparm*

You can use the *lparm* operand with the LOCATE command for either of the following situations:

- If the list is sorted by data set name, specify a data set name.
- If the list is sorted by another field, specify a value for the field by which the list is sorted.

For example, for a data set list sorted by volume, you could enter the following:

```
LOCATE TSOPK1
```

This command locates the first data set in the list on volume TSOPK1. If the value is not found, the list is displayed starting with the entry before which the specified value would have occurred.

REFRESH Command

The REFRESH primary command updates the display of the data set list to whatever the list's current state is. For example, after deleting several items on the

list, REFRESH causes the list to be displayed without the deleted items. If you have appended to the list, REFRESH restores the list to its status *before* the append operation.

RESET Command

The RESET primary command unexcludes data sets that were excluded from a list, and removes any pending line commands and messages from the data set list.

SAVE Command

The SAVE primary command writes the data set list to the ISPF list data set or to a sequential data set. ISPF writes the data set list in its current sort order. Use the following format:

SAVE [*list-id*]

where *list-id* is an optional user-specified qualifier of the data set to which the member list will be written. ISPF names the data set:

*prefix.userid.list-id.*DATASETS

where:

prefix
Your data set prefix, as specified in your TSO user profile. If you have no prefix set, or if your prefix is the same as your user ID, the prefix is omitted and the data set name will be: *userid.list-id*.DATASETS.

userid
Your TSO user ID.

The data set is created if it does not exist, or written over if it exists, and has compatible attributes. If you omit the *list-id* operand, the list is written to the ISPF list data set and includes the list headings.

The following command would tell ISPF to write the list to a sequential data set named either *prefix.userid*.MY.DATASETS or *userid*.MY.DATASETS.

```
SAVE MY
```

If the sequential data set already exists, ISPF writes over it; if not, ISPF creates it.

ISPF displays a message, if necessary, when you enter a SAVE or SORT primary command that shows that the data needed to do the function is being retrieved. The keyboard locks when this message appears and stays locked until the SAVE or SORT command is completed.

SHOWCMD Command

The SHOWCMD primary command controls the display of line commands and their operands as they are called. Use the following format:

SHOWCMD [ON | OFF]

where:

ON
Tells ISPF to display line commands. This is the default setting.

OFF
Tells ISPF not to display line commands. Though the SHOWCMD default is ON, SHOWCMD is initially set to OFF.

After you enter SHOWCMD ON, a panel (Figure 92) is displayed each time you enter a line command, TSO command, CLIST, or REXX EXEC on a data set list display.

On this panel, you see the command as you typed it and then, a few lines down, you see the command as ISPF interpreted it. Seeing these commands displayed can be especially useful when you use the slash (/) character to substitute for the data set name because the panel shows the line command after expansion occurs. Therefore, you can tell immediately whether you need to add operands to the command.

For example, suppose you have a data set list displayed on the screen and decide to browse member MEMB1 of data set USER.TEST.DATA. To see how ISPF interprets the B (browse) line command, type `SHOWCMD ON` on the Command line and press Enter. Then, enter the following line command in the **Line Command** field to the left of USER.TEST.DATA:

```
B /(MEMB1)
```

When you press Enter, the panel shown in Figure 92 appears.

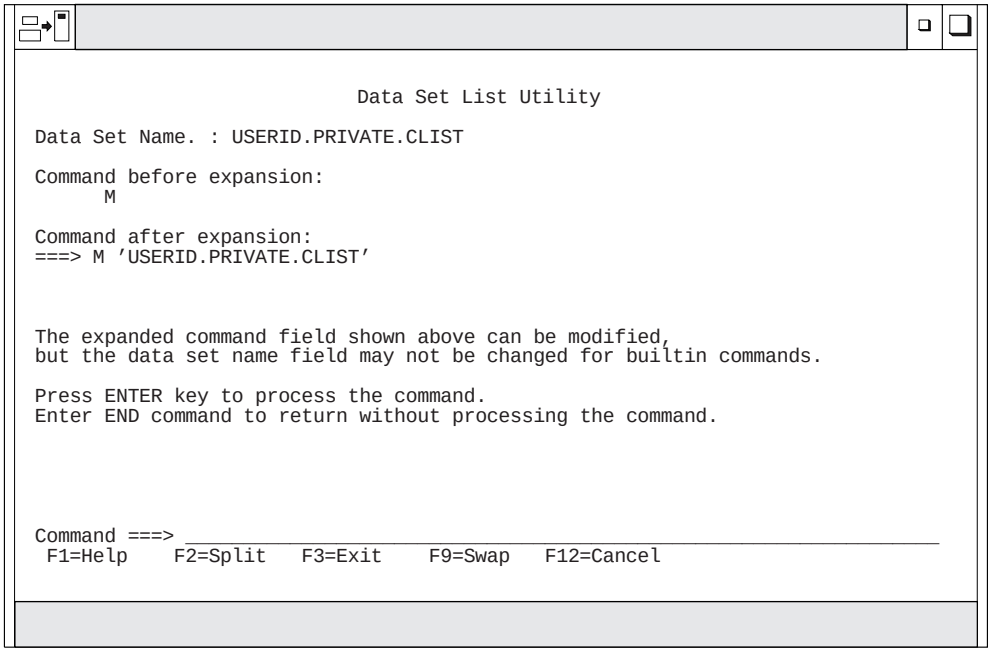


Figure 92. Data Set List Utility - SHOWCMD Panel (ISRUDSLS)

Notes:

1. The data set name and commands shown in Figure 92 are for illustrative purposes only. These values are determined by the command you enter and the data set acted on by that command.
2. SHOWCMD must be entered from a data set list. It is invalid if you use a line command, such as M, to display a member list before calling it.

When the panel showing the commands is displayed, you can do one of the following:

- Press Enter to call the command displayed in the **Command after expansion** field.

- Change the command displayed in the **Command after expansion** field and then press Enter to call the changed command.
- Enter the END command to return to the data set list display.

For information about using line commands, TSO commands, CLISTs, REXX EXECs, and the / character on a data set list display, see "Blank Display Data Set List" on page 134.

SORT Command

The SORT primary command sorts the data set list by the specified field. Use the following format:

SORT [*field1* [*field2*]]

where:

field1
The major sort field. If only one operand is used, ISPF treats it as *field1*. If both operands are used, ISPF sorts the list by *field1* first, then by *field2* within *field1*.

field2
The minor sort field.

For example, to sort a data set list by volume and block size within each volume, use the following command:

```
SORT VOLUME BLKSZ
```

If you do not specify a field, ISPF sorts the list by data set name. The keywords described in Table 15 tell ISPF by which fields to sort the data set list.

Table 15. Sort Fields for Source Libraries

Field	Sequence	Description
NAME	Ascending	Data set name
MESSAGE	Ascending	Command completion message
VOLUME	Ascending	Volume serial
DEVICE	Ascending	Device type
DSORG	Ascending	Data set organization
RECFM	Ascending	Record format
LRECL	Descending	Logical record length
BLKSZ	Descending	Block size
TRACKS	Descending	Data set size
%USED	Descending	Percentage used
XT	Descending	Extents used
CREATED	Descending	Creation date
EXPIRES	Ascending	Expiration date
REFERRED	Descending	Last accessed data
MVOL	Ascending	Multivolume or migration level

Automatic scrolling is performed, if necessary, to bring the major sort field into view. ISPF displays a message when you enter a SAVE or SORT primary command

that shows that the data needed to do the function is being retrieved. The keyboard locks when this message appears and stays locked until the SAVE or SORT command is completed.

VA, VS, VT, and VV Commands

The VA, VS, VT, and VV commands change the data set list display to the Attributes, Space, Total, and Volume views, respectively.

Reset ISPF Statistics Utility (Option 3.5)

When you select this option, a panel is displayed (Figure 93) to allow you to create, update, or delete statistics and to reset sequence numbers. The Reset ISPF Statistics utility handles only partitioned data sets with fixed- or variable-length records and logical record length of:

- From 10–32 760, inclusive, for fixed-length records
- From 14–32 756, inclusive, for variable-length records.

For information about ISPF statistics, see the **ISPF Member Statistics** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*.

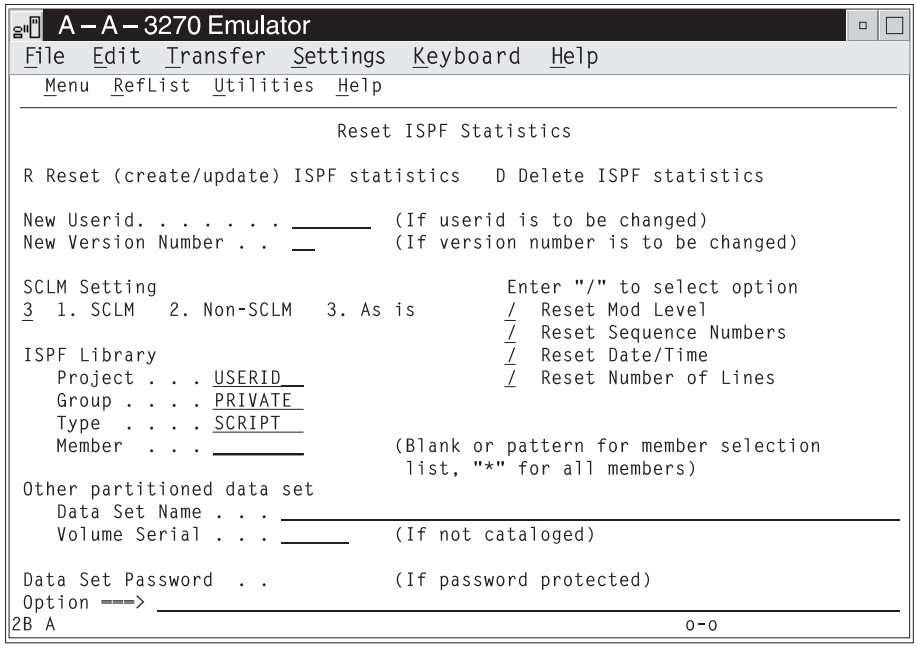


Figure 93. Reset ISPF Statistics Panel (ISRURSP)

Reset ISPF Statistics Panel Action Bar

The Reset ISPF Statistics panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers the following choices:

1 General
2 Why you might want to Reset ISPF statistics
3 Filling in the reset utility panel
4 Using the Member list
5 Interaction between LMF and SCLM
6 ISPF statistics
7 Appendices
8 Index

Reset ISPF Statistics Panel Fields

All the fields on this panel are described in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except the following:

New UseriD
This field is used to set the **ID** field in the statistics. Enter a new user ID here if you want to change the user ID the statistics are recorded under. It is required if you do not specify a new version number.

If you are updating the user ID but not resetting the sequence numbers, the statistics are updated but the data is not scanned or renumbered.

New Version Number
Enter a number here if you want to change the version number. This field is required if you do not specify a new user ID when resetting statistics. It is ignored if you are deleting statistics.

Reset Mod Level
Use a slash to select this option and reset the modification level. Deselect this option if you do not want to reset the modification level. A new version number is required to reset the modification level.

Reset Sequence Numbers
Use a slash to select this option and reset the sequence numbers. Deselect this option if you do not want to reset the sequence numbers. A new version number is required to reset the sequence numbers. Only standard (STD) sequence numbers will be reset.

If the data is in packed format, there can be no sequence number processing. However, statistics for members in packed format can be created or updated if the sequence numbers are not being reset.

SCLM Settings
The SCLM setting is a bit that ISPF uses to determine what type of edit the file last had performed upon it.

1 SCLM
This bit is ON to specify that the last edit of this file was under SCLM control.

2 Non-SCLM
This bit is ON to specify that the last edit of this file was under control of something other than SCLM.

3 As-is
This bit is ON to specify that this copy operation transfers the current setting of this file as it already is.

Reset Date/Time
The setting of this field determines whether or not to reset the Last Modified Date or Time and the Creation Date of the file.

Reset Number of Lines

The setting of this field determines whether or not to reset the Current Number of Lines, the Initial Number of Lines, and the Number of Modified Lines settings. If this field is set ON, the Current Number of Lines and Initial Number of Lines settings are set to the actual number of lines of the member.

The Number of Modified Lines setting is dependent on the Reset Mod Level and Reset Sequence Numbers fields. If either of those are reset and the Reset Date/Time field is ON, then the value of the Number of Modified Lines is set to zero. Otherwise, the Number of Modified Lines remains as is.

Reset ISPF Statistics Utility Options

The following sections describe the options shown on the Reset ISPF Statistics panel.

R — Reset (Create/Update) ISPF Statistics

Use option R either to create statistics in a library that does not currently have them, or to update statistics in a library.

The **New UseriD** field is optional for option R. If you specify a user ID, it is placed in the **ID** field of the statistics. If you leave the **New UseriD** field blank and select a member without statistics, the **ID** field of the statistics is set to the current user ID.

Either a new user ID or a new version number is required when you use this option. When you specify a version number, the statistics are created or reset as follows:

Version Number	Set to the specified value.
Modification Level	Set to zero if requested; otherwise, unchanged.
Creation Date	Set to current date in the national format.
Change Date	Set to current date, in the national format, and time.
Current No. Lines	Set to the current number of data records.
Initial No. Lines	Set to the current number of data records.
No. Modified Lines	Set to zero if the **Reset Sequence Numbers** field is selected.

If you have requested updating of the modification level and resetting of the sequence numbers, the last two digits of each sequence number are set to zeros. Otherwise, they are not changed.

If you have requested updating of sequence numbers, the data is scanned to determine if valid, ascending sequence numbers are present in all records. If so, the data is renumbered. Otherwise, the data is assumed to be unnumbered and renumbering is not done.

D — Delete ISPF Statistics

Use option D to delete ISPF statistics for an ISPF library or other partitioned data set. The **New UseriD** and **New Version Number** fields are ignored when you use option D.

Results of Resetting Statistics

What you specify for the **New Version Number**, **Reset Mod Level**, and **Reset Sequence Numbers** fields controls the resetting of the sequence numbers, the modification flags within the data, and the statistics. A new version number is

required to reset the modification level and sequence numbers. Therefore, if a new version number is entered and the data is not in packed format, Table 16 shows the various combinations you can use for the **Reset Mod Level** and **Reset Sequence Numbers** fields and the results of those combinations.

Table 16. Reset Mod Level and Reset Sequence Numbers Combinations

	Reset Mod Level *Selected*	Reset Mod Level *Deselected*
Reset Sequence Numbers *Selected*	**RESET**	**MOD FLAGS=UNCHANGED SEQ #'s=RESET**
Reset Sequence Numbers *Deselected*	**Unchanged**	**Unchanged**

Hardcopy Utility (Option 3.6)

The Hardcopy utility allows you to specify a sequential data set or a member of a partitioned data set to be printed, and the destination of the output. It also allows you to specify whether or not a sequential data set is to be kept or deleted after printing. Partitioned data set members are always kept.

You can use the Hardcopy utility to print any DASD-resident data set except ISPF list and log data sets; use the ISPF LIST command to print log and list data sets during an ISPF session.

An optional print utility exit can be specified by your installation. If this exit is installed, it may cause the Hardcopy utility's response to differ from the following descriptions. Refer to *ISPF Planning and Customizing* for more information about the print utility exit.

Another factor that can affect the Hardcopy utility's performance is whether or not the TSO/E Information Center Facility is installed. If the TSO/E Information Center Facility is installed, your installation can optionally allow ISPF to display a panel for submitting TSO/E Information Center Facility information with the print request. See "Using the TSO/E Information Center Facility" on page 166 for more information.

If the TSO/E Information Center Facility is not installed, the Hardcopy utility first displays the panel shown in Figure 94 on page 163.

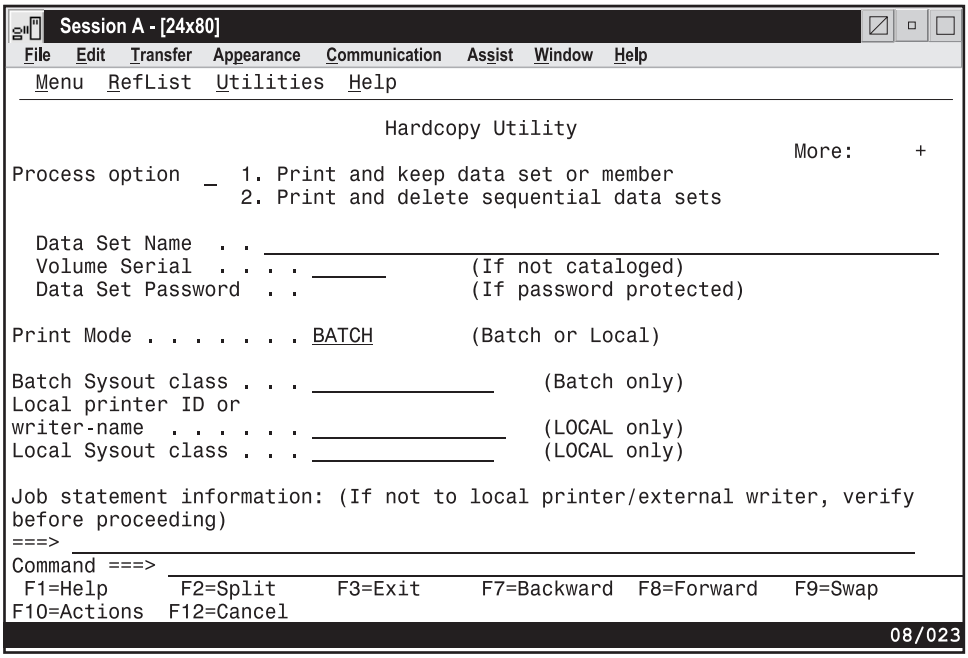


Figure 94. Hardcopy Utility Panel - before JCL Generation (ISRUHCP)

Hardcopy Utility Panel Action Bar

The Reset ISPF Statistics panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers the following choices:

- **1** General
- **2** Function of the hardcopy utility
- **3** Selecting a print mode
- **4** Submitting a background job to print a data set or member
- **5** Routing a data set to a printer local to your terminal group
- **6** Printing a data set using TSO/E Information Center Facility
- **7** Appendices
- **8** Index

Hardcopy Utility Panel Fields

The **Data Set Name**, **Volume Serial**, **Data Set Password**, and **Job statement information** fields, shown in Figure 94, are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*. The other fields on the panel are:

Print Mode

Lets you specify one of the following print modes:

BATCH
Submits your print request as a background job.

LOCAL
Routes your data to a local printer, such as an IBM 328x printer that is connected to your terminal group.

Batch Sysout Class
Destination of printed data set. Used only if the data set is to be printed and Batch SYSOUT class is specified.

Local Printer ID or Writer name
Destination of printed data set. Used only if the data set is to be printed and Local Printer ID or external writer name is specified.

Note: If you specify a Local Printer ID or writer name and you have selected the Edit PRINTDS Command option on the ISPF Settings panel (option 0), ISPF displays the Local Print Command Edit panel to allow you to intercept and edit the PRINTDS command before it processes. See the **Editing the PRINTDS Command** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for additional information.

Local Sysout Class
Used in conjunction with the Local Printer ID or Writer Name. Specifies the output class to use for output processing.

Generating and Submitting JCL

Follow these steps to generate and submit JCL for your print jobs:

1. Choose one of the options listed at the top of the panel and type its code, **1** (for `PK`) or **2** (for `PD`), in the **Option** field.
2. Specify a fully qualified data set name and member name.

   This is a required field. If you are entering a fully qualified TSO data set name, you must enclose the name in quotes. If you omit the quotes, the data set prefix from your TSO user profile is automatically added to the beginning of the data set name.
3. If the data set is not cataloged, specify the volume serial.
4. If your data set is password protected, type the password in the **Data Set Password** field. See the **Data Set Passwords** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.
5. Specify either BATCH or LOCAL in the **Print Mode** field.
6. Specify one of the following:
   - If you chose BATCH in the previous step, type a Batch SYSOUT class and any job statement information you need.
   - If you chose LOCAL in the previous step, type the name of a local printer or writer name in the **Local Printer ID** field. Job statement information is ignored.
7. Press Enter.

   What happens next depends on your choice in step 5. If you chose BATCH, see step 7a. If you chose LOCAL, see step 7b on page 165.

   a. If you chose BATCH, ISPF generates the JCL and displays the panel shown in Figure 95 on page 165, with the message `JCL generated` in the upper-right corner.

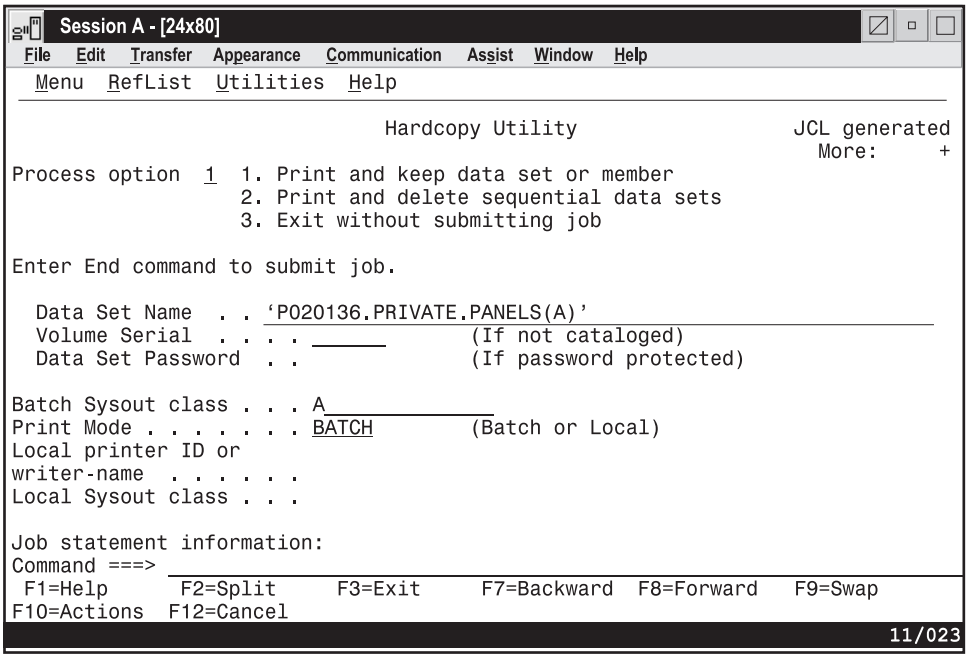


Figure 95. Hardcopy Utility Panel - after JCL Generation (ISRUHCJP)

At this point you can either:

- Cancel the job by typing the CANCEL command in the **Option** field and pressing Enter.
- Submit the job by typing the END command and pressing Enter. ISPF displays the following message at the bottom of the panel:

  ```
  IKJ56250I JOB useridA(JOBnnnnn) SUBMITTED
  ***
  ```

  Press Enter. For more information about BATCH printing, see Additional Batch Printing Information.
- Specify another data set name for printing.

b. If you chose LOCAL, ISPF calls the PRINTDS TSO command processor to print the data set on the specified local printer.

   A message is displayed in the short message area to show that PRINTDS has accepted the request. At this point, you can:
   - Specify another option and press Enter
   - Enter the END command
   - Enter the CANCEL command

8. If you entered CANCEL or END, ISPF determines the next panel you see as follows:
   - If you entered the Hardcopy utility from the ISPF Primary Option Menu or through the jump function (=), ISPF displays the ISPF Primary Option Menu.
   - If you entered the Hardcopy utility from the Utility Selection Panel, ISPF returns you to that panel.

Additional Batch Printing Information

When you enter the desired information and press Enter, ISPF generates JCL that contains the job statement operands and a job step that prints the specified data set, using the IBM IEBGENER utility.

Notes:

1. IEBGENER does not support packed data. If you try to print packed data, you may get unwanted results. IEBGENER prints the data set one logical record per print line. If the logical record length is greater than the printer width, the logical record is truncated.
2. ISPF does not unpack data automatically before printing it. Therefore, if you need to unpack data before printing it, edit the data set and enter the PACK primary command with the OFF operand. Refer to *ISPF Edit and Edit Macros* for more information about the PACK command.

Once the JCL for the first job step is generated, the job statement operands are shown for information only. They are no longer highlighted and you cannot type over them, since the job statement has already been generated. You can then select another data set name to cause another job step to be generated.

Using the TSO/E Information Center Facility

If the TSO/E Information Center Facility is installed, your installation can allow ISPF to display the panel shown in Figure 96.

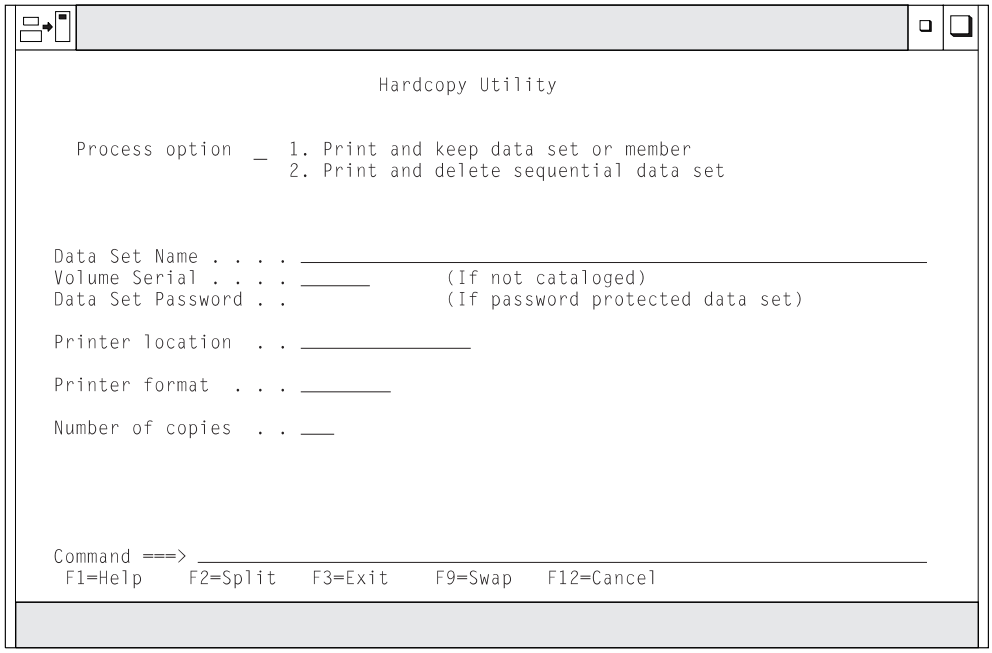


Figure 96. Hardcopy Utility Panel - with the TSO/E Information Center Facility Installed (ISRUHCPI)

Follow these steps to use the TSO/E Information Center Facility to submit your print jobs:

1. Choose one of the options listed at the top of the panel and type its code, `PK` or `PD`, in the **Option** field.
2. Enter a fully qualified data set name and member name.

   You must specify at least the low-level qualifier, such as LIST. If you enter your user prefix as part of the data set name, you must enclose the complete data set name in quotes. However, if you omit the user prefix and quotes, your user prefix is automatically added to the beginning of the data set name.
3. If the data set is not cataloged, enter the volume serial.

4. If your data set is password-protected, enter the password in the **Data Set Password** field. See the **Data Set Passwords** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.
5. You can either leave the **Printer location** field blank or enter the location ID of the printer to be used. The location ID is assigned by your installation.

   You can also enter a partial location name followed by an asterisk (*).
6. You can either leave the **Printer format** field blank or enter the format ID of the printer to be used. The format ID is assigned by your installation.

   You can also enter a partial format name followed by an asterisk (*). If your printer location and format entries do not identify a specific printer, a printer selection list is displayed. From this list, which is similar to a member selection list, you can select a printer.
7. Specify the number of copies you want.
8. Press Enter.

   The values entered in the fields on this panel are passed directly to the TSO/E Information Center Facility for processing.

Download Data Set to Workstation Utility (Option 3.7)

The Download Data Set to Workstation Utility assists you in installing the ISPF Workstation Agent software on the supported software configurations.

Critical Information

It is very important that you review the information in the appendix called **Installation Considerations for the Client/Server** that is found in the *ISPF User's Guide Volume I* before you attempt to use this utility to install the ISPF C/S. This Appendix contains information on the following topics:

- Assumptions
- Required Hardware and Software
- Configuration Parameters
- GUI Mode CLIST or STARTUP procedure.
- The Workstation Agent Install Program window

When you select option 7 from the Utility Selection Panel, ISPF displays the Download Data Set to Workstation panel shown in Figure 97 on page 168.

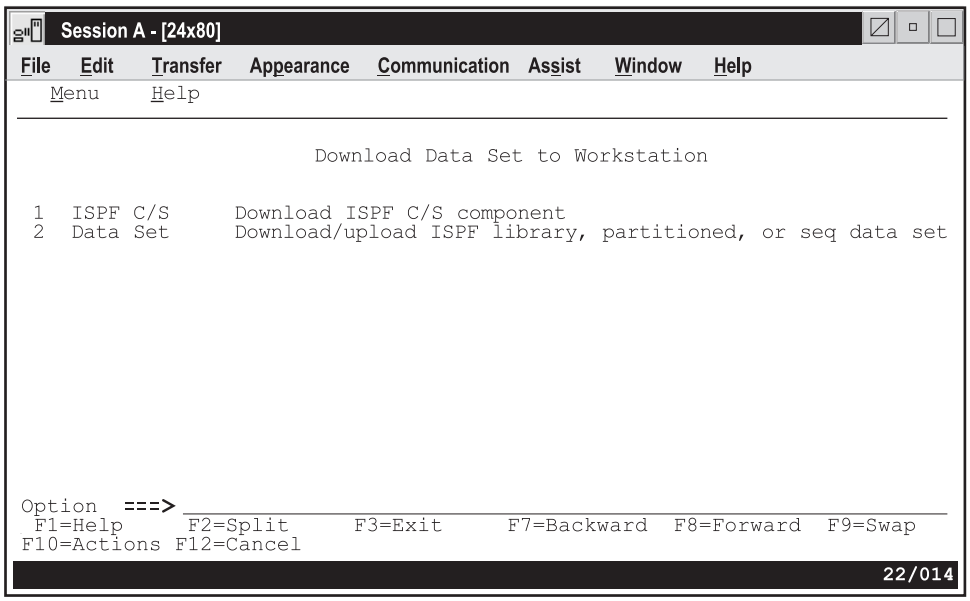


Figure 97. Download Data Set to Workstation Utility Panel (ISPUDL)

Selection 1 — ISPF C/S

This option enables you to download the ISPF Workstation Agent (WSA) component installation program to your desktop workstation. After downloading the WSA and installing it, you can use ISPF on an OS/390 host through GUI windows on your workstation. When you select option 1 from the Download Data Set to Workstation panel, ***ISPF C/S***, ISPF displays the ISPF Client/Server Component Download panel shown in Figure 98.

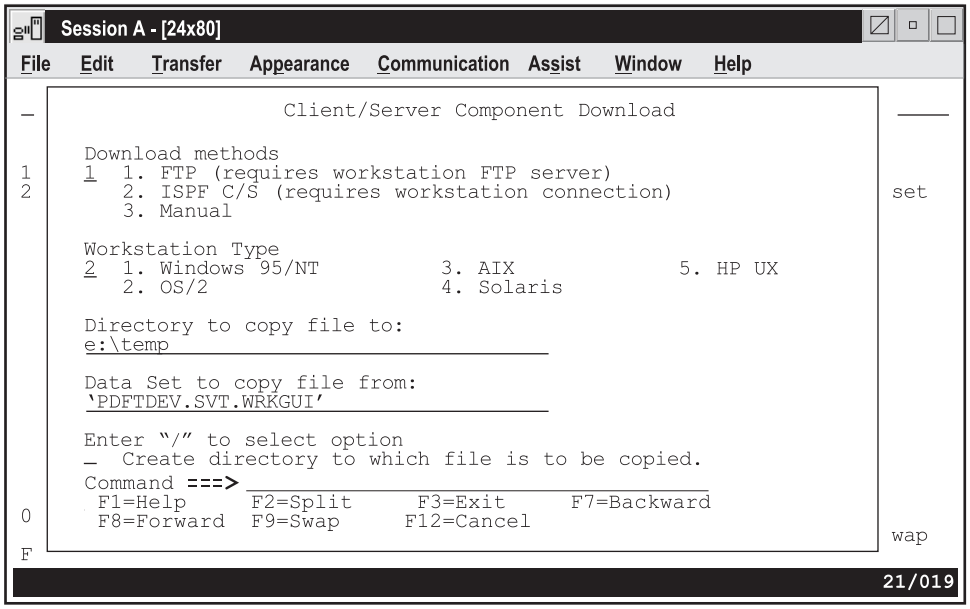


Figure 98. ISPF Client/Server Component Download Panel (ISPWSD01)

Download Data Set to Workstation Utility (Option 3.7)

The *Client/Server Component Download* panel enables you to choose the download method and workstation type you want to use to put the WSA installation program on your desktop.

You have three choices for downloading the workstation agent installation program.

FTP (requires workstation FTP server)
Download using FTP. ISPF invokes the host FTP client to connect with the FTP server on your workstation and transfer the WSA installation program.

ISPF C/S (requires workstation connection)
Download using ISPF Client/Server. If you already have a workstation agent installed on your workstation, you can use the built-in file transfer services to download a new WSA installation program. The file should be downloaded in binary format.

Manual
ISPF tells you the name of the file you need to copy. You can copy it with any method you prefer as long as you maintain the data integrity of the WSA installation program. The file must be downloaded as "binary".

You also use the Client/Server Component Download panel to specify the type of workstation environment you want to use the WSA in. You must indicate whether you want the WSA to run in Windows 95/98/2000 or NT, OS/2, AIX, Solaris, or HP UX. You make this choice by typing the appropriate number in the *Workstation Type* entry field.

To complete any download, you must specify where you want to copy a file to, and which file you want to copy from. The *Directory to copy file to:* entry field on the download panel is where you enter the path and directory name of the directory that you want to use to store the WSA installation program on your workstation. You can specify a specific directory, or leave this field blank. If you leave it blank, the download is made to your home directory (in the case of FTP downloads) or the current directory (in the case of client/server downloads). If you specify a relative directory (one that does not specify a leading slash) the directory is relative to the FTP home directory or the client/server current directory.

You can download into an existing directory, or you can have ISPF create the directory you specify on the panel. If you want ISPF to create the directory on your workstation before copying the WSA installation program, select the field next to *Create directory to which the file is to be copied*.

The *Data set to copy file from:* entry field is where the host data set that contains the WSA installation program is entered. This field value varies depending on the naming convention that was used when ISPF was installed.

File Transfer Protocol (FTP) Download

When you select choice 1 **FTP (requires workstation FTP server)** under *Download methods* on the ISPF Client/Server Component Download panel, ISPF displays the ISPF Client/Server Installation Notice panel shown in Figure 99 on page 170.

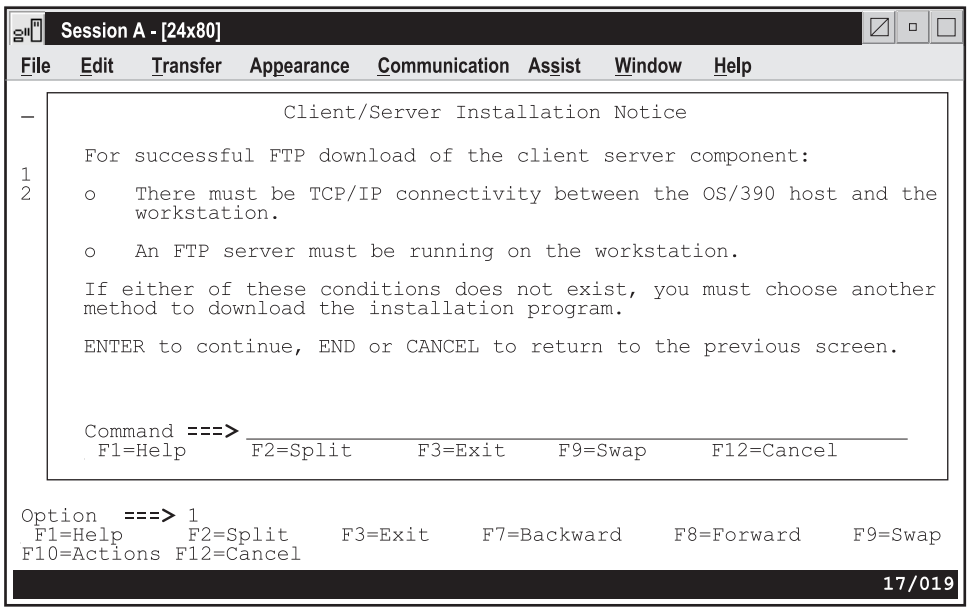


Figure 99. ISPF Client/Server Installation Notice (ISPWSD02)

This panel is a reminder to you that certain conditions must be present for you to use the FTP download method. Aside from the two specific conditions mentioned on the panel, you must also ensure that:

- the path specified has write access (review your TRUSERS file)
- you have read access to the MVS data base where the ISPF Client/Server Component is stored
- the directory where you want to copy the component exists, OR you have selected the "Create directory" option

When you press Enter, ISPF displays the panel shown in Figure 100.

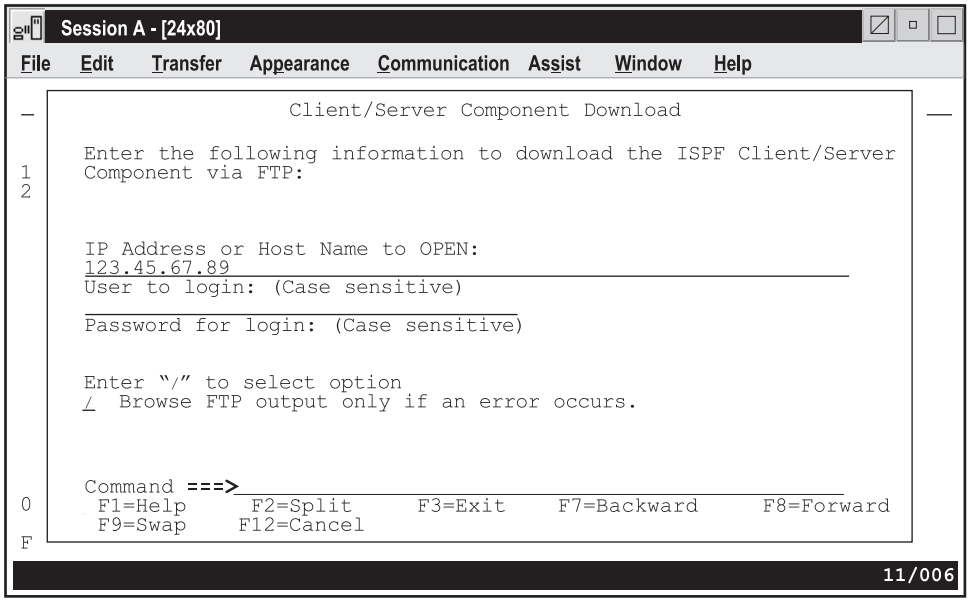


Figure 100. Second Client/Server Component Download Panel (ISPWSD04)

Fill in the fields on this panel as follows:

IP Address or Host Name to OPEN
The dotted IP address or name of the workstation ID you want to copy the ISPF Workstation Agent installation program to.

User to login
This is the file transfer protocol (FTP) user name that must have write access to the directory where the ISPF Workstation Agent code will be installed. This name is case sensitive.

Password for login
This is the password for the user ID you want to use at the FTP server. You can leave this field blank if the user id is "anonymous", but be aware that most FTP servers expect a password, even if only an e-mail address.

Browse FTP output only if an error occurs
You can choose to display FTP output only if something wrong happens. Select the entry field to have this option active. If you do not choose this option, ISPF displays ***all*** output from the FTP transfer.

Press Enter to process this panel. If you chose not to override the ISPF default concerning display of FTP output, your screen will now show that output. If you chose to browse the FTP output only if an error occurs, and there is an error, the error information is displayed. If no error occurred, you proceed to the next download panel.

After a successful FTP download, the following panel appears on your screen, telling you to complete the installation from your workstation.

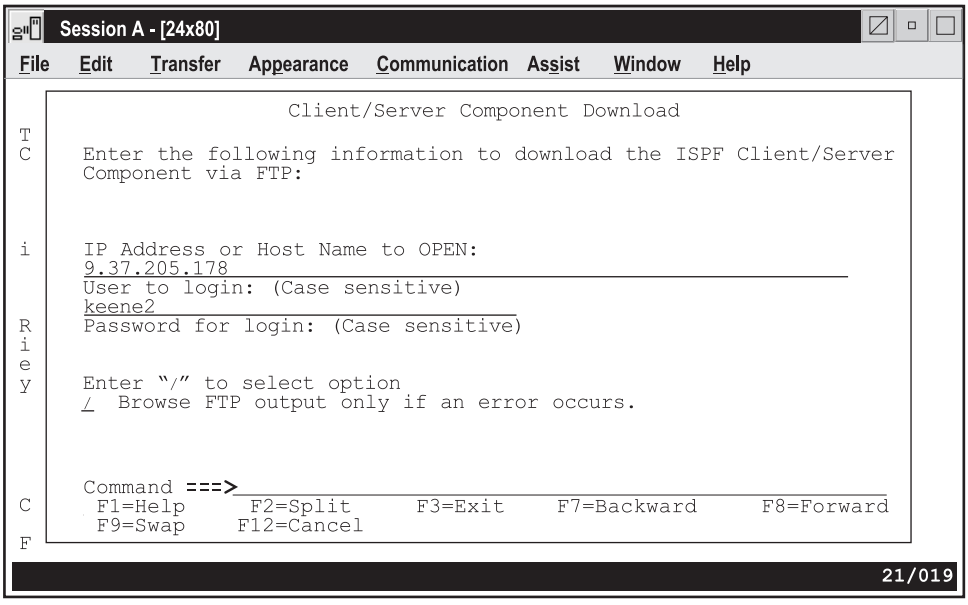


Figure 101. ISPF Client/Server Component Install Program Panel (ISPWSD07)

ISPF Client/Server (C/S) Download

When you select choice 2 **ISPF C/S (requires workstation connection)** under *Download methods* on the ISPF Client/Server Component Download panel, you want to use the ISPF Client/Server method of downloading. If you do not already

have a GUI connection (with or without display) established, ISPF displays the ISPF Client/Server Installation Notice panel shown in Figure 102.

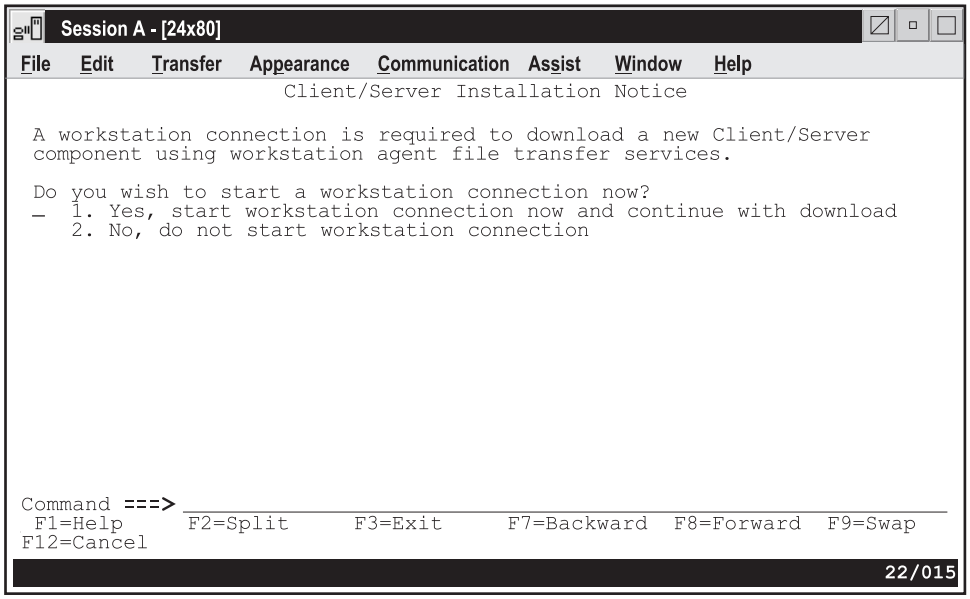


Figure 102. ISPF Client/Server Installation Notice (ISPWSD03)

This panel is a reminder that you must have a client/server connection to use this download method, and it also enables you to start a workstation connection directly from the panel. This assumes, of course, that you have a previous copy of the WSA installed on your workstation. If this is the first time you are downloading the WSA, use the FTP or Manual methods of downloading, instead.

For the ISPF Client/Server method to work, you must have either TCP/IP or APPC connectivity, or both, between the OS/390 host and the workstation. Again, if this condition is not met, choose either the FTP or Manual method of downloading.

If you have a GUI connection (for example, a previous version of ISPF WSA) and you select this download method, the Client/Server transfer service is invoked to copy the WSA installation program to your workstation. A successful transfer results in the following panel.

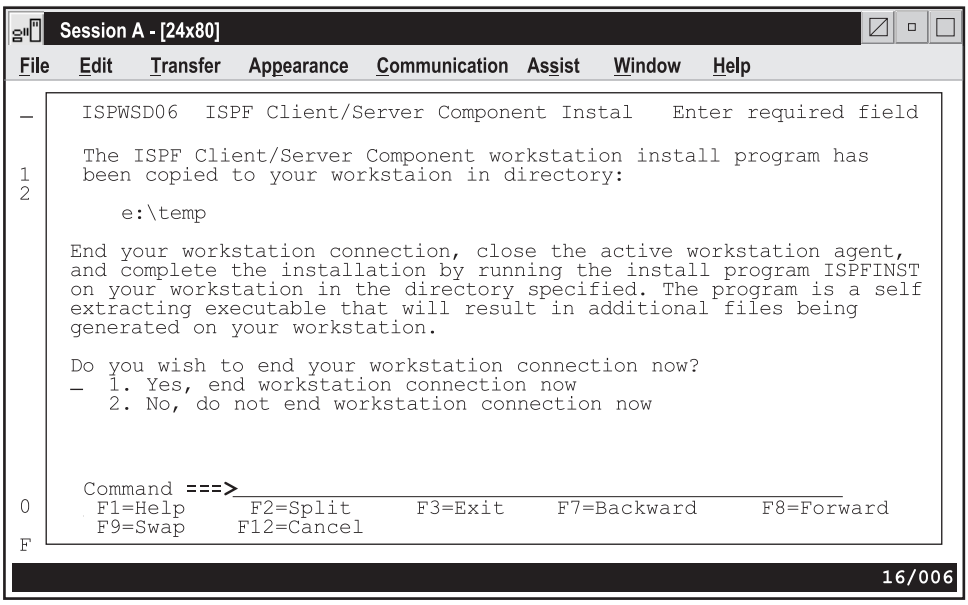


Figure 103. ISPF Client/Server Component Install Program Panel (ISPWSD06)

Manual Download

When you select choice 3 **Manual** under *Download methods* on the ISPF Client/Server Component Download panel, you want to use your own prefered download method. ISPF displays a panel of instructions necessary for you to do this, as shown in Figure 104.

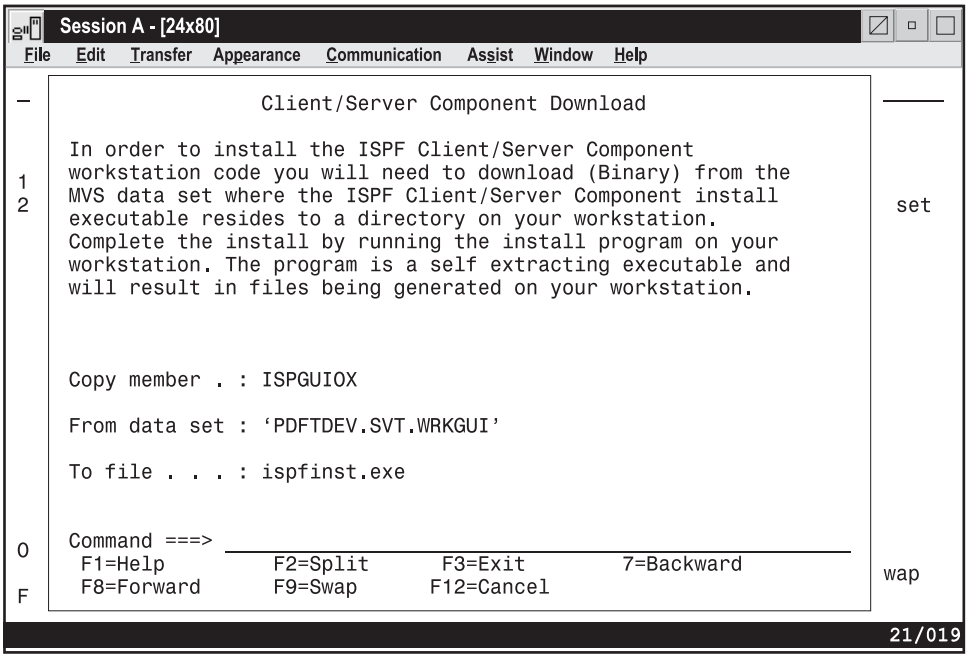
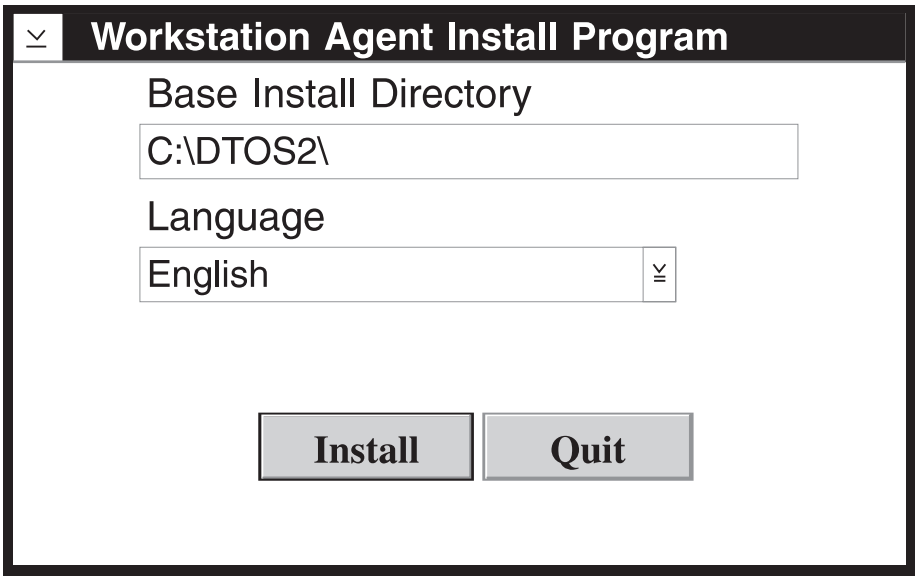


Figure 104. Client/Server Component Download Panel (ISPWSD05)

Running the Installation Program (ISPFINST)

After you have downloaded the Workstation Agent Installation program, resume the installation by running the program called ISPFINST.EXE (ispfinst on UNIX platforms). This is a self-extracting executable program that generates additional necessary files on your workstation. Follow this procedure:

1. Go to a command line.
2. Change to the directory to which you downloaded the ISPF C/S workstation code. (For AIX, Solaris, and HP UX, use the **chmod** command to give the file execute permission).
3. Enter ISPFINST.
4. A dialog box called Workstation Agent Install Program is displayed. A Base Install Directory and a national language (such as English) are



displayed in this box. Be sure this is the Base Install Directory and the national language that you want to use for the installation of ISPFINST. If the directory is incorrect, type in the correct directory name. If the language is incorrect, scroll down the list of languages and pick the one that is correct. Press Enter or select the Install push button.

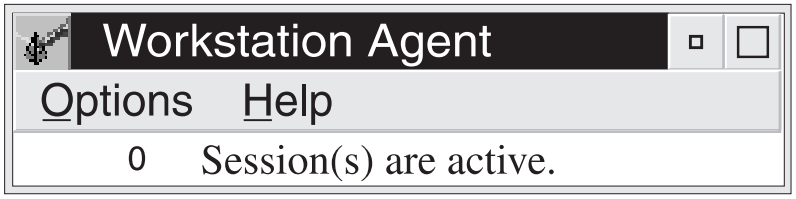
5. WSA.EXE, along with several other files, is created in the Base Install Directory that you specified. (For AIX and HP UX, the executable file, called **wsa**, is created.
6. A final dialog box will appear, instructing you to be sure that the name of the Base Install Directory is in your libpath (or for AIX and HP UX, the PATH environment variable), select OK to remove it from the screen.
7. If the Workstation Agent Install Program dialog box still appears on your screen, select **Quit** to remove it from your display.

Starting an ISPF C/S Session (OS/2)

To start an ISPF C/S session, follow this procedure:

1. Start the ISPF C/S component (OS/2):
   a. Go to an OS/2 command line.
   b. Change to the directory to which you downloaded the ISPF C/S workstation agent code.
   c. Enter WSA or START WSA.

The Workstation Agent window will be displayed on your workstation:



This window represents the executing ISPF C/S workstation program. You can minimize this window. For more information about this window, see "The Workstation Agent Window" on page 177.

Note: If you do not close this window after you end the ISPF C/S session, you will not have to repeat step one to start another ISPF C/S session; that is, as long as the ISPF C/S component has been started, you can begin this start-up procedure at step two.

2. Switch to an Emulator session and log on to TSO/ISPF.
3. You can start a GUI session in one of the following ways:
   - Issue the ISPSTART command with the GUI parameter (see the **Details for Dialog Developers Writing GUI Panels** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I*, and refer to the *ISPF Dialog Developer's Guide and Reference* for additional information about the ISPSTART command). For example:

     ```
     ISPSTART GUI(IP:9.67.229.115)
     ```

     starts ISPF in GUI mode for the specified workstation.
   - Select **Start GUI Session** on the Initiate GUI Session panel (option 0). See "Workstation Connection" on page 44 for additional information.
   - Issue the WSCON command from any command line to display the *Intiate Workstation Connection* panel. See the **ISPF System Commands** table of the ***Using Commands, Function Keys, and Light Pen or Cursor Selection*** chapter of the *ISPF User's Guide Volume I* for more information.
   - Call the WSCON service. Refer to the *ISPF Services Guide* for more information.

Starting an ISPF C/S Session (Windows)

To start an ISPF C/S session, follow this procedure:

1. Start the ISPF C/S component (Windows):
   a. Go to an MS/DOS command line.
   b. Change to the directory to which you downloaded the ISPF C/S workstation agent code.
   c. Enter WSA.
2. Switch to an Emulator session and log on to TSO/ISPF.
3. You can start a GUI session in one of the following ways:
   - Issue the ISPSTART command with the GUI parameter (see the **Details for Dialog Developers Writing GUI Panels** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I*, and refer to the *ISPF Dialog Developer's Guide and Reference* for additional information about the ISPSTART command). For example:

     ```
     ISPSTART GUI(IP:9.67.229.115)
     ```

starts ISPF in GUI mode for the specified workstation.

- Select **Start GUI Session** on the Initiate GUI Session panel (option 0). See "Workstation Connection" on page 44 for additional information.
- Issue the WSCON command from any command line to display the *Intiate Workstation Connection* panel. See the **ISPF System Commands** table of the ***Using Commands, Function Keys, and Light Pen or Cursor Selection*** chapter of the *ISPF User's Guide Volume I* for more information.
- Call the WSCON service. Refer to the *ISPF Services Guide* for more information.

Starting an ISPF C/S Session (UNIX — AIX, HP, Solaris)

To start an ISPF C/S session, follow this procedure:

1. Start the ISPF C/S component (UNIX):
   a. Go to the UNIX command line.
   b. Change to the directory to which you downloaded the ISPF C/S workstation agent code.
   c. Enter WSA.
2. Switch to an Emulator session and log on to TSO/ISPF.
3. You can start a GUI session in one of the following ways:
   - Issue the ISPSTART command with the GUI parameter (see the **Details for Dialog Developers Writing GUI Panels** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I*, and refer to the *ISPF Dialog Developer's Guide and Reference* for additional information about the ISPSTART command). For example:

     ```
     ISPSTART GUI(IP:9.67.229.115)
     ```

     starts ISPF in GUI mode for the specified workstation.
   - Select **Start GUI Session** on the Initiate GUI Session panel (option 0). See "Workstation Connection" on page 44 for additional information.
   - Issue the WSCON command from any command line to display the *Intiate Workstation Connection* panel. See the **ISPF System Commands** table of the ***Using Commands, Function Keys, and Light Pen or Cursor Selection*** chapter of the *ISPF User's Guide Volume I* for more information.
   - Call the WSCON service. Refer to the *ISPF Services Guide* for more information.

Ending an ISPF GUI Session

To end an ISPF GUI session, do one of the following:

1. Terminate the ISPF session as you normally would.
2. Enter the WSDISCON command (see the **ISPF System Commands** table of the ***Using Commands, Function Keys, and Light Pen or Cursor Selection*** chapter of the *ISPF User's Guide Volume I*).
3. Select the ***Disconnect from the workstation*** menu option (see "Disconnect from the Workstation" on page 52).

Notes:

1. You do not have to close the ISPF C/S component window.
2. You can use this window for multiple ISPF emulator sessions.
3. (For AIX) Use x resources to customize your ISPF C/S application. You can customize such things as background color and fonts. In this example, the first line defines the background color and the second line sets the font globally.

   ```
   DtPRocess*background:     gray
   DtProcess.dtFont:         Rom14.500
   ```

4. (For HP UX) Use the .Xdefaults file to customize your ISPF C/S application. This file is in your $HOME directory. You can customize such things as background color and fonts. Note that the fonts must be either MOnospaced or CharCell type. Any other type of font causes unexpected spacing. Refer to your X Protocol reference materials for more information about customizing your applications. In this example, the first line defines the background color and the second line sets the font globally.

```
DtPRocess*background:     gray
DtProcess.dtFont:         Rom14.500
```

5. In Motif applications, the PF10 key highlights the first item of a menu bar and enables you to traverse the bar. This is the equivalent of the Actions system command used by ISPF. When running the ISPF C/S, PF10 can be accelerated so this behavior is moved to the Pause key. We recommend that you use the Pause key instead of the Actions command, because the Pause key does not cause a host interrupt, thus improving performance.

The Workstation Agent Window

The Workstation Agent (WSA) window appears when you have prepared your workstation to make a connection to the host, by downloading and executing the workstation portion of the Client/Server software.

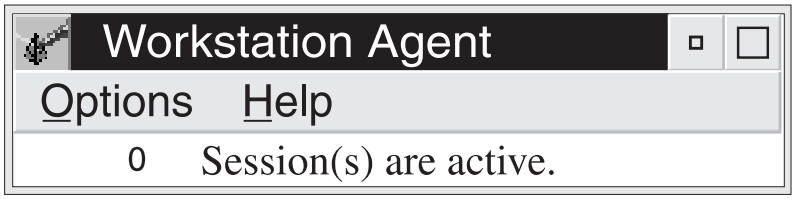


Figure 105. The Workstation Agent window

The functions available from the **Options** pull-down menu on the Workstation Agent window are:

Information
Displays the ISPF WSA Information dialog window. The Information dialog shows you the number of active sessions. Each active session represents a connection between the ISPF Client/Server workstation agent and an ISPF host. The dialog also indicates which communications interfaces (such as TCP/IP or APPC) have been initialized on the workstation, and the TCP/IP Port Number, or APPC Transaction Program (TP) Name. Additionally, the WINSOCK Path, if required, is shown in this dialog. The WINSOCK Path is applicable to Windows environments only.

Enable TCP/IP
This selection toggles between active and inactive when you click on it. The change does not take affect until you restart the Workstation agent.

Enable APPC
This selection toggles between active and inactive when you click on it. The change does not take affect until you restart the Workstation agent.

Set TCP/IP Port
Displays the ISPF Client/Server Configuration dialog. The Configuration dialog enables you to change the TCP/IP port number. From a TCP/IP perspective, the port number represents the ISPF Client/Server Workstation Agent. If a port number is not specified in the Configuration dialog, the default ISPF Client/Server port number is used.

If you specify a port number, the change takes effect after the ISPF Client/Server Workstation Agent is closed and restarted. The change remains in effect for subsequent invocations of the ISPF Client/Server Workstation Agent. If you later decide to change back to the ISPF Client/Server default port number, delete the port number in the Configuration dialog and restart the ISPF Client/Server Workstation Agent.

If you change the port number, you must also change the port number specified in the ISPF GUI initialization.

Set SNA TP Name

Displays the ISPF Client/Server Configuration dialog. The Configuration dialog enables you to change the SNA Transaction Program name. From an SNA APPC perspective, the TP name represents the ISPF Client/Server Workstation Agent.

If specified, the name is used to construct the names of the two transaction programs required to support an ISPF Client/Server connection. The ISPF Client/Server function appends different single alphabetic characters to the supplied name to form the actual names of the two APPC transaction programs. The character **S** is appended to the name selected to indicate the *send* conversation TP name used on the workstation and host, and the character **R** is appended to the name to indicate the *receive* conversation TP name.

This option is available if your workstation operating system is OS/2 or Windows APPC. For all other operating systems this option is disabled.

If a TP name is not specified in the Configuration dialog, the default ISPF Client/Server TP name is used. If you specify a TP name, the change takes effect after the ISPF Workstation Agent is closed and restarted. The change remains in effect for subsequent invocations of the ISPF Workstation Agent. If you later decide to change back to the ISPF Client/Server default TP name, delete the TP name in the Configuration dialog and restart the ISPF Workstation Agent.

If you change the TP name, you must also change the TP name specified in the ISPF GUI initialization.

Set WINSOCK Path

This option enables you to specify an explicit path to the socket DLL used by the active TCP/IP subsystem in a Microsoft Windows workstation environment. The specification of an explicit path overrides the default DLL search order for Windows.

For example, if the desired DLL is located in directory D:\TCPDOS\BIN then the path would be specified as follows:

```
D:\TCPDOS\BIN
```

The setting takes effect after the ISPF Client/Server workstation agent is closed and restarted. The setting remains in effect for subsequent invocations of the ISPF workstation agent.

This option is only available in a Microsoft Windows environment. For other operating systems this option is disabled.

Set Font

This option enables you to specify the font of your connection through the Workstation Agent window. When you choose ***Set font...*** from the Options pull-down, the Font dialog window appears. Choose from one of the

available fonts and sizes that appear in the list. The list of fonts shows the fonts that are registered with your operating system. The change takes place after you re-start the agent, and effects all text in the interface windows except the menu bar and title bar text.

Because ISPF has designed the layout of the data within a workstation panel based on row and column positions, we recommend that if you change the font, you should use a non-proportional (that is, a fixed width or monospaced) font. Using a non-proportional font ensures that the data within the panels lines up correctly. If you choose to use a proportional font, data within columns might not align correctly.

Note: If you are using an AIX platform, you can change the font of the Workstation Agent by entering the following in your **.Xdefaults** file: DtProcess*dtFont: <font name>. For example,

```
DtProcess*dtFont: fixed
```

gives you a fixed font for the Workstation Agent application. However, this setting is overridden when you use the **Set Font** option on the Workstation Agent window.

System Register

This option enables you to bypass the Workstation Agent connection panel when you make a client/server connection. Choosing this function on the **Options** pull-down on the Workstation Agent window causes the **System Register** panel to display.

The System Register Panel: Figure 106 shows the System Register panel that appears when you select **System Register** from the Options pull-down on the Workstation Agent panel. The main panel is divided into four parts.

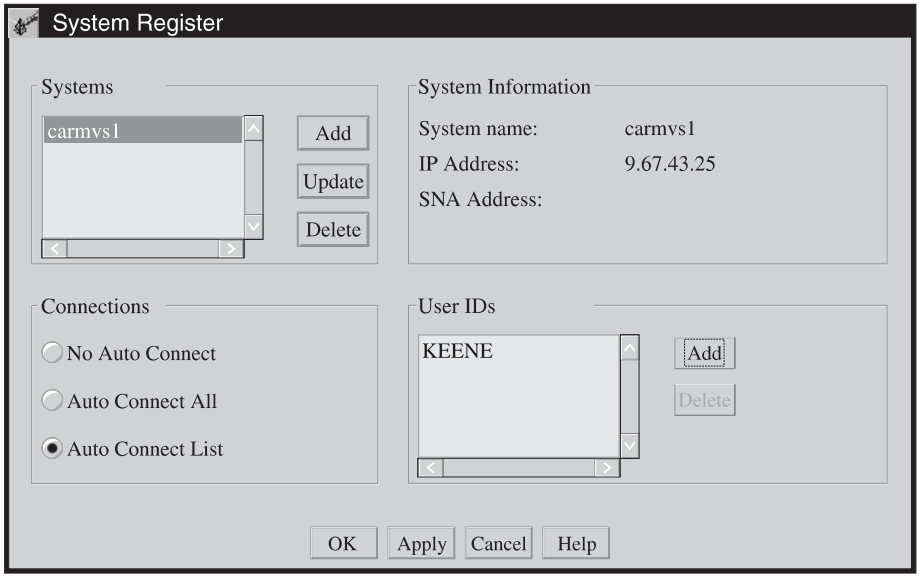


Figure 106. System Register Panel

The **Systems** section of the panel is where you name the system you want to connect from. Click on the **Add** pushbutton to add a new entry to the systems list. A pop-up dialog box like the one shown in Figure 107 on page 180 appears.

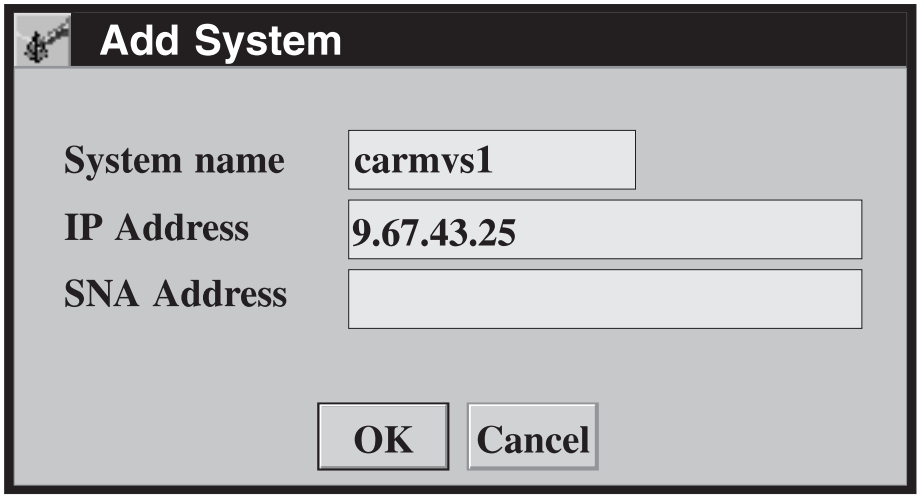


Figure 107. Add System Pop-up Dialog

There are entry fields for the system name and an IP or SNA address. If you do not know the system address, you can get it from the WSA connection panel. Until you set up the system register to bypass that panel, it will show you the address of the system that you are connecting from. Simply make your client/server connection, and before accepting the connection, note the address of the system.

After filling in the appropriate information, click on the **OK** button. After you finish your session with the System Register panel, this system will be available to the users you select without it being necessary for them to see the Workstation Agent connection panel.

You can update or delete system information in the same area of this panel. To update a system, first highlight it in the list by clicking on it. Then click on the **Update** pushbutton. A *Change System* pop-up dialog box, similar to the *Add System* window, appears on your screen with the system name and its IP or SNA address already filled in. Modify the information as you want to, then click on the **OK** button.

To delete a system from the System Register files, first highlight the desired system in the list by clicking on it. Then, click on the **Delete** pushbutton. The system and any user IDs associated with it in the System Register files are deleted.

The **Connections** part of the panel enables you to define how to set the connections that you want to make. The Connections choices are:

No Auto Connect
: Selecting this choice means that no one connecting to the Workstation Agent can bypass the WSA connection panel for the specified system. In other words, everyone connecting to the WSA must use the connection panel to accept the connection from that system before continuing.

Auto Connect All
: Everyone connecting to the WSA from the specified system will bypass the connection panel.

Auto Connect List
: Selecting this choice activates the **User IDs** section of the System Register panel. When you make this selection, you must enter the ID of at least one user you want to be able to bypass the WSA connection panel when

connecting from the specified system. Enter user IDs by clicking on the **Add** button in the User IDs section of the panel. A pop-up dialog like the one shown here appears.
Enter the user ID of each user you want to automatically connect from the

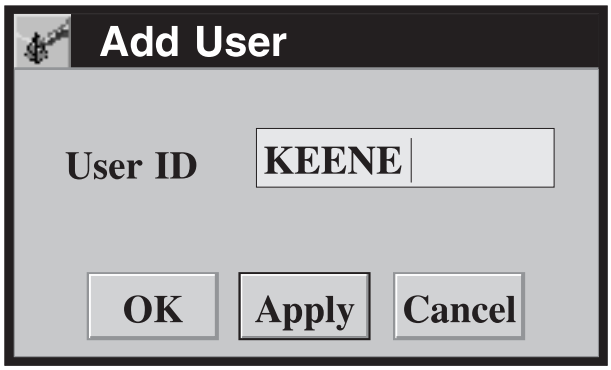


Figure 108. Add User Pop-up Dialog

highlighted system. If you are entering only one user ID at this time, click on the **OK** button to update the list and return to the System Register panel. If you are entering a list of IDs, click on the **Apply** button after each entry, then click on the **OK** button after the last one. As you enter IDs, they are added to the list appearing in this section of the System Register panel.

To delete IDs from the list, highlight the line in the list, then click on the **Delete** button located next to the list.

The **System Information** section of the System Register panel shows the name of the system highlighted in the Systems section of the panel, and its IP or SNA address. This is the system that you are currently working with on the System Register panel. You cannot change the information in the System Information section, it is for information only.

When you are finished working with the System Register panel, you can dismiss it by clicking on the **OK** button at the bottom of the panel. During long sessions where you are making many entries, it is recommended that you occasionally click on the **Apply** pushbutton to save your entries.

Selection 2–Data Set

The final option on the Download Data Set to Workstation (Option 3.7) panel is called **Data Set — Download/upload ISPF library, partitioned, or seq data set**. This option provides a panel-driven interface into the ISPF **FILEXFER** service, enabling you to transfer data between the host and the workstation.

Selecting option 2 causes the following panel to appear:

Download Data Set to Workstation Utility (Option 3.7)

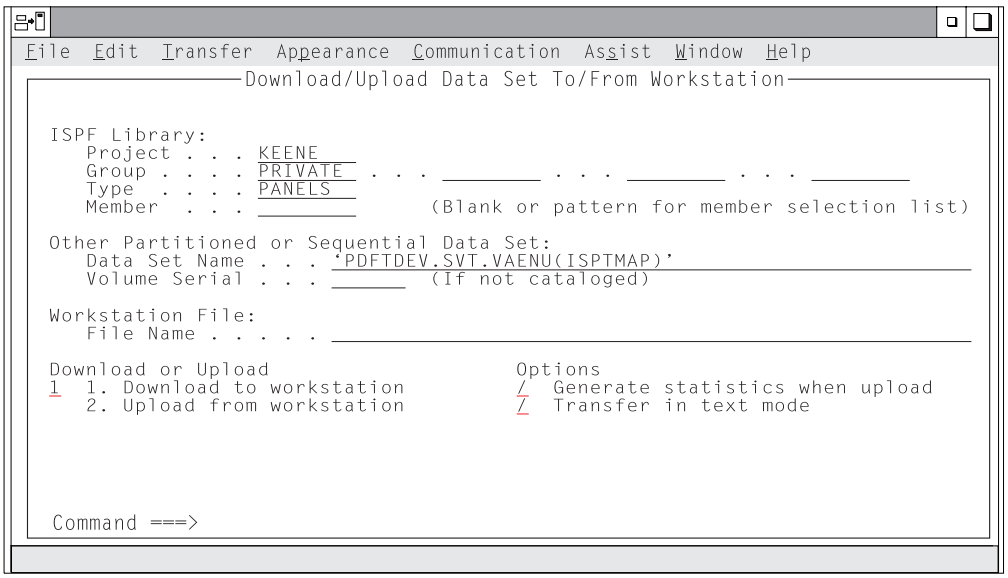


Figure 109. ISPF Data Set Panel (ISPUDLDS)

The Download or Upload selections enable you to indicate whether you want to download host data to the workstation, or upload workstation data to the host. Enter a 1 for ***download to workstation***. Enter a 2 for ***upload from workstation***.

You can transfer data from either PDS or sequential host data sets. The host data set must exist before attempting a transfer, but a PDS member is created if it does not already exist. Workstation files need not exist before downloading data from the host, but the specified directory must be there.

For downloading ***only***, you can specify an asterisk (*) character in the workstation file name. ISPF substitutes the member name of the data being downloaded for the *. This enables you to select multiple members from the member list to be downloaded as separate files.

The **Generate Statistics on Upload** selection indicates whether ISPF member statistics should be generated when a workstation file is uploaded to a member of a PDS. Statistics are only generated when the host data set is record format F or V.

The **Transfer in Text mode** field determines whether the file transfer is done in text mode (with ASCII to EBCDIC translation) or in binary mode (without any translation). When transferring in text mode, the ISPF FILEXFER service provides a one-to-one mapping of all 256 code points between the host code page and the workstation code page. Most other file transfer utilities (for example, FTP) only provide a one-to-one mapping of displayable characters.

Outlist Utility (Option 3.8)

This utility gives you the ability to browse, print, delete, or requeue job output that is in a held SYSOUT queue. When you select this option, a panel is displayed (Figure 110 on page 183) that allows you to select an option and enter the appropriate operands.

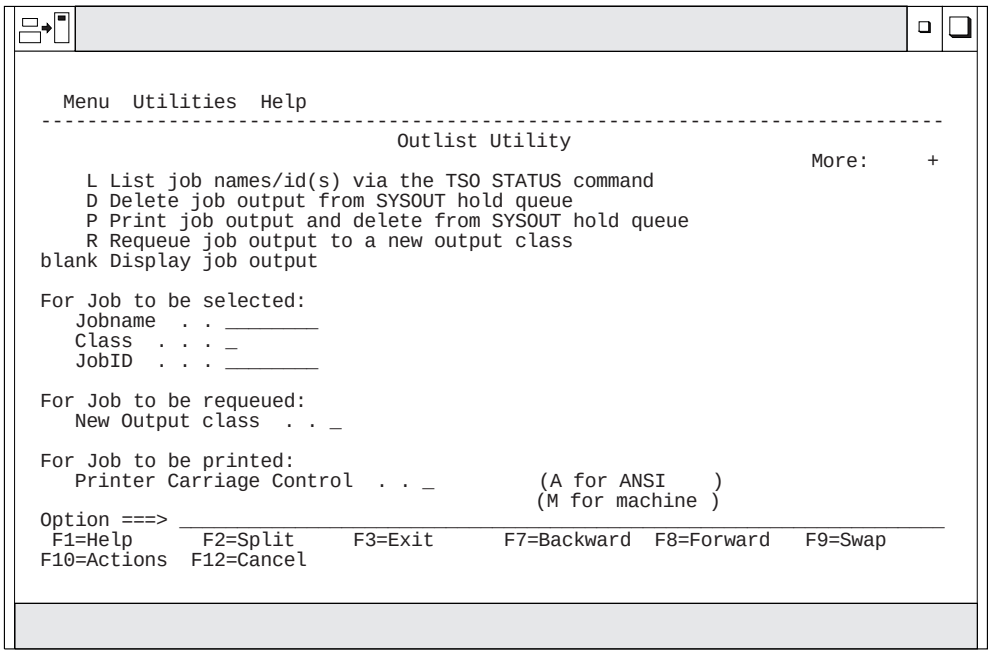


Figure 110. Outlist Utility Panel (ISRUOLP1)

Outlist Utility Panel Action Bar

The Outlist Utility panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities
See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General
2 Listing the status of jobs
3 Deleting the output of a held job
4 Printing the output of a held job
5 Requeueing the output of a held job
6 Displaying the Output of a held job
7 Appendices
8 Index

Outlist Utility Panel Fields

The fields on this panel are:

Jobname
The held SYSOUT job. It is required for all options except option L.

Class The SYSOUT hold queue. If you omit the CLASS operand, all SYSOUT queues are searched for the specified job.

JobID Required only if more than one job exists with the same job name.

New Output class
When requeuing a job (option R), enter the new SYSOUT hold class here.

Printer Carriage Control
When printing a data set (option P), enter a value here that corresponds to the type of carriage control characters in the data set. Valid values are:

A If the data contains American National Standard Institute (ANSI) carriage control characters.

M If the data contains machine control characters.

Blank If the data contains no carriage control characters.

The record formats for the corresponding data sets are FBA, FBM, and FB, respectively.

Outlist Utility Options

The following sections explain the options listed at the top of the Outlist Utility panel.

L — List Job Names/ID(s) via the TSO STATUS Command

If you select option L, a list of job names and job IDs is displayed. If you leave the job name blank, or if the job name is your user ID plus one identifying character, the status is listed for all jobs having job names consisting of your user ID followed by that identifying character. If you supply any other job name, the status for that exact job is displayed.

The list of job names is displayed on the lower portion of the panel. If the list is too long to fit on the screen, three asterisks are displayed on the last line of the screen. You can display the remainder of the list by pressing Enter.

D — Delete Job Output from SYSOUT Hold Queue

If you select option D, the held output for a specific job is deleted from the specified SYSOUT queue.

P — Print Job Output and Delete from SYSOUT Hold Queue

If you select option P, the held output for a specific job is removed from the SYSOUT queue and placed in an ISPF-defined data set for printing. You can choose the record format for this data set by putting an entry in the **Printer Carriage Control** field.

An optional print utility exit can be installed by your system programmer. If this exit is installed, it may cause the Outlist utility's response to differ from the following descriptions. Refer to *ISPF Planning and Customizing* for more information about the print utility exit.

Another factor that can affect the Outlist utility's performance is whether the TSO/E Information Center Facility is installed. If the TSO/E Information Center Facility is installed, your installation can optionally allow ISPF to display a panel for submitting the TSO/E Information Center Facility information with the print request. See Figure 139 on page 244 for an example of this panel and "Using the TSO/E Information Center Facility" on page 166 for information about the fields on this panel.

If the TSO/E Information Center Facility is not installed, the Outlist utility displays the panel shown in Figure 138 on page 237 when you press Enter. Use this panel to

tell ISPF how and where the job output is to be printed. This option does not honor multiple copies for output on hold queue. To print multiple copies use option R.

ISPF uses temporary data sets named *prefix*.*userid*.SPF*xxx*.OUTLIST (if your data set prefix in your TSO user profile is different from your TSO userid) or *userid*.SPF*xxx*.OUTLIST (if your prefix and userid are the same), where *xxx* is a number between 100 and 999.

CAUTION:

If you keep or use all data sets through 999, ISPF resets to 100 and uses the existing data sets. Also, ISPF can use the data sets that you allocate using the temporary data set naming convention.

R — Requeue Job Output to a New Output Class

If you select option R, the held output for a specific job is requeued to another SYSOUT class from the specified SYSOUT queue. You must enter the new SYSOUT class on the panel in the **New Output class** field. You can use this option to print output with multiple copies by requeuing to a SYSOUT class predefined to print multiple copies.

Blank — Display Job Output

If you leave the **Option** field blank, the held output for the specified job is displayed in Browse mode. You can use all Browse commands. The data remains in the SYSOUT queue. When you enter the END or RETURN command to end Browse, the Outlist Utility panel is displayed again, and you can then choose to print, requeue, or delete the job output.

Command Table Utility (Option 3.9)

The Command Table utility (option 3.9) enables you to create or change ISPF application command tables. When you select this option, a panel is displayed (Figure 111 on page 186) to prompt you for an application ID. The name of the command table is then derived by adding CMDS to the application ID. If the table exists in the table input library, ISPTLIB, it is displayed and can be modified. If the table does not exist in the table input library, a new table is generated.

The command table displays the search order of commands for a particular logical screen. The order is from top to bottom of those commands displayed. The **User table** and **Site table** fields are blank if no values are set for them in the **ISPF Configuration** table, or if values have been set but the tables do not exist in the **ISPTLIB** concatenation.

You cannot use this utility to change a command table that is currently in use. Command table ISPCMDS, the system command table, is always in use by the Dialog Manager component. If you enter ISP in the **Application ID** field, ISPF displays the ISPCMDS command table in read-only mode.

While you are using this utility to change a command table, the table cannot be used for other purposes. For example, you cannot use split screen and select a function with NEWAPPL(XYZ) if you are changing command table XYZCMDS.

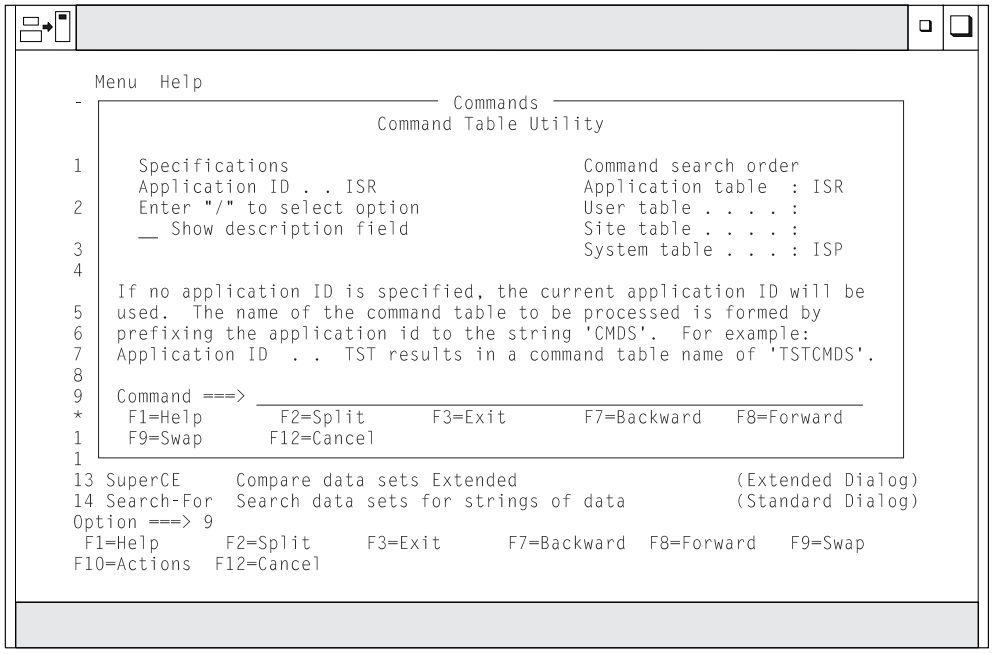


Figure 111. Command Table Utility Panel (ISPUCMA)

Command Table Utility Panel Fields

The fields on the Command Table Utility panel function as follows:

Application ID
Contains the name of an application for which you want to define commands

Show description field
Allows you to display the descriptions as well as the commands and definitions.

The command table for the named application is displayed on a Command Table editing panel (Figure 112 on page 187). This panel can be scrolled up and down using the scroll commands.

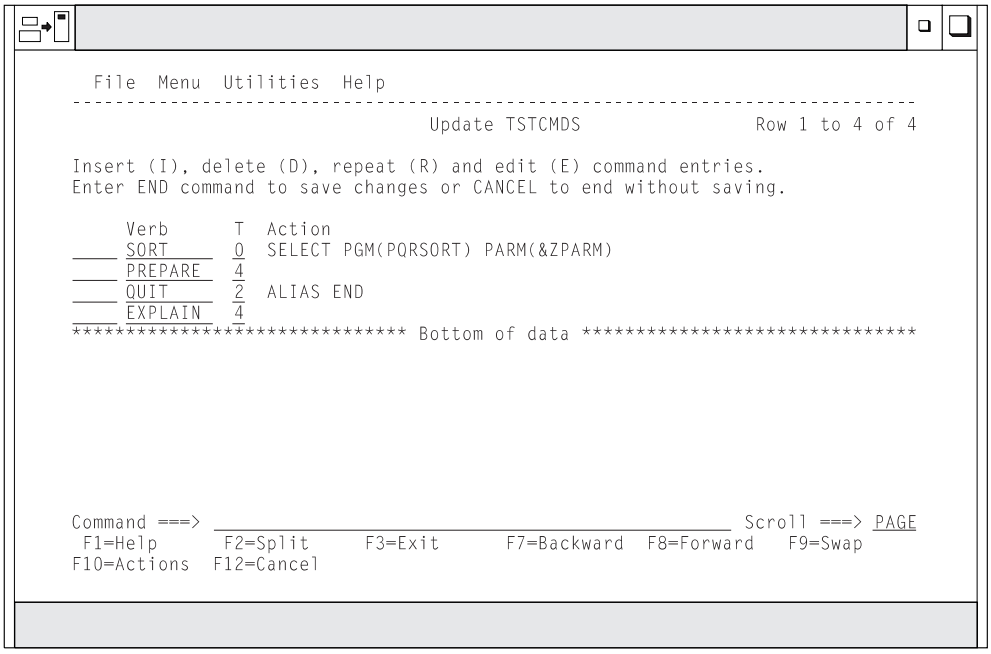


Figure 112. Command Table Editing Panel (ISPUCMD)

The column headings on the panel are:

Verb The command verb, which is the name of the command you are defining in the command table. A command verb must be from 2–8 characters long, inclusive, and must begin with an alphabetic character. The content of this column is assigned to the ZCTVERB system variable.

T (truncation)
The minimum number of characters that you must enter to find a match with the command verb. If this number is zero or equal to the length of the command verb, you must enter the complete command verb. For example, in Figure 112 the PREPARE command has a truncation value of 4. Therefore, for the TST application used as the example in the figure, only the first four letters, PREP, must be entered to call this command. The content of this column is assigned to the ZCTTRUNC system variable.

Action
The actual coding of the action to be carried out when you enter the command. The action length must not be greater than 240 characters. The content of this column is assigned to the ZCTACT system variable.

Note: Do not use ACTIONS, CANCEL, CRETRIEV, CURSOR, EXIT, PRINT, PRINTG, PRINTHI, PRINTL, PRINTLHI, RESIZE, RETF, RETP, RETRIEVE, SPLIT, SPLITV, SWAP, WINDOW, or WS as keywords in the Action column. These keywords are intended only for use in the system command table distributed with ISPF. They are not intended for use in application command tables.

The valid actions are:

Select Causes the selected dialog (command, program, or selection panel) to be given control immediately. Refer to *ISPF Dialog Developer's Guide and Reference* for more information about the SELECT statement and its keywords.

Alias Allows one command verb to carry out the action defined for another. For example, in Figure 112 on page 187, QUIT is an alias for END. Therefore, for the TST application used as the example in the figure, entering QUIT causes the same action to occur as entering END.

Passthru
Causes the command to be passed through to the dialog as if it had not been found in the command table.

Setverb
Causes the command to be passed through to the dialog, with the command verb stored separately from the operands.

NOP Causes the command to be inoperative. An inactive command message is displayed.

Blank Causes the command table entry to be ignored. ISPF continues to search for additional entries for the same command verb. If the command is not found in either the application command table or the system command table, an invalid command message is displayed.

xxxxx A variable name, beginning with an ampersand (&), allows dynamic specification of the command action.

Description
An optional, brief description of the action the command verb is to perform. Since this column is offset three spaces under the Action column, the description length must not be greater than 80 characters. The content of this column is assigned to the ZCTDESC system variable.

For a new table, this panel initially contains dummy entries with all fields shown as underscores. The underscores are pad characters and need not be blanked out. However, any null entries where at least the verb contains all underscores are automatically deleted when the table is saved.

Scrolling a Command Table

You can scroll the table entries, using the ISPF UP and DOWN scroll commands, and change one or more entries simply by typing over them.

Saving a Command Table

The END command causes the table to be saved in the table output library, ISPTABL, and ends the utility.

Cancelling a Command Table

The CANCEL command ends the command table display without saving the table.

Using Command Table Line Commands

You can enter the following line commands at the left of any entry by typing over the four quotation marks. Multiple line commands or changes can be entered in a single interaction. Line commands followed by a number, such as D3, are repeated that number of times. The lines are processed in the order in which they appear on the screen. Any line commands or changes that are entered concurrently with the END command are processed before the table is saved.

D — Deleting Lines

The D command deletes one or *n* lines (`D[n]`).

E — Editing Lines

The E command edits one or *n* lines (`E[n]`). You can modify the action or description fields of a line.

I — Inserting Lines

The I command inserts one or *n* lines (`I[n]`). The inserted lines contain underscores (pad characters) in all field positions.

R — Repeating Lines

The R command repeats a line one or *n* times (`R[n]`). The repeated lines contain underscores (pad characters) in the Verb and T (truncation) fields, but the Action and Description fields are copied from the line on which the R command was entered.

V — Viewing Lines

The V command views one or *n* lines (`V[n]`). You can look at the entire command entry including the command action and description fields, but you cannot change them.

Format Specifications Utility (Option 3.11)

The Format Specifications utility (option 3.11) is provided to support the IBM 5550 terminal using the Double-Byte Character Set (DBCS). It is used to maintain formats that are used when viewing, browsing, and editing to display data sets that contain predefined formatted records.

The purpose of a format is to structure data from a record into fields and to define the order these fields are to be physically displayed on the screen when you are viewing, browsing, and editing.

When you select this option, a panel is displayed (Figure 113 on page 190) that allows you to add, copy, delete, or update a format. You can also display the format list.

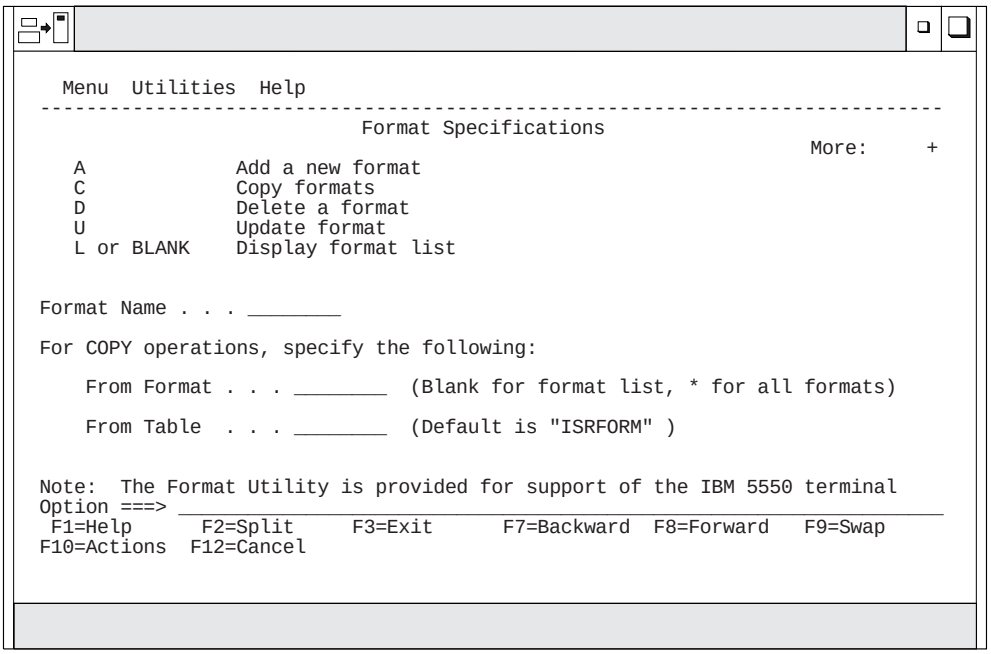


Figure 113. Format Specifications Panel (ISRFM01)

Format Specifications Panel Action Bar

The Format Specifications panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 Add a new format definition
2 Copy formats
3 Delete a format
4 Update a format
5 Display Format selection list
6 Appendices
7 Index

Format Specifications Panel Fields

The fields on this panel are:

Format Name
The name of the format that you want to add, delete, or update. When copying a format (option C), this is the name you want the copied format stored under.

From Format
When copying a format (option C), you can:

- Enter the name of a format you want to copy
- Enter an asterisk (*) to copy all formats

- Leave the field blank to display a copy format selection list.

See Figure 115 on page 193 for an example of a Copy Format Selection List display.

From Table

When copying a format (option C), you can:

- Enter the name of a table from which you want to copy a format
- Leave the field blank if you want to copy a format from the ISRFORM table.

Format Specifications Panel Options

The following sections describe the options shown at the top of the Format Specifications panel.

A — Add a New Format

If you specify option A and a format name, the Format Definition panel (Figure 114) is displayed.

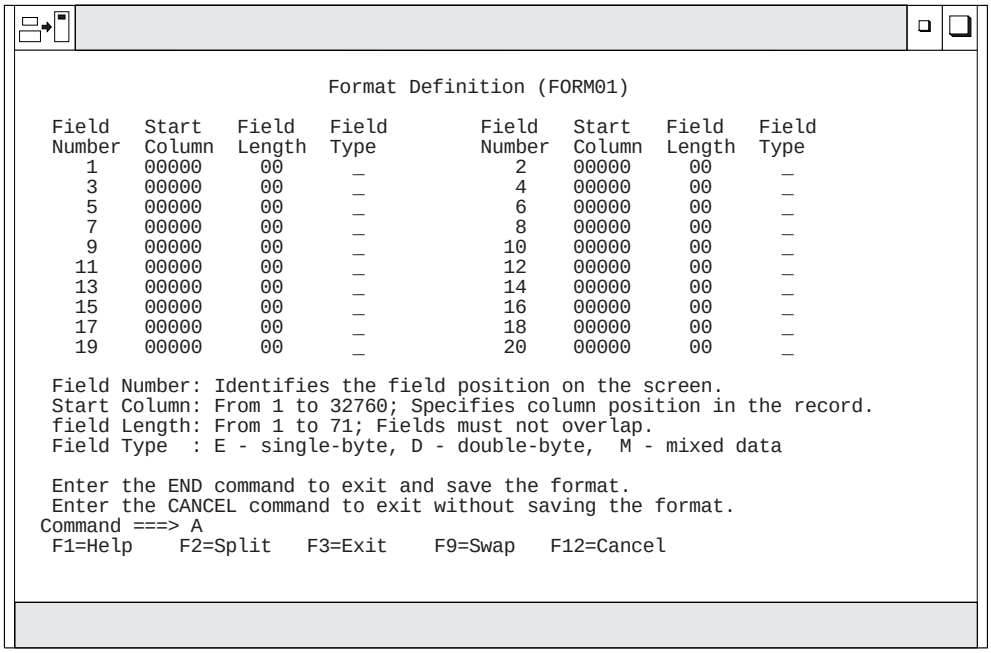


Figure 114. Format Definition Panel (ISRFM02)

A field definition includes:

Field Number

The number of the field for which you are defining a format. You can define up to 20 fields.

Start Column

Starting column position in the record.

Field Length

Field length in bytes; the maximum is 71 bytes.

Field Type

The type of data that can be entered in the field. Valid types are:

E EBCDIC (single-byte)

D DBCS (double-byte)
M Mixed data.

Note: All three of these field types can contain extended graphics characters. CAPS ON processing is not possible because of context dependencies. Therefore, it is ignored when you are editing formatted data.

The format definition information applies to both existing records and inserted records in a data set.

Note: It is recommended that you avoid using STD or COBOL formats with numbered data. The results can be different from using formats with unnumbered data. If you must use numbered data, do not define the columns the sequence numbers will appear in, or define an EBCDIC or mixed data field for them.

C — Copy Formats

If you specify option C on the Format Specifications panel, the following occurs:

- If you specify both an asterisk (*) in the **From Format** field and a table name other than ISRFORM in the **From Table** field, all formats stored in the "From" table are copied to ISRFORM.

  Note: If you specify a table name in the **From Table** field, and that table does not have the same format as ISRFORM, a severe error occurs.
- If you specify both a format name and a "From" format, the format is copied. If you specified a "From" table (other than ISRFORM), the format is copied from that table. Otherwise, the format is copied from ISRFORM. The Format Definition panel for the newly created format, containing the currently defined fields, is displayed. You can add, delete, and update field definitions. When you enter the END command, the format definition is stored in ISRFORM under the format name you specified.
- If you specify a format name but no "From" format, the Copy Format Selection List panel (Figure 115 on page 193) is displayed.

  If you did not specify a "From" table, the formats listed are those stored in ISRFORM, the default format table. Otherwise, the formats listed are those stored in the table you specified.

  You can select a format to copy by entering the S line command to the left of that format name. Other commands you can enter are U (Update), R (Rename), D (Delete), SELECT (which is similar to S), SORT, and LOCATE. See "Format Selection List Commands" on page 194 for a description of these commands.

  The format is copied, and the Format Definition panel for the newly created format, containing the currently defined fields, is displayed. You can add, delete, and update field definitions. When you enter the END command, the format definition is stored in ISRFORM under the format name you specified on the Format Specifications panel.
- If you specify neither a format name nor a "From" format, but you do specify a "From" table (other than ISRFORM), the Copy Format Selection List panel is displayed. You can select one or more formats to copy by entering the S line command to the left of the format name(s). Each of these formats is copied under the same name from the specified "From" table to the ISRFORM table.

Note: If you do not specify option C but specify a name in the **From Format** field, the **From Format** field is ignored.

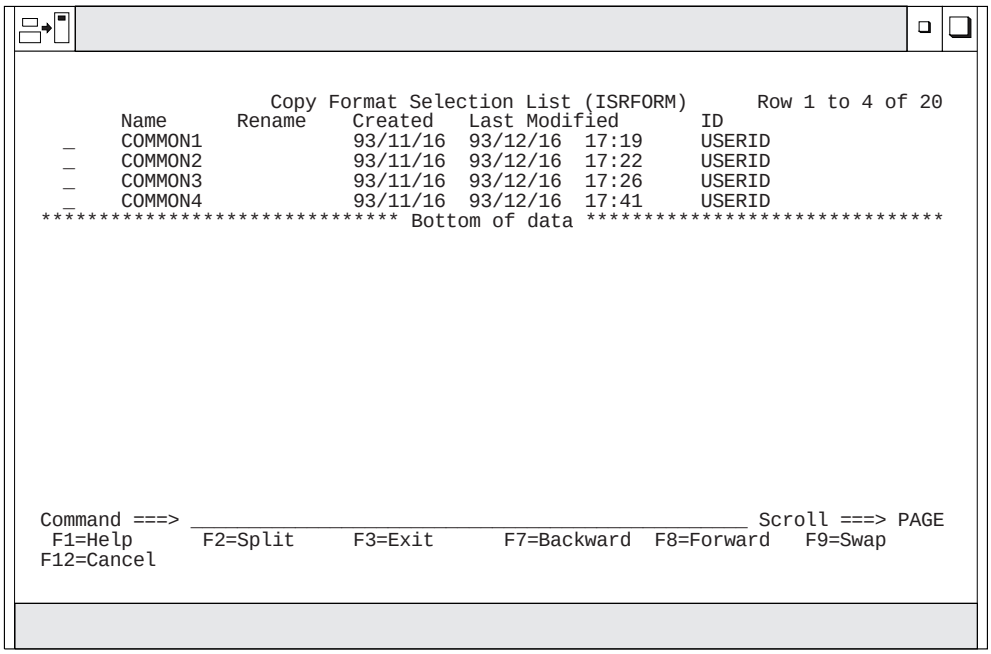


Figure 115. Copy Format Selection List Panel (ISRFM04)

D — Delete a Format

If you specify option D and a format name on the Format Specifications panel, the format is deleted.

U — Update a Format

If you specify option U and a format name on the Format Specification panel, the Format Definition panel containing the currently defined fields is displayed. You can add, delete, and update field definitions.

L or BLANK — Display Format List

If you specify option L or leave the Option line blank on the Format Specifications panel, the Format Selection List panel (Figure 116 on page 194) is displayed.

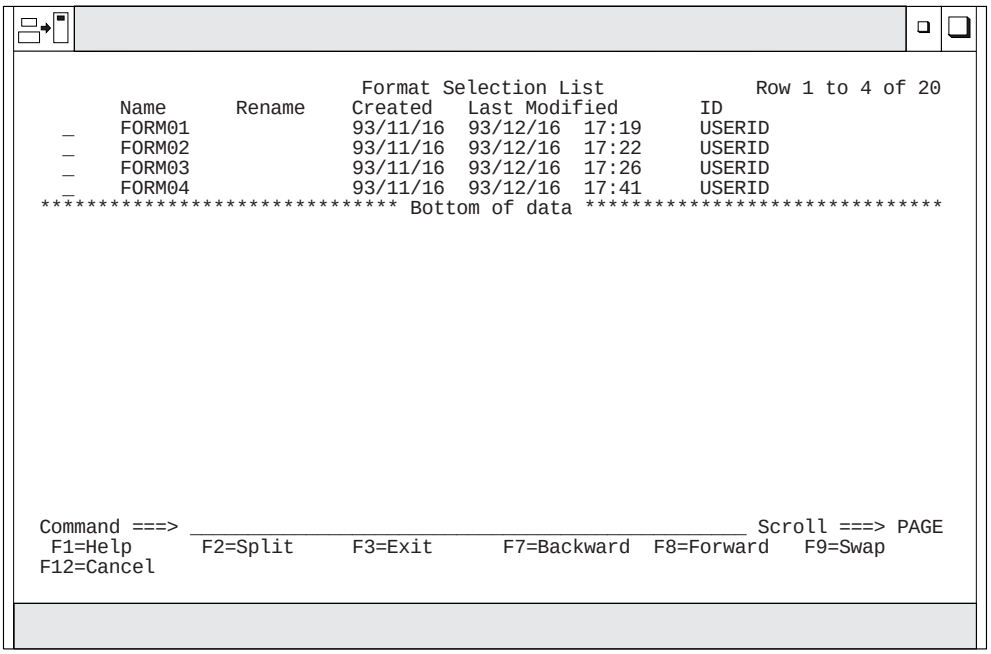


Figure 116. Format Selection List Panel (ISRFM03)

Format Selection List Commands

The following sections describe the commands you can use on a Format Selection List panel.

Deleting a Format

If you specify the D line command beside a format name, the format is deleted.

Locating Format Names

The LOCATE command is another useful tool, especially if you have a long format list. To use the LOCATE command, ensure that the list is sorted by name. Next, enter the LOCATE command on the Command line. The syntax is:

LOCATE *name*

where:

name The name of the format you want to find.

For example, the following command would find a format named FORM03:

```
LOCATE FORM03
```

If the format exists, the entry for the specified format name appears as the second line following the header lines. If the specified name is not found, the existing format name that would immediately precede the specified name appears as the first line following the header lines.

Renaming a Format

If you specify the R line command beside a format name, you must also specify its new name in the **Rename** field before you press Enter. If you do not, the `Enter required field` message appears in the upper-right corner of the screen and the cursor moves to the Rename field.

Sorting Format Names

You can sort the name list on this panel by entering the SORT command on the Command line. The syntax of the SORT command is:

SORT [NAME | TIME]

where:

NAME
Sort by name.

TIME Sort by time last modified.

For example, the following command would sort a format selection list by time:

```
SORT TIME
```

Updating or Selecting a Format

If you specify the U or S line command beside a format name, the Format Definition panel containing the currently defined fields is displayed. You can add, delete, and update field definitions.

You can specify that multiple operations be done at the same time. However, if you specify U or S with other line commands, any commands after the first U or S are ignored.

The SELECT command provides you with another way to specify a format. This command is entered on the Command line.

The syntax of the SELECT command is:

SELECT*name*

where:

name
The name of the format you want to select.

If the format exists, the Format Definition panel containing the currently defined fields is displayed. You can add, delete, and update field definitions.

If no format exists for that name, a new format is created, and the Format Definition panel is displayed to allow you to define fields.

SuperC Utility (Option 3.12)

Note: For an introduction to the SuperC and SuperCE utilities (options 3.12 and 3.13), see Appendix A. SuperC Reference.

The SuperC utility (option 3.12) is a dialog that uses the SuperC program to compare data sets of unlimited size and record length at the file, line, word, or byte level. The panel shown in Figure 117 on page 196 is used to specify the name of a new data set.

Note: In this context, a *new* data set is an updated version of a previously created data set, such as a data set in your private library that has been modified but has not yet been promoted.

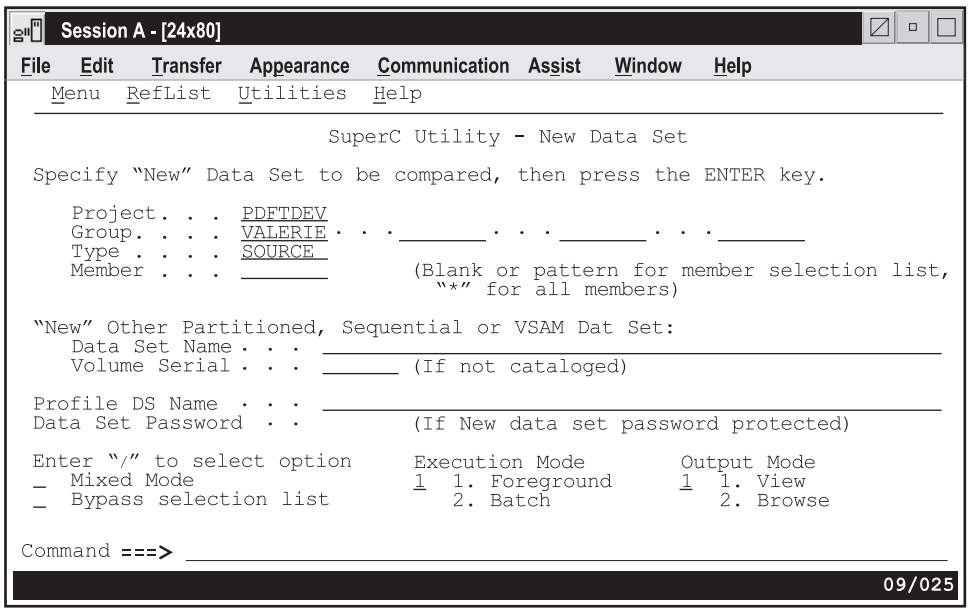


Figure 117. SuperC Utility Panel (ISRSSNEW)

This panel requires only the names of the input data sets and a foreground or batch mode setting.

SuperC Utility Panel Action Bar

The SuperC Utility panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General
2 Overview of SuperC
3 Specifying the "NEW" data set
4 Specifying the "OLD" data set
5 Member selection
6 Setting batch output parameters
7 Interpreting listings
8 Interpreting return codes
9 Appendices
10 Index

SuperC Utility Panel Fields

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except:

Profile DSN
The name of an optional data set that can contain a compare type, listing

type, sequence numbers setting, Browse setting, process options, and process statements. All these elements, when combined in one data set or member, are called a *profile*. See "Profiles and Defaults - Activate Profiles and Defaults" on page 214 for information about using the SuperCE utility (option 3.13) to create a profile data set.

The listing type and sequence numbers setting of the profile are copied onto the panel used to specify the old data set name (Figure 118 on page 198), but can be typed over or blanked out. However, other elements of the profile are in effect, even though they are not shown on the panel.

Mixed Mode
Select this field to have SuperC scan and parse the input data set lines for DBCS text strings.

Note: Mixed Mode is not valid for the File or Byte compare.

Bypass Selection List
When a member pattern is entered in the PDS Member List field or the member name portion of the data set field (such as, MY.DATA.SET(pattern)), selecting this field causes SuperC to process all members matching that pattern without displaying a member selection list. Leaving this field blank causes the member list to be displayed.

Execution Mode
The processing mode you want to use when comparing the data sets. Choose one of the following:

1 **Foreground**. After the old data set panel and member selection, if any, are completed, foreground mode compares the new and old data sets and stores the results in the data set specified in the **Listing DS Name** field, which you can browse at the terminal.

2 **Batch**. After the old data set panel and the member list, if any, are completed, batch mode causes the display of the SuperC Utility - Submit Batch Jobs panel, so you can specify job card and print disposition information or edit the JCL. Then, the batch job is submitted to compare the new and old data sets. See "Submitting a SuperC Job in Batch Mode" on page 202 for more information.

Note: You cannot specify a data set password in batch mode. If your data sets are password protected, use foreground mode.

Output Mode
The output mode you want to use when displaying the listing file. Choose one of the following:

1 **View**. This enables the listing file to be displayed in *view* mode. All View functions are enabled in this mode.

2 **Browse**. This enables the listing file to be displayed in the *browse* mode. All Browse functions are enabled in this mode.

When you complete the New Data Set panel and press Enter, ISPF displays the panel shown in Figure 118 on page 198. Of the five fields shown at the bottom of the panel (Volume Serial, Listing DS Name, Data Set Password, Listing Type, and Sequence Numbers), all except **Listing Type** may not appear, depending on the mode you choose (foreground or batch) and the contents of the profile data set.

Also, if you request a member list or specify an asterisk (*) in the **Member** field on the new data set panel, ISPF does not display a **Member** field on the old data set panel.

Note: In this context, an *old* data set is a base version of a data set, such as a data set in a production library.

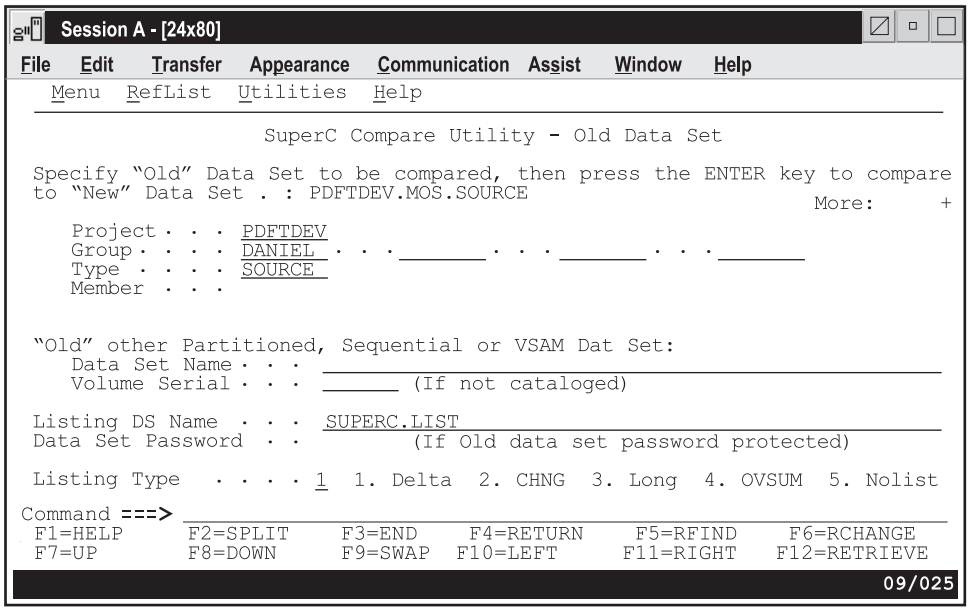


Figure 118. SuperC Utility - Old Data Set Panel (ISRSSOLD)

Specify the name of an old data set. The type of old data set that you can specify depends on the type of new data set you specified on the previous panel. For example, you can compare:

- A complete new PDS to a complete old PDS
- A new sequential data set to:
  - An old sequential data set
  - An old membered PDS
- A new membered PDS to an old sequential data set.

In this context, the term *membered PDS* refers to a PDS for which a single member has been specified, such as:

```
'USERID.TEST.SCRIPT(NEWDATA)'
```

SuperC treats a membered PDS as a sequential data set because the comparison is done on a one-to-one basis. However, SuperC cannot compare a sequential data set to a complete PDS because it cannot compare one data set to more than one member of another data set.

When you press Enter, ISPF either displays a member selection list or begins the comparison. All the fields on this panel are explained in the***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except the following:

Update DS Name
Tells SuperC the name of the data set that will contain column-oriented results of the comparison.

Note: This field is not displayed unless your profile data set contains an update (UPD*xxxx*) process option.

This data set is normally used as input to post processing programs and can be specified in addition to the normal listing data set. See the Process Options selection in "Process Options - Select Process Options" on page 212 for information about the SuperC process options.

If you leave this field blank, SuperC uses the following default name:

```
prefix.userid.SUPERC.UPDATE
```

where *prefix* is your TSO prefix and *userid* is your user ID. If your prefix and user ID are identical, only your prefix is used. Also, if you do not have a prefix, only your user ID is used.

If you enter a fully qualified data set name SuperC uses it as specified. Otherwise, SuperC only appends your TSO prefix to the front of the data set name specified. If you run with TSO PROFILE NOPREFIX, SuperC uses the name as you entered it, which can result in an attempt to catalog the name in the master catalog.

If you enter the name of a data set that already exists, the contents of that data set are replaced by the new update output.

If you enter the name of a data set that does not exist, SuperC allocates it for you. The data set is allocated as a sequential data set unless you enter a member name after it, in which case it is allocated as a partitioned data set.

Note: For the UPDMVS8, UPDCMS8, UPDSEQ0, and UPDPDEL process options, the update data set contains valid data but only after a successful compare when differences are detected. The data set is always empty after a comparison that shows the data sets or members being compared have no differences.

Listing Type

The type of listing you want SuperC to create when it compares the data sets. This is a required field, so you must choose one of the following. See Appendix B. SuperC Listings for sample listings.

DELTA Lists the differences between the source data sets, followed by the overall summary.

CHNG Lists the differences between the source data sets, plus up to 10 matching lines before and after the differences. This listing is a variation of the DELTA listing; the matching lines before and after help you recognize changed areas of the source data sets.

LONG Lists all the new data set source lines, plus old data set deleted lines. Both inserted and deleted lines are flagged.

OVSUM Lists only the overall summary of the comparison. However, a PDS comparison generates an individual summary line for each PDS member.

NOLIST Produces no listing output. In foreground mode, only a message is returned to show the outcome of the compare.

Listing DS Name
The name of the list data set to which SuperC writes the results of the comparison. However, if you enter NOLIST in the **Listing Type** field, SuperC does not create an output listing, so this name is ignored. Also, if you chose batch mode, this field does not appear on the panel. The SuperC Utility - Submit Batch Jobs panel is used instead.

If you leave this field blank, SuperC allocates a list data set, using default data set attributes and the following data set name:

```
prefix.userid.SUPERC.LIST
```

where *prefix* is your TSO prefix and *userid* is your user ID. If your prefix and user ID are identical, only your prefix is used. Also, if you do not have a prefix, only your user ID is used.

If you enter a fully qualified data set name SuperC uses it as specified. Otherwise, SuperC only appends your TSO prefix to the front of the data set name specified. If you run with TSO PROFILE NOPREFIX, SuperC uses the name as you entered it, which can result in an attempt to catalog the name in the master catalog.

If you enter the name of a data set that already exists, the contents of that data set are replaced by the new output listing. However, if the data set is sequential, you can add this listing to the data set instead of replacing it by including the APNDLST process option in your profile data set.

If you enter the name of a data set that does not exist, SuperC allocates it for you. The data set is allocated as a sequential data set unless you enter a member name after it, in which case it is allocated as a partitioned data set.

Sequence Numbers
A value that tells SuperC whether to exclude sequence number fields from its comparison of your data sets. This field is not displayed if the compare type is FILE or BYTE. You can choose one of the following:

blank	Exclude Sequence Number fields from the comparison if the data set is F 80 or V 255 and the compare type is `Line` Otherwise, treat as data.
SEQ	Exclude Sequence Number fields from the comparison. Sequence numbers are assumed in columns 73–80 in F 80 and in columns 1–8 in V 255 data sets.
NOSEQ	Treat F 80/V 255 standard sequence number columns as data.
COBOL	Ignore columns 1–6 in F 80 data sets. Data in columns 1–6 is assumed to be sequence numbers.

SuperC Member Lists

The panel shown in Figure 119 on page 201 is displayed after you specify the old data set name, but only if all the following statements are true:

- The new data set is partitioned.
- The **Member** field, shown on the SuperC Utility panel (see Figure 117 on page 196), or the **PDS Member List** field, shown on the SuperCE Utility panel

(see Figure 122 on page 206) was left blank or a pattern was used, and *Bypass Selection List* was not selected. See the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about displaying member selection lists.

- The profile data set or statements data set being used does not contain any SELECT process statements.

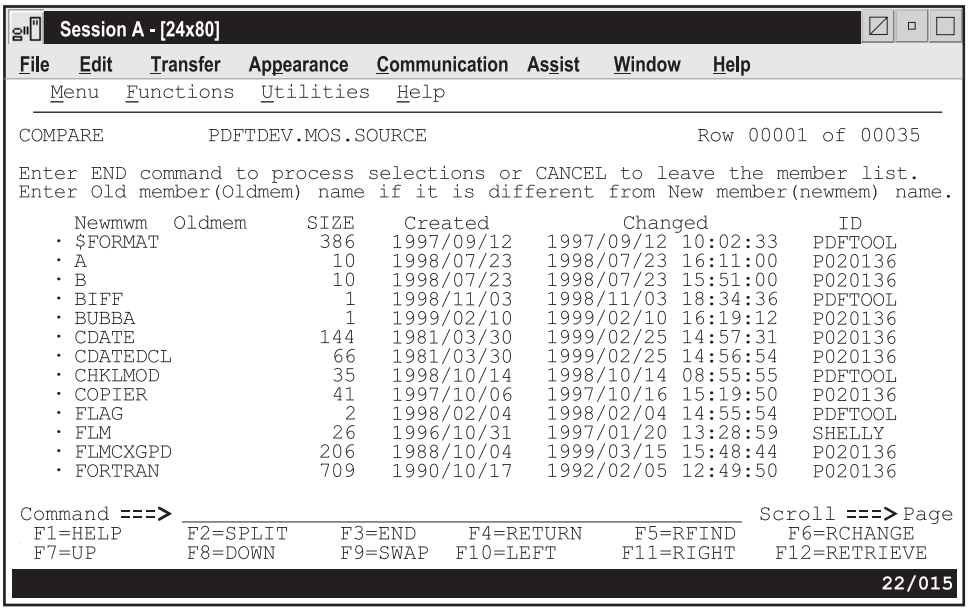


Figure 119. SuperC Member List Panel (ISRSSML)

The members displayed in this list are members in the new data set. If the OLDMEM column is blank, SuperC assumes each member in the new data set is to be compared with a member of the same name in the old data set.

If you enter a member name in the OLDMEM column, SuperC compares this member to the one listed beside it in the NEWMEM column.

To compare your selections, enter the END command. If you have not selected any members, ISPF returns you to the previous panel.

To cancel your selections, enter either:

- The RESET command to remove all unprocessed selections without ending the member list display
- The CANCEL command to end the member list display without processing selections that are still on the screen.

Note: Both the jump function (=) and the RETURN command cause an implied cancellation of selections before they are carried out.

For more information about member lists, see the **Using Member Selection Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*.

Submitting a SuperC Job in Batch Mode

If you selected Batch Mode (2) on the SuperC Utility panel, the panel shown in Figure 120 is displayed before the job is submitted. This panel allows you to specify one of the following:

- The SYSOUT class, which determines the printer to which your job is sent and the format used for the printed output
- The name of a listing data set
- Output data definitions that you can use to give the printer additional instructions, such as an output destination that is not defined by a SYSOUT class.

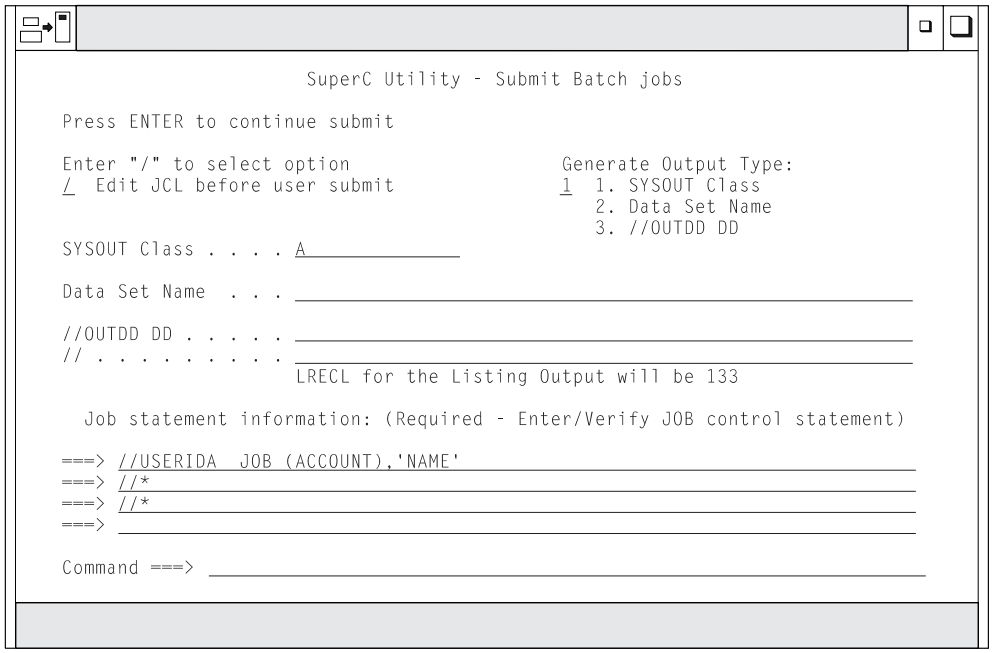


Figure 120. SuperC Utility - Submit Batch Jobs Panel (ISRSCSUB)

The **Job statement information** field is explained in the **Job Statement Information** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*. The other fields on the panel shown in Figure 120 are:

SYSOUT class

A system output classification defined by your installation, which defines certain print characteristics, such as the printer and the format that is used to produce the output. You can enter any valid SYSOUT parameters. This field is required if you leave the **Option** field blank.

If you enter either option 1 or option 2, the **SYSOUT class** field is ignored. However, for option 2, you can include the SYSOUT= operand in an **OUTDD DD** field.

Data Set Name

The name of the listing data set that you want ISPF to store your compare results in. This data set can be either partitioned or sequential.

The **Data Set Name** field is required if you use option 1 on this panel. This field serves the same purpose as the **Listing DS Name** field, which is used when running the SuperC utility in foreground mode.

The logical record length (LRECL) of the listing data set is displayed under the blank OUTDD lines on the SuperC Utility - Submit Batch Jobs panel. SuperC creates listings with one of four LRECLs:

132 Standard listing for the NOPRTCC process option; printer control characters are omitted.

133 Standard listing.

202 Wide listing for the NOPRTCC process option; printer control characters are omitted.

203 Wide listing.

If you specify an existing sequential data set with an incorrect LRECL, SuperC overrides the data set specifications. This applies to any listing and update data sets in both foreground and batch.

A separate operation, such as using the Hardcopy utility (option 3.6), is needed to print the listing data set.

If you leave the **Option** field blank or enter option 2, the **Data Set Name** field is ignored. Therefore, to specify an output data set in either of these two situations, you must include the DSN= operand in an **OUTDD DD** field.

Specifying Existing Data Sets

The following rules apply when specifying the name of an existing data set:

- When you submit JCL for processing, the output listing produced by that JCL usually replaces the contents of the specified data set, if any exist. Therefore, be careful when specifying the name of an existing data set.

  You can keep a history of changes by using the APNDLST compare option when you run the comparison. This compare option adds the new output listing to the specified sequential data set's contents instead of replacing it.

  Note: Using the APNDLST process option with a packed output listing file may cause unpredictable results in the output listing file.
- Use standard TSO data set naming conventions.

Specifying Nonexistent Data Sets

The following rules apply when specifying the name of a data set that does not exist:

- If you include a member name in the data set specification, ISPF allocates a partitioned data set with suitable attributes for the listing.
- If you do not specify a member name, ISPF allocates a sequential data set.

//OUTDD DD

Output data definitions that are used to specify additional printer instructions in job control language (JCL). This field is required if you use this panel. Otherwise, it is ignored.

The **OUTDD DD** fields are provided so you can pass to your printer all the JCL needed to format special types of output that may not be supported by your installation's SYSOUT class definitions. The example shown in Figure 120 on page 202 specifies a wide format for printing on 14 3/4 inch forms.

The **SYSOUT class** and **Data Set Name** fields are ignored. If you need to specify this information, be sure to include it in your OUTDD DD job card. If you specify a data set name in your OUTDD DD job card, the output data set is printed and kept. Otherwise, it is printed and deleted. Here are some examples:

- To specify a SYSOUT class, enter:

  ```
  //OUTDD DD SYSOUT=X
  ```

  where `X` is the SYSOUT class, such as `A`, `B`, or `C`.
- To specify a data set name, enter:

  ```
  //OUTDD  DD  DSN=fully.qualified.name
  //           DISP=XXXXX...
  ```

  where `XXXXX...` is one of the following:
  - For an old data set:

    ```
    OLD
    ```
  - For a new sequential data set:

    ```
    (NEW,CATGL),SPACE=(3325,(50,100),RLSE),UNIT=SYSDA
    ```
  - For a new partitioned data set

    ```
    (NEW,CATGL),SPACE=(3325,(50,100,25)),UNIT=SYSDA
    ```
  - For a sequential data set that will be modified by, instead of replaced by, the comparison results:

    ```
    MOD
    ```

Note: These three fields are independent of one another. Also, none of them requires you to provide an OUTDD card in the **Job statement information** field.

Using the NOLIST Listing Type in Batch Mode

If you enter the NOLIST listing type and choose batch mode, the options on the SuperC Utility - Submit Batch Jobs panel shown in Figure 120 on page 202 are not valid because no listing is produced. Therefore, an alternate panel is displayed, which blanks out the fields that are not valid but still allows you to submit job statement JCL. This panel is shown in Figure 121 on page 205.

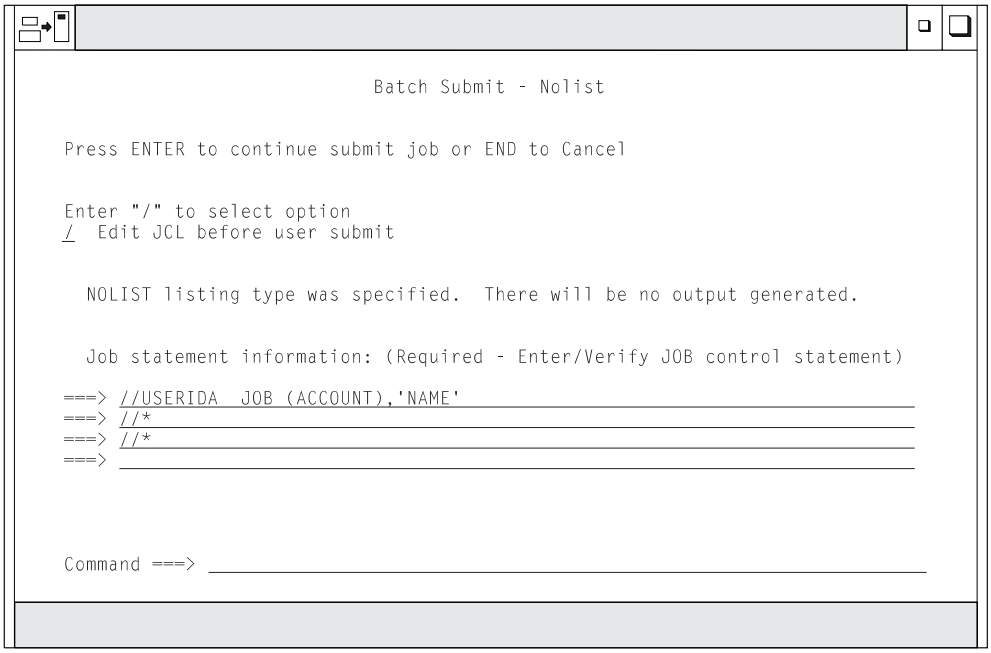


Figure 121. SuperC Utility - Submit Batch Jobs Panel using NOLIST (ISRSCSB1)

When this panel is displayed, you can either:
- Type the job statement JCL and press Enter to submit the job
- Enter the END command to cancel the job.

SuperCE Utility (Option 3.13)

The SuperCE utility (option 3.13) is a dialog that uses the SuperC program to compare data sets of unlimited size and record length at the file, line, word, or byte level. It is appropriate if you need more flexibility than the standard SuperC utility (option 3.12) provides.

Note: For an introduction to the SuperC and SuperCE utilities (options 3.12 and 3.13), see "Appendix A. SuperC Reference" on page 391.

The panel shown in Figure 122 on page 206 is the first panel of the SuperCE utility. It requires only the names of the input data sets, which are entered using standard TSO naming conventions, such as:

```
New DS Name  . . . . 'USERID.TEST2.SCRIPT'
```

Note: In this context, a *new* data set is an updated version of a previously created data set, such as a data set in your private library that has not yet been promoted.

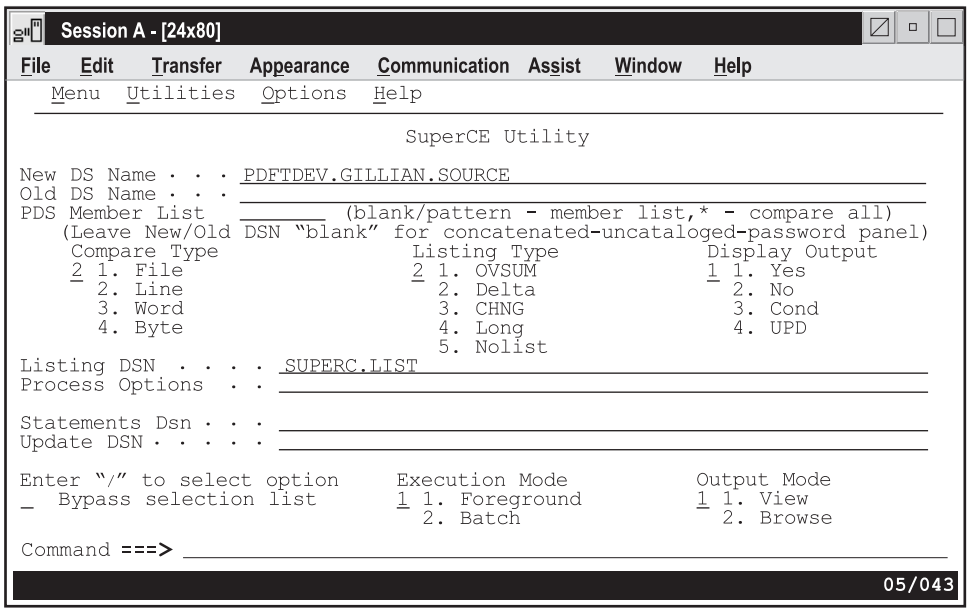


Figure 122. SuperCE Utility Panel (ISRSEPRI)

SuperCE Utility Panel Action Bar

The SuperCE Utility panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Options The Options pull-down offers you the following choices:

1 Edit Statements
2 Process Options
3 Profiles and Defaults

Help The Help pull-down offers you the following choices:

1 General
2 SuperCE functions
3 Appendices
4 Index

SuperCE Utility Panel Fields

A default compare type, listing type, listing data set name, and Browse option are provided if you choose not to specify your own. The fields on the SuperCE Utility panel are:

New DS Name and Old DS Name

Specify the name of a sequential data set, PDS, or membered PDS. Use standard TSO naming conventions, including quotes for fully qualified names. Leave either or both of these fields blank to display a panel on which you can specify concatenated, uncataloged, and password-protected

data sets. These panels are shown in Figure 123 on page 211 (foreground compare) and Figure 124 on page 212 (batch compare).

PDS Member List

Leave this field blank to display a member selection list for the new data set. Otherwise, enter one of the following. See "SuperC Member Lists" on page 200 for more information.

pattern Entering a pattern causes ISPF to display a list of the members in the new data set that match the pattern, unless *Bypass Selection List* has been specified. See the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about using patterns. For example:

```
PDS Member List  . . ISR*
```

***** Entering an asterisk causes all the members in the new data set to be compared to any like-named members in the old data set. A member list is not displayed. For example:

```
PDS Member List  . . *
```

Members in either data set not having like-named members in the other data set are not compared, but are listed in the output list data set.

When entire data sets are compared by using an asterisk for a member name pattern, each real member that appears in both the old and new data sets is compared once. Alias entries are processed but only to determine if they have matching alias and/or real entries.

Note: You can also use SELECT process statements in the statements data set to specify an optional set of PDS members to be searched. However, the SELECT statement turns off the PDS member list function.

Compare Type

The type of comparison you want SuperC to perform. Choose one of the following:

File Compares source data sets for differences, but does not show what the differences are. This is the simplest and fastest method with the least amount of processing overhead. For this compare type, SuperC prepares summary information only and causes all listing types to produce the same output, except NOLIST, which does not produce any output listing. A message is returned to notify you of the compare results.

Line Compares source data sets for line differences. Reformatted lines (that is, lines with blanks inserted or deleted) are automatically detected for lines ≤ 256 characters. This compare type is the default. It is most useful for comparisons of program source code because it is record-oriented and points out inserted or deleted lines of code. Lines can be of unlimited size.

Word Compares source data sets for word differences. In this context, a *word* is a group of characters that begins and ends with a blank or other line delimiter. If you use the XWDCMP process option, all

non-alphanumeric characters are considered to be delimiters. Also, a word cannot be longer than 256 characters.

The Word compare type is most useful for comparing text data sets. If two data sets contain the same words in the same order, SuperC considers them to be identical, even if those words are not on the same lines.

Byte Compares source data sets for byte differences. The output listing data set consists of a hexadecimal printout with character equivalents listed on the right. A BYTE compare with a LONG listing of a data set against itself results in a hexadecimal dump of that data set. This compare type is most useful for comparing machine readable data.

Listing Type

The type of listing you want SuperC to create when it compares the data sets. **Listing Type** is not a required field in SuperCE. If you do not specify a listing type, the default is DELTA. See the **Listing Formats** appendix of the *ISPF User's Guide Volume I* for sample listings.

OVSUM Lists only the general summary of the comparison. However, a PDS comparison generates an individual summary line for each PDS member.

Delta Lists the differences between the source data sets, followed by the general summary.

CHNG Lists the differences between the source data sets, plus up to 10 matching lines before and after the differences. This listing is a variation of the DELTA listing; the matching lines before and after help you recognize changed areas of the source data sets.

Long Lists all the new data set source lines, plus old data set deleted lines. Both inserted and deleted lines are flagged.

Nolist Produces no listing output. In foreground mode, a message is returned to show the outcome of the comparison.

Listing Dsn

The name of the list data set to which SuperC writes the results of the comparison. However, if you enter NOLIST in the **Listing Type** field, SuperC does not create an output listing, so this name is ignored.

If you leave this field blank, SuperC allocates a list data set, using default data set attributes and the following data set name:

```
prefix.userid.SUPERC.LIST
```

where *prefix* is your TSO prefix and *userid* is your user ID. If your prefix and user ID are identical, only your prefix is used. Also, if you do not have a prefix, only your user ID is used.

If you enter a fully qualified data set name SuperC uses it as specified. Otherwise, SuperC only appends your TSO prefix to the front of the data set name specified. If you run with TSO PROFILE NOPREFIX, SuperC uses the name as you entered it, which can result in an attempt to catalog the name in the master catalog.

If you enter the name of a data set that already exists, the contents of that data set are replaced by the new output listing. However, if the data set is sequential, you can add this listing to the data set instead of replacing it by using the APNDLST process option.

If you enter the name of a data set that does not exist, SuperC allocates it for you. The data set is allocated as a sequential data set unless you enter a member name after it, in which case it is allocated as a member of a partitioned data set.

Process Options
Keywords that tell SuperC how to process the compare operation. You can type these keywords in the **Process Options** fields or select them from a panel. See the Process Options selection in "Process Options - Select Process Options" on page 212 for a table of keywords.

Statements Dsn
The name of the data set that contains your process statements. All statements data sets must be fixed block with 80-byte records (FB 80). See the Edit Statements selection in "Process Options - Select Process Options" on page 212 for more information.

Update Dsn
Tells SuperC the name of the data set that will contain column-oriented results of the comparison. This data set is normally used as input to post processing programs and can be specified besides the normal listing data set.

If you leave this field blank and use an update (UPD*xxxx*) option, SuperC uses the following default name:

```
prefix.userid.SUPERC.UPDATE
```

where *prefix* is your TSO prefix and *userid* is your user ID. If your prefix and user ID are identical, only your prefix is used. Also, if you do not have a prefix, only your user ID is used.

If you enter a fully qualified data set name SuperC uses it as specified. Otherwise, SuperC only appends your TSO prefix to the front of the data set name specified. If you run with TSO PROFILE NOPREFIX, SuperC uses the name as you entered it, which can result in an attempt to catalog the name in the master catalog.

If you enter the name of a data set that already exists, the contents of that data set are replaced by the new update output. However, if the data set is sequential, you can add this listing to the data set instead of replacing it by using the APNDUPD process option.

If you enter the name of a data set that does not exist, SuperC allocates it for you. The data set is allocated as a sequential data set unless you enter a member name after it, in which case it is allocated as a partitioned data set.

Note: For the UPDMVS8, UPDCMS8, UPDSEQ0, and UPDPDEL process options, the update data set contains valid data, but only after a successful compare when differences are detected. The data set is always empty after a comparison that shows the data sets or members being compared have no differences.

Display Output
Tells ISPF whether or not you want to display the output listing in Browse mode. Enter one of the following:

Note: The NOLIST listing type overrides Yes, No, and Cond.

Yes Call Browse to display the listing data set after processing the comparison. This is the default.

No Do not call Browse to display the SuperC listing data set.

Cond Do not call Browse unless SuperC finds differences between the data sets.

UPD Browse the update data set instead of the list data set. This parameter is not valid unless you create an update data set by using one or more of the SuperC process options that begin with UPD (UPD*xxxx*).

Bypass Selection List
When a member pattern is entered in the PDS Member List field or the member name portion of the data set field (such as, MY.DATA.SET(pattern)), selecting this field causes SuperC to process all members matching that pattern without displaying a member selection list. Leaving this field blank causes the member list to be displayed.

Output Mode
The output mode for displaying the listing file. Choose one of the following:

1 **View**. This enables the listing file to be displayed in *view* mode. All View functions are enabled in this mode.

2 **Browse**. This enables the listing file to be displayed in the *browse* mode. All Browse functions are enabled in this mode.

SuperCE Utility Options

The following sections describe the Execution Mode options shown on the SuperCE Utility panel.

Foreground Compare Data Sets

If you choose **Foreground**, SuperC processes the data sets in foreground mode, so you can browse the results of the compare. This choice locks your keyboard until SuperC processing is complete.

The panel shown in Figure 123 on page 211 is displayed if you leave the **Option** field and the **New DS Name** or **Old DS Name** field blank on the SuperCE Utility panel.

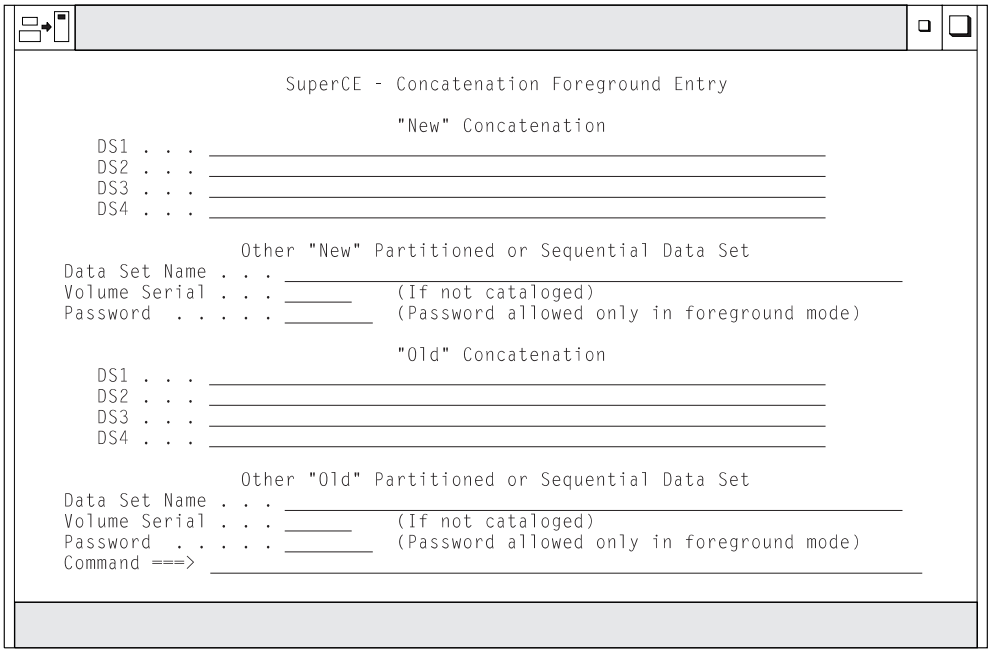


Figure 123. SuperCE - Concatenation Interactive Entry Panel (ISRSECAT)

For fields **DS1** through **DS4**, both new and old, use normal TSO naming conventions. You can specify a series of concatenated data sets, an uncataloged or password-protected data set, or a cataloged data set.

Up to four data sets can be concatenated for both the new and old input data sets. Make sure the data sets are concatenated in the proper sequence, as follows:

1. If two or more sequential data sets are concatenated as one input data set, the data set attributes, such as block size, must be identical.
2. PDS concatenations must have the data set with the largest block size as the first in any concatenation.
3. The SuperCE dialog uses only the first occurrence of a member in the concatenated series of PDSs as source input for a compare. Any other occurrences of the member are ignored.

Other partitioned or sequential data sets, volume serials, and data set passwords are specified as on any other data entry panel. See the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.

Note: The **Password** fields apply only to the other partitioned or sequential data sets. TSO prompts you if any concatenated data sets are password-protected. The Password field is only enabled in foreground mode.

Batch Submit Batch Data Set Compare

Option B causes SuperC to process the data sets in batch mode. This choice frees the keyboard, allowing you to continue using ISPF while waiting for SuperC to compare the data sets. The output listing is sent to the destination specified on the SuperC Utility - Submit Batch Jobs panel (Figure 120 on page 202).

The panel shown in Figure 124 on page 212 is displayed if you select option B and leave the **New DS Name** or **Old DS Name** field blank on the SuperCE Utility

panel. You can concatenate up to four data sets that have like attributes. For example, all must be either sequential or partitioned.

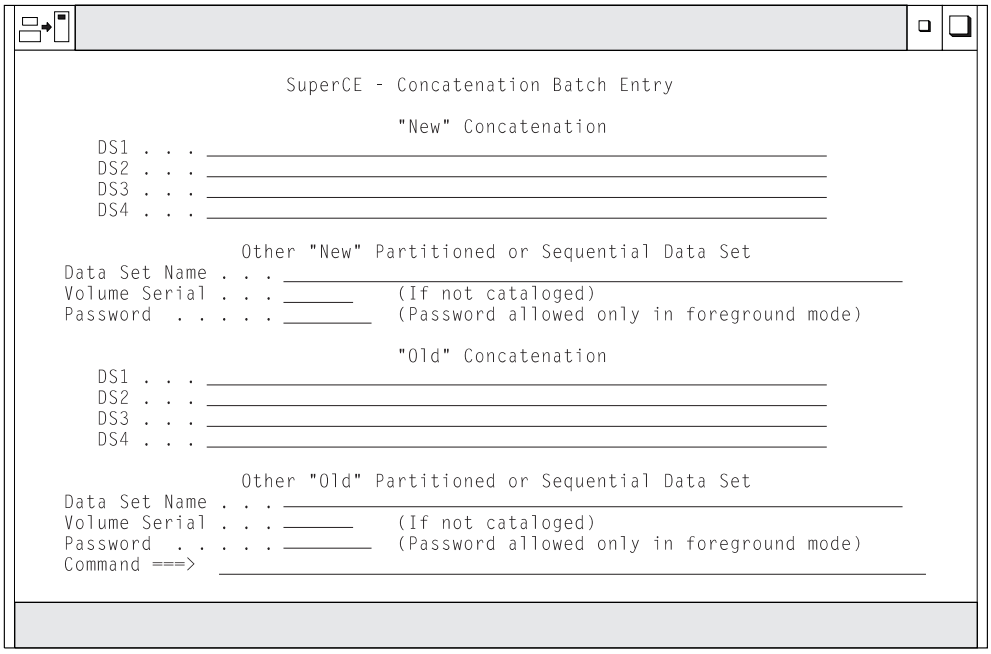


Figure 124. SuperCE - Concatenation Batch Entry Panel (ISRSECAT)

This panel is the same as the panel shown in Figure 123 on page 211, except the **Password** field is omitted. If your data sets are password protected, compare the data sets in foreground mode by leaving the **Option** field on the SuperCE Utility panel blank.

Printing a SuperCE Listing in Batch Mode: If you selected option B on the SuperCE Utility panel, the panel shown in Figure 120 on page 202 is displayed before the job is submitted. This panel allows you to determine whether to print your SuperC listing or write it to a list data set.

Process Options - Select Process Options

The compare type that you select determines the available process options, which are listed in Table 17 on page 213.

Table 17. SuperCE Process Options

Line Compare:

```
ALLMEMS ANYC    APNDLST APNDUPD CKPACKL CNPML   COBOL   COVSUM  DLMDUP  DLREFM
DPACMT  DPADCMT DPBLKCL DPCBCMT DPCPCMT DPFTCMT DPMACMT DPPLCMT DPPSCMT
FMVLNS  GWCBL   LOCS    LONGLN  MIXED   NARROW  NOPRTCC NOSEQ   NOSUMS
REFMOVR SEQ     UPDCMS8 UPDCNTL UPDLDEL UPDMVS8 UPDPDEL UPDREV  UPDREV2
UPDSEQ0 UPDSUMO WIDE    Y2DTONLY
```

Word Compare:

```
ALLMEMS ANYC    APNDLST APNDUPD CKPACKL COBOL   COVSUM
DPACMT  DPADCMT DPBLKCL DPCBCMT DPCPCMT DPFTCMT DPMACMT DPPLCMT DPPSCMT
GWCBL   LOCS    MIXED   NOPRTCC NOSEQ   NOSUMS  SEQ
UPDCNTL UPDREV  UPDREV2 UPDSUMO XWDCMP
```

Byte Compare:

```
ALLMEMS APNDLST APNDUPD COVSUM  LOCS
NOPRTCC NOSUMS  UPDCNTL UPDSUMO
```

File Compare:

```
ALLMEMS APNDLST COVSUM  FMSTOP
LMCSFC  LOCS    NOPRTCC
```

To select one or more SuperCE process options, do either of the following:

- Type any non-blank character to the left of a process option(s). If `move +` or `move -+` is shown, use your Backward and Forward keys to move through the panel. Press Enter when you finish selecting options. This causes the options you chose to be displayed in the **Process Options** fields on the SuperCE Utility panel. If you select two options that cannot be chosen together, or if you enter an option name incorrectly, an error message is displayed.
- Use the CANCEL command to return to the SuperCE Utility panel without processing selections.

SuperC process options can affect how the input data is processed, and determine the format and content of the output listing data set. They can also help you save processing time by avoiding comments and blank lines. A separate group of options, called update data set options (UPD*xxxx*), allow you to create update data sets, examples of which are shown in "Update Data Set Control Output Examples" on page 480.

All these options can be chosen from the XXXX Compare Process Options panels, where XXXX is the compare type (FILE, LINE, WORD, or BYTE) that you are using. The only exception is that the DP*xxxx* (do not process) options are not available from a selection panel when you are conducting a WORD comparison. However, you can type any of them in the **Process Options** field on the SuperCE Utility panel. Errors caused by mistyping process options are detected when you call the SuperCE utility.

For definitions of the SuperC process options, see "Process Options" on page 395.

Edit Statements - Edit Statements Data Set

A statements data set consists of process statements that contain instructions for the SuperC program. They are similar to the process options, but are composed of a keyword and one or more operands. See "Process Options - Select Process Options" on page 212 for information about SuperCE process options.

When you select the Edit Statements option from the SuperCE Utility pull-down menu, the SuperCE utility displays the statements data set you specified in the **Statements Dsn** field. This data set is always displayed in Edit mode, allowing

you to add, change, or delete SuperC process statements as needed. Only one process statement can appear on each line of the statements data set.

The size of the Edit window depends on the number of lines your terminal can display. The sample panel shown in Figure 125 shows how the Edit window appears on a 24-line display. Examples of some common process statements are listed below the Edit window so you can easily compose the proper input line.

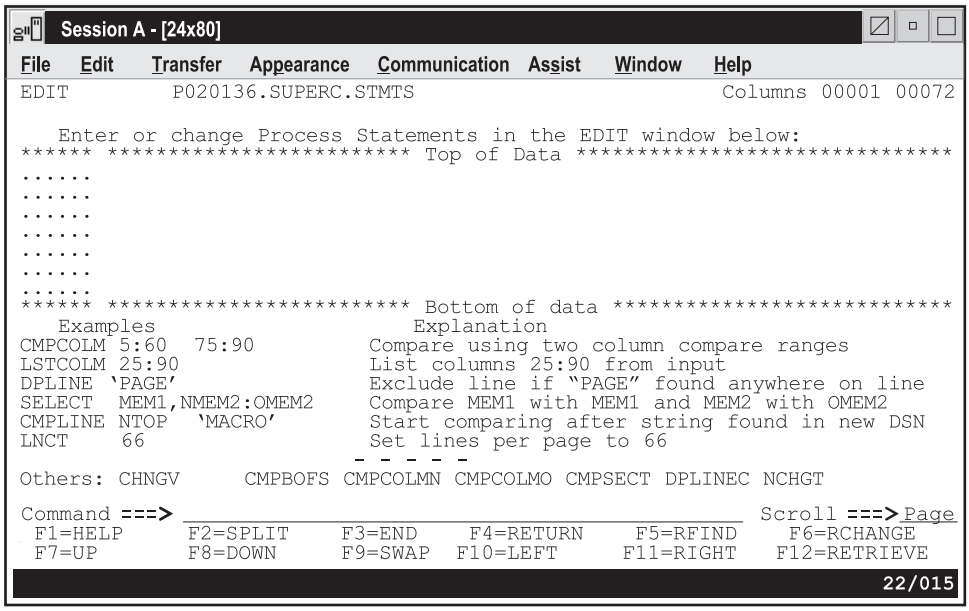


Figure 125. SuperC Process Statements Panel (ISRSEPRS)

The SuperC program validates process statements at run time. Invalid process statements are not used and are noted at the bottom of the listing. Unless a higher return code is required by some other condition, a return code of 4 is generated.

See "SuperC Process Statements" on page 406 for process statement syntax, definitions, and examples.

Profiles and Defaults - Activate Profiles and Defaults

A SuperC profile is a data set that can contain a compare type, a listing type, a Browse setting, and various combinations of process options and process statements that you select.

SuperC profiles are useful for a wide range of users. Beginners can use profiles created by others as a simple method of running SuperC. Experienced SuperC users can create profiles for the groups of options they use often so that they do not have to remember individual process options and statements. Also, profiles give system programmers a mechanism for setting up complex compare tools that others can simply call by profile name.

Some other characteristics of profiles are:

- A profile can be either a sequential data set or a member of a PDS.
- Data set names are not represented in a profile.

- Profiles can be created only with the SuperCE utility (option 3.13). However, once they are created, they can be used in the standard SuperC utility (option 3.12).
- To change a profile, activate it and make the necessary changes to the information in the fields on the SuperCE Utility panel. Then select option C and create a profile, entering in the **Activate/Create Profile DS Name** field the name of the profile data set that you want to modify.
- You can modify the SuperC default settings by selecting the Defaults option on the Profile Manager screen. See Figure 128 on page 218 for an example of the SuperC - Defaults panel.
- You can display the contents of a profile data set using View, Browse, or Edit. Figure 126 shows a Browse display of a profile data set.

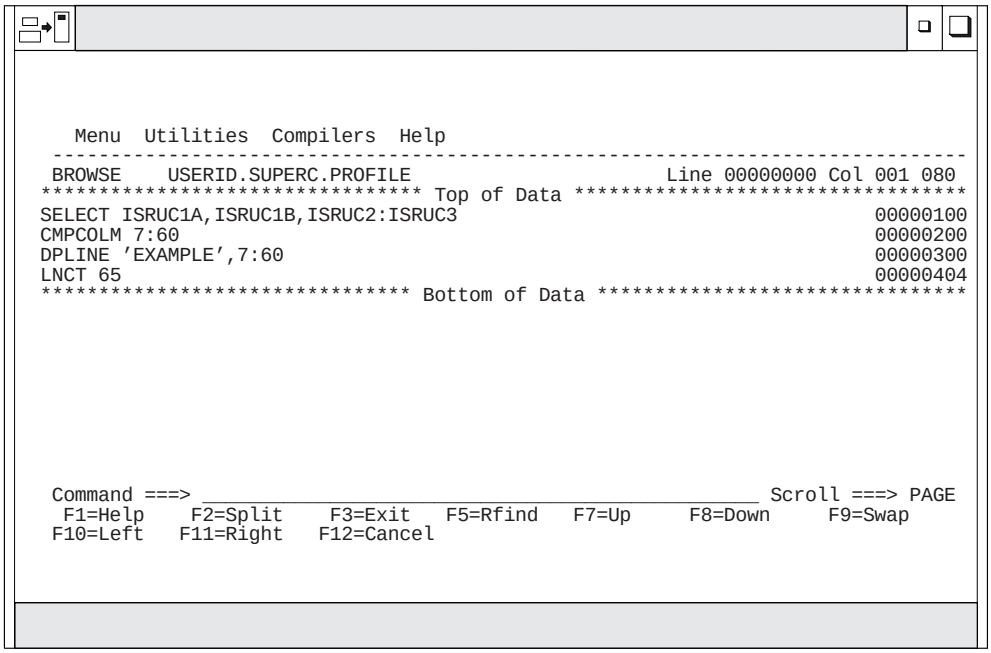


Figure 126. Browse A SuperCE Profile

Selecting option A on the SuperCE Utility panel displays the panel shown in Figure 127. This panel is used to activate and create profiles.

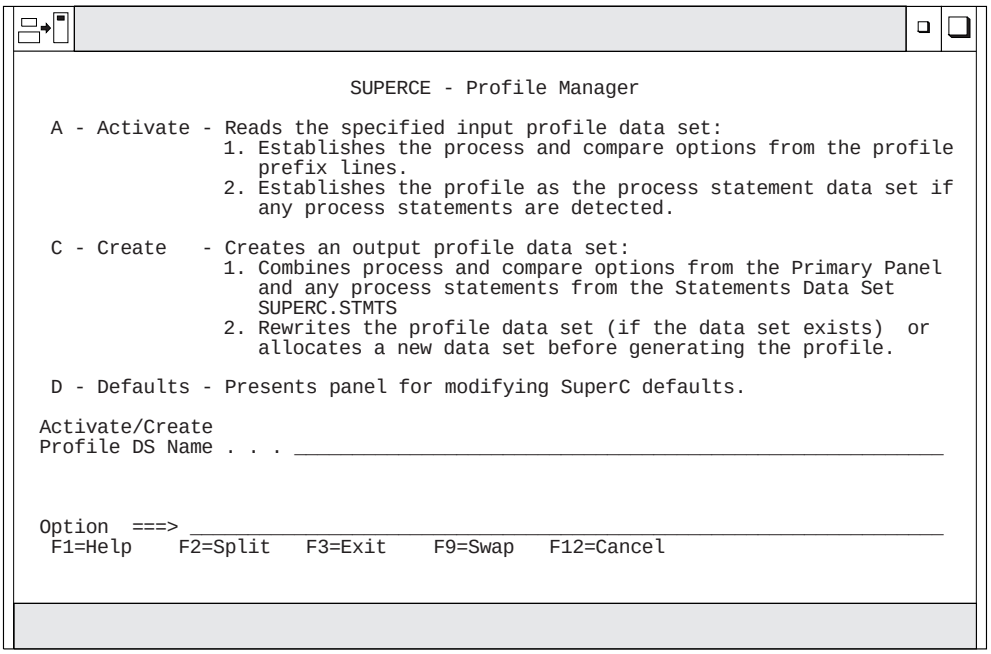


Figure 127. SuperCE - Profile Manager Panel (ISRSEPMG)

The only field on this panel is:

Activate/Create Profile DS Name
The name of the profile data set that you want to either activate or create. This field is required.

If you choose option A (Activate), SuperCE copies the compare type, listing type, Browse setting, and any process options this data set contains. If the profile also contains process statements, SuperCE displays the name of the profile data set in the **Statements Dsn** field on the SuperCE Utility panel.

If you choose option C (Create), SuperCE copies the information that is saved into one output data set or member.

The following sections describe the options shown at the top of the SuperCE - Profile Manager panel.

A — Activate: Option A (Activate) restores the contents of the profile data set specified in the **Activate/Create Profile DS Name** field. This data set must be cataloged. When you press Enter, information that was stored in the profile data set when it was created is displayed in the corresponding fields on the SuperCE Utility panel. For example, process options stored in the profile appear in the **Process Options** fields. At this point, you can make additional changes or choose another option.

C — Create: Option C (Create) causes SuperCE to copy data entered on the SuperCE Utility panel and place it in the profile data set specified in the **Activate/Create Profile DS Name** field. Be sure the correct information is displayed on that panel and that the statements data set, if you specify one, contains the correct process statements before you create the profile.

If the profile data set that you specify does not already exist, SuperCE allocates it for you. Data stored in the profile data set can include:

- The following values taken from the fields on the SuperCE Utility panel. The abbreviations in parentheses show how these values are identified in a profile data set:
  - Compare type (CTYP)
  - Listing type (LTYP)
  - Browse setting (BRW)
  - Process options (PROC1 and PROC2).
- Process statements copied from the statements data set that was specified in the **Statements Dsn** field. This data set name is displayed and highlighted on the SuperCE - Profile Manager panel. For example, the sample panel shown in Figure 127 on page 216 displays the name SUPERC.STMTS.

  If you leave the **Statements Dsn** field blank, the data set name and the words preceding it are not displayed on the SuperCE - Profile Manager panel and SuperCE does not include any process statements in your profile. See the following sections for information about process options and process statements, respectively:
  - "Process Options - Select Process Options" on page 212
  - "Edit Statements - Edit Statements Data Set" on page 213.

D — Defaults: Option D (Defaults) brings up an additional panel, shown in Figure 128 on page 218, that allows you to do the following:

- Specify SuperC output data set default allocation parameters

  The first extent and secondary space values are used whenever Options 3.12, 3.13, or 3.14 create a new output data set such as a listing or statements data set. If you specify a new data set with a member name, the directory space value is used to create a PDS. If you blank out any of the values, SuperC will supply defaults.

  Space values are applicable only if you select **Invoke SuperC via PROGRAM interface**.

  Note: New data set allocation block size parameters are controlled by the PDF Configuration Table. See the *ISPF Planning and Customizing* manual for details.
- Specify your own Statements data set initial edit macro name
- Enable or disable a new high performance program interface to SuperC. If you select **Invoke SuperC via PROGRAM interface**, ISPF invokes SuperC directly. Otherwise, ISPF invokes SuperC via a CLIST named ISRSFORG (ISRSSRCH for Search-For). The CLIST interface may be useful if you need to customize the allocations or wish to post-process the result. The PROGRAM interface is more efficient and is the default.

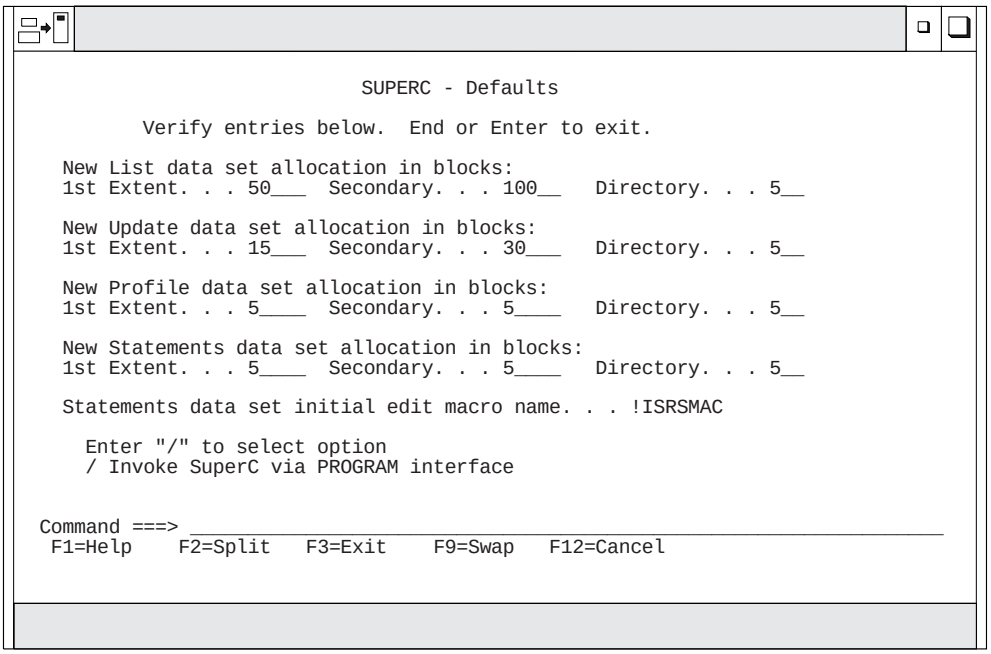


Figure 128. SuperC - Defaults Panel (ISRSDFLT)

Search-For Utility (Option 3.14)

Note: For an introduction to the Search-For and Extended Search-For utilities (options 3.14 and 3.13.S), see "Appendix A. SuperC Reference" on page 391.

The Search-For utility (option 3.14) is a dialog that uses the SuperC program to search your data sets or PDS members for one or more character strings. The Search-For Utility panel, shown in Figure 129 on page 219, is the first panel of the Search-For utility. The only requirements for this panel are:

- A string to be searched for, unless you select **Specify additional search strings**
- A data set to search, along with a volume serial and password if necessary.

A default listing data set name is provided if you choose not to enter your own.

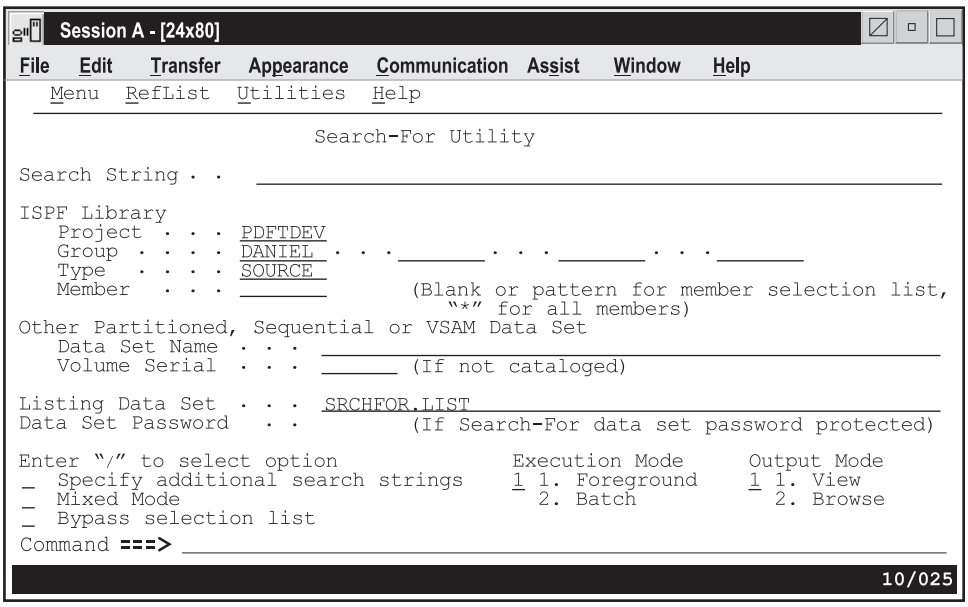


Figure 129. Search-For Utility Panel (ISRSFSPR)

Search-For Utility Panel Action Bar

The Search-For Utility panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

RefList See the ***Using Personal Data Set Lists and Library Lists*** chapter of the *ISPF User's Guide Volume I* for information on referral lists.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

- **1** Overview of Search for utility
- **2** Specifying the search data string
- **3** Specifying the data set or members to be searched
- **4** Specifying the data set to contain the results of the search
- **5** Specifying the execution mode and mixed data mode
- **6** Selecting members to search
- **7** Setting batch output parameters
- **8** Appendices
- **9** Index

Search-For Utility Panel Fields

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I,* except the following:

Search String

A string to be searched for. No distinction is made between uppercase and lowercase characters. Use the Extended Search-For utility (option 3.13.S) to specify case-sensitive searches.

Four keywords—C, PREFIX, SUFFIX, and WORD—can help you narrow the scope of a search. See "Search-For Strings and Keywords" on page 222 for information about these keywords and the rules that govern search string entry.

Specify additional search strings
Select this field to have the Search-For utility search for more than one string. The Search-For utility displays the panel shown in Figure 130 on page 221, on which you can specify additional search strings. This panel precedes a member list request.

If you do not select this option, the Search-For utility searches only for the string entered in the **Search String** field.

Mixed Mode
Select this field to have the Search-For utility scan and parse the input data set lines for DBCS text strings.

Note: The Word, Prefix, and Suffix Search-For qualifiers have no effect on DBCS strings.

Bypass Selection List
When a member pattern is entered in the PDS Member List field or the member name portion of the data set field (such as, MY.DATA.SET(pattern)), selecting this field causes SuperC to process all members matching that pattern without displaying a member selection list. Leaving this field blank causes the member list to be displayed.

Execution Mode
The processing mode you want to use when searching the data sets. Specify one of the following:

1 **Foreground**. Searches the data sets and stores the results in the data set specified in the **Listing Data Set Name** field. You can browse the listing data set at the terminal.

2 **Batch**. Causes the display of the Search-For Utility - Submit Batch Jobs panel so that you can specify job card and print disposition information or edit the JCL statements. Then, Search-For submits the batch job to search the data sets. See "Submitting a Search-For Job in Batch Mode" on page 223 for more information.

Note: You cannot specify a data set password in batch mode. If your data sets are password protected, use foreground mode.

Output Mode
The output mode you want to use when displaying the listing file. Choose one of the following:

1 **View**. This enables the listing file to be displayed in *view* mode. All View functions are enabled in this mode.

2 **Browse**. This enables the listing file to be displayed in the *browse* mode. All Browse functions are enabled in this mode.

Listing Data Set
The name of the listing data set to which the SuperC program writes the results of the search. If you leave this field blank, the Search-For utility allocates a listing data set, using default data set attributes and the following data set name:

```
prefix.userid.SRCHFOR.LIST
```

where *prefix* is your TSO prefix and *userid* is your user ID. If your prefix and user ID are identical, only your prefix is used. Also, if you do not have a prefix, only your user ID is used.

If you enter a fully qualified data set name SuperC uses it as specified. Otherwise, SuperC only appends your TSO prefix to the front of the data set name specified. If you run with TSO PROFILE NOPREFIX, SuperC uses the name as you entered it, which can result in an attempt to catalog the name in the master catalog.

If you enter the name of a data set that does not exist, the Search-For utility allocates it for you. The data set is allocated as a sequential data set unless you enter a member name after it, in which case it is allocated as a partitioned data set.

Specifying Additional Search Strings

The panel shown in Figure 130 is displayed if you select **Specify additional search strings** on the Search-For Utility panel. You can specify:

- Additional strings to be searched for
- Optional scan-type and continuation keywords.

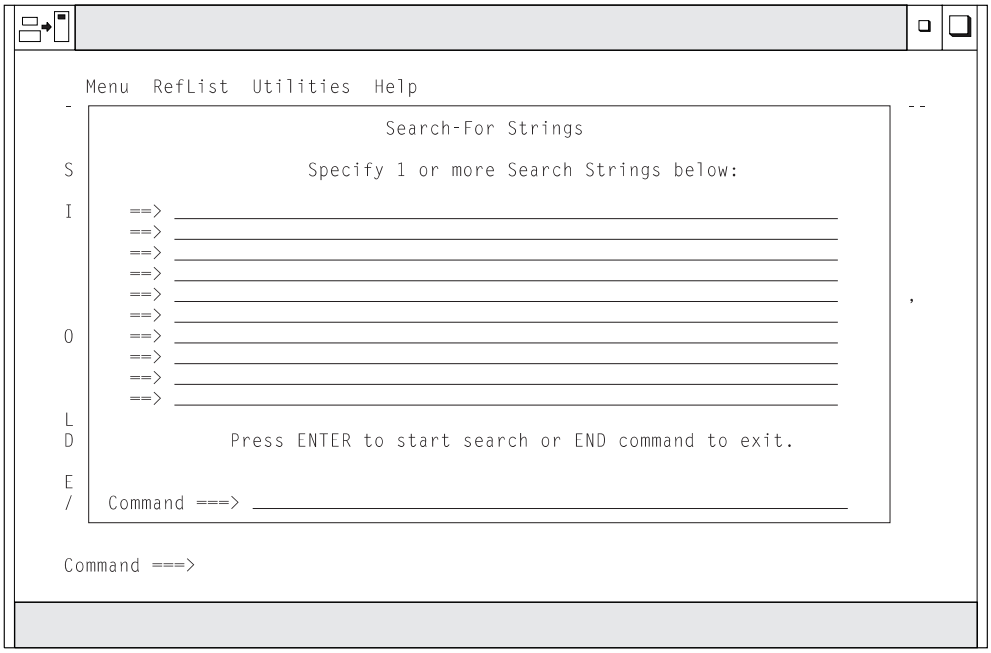


Figure 130. Additional Search Strings Panel (ISRSFSST)

From this panel, pressing Enter either:

- Displays a member list, if requested
- Runs the search if no member list is needed.

Entering the END command returns you to the Search-For Utility panel.

Search-For Strings and Keywords

Enter the strings that you want SuperC to find. When you press Enter, SuperC looks for the strings without regard to whether they appear in uppercase or lowercase in the original data set. If you are searching a partitioned data set concatenation, SuperC will inform you (in the CONCAT# field in the listing) in which group it first found the string. If you want SuperC to search all the groups for each member, you can use the SDUPM process option of Extended Search-For (option 3.13.S). If you want the search to distinguish between uppercase and lowercase, you must use the Extended Search-For utility (option 3.13.S). If any of the strings are found (string-1 OR string-2 OR string-3) on the line, SuperC considers the condition met. You can restrict SuperC searches further by using one of the SuperC Search-for keywords discussed below.

Entering Search Strings

Enclose the string in single quotation marks if it contains imbedded blanks or apostrophes. Two consecutive apostrophes must be entered to specify a single apostrophe within a search string.

If you need to specify a DBCS string that contains a hexadecimal '7D' (x'7D', the hexadecimal representation of a single quotation mark) as half of a DBCS pair, you must use the Enhanced SearchFor option (option 3.15) with the MIXED process option.

The following example searches for the string `IT'S A LIVING`.

```
==> 'IT'S A LIVING'
```

Using Keywords

The following keywords can help you narrow the range of the search. If you do not use a keyword, SuperC will find the string wherever it exists, even if that happens to be in the middle of a word.

PREFIX Shows the string is preceded by a non-alphanumeric character, such as a blank space. It cannot be used on the same line with SUFFIX or WORD. For example, you can do this:

```
==> ELSE PREFIX
==> ELSE SUFFIX
```

but not this:

```
==> ELSE PREFIX SUFFIX
```

SUFFIX Shows the string is followed by a non-alphanumeric character. It cannot be used on the same line with PREFIX or WORD. See the examples under PREFIX.

WORD Shows the string is preceded and followed by a non-alphanumeric character. It cannot be used on the same line with PREFIX or SUFFIX. See the examples under PREFIX.

C Continuation. Shows continuation of the previous line(s). Continuation lines generate additional strings, all of which must be found in the same line of an input data set.

Also, the C keyword can be entered on the same line as one of the other keywords. The following example tells SuperC to find ELSE and to also find IF, but only when IF is on the same line as ELSE.

```
==> ELSE WORD
==> IF WORD C
```

Search-For Member Lists

A panel similar to the one shown in Figure 131 is displayed only if:

- The search data set is partitioned.
- The **Member** field on the Search-For Utility panel (Figure 129 on page 219) or the *PDS Member List* field on the Extended Search-For Utility panel (Figure 133 on page 225) was left blank or a pattern was used and *Bypass Selection List* was not selected. See the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about displaying member lists.
- For the Extended Search-For utility (option 3.13.S), the statements data set being used does not contain any SELECT process statements.

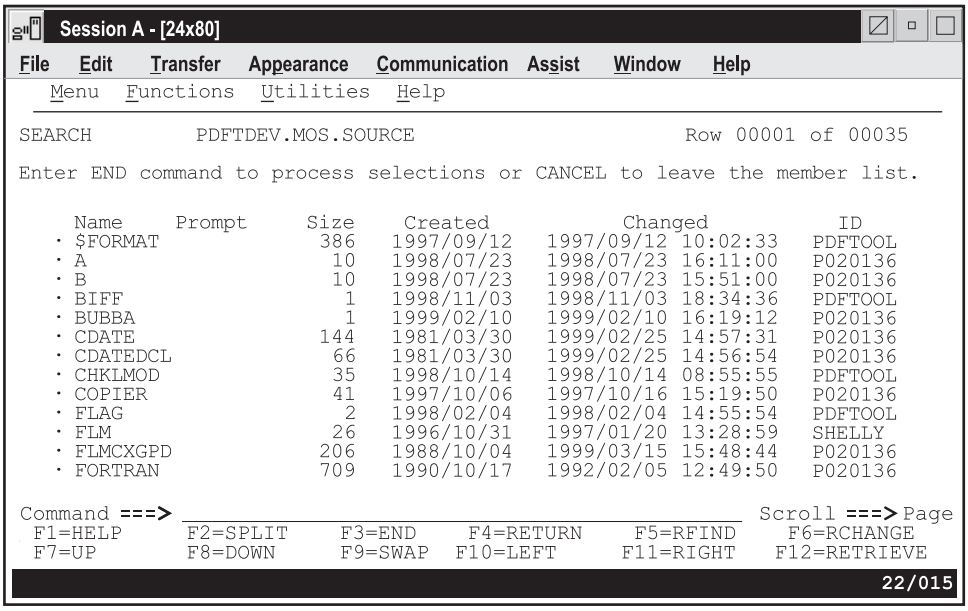


Figure 131. Search Member List Panel (ISRSSML)

To start the search, enter the END command.

To cancel your selections, enter either:

- The RESET command to remove all unprocessed selections without ending the member list display
- The CANCEL command to end the member list display without processing selections still on the screen.

Note: Both the jump function (=) and the RETURN command cause an implied cancellation of selections before they are carried out.

For more information about member lists, see the **Using Member Selection Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I.*

Submitting a Search-For Job in Batch Mode

If you selected Batch Mode (2) on the Search-For Utility panel, the panel shown in Figure 132 on page 224 is displayed before the job is submitted.

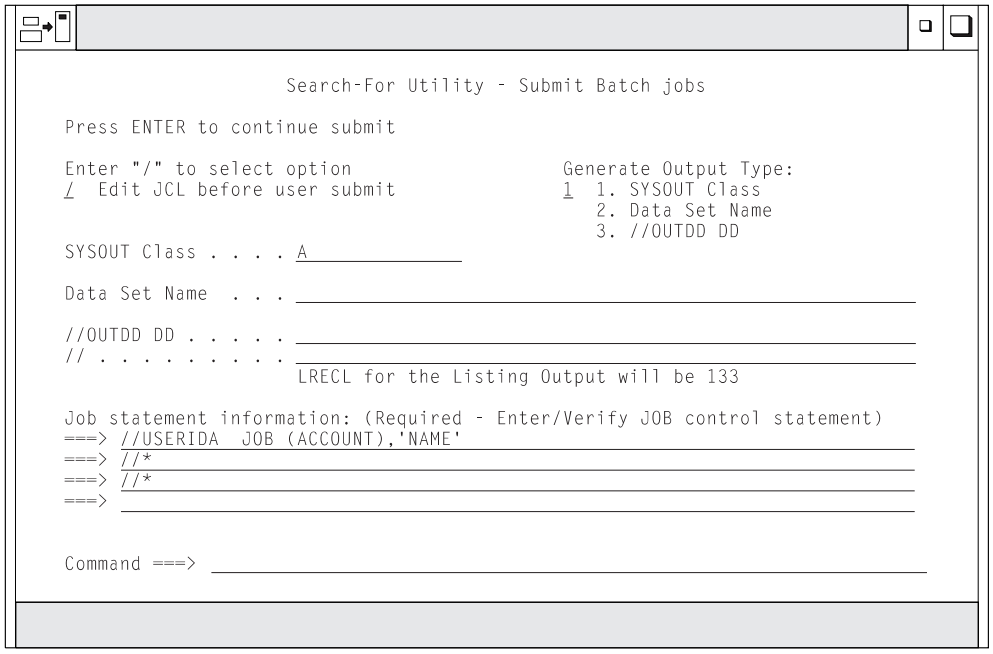


Figure 132. Search-For Utility - Submit Batch Jobs Panel (ISRSFSUB)

This panel allows you to specify one of the following Generate Output types:

- The SYSOUT class, which determines the printer to which your job is sent and the format used for the printed output
- The name of a listing data set
- Output data definitions that you can use to give the printer additional instructions, such as an output destination that is not defined by a SYSOUT class.

The **Job Statement information** field is explained under the **Job Statement Information** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*. The other fields on this panel, as well as the options listed at the top of the panel, are described in "Submitting a SuperC Job in Batch Mode" on page 202.

Search-ForE Utility (Option 3.15)

Note: For an introduction to the Search-For and Extended Search-For utilities, see Appendix A. SuperC Reference.

If you select option 3.15, the Extended Search-For Utility panel, shown in Figure 133 on page 225, is displayed. This utility is a dialog that uses the SuperC program to search your data sets or PDS members for one or more character strings. It is appropriate if you need more flexibility than the standard Search-For utility (option 3.14) provides.

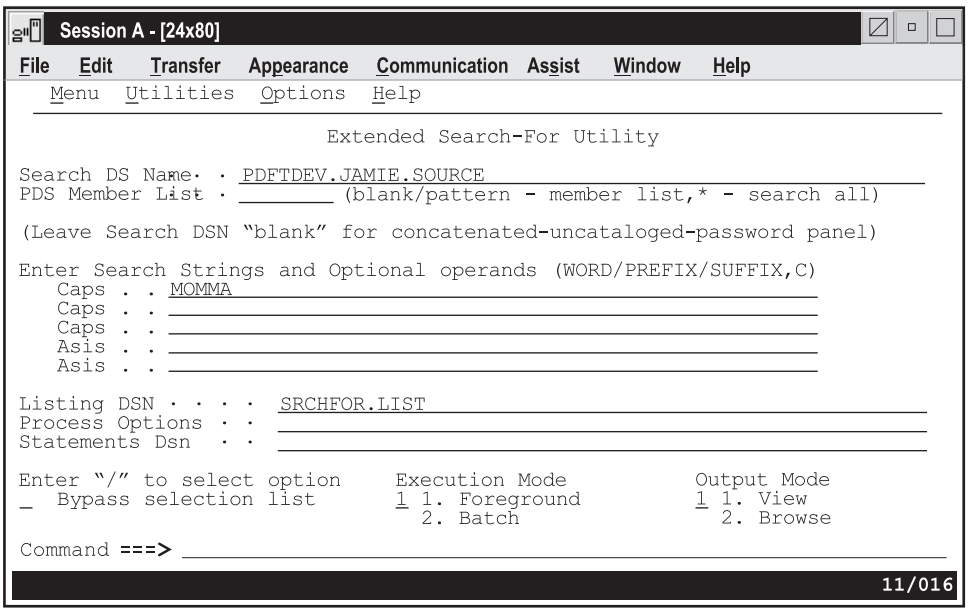


Figure 133. Extended Search-For Utility Panel (ISRSFPRI)

Search-ForE Utility Panel Action Bar

The Search-ForE Utility panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Options

1 Edit statements
2 Process options

Help The Help pull-down offers you the following choices:

1 Extended Search-For functions
2 Appendices
3 Index

Search-ForE Utility Panel Fields

The panel requires only the entry of character string(s). The fields on this panel are:

Search DS Name

Specify the name of a sequential data set, PDS, or membered PDS. Use standard TSO naming conventions, including quotes for fully qualified names. Leave this field blank to display a panel on which you can specify concatenated, uncataloged, and password-protected data sets. This panel is shown Figure 134 on page 228.

PDS Member List

Leave this field blank to display a list of all the members in the

search data set. Otherwise, enter one of the following. See "Search-For Member Lists" on page 223 for more information.

pattern
Entering a pattern causes ISPF to display a list of the members in the search data set that match the pattern unless *Bypass Selection List* was selected. See the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about using patterns. For example:

```
PDS Member List . . . ISR*
```

*****
Entering an asterisk causes all the members in the search data set to be searched.

You can also use SELECT process statements in the statements data set to specify an optional set of PDS members to be searched. However, the SELECT statement turns off the PDS member list function.

CAPS
A search string that you want the Extended Search-For utility to find. This search string is converted to uppercase before the search begins and is found only if it exists in the search data set in uppercase.

The ANYC process option causes the string to be found in any case, (uppercase, lowercase, or mixed case) even if you enter the string in the **CAPS** field.

You can enter up to three uppercase search strings, one in each **CAPS** field. Here are some examples:

example 1
Either of the following strings may be found in the search data set:

```
CAPS . . . . THEN
CAPS . . . . IF
```

example 2
The following two strings must be found on the same line because of the continuation (C) keyword. `THEN` must be a complete word, while `ISR` must be the prefix of a word.

```
CAPS . . . . THEN WORD
CAPS . . . . ISR PREFIX C
```

example 3
In the next example, a hexadecimal string is specified as the search string. Use this to find unprintable characters.

```
CAPS . . . . X'7B00'
```

example 4
The following example searches for the string `JOE'S CLIST`. Notice that the string is enclosed in single quotation marks and the apostrophe following Joe's name has been doubled.

```
CAPS . . . . 'JOE'S CLIST'
```

ASIS
A search string that you want the Extended Search-For utility to find. This search string is searched for as it is when you enter it in the **ASIS** field. Therefore, the Extended Search-For utility does not

find the string unless it exists in the data set exactly as you enter it in an **ASIS** field. You can enter one search string in each **ASIS** field.

The examples following the **CAPS** field definition apply to the **ASIS** field as well.

See "Search-For Strings and Keywords" on page 222 for a list of rules that determine the format required for entering search strings and for definitions of the keywords that are shown in the examples below.

The SRCHFOR and SRCHFORC process statements override any strings entered in the **CAPS** and **ASIS** fields.

Listing DS Name

The name of the list data set to which the Extended Search-For utility writes the listing information. If you leave this field blank, Extended Search-For allocates a list data set, using default data set attributes and the following data set name:

```
prefix.userid.SRCHFOR.LIST
```

where *prefix* is your TSO prefix and *userid* is your user ID. If your prefix and user ID are identical, only your prefix is used. Also, if you do not have a prefix, only your user ID is used.

If you enter a fully qualified data set name SuperC uses it as specified. Otherwise, SuperC only appends your TSO prefix to the front of the data set name specified. If you run with TSO PROFILE NOPREFIX, SuperC uses the name as you entered it, which can result in an attempt to catalog the name in the master catalog.

If you enter the name of a data set that already exists, the contents of that data set are replaced by the new listing output. However, if the data set is sequential, you can add this listing to the data set instead of replacing it by using the APNDLST process option.

If you enter the name of a data set that does not exist, Search-For allocates it for you. The data set is allocated as a sequential data set unless you enter a member name after it, in which case it is allocated as a partitioned data set.

Process Options

Keywords that tell SuperC how to process the search-for operation. You can type these keywords in the **Process Options** field or select them from a panel. See "Process Options" on page 395 for tables of keywords.

Bypass Selection List

When a member pattern is entered in the PDS Member List field or the member name portion of the data set field (such as, MY.DATA.SET(pattern)), selecting this field causes SuperC to process all members matching that pattern without displaying a member selection list. Leaving this field blank causes the member list to be displayed.

Statements Dsn

The name of the data set that contains your search-for process statements, which you can create or change by using option E on the Extended

Search-For Utility panel. SuperC reads these process statements before conducting the search. All statements data sets must be fixed block with 80-byte records (FB 80).

Execution Mode

Foreground

If you choose option 1, Foreground, and you leave the **Search DS Name** field blank, the Extended Search-For - Concatenation Data Set Entry panel, shown in Figure 134, is displayed.

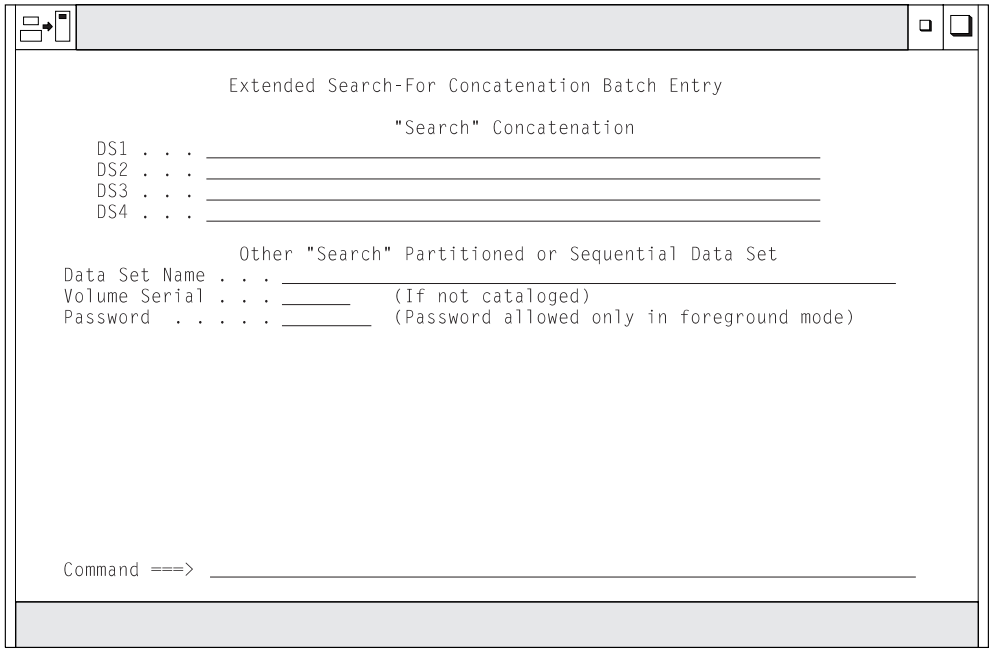


Figure 134. Extended Search-For - Concatenation Data Set Entry Panel (ISRSFCON)

For fields **DS1** through **DS4**, use normal TSO naming conventions. You can specify a series of concatenated data sets, an uncataloged or password-protected data set, or a cataloged data set name.

Up to four data sets can be concatenated. Make sure the data sets are concatenated in the proper sequence, as follows:

1. If two or more sequential data sets are concatenated as one input data set, the data set attributes, such as block size, must be identical.
2. PDS concatenations must have the data set with the largest block size as the first in any concatenation.
3. Search-For uses only the first occurrence of a member in the concatenated series of PDSs as source input for a search. Any other occurrences of the member are ignored. You may specify the SDUPM process option to cause SuperC to search for and report all occurrences of the string for the entire concatenated series of PDS members.

Other partitioned or sequential data sets, volume serials, and data set passwords are specified as on any other data entry panel. See the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.

Note: The **Password** field applies only to the other partitioned or sequential data set. TSO prompts you if any concatenated data sets are password-protected.

Batch Option 2 causes SuperC to process the data sets in batch mode. This choice frees the keyboard, allowing you to continue using ISPF while waiting for SuperC to search the data sets. The output listing is sent to the destination specified on the Search-For Utility - Submit Batch jobs panel (Figure 132 on page 224).

The panel shown in Figure 135 is displayed if you select option 2 and leave the **Search DS Name** field blank on the Extended Search-For Utility panel. You can concatenate up to four data sets that have like attributes. For example, all must be either sequential or partitioned.

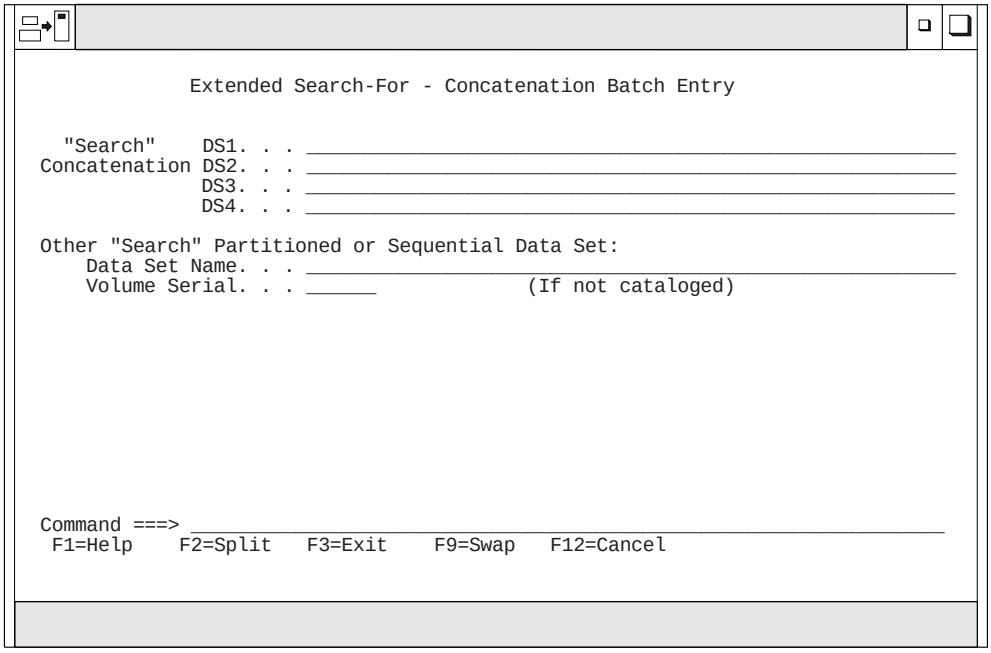


Figure 135. Extended Search-For - Concatenation Batch Entry Panel (ISRSFCON)

This panel is the same as the panel shown in Figure 134 on page 228, except the **Password** field is omitted. If your data sets are password-protected, search the data sets in foreground mode by leaving the **Option** field on the Extended Search-For Utility panel blank.

Printing an Extended Search-For Listing in Batch Mode

If you selected the Batch option on the Extended Search-For Utility panel, the panel shown in Figure 132 on page 224 is displayed before the job is submitted. This panel allows you to determine whether to print your Search-For listing or write it to a list data set.

Output Mode

The output mode you want to use when displaying the listing file. Choose one of the following:

View This enables the listing file to be displayed in *view* mode. All View functions are enabled in this mode.

Browse
This enables the listing file to be displayed in the *browse* mode. All Browse functions are enabled in this mode.

Select Search-For Process Options

Table 18 lists all of the process options for Search-For.

Table 18. Search-For Process Options

ALLMEMS	ANYC	APNDLST	CKPACKL	COBOL	DPACMT	DPADCMT	DPBLKCL
DPCBCMT	DPCPCMT	DPFTCMT	DPMACMT	DPPLCMT	DPPSCMT	FMSTOP	
IDPFX	LMTO	LNFMTO	LONGLN	LPSF	LTO		
MIXED	NOPRTCC	NOSEQ	NOSUMS	SDUPM	SEQ	XREF	

The following rules govern the selection of Search-For process options:

- Type any non blank character to the left of one or more process options. Then press Enter. This causes the options you specify to be displayed in the **Process Options** field on the Extended Search-For Utility panel. If you select two options that cannot be specified together, or if you enter an option name incorrectly, an error message is displayed. If **more +** or **more -+** is shown, use your Backward and Forward keys to move through the panel.
- Use the CANCEL command to return to the Extended Search-For Utility panel without processing selections.

Search-For process options can affect how the input data is processed, and determine the format and content of the output listing data set. They can also help you save processing time by avoiding comments and blank lines.

All these options except the DP*xxxx* (do not process) options can be chosen from the Search-For Process Options panel. However, you can type any of them in the **Process Options** field on the Extended Search-For Utility panel. Errors caused by mistyping process options are detected when you call the Extended Search-For utility.

For definitions of the Search-For process options, see “Process Options” on page 395.

Edit Search-For Statements Data Set

A statements data set consists of process statements that contain instructions for the SuperC program. They are similar to the process options, but are composed of a keyword and one or more operands. See “Select Search-For Process Options” for information about Search-For process options.

When you select option E from the Extended Search-For Utility panel, the Extended Search-For utility displays the statements data set you specified in the **Statements Dsn** field. This data set is always displayed in Edit mode, allowing you to add, change, or delete search-for process statements as needed.

The size of the Edit window depends on the number of lines your terminal can display. The sample panel shown in Figure 136 on page 231 shows how the Edit window appears on a 24-line display. Examples of some common process

statements are listed below the Edit window so you can easily compose the proper input line.

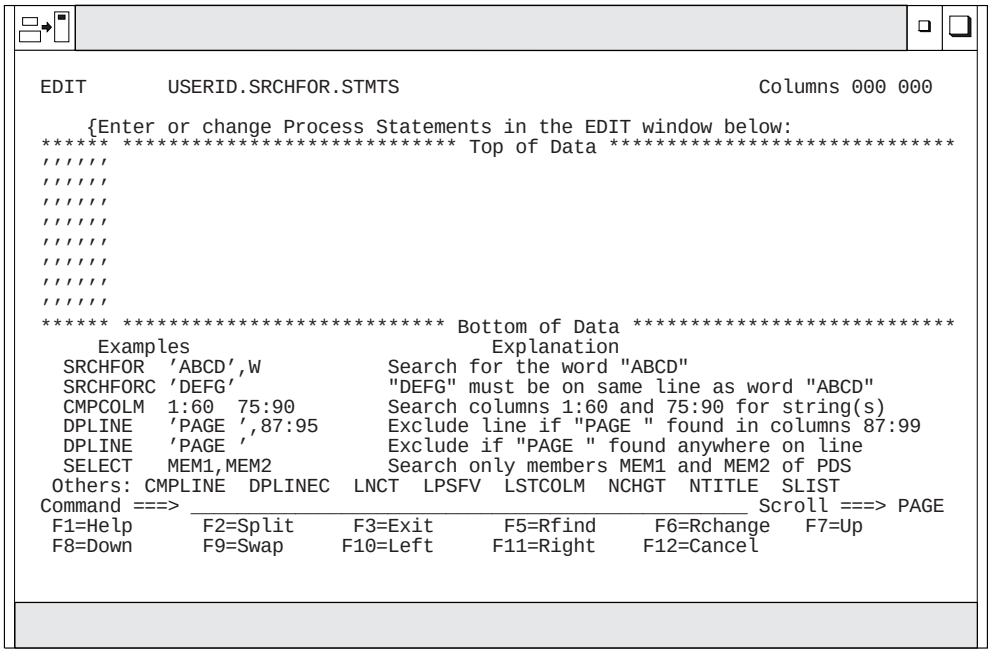


Figure 136. Search-For Process Statements Panel (ISRSFPRS)

The SuperC program validates the process statements at run time. Invalid process statements are not used and are noted at the bottom of the listing. Unless a higher return code is required by some other condition, a return code of 4 is returned.

For the syntax and examples of the Search-For process statements, see "Search-For Process Statements" on page 441.

Chapter 5. Foreground (Option 4)

The Foreground option (4) allows ISPF to run the foreground processors shown on the Foreground Selection panel, Figure 137. All these processors, except SCRIPT/VS, COBOL interactive debug, and FORTRAN interactive debug, are also available with the Batch option (5).

When you run a foreground processor, you must wait until the processor ends before doing anything else with ISPF. However, if you want to use ISPF while waiting for the processor to end, submit the input as a batch job. You can do this by using the Batch option if the processor you need is listed on the Batch Selection panel, Figure 165 on page 273.

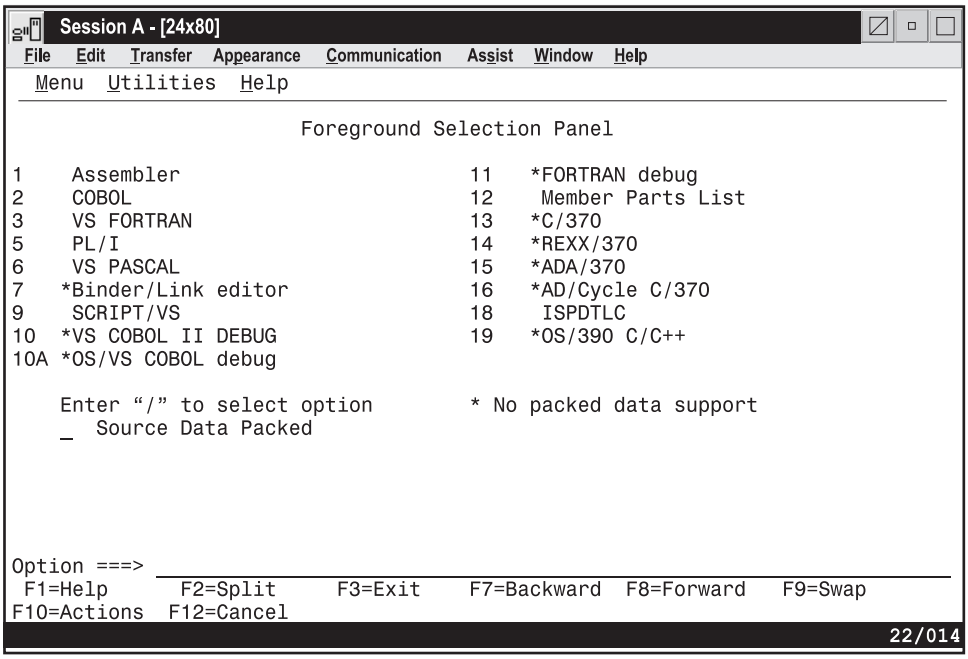


Figure 137. Foreground Selection Panel (ISRFPA)

The names of the foreground processors on this panel are point-and-shoot fields. See the **Point-and-Shoot Text Fields** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for more information.

Foreground Selection Panel Action Bar

The Foreground Selection Panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

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Help

The Help pull-down offers you the following choices:

1	General
2	Assembler
3	COBOL
4	VS Fortran
5	PL/I
6	VS Pascal
7	Binder/Link editor
8	SCRIPT VS
9	VS COBOL II debug
10	OS/VS COBOL debug
11	FORTRAN debug
12	Member parts list
13	C/370
14	REXX/370
15	Ada/370
16	AD/Cycle C/370
17	ISPDTLC
18	OS/390 C/C++

Foreground Processing Sequence

The main foreground processing sequence is:

1. If you do not know whether the source data is in packed format, find out by editing the data set and entering the PROFILE command. The profile shows either PACK ON (data is stored in packed format) or PACK OFF (data is not stored in packed format).

   If the data is packed, select the Source Data Packed option. If the data is not packed, deselect this option.

   Also, you should read "Expanding Packed Data" on page 237, paying close attention to:

   - Information that applies to the foreground processor you plan to use
   - The difference between expanding a sequential data set and expanding members of a partitioned data set.

   When you are satisfied that the data set is ready to be processed, continue with the next step.
2. Select one of the foreground processors listed at the top of the Foreground Selection panel shown in Figure 137 on page 233.

   Note: A region size of 2 megabytes or more will probably be required to run the VS FORTRAN compiler in the foreground.
3. Select the Source Data Packed option to tell ISPF if it needs to expand the source data.

   Note: The Source Data Packed option has no effect on the Member parts list option (4.12). Member parts list can read both packed and unpacked data sets, so no expansion is needed.
4. When the Session Manager licensed program, 5740-XE2, is installed, you can select the Session Manager mode option on the ISPF Settings panel so that you enter Session Manager mode when you call any of the foreground processors. Once you call Session Manager, it stays in effect for all logical

screens until you turn it off. For example, if you call Session Manager and then split the screen, Session Manager will be in effect on both logical screens.

Note: If graphics interface mode is active, Session Manager does not getcontrol of the screen. Graphics interface mode is started when a GRINIT service has been issued, but a GRTERM service has not been issued. Refer to *ISPF Examples* for more information about these two services.

5. Press Enter. ISPF displays the data entry panel for the processor you selected. The remainder of this processing sequence applies to all foreground processors except SCRIPT/VS, VS COBOL II interactive debug, COBOL interactive debug, and Member Parts List. For these processors, use the sequence referred to in the following list:

Processor	Reference
SCRIPT/VS	"SCRIPT/VS Processor (Option 4.9)" on page 251
VS COBOL II interactive debug	"VS COBOL II Interactive Debug (Option 4.10)" on page 258
COBOL interactive debug	"OS/VS COBOL Debug (Option 4.10A)" on page 259
Member parts list	"Member Parts List (Option 4.12)" on page 263

6. Enter the appropriate ISPF library and concatenation sequence or data set name. If the input data set is partitioned, you can leave the member name blank or use a pattern to display a member list. If you need help, see:
   - the **Naming ISPF Libraries and Data Sets** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for help in entering library or data set names
   - the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for information about patterns and displaying member lists
   - "Input Data Sets" on page 241 for information about the regular concatenation sequence
   - "Object Data Sets" on page 243 for information about object modules
   - "Linkage Editor Concatenation Sequence" on page 251 for help with the linkage editor concatenation sequence

   VS FORTRAN has no LIB option, which some foreground processors use to specify the input data set concatenation sequence. Therefore, the concatenation sequence specified in the **Group** fields is used to find the member to be compiled.

   For FORTRAN interactive debug, the TYPE, or last qualifier, must be either OBJ or LOAD. However, if you specify an OBJ data set as your input data set, you must include a load library or data set in the input search sequence (see step 11 on page 236).
7. This step applies to FORTRAN interactive debug only. Use the **Source Type** field to tell ISPF the Type, or last qualifier, of the data set used to create the input object module or load module.
8. Use the List ID field to tell ISPF what to name the output listing. See "List Data Sets" on page 242 for more information.
9. Enter your password in the **Password** field if your input data set is password-protected. See "Password Protection" on page 243 for more information.

10. The **Option** field, whether ASSEMBLER, COMPILER, LINKAGE EDITOR, or DEBUG, is remembered from one session to another. Therefore, you do not need to change this field unless the options you need are not displayed.

    Be careful not to enter any options that ISPF generates automatically. These options are listed on the data entry panel. For more information about the options available for your processor, refer to the documentation supplied with that processor.

11. Enter any additional input libraries you need. For FORTRAN interactive debug, enter any input LOAD libraries that you need to complete the search sequence. These libraries must be LOAD libraries only. See "Input Data Sets" on page 241 if you need help.

12. Once all the input fields have been specified, press Enter to call the foreground processor.

    If the Session Manager is installed and you selected Session Manager mode on the ISPF Settings panel, the foreground processor and all function keys and PA keys are under the control of the Session Manager. When foreground processing is complete, you are prompted to enter a null line to return to ISPF control.

    If the Session Manager is not called, the PA and function keys have their usual TSO-defined meanings; generally, the function keys are treated the same as the Enter key.

13. Communication with foreground processors is in line-I/O mode. Whenever you see three asterisks, press Enter.

14. If the foreground processor generated an output listing, the listing is displayed automatically in Browse mode.

    Note: If a Foreground processing program ends abnormally, ISPF displays a message in the upper-right corner of the screen and does not enter Browse mode. The list data set is retained, but the Foreground Print Options panel (see step 15) is not displayed.

    You can scroll the output up or down using the scroll commands. All the Browse commands are available to you. When you finish browsing the listing, enter the END command.

15. An optional print utility exit routine can be installed by your system programmer. If this exit routine is installed, it may cause the Foreground option's response to differ from the following descriptions. Refer to *ISPF Planning and Customizing* for more information about the print utility exit.

    Another factor that can affect the Foreground option's performance is whether or not the TSO/E Information Center Facility is installed. If the TSO/E Information Center Facility is installed, your installation can optionally allow ISPF to display a panel for submitting TSO/E Information Center Facility information with the print request. See Figure 139 on page 244 for an example of this panel and "Using the TSO/E Information Center Facility" on page 166 for information about the fields on this panel. If the TSO/E Information Center Facility is not installed, the Foreground option displays the panel shown in Figure 138 on page 237 to allow you to print, keep, or delete the output.

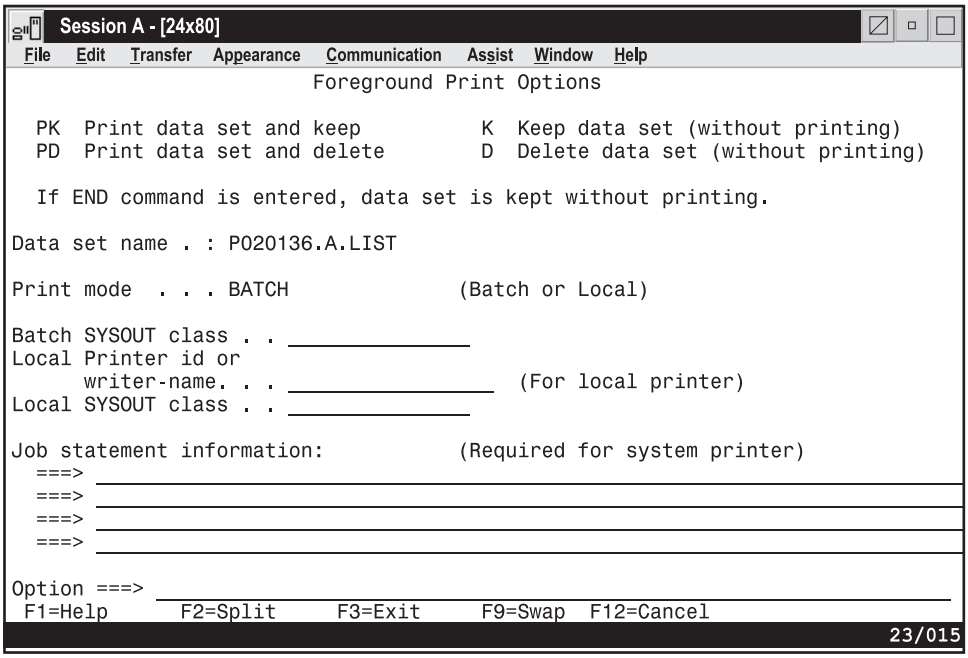


Figure 138. Foreground Print Options Panel (ISRFPPRT)

On this panel, the **Data set name** field shows the name of the list data set that contains the output generated by the processor you selected. In the **Option** field, enter one of the options shown at the top of the panel. The **Print mode**, **Batch SYSOUT class**, **Local Printer id or writer name**, and **Local SYSOUT Class** fields on this panel are described under "Hardcopy Utility (Option 3.6)" on page 162. The **Job statement information** field is described under the **Job Statement Information** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*.

When you press Enter, the processor entry panel is displayed again. A message indicating completion of the process is displayed in the upper-right corner of the screen.

16. You can do one of the following:
    - Enter other parameters and call the same processor.
    - Enter the END command to return to the Foreground Selection panel and select another processor.
    - Enter the RETURN command to go to the ISPF Primary Option Menu.
    - Use the jump function (=) to choose any primary option.

Expanding Packed Data

Packed data is data in which ISPF has replaced any repeating characters with a sequence showing how many times the character is repeated. Packing data allows you to use direct access storage devices (DASD) more efficiently because the stored data occupies less space than it would otherwise.

If the source data that you want to process is packed, it must be expanded before it can be successfully processed by any of the language processors. The expansion method you should use depends on whether your source data is:

- A sequential data set that contains expansion triggers

Foreground—Expanding Packed Data

An *expansion trigger* is a keyword that tells ISPF to expand additional data before copying, including, or imbedding it in the source data. Examples are INCLUDE and COPY statements, and SCRIPT .IM (imbed) control words. For information about defining your own expansion triggers, refer to *ISPF Planning and Customizing*

ISPF does not recognize expansion triggers in data stored as a sequential data set. Therefore, for this type of data, you should follow these steps:

1. Manually expand the data that is to be copied, included, or imbedded in your source data. To do this, edit the source data, enter the PACK OFF command, and then save the data. When you have finished processing the data, you can repack it by editing it again and entering PACK ON.
2. Select the Source Data Packed option before calling one of the language processors.

- Either of the following:
  - A sequential data set that does not contain expansion triggers
  - Any member of a partitioned data set, either with or without expansion triggers.

  ISPF does recognize expansion triggers in data stored as members of a partitioned data set. Also, if your source data does not contain expansion triggers, you do not have to be concerned with them. Therefore, for these two types of data, select the Source Data Packed option before calling one of the language processors.

In each of the preceding situations, selecting the Source Data Packed option causes ISPF to expand packed source data before it is processed. For partitioned data sets, any included members are also expanded inline where the INCLUDE or COPY statements, .IM SCRIPT control words, or other user-defined trigger statements are found.

Member Expansion (ISRLEMX)

Member expansion uses simple language scanners to find expansion triggers. If you specify that the source data is not packed, the ISRSCAN program is used. However, if you specify that the source data is packed, member expansion uses the ISRLEMX program.

These scanners do not have all the sophistication of the actual language processors. Therefore, unusual code or code that does not compile cannot be successfully processed by member expansion. Examples are trigger statements:

- With comments that extend onto the next line
- That have compiler instructions to change the content of the code to be included.

Compiler control statements and/or symbolic substitution are not considered during member expansion. Instead, ISRLEMX creates a temporary data set to be used as input to the language processor. All members to be processed, including members imbedded with COPY, INCLUDE, or .IM statements, are copied into this data set, expanded, and passed on to the language processor. The temporary data set will have the same block size as the input data set that contains your source data.

When using languages that allow multiple compilations, such as VS FORTRAN, you must put the program source ending statement in your original, or top-level, program. This statement cannot be in an included member.

Table 19 shows the languages processed by member expansion, their expansion triggers, syntax, and the input columns processed for fixed-record data and variable-record data.

Table 19. Expansion Triggers and Syntax

Language	Expansion Trigger	Syntax	Input Columns Processed for F/FB Format	Input Columns Processed for V/VB Format
Assembler	`COPY`	`COPY name`	1 - 80	N/A
PL/I	`%INCLUDE`	`%INCLUDE DDNAME(name);` `%INCLUDE name;`	2 - 72	10 - 100
COBOL	`COPY`	`COPY name.`	7 - 72	N/A
VS FORTRAN	`INCLUDE`	`INCLUDE (name)`	1 - 72	N/A
Pascal	`%INCLUDE`	`%INCLUDE name;` `%INCLUDE DDNAME(name);`	1 - 72	1 - 100

SCRIPT	`.IM`	`.IM name`
		`.IM (name)`
		`.IM ('name')`
			1-reclength or 9-reclength	1-reclength or 1-(reclength-8)

All languages	`User-trigger`	`User-trigger name`	N/A	N/A

Restrictions on Member Expansion and Member Parts Lists

The following restrictions apply only to the member expansion and member parts listing functions:

- The following restrictions apply to all languages:
  - Expansion triggers must follow their respective language coding conventions unless otherwise noted.
  - Multiple names and preprocessor variables on trigger statements are not permitted.
  - User triggers and their start column are specified at installation time and must be:
    - No more than 20 characters long
    - Uppercase with no imbedded blanks.

    No part of the user trigger can be in a comment or continuation field.
  - Macros cannot be in packed form.
  - The trigger statement must be the only statement in the logical record. No continuation is allowed into or from a trigger statement. Also, the trigger keyword must be the first character on the trigger statement that is not a blank and can be followed by only one statement delimiter.
  - For compilers that allow names longer than 8 characters, the name is truncated at 8.
  - For compilers that allow uppercase and lowercase names, all referenced names are converted to uppercase.
- This restriction applies to assembler only:
  - The user trigger cannot start in column 1.

- This restriction applies to FORTRAN only:
  - The member expansion function allows only the fixed form of coding.
- This restriction applies to PL/I, Pascal, and COBOL:
  - Free form coding is allowed except in trigger statements.
- The following are other COBOL restrictions:
  - The name is truncated at 8 characters or the first hyphen (-), whichever comes first.
  - The first statement in the COBOL program must be either an expansion trigger, a valid COBOL division header, a TITLE, a PROCESS, or a CBL statement. The expansion trigger can precede all other statements, but it must start in FIELD B.

    If an expansion trigger is the first statement, it must eventually resolve (through multiple expansion triggers if needed) to a valid COBOL division header, TITLE, PROCESS, or CBL statement.
  - In the COPY statement, the text-name is the only value processed. The statement must end on the same line as the COPY keyword with a period followed by a space. If any option is found, the COPY statement is not expanded.
  - In the IDENTIFICATION DIVISION, the division header or paragraph header statements must be blank except for the division or paragraph name. The trigger statement must be on the next line that is neither blank nor a comment.
  - In all other divisions, the trigger statement (line) can be on any line in the division.
  - If the WITH DEBUGGING MODE clause is not found in the SOURCE COMPUTER paragraph, all debug lines are passed to the compiler without being scanned for expansion triggers, as if they were comment lines. If the clause is found, valid trigger statements found on debug lines are expanded and a `D` is inserted in column 7 of all the non-comment, non-continuation lines included.
  - Any character found in FIELD A that is not a blank causes the end of the paragraph form of the NOTE statement.
- The following are SCRIPT/VS restrictions:
  - The `.im` statement must be the only statement in the logical record and must start in the first valid column. The first logical record is tested for line numbers, as follows:
    - For fixed-length records, if the last 8 characters are all numeric, they are skipped for the complete library.
    - For variable-length records, if the first 8 characters are all numeric, processing begins with column 9.

    The statements can be in either uppercase, lowercase, or mixed case.
  - Because ISPF creates a sequential data set from the imbedded members, use of the `.EF` control word will cause all statements in the sequential data set following the `.EF` to be ignored. The use of .EF is not recommended with packed data.

Member Expansion ISRLEMX Return Codes

Table 20 describes the ISRLEMX return codes.

Table 20. ISRSCAN and ISRLEMX Return Codes

ISRSCAN		ISRLEMX	
12	Member not found.	**1 - 15**	Parameter n was too long, where *n* = 1 to 15.
16	OPEN error on DDNAME=IN.	**16**	Too many parameters.
20	I/O error on DDNAME=IN.	**17**	Too few parameters.
24	OPEN error on DDNAME=OUT.	**20**	Severe error in expand module. An error message should be printed in the ISRLMSG data set.
28	I/O error on DDNAME=OUT.		

Trigger Statement Errors

Some of the more common errors that occur are:
- Restricted option
- Statement on more than one line
- Referenced member name not found.

If an error occurs, the trigger statement is not expanded and is passed to the language processor.

In SCRIPT/VS, if the error was found in a user trigger, one blank line is inserted before and after the statement in question.

Input Data Sets

Input to a foreground processor is one of the following:
- A member of an ISPF library or other partitioned data set. If you do not specify a member name, ISPF displays a member list.
- A sequential data set.

If an ISPF library is the input source, the member can be in any library in the concatenation sequence. You can include additional input by using:
- The COPY statement for assembler and COBOL
- The INCLUDE statement for PL/I, FORTRAN, and Pascal
- The SCRIPT/VS imbed control word (.im)
- Macros
- Additional input libraries.

Whenever the input source is partitioned, you can specify additional input libraries. They must be partitioned data sets that are not password protected. You cannot specify additional input libraries if the input source is sequential. Specify the fully qualified data set names, enclosed in apostrophes, such as:

```
Additional input libraries:
        ===> 'ABC.MACROS'
```

For example, in Figure 140 on page 245, a concatenation sequence of three ISPF data sets and one additional input library has been specified. The concatenation order is:

Foreground—Input Data Sets

```
ISPFDEMO.XXX.ASM
ISPFDEMO.A.ASM
ISPFDEMO.MASTER.ASM
ISPFTEST.FLAG.ASM
```

The last data set in the concatenation sequence, ISPFTEST.FLAG.ASM, is entered as an additional input library at the bottom of the panel. Additional input libraries are always last in the sequence.

Before calling a foreground processor, ISPF scans the concatenated sequence of libraries to find the member to be processed. For this example, the member name is TOP. If member TOP first appears in data set ISPFDEMO.A.ASM, the following prompter command would be generated by Assembler XF.

```
ASM  'ISPFDEMO.A.ASM(TOP)'
     LIB('SYS1.MACLIB',
         'ISPFDEMO.XXX.ASM',
         'ISPFDEMO.A.ASM',
         'ISPFDEMO.MASTER.ASM',
         'ISPFTEST.FLAG.ASM')
     LOAD('ISPFDEMO.XXX.OBJ(TOP)')
     PRINT(LISTASM)
     LIST,TEST,TERM,RENT
```

The processor options are passed to the prompter exactly as you specify them.

Note: The macro library SYS1.MACLIB is included in the concatenation sequence for Assembler only. When included, as the preceding prompter command example shows, it is always first in the sequence because of its large block size.

List Data Sets

In the List ID field, you can enter the name you want ISPF to use to identify the list data set that will contain the foreground processor output. This name is passed to the foreground processor by either the LIST or PRINT option. The following rules apply:

- If the input data set is partitioned the List ID field is optional:
  - Leave the List ID field blank if you want ISPF to use the input member name to identify the output list data set.
  - Enter a LIST ID if you want to use a name other than the input member name to identify the output list data set.
- If the input data set is sequential, you must enter a LIST ID.

For best results, if you plan to debug your program later using COBOL interactive debug:

- Enter the name of the member being compiled in the **List ID** field if the input data set is partitioned.
- If the input data set is sequential, enter the name of the sequential data set.

Then, when you debug your program, use these same names in the **PROG ID** fields on the COBOL Interactive Debug panel.

ISPF names the listing:

```
prefix.userid.listid.LIST
```

where

`prefix`

is the data set prefix in your TSO profile, if you have one and if it is different from your user ID,

`userid`

is your user ID, and

`listid`

is the member name or the value in the **List ID** field.

If you are using the same list data set for multiple job steps, be aware that the DCB information can differ between the language processors and the linkage editor, causing an I/O error when trying to read the list data set. We suggest that you use a different list ID for each job step.

Password Protection

Input, object, interpretable text (ITEXT), and symbolic debug data sets can be password-protected. You can specify the password in the **Password** field on the foreground processor data entry panel. The password does not appear on the screen when you enter it, but ISPF remembers it.

Since foreground processor panels have only one **Password** field, ISPF prompts you if all data sets do not have the same password.

Object Data Sets

The following information about object data sets applies to all foreground assemblers and compilers. However, if you are using the VS FORTRAN compiler, you must enter OBJECT in the **Other** field to generate an output object module. The two assemblers and the other compilers generate object modules automatically.

If you specify an ISPF library as the input source, ISPF writes object output from the foreground assembler or compiler to a partitioned data set. This data set has the same name as the first library in the concatenation sequence, but has a type of OBJ. For example, if you specify PROJECT.LIB1.ASM as the first library name, the object output is placed in data set PROJECT.LIB1.OBJ. The member name of the object module is the same as the input member.

If you specify another data set, the object output is placed in a data set of the same name, but with the last qualifier replaced by OBJ. If the data set name has only one qualifier, OBJ is appended as the last qualifier. For example, if you specify an input data set named OTHER.ASM or OTHER, the object output is placed in a data set named OTHER.OBJ. For partitioned data sets, the object output is stored in a member with the same name as the input member. For sequential data sets, the object output is stored in a sequential data set.

Note: The object data set must exist before invoking a foreground or batch option that creates an object module.

Foreground—TSO/E Information Center Facility

If the TSO/E Information Center Facility is installed, your installation can optionally allow ISPF to substitute the panel shown in Figure 139 for the panel shown in Figure 138 on page 237. This panel is valid for all foreground processors except SCRIPT/VS and member parts list. See "Using the TSO/E Information Center Facility" on page 166 for information about the fields on this panel.

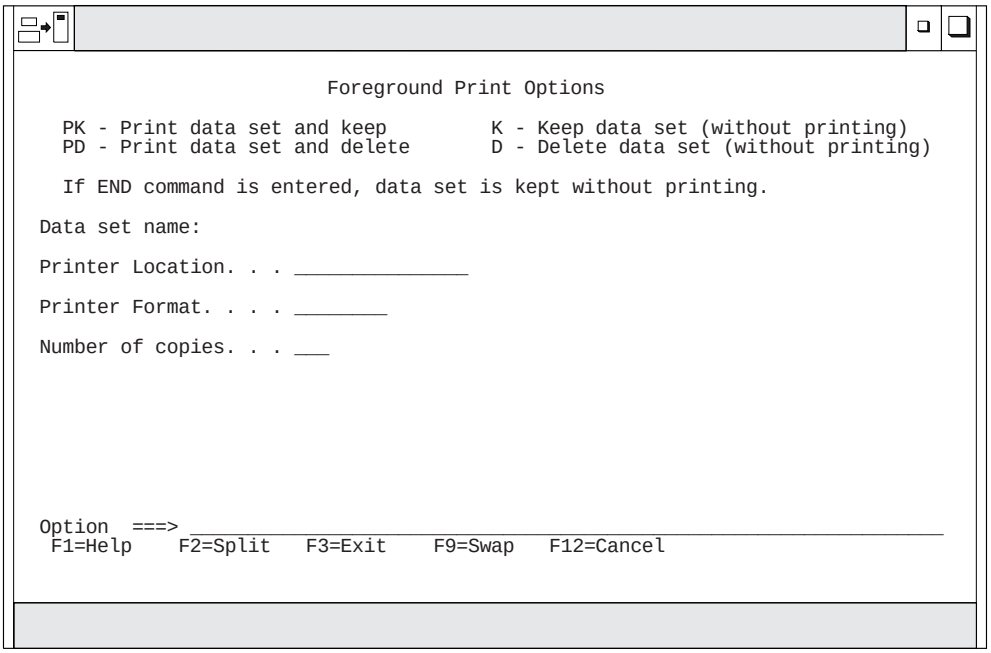


Figure 139. Foreground Print Options Panel With TSO/E Information Center Facility (ISRFPPRI)

Assembler (Option 4.1)

Foreground Assembler enables you to use either High Level Assembler or Assembler H. Both are called from the Foreground Assembler panel, shown in Figure 140 on page 245. For information about Assembler data sets, see the appendix called **Allocation Data Sets** in the *ISPF User's Guide Volume I*.

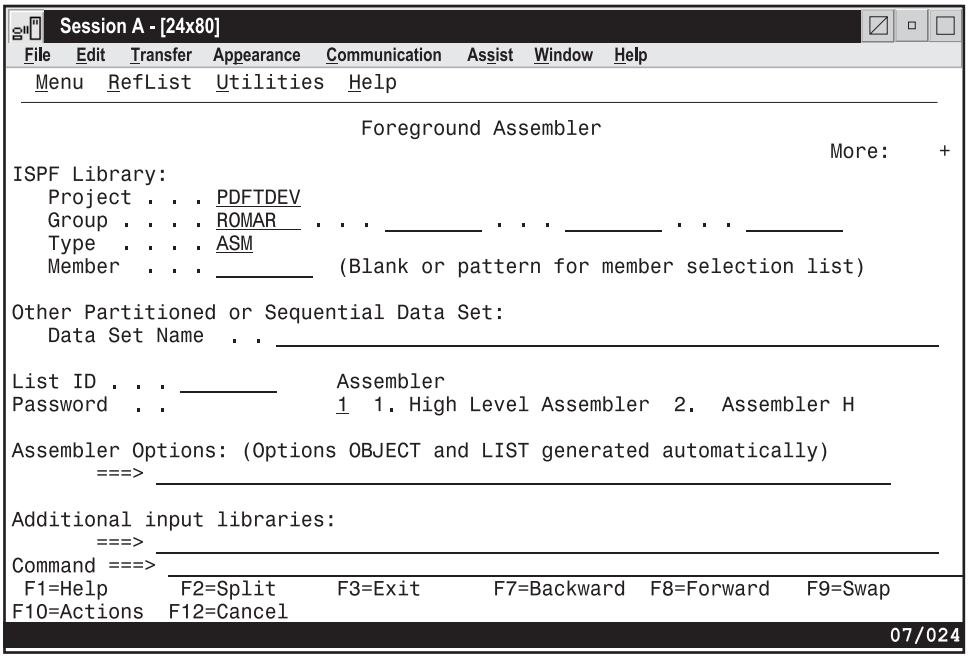


Figure 140. Foreground Assembler Panel (ISRFP01)

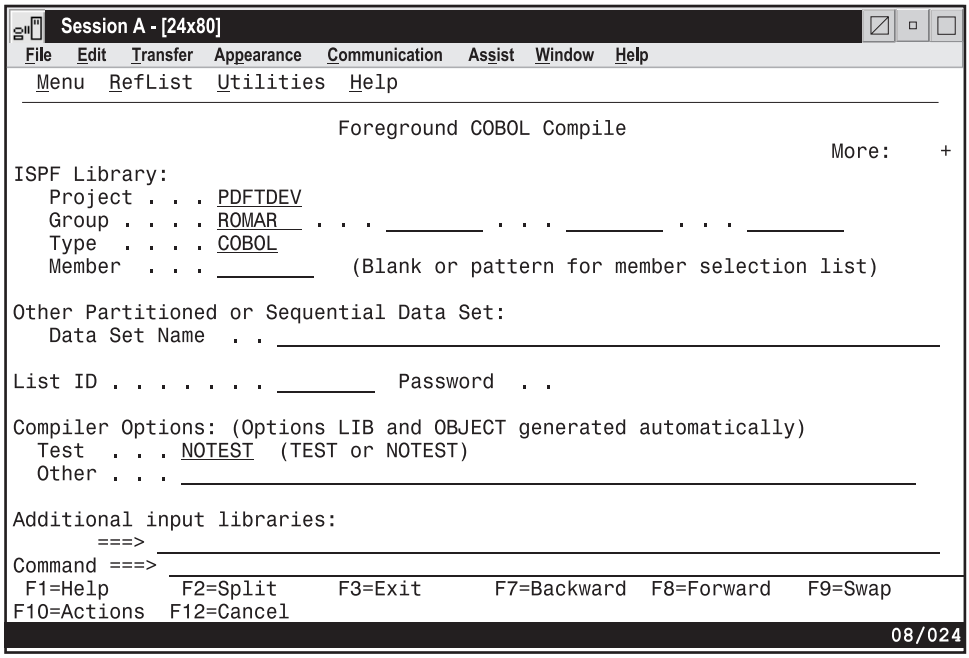
All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input Libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Assembler Options
: Be careful not to enter the OBJECT and LIST options in this field. ISPF generates these options automatically. OBJECT writes the output object module to a partitioned data set. LIST writes the output listing to a list data set. See "Object Data Sets" on page 243 and "List Data Sets" on page 242 for more information.

Assembler
: Enables you to specify whether to use the High Level Assembler or Assembler H. Specify a **1** for High Level Assembler or a **2** for Assembler H.

COBOL (Option 4.2)

ISPF generates an ISPEXEC SELECT PGM(IGYCRCTL) statement to invoke a COBOL compiler using the values you enter on the Foreground COBOL Compile panel, shown in Figure 141 on page 246. For information about COBOL allocation data sets, see the appendix called **Allocation Data Sets** in the *ISPF User's Guide Volume I*.


Session A - [24x80]
File Edit Transfer Appearance Communication Assist Window Help
Menu RefList Utilities Help
Foreground COBOL Compile
More: +
ISPF Library:
Project . . . PDFTDEV
Group . . . . ROMAR . . . .

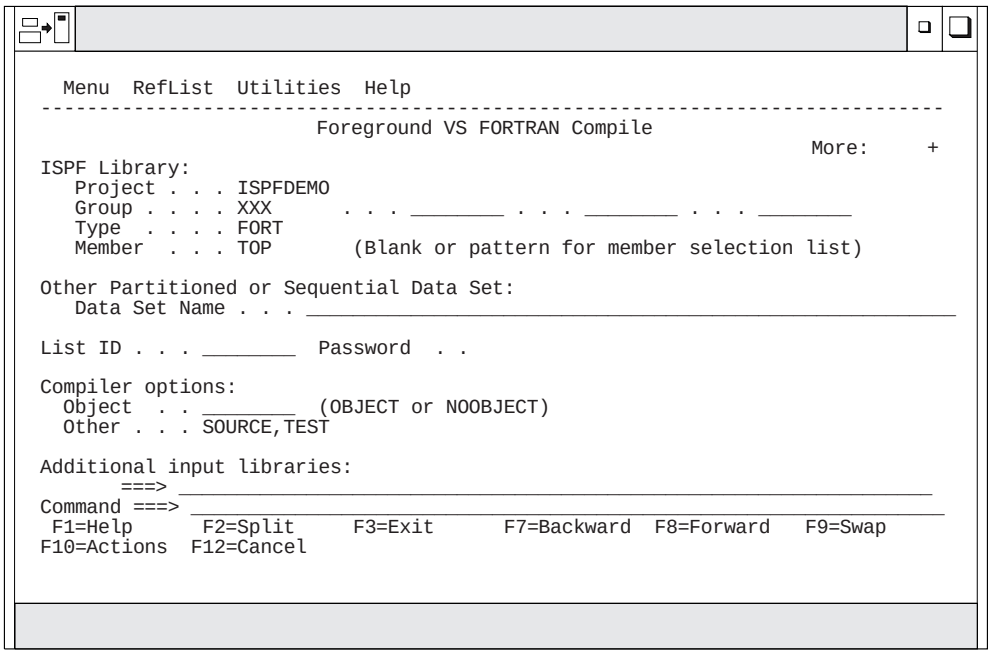


Figure 142. Foreground VS FORTRAN Compile Panel (ISRFP03)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Object
ISPF does not automatically generate any options for VS FORTRAN. Instead of generating an object module automatically, the VS FORTRAN compiler allows you to decide whether to generate one. To generate an object module, enter OBJECT in the **Object** field. To avoid generating an object module, enter NOOBJECT. See "Object Data Sets" on page 243 for more information.

Other If you plan to run FORTRAN interactive debug after you compile your program, enter TEST in the **Other** field, along with any other options you need.

PL/I (Option 4.5)

The Foreground PL/I option enables you to invoke either OS PL/I Version 2 or PL/I for MVS and VM, using the values specified on the Foreground PL/I Compile panel shown in Figure 143 on page 248.

Foreground—PL/I Compile (Option 4.5)

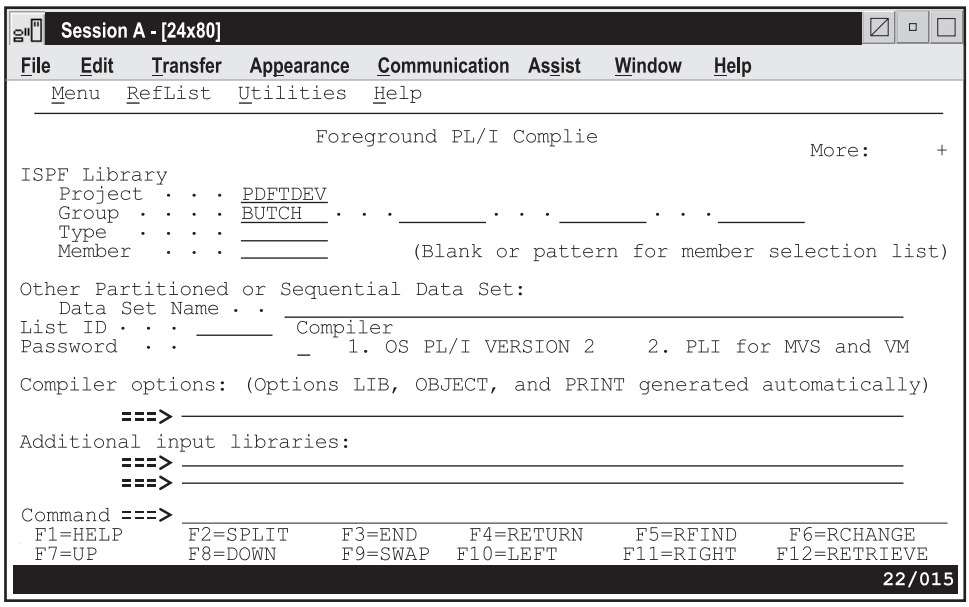


Figure 143. Foreground PL/I Optimizing Compile Panel (ISRFP05)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Compiler
: Choose the compiler you want to use from the list presented.

Compiler Options
: Enter any options you need in the **Other** field, except LIB, OBJECT, or PRINT. ISPF generates these options automatically. LIB specifies the input data set concatenation sequence. OBJECT writes the output object module to a partitioned data set. PRINT writes the output listing to a list data set. See "Input Data Sets" on page 241, "Object Data Sets" on page 243, and "List Data Sets" on page 242 for more information.

VS Pascal Compile (Option 4.6)

The Foreground VS Pascal Compile panel is shown in Figure 144 on page 249.

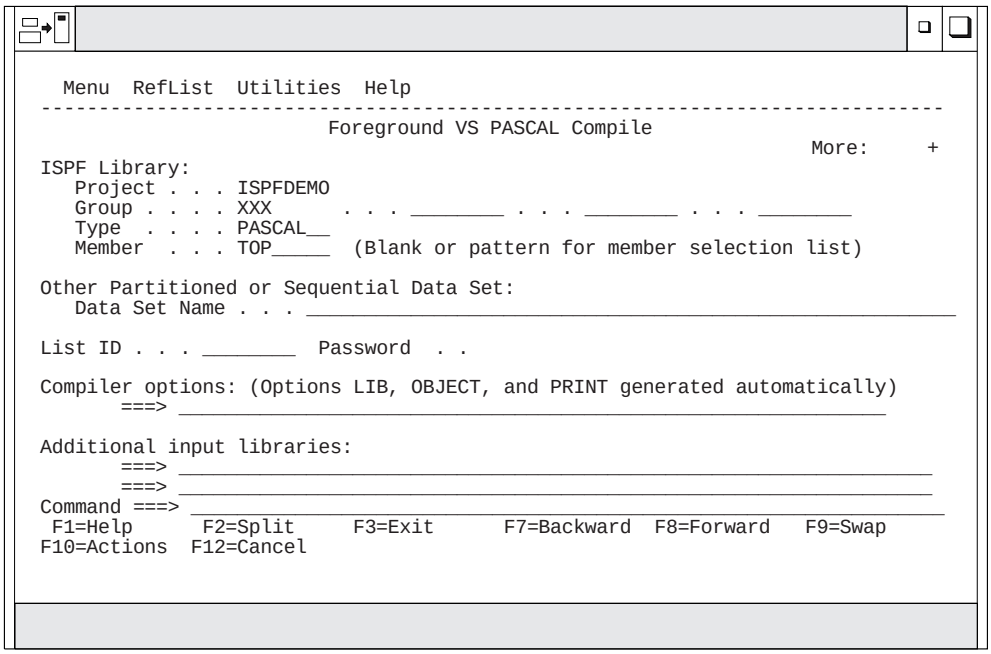


Figure 144. Foreground VS Pascal Compile Panel (ISRFP06)

All the fields on this panel are explained in the***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Other Enter any options you need in the **Other** field, except LIB, OBJECT, or PRINT. ISPF generates these options automatically. LIB specifies the input data set concatenation sequence. OBJECT writes the output object module to a partitioned data set. PRINT writes the output listing to a list data set. See "Input Data Sets" on page 241, "Object Data Sets" on page 243, and "List Data Sets" on page 242 for more information.

Binder/Linkage Editor (Option 4.7)

The Foreground Binder/Linkage Editor is called from the Foreground Binder/Linkage Edit panel, shown in Figure 145 on page 250.

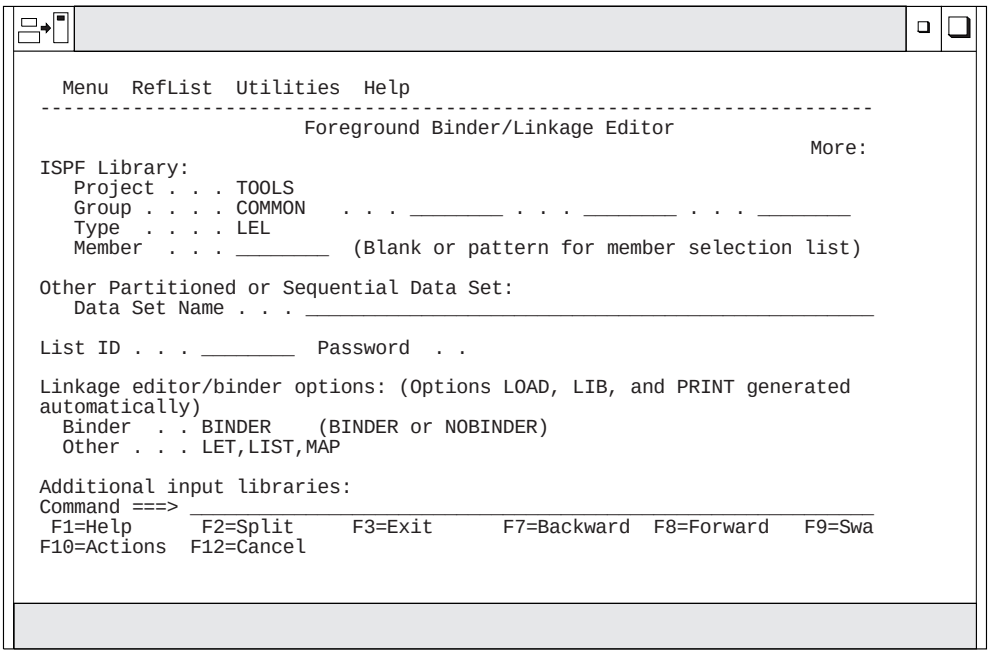


Figure 145. Foreground Binder/Linkage Editor Panel (ISRFP07B)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Linkage editor/binder options
Enter any options you need, except LOAD, LIB, or PRINT. ISPF generates these options automatically. LOAD writes the output object module to a partitioned data set.

Note: Sequential data sets are invalid when using the Linkage Editor.

LIB specifies the input data set concatenation sequence. PRINT writes the output listing to a list data set. See "List Data Sets" on page 242 and "Object Data Sets" on page 243 for more information.

Binder
Determines whether the Linkage Editor (NOBINDER) or Binder (BINDER) is invoked.

Note: The binder is available only if DFSMS 1.1, or later, is installed.

SYSLIB
The name of the data set that is to contain the ISPF library concatenation sequence used to resolve any copy statements specified in your program. See "Input Data Sets" on page 241 and the **SYSLIB Data Set** section of the appendix called **Allocation Data Sets** in the *ISPF User's Guide Volume I* for more information.

SYSLIN
The name of the data set that is to contain the object module. The **SYSLIN** field is provided to accommodate the VS Pascal XA and NOXA processing options. See "Input Data Sets" on page 241 and **SYSLIN Data Set** section of the appendix called **Allocation Data Sets** in the *ISPF User's Guide Volume I* for more information.

Linkage Editor Concatenation Sequence

The concatenation sequence used by ISPF to find the member for input to the Linkage Editor is:

```
project-name.lib1-name.type
project-name.lib2-name.type
(and so forth)
```

where type is whatever you specify on the panel. For example, it can be OBJ or some other type containing Linkage Editor language (LEL) control statements. If the type is not OBJ, an OBJECT DDNAME is automatically allocated to ease the use of the following Linkage Editor control statements:

```
INCLUDE OBJECT(member-name)
```

For example:

```
Project . . . XYZ
Group . . . . MYLIB   . . . MASTER  . . .          . . .
Type  . . . . LEL
Member  . . . TOP
```

In this example, ISPF searches data sets XYZ.MYLIB.LEL and XYZ.MASTER.LEL to find member TOP, which should contain LEL control statements. Also, ISPF allocates to DDNAME OBJECT (DISP=SHR) the following concatenated sequence of object libraries:

```
XYZ.MYLIB.OBJ
XYZ.MASTER.OBJ
```

This concatenated sequence is searched by the Linkage Editor if member TOP contains INCLUDE OBJECT(member-name) statements. The concatenation sequence passed to the Linkage Editor by way of the LIB parameter has a type qualifier of LOAD and includes the system libraries you specify, as follows:

```
LIB('project-name.lib1-name.LOAD',
    'project-name.lib2-name.LOAD',
          .
          .
          .
    and so forth,
          .
          .
          .
    'syslib1-name',
          .
          .
          .
    and so forth)
```

This concatenation sequence is used by the Linkage Editor to resolve automatic call references.

SCRIPT/VS Processor (Option 4.9)

Use of this facility requires the installation of the Document Composition Facility (DCF) program product and its component text processing program, SCRIPT/VS, with the Foreground Environment Feature.

Note: DCF requires the TSO profile prefix to be set. For additional information, refer to DCF documentation.

Foreground—SCRIPT/VS Processor (Option 4.9)

When you select the SCRIPT/VS option, the first panel displayed is the SCRIPT/VS Processor panel shown in Figure 146.

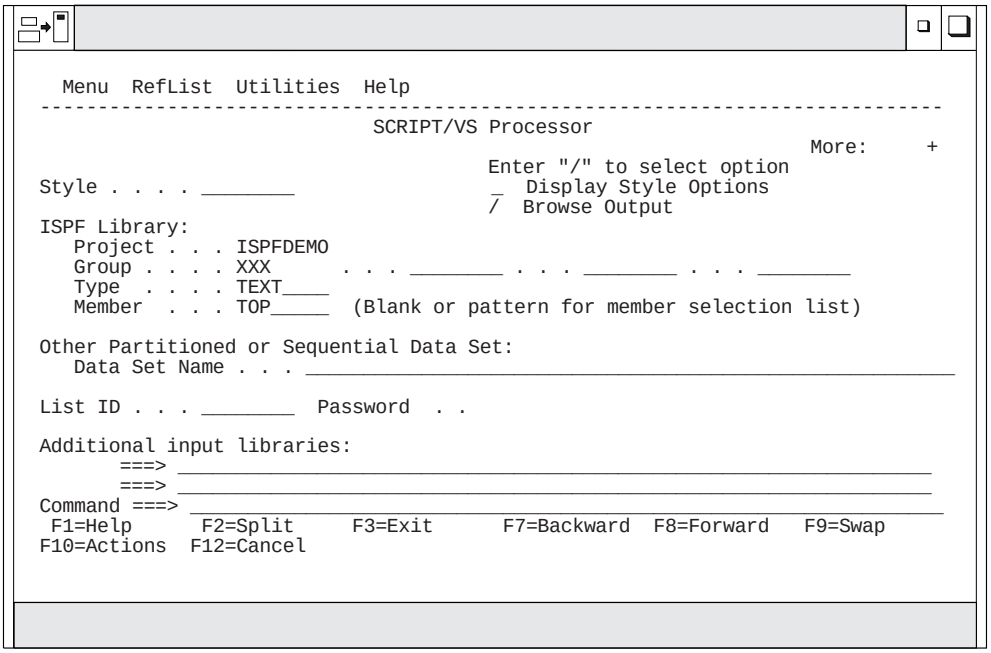


Figure 146. SCRIPT/VS Processor Panel (ISRFP09)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, and **Style**, Display Style Options, and Browse Output option, which are explained in the following sections.

SCRIPT/VS Processing Sequence

A *style* contains options that tell SCRIPT/VS how to format a document for display or printing. These options include the use of fonts, white space, line lengths, and so forth.

The value you put in the **Style** field and whether or not you select the Display Style Options and Browse Output options determine the following SCRIPT/VS processing sequence:

1. For the **Style** field, you can do one of the following:
   - Enter the name of an existing style.

     You can enter the name of a style you have created or one of the styles SCRIPT/VS creates for you: DRAFT and FINAL. These two styles correspond to the formatting options available in the previous release of SCRIPT/VS Foreground Processing. If you have not defined these options before or if this is your first release of ISPF, the default values for the SCRIPT/VS formatting options are set for you.

     If you enter the name of an existing style in the **Style** field, that style is used for formatting.
   - Enter the name of a new style you want to define.

     If you enter a new style name, the name is added to your style list. The new style uses SCRIPT/VS formatting options that are equal to the formatting options of the last style. Step 2 on page 253 explains what to do to change these options.

- Leave the **Style** field blank.

  If you leave the **Style** field blank, ISPF displays the Select SCRIPT/VS Formatting Style panel. This panel displays a list of the available styles. See "Selecting a Formatting Style" on page 255 for more information.

2. Use a slash to select Display Style Options. ISPF displays the SCRIPT/VS Options for Style panel, which shows the options that are currently being used and allows you to change them. See "Changing Style Options" on page 256 for more information.

   If you do not select Display Style Options, ISPF does not display the SCRIPT/VS Options for Style panel.
3. Enter the appropriate ISPF library and concatenation sequence or data set names. You can display a member list by omitting the member name or by using a pattern. See the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* if you need help entering library or data set names, "Input Data Sets" on page 241 for more information about the concatenation sequence, and the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about displaying member lists.
4. Enter your password in the **Password** field if your input data set is password-protected. See "Password Protection" on page 243 for more information.
5. Use the List ID field to tell ISPF what to name the output SCRIPT/VS listing. See "List Data Sets" on page 242 for more information.
6. Use a slash to select the Browse Output option. ISPF displays your output in Browse mode after it has formatted.

   If you do not select the Browse Output option, ISPF skips Browse mode and displays a Foreground Print Options for Style panel, shown in Figure 147 on page 254.
7. Once all the input parameters have been specified, press Enter to call SCRIPT/VS.
8. Communication with SCRIPT/VS is in line-I/O mode. Each time you see three asterisks, press Enter. These asterisks, which usually appear at the bottom of the screen, show that TSO is waiting for you to clear the screen before it can proceed.

   If the Session Manager is installed and you selected the Session Manager mode option on the ISPF Settings panel, SCRIPT/VS and all PF and PA keys are under control of the Session Manager. When formatting is complete, you are prompted to enter a null line to return to ISPF control.

   If the Session Manager is not called, the PA and function keys have their usual TSO-defined meanings; generally, the function keys are treated the same as Enter.
9. One or both of the following panels may appear, depending on your treatment of the **Style** and Display Style Options fields. If both appear, they will be in the following sequence:
   a. Select SCRIPT/VS Formatting Style
   b. SCRIPT/VS Options for Style

   See "Selecting a Formatting Style" on page 255 and "Changing Style Options" on page 256 if you need information about using these panels. When you are finished with each panel, press Enter.
10. If SCRIPT/VS generated an output listing and you selected the Browse Output option, the output is displayed automatically in Browse mode. Otherwise, continue with the next step.

Note: If SCRIPT/VS formatting ends abnormally, ISPF displays a message in the upper-right corner of the screen and does not enter Browse mode. The list data set is retained, but the Foreground Print Options for Style panel (see step 11) is not displayed.

You can scroll the output up or down using the scroll commands. All the Browse commands are available to you. When you finish browsing the listing, enter the END command.

11. An optional print utility exit can be installed by your system programmer. If this exit is installed, it may cause SCRIPT/VS's response to differ from the following descriptions. Refer to *ISPF Planning and Customizing* for more information about the print utility exit.

    Another factor that can affect SCRIPT/VS's performance is whether the TSO/E Information Center Facility is installed. If the TSO/E Information Center Facility is installed, your installation can optionally allow ISPF to display a panel for submitting the TSO/E Information Center Facility information with the print request. See Figure 150 on page 258 for an example of this panel and "Using the TSO/E Information Center Facility" on page 166 for information about the fields on this panel.

    If the TSO/E Information Center Facility is not installed, SCRIPT/VS displays the panel shown in Figure 147.

    The Foreground Print Options for Style panel allows you to optionally print the formatted document and specify its disposition. On this panel, the **Data Set Name** field shows the name of the list data set that contains the SCRIPT/VS output. On the Command line, enter one of the options shown at the top of the panel.

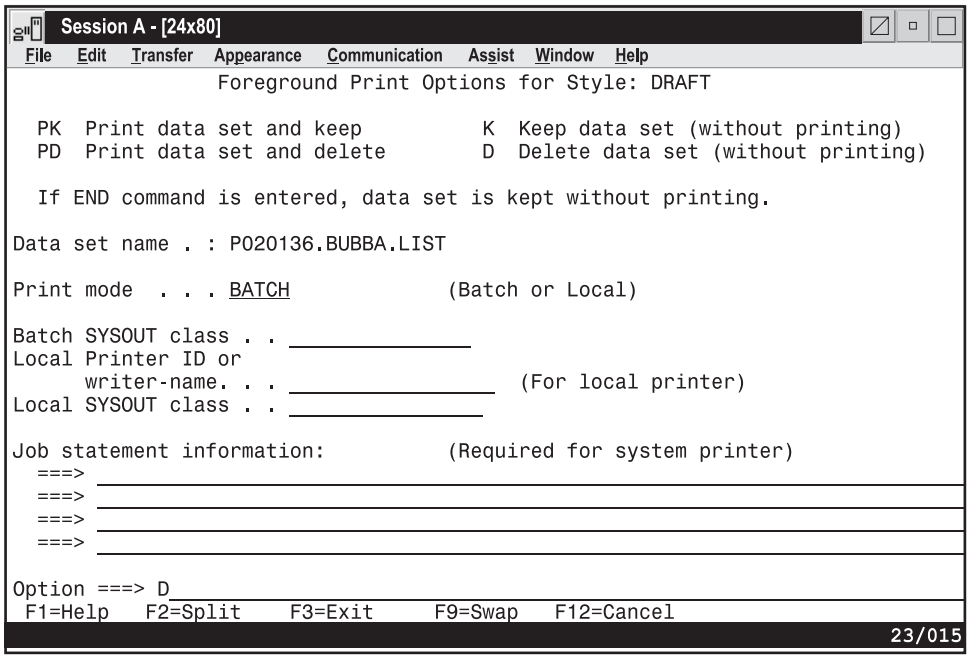


Figure 147. Foreground Print Options for Style Panel (ISRFP09P)

In the **Print mode** field, enter either of the following commands:

- BATCH to submit your print request as a background job.

If you choose BATCH, specify a valid Batch SYSOUT CLASS and job statement information. Specifying BATCH causes SCRIPT/VS to ignore the **Local Printer ID or Writer Name** field, and the **Local SYSOUT Class** field.

SCRIPT/VS list data sets are formatted DCB=RECFM=VBM. Unless the line count is altered, the formatted page length may exceed the JES line count and cause duplicate page ejects. Therefore, specify the following job statement information to prevent JES line counting:

```
/*JOBPARM LINECT=0
```

- LOCAL to print the output on a local printer.

  If you choose LOCAL, specify the **Local Printer ID or writer name** of a local printer and optional **Local SYSOUT Class**. Specifying LOCAL causes SCRIPT/VS to ignore the **Batch SYSOUT class** field. Job statement information is ignored.

  Page spacing will probably vary from the expected format because of differences between 328x printers and 1403 or 3800 printers used as a formatting guide.

See "Hardcopy Utility (Option 3.6)" on page 162 if you need information about the **Print mode**, **Batch SYSOUT class**, **Local Printer ID or Writer Name**, and **Local SYSOUT Class** fields. See the **Job Statement Information** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for information about the **Job statement information** fields.

When you press Enter, the SCRIPT/VS Processor panel is displayed again. A message indicating completion of the process is displayed in the upper-right corner of the screen.

12. You can do one of the following:
    - Enter other parameters and call SCRIPT/VS again.
    - Enter the END command to return to the Foreground Selection panel and select another processor.
    - Enter the RETURN command to go to the ISPF Primary Option Menu.
    - Use the jump function (=) to choose any primary option.

Selecting a Formatting Style

Use the Select SCRIPT/VS Formatting Style panel shown in Figure 148 on page 256 to see which styles are available and to select or delete styles as necessary.

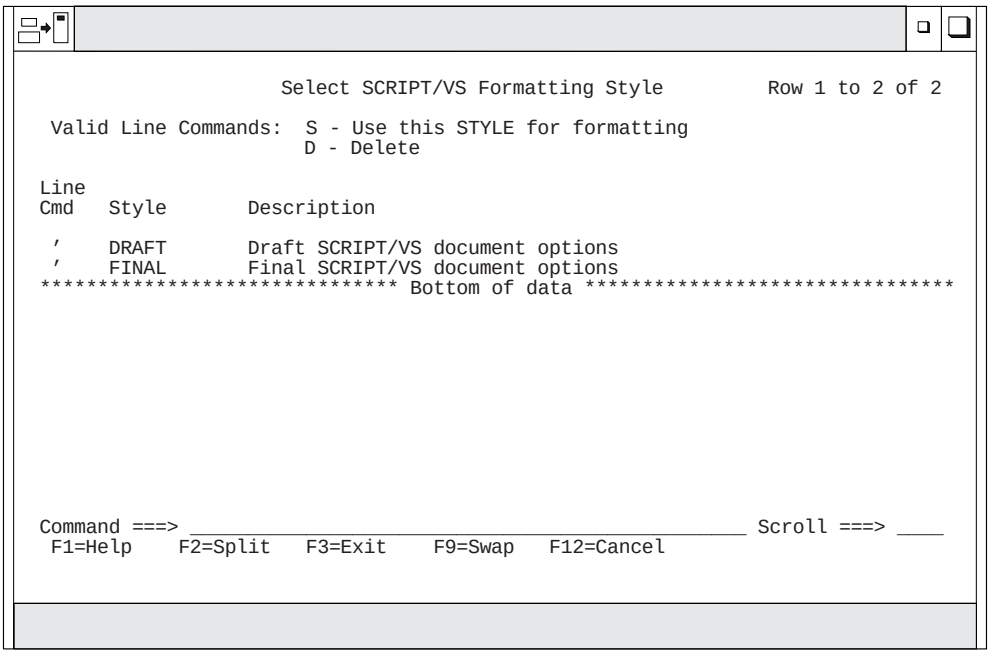


Figure 148. Select SCRIPT/VS Formatting Style Panel (ISRFP09T)

The Select SCRIPT/VS Formatting Style panel is a list that can be scrolled and contains all the styles available to you. Each style is a set of predefined formatting options.

Type either `S` or `D` in the **Line Cmd** field and press Enter to select or delete a style, respectively. You can only select one style at a time for formatting. However, one or more styles can be deleted at the same time.

The display fields on the Select SCRIPT/VS Formatting Style panel contain the following information:

Style The names of styles that you can either select or delete.

Description
A reminder of the purpose of each style. Type over the description to change it.

Changing Style Options

Use the SCRIPT/VS Options for Style panel to:
- See which options are currently being used for the style you chose
- Change the options as needed.

Figure 149 on page 257 shows the options available for the DRAFT style.

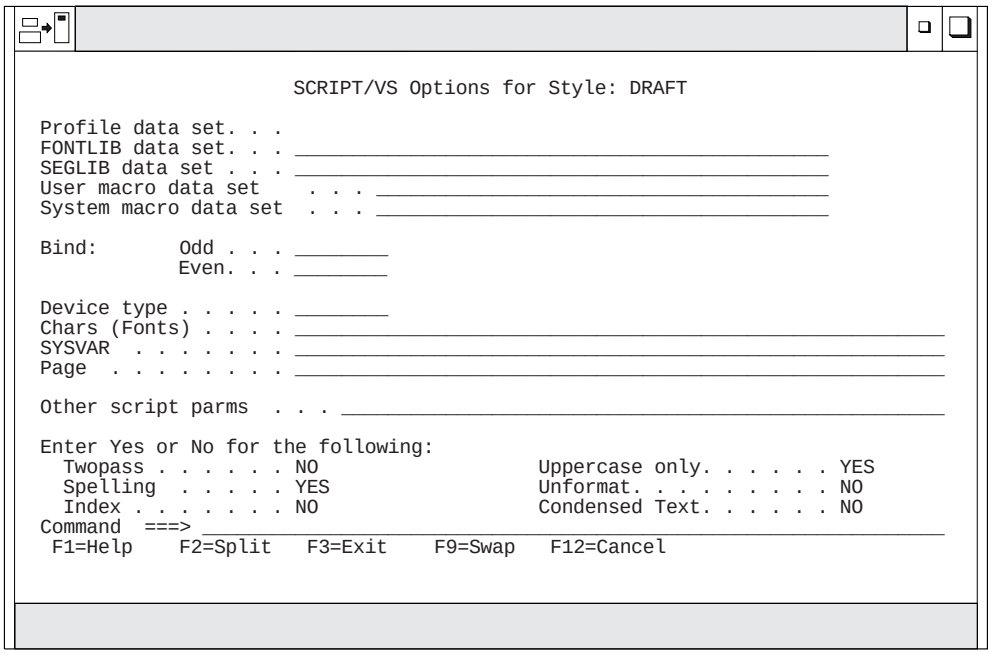


Figure 149. SCRIPT/VS Options for Style: DRAFT Panel (ISRFP09O)

The fields on the SCRIPT/VS Options for Style panel represent SCRIPT/VS formatting options, all of which are optional. For a complete description of these options, refer to *Document Composition Facility: Generalized Markup Language Starter Set User's Guide*

If you enter the END command from the SCRIPT/VS Options for Style panel, changes on this panel are not saved. If the style is new, it is saved with default formatting options.

If you press Enter from the SCRIPT/VS Options for Style panel, SCRIPT/VS processes the data set, and then one of the following occurs:

- A Browse panel is displayed if you selected the Browse Output option on the SCRIPT/VS Processor panel. When you finish browsing the SCRIPT/VS formatted output, a Foreground Print Options for Style panel is displayed.

  Note: If you enter the PRINT parameter in the **Other script parms** field, the Browse panel is not displayed.
- A Foreground Print Options for Style panel is displayed if you did not select the Browse Output option on the Script/VS Processor panel.

See step 11 on page 254 for more information about printing SCRIPT/VS output.

Using SCRIPT/VS with the TSO/E Information Center Facility

If the TSO/E Information Center Facility is installed, your installation can optionally allow ISPF to substitute the panel shown in Figure 150 on page 258 for the panel shown in Figure 147 on page 254. See "Using the TSO/E Information Center Facility" on page 166 for information about the fields on this panel.

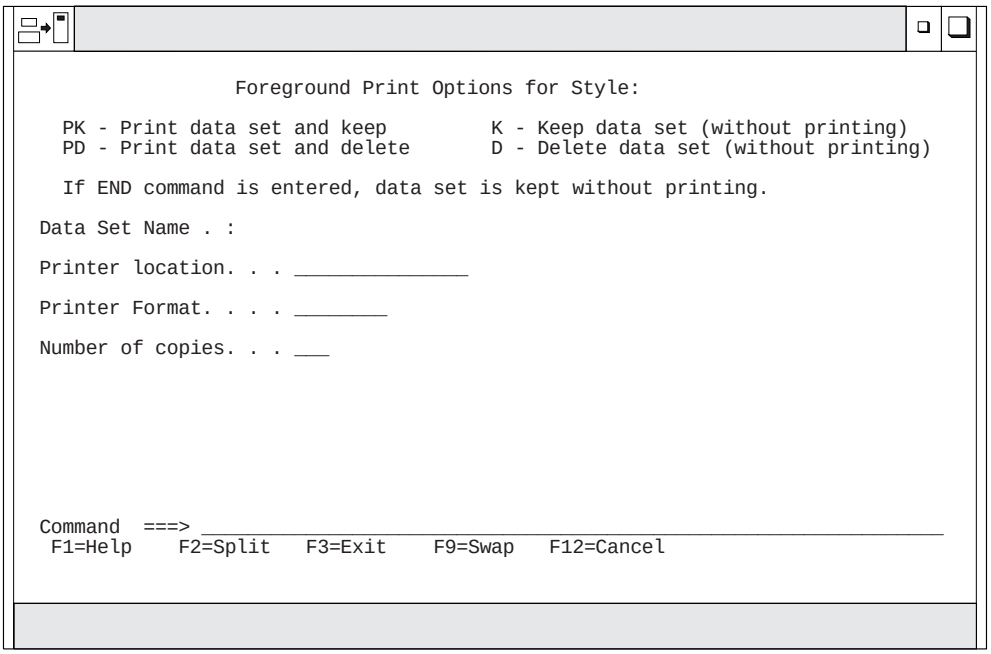


Figure 150. Foreground Print Options for Style Panel with the TSO/E Information Center Facility (ISRFP09I)

VS COBOL II Interactive Debug (Option 4.10)

To run VS COBOL II interactive debug in foreground, the VS COBOL II compiler, Release 2, must be both installed and accessible, for the following reasons:

- You must compile your program by using the VS COBOL II compiler (option 4.2 or option 5.2) with the TEST and RESIDENT options before running VS COBOL II interactive debug. Debug output from the compilation is stored in the object module, which ISPF generates automatically.
- The VS COBOL II compiler contains the Debug Productivity Aid (DPA) facility, which ISPF accesses when you run VS COBOL II interactive debug in the foreground. The panel shown in Figure 151 on page 259 is displayed if ISPF cannot access DPA.

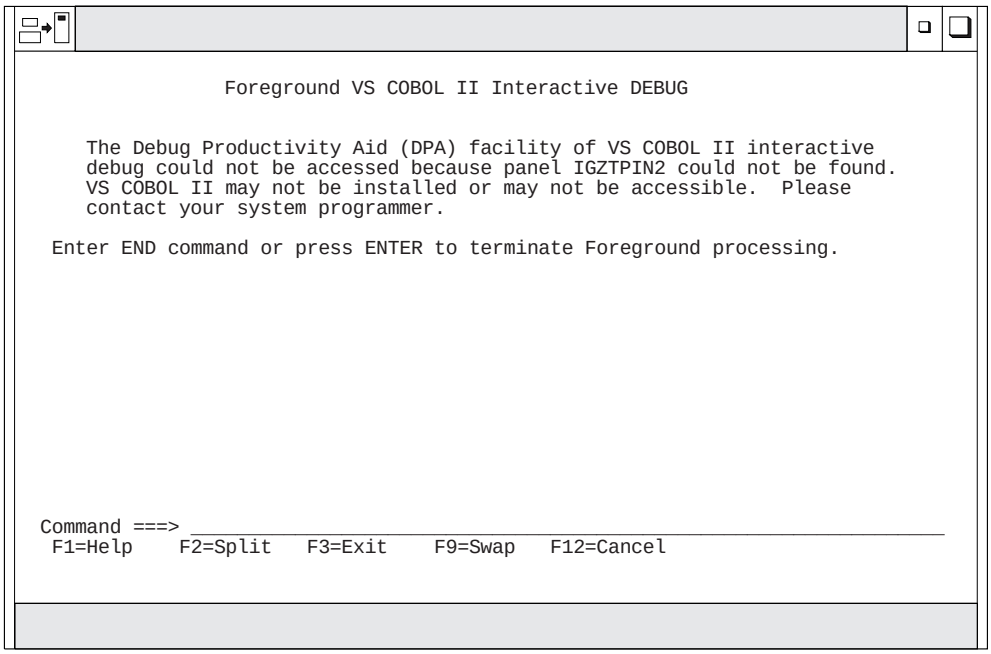


Figure 151. Foreground VS COBOL II Interactive Debug Panel (ISRFP10)

All VS COBOL II interactive debug processing in the foreground is under DPA's control. DPA displays a series of interactive panels. When processing is complete, return to step 12 on page 236.

OS/VS COBOL Debug (Option 4.10A)

Before you can run COBOL interactive debug, you must first do the following, in the order shown:

1. Allocate a symbolic debug data set and, optionally, a print output data set by using the Data Set utility (option 3.2). See "Symbolic Debug Data Sets" on page 261 and "Print Output Data Sets" on page 261 for more information.
2. Compile the program by using the OS/VS COBOL compiler (option 4.2A or option 5.2A) with the TEST option.
3. Use the linkage editor (option 4.7 or option 5.7) to generate an output load module, which COBOL interactive debug will use as input.

The COBOL Debug panel is shown in Figure 152 on page 260.

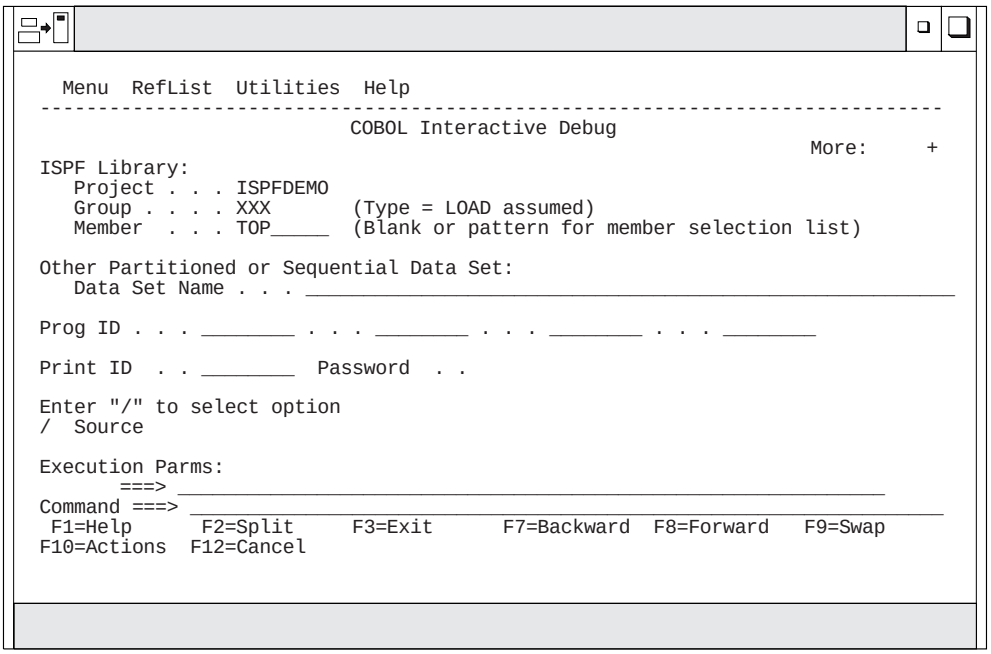


Figure 152. COBOL Debug Panel (ISRFP10A)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except **Prog ID**, **Print ID**, **Source**, and **Execution Parms**, which are explained in the following sections.

COBOL Debug Processing Sequence

Fill in the fields on the COBOL Debug panel as follows:

1. Enter the ISPF library or data set name that contains the input load module generated by the linkage editor. You can display a member list by omitting the member name or by using a pattern. See the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* if you need help entering library or data set names, "Object Data Sets" on page 243 for more information about object modules, and the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about displaying member lists.
2. The **Prog ID** field tells ISPF the names of the sequential list data sets generated by the OS/VS COBOL compiler. You can enter up to four Prog ID names if you compiled a partitioned data set member or a sequential data set for each name. See "List Data Sets" on page 242 for more information.
3. The **Print ID** field is optional.This field tells ISPF the name of a sequential data set to which it writes the print output from the debug session. This data set must be pre-allocated. See "Print Output Data Sets" on page 261 for more information.
4. Enter your password in the **Password** field if your input data set is password-protected. See "Password Protection" on page 243 for more information.
5. The Source option tells ISPF whether or not to allocate the list data sets specified in the **Prog ID** field. If you select Source, these data sets must already exist.

6. The **Execution Parms** field is remembered from one session to another. Therefore, you do not need to change this field unless the parameters you need are not displayed. Enter any parameters that you want ISPF to pass to the program being debugged.
7. To continue COBOL interactive debug, return to step 12 on page 236.

Symbolic Debug Data Sets

If you want to run COBOL interactive debug on a program compiled with the OS/VS COBOL compiler, you must use the Data Set utility (option 3.2) to allocate a symbolic debug data set before compiling the program. Then, when you compile the program, enter TEST in the **Test** field on the Foreground OS/VS COBOL Compile panel. The TEST parameter generates the debug output, which ISPF stores in the symbolic debug data set you allocated.

Note: You do not need to allocate a symbolic debug data set for programs compiled with VS COBOL II because the debug output, if requested, is stored in the OBJECT module, which ISPF generates automatically.

When you allocate the data set, specify the same name as the data set that contains your COBOL program, but:

- For an ISPF library, enter:
  - The Group name you will specify in the first **Group** field on the Foreground OS/VS COBOL Compile panel
  - SYM in the **Type** field.
- For another partitioned or sequential data set, use SYM to replace the last qualifier. For example, if COBOL.INPUT or COBOL is the input data set name, allocate COBOL.SYM as the symbolic debug data set.

Use the following values to allocate symbolic debug data sets:

```
Record format . . . . . F
Record length . . . . . 512
Block size  . . . . . . 512
```

For partitioned data sets, including ISPF libraries, the debug output is stored in a member with the same name as the input member. For sequential data sets, the debug output is stored in a sequential data set.

When you run COBOL interactive debug, the names you put in the **Prog ID** field on the COBOL Interactive Debug panel must be the same as the input member names if you are to create a correct SYM data set.

Print Output Data Sets

ISPF writes the print output from a debug session to a sequential data set, if you:

- Allocate the data set, using the Data Set utility (option 3.2), before you run COBOL interactive debug
- Enter, in the **Print ID** field on the COBOL Interactive Debug panel, the name of the data set you allocated.

You can avoid generating the print output by leaving the **Print ID** field blank, even if you allocated the data set.

Foreground—OS/VS COBOL Debug (Option 4.10A)

The last qualifier in the name of the data set you allocate must be TESTLIST. For example, if you allocate a sequential data set named DEBUG1.TESTLIST and then specify the Print ID as:

```
Print ID . . DEBUG1
```

ISPF writes the print output to a sequential data set named:

```
'prefix.userid.DEBUG1.TESTLIST'
```

where *prefix* is your TSO data set prefix, if you have one and if it is different from your user ID, and *userid* is your TSO user ID. Use the following values to allocate print output data sets:

```
Record format . . . . . FBA
Record length . . . . . 121
Block size  . . . . . . 3146
```

The value you put in the **Block Size** field should be a multiple of 121, the record length. Therefore, if your print output data is too large to fit within the recommended block size (3146), increase this amount by using a multiple of 121, such as 3267 or 3388.

FORTRAN Debug (Option 4.11)

Before you can run FORTRAN interactive debug, you must first compile the program using the VS FORTRAN compiler (option 4.3 or option 5.3) with the OBJECT and TEST options.

The FORTRAN interactive debug option supports both FORTRAN Interactive Debug Version 2 (5668-903) and FORTRAN Interactive Debug Version 1 (5734-F05). ISPF looks for Version 2 first, then Version 1, and finally its own Debug Dialog, which displays the panel shown in Figure 153.

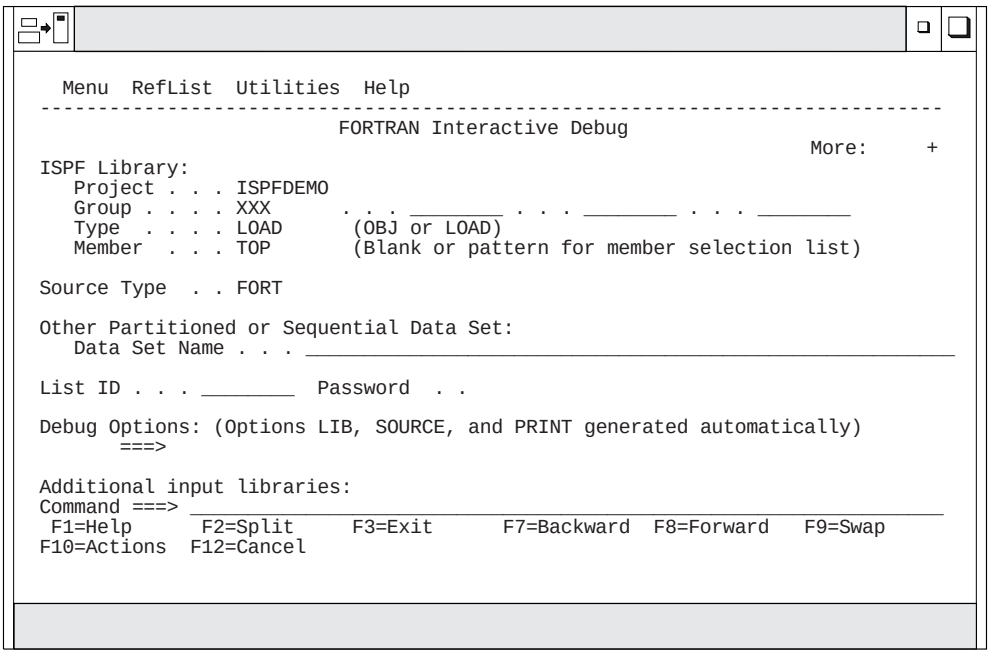


Figure 153. FORTRAN Debug Panel (ISRFP11)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Debug Options
Enter any options you need, except LIB, SOURCE, or PRINT. ISPF generates these options automatically. LIB specifies the input data set concatenation sequence. SOURCE specifies the input source program, whose type is identified in the **Source Type** field. PRINT writes the output listing to a list data set. See "Input Data Sets" on page 241 and "List Data Sets" on page 242 for more information.

Member Parts List (Option 4.12)

The member parts list utilizes the program ISRLEMX to show the following information for each source program module specified:
- The names of the modules it calls or includes
- The names of the modules that call or include it.

The languages permitted in the member expansion function also are permitted in the member parts list function, and the expansion triggers have the same restrictions. See "Member Expansion (ISRLEMX)" on page 238. Besides the expansion triggers, the member parts list also uses the CALL statements in assembler, PL/I, COBOL, and VS FORTRAN. The format of the CALL statement is:

```
CALL name
```

where the delimiter after the name can be either a left parenthesis, a blank, or a valid statement delimiter. In COBOL, the CALL statement is valid only in the `PROCEDURE DIVISION`, and the `CALL PGMA` and `CALL 'PGMA'` statements both result in a reference to the member name PGMA.

When you select the Foreground Member parts list option (4.12), the panel shown in Figure 154 on page 264 is displayed.

Foreground—Member Parts List (Option 4.12)

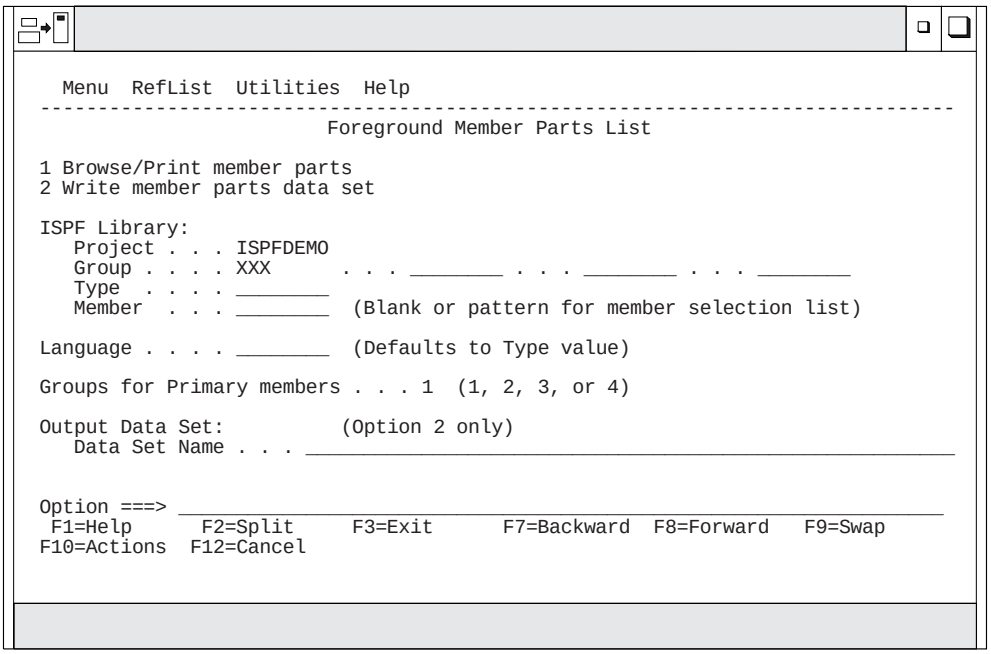


Figure 154. Foreground Member Parts List Panel (ISRFP12)

The member parts list does not use the **Source Data Packed** option on the Foreground Selection panel; both packed and unpacked data sets can be read.

Fill in the fields on the Foreground Member Parts List panel as follows:

1. Select one of the options listed at the top of the panel by typing its number in the **Option** field.
2. Enter the appropriate ISPF library and concatenation sequence or data set names. A blank member name results in a member list being displayed. You can select only one member from this list. A pattern results in the processing of all member names matching the pattern; an asterisk results in all members being processed.

   See the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* if you need help entering library or data set names, the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for information about using patterns and displaying member lists, and "Input Data Sets" on page 241 for more information about the concatenation sequence.
3. The **Language** field is optional.It is used to specify the language in which the source code is written. If you leave this field blank, ISPF uses the value in the **Type** field as the default. However, the language must be one of the following:
   - Assembler
   - COBOL
   - FORTRAN
   - Pascal
   - PLI
   - SCRIPT.
4. In the **Groups For Primary members** field, enter a number from 1–4. This number tells ISPF how many libraries in the concatenation sequence are to be used in locating primary members. For example, if you enter 2, the first and second libraries specified in the **Group** field are used to find primary members.
5. If you selected option 2 (write member parts data set), use the **Data Set Name** field to tell ISPF where to write the output data set. The name you enter:

- Can be a sequential data set or a member of a partitioned data set
- Must follow standard TSO data set naming conventions.

If you enter the name of a data set that does not exist, ISPF allocates it for you.

6. Once all the input parameters have been specified, press Enter to call the Foreground Member Parts List processor.

   If the Session Manager is installed and if you specified Session Manager mode on the Foreground Selection panel, the Foreground Member Parts List processor and all function keys and PA keys are under control of the Session Manager. When processing is complete, you are prompted to enter a null line to return to ISPF control.

   If the Session Manager is not called, the PA and function keys have their usual TSO-defined meanings; generally, the function keys are treated the same as Enter.
7. Communication with the Foreground Member Parts List processor is in line-I/O mode. Each time you see three asterisks, press Enter. These asterisks, which usually appear at the bottom of the screen, show that TSO is waiting for you to clear the screen before it can proceed.
8. The option you chose in step 1 on page 264 determines what happens next.

   Note: If the Foreground Member Parts List processing program ends abnormally, ISPF displays a message in the upper-right corner of the screen and does not enter Browse mode. The list data set is retained, but the Foreground Print Options panel (see step 15 on page 236) is not displayed.

Option 1 (Browse/print member parts) creates the member parts list and displays it in Browse mode. Figure 155 shows an example.

```
 BROWSE - Parts List for ISPFPROJ.ABL.PLI(*)-----------------------------------

  From   Via         From   Via     Member       To    Via          To    Via
 ------- ---       -------- ---    --------   -------- ---       -------- ---
********************************* TOP OF DATA  ********************************
                                  (MEMBERA )
                                  (MEMBERB )  MEMBERC   C
                    MEMBERB   C   (MEMBERC )  MEMBERD   C       MEMBERE   I
                                              MEMBERG   C*
                    MEMBERC   C   (MEMBERD )  MEMBERE   I
 MEMBERC  I         MEMBERD   I   (MEMBERE )
                                  (MEMBERF )
******************************** BOTTOM OF DATA ********************************




 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
```

Figure 155. Member Parts List Display (ISRFP12B)

The figure shows that:

- Library ISPFPROJ.ABL.PLI contains these members:

MEMBERA Has no calls or includes.

MEMBERB Calls MEMBERC.

MEMBERC Calls MEMBERD and MEMBERG, and includes MEMBERE. The asterisk (*) beside the C in the third VIA column means that MEMBERG was not found in the input library.

MEMBERD Includes MEMBERE.

MEMBERE Has no calls or includes.

MEMBERF Has no calls or includes.

- A parts list is requested for all members in the first data set.

You can scroll the output up or down using the scroll commands. All the Browse commands are available to you. When you finish browsing the listing, enter the END command and continue with step 15 on page 236.

Option 2 (Write member parts data set) produces an intermediate sequential member parts list in the data set you named in step 5 on page 264.This data set can be either a sequential data set or a member of a partitioned data set.

If the data set has not been allocated, option 2 allocates it with a logical record length (LRECL) of 17, a block size (BLKSIZE) of 3009, and a record format (RECFM) of FB. The format of the records is shown in Table 21:

Table 21. Foreground Member Parts List Record Formats

Field Name	Format	Description
Member name	CHAR(8)	Subject member.
Called by or calls member name	CHAR(8)	Referenced member.
Call flag	BIT(1)	Found on a CALL statement.
Include flag	BIT(1)	Found by INCLUDE or COPY.
Not found flag	BIT(1)	Referenced member not found.
From flag	BIT(1)	Subject member called from referenced member.
To flag	BIT(1)	Referenced member called from subject member.
COBOL flag	BIT(1)	Member referenced outside valid COBOL division.
Reserved	BIT(2)	Field that is reserved.

9. You can do one of the following:
   - Enter other parameters and call the same processor.
   - Enter the END command to return to the Foreground Selection panel and select another processor.
   - Enter the RETURN command to go to the ISPF Primary Option Menu.
   - Use the jump function (=) to choose any primary option.

Member Not Found

A *primary library* is one of the number of libraries specified in the **Groups For Primary members** field. A *primary member* is a member that starts the member

parts explosion chain. An *explosion chain* is the order in which members are nested, starting with the primary member and continuing through each member that it includes, calls, or copies.

The chain is broken when a member cannot be found in the set of concatenated libraries or no more members are referenced. If a member cannot be found, the name is flagged with an asterisk (*) and processing continues. For instance, internally-called routines are not found.

When no more primary members can be found, the listing is printed, written, or browsed. Calls to internal routines or variable names result in the `member not found` flag being set.

C/370 Compile (Option 4.13)

ISPF supports the C/370 compiler through dialogs supplied with the C/370 compiler (5688-040). Refer to *C Compiler User's Guide for MVS* , SC09-1129 for additional information. If ISPF cannot access the C/370 compiler it displays the information panel shown in Figure 156.

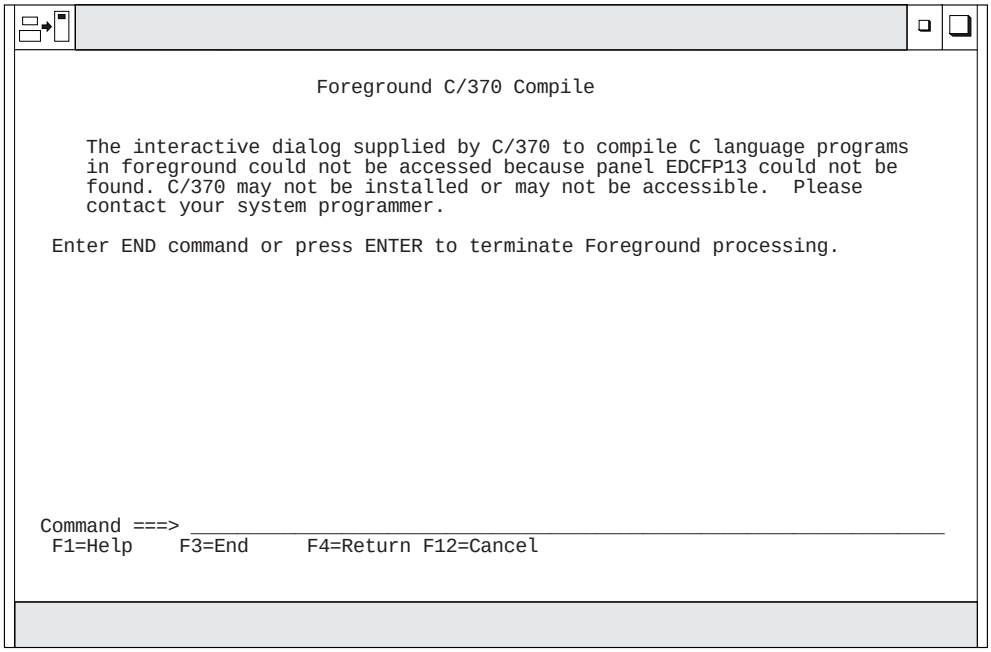


Figure 156. Foreground C/370 Compile Panel (ISRFP13)

REXX/370 Compile (Option 4.14)

ISPF supports the REXX/370 compiler through dialogs supplied with the REXX/370 compiler (5695-013). Refer to *IBM Compiler and Library for REXX/370 User's Guide and Reference* , SH19-8160, for additional information.

If ISPF cannot access the REXX/370 compiler, it displays the information panel shown in Figure 157 on page 268.

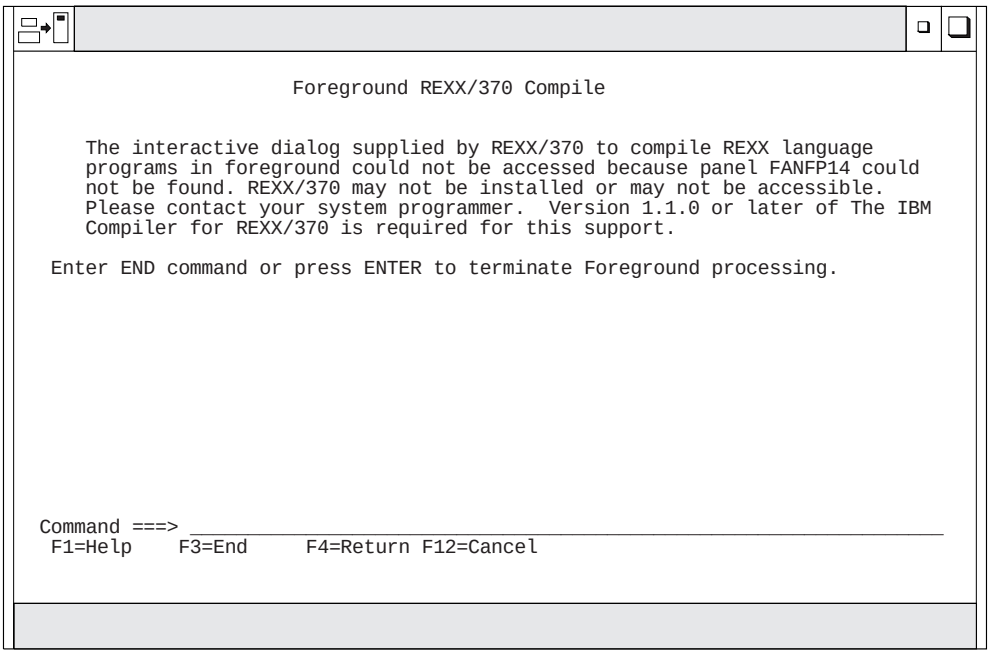


Figure 157. Foreground REXX/370 Compile Panel (ISRFP14)

Ada/370 Compile (Option 4.15)

ISPF supports the Ada/370 compiler and it's tools through dialogs supplied with the Ada/370 compiler (5706-292). Refer to *IBM Ada/370 User's Guide* SC09-1415, for additional information.

If ISPF cannot access the Ada/370 compiler, it displays the information panel shown in Figure 158.

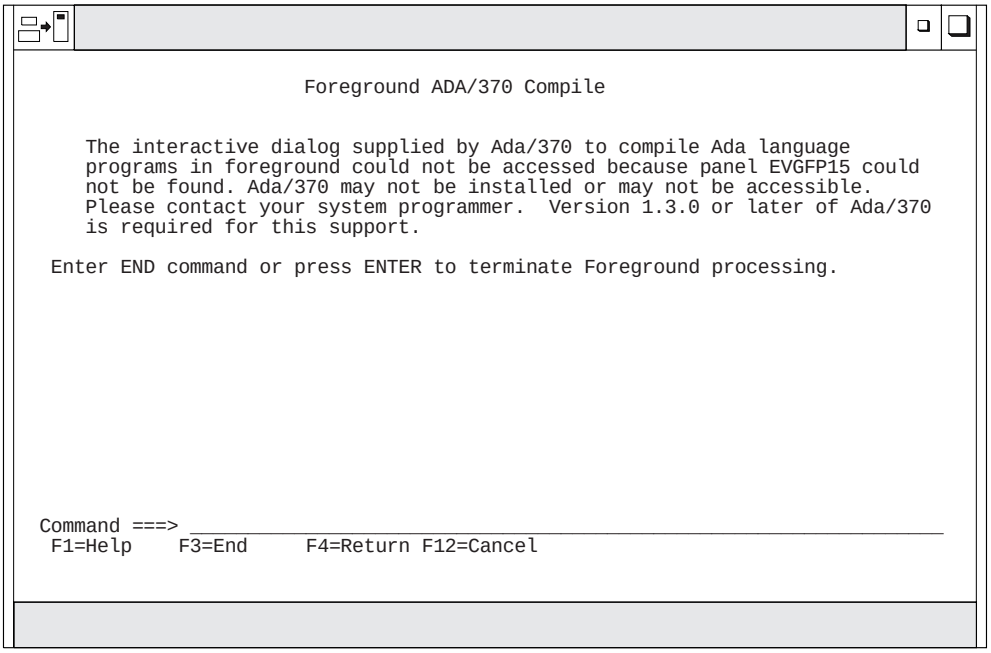


Figure 158. Foreground Ada/370 Compile Panel (ISRFP15)

AD/Cycle C/370 Compile (Option 4.16)

ISPF supports the AD/Cycle* C/370 compiler through dialogs supplied with the AD/Cycle C/370 compiler (5688-216). Refer to *IBM SAA AD/Cycle C/370 Programming Guide* SC09-1356, for additional information.

If ISPF cannot access the AD/Cycle C/370 compiler, it displays the information panel shown in Figure 159.

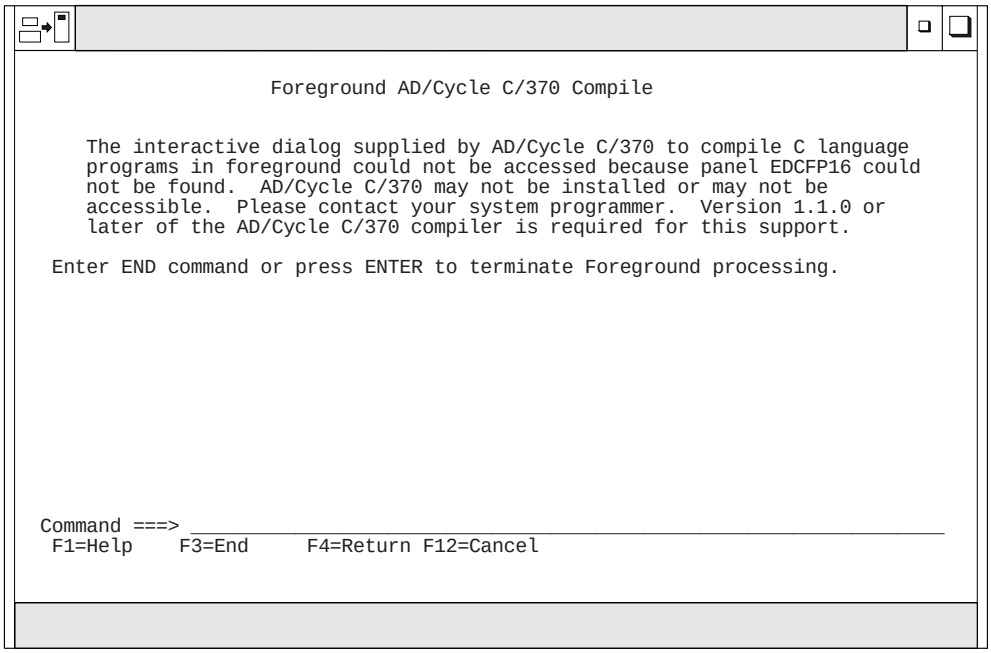


Figure 159. Foreground AD/Cycle C/370 Compile Panel (ISRFP16)

ISPDTLC (Option 4.18)

ISPF supports the ISPF Dialog Tag Language compiler by running the ISPDTLC function. Refer to *ISPF Dialog Tag Language Guide and Reference* for more information about DTL.

The ISPDTLC interface panel appears as shown in Figure 160, Figure 161, and Figure 162 on page 271

Foreground—ISPDTLC (Option 4.18)

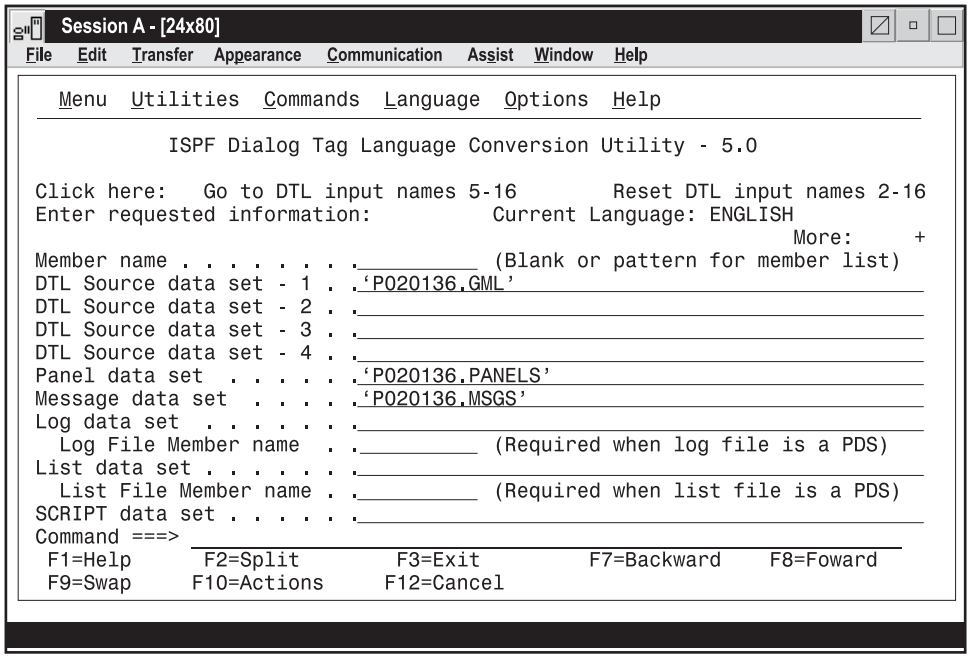


Figure 160. Foreground ISPDTLC Compile Panel (ISPCP01) Screen 1

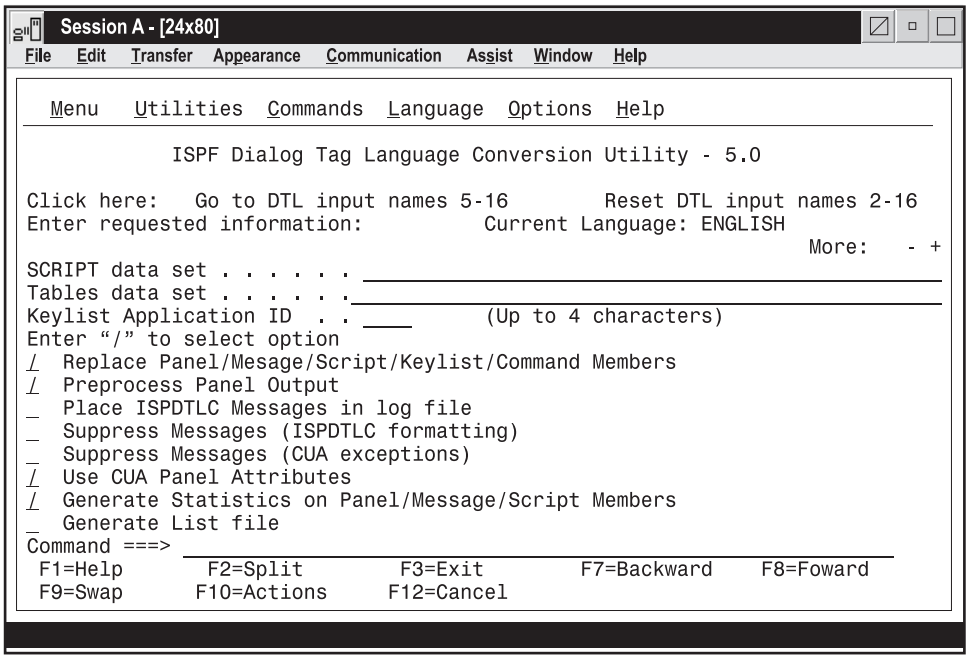


Figure 161. Foreground ISPDTLC Compile Panel (ISPCP01) Screen 2

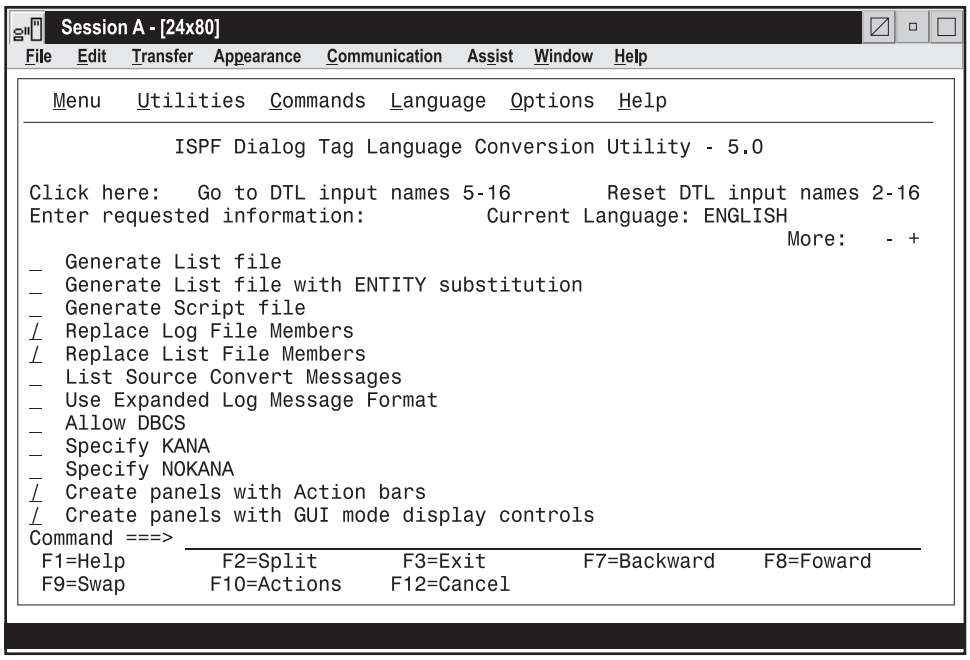


Figure 162. Foreground ISPDTLC Compile Panel (ISPCP01) Screen 3

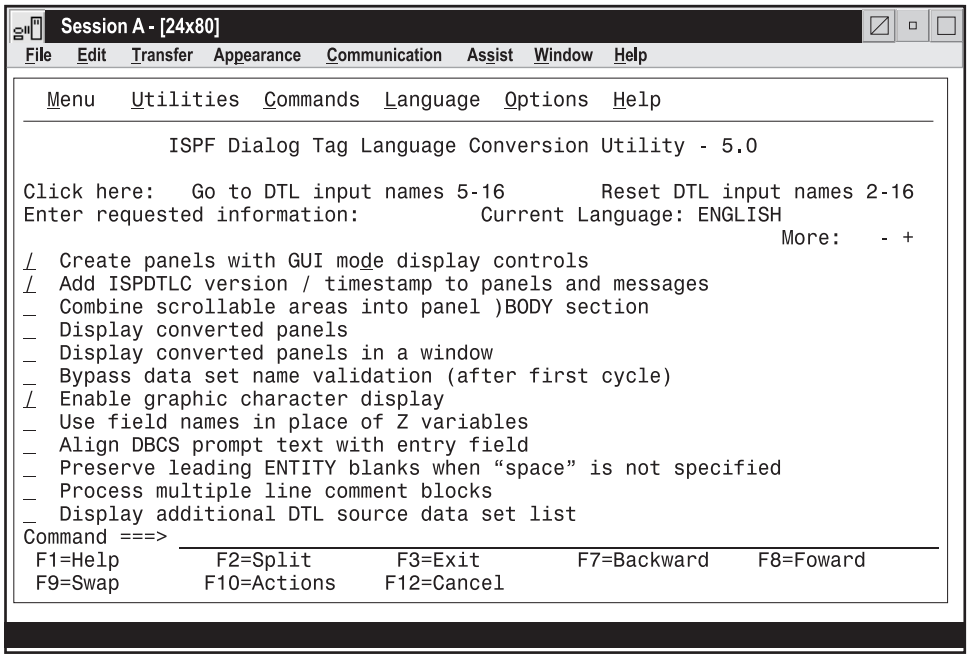


Figure 163. Foreground ISPDTLC Compile Panel (ISPCP01) Screen 4

The fields on this panel are explained in *ISPF Dialog Tag Language Guide and Reference*

OS/390 C/C++ Compile (Option 4.19)

ISPF supports the C/C++ for MVS/ESA compiler and its tools through dialogs supplied with the C/C++ for MVS/ESA compiler (5655-121). For information about C/C++ for MVS/ESA, refer to the *C/MVS User's Guide* and the *C++/MVS User's Guide*

If ISPF cannot access the C/C++ for MVS/ESA compiler, it displays the information panel shown in Figure 164.

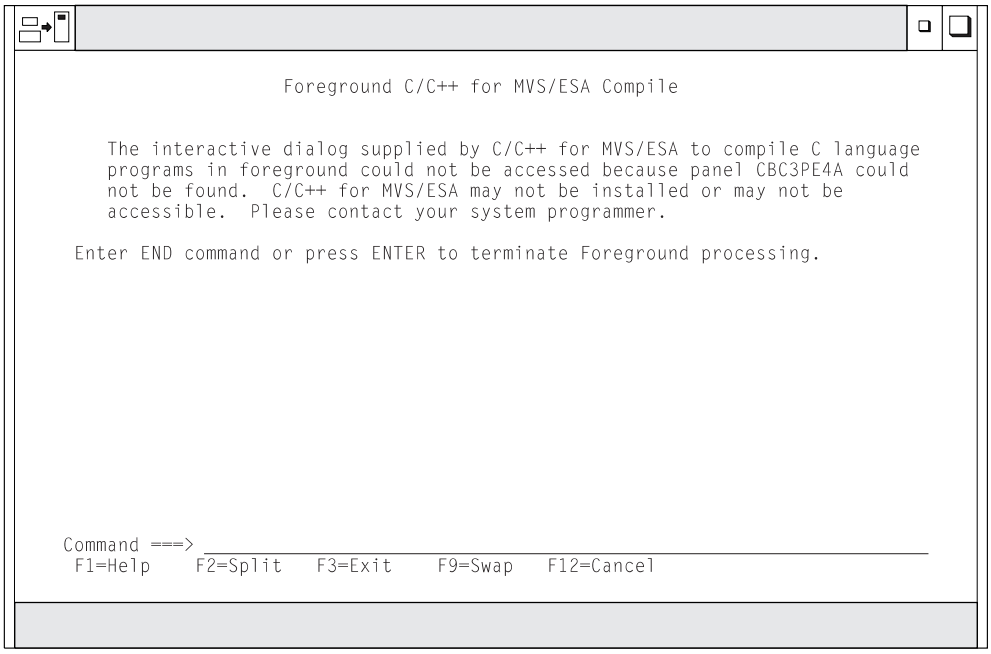


Figure 164. Foreground C/C++ for MVS/ESA information Panel (ISRFP19)

Chapter 6. Batch (Option 5)

The Batch option (5) allows ISPF to run the batch processors shown on the Batch Selection panel, Figure 165, as batch jobs. ISPF generates job control language (JCL) for the job, based on information you enter on the batch processing panels, and then submits the job for processing. All these processors, plus SCRIPT/VS, COBOL interactive debug, and FORTRAN interactive debug, are also available with the Foreground option (4).

When you run a batch processor, you can continue using ISPF while the program is running. However, if you run these processors by using the Foreground option, you must wait for processing to end before doing anything else with ISPF. The Foreground Selection panel is shown in Figure 137 on page 233.

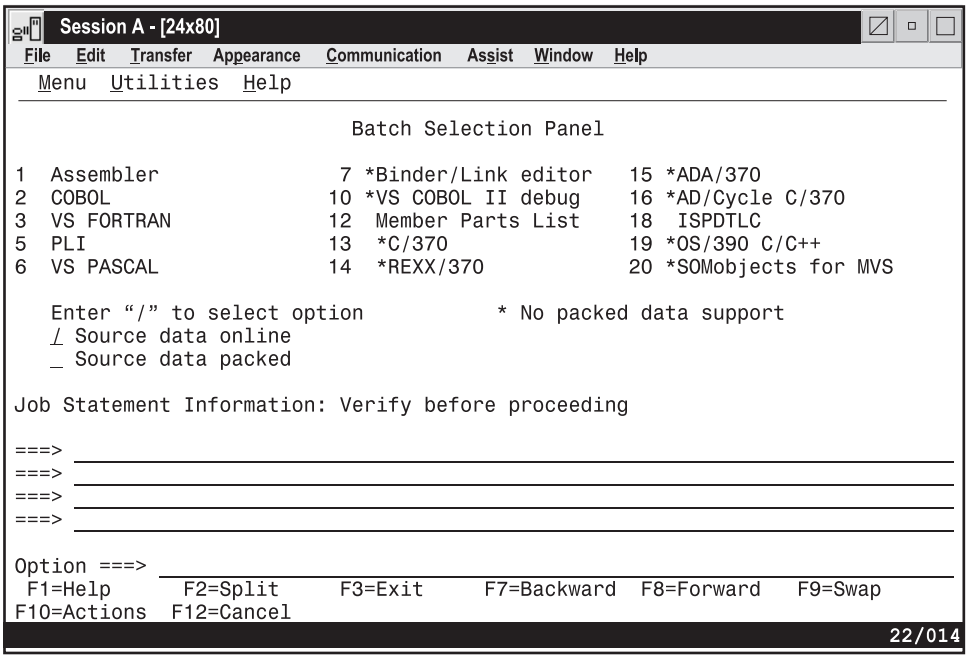


Figure 165. Batch Selection Panel (ISRJPA)

The names of the batch processors on this panel are point-and-shoot fields. See the **Point-and-Shoot Text Fields** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for more information.

Batch Selection Panel Action Bar

The Batch Selection Panel action bar choices function as follows:

Menu — See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities — See the **Utilities Action Bar Choice** section of the

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ISPF User Interface chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help

The Help pull-down offers you the following choices:

1	General
2	Assembler
3	COBOL
4	VS Fortran
5	PL/I
6	VS Pascal
7	Binder/Linkage editor
8	VS COBOL II debug
9	Member parts list
10	C/370
11	REXX/370
12	Ada/370
13	AD/Cycle C/370
14	ISPDTLC
15	O/S 390 C/C++
16	SOMobjects for MVS
17	Appendices

Batch Processing Sequence

The main batch processing sequence is:

1. If you do not know whether the source data is in packed format, find out by editing the data set and entering the PROFILE command. The profile shows either PACK ON (data is stored in packed format) or PACK OFF (data is not stored in packed format).

   If the data is not packed, continue with the next step.

   If the data is packed, you should read "Expanding Packed Data" on page 237, paying close attention to information that applies to the batch processor you plan to use. When you are satisfied that the data set is ready to be processed, save the data set if you are in Edit and continue with the next step.
2. Select a batch processor. If you bypass the Batch Selection panel, you cannot verify or change the job statement parameters, or generate multiple compilations (multiple job steps) or link edits within the same job.
3. Select the Source data online option to tell ISPF that the data to be processed resides on a currently mounted volume. ISPF checks the data set information that you entered on the Batch Selection panel and allows you to display a member list. If you do not select this option, ISPF assumes that the data cannot be accessed except by the batch job and does not verify the existence or validity of the specified data set.
4. Select the Source data packed option to tell ISPF that it needs to expand the source data. This option has no effect on the member parts list option (5.12). Member parts list can read both packed and unpacked data sets, so no expansion is needed.
5. Enter any job statement information you need. See the **Job Statement Information** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information.
6. Press Enter. ISPF displays the data entry panel for the processor you selected.

Note: The remainder of this processing sequence applies to all batch processors except Member Parts List. See "Member Parts List (Option 5.12)" on page 285 for more information.

7. Enter the appropriate ISPF library and concatenation sequence or data set names.

   For VS COBOL II interactive debug, enter the name of the input object module or load module. The TYPE, or last qualifier, must be either OBJ or LOAD. However, if you specify an OBJ data set as your input data set, you must include a load library or data set in the input search sequence (see step 11).

   ISPF displays a member list if you omit the member name or use a pattern. See the **Naming ISPF Libraries and Data Sets** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* if you need help entering library or data set names, "Input Data Sets" on page 241 for more information about the concatenation sequence, and the **Displaying Member Lists** section of the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I* for more information about displaying member lists.

   Notes:

   a. VS FORTRAN has no LIB option. However, the concatenation sequence is still used to find the member to be compiled.

   b. Password protection is not supported from the Batch option. Therefore, if your input or output data sets are password-protected, use the Foreground option, which does support passwords.

      If you submit a job requiring a password-protected data set, the system operator will be requested to enter the required password.

8. The List ID field tells ISPF what to name the output listing. Leave this field blank and enter a SYSOUT class to send the listing to a printer. See "List Data Sets" on page 242 for more information.
9. Enter a SYSOUT class to generate hardcopy of the listing. You can enter any valid SYSOUT parameter. If a List ID is entered, this field is ignored.
10. The **Options** field, whether ASSEMBLER, COMPILER, or LINKAGE EDITOR, is remembered from one session to another. Therefore, you do not need to change these fields unless the options or parameters you need are not displayed.

    If you need information about the options available for your processor, refer to the documentation that shipped with the processor.
11. Enter any additional input libraries you need. For VS COBOL II interactive debug, enter any input LOAD libraries that you need to complete the search. These libraries must be LOAD libraries only. See "Input Data Sets" on page 241 if you need help.
12. Once all the input fields have been specified, press Enter to call the batch processor. ISPF generates the appropriate JCL statements. See "JCL Generation—Compilers" on page 276 and "JCL Generation—Assemblers and Linkage Editor" on page 278 for more information.

    Note: You can leave the entry panel without generating any JCL by entering the END command instead of pressing Enter.
13. One of the following occurs:
    - If you used the jump function to bypass the Batch Selection panel, ISPF submits the generated JCL and returns directly to the ISPF Primary Option Menu.

ISPF calls the TSO SUBMIT command to submit a job. The SUBMIT command displays the following message:

```
JOB useridA(JOB nnnnn) SUBMITTED
***
```

When you press Enter or any other interrupt key, ISPF returns to the previous panel.

- Otherwise, ISPF returns to the Batch Selection panel with the message `Job step generated` displayed in the short message area on line 1, as shown in Figure 166.

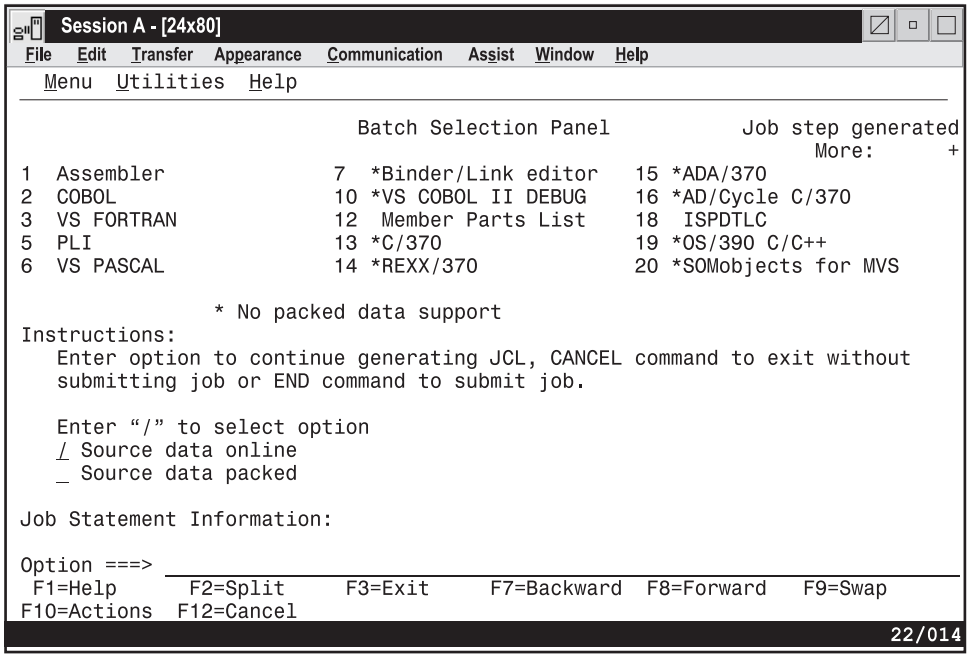

Figure 166. Batch Selection Panel with JCL Generated (ISRJPB)

The job statement parameters are shown for information only. They are no longer intensified, and you cannot type over them because the JOB statement has already been generated. At this point, you can:

- Select the same or another processor to cause more JCL to be generated
- Go to the ISPF Primary Option Menu by:
  - Canceling the batch job by entering the CANCEL command
  - Entering the END or RETURN command to cause the generated JCL to be submitted for processing.
- Use the jump function (=) to choose any primary option. If any JCL has been generated, it is submitted for batch processing.

JCL Generation—Compilers

Figure 170 on page 281 shows an example for the PL/I optimizing compiler. This panel is typical of the batch compiler entry panels. After you fill in an entry panel and press Enter, ISPF generates the appropriate JCL statements. The JCL that would be generated for the PL/I example is:

```
//SCAN   EXEC PGM=ISRLEMX,COND=(12,LE),
//   PARM=('PLI,TOPSEG,B,N,E,4, ,00,ENU,4,7',
//        '1,/,VIO')
```

```
//*
//* INSERT STEPLIB DD CARDS HERE FOR ISRLEMX AND THE NATIONAL
//* LANGUAGE LITERAL LOAD MODULE IF THEY ARE NOT IN YOUR SYSTEM
//* LIBRARY
//*
//ISRLCODE DD  DSN=ISPFDEMO.XXX.PLIO,DISP=SHR
//         DD  DSN=ISPFDEMO.A.PLIO,DISP=SHR
//         DD  DSN=ISPFDEMO.MASTER.PLIO,DISP=SHR
//ISRLEXPD DD  UNIT=SYSDA,DISP=(NEW,PASS),SPACE=(CYL,(2,2)),
//             DSN=&&TEMP1
//ISRLMSG  DD  SYSOUT=(A)
//PLIO   EXEC  PGM=IEL0AA,REGION=1024K,COND=(12,LE),
//             PARM='MACRO,XREF'
//SYSPRINT DD  DSN=ISPFDEMO.LISTPLIO.LIST,UNIT=SYSDA,
//             SPACE=(CYL,(2,2)),DISP=(MOD,CATLG),
//             DCB=(RECFM=VBA,LRECL=125,BLKSIZE=3129)
//SYSIN    DD  DSN=&&TEMP1,DISP=(OLD,DELETE)
//SYSLIB   DD  DSN=ISPFDEMO.XXX.PLIO,DISP=SHR
//         DD  DSN=ISPFDEMO.A.PLIO,DISP=SHR
//         DD  DSN=ISPFDEMO.MASTER.PLIO,DISP=SHR
//         DD  DSN=ISPFTEST.FLAG.PLIO,DISP=SHR
//SYSUT1   DD  UNIT=SYSDA,SPACE=(CYL,(2,2))
//SYSLIN   DD  DSN=ISPFDEMO.XXX.OBJ(TOPSEG),DISP=OLD
```

The JCL is generated in two steps:

1. The first step processes one of the following scan programs, which are distributed as part of ISPF:

   ISRSCAN
   Copies one member.

   ISRLEMX
   Copies the primary member, expands any included members, and unpacks any packed members.

   The selected scan program searches the user-specified sequence of concatenated libraries to find the designated member. If the scan program finds the member, it copies the member to a temporary sequential data set that is shown by &&TEMP1 and generated by the system. The scan program then exits with a return code of zero, if no errors are found. If any errors are found, the scan program exits with one of the following return codes, which prevent the processing of the second job step. Table 22 describes ISRLEMX return codes.

Table 22. ISRSCAN and ISRLEMX Return Codes

ISRSCAN		ISRLEMX	
12	Member not found.	**1 - 15**	Parameter `n` was too long, where *n* = 1 to 15.
16	OPEN error on DDNAME=IN.	**16**	Too many parameters.
20	I/O error on DDNAME=IN.	**17**	Too few parameters.
24	OPEN error on DDNAME=OUT.	**20**	Severe error in expand module. An error message should be printed in the ISRLMSG data set.
28	I/O error on DDNAME=OUT.		

2. In this example, the second step calls the PL/I optimizing compiler by using the temporary data set designated by &&TEMP1 as the input data set. The concatenation sequence is passed to the compiler through SYSLIB DD statements, to allow inclusion of subsidiary members referenced by %INCLUDE statements in the source text.

The object module is directed to a partitioned data set with a three-level name composed of the project name, the first library name, and a type qualifier of OBJ. The member name for the object module is the same as the primary member to be compiled.

The compiler listing is directed to SYSOUT class A, as specified.

JCL Generation—Assemblers and Linkage Editor

For batch assembly and link edit, an optional SYSTERM DD statement is generated (if you specify TERM) besides the JCL shown in "JCL Generation—Compilers" on page 276, as follows:

```
//SYSTERM  DD  DSN=prefix.member.TERM,DISP=(MOD,CATLG)
```

where:

prefix The data set prefix in your TSO user profile

member
For members of partitioned data sets, this is the same member name specified on the entry panel. For sequential data sets, this name is TEMPNAME.

Assembler (Option 5.1)

Batch Assembler enables you to invoke either the High Level Assembler or Assembler H. Both are called from the Batch Assembler panel, shown in Figure 167. For information about Assembler allocation data sets, see the appendix called **Allocation Data Sets** in the *ISPF User's Guide Volume I*.

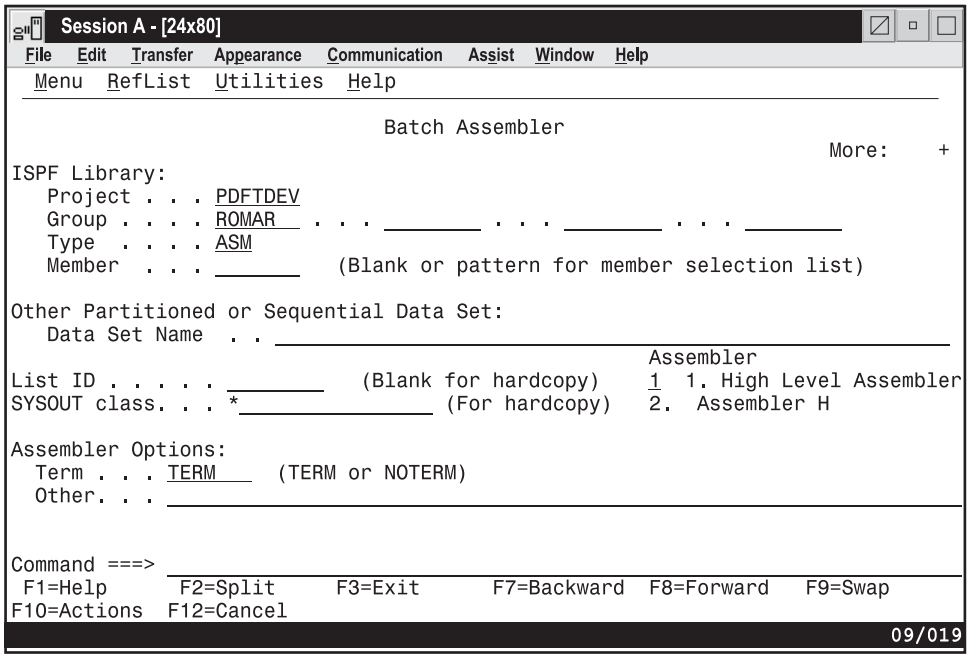

Figure 167. Batch Assembler Panel (ISRJP01)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Term In the **Term** field, enter TERM if you want ISPF to generate a terminal data set. A *terminal data set* contains a synopsis of the error messages produced by Assembler XF. If the input data set is partitioned, the terminal data set name is:

```
prefix.member.TERM
```

where *prefix* is the data set name prefix in your TSO user profile, if you have one, and *member* is the name of the member being assembled. However, if the input data set is sequential, the terminal data set name is:

```
prefix.TEMPNAME.TERM
```

Enter NOTERM in the **Term** field to avoid generating the terminal data set. This is a required field.

Other Enter any other options you need in the **Other** field.

COBOL Compile (Option 5.2)

ISPF generates an ISPEXEC SELECT PGM(IGYCRCTL) statement to invoke a COBOL compiler using the values you enter on the Batch COBOLCompile panel, shown in Figure 168. For information about COBOL allocation data sets, see the appendix called **Allocation Data Sets** in the *ISPF User's Guide Volume I*.

```
Session A - [24x80]
File  Edit  Transfer  Appearance  Communication  Assist  Window  Help
  Menu  RefList  Utilities  Help
                              Batch COBOL Compile
                                                                More:     +
ISPF Library:
   Project . . . PDFTDEV
   Group . . . . HELEN   . . . ________ . . . ________ . . . ________
   Type  . . . . COBOL
   Member  . . . ________ (Blank or pattern for member selection list)

Other Partitioned or Sequential Data Set:
   Data Set Name  . . ____________________________________________________

List ID . . . . . . ________   (Blank for hardcopy)
SYSOUT class. . . . *_______________ (If hardcopy requested)

Complier options:
  Term  . . . NOTERM         (TERM or NOTERM)
  Other . . . ____________________________________________________________

Additional input libraries:
Command ===> ____________________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
                                                                  07/024
```

Figure 168. Batch COBOL Compile Panel (ISRJP02)

All the fields on this panel are explained in the***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Term In the **Term** field, enter TERM if you want ISPF to generate a terminal data set. A *terminal data set* contains a synopsis of the error messages produced by Assembler XF. If the input data set is partitioned, the terminal data set name is:

prefix.member.TERM

where *prefix* is the data set name prefix in your TSO user profile, if you have one, and *member* is the name of the member being assembled. However, if the input data set is sequential, the terminal data set name is:

prefix.TEMPNAME.TERM

Enter NOTERM in the **Term** field to avoid generating the terminal data set. This is a required field.

Other If you plan to run VS COBOL II interactive debug after you compile your program, enter TEST, RESIDENT, and any other options you need in the **Other** field.

VS FORTRAN Compile (Option 5.3)

The Batch VS FORTRAN Compile panel is shown in Figure 169.

```
  Menu  RefList  Utilities  Help
------------------------------------------------------------------------------
                          Batch VS FORTRAN Compile
                                                                More:     +
ISPF Library:
   Project . . . ISPFDEMO
   Group . . . . XXX      . . . ________ . . . ________ . . . ________
   Type  . . . . FORT
   Member  . . . ________  (Blank or pattern for member selection list)


Other Partitioned or Sequential Data Set:
   Data Set Name . . . ____________________________________________________

List ID  . . . . . ________  (Blank for hardcopy listing)
SYSOUT class . . . A         (If hardcopy requested)

Compiler options:
  Term  . . . NOTERM  (TERM or NOTERM)
  Other . . . LOAD,NODECK,SOURCE

Command ===> ____________________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
```

Figure 169. Batch VS FORTRAN Compile Panel (ISRJP03)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Term In the **Term** field, enter TERM if you want ISPF to generate a terminal data set. A *terminal data set* contains a synopsis of the error messages produced by the VS FORTRAN compiler. If the input data set is partitioned, the terminal data set name is:

prefix.member.TERM

where *prefix* is the data set name prefix in your TSO user profile, if you have one, and *member* is the name of the member being assembled. However, if the input data set is sequential, the terminal data set name is:

prefix.TEMPNAME.TERM

Enter NOTERM in the **Term** field to avoid generating the terminal data set. This is a required field.

Other If you plan to run FORTRAN interactive debug after you compile your program, enter TEST in the **Other** field, along with any other options you need.

PL/I Compile (Option 5.5)

The Batch PL/I Compile option enables you to invoke either OS PL/I Version 2 or PL/I for MVS and VM, using the values specified on the Batch PL/I compile panel shown in Figure 170.

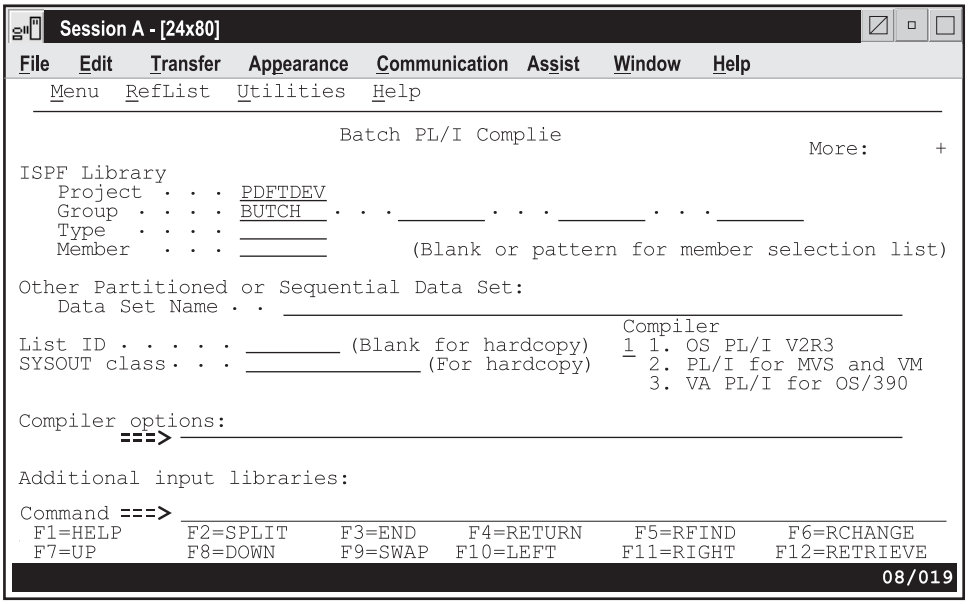

Figure 170. Batch PL/I Compile Panel (ISRJP05)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Compiler
Choose the compiler you want to use from the list presented.

VS Pascal Compile (Option 5.6)

The Batch VS Pascal Compile panel is shown in Figure 171 on page 282.

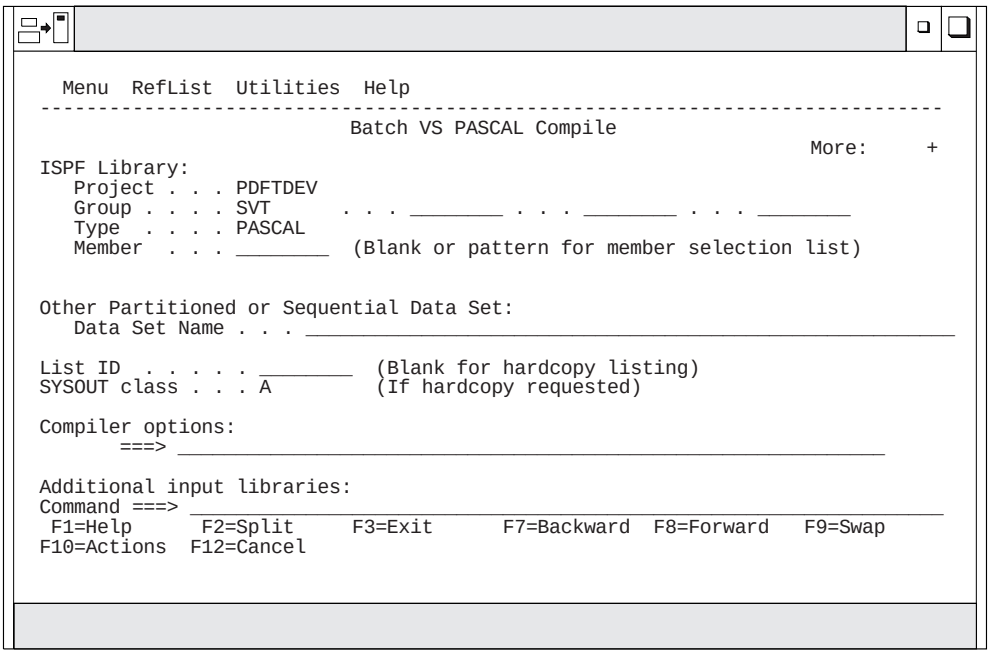

Figure 171. Batch VS Pascal Compile Panel (ISRJP06)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241.

Binder/Linkage Editor (Option 5.7)

The Batch Binder or Linkage Editor is called from the Batch Binder/Linkage editor panel. The panel in Figure 172 on page 283 shows entries you might make when link editing a VS Pascal program.

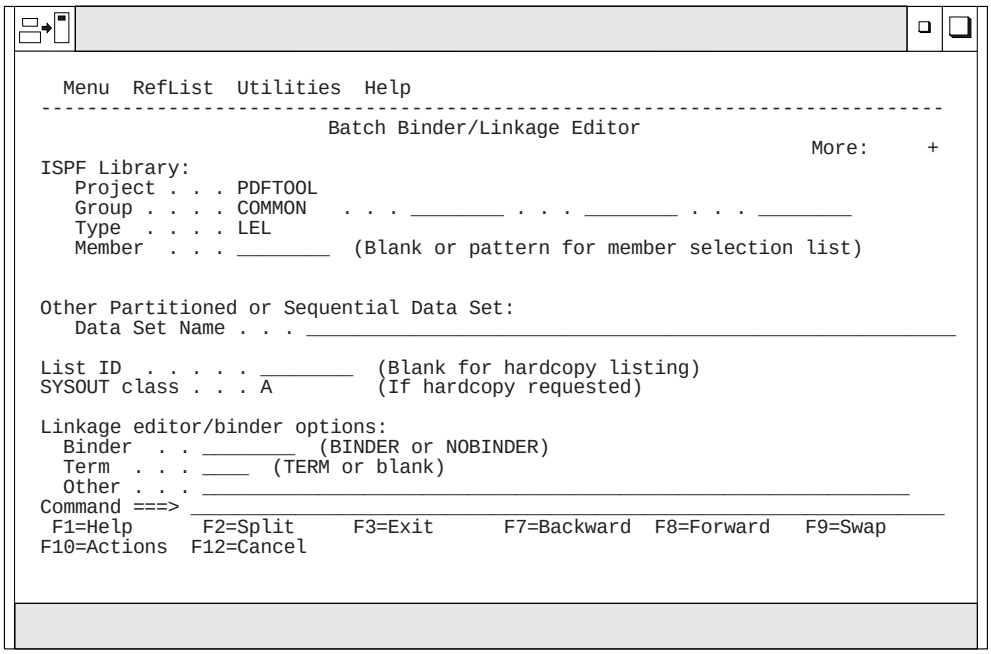

Figure 172. Batch Binder Linkage/Editor Panel (ISRJP07B)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, and the following:

Binder
Determines whether the Linkage Editor (NOBINDER) or Binder (BINDER) is invoked.

Note: The binder is available only if DFSMS 1.1, or later, is installed.

Term In the **Term** field, enter TERM if you want ISPF to generate a terminal data set. A *terminal data set* contains a synopsis of the error messages produced by the linkage editor. If the input data set is partitioned, the terminal data set name is:

```
prefix.member.TERM
```

where *prefix* is the data set name prefix in your TSO user profile, if you have one, and *member* is the name of the member being assembled.

Note: Sequential data sets are invalid when using the Linkage Editor.

Leave the **Term** field blank to avoid generating the terminal data set.

Other Enter any other options you need in the **Other** field.

SYSLIB
The name of the data set that is to contain the ISPF library concatenation sequence used to resolve any copy statements specified in your program. See "Input Data Sets" on page 241 and the **SYSLIB Data Set** section of the appendix called **Allocation Data Sets** in the *ISPF User's Guide Volume I* for more information.

SYSLIN
The name of the data set that is to contain the object module. The **SYSLIN** field is provided to accommodate the VS Pascal XA and NOXA processing

options. See "Input Data Sets" on page 241 and the **SYSLIN Data Set** section of the appendix called **Allocation Data Sets** in the *ISPF User's Guide Volume I* for more information.

VS COBOL II Interactive Debug (Option 5.10)

Before you can run VS COBOL II interactive debug in batch, you must first do the following, in the order shown:

1. Compile the program using the VS COBOL II compiler (option 4.2 or option 5.2) with the TEST and RESIDENT options.
2. Use the linkage editor (option 4.7 or option 5.7) to generate an output load module, which VS COBOL II interactive debug will use as input.

The VS COBOL II Interactive Debug panel is shown in Figure 173.

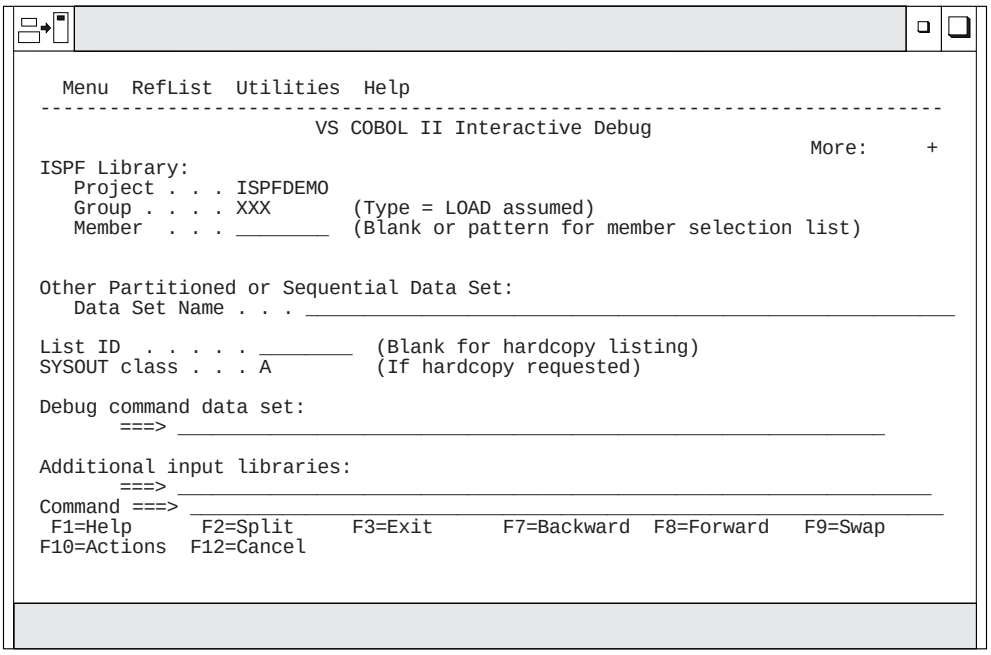

Figure 173. VS COBOL II Interactive Debug Panel (ISRJP10)

All the fields on this panel are explained in the ***Libraries and Data Sets*** chapter of the *ISPF User's Guide Volume I*, except List ID, which is explained in "List Data Sets" on page 242, **Additional input libraries**, which is explained in "Input Data Sets" on page 241, and the following:

Note: For VS COBOL II interactive debug, any additional input libraries that you enter to complete the search sequence must be LOAD libraries only.

Debug command data set

In the **Debug command data set** field, enter the name of the data set that contains the DEBUG command that you want VS COBOL II interactive debug to enter during batch processing. Refer to *VS COBOL II Application Programming Debugging Guide* for more information.

Member Parts List (Option 5.12)

When you select the Batch Member Parts List option (5.12), the panel shown in Figure 174 is displayed.

The only difference between this panel and the Foreground Member Parts List panel is that option 1 (print member parts) is called *Browse/Print member parts list* in foreground. The foreground version does not print your member parts list unless you use the Foreground Print Options panel to do so.

Otherwise, this version operates the same as the foreground version. See "Member Parts List (Option 4.12)" on page 263 for more information about using the member parts list function.

The listing is 120 characters wide and uses ANSI printer controls.

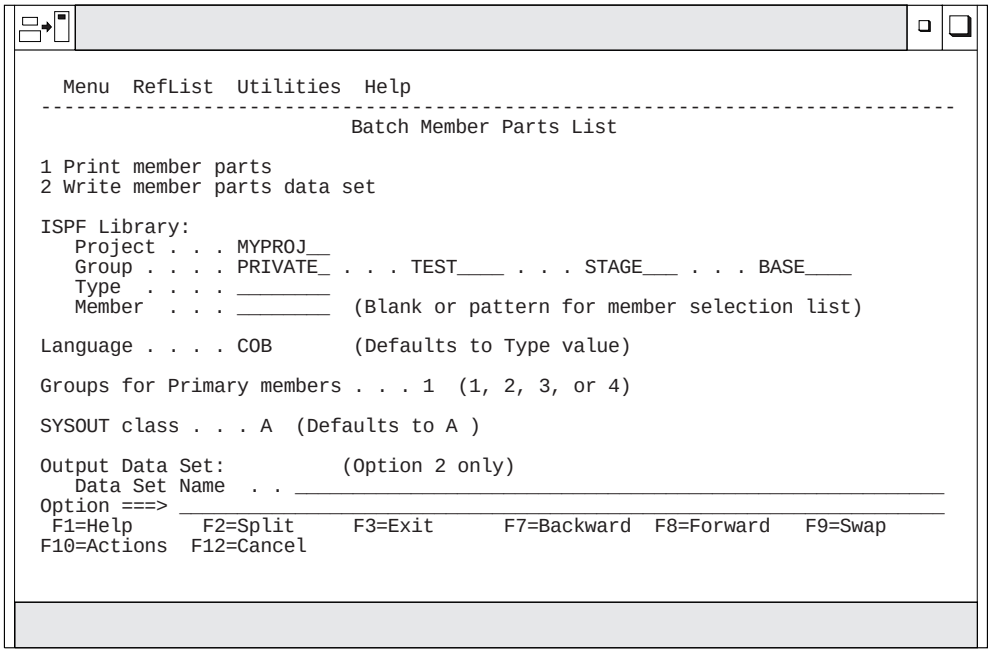

Figure 174. Batch Member Parts List Panel (ISRJP12)

C/370 Compile (Option 5.13)

ISPF supports the C/370 compiler through dialogs supplied with the C/370 compiler (5688-040). Refer to *C Compiler User's Guide for MVS* , SC09-1129 for additional information. If ISPF cannot access the C/370 compiler, it displays the information panel shown in Figure 175 on page 286.

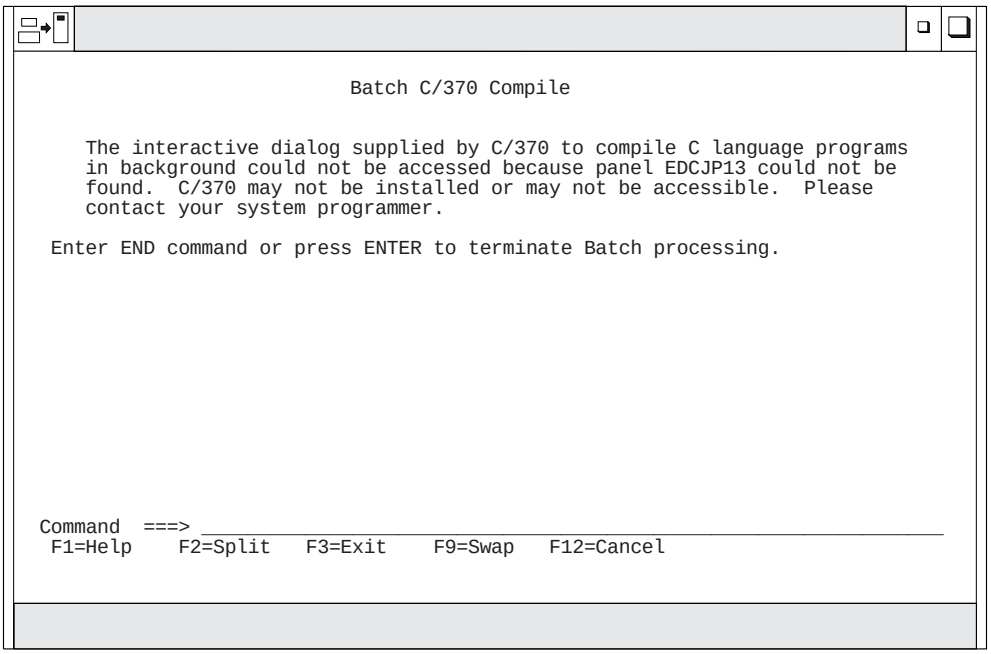

Figure 175. Batch C/370 Compile Panel (ISRJP13)

REXX/370 Compile (Option 5.14)

ISPF supports the REXX/370 compiler through dialogs supplied with the REXX/370 compiler (5695-013). Refer to *IBM Compiler and Library for REXX/370 User's Guide and Reference* , SH19-8160, for additional information.

If ISPF cannot access the REXX/370 compiler, it displays the information panel shown in Figure 176.

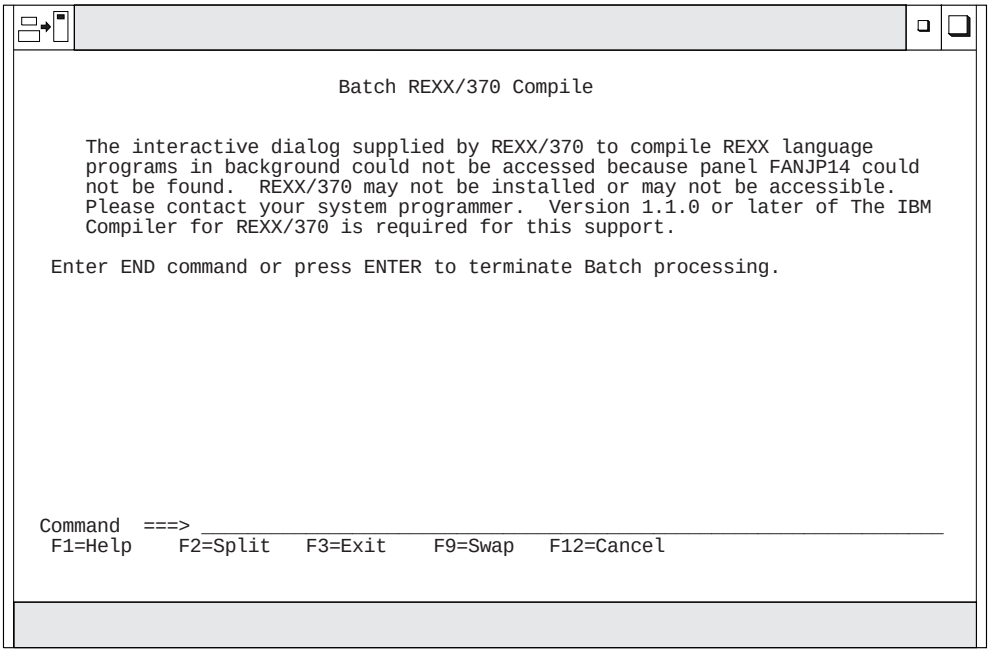

Figure 176. Batch REXX/370 Compile Panel (ISRJP14)

Ada/370 Compile (Option 5.15)

ISPF supports the Ada/370 compiler and it's tools through dialogs supplied with the Ada/370 compiler (5706-292). Refer to IBM Ada/370 User's Guide, SC09-1415, for additional information.

If ISPF cannot access the Ada/370 compiler, it displays the information panel shown in Figure 177.

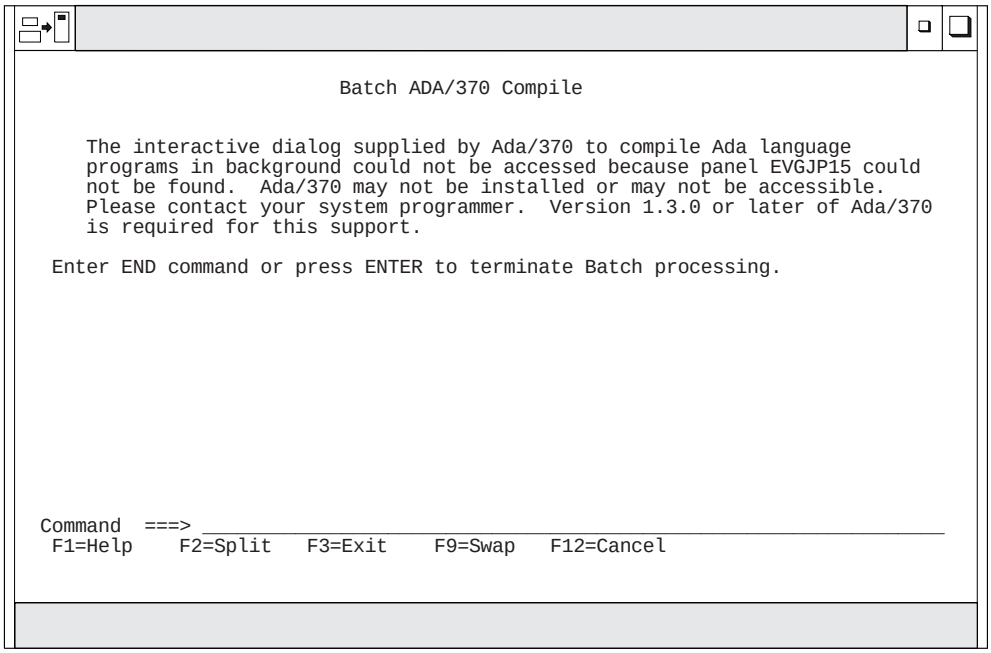

Figure 177. Batch Ada/370 Compile Panel (ISRJP15)

AD/Cycle C/370 Compile (Option 5.16)

ISPF supports the AD/Cycle C/370 compiler through dialogs supplied with the AD/Cycle C/370 compiler (5688-216). Refer to *IBM SAA AD/Cycle C/370 Programming Guide* SC09-1356, for additional information.

If ISPF cannot access the AD/Cycle C/370 compiler, it displays the information panel shown in Figure 178 on page 288.

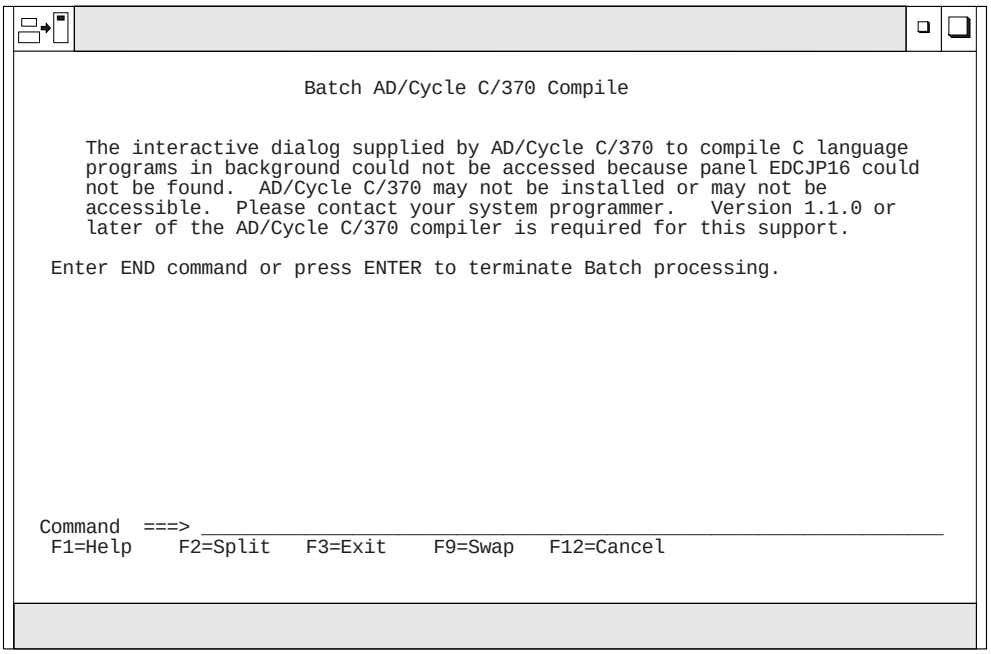

Figure 178. Batch AD/Cycle C/370 Compile Panel (ISRJP16)

ISPDTLC Compile (Option 5.18)

ISPF supports the ISPF Dialog Tag Language compiler by running the ISPDTLC function. Refer to *ISPF Dialog Tag Language Guide and Reference* for additional information.

The ISPDTLC interface panel is shown in Figure 179, Figure 180, and Figure 181 on page 289.

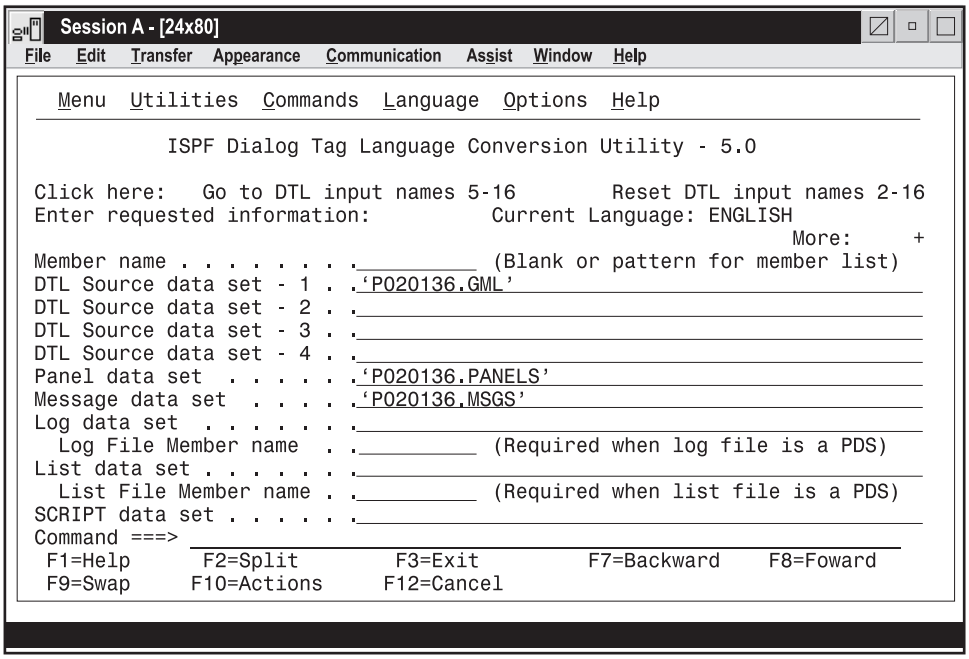

Figure 179. Batch ISPDTLC Compile Panel (ISPCP01) Screen 1

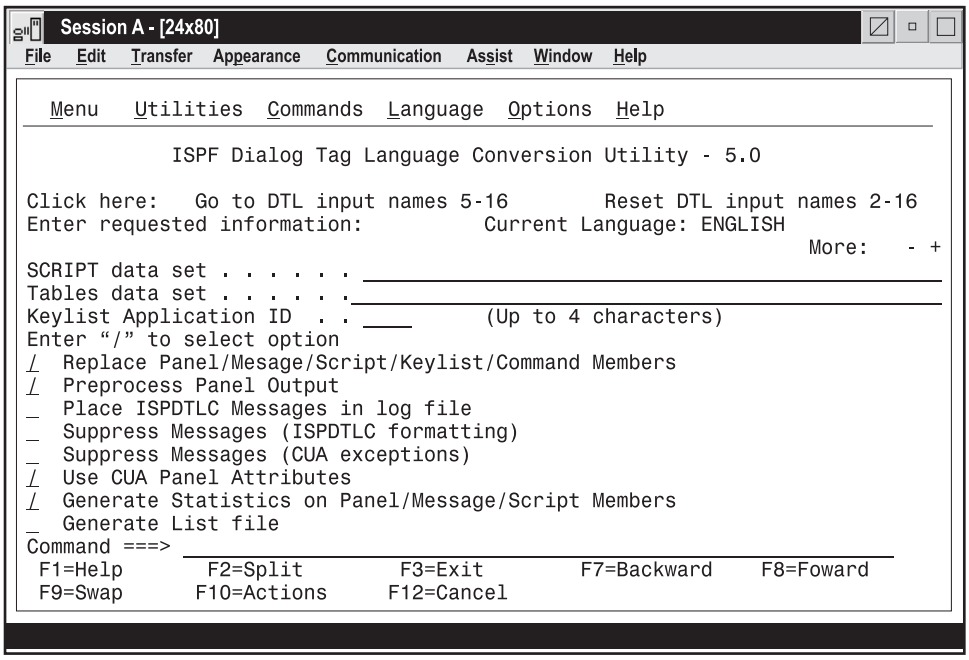

Figure 180. Batch ISPDTLC Compile Panel (ISPCP01) Screen 2

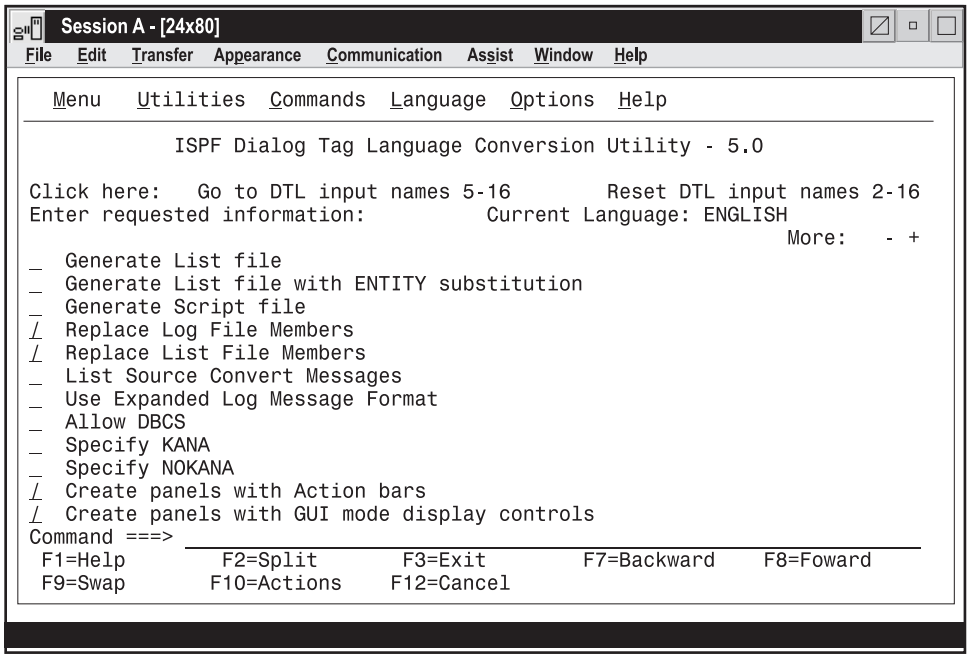

Figure 181. Batch ISPDTLC Compile Panel (ISPCP01)Screen 3

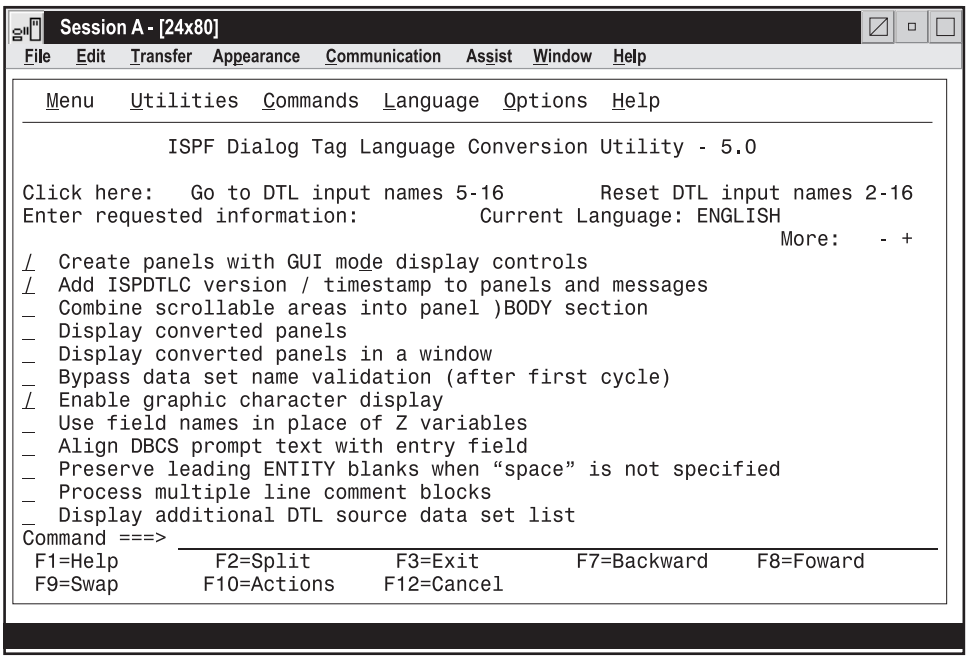

Figure 182. Batch ISPDTLC Compile Panel (ISPCP01)Screen 4

C/C++ for MVS/ESA Compile (Option 5.19)

ISPF supports the C/C++ for MVS/ESA compiler and its tools through dialogs supplied with the C/C++ for MVS/ESA compiler (5655-121). Refer to the *C/MVS User's Guide* and the *C++/MVS User's Guide* for additional information.

If ISPF cannot access the C/C++ for MVS/ESA compiler, it displays the panel shown in Figure 183.

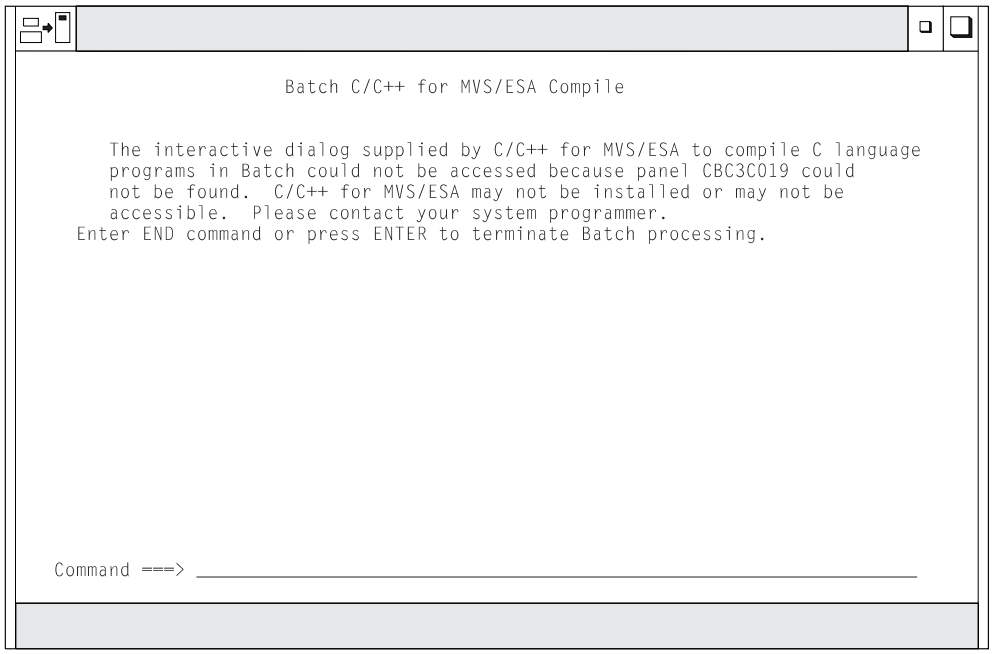

Figure 183. C/C++ for MVS/ESA Information Panel (ISRJP19)

SOMobjects for MVS Compile (Option 5.20)

ISPF supports the SOMobjects for MVS compiler and its tools through dialogs supplied with the SOMobjects for MVS compiler (5696-822). Refer to the documentation supplied with the compiler for additional information.

If ISPF cannot access the SOMobjects for MVS compiler, it displays the panel shown in Figure 184.

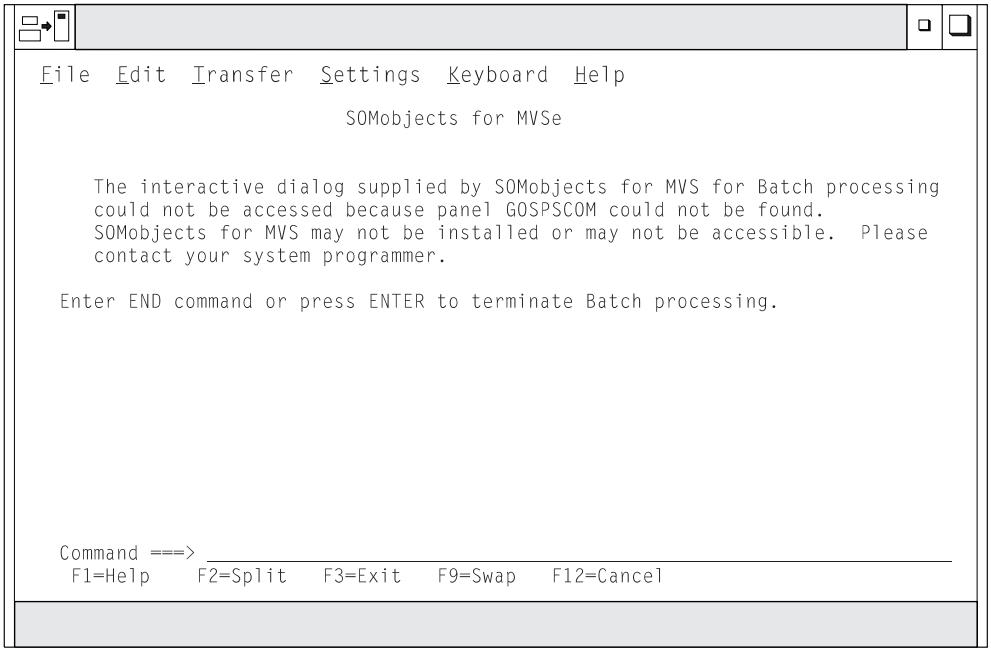

Figure 184. SOMobjects for MVS Information Panel (ISRJP20)

Chapter 7. Command (Option 6)

When you select this option, the ISPF Command Shell panel shown in Figure 185 is displayed. ISPF allows you to enter TSO commands, CLISTs, and REXX EXECs on the Command line of any panel and in the **Line Command** field on data set list displays (option 3.4). However, the ISPF Command Shell panel provides additional capabilities. On this panel, you can enter:

- TSO commands, ISPF commands, CLISTs, and REXX EXECs in a separate, but optional, **ISPF Command** field. This field is displayed only if your installation chooses to do so. The default panel shown in Figure 185 does not display this field. When you use this field, commands that are typed in the TSO Command Entry field (==>) are not blanked out when you enter the SPLIT command to split the screen.

  Note: If you use this field, you will not have access to the new function described in "The ISPF Command Shell Panel Saved Command Area" on page 295.
- Session Manager mode, but only if this licensed program is installed. See "Using the Session Manager" on page 296 for more information.
- A long command that continues on the following two lines.

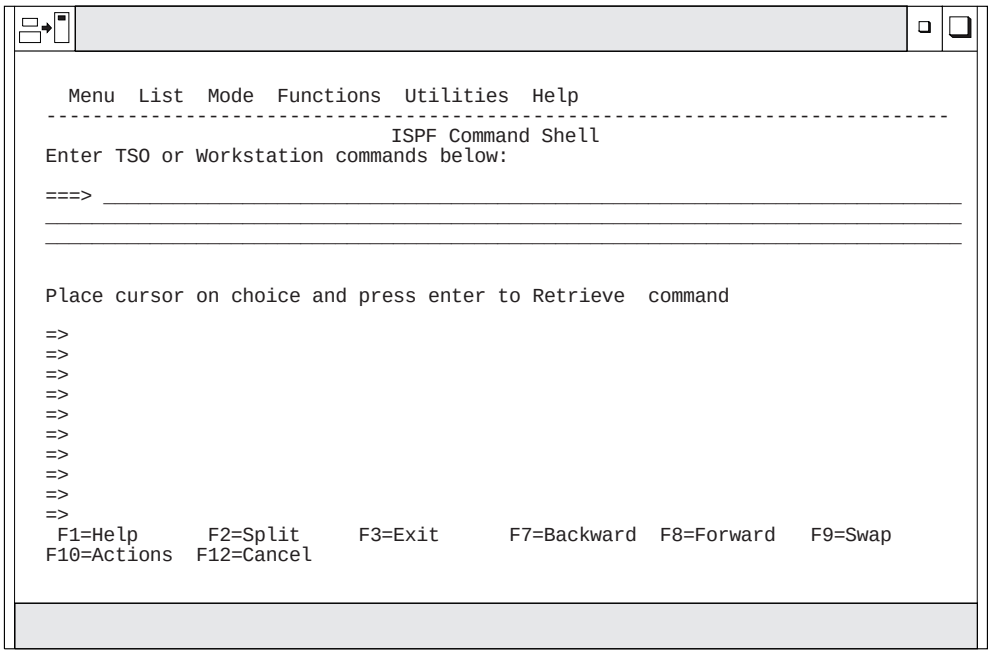

Figure 185. ISPF Command Shell Panel (ISRTSO)

ISPF Command Shell Panel Action Bar

The ISPF Command Shell panel action bar choices function as follows:

Note: The ISPF Command Shell panel action bar contains three pull-down choices that let you control the saved command area.
- List

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- Mode
- Functions.

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

List The List pull-down offers you the following choices:

Note: The current setting will be shown as an unavailable choice; that is, it will display in blue (the default) with an asterisk as the first digit of the selection number (if you are running in GUI mode, the choice will be *grayed*).

Update On
Makes the list of commands in the saved command area *live*; that is, new commands are appended to the list automatically.

Update Off
Makes the list of commands in the saved command area *static*; that is, new commands are not appended to the list automatically.

Mode The Mode pull-down offers you the following choices:

Note: The current setting will be shown as an unavailable choice; that is, it will display in blue (the default) with an asterisk as the first digit of the selection number (if you are running in GUI mode, the choice will be *grayed*).

Retrieve
Allows commands to be retrieved from the saved command area and placed on the TSO Command Entry field (==>) so that you can edit them before they are executed. This mode is the default.

Execute
Allows commands to be retrieved from the saved command area and executed in one step.

Delete Allows you to delete commands from the saved command area without executing the commands. Place the cursor on the command to be deleted and press Enter. The command will be blanked out. This process allows you to delete a command if you are running with Update mode set off.

Functions
The Functions pull-down offers you the following choice:

Compress List
Removes duplicate entries and blank spaces in the saved command area if you are running with Update mode set off. Entries are compressed automatically in Update mode.

TSO command
Sets the command shell to route commands to TSO

Workstation command
Sets the command shell to route commands to your workstation.

Notes:

1. Workstation command is available only if you are running the ISPF Client Server.
2. Any command may be prefixed with either `TSO` or `WS` to override the command function setting.

Utilities

See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General
2 TSO Command processor panel
3 Restrictions
4 Line I/O mode
5 Session Manager mode
6 Appendices
7 Index

The ISPF Command Shell Panel Saved Command Area

The ISPF Command Shell panel has a saved command area (the bottom portion of the screen) that contains a list of up to 10 commands that you have saved; see Figure 186 for an example. These commands are point-and-shoot fields. What happens when you select a command depends on the mode you specify from the Mode pull-down menu on the action bar.

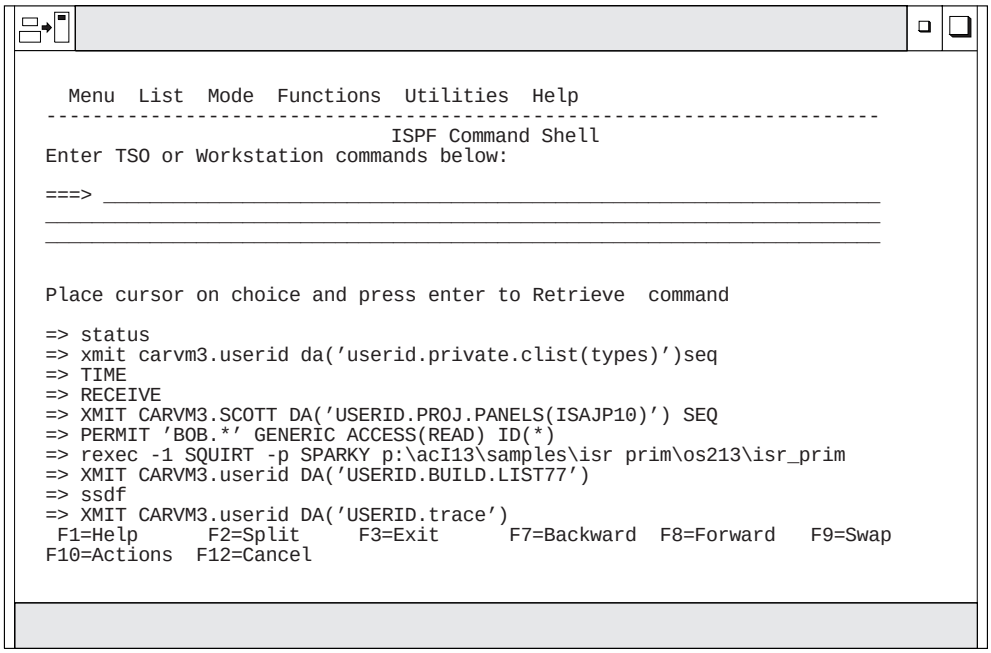

Figure 186. ISPF Command Shell Panel with Saved Commands (ISRTSO)

Entering TSO Commands, CLISTs, and REXX EXECs

You do not need to enter TSO before the command on this panel as you do on other panels, unless the command exists in both ISPF and TSO and you want to process the TSO command. If you use TSO, your processed command is blanked out when the ISPF Command Shell panel is displayed again.

TSO commands, CLISTs, and REXX EXECs entered are invoked using the ISPF SELECT CMD service. Variable names starting with an ampersand (&) are evaluated by ISPF. If you want the underlying command processor to see the ampersand you must specify 2 ampersands. For example

Command (Option 6)

```
DEF NONVSAM(NAME('MY.DATASET') DEVT(0000) VOLUME(&&SYSR2))
```

.

For example, the HELP, PRINT, and CANCEL commands are interpreted as the ISPF HELP, PRINT, and CANCEL commands, unless you precede them with TSO. Therefore, to get TSO HELP information, enter:

```
===> TSO HELP xxx
```

Rules for Entering TSO Commands

Do not enter the following commands under ISPF:

- LOGON and LOGOFF
- ISPF, PDF, or ISPSTART
- TEST
- Commands that are restricted by TSO or ISPF
- Commands that call a program authorized by the Authorized Program Facility (APF), except for the TSO CALL command
- ISPEXEC service calls.

Rules for Entering CLISTs and REXX EXECs

You can enter a CLIST name or REXX EXEC name on this panel, but the following restrictions apply:

- The CLIST or REXX EXEC cannot call the restricted commands shown in the preceding list. However, this does not apply to ISPEXEC, which can be called in a CLIST or REXX EXEC.
- CLIST error exits are not entered for ABENDs.
- CLIST TERMIN command procedure statements may cause unwanted results.

Note: Remember that a command issued through an alias may contain some of the characteristics listed here and thus may cause unwanted results.

Using the Session Manager

If the Session Manager licensed program is installed and available, you can use it by selecting Session Manager mode on the ISPF Settings panel.

Note: Refer to *ISPF Planning and Customizing* for information on altering the PDF configuration table to allow you to enter Session Manager mode.

If you select this option, any display output is displayed in the Session Manager TSOOUT stream.

Note: If GDDM/ISPF mode is active, Session Manager does not get control of the screen. GDDM/ISPF mode is started when a GRINIT service has been issued, but a GRTERM service has not been issued. Refer to *ISPF Services Guide* for more information about these two services.

The function key definitions are not transferred to the Session Manager from ISPF. When the command ends, the Session Manager prompts you to enter a null line to return to ISPF control and displays the TSO Command Processor panel again when you do so.

If you do not select Session Manager mode, terminal I/O occurs as though the Session Manager were not installed. The terminal operates in normal TSO fashion. Any communication with the command is in line-I/O mode. When the command ends, three asterisks (***) are displayed. Press Enter to display the TSO Command Processor panel again in full screen mode.

To interrupt a TSO command, CLIST, or REXX EXEC, press the PA1 key. The TSO command ends and the TSO Command Processor panel is displayed again. If terminal input is inhibited, press the Reset key before pressing the PA1 key. If you are in Session Manager mode, enter a null line to return to ISPF full screen mode.

When the TSO Command Processor panel is displayed again, the command that was just processed is displayed to the right of the arrow. Enter another command or the END command to return to the ISPF Primary Option Menu.

For terminals with primary and alternate screen sizes, ISPF does not check to make sure the same screen settings are in effect when a command, CLIST, or REXX EXEC ends. If you call a CLIST, REXX EXEC, or command that changes the screen settings, you are responsible for saving and restoring them before control is returned to ISPF.

Chapter 8. Dialog Test (Option 7)

This chapter describes Dialog Test, option 7 on the ISPF Primary Option Menu.

Dialog Test (option 7) provides you with facilities for testing both complete ISPF applications and ISPF dialog parts, including functions, panels, variables, messages, tables, and skeletons. The Dialog Test option allows you to:

- Call selection panels, command procedures, and programs
- Display panels
- Add new variables and change variable values
- Display a table's structure and status
- Display, add, modify, and delete table rows
- Browse the ISPF log
- Process dialog services
- Add, modify, and delete function and variable trace definitions
- Add, modify, and delete breakpoint definitions.

You can use TSO TEST to complement this option if you want to examine and manipulate non-ISPF storage areas.

You usually test a dialog in one of two ways:

- Test individual dialog parts, including panels, skeletons, and messages, without calling a function or a selection panel. Eventually, you end your test session by entering the END command on the Dialog Test Primary Option Panel.
- Test dialog functions, including programs, commands, and selection panels, using the Functions option (7.1). You can define traces and breakpoints before calling the function.

Any requested traces for variable usage and dialog service calls are written to the ISPF log. You can browse the log using the Log option (7.5).

If you define a breakpoint and the function gets to it, dialog processing is suspended, and Dialog Test displays the Breakpoint Primary Option Panel (Figure 209 on page 344). At this point, you can access and manipulate dialog parts, such as variables, tables, and so forth. Then, if you select the Go option from the Breakpoint Primary Option Panel, the dialog resumes processing.

When the processing is complete, you are returned to the Functions option (7.1). If you select the Cancel option from the Breakpoint Primary Option Panel, the dialog is cancelled and the first primary option panel that you were shown during your terminal session is displayed again. For example, if the first screen displayed when you began your session was a master application panel that is different from the ISPF Primary Option Menu, that master application panel is displayed again.

The Dialog Test Environment

The Dialog Test Primary Option Panel, shown in Figure 187 on page 300, follows the conventions for a primary option panel. If you use the RETURN command from one of the selected Dialog Test options, the Dialog Test Primary Option Panel is displayed again. If you use the END command from this panel, you return to the ISPF Primary Option Menu.

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Dialog Test (Option 7)

When you enter Dialog Test from the ISPF Primary Option Menu, you enter a new user application with an ID of ISR. When you enter Dialog Test from the ISPF primary option panel, you enter a new user application with an ID of ISP. All options listed on the Dialog Test Primary Option Panel operate in this context. If you call a new function using the Functions options (7.1), a SELECT service call is performed, and the rules for the SELECT service are followed.

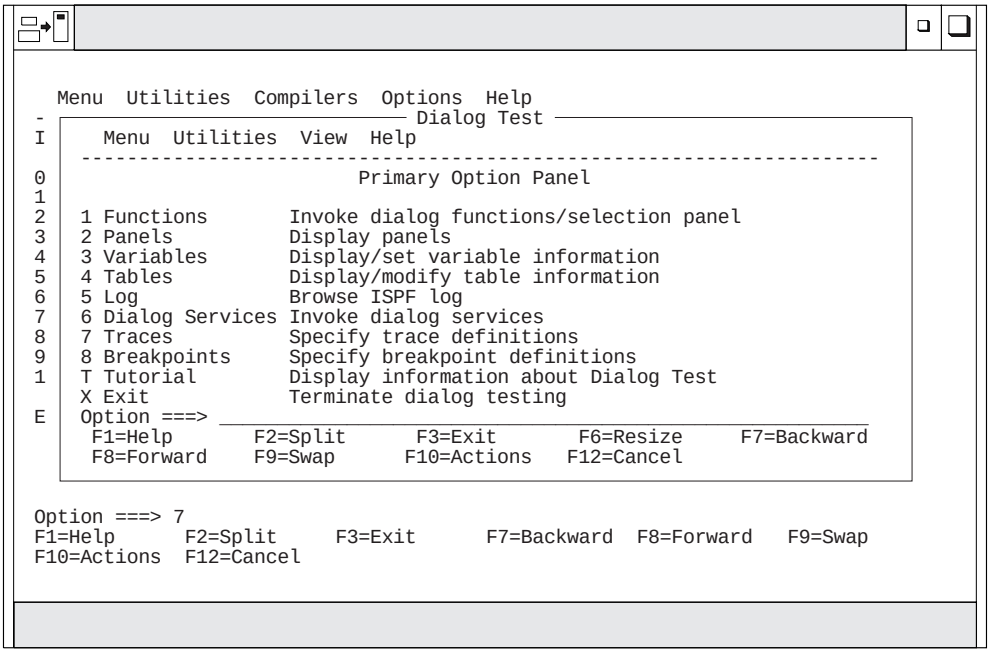

Figure 187. Dialog Test Primary Option Panel (ISPYXD1)

Note: You can set the application ID under which you enter the Dialog Test function using the Dialog Test appl ID... choice from the Options pull-down on the ISPF Primary Option Menu or using the Dialog Test appl ID... choice from the Test pull-down on an Edit panel.

After you begin an application under Dialog Test, you can enter the DTEST command with one of its parameters as a quicker way to start a dialog test function. For example, if you enter **DTEST 8** on the command line, the Option 7.8 Breakpoints panel appears. The other parameters of the DTEST command also match the dialog test function they perform:

1 invoke Functions panel

2 invoke Display Panel panel

3 invoke Variables panel

4 invoke Tables panel

5 display browse log panel

6 invoke Dialog Services panel

7 invoke Traces selection panel

8 invoke Breakpoint panel

You must use a parameter with the DTEST command, otherwise an error message appears. After you complete the entries on whichever dialog test panel you invoke, leaving the panel returns you to the application you were running with the new entries in place.

Dialog Test is itself a dialog and, therefore, uses dialog variables. Since it is important to allow your dialog to operate without interference, as though in a production environment, Dialog Test accesses and updates variables independently of your dialog variables.

All breakpoints and traces that you set in Dialog Test exist only while you remain within the Dialog Test option.

You should always allocate the ISPF log when using Dialog Test. Do not suppress its generation by typing `0` in the **Primary pages** field that appears on the Log Data set defaults... and List Data set defaults... choices from the Log/List pull-down on the ISPF Settings panel. Dialog Test writes trace data to the log when you request it. Also, if Dialog Test finds an unexpected condition, it writes problem data to the log.

When you enter Dialog Test, you are given the following ISPF facilities:

- All functions you normally get by specifying the TEST parameter on the ISPSTART command
- The logging of all severe errors, both from user dialogs and Dialog Test. This is normally done when you specify TRACE or TRACEX on the ISPSTART command.
- The suspension of the logging of all ISPEXEC dialog service requests. Such logging normally occurs when you specify TRACE or TRACEX on the ISPSTART command. You should use the Traces option (7.7).

These facilities become active for all logical screens when you are using split-screen mode. At the completion of the last dialog test session (dialog test is no longer active in any logical screen), these options will be restored to the original values established during dialog manager start-up. Optionally, by making the appropriate selection on the ISPF Settings panel, the facilities established by dialog test will remain in effect after the last dialog test session terminates.

Dialog Test Primary Option Panel Action Bar

The Dialog Test Primary Option Panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities
See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

View Allows you to select whether or not the Add row, Modify row, and Display row panels are displayed in pop-up windows and whether or not Dialog Services (option 7.6) are displayed in a pop-up. By displaying the panel in a pop-up window, you can see the panel underneath and move the window. By displaying the panel as a full-screen display, you can see more data. The setting you choose will remain until you change it.

Help The Help pull-down offers you the following choices:
1 General Dialog Test

2 General Information
3 Functions
4 Panels
5 Variables
6 Tables
7 Log
8 Dialog Services
9 Traces
10 Breakpoints
11 View Action Bar
12 Exit

Using Variables

When you select the Dialog Test option from the ISPF Primary Option Menu, you are given a new function pool, a new shared pool, and the profile pool for the application ID under which you entered Dialog Test. When you select Dialog Test from the ISPF Primary Option Menu, you are given a new function pool, a new shared pool, and the ISPPROF profile pool. These pools are used if you set a variable, display a panel, call an ISPF service, and so forth. When you call a new dialog, Dialog Test uses the SELECT service, and follows the rules for the creation of new variable pools. For example, if you call a new dialog using the NEWPOOL option, Dialog Test creates new shared and function variable pools for you. The profile variable pool, ISRPROF or ISPPROF, remains as it was.

If you set a dialog variable in the shared pool from a dialog running under Dialog Test and then call the dialog again from the Command line, you cannot retrieve the value of that variable.

Dialog variables should be initialized and set in the context of the dialog's processing. A dialog's function variable pools are created when it is called; that is, when the SELECT is done. Therefore, to set function variables in newly created pools, you must define a breakpoint early in your dialog's processing, at a point before the function is called.

For example, if you call a dialog with the NEWPOOL parameter, you must define a breakpoint in the dialog before the first function is called to access that dialog's function and shared variable pools. You can change the dialog's profile variable pool before calling the dialog, since a new profile variable pool is not created.

When your dialog ends, all variable pools that were created when the dialog was called are deleted.

Note: ISPF does not support TSO global variables. You can find a severe dialog test error when testing a dialog that refers to a global variable.

Severe Error Handling

If your dialog finds a severe error when it calls a dialog service, the error is handled as requested by the dialog. The current CONTROL service ERRORS setting, CANCEL or RETURN, determines what is done. If CANCEL is in effect, you can choose whether to continue dialog testing when the Error Message panel is displayed.

Note: If you choose not to continue dialog testing, you return to the ISPF Primary Option Menu. The TEST and TRACE options set by dialog test are restored

to the values originally established during dialog manager start-up. Optionally, by making the appropriate selection on the ISPF Settings panel, the facilities established by dialog test will remain in effect after the last dialog test session terminates.

If you find a severe error when manipulating your dialog at a breakpoint, Dialog Test assumes that the CONTROL service ERRORS setting is CANCEL. For example, if you display a panel at a breakpoint and that panel is not found, the Error Message panel is displayed. This occurs even if your current dialog has an ERRORS setting of RETURN.

Regardless of the ERRORS setting, all your severe errors are logged.

If Dialog Test finds a severe error during its processing, the details are logged and the following message is shown to you on an error message display:

```
Test severe error
Details precede this message in the ISPF log
```

Dialog Test errors can occur because:

- Proper ISPF libraries are not being used.
- A programming problem has been found.
- You have attempted to process Dialog Test.
- You have called a Dialog Test option without being in test mode or without calling Dialog Test first.

You should browse the ISPF log to find the problem; see "Log (Option 7.5)" on page 330 for more information.

Commands

You can enter ISPF primary commands on Dialog Test panels. Five commands have special meaning during Dialog Test operations. You enter them in the Command line of the applicable Dialog Test option panel. These commands, and the Dialog Test options with which they function, are:

Primary Command	Valid Options
CANCEL	• Variables (option 7.3) • Tables (option 7.4)[1] • Traces (option 7.7)[2] • Breakpoints (option 7.8)
END	• Variables (option 7.3) • Tables (option 7.4)[3] • Traces (option 7.7) [2] • Breakpoints (option 7.8)
LOCATE	

1. Valid only with Tables options 3 and 4.
2. Valid only with Traces options 1 and 2.
3. Valid only with Tables options 1, 3, and 4.

- Variables (option 7.3)
- Tables (option 7.4)[4]
- Traces (option 7.7) [2]
- Breakpoints (option 7.8)

NEXT/PREV

- Tables (option 7.4)[4]

QUAL

- Breakpoints (option 7.8)

RESUME

- Breakpoints (option 7.8)

Dialog Test has three line commands that have special meaning during testing operations. These commands, and the options with which they function, are:

Line Command	Valid Options
D (delete)	• Variables (option 7.3) • Tables (option 7.4) [1] • Traces (option 7.7) [2] • Breakpoints (option 7.8)
I (insert)	• Variables (option 7.3) • Tables (option 7.4) [1] • Traces (option 7.7) [2] • Breakpoints (option 7.8)
R (repeat)	• Tables (option 7.4) [1] • Traces (option 7.7) [2] • Breakpoints (option 7.8)

When using the Dialog Test primary and line commands, you should be aware of the following:

- You can specify both a primary command and line commands before you press the Enter key.
- You can enter multiple line commands on the display.
- You cannot carry out a deletion if one of the included lines contains another line command.
- You can delete lines that contain an input error.
- The line commands are processed in row order when you press the Enter key. Any fields changed in the row are handled before a line command is processed.
- A primary command is handled after processing for all line commands is complete.
- As in the ISPF editor, you can specify a number with each line command to denote repetitive operation, unless you are using the Variables option (7.3). To avoid conflict with the I (insert) line command, the Variables option does not

4. Valid only with Tables options 1 and 3.

allow you to type a number along with the D command to delete more than one line simultaneously. Therefore, enter a single D line command on each line you want to delete. Unlike the ISPF editor, the Variables option does not support block deletes; however, you can enter this command on more than one line before pressing the Enter key.

Ending the Current Option without Saving Changes

The CANCEL command ends the current option. Any changes made to the data are ignored.

Saving Changes

The END command ends the current option. Any changes made to the data now take effect.

Finding a Character String

The LOCATE command searches for a character string and positions a scrollable display to the next row that contains the string. The scan starts at the end of the first row currently being displayed. A message is displayed indicating the result of the scan.

LOCATE *string*

where:

string
The character string you are trying to find. If the string ends in an asterisk (*), a scan for the characters preceding the asterisk is done.

Displaying Breakpoint Qualification Data

The QUAL command can only be entered from the Breakpoints pop-up window. It displays the breakpoint qualification data.

The same breakpoint qualification data can be obtained using the Qualifications... choice on the Qualify pull-down.

Restoring the Format of the Breakpoints Panel

The RESUME command is entered on the Breakpoints panel when qualification parameter values are shown. It restores the format of the Breakpoints panel. Each breakpoint that has qualification is flagged by the characters `*QUAL*` in columns 75 to 80 on that line of the Breakpoints panel.

Dialog Test Line Commands

The following line commands have special meaning during testing operations:

D – Deleting Lines

The D command deletes one line or *n* lines starting with this line. The syntax is:

`D[n]`

If you are using the Variables option (7.3), the *n* operand does not apply. To avoid conflict with the I (insert) line command, the Variables option does not allow you to type a number along with the D command to delete more than one line simultaneously. Therefore, enter a single D line command on each line you want to delete. You can enter this command on more than one line before pressing the Enter key.

I – Inserting Lines

The I command inserts one line or *n* lines directly after this line, with underscores and quotation marks in the appropriate fields. The syntax is:

`I[n]`

R – Repeating Lines

The R command repeats this line once or *n* times. The syntax is:

`R[n]`

Setting a Keylist for Dialog Test

Depending on your needs and preferences, you may wish to set a dialog test-specific keylist to enhance productivity. To modify the default function key settings, go to the Dialog Test Primary Option Panel, type KEYS on the Command line, and press Enter to display the pop-up window shown in Figure 188. Or, you may perform the following steps to display the pop-up:

1. Select Option 0 from the ISPF Primary Option Menu.
2. Select Keylist settings from the Function keys pull-down on the ISPF Settings panel action bar.
3. Use a slash to select the ISPTEST Keylist; then select Change from the Functions pull-down.

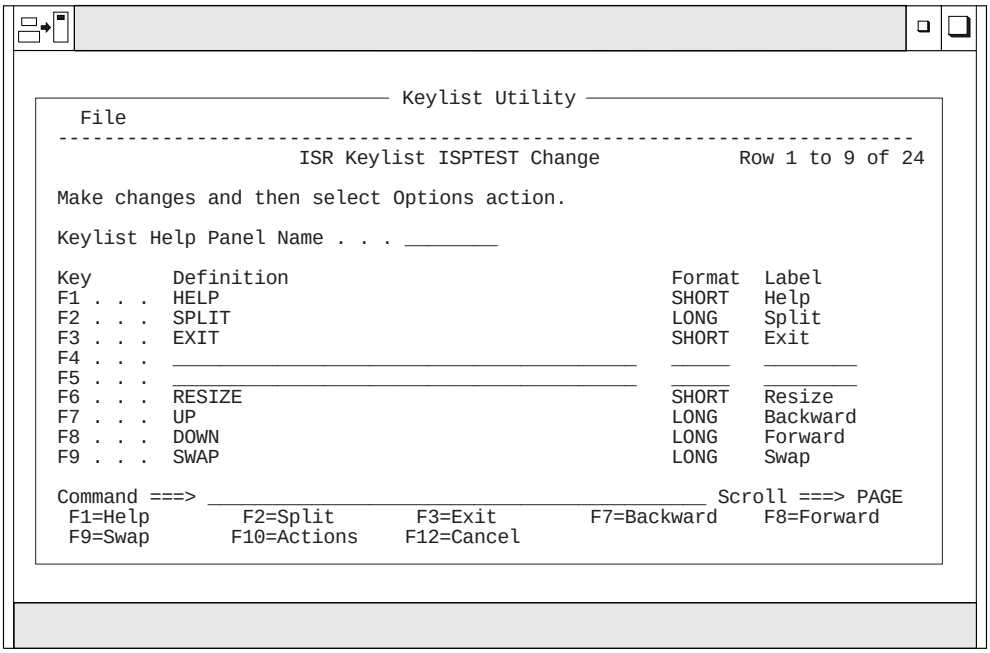

Figure 188. Keylist Change Panel (ISPKLUCH)

On the Keylist Change panel, you can reassign existing function keys by typing over the information in the data fields, or create a new function key assignment to suit your needs. For example, you could assign the GO command to F4 if you typically issue GO many times during a dialog test.

If you press F3 or select Save and Exit from the File pull-down, the values that you have assigned will be valid when you return to Dialog Test. If you select Cancel from the File pull-down, the fields return to their original values.

Functions (Option 7.1)

The Functions option (7.1) allows you to test a dialog function without having to build supporting code or panels. Dialog functions include panels, command procedures, and programs. The name of the dialog function and the parameters you can pass are the same as those that you can specify from a dialog function when you call the SELECT service. When you press the Enter key, a SELECT service is called.

If you call a new function or selection panel at a breakpoint, the previous function or selection panel is suspended and the new one is processed. When the new activity finishes, the Invoke Dialog Function/Selection Panel is displayed. The old activity resumes when you enter the END command. When the originally-called function finishes processing, the Invoke Dialog Function/Selection Panel is displayed again.

When you select the Functions option, the scrollable panel shown in Figure 189 is displayed to allow you to specify the dialog function that you want to test. Press F8=Forward to display the rest of the panel.

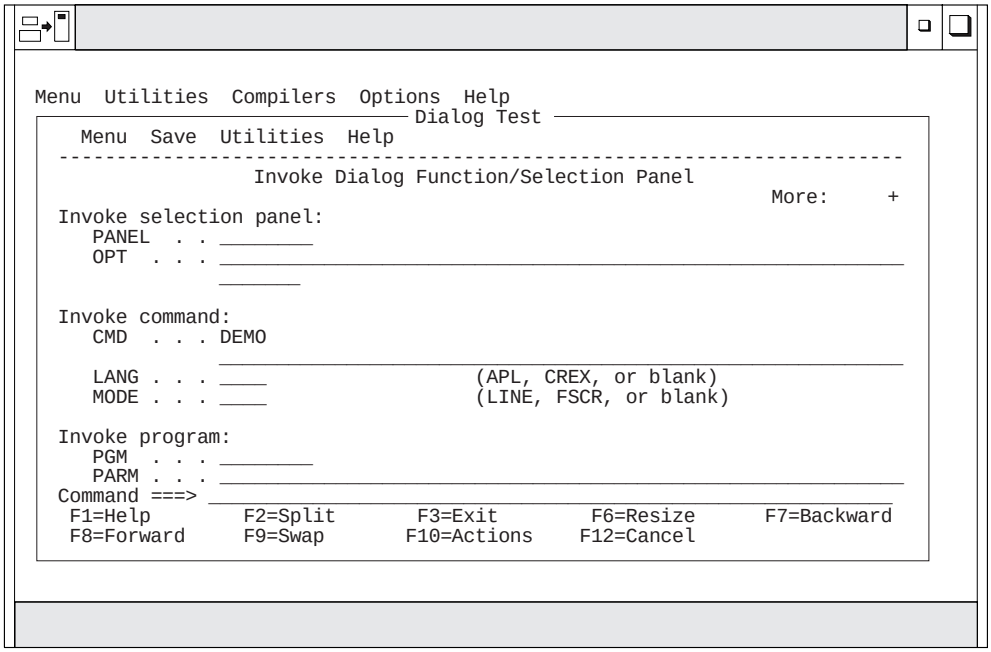

Figure 189. Invoke Dialog Function/Selection Panel (ISPYFP)

There are two alternate Invoke Dialog Function/Selection panels, ISPYFPA and ISPYFPB. ISPYFPA is formatted with the most often used fields at the top of the scrollable area. ISPYFPB is similar, but it has a selection field for panel, command, program, or request selection. Unlike panel ISPYFP and ISPYFPA, when you use ISPYFPB the panel, command, program, and request selection fields can all contain values.

You can specifiy one of the alternate panels using ISPF's Configuration utility. Refer to the *ISPF Planning and Customizing* manual for more information.

One of the advantages of placing dialog panels in pop-up windows is that you can move the pop-up within the 3270 physical display area to reveal portions of the underlying panel.

See *ISPF Dialog Developer's Guide and Reference* for instructions on how to move a pop-up window.

Invoke Dialog Function/Selection Panel Action Bar

The Invoke Dialog Function/Selection Panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Save Allows you to specify that you want to save or clear input field information when you exit this panel.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General
2 Invoke Function Panel
3 Usage Notes
4 General Dialog Test

Invoke Dialog Panel Fields

To call a function, you must specify a value for either the PANEL, CMD, or PGM field. You cannot specify more than one of these fields.

The fields on the Invoke Dialog Function/Selection Panel function as follows:

Invoke selection panel:
Use the following fields to call a selection panel:

PANEL
The name of the selection panel to be displayed.

OPT An optional parameter indicating the first selection option that must be valid from the specified selection panel. This input field continues onto the next line on the panel.

Invoke command:
Use the following fields to call a command:

CMD The name of a command procedure written in CLIST or REXX, or any TSO command, to be called as a dialog function. You can include command parameters.

Use the percent sign (%) as a prefix symbol to tell ISPF to remove the Invoke Dialog Function/Selection Panel and use the full screen to display the results of a CLIST or REXX EXEC call. A complete CLIST or REXX EXEC call is indicated by three asterisks. Press the Enter key to return to the Invoke Dialog Function/Selection Panel.

If you omit the % prefix, ISPF interprets the command as a TSO command, using line mode to display the command results at the bottom of the Invoke Dialog Function/Selection Panel.

LANG

An optional parameter used to specify **APL** or **CREX**.

Type `APL` in this field to specify the use of the APL language. If this is your first APL request during the session, the command specified in the CMD keyword is called and an APL2 environment is established. If this is not your first APL request during this session, the string specified after the CMD keyword is passed to the APL2 workspace and processed.

Type `CREX` in this field to specify that the command specified in the CMD keyword is a REXX EXEC that has been compiled and link-edited into a load module, and that a CLIST/REXX function pool is to be used rather than an ISPF module function pool.

See *ISPF Dialog Developer's Guide and Reference* for further information about Compiled REXX processing.

To specify any language other than APL or Compiled REXX, leave this field blank.

MODE

An optional parameter that overrides:

- Automatic line mode entry, caused when a TSO command is entered.
- Automatic full-screen display caused by the `%` CLIST or REXX EXEC prefix. However, it does not prevent ISPF from calling the command as a CLIST or REXX EXEC.

If you leave this field blank, the `%` prefix has its normal effect. The valid values for this field are:

LINE Used to enter line mode when calling a CLIST or REXX EXEC.

FSCR Used to enter full-screen mode when calling a TSO command.

Invoke program:

Use the following fields to call a program:

PGM The name of a program to be called as a dialog function.

PARM Optional parameters to be passed to the program. This input field continues onto the next line on the panel.

MODE

An optional parameter used to tell ISPF whether to display the program results in line mode or full-screen mode. If you leave this field blank, ISPF uses line mode as the default. The valid values for this field are:

LINE Used to enter line mode when calling a program. Results of the program are displayed at the bottom of the Invoke Dialog Function/Selection Panel.

FSCR Used to enter full-screen mode when calling a program. ISPF removes the Invoke Dialog Function/Selection Panel and uses the full screen to display the program results. Three asterisks show program completion. Press the Enter key to return to the Invoke Dialog Function/Selection Panel.

Functions (Option 7.1)

Invoke request:

Use the following field to call a workstation command:

WSCMD

A fully qualified workstation command with any of its parameters.

Options:

Use a slash to select the following options:

NEWAPPL Indication of whether a new application is being called. Select this option if the function is a new application.

ID A one- to four-character ID for a new application. If you call a new application and leave the ID field blank, the default ID of ISP is used. Note that the ID determines the names of the profile and the command table to be used for the application.

NEWPOOL Indication of whether a new shared variable pool is to be created. Select this option if you want to create a new shared variable pool; however, the selection is ignored if NEWAPPL is selected.

PASSLIB Shows that the current set of application-level ISPF libraries, if any sets exist, is to be used by the application being selected. You can select PASSLIB only if you also select NEWAPPL.

Note: For more information about the PASSLIB field, see the description of the SELECT service in *ISPF Services Guide*

Panels (Option 7.2)

When you are developing panels, you can use the Panels option (7.2) to test newly created or changed panels and messages without having to build supporting code to display them. Any variables referred to and set during panel processing are written to the current function variable pool.

When you select the Panels option (7.2), the panel in Figure 190 on page 311 is displayed.

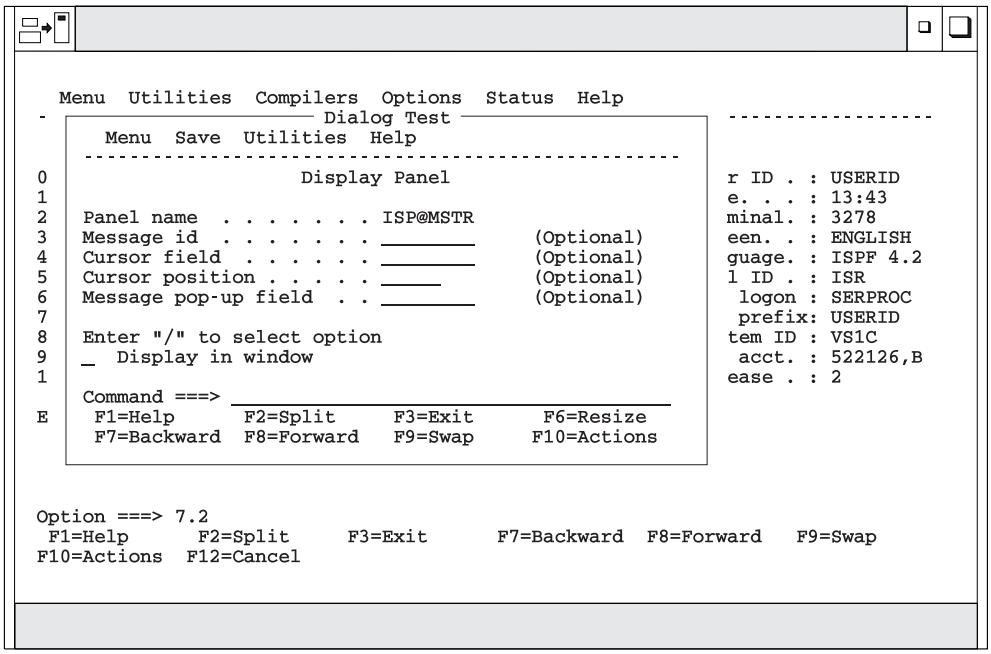

Figure 190. Display Panel (ISPYP1)

Display Panel Action Bar

The Display Panel action bar choices function as follows:

Menu
See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Save
Allows you to specify that you want to save or clear input field information when you exit this panel.

Utilities
See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help
The Help pull-down offers you the following choices:

1 General
2 Display Panel
3 Usage Notes
4 General Dialog Test

Display Panel Fields

The fields on the Display Panel function as follows:

Panel name
The name of the panel to be displayed.

Message id
The identifier of a message to be displayed on the panel.

Cursor field
The name of the field on the panel where the cursor is to be positioned.

Cursor position
An integer specifying the position in the field where the cursor is to be placed.

Message pop-up field
The name of a panel field the pop-up message window should be placed adjacent to. Note that the message definition determines if the message will appear in a pop-up window.

Display in window
A slash (/) specifies that the panel is to be displayed in a pop-up window.

If you specify a panel name, entries in **Message id**, **Cursor field**, **Cursor Position**, **Message pop-up field**, and the Display in window option are optional.

With the exception of the Display in window option, these are the same parameters that a dialog function can specify when calling the DISPLAY service. Selecting the Display in window field is the functional equivalent to the dialog issuing an ADDPOP service prior to the DISPLAY service.

When the panel is displayed, the)INIT and)PROC sections of the panel are processed in the same way the DISPLAY service would process them.

If you want to set variables before you display the panel, you can use the Variables option (7.3) to do so. When you display the panel, you can type in new data or type over existing data, and then verify the variables by using the Variables option (7.3) again. Data that you type on the panel is retained until you change it, leave Dialog Test, or reset the function pool.

Figure 191 on page 313 shows the panel that is displayed if you specify message ID ISPD241 and, optionally, a cursor position without identifying a panel name. The long message portion of the identified message is displayed when you enter the HELP command on that panel.

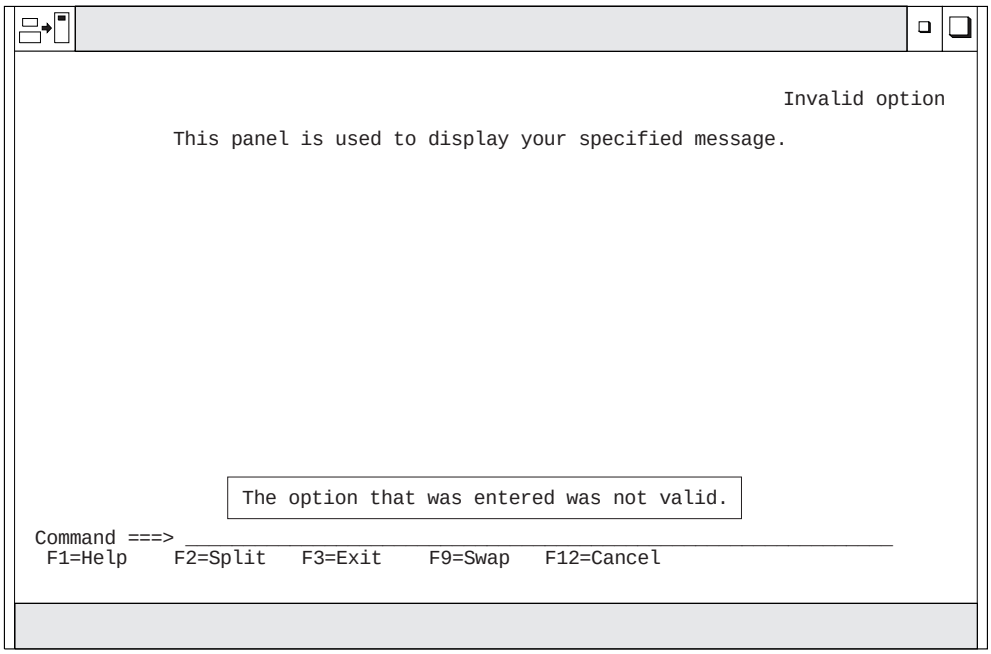

Figure 191. Message Display Panel (ISPYP2)

When you enter the END command from the panel being tested, the Display Panel reappears on the screen.

Variables (Option 7.3)

The Variables option (7.3) allows you to:

- Display all the ISPF variables defined in the dialog application you are testing.
- Change the value of a variable by typing over it, unless the variable has an N (non-modifiable) attribute.
- Define new variables by inserting lines or by changing the name or pool of a listed variable.
- Delete variable names and blank lines.

When you select this option, you can scroll a display showing all the current variables for the dialog being tested, as shown in Figure 192 on page 314.

In addition to scrolling capability, you can also increase the size of the Variables pop-up window to fill the entire 3270 physical display area using the RESIZE command. The initial RESIZE command increases the pop-up window to its maximum size, and the following RESIZE reduces the window to its original size.

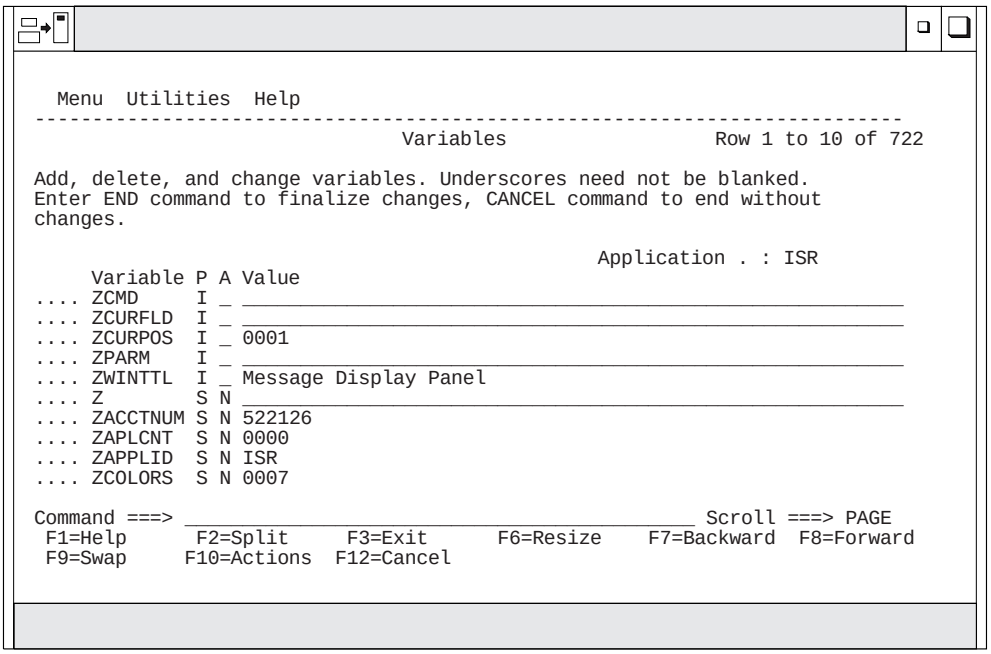

Figure 192. Variables Panel (ISPYVPN)

The Variables display is controlled by the selection you make in the View pull-down on the Dialog Test Primary Option Panel action bar:

1 **Display Variables in window**. Variables are displayed in a pop-up window.

2 **Display Variables full-screen**. Variables are displayed full-screen.

Note: The current setting will be shown as an unavailable choice; that is, it will display in blue (the default) with an asterisk as the first digit of the selection number (if you are running in GUI mode, the choice will be *grayed*).

Variables Panel Action Bar

The Variables Panel action bar choices function as follows:

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Utilities See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General Variables
2 Definitions
3 Variables Panel
4 Manipulating Variables
5 Primary Commands
6 Line Commands
7 Usage Notes
8 General Dialog Test

Variables Panel Fields

Each line of the display represents a variable and contains a line command area ('). The fields on the Variables panel function as follows:

Variable
Name of the variable. The variable name is alphanumeric, with the first character either alphabetic or the special characters $, #, or @. The variable name cannot exceed eight characters in length. All alphabetic characters are converted to uppercase when you press the Enter key. The Variable field is required.

P Pool that contains the variable; a required one-character field, where:

- **V** Function pool; the variable was defined with the VDEFINE service.
- **I** Function pool; a variable that was created by a CLIST or REXX EXEC, or by using the Variables option. This is an *implicit* variable, which was not explicitly defined by using the VDEFINE service.
- **S** Shared variable pool.
- **P** Profile variable pool.

A Attributes of the variable, a non-modifiable one-character field, where:

- **N** Non-modifiable variable. Some system-reserved variables are not modifiable.
- **T** Truncated variable value. The actual value is longer than the 58 characters that you can display on the panel.

  If you change a line showing a truncated value, only the data shown on the display is stored as the new value.

Value Value of the variable. The value can be up to 58 characters in length.

Variables Commands

The Variables option (7.3) uses the CANCEL, END, and LOCATE commands, and the I (insert) and D (delete) Dialog Test line commands described in "Commands" on page 303.

Normally, the variable pools are updated with the data from the display when you use the END command to leave the option.

Manipulating Variables

The rows of the display are sorted in the following order:
1. By pool (function, then shared, then profile)
2. By function pool type (V, then I)
3. Alphabetically by variable name within each pool.

Insertions are left where they are typed on the display. Changes to the display are processed when you press the Enter key. Updating of the variable pools occurs when you enter the END command.

Creating New Variables

You can create new dialog variables, but you cannot create two variables with the same name in the same variable pool.

To create a new variable, you can do one of two things:

- Use the I line command to insert a new row, and then type the variable name, pool, and value on the new line. For each field, move the cursor to the start of the field and type new information. The underscores are pad characters; you do not need to blank them out.
- Type over the name of an existing variable, its pool indicator, or both. This creates a new variable and resets the old variable's value to nulls.

  If you change a truncated value, the portion that is not displayed is lost. The new variable value consists only of the visible portion on the screen.

New function pool variables are given an I (implicit) attribute and a CHAR format. If you type `F` in the attribute field, ISPF changes it to `I`.

By using the second method, you can interchange the values of two or more variables by simply changing their names. For example, you can interchange the values for variables A and B by changing the variable name A to B and name B to A, and then pressing the Enter key.

Deleting Variables

Any dialog variable in the shared and profile pools can be deleted, unless it has an N attribute. Though you cannot delete a variable from the function pool, you can set its value to blanks.

To delete a variable, use the D line command. However, to avoid conflict with the I (insert) line command, the Variables option does not allow you to type a number along with the D command to delete more than one line simultaneously. Therefore, enter a single D line command on each line you want to delete. You can type this command on more than one line before pressing the Enter key.

Variables Usage Notes

When using the Variables option (7.3), you should be aware of the following:

Input errors

Correct any errors before leaving a display. If you cannot correct the errors, use the CANCEL command.

Length and format errors in variables defined with the VDEFINE service are detected when you enter the END command. If ISPF finds such an error, it prompts you to fix the variable value.

Test mode

Variable manipulations carried out under Dialog Test at a breakpoint are considered an extension of your dialog and, as such, are handled in user mode. Dialog variables, table data, and service return codes that you introduce, delete, or change are treated as though your dialog had made those changes.

Variable life

Profile variables that you create remain in your profile pool from one Dialog Test session to another. Shared and function variables exist only for the duration of Dialog Test.

Split-screen mode

In split-screen mode, two logical screens can share a profile variable pool. Since the Variables option (7.3) takes a snapshot of the variables, any change to a profile variable on one screen is not immediately reflected on the other screen. To get the latest changes, select the Variables option (7.3) again. Also, when one profile variable is changed on two logical screens

using split-screen mode, the changed profile variable on the screen where the last END command was entered takes precedence.

Variable value
Variables defined with the VDEFINE service as non-character are displayed in converted form. Any changes made to the variable's value should conform to the defined format.

Do not change them using the hexadecimal representation. A format or length error causes a message to be displayed when you use the END command. When a VDEFINE error occurs, a panel identifies the data and its value and describes the error. You must then correct the error and press the Enter key. If you create a new variable by changing the pool indicator of an existing variable defined as non-character, the new variable has character (CHAR) format.

Hexadecimal data
Hexadecimal data that cannot be displayed is converted to displayable characters or typed using the form:

```
X'nnnnnnnn'
```

where:

n An integer 0 through 9 or an alphabetic character A through F. There must be an even number of characters within the quotation marks.

DBCS data
A variable defined as DBCS by the VDEFINE service or displayed through the field with FORMAT(DBCS) specified in the test environment is displayed using the form:

```
'¬[DBDBDB]'
```

where:

[and **]** Represent the SO (shift-out) and SI (shift-in) characters, respectively.

If you type a DBCS value in this format on the Variables panel, only the DBCS characters are stored.

Tables (Option 7.4)

The Tables option (7.4) allows you to examine and manipulate the rows of a table, and to display table structure and status. When you select this option, the panel in Figure 193 on page 318 is displayed, on which you show the table function you want and the parameters needed to identify the table.

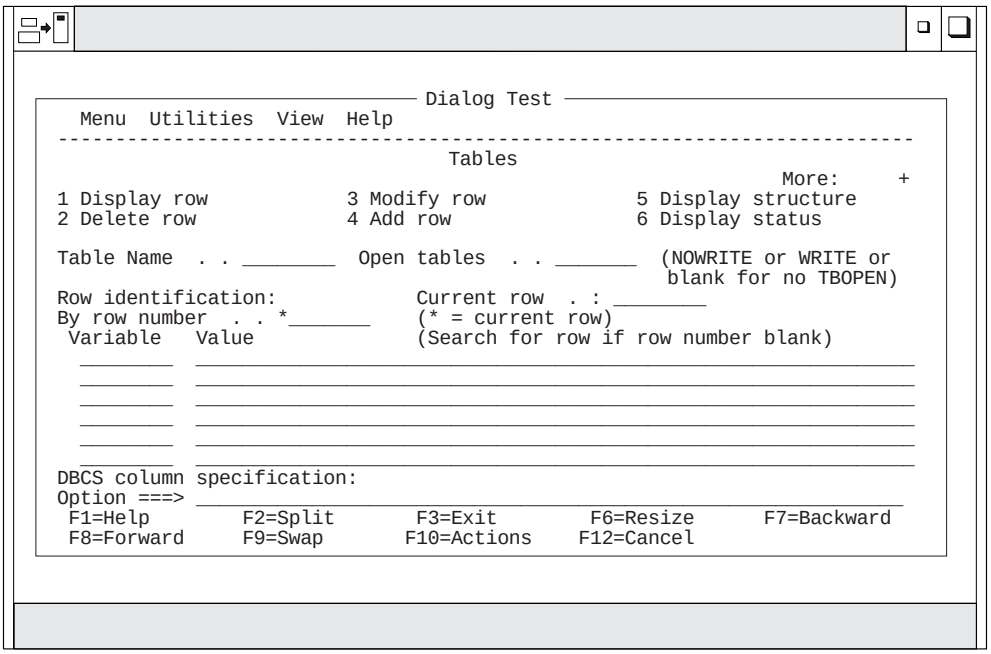

Figure 193. Tables Panel (ISPYTPI)

Tables Panel Action Bar

The Tables panel action bar choices function as follows:

Menu
See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Utilities
See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

View
Allows you to select whether or not the Add row, Modify row, and Display row panels are displayed in pop-up windows. By displaying the panel in a pop-up window, you can see the panel underneath and move the window. By displaying the panel as a full-screen display, you can see more data. The setting you choose will remain in effect until you change it.

Help
The Help pull-down offers you the following choices:

1 General Tables
2 Definitions
3 Tables Panel
4 Display Row
5 Delete Row
6 Modify Row
7 Add Row
8 Display Structure

9 Display Status
10 Usage Notes
11 View Action Bar
12 General Dialog Test

Tables Panel Fields

The fields on the Tables panel function as follows:

Table Name
The name of the table in which you are interested. The table must be open for all, except the Display Status option (6) of the Tables option (7.4). The table can be opened using the Dialog Services option (7.6) or can be opened automatically by specifying the Open tables field WRITE/NOWRITE option.

Open tables
The table must be open for all but the Display Status option (6) of the Tables option (7.4). Specifying WRITE or NOWRITE will cause Tables option to automatically open the table in the respective mode. A blank field directs Tables to bypass the automatic open. If Tables automatically opens the table, it will be closed automatically when the Tables option is terminated. This is done with a TBCLOSE service which will cause any table changes to be preserved if the table were automatically opened with the WRITE option.

This field is ignored if the table has been opened outside of the Tables (7.4) option.

Row identification
Identify a row, either directly by row number or indirectly by specifying table variable names and their values as search operands.

Current row
The position number of the current row after you have identified a table. This field is not modifiable.

By row number
The position number of the table row that you want, or If you are adding a row, you can use:
TOP Makes the new row first in the table.
BOTTOM
Makes the new row last in the table.

Variable
The names of variables whose values are to be used to search the table for a row with matching contents. You insert them by typing over the underscores beneath this heading.

Value The value to be used in the search, up to 58 characters. For an abbreviated search, type the beginning characters followed by an asterisk.

You can specify a DBCS value in the form:

```
¬[DBDBDB]
```

where:

[and] Represent the SO (shift-out) and SI (shift-in) characters, respectively. For an abbreviated search, type a two-byte asterisk (*) at the end of the DBCS value. For example:

```
¬[DBDB**]
```

where:

** Represents the two-byte asterisk character.

DBCS column specification
The variable names of the values that are DBCS data. The value of the variable is displayed using the form:

```
¬[DBDBDB]
```

If you type a DBCS value in this format on the Modify Row panel or the Add Row panel, only the DBCS characters are stored, regardless of the DBCS column specification.

Option
The number of one of the functions displayed on the Tables panel.

Note: The option names (for example, Display row) are point-and-shoot fields; however, if an option is already specified at the Option prompt, it takes precedence over your point-and-shoot selection.

Once you specify a table name, it is retained until you change it or until you leave Dialog Test.

For the Display row (1), Delete row (2), Modify row (3), and Add row (4) options of the Tables option (7.4), you must identify the row you want to display, delete, modify, or add. To do this, you can specify a row number in the **By row number** field, or you can use the **Variable** and **Value** fields to specify a list of search operands. To show the current row, leave the asterisk in the **By row number** field. If you specify both a row number and a search operand, the row number is used and the search operand is ignored.

The current row pointer in the table can be changed only at your request or by your dialog.

The list of search operands consists of variable names and values that allow you to specify the values that specific variables have in a row. You can specify the complete value, abbreviate the value with an asterisk to find a row containing a variable beginning with specified characters, or leave the row blank. The search begins with the row following the current row. If a row matching the search operand is not found, the current row pointer is set to the top. You can repeat the search, if necessary.

Tables Panel Options

The following sections describe the options at the top of the Tables panel.

1—Display row

You can use the Display row option to display the contents of an existing row in an open table. When you select the Display row option, do the following on the Tables panel:

- Specify the name of a table in the **Table Name** field. If the table is not open, specify NOWRITE or WRITE in the **Open tables** field.
- Specify a row number or a search operand list to identify a row.

Note: Use the View action bar choice on the Tables panel to specify whether this display is to be in a pop-up or full-screen.

When you press Enter, you are shown the table row data on a display that you can scroll (Figure 194). The pop-up window can also be resized using the RESIZE command. In the figure, the variables constitute one table row.

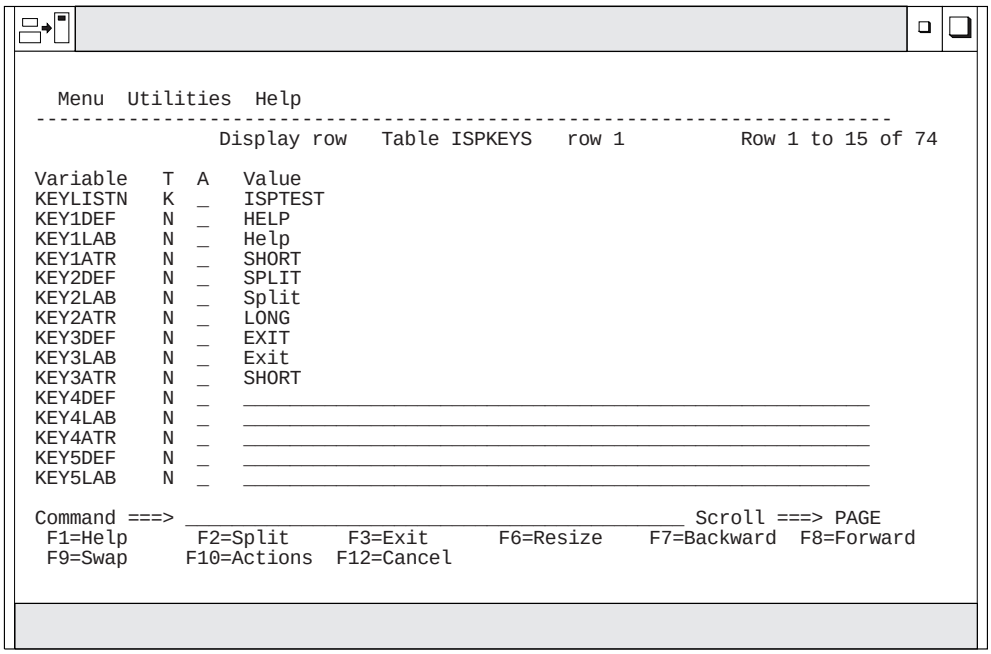

Figure 194. Display Row Panel (ISPYTPD)

Each line on the display shows:

Variable Variable name

T Type of variable:
- **K** Key variable.
- **N** Name variable; non-key.
- **S** Save (extension) variable.

A Attribute of each variable:
- **T** Truncated to 58 characters for display.

Value The first 58 characters of the variable value.

Display Row Commands: The Display Row option uses the END and LOCATE commands described in "Commands" on page 303.

2—Delete row

You can use the Delete row option to remove an existing row from an open table. When you select the Delete row option, do the following on the Tables panel:

- Specify the name of a table in the **Table Name** field. If the table is not open, specify NOWRITE or WRITE in the **Open tables** field.
- Specify a row number or a search operand list to identify a row.

When you press Enter, a panel is displayed (Figure 195 on page 322) to allow you to confirm the delete request.

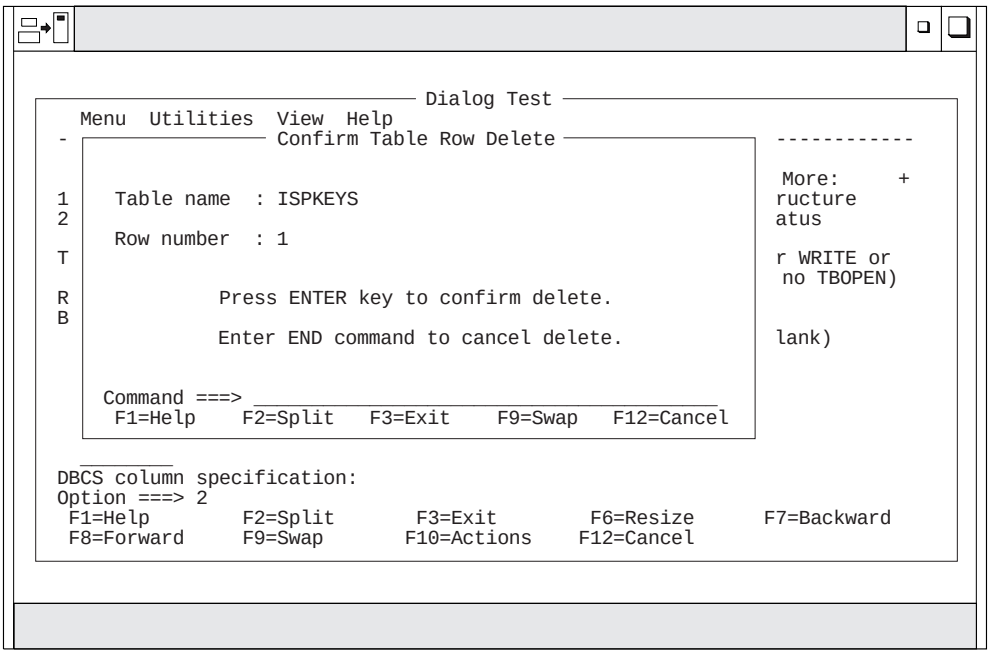

Figure 195. Confirm Table Row Delete Panel (ISPYTPCD)

The fields on the panel are:

Table name
Name of an open table

Row number
Number of the row to be deleted.

Press Enter to delete the row, or enter the END or CANCEL command to cancel the deletion.

3—Modify row

You can use the Modify row option to change the contents of an existing row of an open table. When you select the Modify row option, do the following on the Tables panel:

- Specify the name of a table in the **Table Name** field. If the table is not open, specify NOWRITE or WRITE in the **Open tables** field.
- Specify a row number or a search operand list to identify a row.

Note: Use the View action bar choice on the Tables panel to specify whether this display is to be in a pop-up or full-screen.

When you press Enter, a display that you can scroll (Figure 196 on page 323) is shown. The pop-up window can also be resized using the RESIZE command.

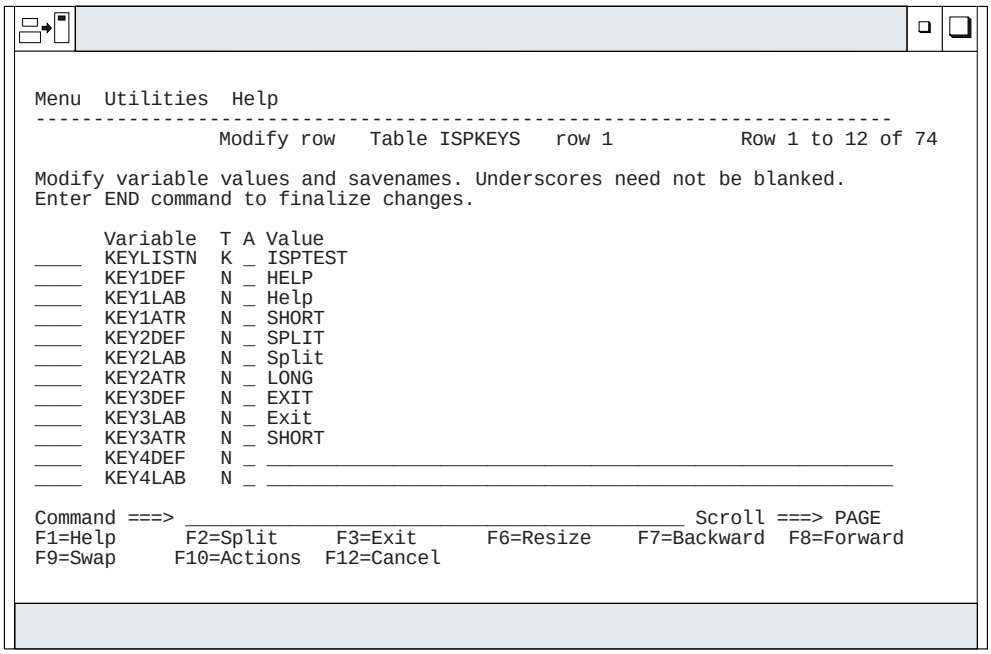

Figure 196. Modify Row Panel (ISPYTPM)

Each line on the panel represents a variable in row 6 of the table and contains a line command area (') and the following fields:

Variable Variable name, modifiable only for save variables.

T Type of variable, non-modifiable:
- **K** Key variable.
- **N** Name variable; non-key.
- **S** Save (extension) variable.

A Attribute of each variable, non-modifiable:
- **T** Truncated to 58 characters for display.

Value Value of the variable up to 58 characters.

Type in new values or change the current values for the key, name, and save variables in the Value column. Enter new save variables by typing over the underscores in the Name column with the variable names and specifying the desired values. The underscores are pad characters; you do not need to blank them out.

When using the Modify row option, be aware of the following:

- If the table has keys, the values for the keys in the added row must be different from those in the existing rows when you leave the Modify row option. Otherwise, a message is displayed and the row is displayed again so you can change the keys.
- If the table was sorted using the TBSORT dialog service and a sort field is modified, the row's position in the table can change to preserve the search order.
- You cannot change the variable name for a key variable or name variable; if you do, an error message is displayed and the original name is restored.
- You cannot delete a key or name variable and its value from the display or table row.

- If you delete a save variable, assume that the variable no longer exists in this row.
- If more than one variable entry has the same name, all instances of that variable are assigned the value of the last occurrence of the variable; that is, the occurrence closest to the bottom of a display that you can scroll.
- Blank save names are ignored and do not need to be deleted, even if data is left in the value.
- Hexadecimal data that usually cannot be displayed is converted to characters that can be displayed or is typed by using the form:

  `X'nnnnnnnn'`

  where:

  n An integer 0–9 or an alphabetic character A–F. There must be an even number of characters within the quotation marks.
- Variables defined with the VDEFINE service as non-character are shown in converted form; do not change them by using the hexadecimal representation. A format or length error causes a message to be displayed when you use the END command.
- When you leave the Modify row option by using the END command, the row is replaced, and the message `Row modified` is issued.

Modify Row Commands: The Modify row option uses the CANCEL, END, and LOCATE commands, and the D (delete), I (insert), and R (repeat) Dialog Test line commands described in "Commands" on page 303. Inserted and repeated lines always have a type of S, because you can add only save variables to a row of an existing table. also, you can delete only save variables.

4—Add row

You can use the Add row option to add a new row after a selected row of an opened table. When you select the Add row option, do the following on the Tables panel:

- Specify the name of a table in the **Table Name** field. If the table is not open, specify NOWRITE or WRITE in the **Open tables** field.
- Specify a row number or a search operand list to identify a row.

Note: Use the View action bar choice on the Tables panel to specify whether this display is to be in a pop-up or full-screen.

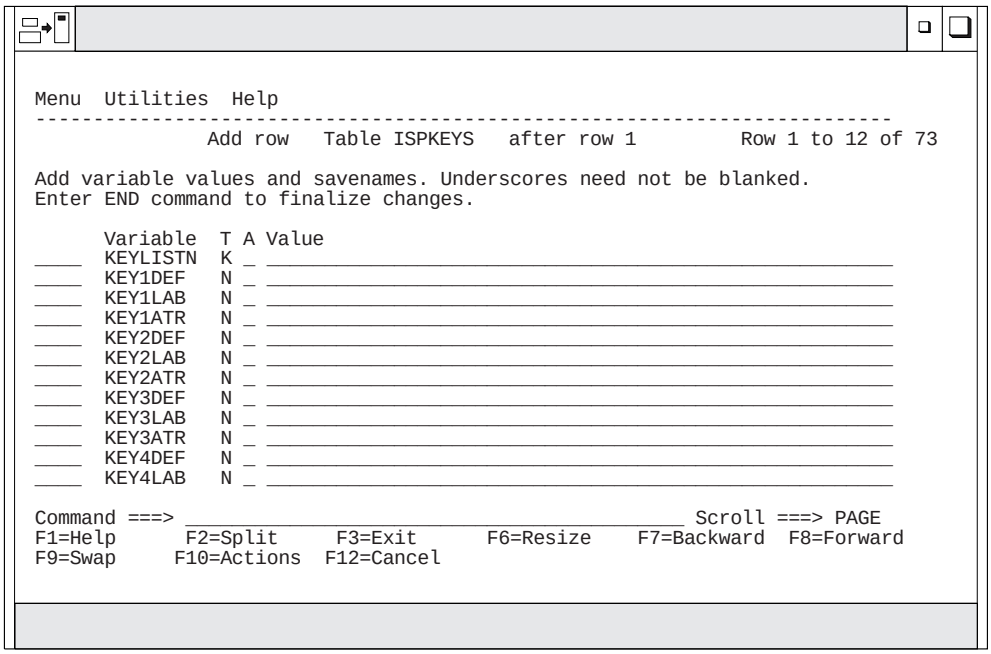

Figure 197. Add Row Panel (ISPYTPA)

When you press Enter, a display that you can scroll is shown (Figure 197), containing all the key and name variables in the table. The pop-up window can also be resized using the RESIZE command.

Each row of the display contains a line command area (') and the following fields:

Variable Variable name.

T Type of variable, non-modifiable:
- **K** Key variable.
- **N** Name variable; non-key.
- **S** Save (extension) variable.

A Attribute of each variable. This attribute is non-modifiable and is not used for this option.

Value Space for the variable value to be added, up to 58 characters.

Type the values for the key and name variables in the Value column, which is originally initialized to all nulls. You cannot change the names of the key and name variables because they were established when the table was created.

You can enter save variables, identified as TYPE S, by typing over the underscores with the save variable names and specifying the desired values. The underscores are pad characters; you do not need to blank them out.

You can add a row with no values to the table, but you are asked to confirm such an action to guard against inadvertent use of the END command.

When using the Add row option, be aware of the following points:

- The position of the new row in the table depends on whether the table was previously sorted using the TBSORT dialog service. If the table was sorted, the new row is placed in sort order; if it has not been sorted, the new row is placed after the row you specified.
- You cannot delete a key or name variable and its value from the display or table row.
- You cannot change the variable name for a key or name variable; if you do, an error message is displayed and the original name is restored.
- If more than one variable entry has the same name, all instances of that variable are assigned the value of the last occurrence of the variable; that is, the occurrence closest to the bottom of the display that you can scroll.
- If the table has keys, the values for the keys in the added row must be different from those in all the existing rows when you leave the Add Row option. Otherwise, a message is displayed and the row is displayed again so you can change the keys.
- Blank save names are ignored and do not need to be deleted, even if data is left in the value.
- Hexadecimal data that usually cannot be displayed is converted to characters that can be displayed or is typed by using the form:

  X'*nnnnnnnn*'

  where:

  n An integer 0–9 or an alphabetic character A–F. There must be an even number of characters within the quotation marks.
- Variables defined with the VDEFINE service as non-character are shown in converted form; do not change them by using the hexadecimal representation. A format or length error causes an error message to be displayed when you use the END command.

Add Row Commands: The Add row option uses the CANCEL, END, and LOCATE commands, and the D (delete), I (insert), and R (repeat) Dialog Test line commands described in "Commands" on page 303. Inserted and repeated lines always have a type of S because you can add only save variables to a row of an existing table. Also, you can delete only save variables.

5—Display structure

When you select the Display structure option on the Tables panel, you are shown a display of the table structure for the table specified in the **Table Name** field. You can scroll this display (Figure 198 on page 327) using the scroll commands. The table name appears in the panel header.

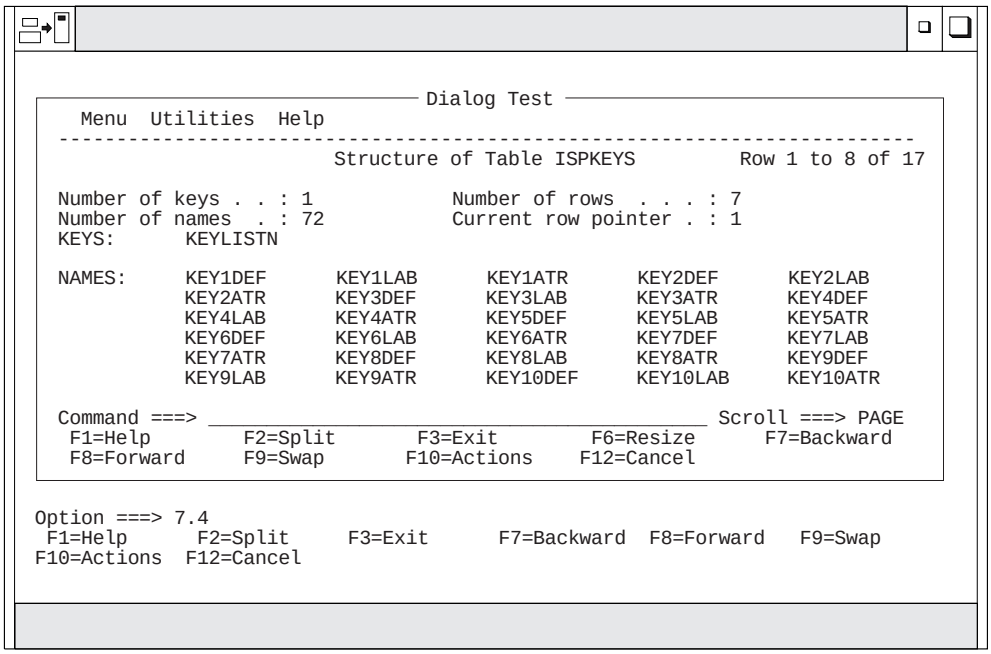

Figure 198. Structure of Table Panel (ISPYTPSR)

The display contains the following fields:

Number of keys Number of key variables in a row.

Number of names Number of name variables in a row.

Number of rows Number of rows currently in the table.

Current row pointer Current row pointer value.

KEYS A list of the names of all the key variables.

NAMES A list of the names of all the name variables.

Display Structure Command: The KEYS and NAMES lists can be scrolled, and you can use the LOCATE command to find a specific variable name. See “Finding a Character String” on page 305 for information on its use.

6—Display status

If you select the Display status option from the Tables panel, one of two data information panels is displayed for the table specified in the **Table Name** field. The information reflects all operations using the specified table, including those done at your request by the Tables options under Dialog Test.

Table Not Open: If the table is not open for your user ID, you are shown a Status of Table panel (Figure 199 on page 328) with the value NOT OPEN in the **Status for this screen** field.

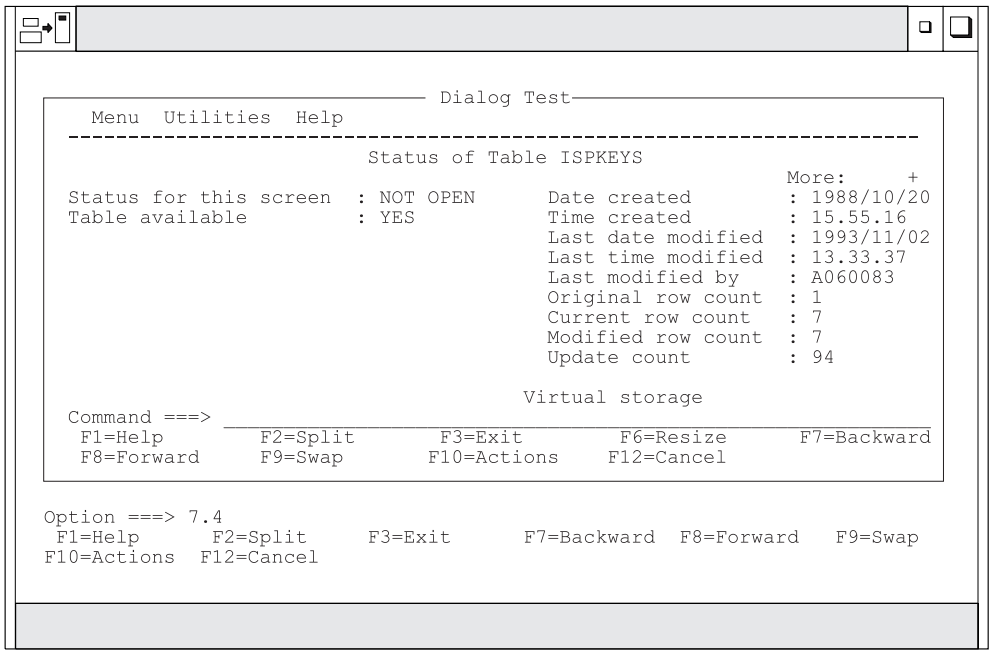

Figure 199. Status of Table Panel with Table Not Open (ISPYTPS1)

The panel contains the following fields:

Status for this screen Shows that the table is NOT OPEN for this logical screen.

Table available YES or NO; whether you can open the table.

Date created Date the table was created; shown in national format.

Time created Time the table was created.

Last date modified Date the table was last modified; shown in national format.

Last time modified Time the table was last modified.

Last modified by User ID of the user who last changed the table.

Original row count The number of rows that were added to a newly created table before closing the table for the first time.

Current row count The number of rows currently in the table.

Modified row count The number of rows in the table that have been changed at least once. A row that has been added to an existing table is also considered a changed row.

Update count Number of times the table has been modified. One or more updates during any table open or close sequence increments this counter by one.

Virtual storage The number of bytes of virtual storage required by the table when it is open.

The Modify row option on the Tables panel allows you to change a key of a keyed table by adding the new row and deleting the old row. The row counts thus reflect this processing when changing a key value.

Table Open: If the table is open for your user ID, you are shown a Status of Table panel (Figure 200) with the value OPEN in the Status for this screen field.

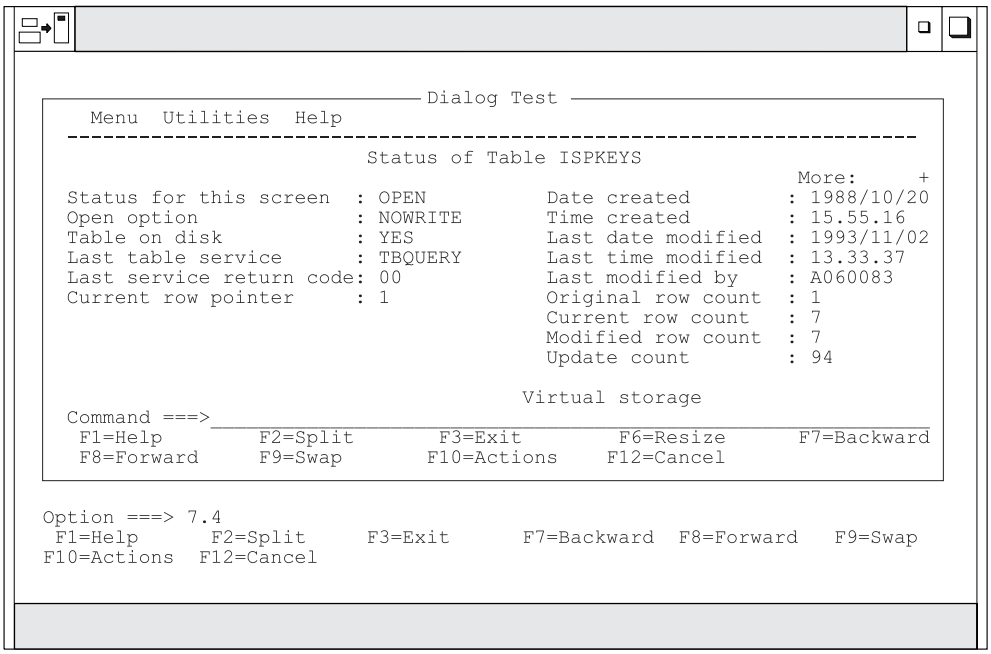

Figure 200. Status of Table Panel with Table Open (ISPYTPS1)

This panel contains the following fields:

Status for this screen
Shows that the table is OPEN for this logical screen.

Open option
Option used to open the table; this value can be WRITE, NOWRITE, SHR WRITE, or SHR NOWRITE.

Table on disk
Whether the table has been saved on disk; this value can be YES or NO.

Last table service
Name of the last table service called.

Last service return code
Last table services return code.

Current row pointer
Current position in the table.

Date created
Date the table was created; shown in national format.

Time created
Time the table was created.

Last date modified
Date the table was last modified; shown in national format.

Last time modified
Time the table was last modified.

Last modified by
User ID of the user who last changed the table.

Original row count
The number of rows that were added to a newly created table before closing the table for the first time.

Current row count
The number of rows currently in the table.

Modified row count
The number of rows in the table that have been changed at least once. A row that has been added to an existing table is also considered a changed row.

Update count
Number of times the table has been modified. One or more updates during any table open or close sequence increments this counter by one.

Virtual storage
The number of bytes of virtual storage required by the table.

The Modify row option on the Tables panel allows you to change a key of a keyed table by adding the new row and deleting the old row. The row counts thus reflect this processing when changing a key value.

Log (Option 7.5)

The Log option (7.5) allows you to display and browse data recorded in the ISPF transaction log, as shown in Figure 201.

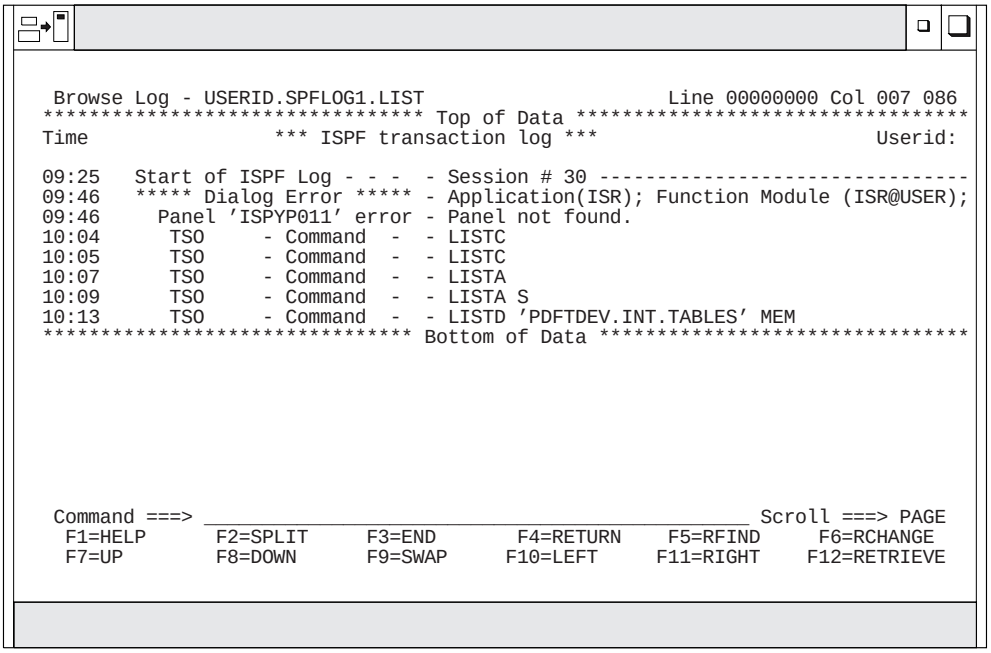

Figure 201. ISPF Transaction Log (ISPYLP1)

You can use all the Browse commands, except BROWSE, while looking at the ISPF log.

ISPF Transaction Log Not Available

Sometimes the log is not available for browsing. This can occur when:

- The log data set is empty.
- The log data set was not created for this session because 0 was entered in the **Primary pages** field on the Log Set Defaults and List Set Defaults pop-ups, which can be reached by selecting Option 0 from the ISPF Primary Option Menu and then selecting the Log Data set defaults and List Data set defaults choices from the Log/List pull-down.
- No data has been written to the log during this session, and although the log data set exists and is not empty, you did not end the last ISPF session normally; for example, an abend can have ended the session. You can browse the log if you take an action that causes a log entry to be written.
- The log data set was previously allocated with a disposition of OLD. It must be allocated with a disposition of MOD.
- The log data set has been previously allocated to SYSOUT.

Trace Output in ISPF Log

The following trace output is written to the ISPF log:

- Trace header entries
- Function trace entries
- Variable trace entries.

Each type of entry follows the format of other log entries: a short summary on the left, and a detailed entry on the right.

Trace Header Entries

The first line of trace data is a trace header that identifies the trace and shows the current application ID, the current function, and the current screen. For split-screen mode, the original screen is 1 and the screen generated by the SPLIT command is 2. The summary section of the header entry identifies the entry as a dialog trace. The trace header entry is written during the test session whenever a function or variable trace entry is to be written for an application, function, or screen that differs from the last.

For example, a trace of logical screen 1 of function TESTF1 in application ISR would place the following line in the ISPF log:

```
DIALOG TRACE ---- - APPLICATION(ISR)  FUNCTION(TESTF1)  SCREEN(1)
```

Function Trace Entries

A pair of function trace entries, a BEGIN entry and an END entry, is generated during a function trace for each traced dialog service that is called. A service can be called from a user dialog that is currently processing, or from a Dialog Test action for the user. The summary portion of each of these entries shows the name of the dialog service, whether it is the beginning or the end of its processing, and whether it was called indirectly from a Dialog Test panel. If the word TEST does not appear, the user dialog called the service directly. For END entries, the service return code is shown on a second line.

The detailed section of the log entries contains an image of the service call and the parameters used to call that service, using two lines if necessary. For example:

Log (Option 7.5)

```
DISPLAY .. BEGIN ... TEST - DISPLAY PANEL(XYZ)

⋮
DISPLAY .. END.. ... TEST - DISPLAY PANEL(XYZ)
  ..RETURN CODE (0)
```

There can be many log entries between the begin and end entries. For example, any active variable traces can cause log entries during a SELECT trace.

You should note the following about the service call image:

- The image is truncated after the second line.
- ISPEXEC calls are shown as typed in the dialog.
- ISPLINK and ISPLNK calls (except for the ISREDIT service) are displayed with their parameter values separated by commas. Name-lists are shown as typed in the dialog, in either string or structure format. Structure format includes the count, element length, and list of names. For a variable services parameter whose context is defined by the name-list parameter on the service call, the first four bytes of the parameter value are displayed in hexadecimal format (`X'nnnnnnnn'`).
- Dialog Test calls are shown using the command call format without the ISPEXEC prefix.

Variable Trace Entries

Two variable trace entry lines are generated for each variable trace log entry. The variable can be referred to or set by a user dialog directly or indirectly by a dialog service, or explicitly set by a Dialog Test option for a user. The summary parts of these entry lines identify the trace. Line one shows the name of the variable, the pool that contains it (F for function, S for shared, P for profile), and an indicator (TEST) if a Dialog Test option set the value. Line two shows the operation done for the variable (GET, PUT, or CHG) and the name of the dialog service that did the operation for non-TEST entries.

The current value of the variable is printed in the detail section of the log entry and can span two lines. For example:

```
LIB1.... POOL(P) .... - VALUE(FLAG)
 ...GET by EDIT       -
```

The value is truncated after the second line.

If the variable value contains characters that cannot be displayed, the value is displayed in hexadecimal format (`X'nnnnnnnn'`).

Dialog Services (Option 7.6)

The Dialog Services option (7.6) allows you to call a dialog service by entering the service call with or without the ISPEXEC characters.

Figure 202 on page 333 shows the Invoke Dialog Service panel.

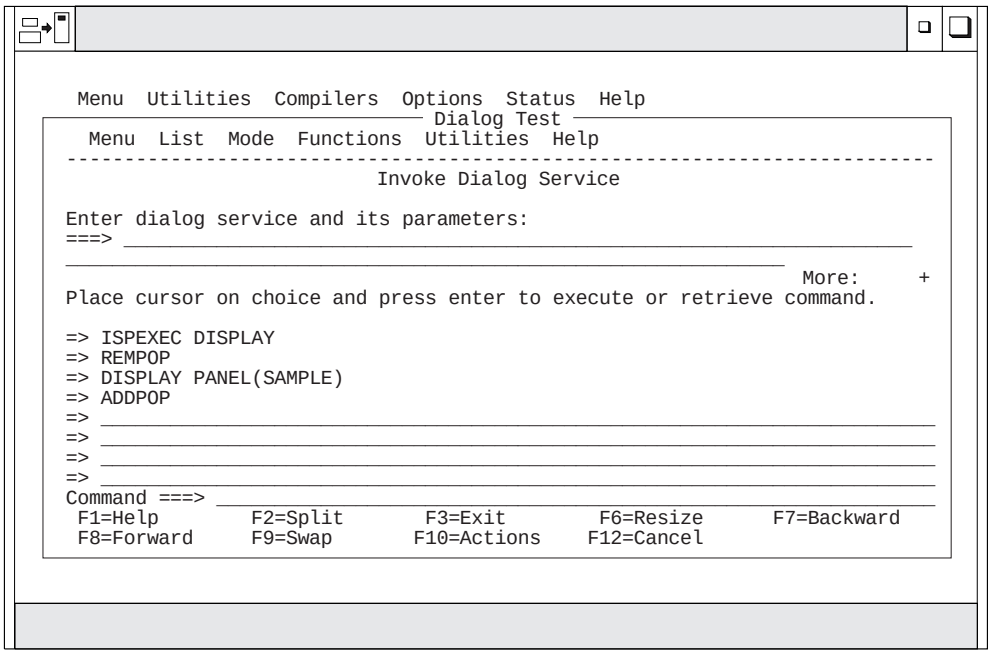

Figure 202. Invoke Dialog Service Panel (ISPYS1)

On this panel, if you want to display panel XYZ, enter:

```
===> DISPLAY PANEL(XYZ)
```

or

```
===> ISPEXEC DISPLAY PANEL(XYZ)
```

The service is called when you press the Enter key. You are informed of the service's completion and return code.

You can call any dialog service that is valid in the command environment except CONTROL at a breakpoint or before calling a function.

The Invoke Dialog Service panel has a saved command area (the bottom portion of the screen) that contains a list of up to 10 commands that you have saved. These commands are point-and-shoot fields. The mode you specify from the Mode pull-down menu on the action bar determines what happens when you select a command.

Invoke Dialog Service Panel Action Bar

The Invoke Dialog Service panel action bar choices function as follows:

Note: The Invoke Dialog Service panel action bar contains three pull-down choices that let you control the saved command area.
- List
- Mode
- Functions.

Menu See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

List The List pull-down offers you the following choices:

Note: The current setting will be shown as an unavailable choice; that is, it will display in blue (the default) with an asterisk as the first digit of the selection number (if you are running in GUI mode, the choice will be *grayed*).

Update On
Makes the list of commands in the saved command area *live*; that is, new commands are appended to the list automatically.

Update Off
Makes the list of commands in the saved command area *static*; that is, new commands are not appended to the list automatically.

Mode The Mode pull-down offers you the following choices:

Note: The current setting will be shown as an unavailable choice; that is, it will display in blue (the default) with an asterisk as the first digit of the selection number (if you are running in GUI mode, the choice will be *grayed*).

Retrieve
Allows commands to be retrieved from the saved command area and placed on the TSO Command Entry field (==>) so that you can edit them before they are executed. This mode is the default.

Execute
Allows commands to be retrieved from the saved command area and executed in one step.

Functions
The Functions pull-down offers you the following choice:

Note: The choice is unavailable when you initially enter the panel and after you refresh the list; that is, it will display in blue (the default) with an asterisk as the first digit of the selection number (if you are running in GUI mode, the choice will be *grayed*).

Refresh List
Clears the existing list from the display.

Utilities
See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:
1 General
2 General Dialog Test

Special Display Panel

If you issue the DISPLAY service call with only a message parameter, or with no parameter at all, the Special Display Panel is shown (Figure 203 on page 335).

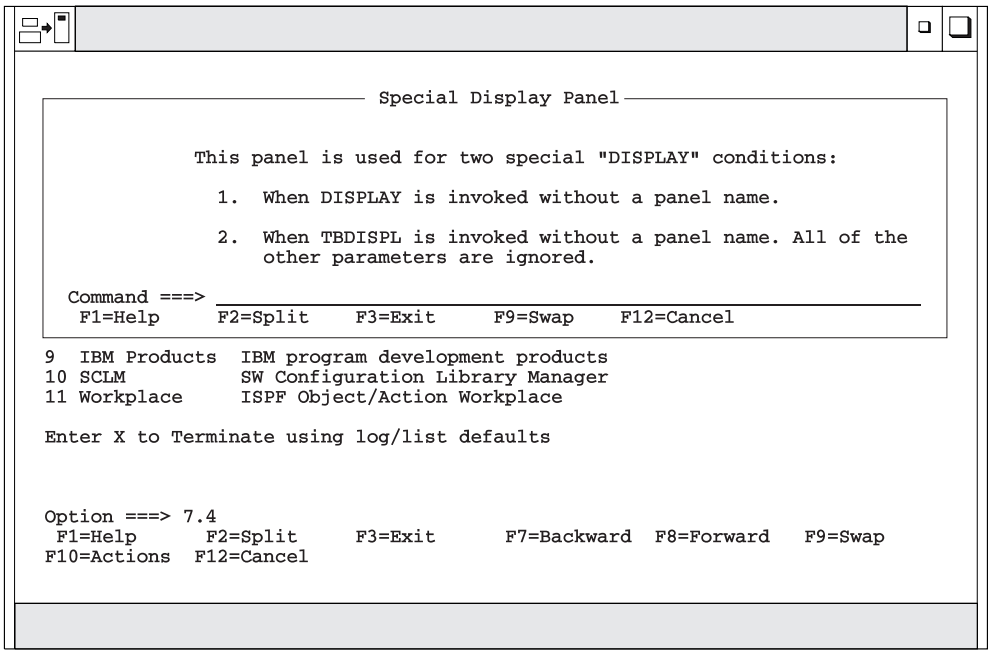

Figure 203. Special Display Panel (ISPYS2)

Traces (Option 7.7)

The Traces option (7.7) allows you to define, change, and delete trace specifications. You can trace processed dialog services, except for the VPUT or VGET service issued from a panel, and dialog variables to which are referred during dialog processing. Trace data is placed in the transaction log, where you can browse it by using the Log option (7.5) or print it when you leave ISPF. You can also print the log data set during an ISPF session by using the ISPF LOG command.

Since tracing can degrade dialog performance and create large amounts of output, you should be careful in setting the scope of trace definitions.

When you select this option, a selection panel is displayed (Figure 204 on page 336) on which you can show the type of trace you want to define.

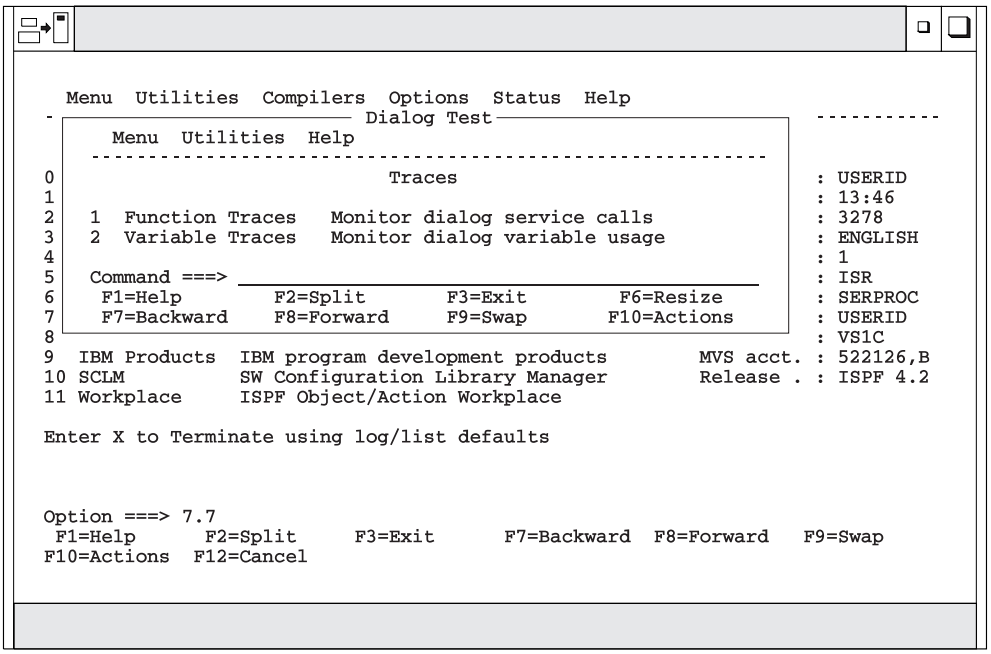

Figure 204. Traces Panel (ISPYRI1)

The following sections describe the options shown at the top of the Traces panel.

1—Function Traces

The Function Traces option on the Traces panel is used to establish criteria for recording the names of dialog service calls, the service parameters, and return code in the ISPF log. If either a dialog or Dialog Test processing causes a service call, that call is recorded in the trace. An example of Dialog Test processing that causes a service call is the use of the Panels option (7.2) to display a panel. Whenever a new application or function causes data to be recorded, a header is placed in the trace.

When you select the Function Traces option, you are shown a panel that you can scroll (Figure 205 on page 337). The pop-up window can also be resized using the RESIZE command. The panel lists all currently defined function traces.

You can add, delete, and change function trace definitions by using this panel, either before calling a function or at a breakpoint.

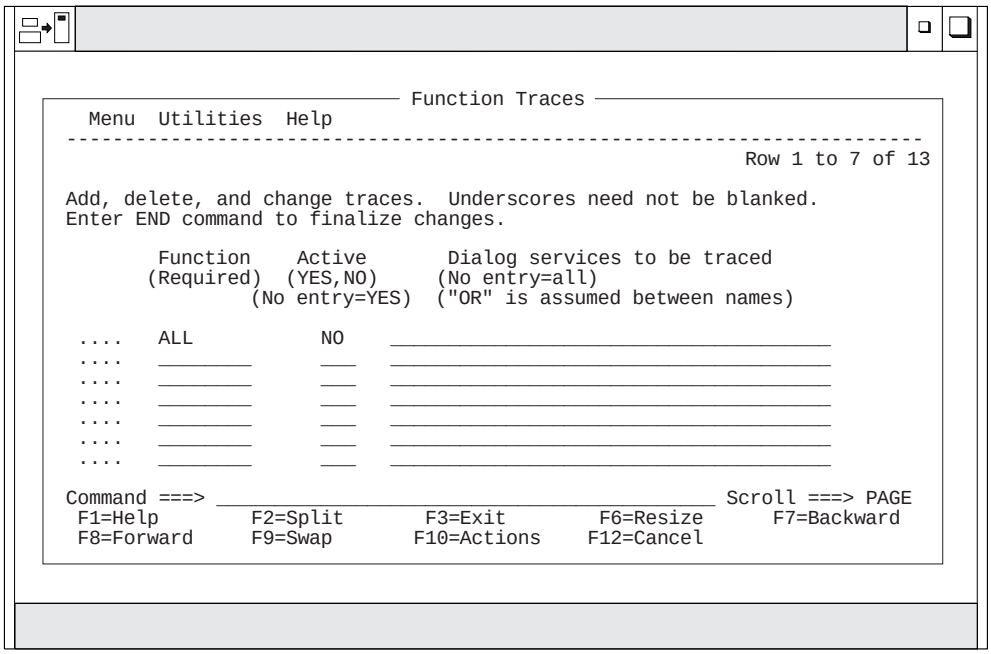

Figure 205. Function Traces Panel (ISPYRFP)

Each line defines a function trace, showing a line command area (') and the following fields:

Function
The name of the user function that should contain the trace, or ALL to trace every dialog function. Initially, ALL is presented on the display but is not started. Change the NO to a YES in the Active column to start such a trace. If you want to trace a function whose name is ALL, enclose the name in single quotes to distinguish it; that is, type 'ALL', not ALL.

Active Whether the trace is to be active now:
YES The trace is currently active.
NO The trace is currently not active.
Blank The trace is currently active.

Dialog services to be traced
Names of dialog services to be traced. No entry in this field shows all calls to dialog services for the function are to be traced.

All function traces exist until you leave Dialog Test, or until you delete them from this panel. Enter new information by typing over the existing data. The underscores are pad characters to show the starting and ending positions for each field; you do not need to blank them out. You can create several function traces before you press the Enter key.

During dialog processing, to determine whether the criteria for a function trace have been met, Dialog Test processes a logical AND of the Function, Active, and Dialog services fields specified for that function trace. Dialog Test also processes a logical OR within the Dialog services field to determine whether a particular dialog service has been matched. Therefore, if you want more than one trace for a function, you should create multiple rows.

Function Traces Commands

The Function Traces option uses the CANCEL, END, and LOCATE commands, and the D (delete), I (insert), and R (repeat) Dialog Test line commands described in "Commands" on page 303.

2—Variable Traces

The Variable Traces option on the Traces panel is used to establish criteria for recording variable usage. A variable's usage is recorded if an ISPF service is directly asked to operate on the variable (such as VGET, VPUT, and VCOPY), or if an ISPF service is indirectly asked to operate on the variable (such as DISPLAY). Variables changed under the Variables option (7.3) are also recorded if the trace specifications are met.

When you select the Variable Traces option, you are shown a display that you can scroll (Figure 206). The pop-up window can also be resized using the RESIZE command. The display lists all currently defined variable traces. You can add, delete, and change variable trace definitions at a breakpoint, or by using this panel before calling a function.

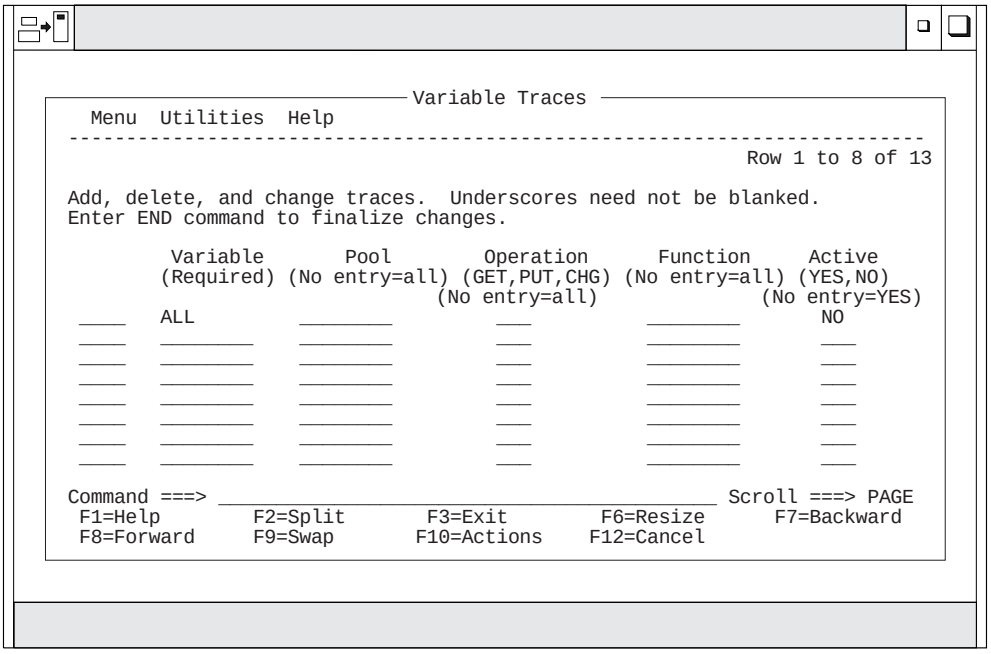

Figure 206. Variable Traces Panel (ISPYRVP)

Each line defines a variable trace, showing a line command area (') and the following fields:

Variable
Name of the variable to be traced, or ALL to show tracing of all variables. Initially, ALL is presented on the display but is not started. Change the NO in the Active column to YES to start such a trace. If you want to trace a variable whose name is ALL, enclose that name in single quotes to distinguish it; that is, type `'ALL'`, not `ALL`.

Pool Pool of interest for variable tracing:
- **F** Function variable pool.
- **S** Shared variable pool.
- **P** Profile variable pool.

Blank All pools.

Operation
Type of variable reference to trace:
GET Accesses to the variable's value.
PUT Stores to the variable's value.
CHG Changes to the variable's value.
Blank All references to variable are traced.

Function
If there is no entry, this variable is traced for all functions.

Active Indication of whether the trace is to be active:
YES The trace is currently active.
NO The trace is currently not active.
Blank The trace is currently active.

All variable trace definitions exist until you leave Dialog Test, or until you delete them from this panel. Enter new information by typing over the existing data. The underscores are pad characters to show the start and end of each field; you do not need to blank them out. You can create several variable traces before you press the Enter key.

During dialog processing, to determine whether the criteria for a variable trace have been met, Dialog Test processes a logical AND of the Variable, Pool, Operation, Function, and Active fields specified for that variable trace. Therefore, if you want more than one trace for a variable, you should create multiple rows.

Variable Traces Commands

The Variable Traces option uses the CANCEL, END, and LOCATE commands, and the D (delete), I (insert), and R (repeat) Dialog Test line commands described in "Commands" on page 303.

Breakpoints (Option 7.8)

A *breakpoint* is a location at which the processing of your dialog is suspended so that you can use Dialog Test facilities. The Breakpoints option (7.8) allows you to show where such temporary suspensions should occur. At a breakpoint, you can examine and manipulate dialog data such as tables and variables. You can also specify new test conditions, such as traces and other breakpoints.

Breakpoints are located immediately before a dialog service receives control or after it relinquishes control. Breakpoint definitions cause special handling within the ISPLINK, ISPLNK, or ISPEXEC interfaces to dialog services; no user dialog code is modified. When the criteria for a breakpoint are satisfied, your dialog is suspended. You can then do any of the functions shown on the Breakpoint Primary Option Panel. You cannot use as a breakpoint the VPUT or VGET service issued from a panel, nor will breakpoints occur for selections from a menu (selection) panel. Breakpoints occur only for dialog service calls that use the ISPLINK, ISPLNK, or ISPEXEC interfaces.

Along with several menu bar items common across ISPF Version 4.1, the Breakpoints panel has added the Qualify pull-down. You can now display the qualification parameter values from the Breakpoints panel in two ways:
- Enter the QUAL primary command
- Select the Qualifications... choice from the Qualify pull-down.

The Function and Active columns are overlaid with a column of data titled Qualification Parameter Values; this column was logically off the screen to the right of the first Breakpoints panel. To resume the format of the Breakpoints panel, you can do one of the following:

- Enter the RESUME primary command
- Select the Breakpoints... choice from the Qualify pull-down.

Specifying Breakpoints

When you select the Breakpoints option, you are shown a display that you can scroll (Figure 207). The pop-up window can also be resized using the RESIZE command. The display lists all currently defined breakpoints for this session. You can use this panel to add, delete, or change breakpoint definitions, either before calling a function or at a breakpoint.

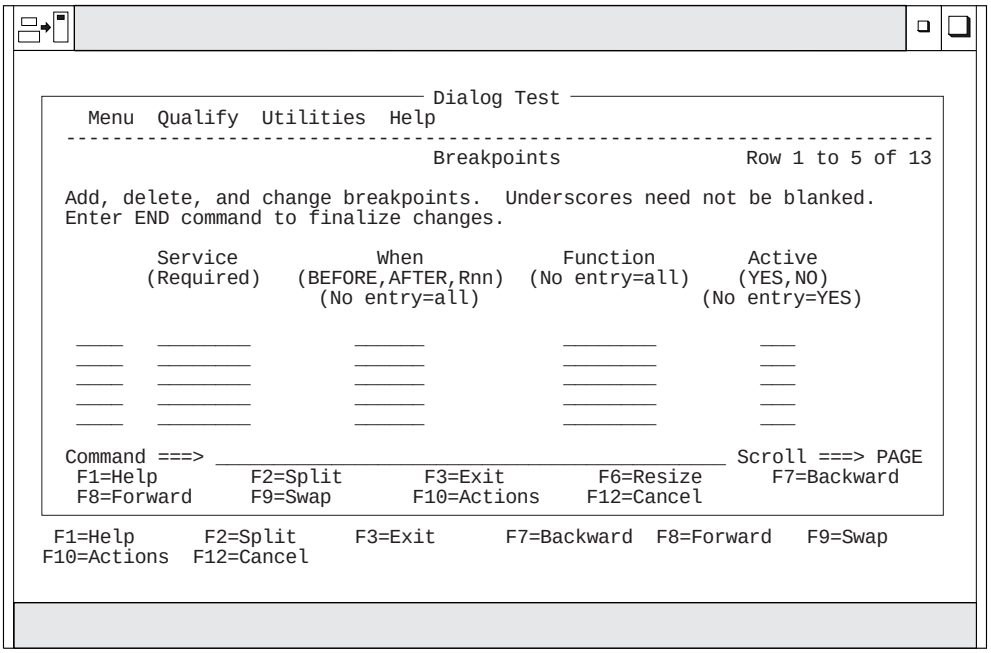

Figure 207. Breakpoints Panel (ISPYBP1)

Breakpoints Panel Action Bar

The Breakpoints panel action bar choices function as follows:

Menu — See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Qualify — Displays the Qualification parameter values field on the Breakpoints panel so that you can further constrain the conditions under which a breakpoint is to occur.

Utilities — See the **Utilities Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General
2 Definitions
3 Breakpoints Panel
4 Qualification Panel
5 Line Commands
6 Primary Commands
7 Usage Notes
8 General Dialog Test

Breakpoints Panel Fields

Each line defines a breakpoint and includes a line command area (') and the following fields:

Service Name of the dialog service at which to interrupt dialog processing. This field is required.

When Indication of when the breakpoint should occur:

BEFORE Before the service receives control.

AFTER After the service finishes processing.

Rnn After the service finishes processing, but only if the return code is the integer *nn*.

Blank Before and after service processing.

Function The program function or command function that must be processing for the breakpoint to be taken. No entry in this field shows that the breakpoint can occur for all functions.

Active Indication of whether the breakpoint is to be active now:
YES It is currently active.
NO It is currently not active.
Blank It is currently active.

If present at the end of a row, shows that qualification data exists for the breakpoint. This field is non-modifiable. See "Qualification Parameter Values" for additional information.

All input fields contain underscores. Empty lines are added to the first display to fill up the screen. If you delete all the lines used for defining breakpoints, the display is automatically refreshed with enough empty lines to fill the screen again.

All breakpoints exist until you end or cancel your Dialog Test session, or until you delete them from this panel. Enter new information by typing over the existing data. The underscores are pad characters to show the starting and ending positions for each field; you do not need to blank them out. You can create several breakpoints before you press the Enter key.

Breakpoints Commands

From the Breakpoints panel, you can use the CANCEL, END, LOCATE, QUAL, and RESUME commands, and the D (delete), I (insert), and R (repeat) Dialog Test line commands described in "Commands" on page 303.

Qualification Parameter Values

A different part of the Breakpoints panel allows you to further constrain the conditions under which a breakpoint is to occur by allowing you to enter

qualification parameter values. On this part of the panel, you can list parameter data with which the named service must have been called.

The Breakpoints panel with the Qualification parameter values field is displayed (Figure 208) if you enter the QUAL primary command on the first part of the Breakpoints panel or if you select the Qualifications... choice from the Qualify pull-down. The Function and Active columns are overlaid with a column of data titled Qualification parameter values; this column was logically off the screen to the right of the first Breakpoints panel. To resume the format of the Breakpoints panel, use the RESUME primary command or select the Breakpoints... choice from the Qualify pull-down.

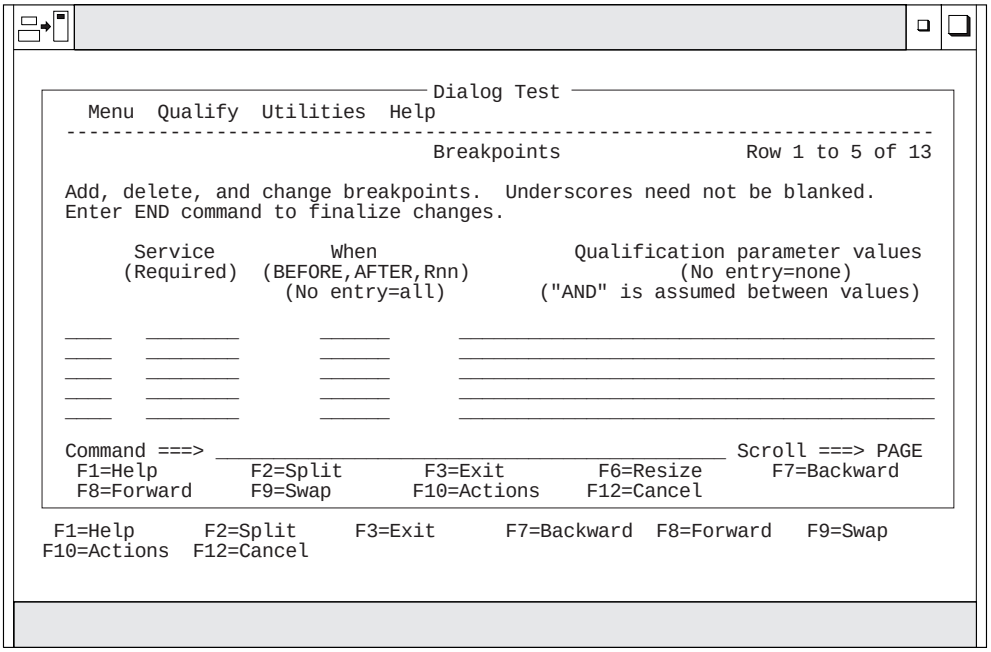

Figure 208. Breakpoints Panel with Qualification Parameter Values (ISPYBP2)

The lines on the Breakpoints panel with qualification parameter values correspond to the lines on the first Breakpoints panel; "Specifying Breakpoints" on page 340 describes the Service and When fields. In the Qualification parameter values field, you can enter any combination of the following for all services except SELECT:

- One or more parameter values, separated by blanks, that the dialog passes to the service. No order is implied by the specification of the parameter values.

  For example, if you want a breakpoint to occur when message `ABC0001` is included on a DISPLAY service request, you should specify ABC0001. If the breakpoint should occur only when message `ABC0001` and panel XYZ are both included, you should specify ABC0001 XYZ.
- One or more command call keywords, separated by blanks, that have values that are not blank when a dialog calls the service. For ISPLINK or ISPLNK calls, the keywords matching the calling sequence parameter positions are used.

  For example, if you want a breakpoint to occur whenever the DISPLAY service is called with a message, then specify MSG.

For ISPF's SELECT and ISREDIT services, you can enter one or more parameter strings that would be entered on these two service calls. A *parameter string* is a series of characters delimited by a blank, a comma, a single quotation mark, or a left or right parenthesis.

For example, if a SELECT call is:

```
SELECT PGM(ABC) PARM(1 2 3 5 '6'),
```

then all or any of the following strings can be used: `SELECT`, `PGM`, `ABC`, `1`, `2`, `3`, `5`, `6`.

For a breakpoint to be taken, all qualification data listed must be matched.

All line commands and change capabilities are still available on the Breakpoints panel with qualification parameter values.

During dialog processing, to determine whether the criteria for a breakpoint have been met, Dialog Test processes a logical AND of the Service, When, Function, Active, and Qualification fields specified for that breakpoint. Therefore, if you want more than one breakpoint for an ISPF service, you should create multiple rows.

When you use the Breakpoints option (7.8), be aware of the following items:

Qualification
If you plan to qualify several breakpoints, it can be more efficient to specify all breakpoint data on the Breakpoints panel with qualification parameter values.

END command
You can use the END primary command from either the first Breakpoints panel or the Breakpoints panel with qualification parameter values.

Input errors
You must correct input errors before leaving any display using the END, QUAL, or RESUME command. You can use the CANCEL command to end the Breakpoints option, even if input errors remain on the display.

Syntax checking
A dialog service call must pass a basic syntax check before a breakpoint is honored.

Control display
If any CONTROL service settings for DISPLAY LINE or DISPLAY SM (Session Manager) were in effect before the breakpoint, such settings are lost.

Finding a Breakpoint

If you call a dialog function or selection panel and find a breakpoint, the Breakpoint Primary Option Panel is displayed. Figure 209 on page 344 shows this selection panel at a breakpoint just after the ISPF DISPLAY service was called while processing the TEST function in application PAY.

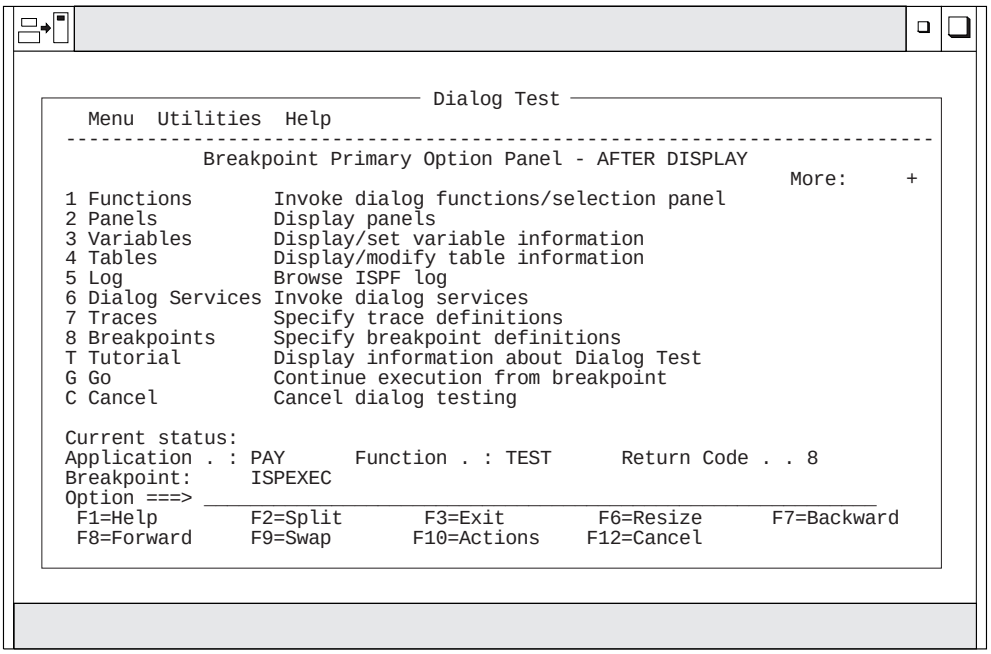

Figure 209. Breakpoint Primary Option Panel (ISPYXM2)

Like the Dialog Test Primary Option Panel, the Breakpoint Primary Option Panel allows you to use the RETURN command from any one of the selected test options to display the Breakpoint Primary Option Panel again. At the Breakpoint Primary Option Panel, the END and RETURN commands have no effect. You must use the Go option (G) to end processing at this breakpoint and continue processing the dialog being tested, or the Cancel option (C) to cancel the Dialog Test option (7). This protects against inadvertent loss of data.

The Breakpoint Primary Option Panel contains all the options of the Dialog Test Primary Option Panel except Exit (7.x) and, as such, presents all but one of the Dialog Test functions to you.

This panel also contains two options not shown on the Dialog Test Primary Option Panel: Go (G) and Cancel (C). When a breakpoint occurs, these options allow you to continue processing or stop processing, respectively:

G The Go option continues dialog processing from a breakpoint. The user dialog resumes processing from the point at which it was suspended.

C The Cancel option ends dialog testing and displays the first primary option panel you displayed at the beginning of your ISPF session again. All trace and breakpoint definitions are lost when you leave Dialog Test.

When a user dialog finds a breakpoint, the current dialog environment is saved. When you select the Go option, the environment is restored, except for the following:

- If you change variable, table, and file tailoring data at a breakpoint, these actions are an extension of the suspended dialog; it is as though the dialog had taken all the actions itself during processing.
- If you change the service return code on the Breakpoint Primary Option Panel, the new return code is passed back to the dialog as though the service had set the new return code itself.

- If you process the PANELID command at the breakpoint, the last setting for displaying panel identifiers is retained.
- If any CONTROL service settings for DISPLAY LINE or DISPLAY SM (Session Manager) were in effect before the breakpoint, such settings are lost.

Note that the manipulation of one dialog part can cause a change to another dialog part. For example, if a panel is displayed, variables can be set.

All trace and breakpoint definitions are lost if you select the Cancel option.

The Breakpoint Primary Option Panel also displays the following information:

AFTER or BEFORE
An indication of whether the dialog has been suspended after or before the service has processed.

Service Name
The name of the service at which the dialog has been suspended. In Figure 209 on page 344, the service name is DISPLAY.

Current status:
The application's current status when the breakpoint occurred. The following fields show this status:

Application
The application identifier of the suspended user dialog.

Function
The program or command name of the suspended user dialog.

Return code
The dialog service return code. This field is displayed only if the breakpoint occurs after the dialog service has processed. The Return code field is modifiable; its value is passed back to the dialog (as the service's) when you select the Go option. This helps test dialog error handling.

Breakpoint
Up to four display lines showing an image of the dialog service call. Truncation occurs after the second line.

ISPEXEC calls are shown as typed.

ISPLINK (ISPLNK) calls are displayed with their parameter values separated by commas. Name-lists are shown as typed in the dialog, in string format or in structure format. Structure format includes the count, element length, and list of names. For variable services parameters whose context is defined by the name-list parameter on the service call (for example, the variable value areas for a VDEFINE), the first four bytes of the parameter value are displayed in hexadecimal format (`X'nnnnnnnn'`).

ISPEXEC calls from a program are the same as ISPEXEC calls from a command except that ISPEXEC is not displayed.

Tutorial (Option 7.T)

The Tutorial option (7.T) allows you to display information about the Dialog Test facilities. Figure 210 on page 346 shows the first panel displayed when you select the Tutorial option.

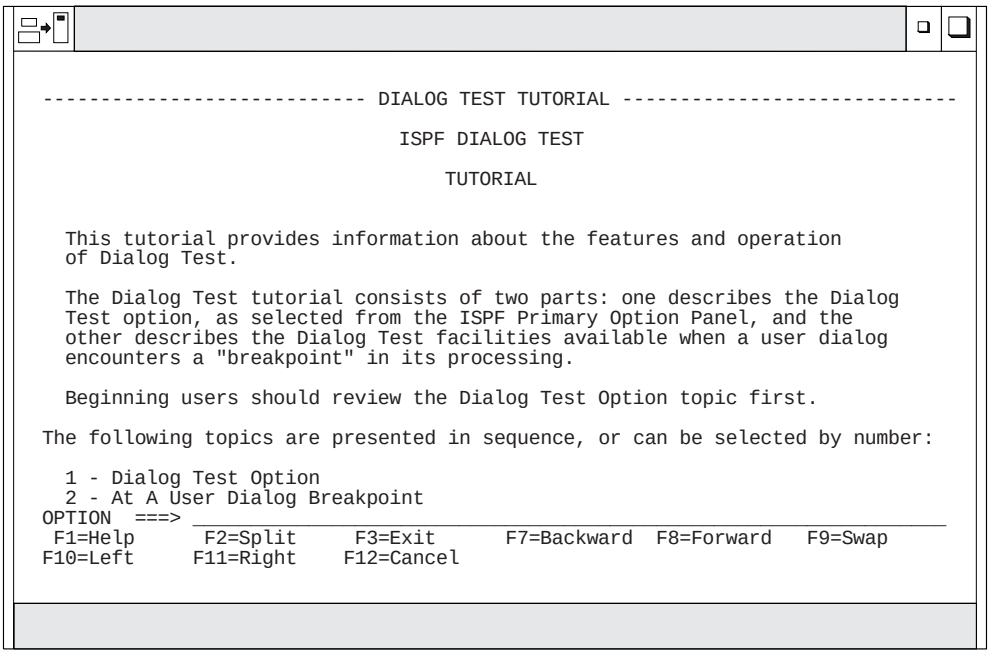

Figure 210. Dialog Test Tutorial - First Panel (ISP70000)

The default function key command assignments for a terminal with 12 function keys are shown at the bottom of the screen if you enter the PFSHOW command.

Exit (Option 7.X)

The Exit option (7.X) ends your Dialog Test session. All trace and breakpoint definitions are lost.

Chapter 9. Library Management Facility (Option 8)

When you select the Library Management Facility option (8) from the ISPF Primary Option Menu, the panel shown in Figure 211 is displayed. The options on this panel give you access to the Library Management Facility (LMF), which is an extension of the ISPF library concept.

To use the Library Management Facility option, you must have pre-allocated the ISRCFIL control file. For complete information on the use of the Library Management Utilities option, refer to *ISPF Library Management Facility* An alternate method of library management is provided by the Software Configuration and Library Manager (SCLM), option 10. See "Chapter 11. SCLM (Option 10)" on page 353 for an overview, or refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide* for complete information.

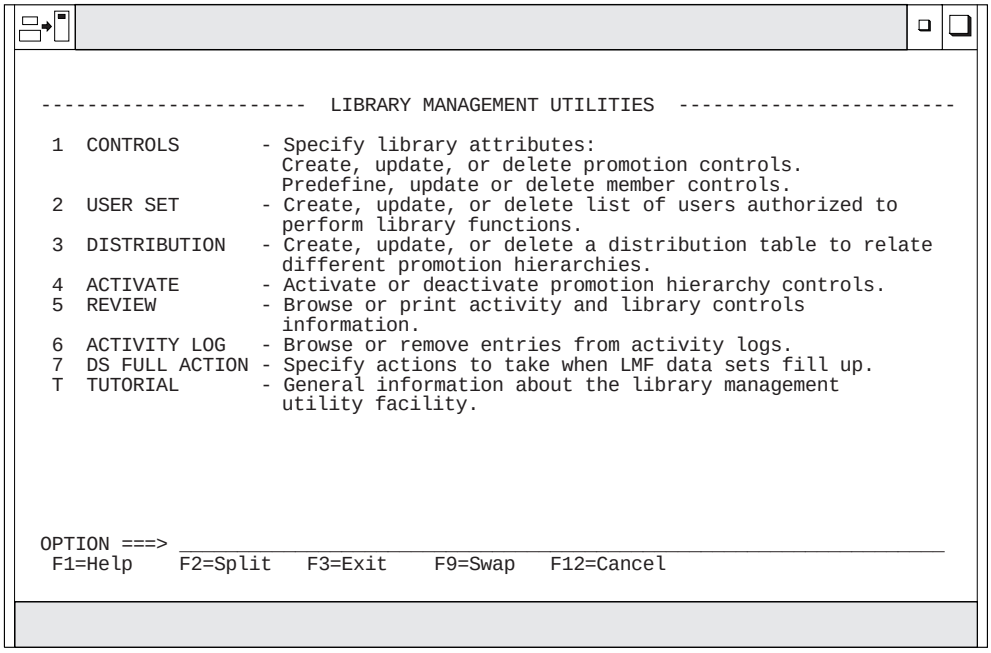

Figure 211. Library Management Utilities Panel (ISRLPRIM)

LMF allows you to control the contents of your libraries and manage your development processes. Therefore, libraries that you control by using LMF are called *controlled libraries*.

LMF requires a library administrator to set up and maintain library controls. If you create the controls for a library for a new project, you automatically become the project administrator for that project.

The controls you establish allow authorized users to:

- Enter information into a controlled library.

  LMF, with help from RACF or an equivalent protection system, helps you maintain data integrity by allowing only one person at a time to update a member in a controlled library.

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- Get information from a controlled library to change it and return it to the controlled library.

  LMF allows only users who have been authorized by the project administrator to replace a member in a controlled library with an updated member.
- Move information from one controlled library to another.

  LMF allows authorized users to put a member into one or more libraries, or one or more hierarchies within the same project.

The project administrator is the only person who can update the library controls and process the User Set (option 8.2), Distribution (option 8.3), Activate (option 8.4), Activity Log (options 8.6.3 and 8.6.4), and DS Full Action (option 8.7) utilities for that project.

Only the project administrator can change the project administrator ID of the project. Where there are several project administrators for a given project, only one administrator can update the project controls at a time. The updating of project controls is restricted to one logical screen.

Chapter 10. IBM Products (Option 9)

Option 9 provides an interface to IBM program development products other than ISPF. It displays a panel that lists other IBM products that are supported as ISPF dialogs, as shown in Figure 212. Each of these products is described in a section in this chapter.

When you select one of these products, one of the following occurs:

- If the product is installed and available on your system, ISPF tries to call it. However, the only way ISPF can determine whether a product is installed and available is to check for the existence of a single product-related panel in the panel library concatenation. No other check is made to ensure that the product is correctly installed or that it is completely available to you.
- If the product is not installed or available, ISPF displays an informational panel that describes the product and shows how additional information can be obtained.

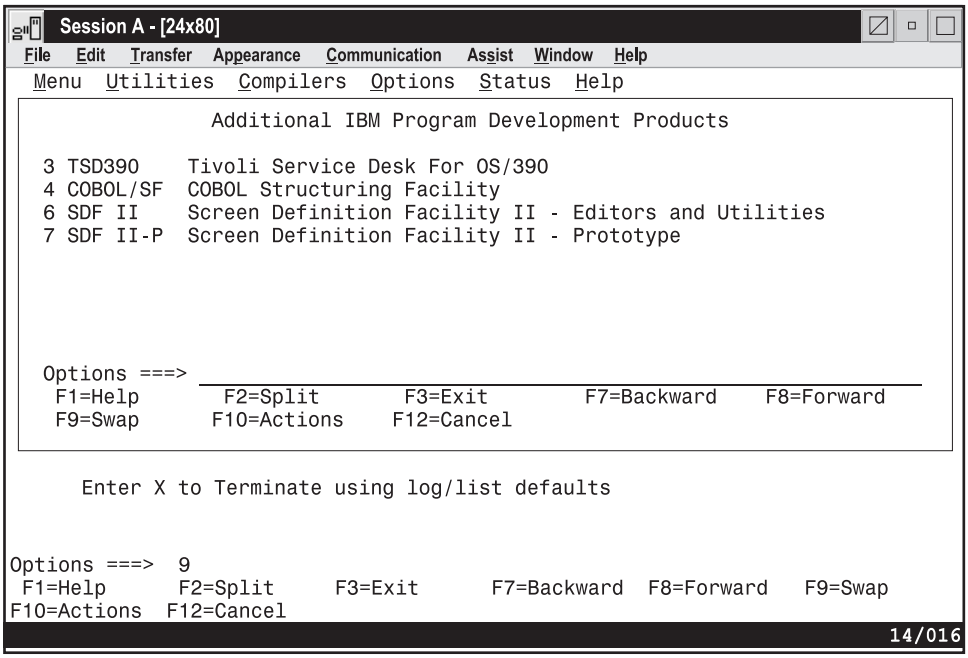

Figure 212. Additional IBM Program Development Products Panel (ISRDIIS)

The names of the products on this panel are point-and-shoot fields. See the **Point-and-Shoot Text Fields** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for more information.

Tivoli Service Desk for OS/390(Option 9.3)

If the Information/Management (INFO/MAN) product is not available on your system, ISPF displays the panel shown in Figure 213 on page 350:

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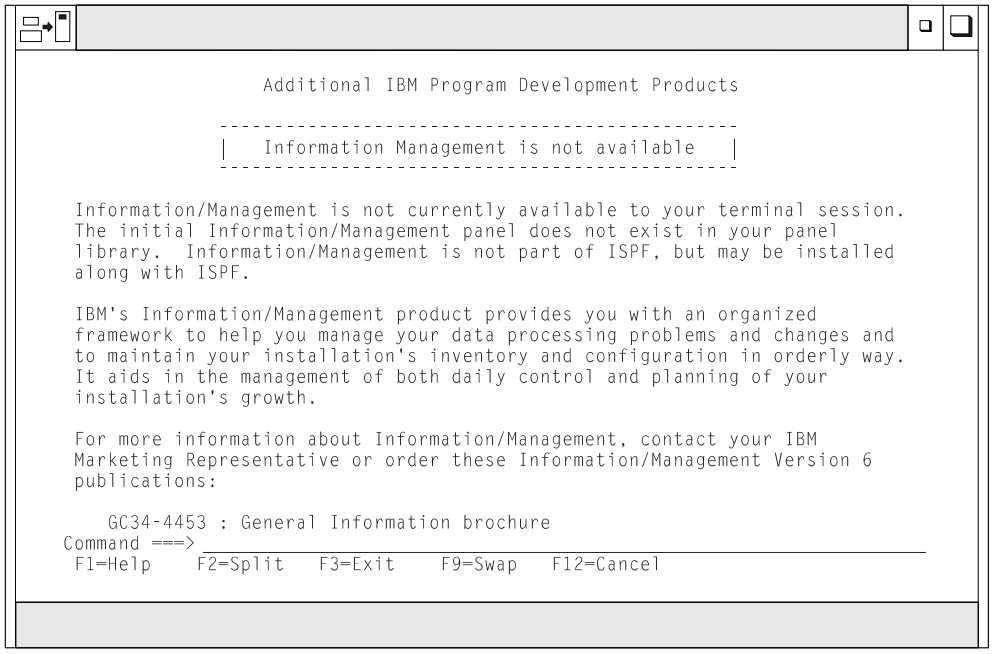

Figure 213. Tivoli Service Desk Panel (ISRDINFO)

COBOL/SF-F (Option 9.4)

COBOL/SF-F (Option 9.4)

If the COBOL Structuring Facility (COBOL/SF) is not available on your system, ISPF displays the panel shown in Figure 214:

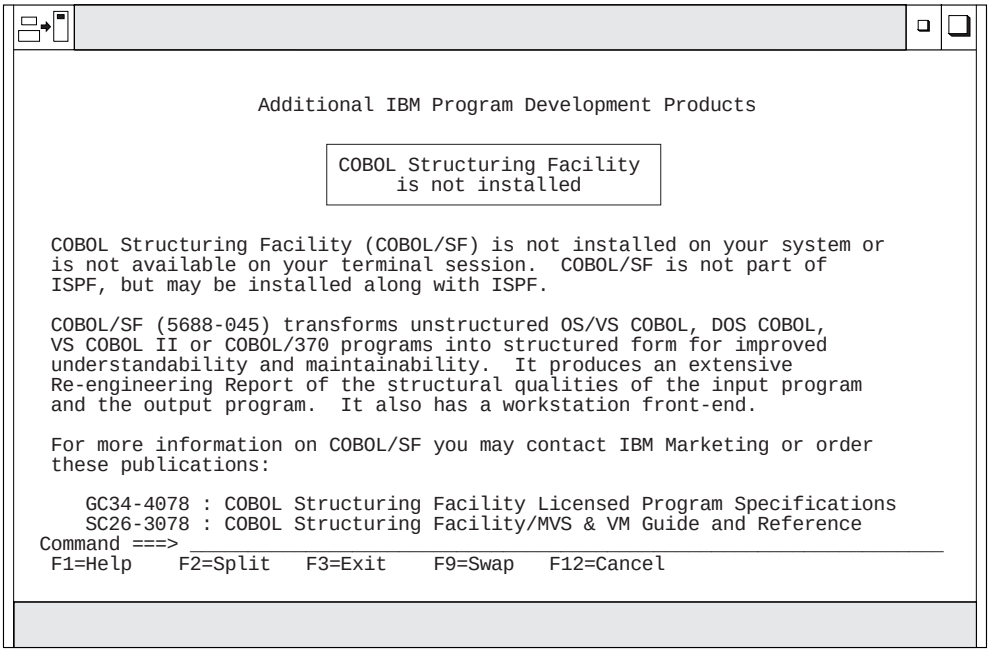

Figure 214. COBOL Structuring Facility Panel - Foreground Dialog (ISRDCSF)

SDF II (Option 9.6)

SDF II (Option 9.6)

If the Screen Definition Facility II - Editors and Utilities (SDF II) is not available on your system, ISPF displays the panel shown in Figure 215:

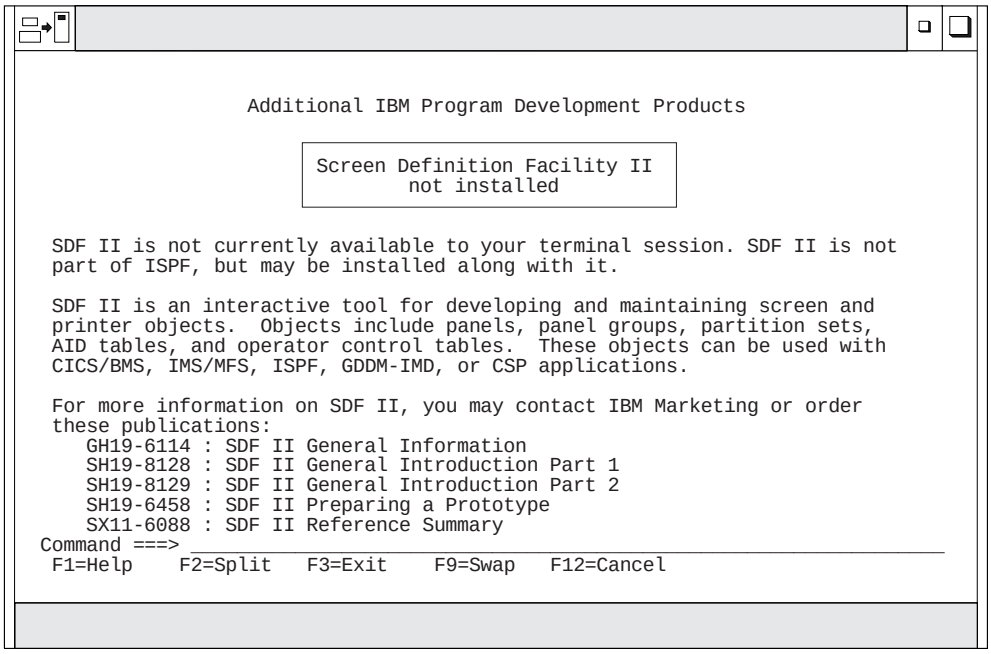

Figure 215. Screen Definition Facility II Panel - Editors and Utilities (ISRDSDFF)

SDF II-P (Option 9.7)

SDF II-P (Option 9.7)

If the Screen Definition Facility II - Prototype (SDF II-P) is not available on your system, ISPF displays the panel shown in Figure 216 on page 352:

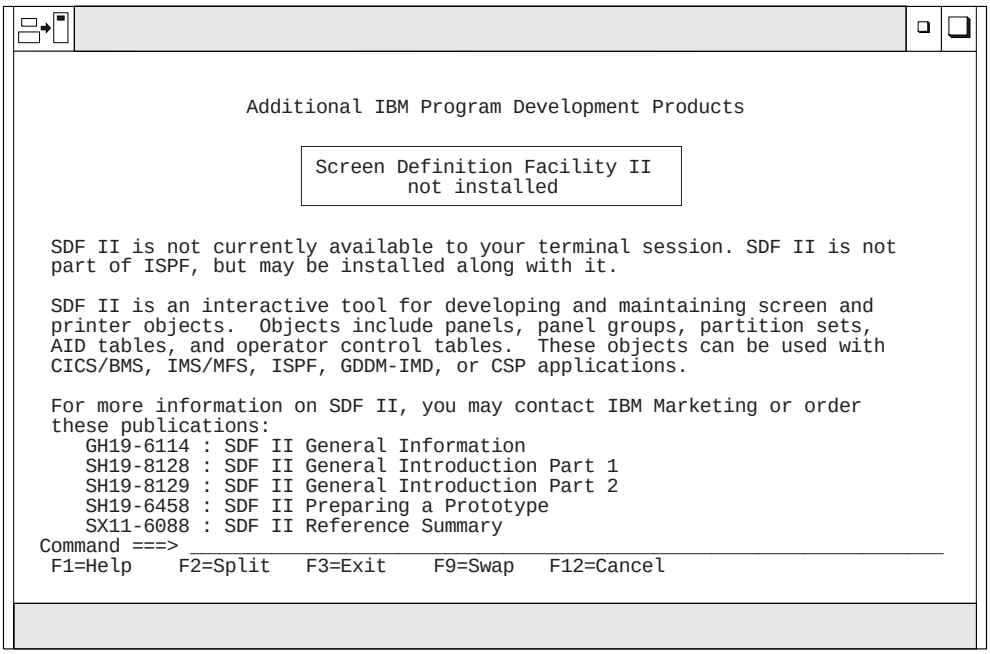

Figure 216. Screen Definition Facility II Panel - Prototype (ISRDSDFF)

Chapter 11. SCLM (Option 10)

Option 10 gives you access to the Software Configuration and Library Manager (SCLM), which is an extension of the ISPF library concept. You call SCLM by entering one of the options shown on the panel in Figure 217.

If SCLM does not appear on any of your menu panels or on your *Menu* pull-down, you can still access it by typing **TSO SCLM** on any ISPF command line, then pressing Enter. If SCLM is available to your terminal session, the SCLM Main Menu is displayed. If SCLM is not available on your system, a panel (ISRNOSLM) is displayed to inform you that SCLM is not available to your terminal session.

Note: An alternate method of library management is provided by the Library Management Facility, option 8. See "Chapter 9. Library Management Facility (Option 8)" on page 347 for an overview, or refer to *ISPF Library Management Facility* for complete information.

For more information about SCLM, refer to the ISPF SCLM manuals.

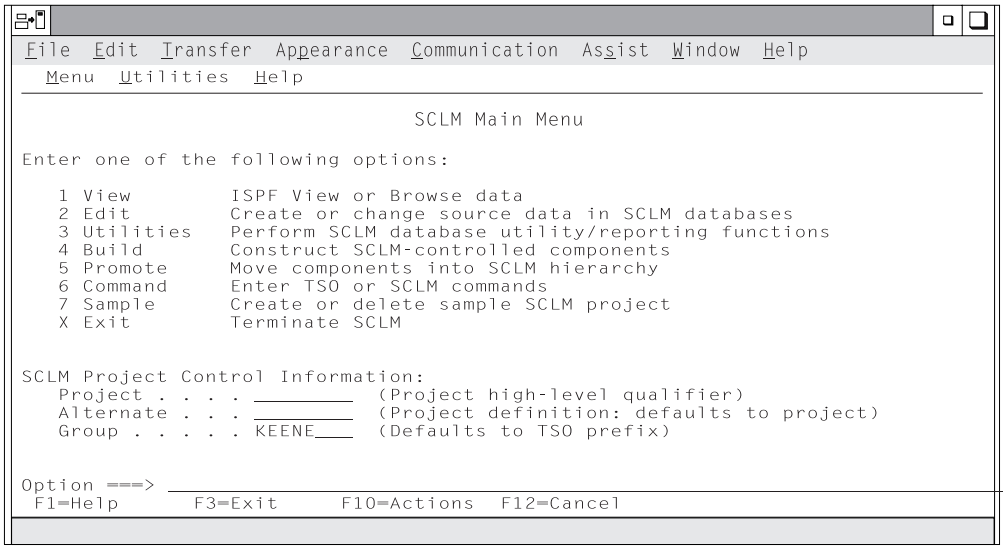

Figure 217. SCLM Main Menu (FLMDMN)

The option names on this panel are point-and-shoot fields. See See the **Point-and-Shoot Text Fields** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for more information.

SCLM Main Menu Action Bar

The SCLM Main Menu panel action bar choices function as follows:

Menu — See the **Menu Action Bar Choice** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* for information on the Menu pull-down.

Utilities — See the **Utilities Action Bar Choice** section of the

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ISPF User Interface chapter of the *ISPF User's Guide Volume I* for information on the Utilities pull-down.

Help The Help pull-down offers you the following choices:

1 General
2 Topic description
3 Alternate projects
4 Architecture definitions
5 Documentation
6 View
7 Edit
8 SCLM Utilities
9 SCLM Build
10 SCLM Promote
11 SCLM Command Shell

SCLM Overview

SCLM is a library facility that supports projects in developing complex software applications. It does this by providing software configuration and library management support. SCLM supports the software development cycle of an application from the program design phase to release of the final product.

SCLM allows designers and programmers to define the architecture of an application (how the components fit together) and ensures that the architecture definition is followed by automatically controlling, maintaining, and tracking software components. By automatically enforcing guidelines and procedures for developing software, SCLM enhances software quality and improves programmer productivity. For complete information on the use of the SCLM option, refer to *ISPF Software Configuration and Library Manager (SCLM) Developer's and Project Manager's Guide*

SCLM addresses the following software configuration and library management issues:

- Ensures that two programmers are not working on the same component at the same time.
- Allows users to integrate components only at the correct time and only by using the correct procedure.
- Logs and tracks software changes.
- Provides application integrity; all of the software components used to produce the final product are available, but controlled.
- Documents the interfaces between the software components.

SCLM provides the following facilities for automating software configuration and library management tasks:

Project Definition Establishes the database.

Edit Uses the ISPF editor to create and modify the software components.

Build Integrates the software components.

Promote Moves software components through the library hierarchy.

Utilities	Maintain the database.
Reports	Generate information about the build and promote activities, and about the contents of the database.

Interactive dialogs, batch interfaces, and callable services provide access to the functions and capabilities of SCLM. These functions support the routine use of SCLM by:

- Allowing programmers to use the ISPF editor to create and modify software components
- Providing automated draw down and lockout functions without requiring any special customizing to suit a particular installation.

Chapter 12. ISPF Object/Action Workplace (Option 11)

Option 11 gives you access to the *ISPF Object/Action Workplace*, or Workplace, which combines many of the ISPF functions onto one object-action interface. The idea of object-action is to specify an *object* (such as an ISPF library, data set name, or workstation file) and then specify an *action* to perform upon it. You can specify any of the following objects:

- An ISPF Library—a cataloged partitioned data set (PDS) with a three-level data set name in the project.group.type format.
- A partitioned or sequential data set.
- A VSAM data set for use with the data set actions allocate, delete, or information.
- A DSLIST level for data set list actions, for example, 'YOURID.*' for all data sets beginning with YOURID.
- A workstation file name for use with the actions edit or view.
- A volume serial number for uncataloged data sets to use with actions to retrieve volume information, print volume information, build a DSLIST based on a volume serial number, or as a filter for a DSLIST level.
- Personal data set lists or reference lists for use with action DL (DSLIST) only.

Additionally, Workplace provides ISPF Referral list fields to enable object selection through retrieval from personal lists (pre-packaged lists of data sets which you create) or reference lists (lists of recently referenced data sets which ISPF creates).

You can select an action by making a choice on an action bar or by using a command. Eighty-five ISPF functions are available as workplace actions.

There is a fast path system command for starting the Workplace. Type ISPFWORK on any ISPF command line and you are taken to the Workplace entry panel.

You can display the Workplace in GUI mode as well as standard mode. See "Workstation Connection" on page 44 for information about how to start GUI mode for ISPF. All of the screens that appear in this chapter are shown in their GUI mode.

Selecting Objects

The first step in using the Workplace to perform ISPF functions is to specify the particular object that you want to perform an action on, for example, a sequential data set 'YOURID.SOURCE.DATA'. Object specification takes place on the Workplace entry panel.

Workplace Entry Panel

When you first enter the Workplace, the entry panel that appears is called *ISPF Workplace*. It is possible to display this panel in two distinct modes called views: either the *Library View* or the *Data Set View*.

The Library View panel has the words "Library View" as a heading just above the referral lists in the lower portion of the screen. This view enables you to work with ISPF library concatenations and library lists.

The Data Set View panel has the words "Data Set View" as a heading just above the referral lists in the lower portion of the screen. This view enables you to work

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with data set lists, sequential files, or single partitioned data sets. You can choose to work with either entry panel view by using the command LISTVIEW, or the function key ChgView (F11) to toggle between the two panels.

Library View

You use the Library View to work with a ISPF library concatenations. The panel that appears in Figure 218 is the Library View entry panel for the Workplace.

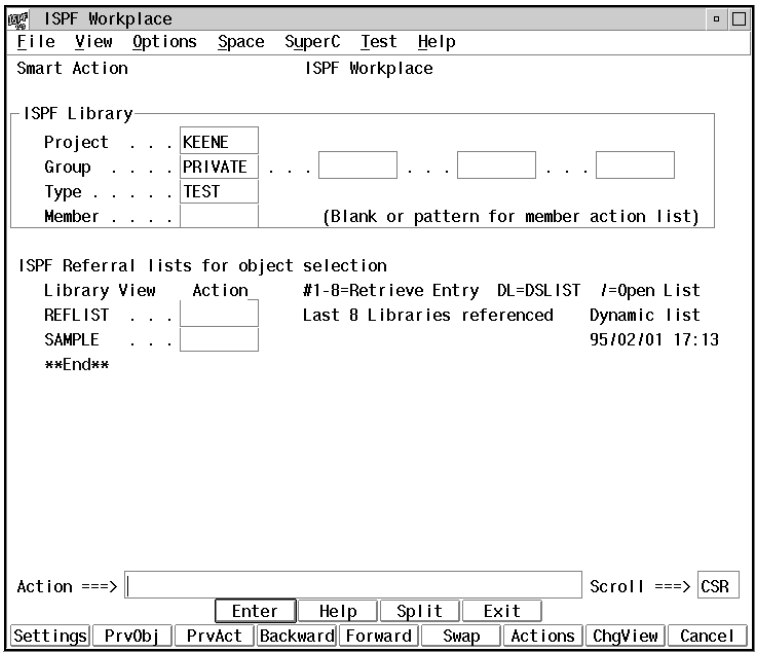

Figure 218. Workplace Entry Panel - Library View (ISRWORK1)

When using this Workplace entry panel, you can select a data set or a group of data sets to work with in one of the following ways:

- Fill in the **ISPF Library** fields. These fields are used the same way as they are on other ISPF panels. You can use the traditional method of selecting a data set by entering its Project, Group, Type, and Member names in the ISPF Library fields. Omitting the Member name gives you a list of members to choose from.
- Select an object or list of objects using **ISPF Referral lists for object retrieval**. See "ISPF Referral Lists for Object Retrieval" on page 359 for more information. You can access personal and reference lists, and then select libraries from these lists.

Data Set View

You use the Data Set View to work with a single data set, a list of data sets, a workstation file, or any action that requires a volume serial.

Note: Catalog, DSLIST, Volume information, Print volume, and Workstation file actions, are only available from the Data Set View.

The panel that appears in Figure 219 on page 359 is the Data Set View entry panel for the Workplace.

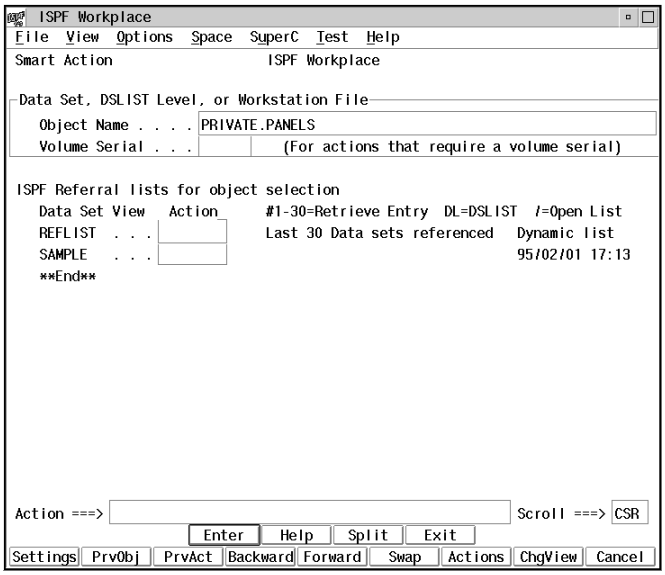

Figure 219. Workplace Entry Panel - Data Set View (ISRWORK)

When using this Workplace entry panel, you can select a data set or a group of data sets to work with in one of the following ways:

- You can use the traditional method of selecting a data set by entering its name in the **Object Name** field. For example, enter 'YOURID.SOURCE.DATA' to act upon a data set on the host, or D:\YOUR.FIL to act upon a workstation file (perhaps to edit it using the PDF editor).
- Select an object or list of objects using **ISPF Referral lists for object retrieval**. You can access personal and reference lists, and select data sets, libraries, workstation files, VSAM files, and data set levels from each list.

ISPF Referral Lists for Object Retrieval

Both views of the ISPF Workplace entry panel enable you to use referral lists. The bottom of the ISPF Workplace panel contains a reference list entry field (REFLIST), followed by a list of personal lists. You can display either referral library lists or referral data set lists, depending on the view you choose.

All data sets and libraries referenced during an ISPF session are appended to the reference lists. You can use the input fields next to the referral lists to access a referral data set in one of the following ways:

- Entering a slash (/) in this field causes the personal data set list or library list (depending on the selected view) to be displayed.
- Type a **DL** in the input field and press Enter. This builds a DSLIST based on entries in the personal data set list, personal library lists, or Reflists.
- Enter a library entry number (from 1 to 8). If you know the list numbers of your libraries, for example, your panels library is number 1, you can type the number in this field and press Enter. ISPF retrieves the respective library entry from the library reference list.
- Enter a data set entry number (from 1 to 30). If you know the order of your data sets, you can type the number in this field and press Enter. ISPF retrieves the respective data set entry from the data set reference list.

Specifying Actions

After you select the object you want to work with, choose the action to perform on it. You can select an action by making a choice on an action bar or by using a command.

Choices on the Workplace Action Bar

The Workplace action bar makes available the following choices.

File

The **File** action bar choice enables you to manipulate files. The pull-down choices for File are:

Choice Description

List... Displays a pop-up menu that enables you to choose either a *member list*, a *data set list* list, a list of *personal data set lists* or a list of *personal library lists*. You can perform any of the File actions except *DSLIST* against the resulting member list.

Member list
displays a list of members for a partitioned data set. To display a member list:

1. type the library or data set information in the appropriate fields of the Workplace entry panel (library view).
2. specify blank or a pattern for the member name to display a member list.
3. select the **List** action from the **File** action bar choice
4. select **Member list** from the List Action prompt panel.

Note: All member lists displayed by the ISPF Workplace are enhanced member lists, all supported member list actions and commands are available on any member list display.

Data Set list
displays a list of data sets based on a DSLIST level and, optionally, a volume serial number. The data set list initial view can be set from the Workplace Settings panel. To create a data set list:

1. type the data set level in the Object name field on the Workplace entry panel (data set view). If you do not full qualify the data set level (by enclosing it in single quotes), your TSO prefix is set as the first level. Optionally, you can enter a volume to view just the data sets that match the DSLIST level on the volume entered. You can also optionally enter just a volume name to list all data sets on the volume entered.
2. select the **LIST** action from the **File** action bar choice
3. select **Data Set list** from the List Action prompt panel.

Personal Data Set lists
displays a list of your personal data set lists. All valid personal list actions can be performed against any selected personal list. The personal data set list you used most recently is the current active list. The currently active list cannot be directly deleted from the list dialog, however all other list actions are valid. To list your personal data set lists:

1. select the **List** action from the **File** action bar choice

2. select **Personal Data Set List** from the List Action prompt panel. You can perform this action from either view of the Workplace entry panel.

Personal Library lists
displays a list of your personal library lists. All valid personal list actions can be performed against any selected personal list. The personal library list you used most recently is the current active list. The currently active list cannot be directly deleted from the list dialog, however all other list actions are valid. To list your personal library lists:
1. select the **List** action from the **File** action bar choice
2. select **Personal Library List** from the List Action prompt panel. You can perform this action from either view of the Workplace entry panel.

Edit... starts Edit action for a member or a sequential file. The Edit action prompt panel is presented when you choose the **Edit** pull-down choice on the action bar. Select a file type and an editor and press Enter. The Edit function is used to edit a member of a partitioned data set, a sequential data set, or a workstation file.

Type of File
Select the type of file you want to edit.

1. Host File
Edit a host file using ISPF Edit or a workstation-defined editor. The selection of host or workstation editors is based on the **Editor Choice** option setting on the Edit Entry panel. To start the member list function, enter a pattern or leave the member field blank on the Workplace entry panel. To edit a single member on the host :
1. type the library or data set information in the appropriate fields of the Workplace entry panel.
2. type the member name in the member field (for library view) or in parentheses after the data set name (for data set view).
3. select **Edit** under the **File** action bar choice
4. select **Host File** and **ISPF Editor** on the Edit Action prompt panel.

To edit a single member on the workstation :
1. type the library or data set information in the appropriate fields of the Workplace entry panel.
2. type the member name in the member field (for library view) or in parentheses after the data set name (for data set view).
3. select **Edit** under the **File** action bar choice
4. select **Host File** and **Workstation Editor** on the Edit Action prompt panel.

2. Workstation File
To edit a workstation file using the ISPF editor:
1. type the file path and name in the Object name field on the Workstation entry panel (data set view)
2. select **Edit** from the **File** action bar choice
3. select **Workstation File** and **ISPF Editor** from the Edit Action prompt panel.

To edit a workstation file using a workstation editor:
1. type the file path and name in the Object name field on the Workstation entry panel (data set view)
2. select **Edit** from the **File** action bar choice
3. select **Workstation File** and **Workstation Editor** from the Edit Action prompt panel.

2. Editor Choice

1. ISPF Editor
Selects the ISPF editor.

2. Workstation Editor
Selects the workstation editor.

View... Starts View action for a member or a sequential file. The View prompt panel is presented when you choose the **View** pull-down choice on the **File** action bar. The View function is used to view a member of a partitioned data set, a sequential data set, or a workstation file.

Type of File
Select the type of file you want to view.

1. Host File
View a host file using ISPF View or a workstation-defined editor/browser. The view mechanism used is based on the *View Choice* setting found on the View entry panel. To enter the member list function, type a pattern or leave the member field blank on the Workstation entry panel. To view a single member on the host:
1. type the library or data set information in the appropriate fields on the Workplace entry panel.
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select **View** from the **File** action bar choice
4. select **Host File** and **ISPF View** from the View Action prompt panel.

To view a single member on the workstation:
1. type the library or data set information in the appropriate fields on the Workplace entry panel.
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select **View** from the **File** action bar choice
4. select **Host File** and **Workstation View** from the View Action prompt panel.

2. Workstation File
To view a workstation file using ISPF View:
1. type the file path and name in the Object name field of the Workstation entry panel (data set view)
2. select **View** from the **File** action bar choice
3. select **Workstation File** and **ISPF View** from the View Action prompt panel.

To view a workstation file using a workstation editor or browser:

1. type the file path and name in the Object name field of the Workstation entry panel (data set view)
2. select **View** from the **File** action bar choice
3. select **Workstation File** and **Workstation View** from the View Action prompt panel.

2. View Choice

1. ISPF View
Selects the ISPF view function.

2. Workstation View
Selects the workstation editor or browser.

Browse...
Starts Browse action for a member or a sequential file.

If you do not specify a member name or if you specify a pattern and the specified data set is a PDS, a member list is displayed. Select a member to Browse by typing **s** next to the member name. To browse a single member:
1. type the library or data set information in the appropriate fields of the ISPF Workplace panel
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select **Browse** from the **File** action bar choice.

Delete...
Displays a pop-up prompt window with *member* or *data set* as the choices.

If you do not specify a member name or if you specify a pattern and the specified data set is a PDS, a member list is displayed. Select a member to Delete by typing **s** next to the member name.

To delete a single member:
1. type the library or data set information in the appropriate fields of the ISPF Workplace panel
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select Delete under the **File** action bar choice for member delete.

To delete a PDS or a sequential data set:
1. enter the data set name in the Object name field, or enter a library in the ISPF Library field on the Workplace panel.
2. select Delete under the **File** action bar choice for data set delete.

Rename...
Displays a pop-up prompt window with *member* or *data set* as the choices.

If you do not specify a member name or if you specify a pattern and the specified data set is a PDS, a member list is displayed. Select a member to Rename by typing **s** next to the member name.

To rename a single member:
1. type the library or data set information in the appropriate fields of the ISPF Workplace panel
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select Rename under the **File** action bar choice for member rename.

To rename a PDS or a sequential data set:

1. type the data set name in the Object name field, or type a library in the ISPF Library field on the Workplace panel.
2. select Rename under the **File** action bar choice for data set rename.

For more information, see "Rename" on page 377.

Move Starts the move action for a member or a sequential file. A Move entry panel is presented.

If you do not specify a member name or if you specify a pattern and the specified data set is a PDS, a member list is displayed. Select a member to move by typing **s** next to the member name.

If you specify an asterisk (*) as the member name, all members of the PDS are moved without a member list being displayed.

Note: You can change your **Workstation Settings** so that you can move, copy, or reset all members that match a certain pattern, not just an asterisk. See "Changing Workplace Settings" on page 381 for more information.

To move a single member:
1. type the library or data set information in the appropriate fields of the ISPF Workplace panel
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select Move from the **File** action bar choice.

For more information, see "Move or Copy" on page 376.

Copy Starts the copy action for a member or a sequential file. A Copy entry panel is presented.

If you do not specify a member name or if you specify a pattern, a member list is displayed. Select a member to copy by typing **s** next to the member name.

If you specify an asterisk (*) as the member name, all members of the PDS are copied without a member list being displayed.

Note: You can change your **Workstation Settings** so that you can move, copy, or reset all members that match a certain pattern, not just an asterisk. See "Changing Workplace Settings" on page 381 for more information.

To copy a single member:
1. type the library or data set information in the appropriate fields of the ISPF Workplace panel
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select **Copy** from the **File** action bar choice.

For more information, see "Move or Copy" on page 376.

Reset...

Starts reset action for a member. A Reset prompt panel is presented for the member.

If you do not specify a member name or if you specify a pattern and the specified data set is a PDS, a member list is displayed. Select a member to reset by typing **s** next to the member name.

If you specify an asterisk (*) as the member name, all members of the PDS are reset without a member list being displayed.

Note: You can change your **Workstation Settings** so that you can move, copy, or reset all members that match a certain pattern, not just an asterisk. See "Changing Workplace Settings" on page 381 for more information.

To reset a single member:
1. type the library or data set information in the appropriate fields of the ISPF Workplace panel
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select **Reset** from the **File** action bar choice.

For more information, see "Resetting Member Statistics" on page 372.

Open is defined on the Workplace Settings panel, making it a user customizable action. After you set this action, it is performed automatically each time you open a member. The Open action can be set to the following actions:

User Any TSO command, REXX exec, or CLIST set by the **Open Command** field on the Workplace Settings panel.
E Edit
V View
B Browse
D Delete member
R Rename member
M Move
C Copy
G Reset
P Print member
J Submit
T TSO command action

To open a single member:
1. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
2. select **Open** from the **File** action bar choice. When you press the ENTER key, the action for open runs against the member, or a member list is displayed. See "Changing Workplace Settings" on page 381 for more information.

Submit

Submits the member or sequential file to TSO for job execution.

If you do not specify a member name or if you specify a pattern and the specified data set is a PDS, a member list is displayed. Select a member to submit by typing **s** next to the member name.

To submit a single member, fill in the following fields of the ISPF Workplace panel:
1. type the library or data set information in the appropriate fields.
2. type the member name in the member field (for ISPF library view) or in parentheses after data set name (for data set view).

3. select **Submit** from the **File** action bar choice.

Print... The Print selection enables you to print information. The pull-down choices on the Print action prompt panel are:

Data Set
prints the entire data set. To print a data set:
1. type the data set name in the Object name field (for the data set view) or enter an ISPF library name in the ISPF Library fields (for the library view).
2. select the **Print** action from the **File** action bar choice
3. select **Data set** from the Print Action promt panel.

Data Set index
prints the data set index for the selected data set. To print a data set index:
1. type the data set name in the Object name field or type an ISPF library name in the ISPF Library fields.
2. select the **Print** action from the **File** action bar choice
3. select **Data Set index** from the Print Action prompt panel.

Data Set List
prints the list of data sets for the selected data set name level. To print a data set list:
1. type a data set level, or optionally a volume serial, in the appropriate fields on the ISPF Workplace panel
2. select **Print** from the **File** action bar choice
3. select **Data set list** from the Print Action prompt prompt panel.

VTOC prints the VTOC information for the selected volume. To print a VTOC summary:
1. type a volume serial in the proper field on the ISPF Workplace panel
2. select **Print** from the **File** action bar choice
3. select **VTOC** from the Print Action prompt panel.

Member
prints the selected member. To print a member:
1. type the data set name in the Object name field or type an ISPF library name in the ISPF Library fields.
2. select the **Print** action from the **File** action bar choice
3. select **Member** from the Print Action prompt panel.

Command...
Enables you to enter TSO, Workstation, or ISPF commands. You are prompted to choose between types of commands. The pull-down choices on the Command prompt are:

TSO Cmd
The TSO Cmd action is used to run a TSO command, passing the data set and member name and any additional parameters to the TSO command entered. To run a TSO command against a single member, fill in the following fields of the ISPF Workplace panel:
1. type the library or data set information in the appropriate fields.
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select **Command** from the **File** action bar choice
4. select **TSO** from the Command Action prompt panel.

WS Cmd

The WS Cmd action is used to run a WS command, passing the data set and member name and any additional parameters to the WS command entered.

To run a WS command against a single member, fill in the following fields of the ISPF Workplace panel:

1. type the library or data set information in the appropriate fields.
2. type the member name in the member field (for ISPF library view) or in parentheses after the data set name (for data set view).
3. select **Command** from the **File** action bar choice
4. select **WS command** from the Command Action prompt panel.

Note: The ISPF Client/Server must be connected to run the WS command.

ISPF Command Shell

The ISPF command shell option enables TSO commands, CLISTs, and REXX execs to be run under ISPF. You can enter the TSO commands, CLISTs, and REXX execs in the command input field of any panel.

ISPF also enables Workstation commands to be entered in the command input field of any panel.

You can enter a long command that wraps to the next line if you want to. For more information about the ISPF Command Shell, see "ISPF Command Shell" on page 375.

ISPF Command Table

The command table utility allows you to create or change application command tables.

A command table contains the specification of general commands that can be entered from any panel during the execution of an application. Command tables are identified by application id, and are maintained in the ISPF table input library.

Exit ends the Workplace, returning to the primary option panel.

View

The View action bar choice displays the object views that are available to you. The currently selected view is unavailable.

The pull-down choices for View are:

Choice	Description
Data Set View	Changes the current view to reference data set list, personal data set lists, and Object name view. To change to the data set view: 1. select the **View** action bar choice 2. select **Data Set View** from the pull-down menu.
Library View	Changes the current view to reference library list, personal library lists, and ISPF Library view. To change to the ISPF Library view: 1. select the **View** action bar choice

2. select **Library View** from the pull-down menu.

By name	Changes the current view of the personal list by sorting on the name field.
By description	Changes the current view of the personal list by sorting on the description field.
By created	Changes the current view of the personal list by sorting on the created field.
By referenced	Changes the current view of the personal list by sorting on the referenced field.

Options

The Options action bar choice displays the settings available. The pull-down choices for Options are:

Choice	Description
Workplace Settings...	Displays the Workplace Settings panel. See "Changing Workplace Settings" on page 381 for more information.
ISPF Settings	Displays the ISPF Settings panel. See "Chapter 1. Settings (Option 0)" on page 5 for more information.
CUA Attributes...	Starts the ISPF CUA Attribute Change Utility dialog. See "CUA Attributes" on page 40 for more information.
Keylists...	Starts the ISPF Keylist Utility dialog. See "Working with Function Keys and Keylists (The Function Keys Action Bar Choice)" on page 21 for more information.
Point-and-Shoot...	Starts the ISPF CUA Attribute Change Utility dialog indexed to the point-and-shoot entry. See "CUA Attributes" on page 40 for more information.
Colors...	Starts the ISPF Global Color Change Utility dialog. See "Changing Default Colors (The Colors Action Bar Choice)" on page 35 for more information.

Space

The Space action bar choice enables you to create and maintain data sets. The pull-down choices available for Space are:

Choice	Description
Allocate...	Displays a pop-up menu for the allocate action. The choices on the prompt are: **Data Set** The allocate action is used to allocate a partitioned or sequential data set. To allocate a data set: 1. type the data set name in the Object name field or type an ISPF library name in the ISPF Library fields. 2. select the **Allocate** action from the **Space** action bar choice

3. select **Data Set** from the Allocate Action prompt panel.

Enhanced Data Set

The enhanced allocate action is used to allocate an SMS-managed partitioned or sequential data set. To allocate an SMS data set:

1. type the data set name in the Object name field or enter an ISPF library name in the ISPF Library fields.
2. select the **Allocate** action from the **Space** action bar choice
3. select **Enhanced Data Set** from the Allocate Action prompt panel.

VSAM Data Set

The VSAM action is used to define, delete, or retrieve information for a VSAM data set. To define, delete, or retrieve information for a VSAM data set:

1. type the VSAM data set name in the Object name field or enter an ISPF library name in the ISPF Library fields.
2. select the **Allocate** action from the **Space** action bar choice
3. select **VSAM Data Set** from the Allocate Action prompt panel.

Compress

The Compress action is used to recover unused space in a partitioned or sequential data set. To compress a data set:

1. type the data set name in the Object name field or type an ISPF library name in the ISPF Library fields.
2. select the **Compress** action from the **Space** action bar choice.

Catalog

The Catalog action is used to catalog a partitioned or sequential data set on a direct access device. To catalog a data set:

1. type the data set name in the Object name field.
2. type the volume name in the volume field.
3. Select the **Catalog** action from the **Space** action bar choice.

Note: You cannot catalog an SMS managed data set.

Uncatalog

The Uncatalog action is used to uncatalog a partitioned or sequential data set from a direct access device. To uncatalog a data set:

1. type the data set name in the Object name field.
2. select the **Uncatalog** action from the **Space** action bar choice.

Note: You cannot uncatalog an SMS managed data set.

A confirmation dialog appears if specified in the Workplace Settings panel. See "Changing Workplace Settings" on page 381 for more information.

Information...

The Data Set Information action is used to retrieve information about a partitioned or sequential data set. To retrieve data set information:

1. type the data set name in the Object name field or type an ISPF library name in the ISPF Library fields.
2. select **Information** from the **Space** action bar choice
3. select one of the following choices from the Information Action prompt panel:

   Data Set Long...
   displays information about the selected data set.

   Data Set Short...
   displays a subset of information about the selected data set.

   VTOC summary...
   displays VTOC information about the selected volume. You must type the volume serial of the VTOC in the volume serial field of the Workplace entry panel.

SuperC

The SuperC action bar choice gives you access to SuperC compare and search dialogs for your data sets. The data set you specify on the Workplace panel is automatically filled in for you in the Superc dialog you choose. For more information, see "SuperC Utility (Option 3.12)" on page 195.

The SuperC pull-down choices are:

Choice	Description
SuperC	Compare two data sets. To SuperC compare two data sets: 1. Type the first data set name in the Object name field or type an ISPF library name in the ISPF Library fields. 2. Select the **SuperC** action from the **SuperC** action bar choice. The SuperC Compare Utility— New Data Set Specification panel appears with the data set information entered in it. Make sure the panel is filled in the way you want it to be. 3. Press Enter to display the *Old* SuperC comparison panel, and fill in the panel. 4. Press Enter again to submit the comparison. For more information, see "SuperC Utility (Option 3.12)" on page 195.

SuperCE	Compare two data sets using extended options. For more information, see “SuperCE Utility (Option 3.13)” on page 205.
Search-For	Search data sets for strings of data. To SuperC search for strings of data: 1. Type the data set name in the Object name field or type an ISPF library name in the ISPF Library fields. 2. Select the **Search-For** action from the **SuperC** action bar choice. The Search-For Utility panel appears with the data set information entered in it. Make sure the panel is filled in the way you want it to be. For more information, see “Search-For Utility (Option 3.14)” on page 218.
Search-ForE	Search a data set using extended options. For more information, see “Search-ForE Utility (Option 3.15)” on page 224.

Test

The Test action bar choice gives you access to the ISPF services that help you test dialogs, such as “Chapter 8. Dialog Test (Option 7)” on page 299. For more information, refer to the *ISPF Dialog Developer's Guide and Reference* , and the *ISPF Edit and Edit Macros* manual.

The Test pull-down choices are:

Choice	Description
Functions...	Displays the Dialog Test Function/Selection panel. Select the **Functions** action from the **Test** action bar choice. For more information, see “Functions (Option 7.1)” on page 307.
Panels...	Displays the Dialog Test Display panel. Select the **Panels** action from the **Test** action bar choice. For more information, see “Panels (Option 7.2)” on page 310.
Variables...	Displays the Dialog Test Variables panel. Select the **Variables** action from the **Test** action bar choice. For more information, see “Variables (Option 7.3)” on page 313.
Tables...	Displays the Dialog Test Tables panel. Select the **Tables** action from the **Test** action bar choice. For more information, see “Tables (Option 7.4)” on page 317.
Log	Displays the ISPF Transaction Log panel. Select the **Log** action from the **Test** action bar choice. For more information, see “Log (Option 7.5)” on page 330.
Services...	Displays the Invoke Dialog Service panel. Select the **Services** action from the **Test** action bar choice. For more information, see “Dialog Services (Option 7.6)” on page 332.

Traces...	Displays the Dialog Test Traces panel. Select the **Traces** action from the **Test** action bar choice. For more information, see "Traces (Option 7.7)" on page 335.
Break Points...	Displays the Dialog Test Breakpoints panel. Select the **Break Points** action from the **Test** action bar choice. For more information, see "Breakpoints (Option 7.8)" on page 339.
Dialog Test...	Displays the Dialog Test Primary Option panel. Select the **Dialog Test** action from the **Test** action bar choice. For more information, see "Chapter 8. Dialog Test (Option 7)" on page 299.
Dialog Test appl ID...	Displays the Dialog Test Application ID panel for changing the Dialog Test application ID. Select the **Dialog Test appl ID** action from the **Test** action bar choice.

Help

The Help action bar choice provides access to the program tutorials.

Actions That Require Prompt Windows for More Information

Some actions that you call from the Workplace require additional information. You provide this information through the use of pop-up prompt windows. Some common actions of this type are:

- Resetting member statistics
- Using TSO commands
- Using WS commands
- Using the ISPF command shell
- Moving or copying data
- Renaming data sets.

Following are the actions and the pop-up windows that accompany each one.

Resetting Member Statistics

Figure 220 on page 373 shows the pop-up prompt window that appears when you choose **Reset...** from the **File** action bar, after you choose a member to work with.

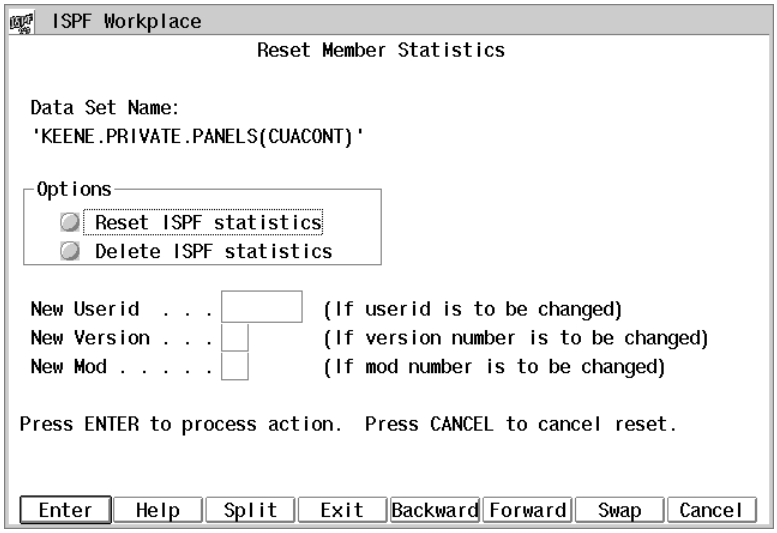

Figure 220. Reset Statistics panel

For more information about how the Reset statistics option works, see "Reset ISPF Statistics Utility (Option 3.5)" on page 159. You can set the following items from this window:

Options
: select 1 to Reset ISPF statistics, or 2 to Delete ISPF statistics

New Userid
: Sets the **ID** field in the statistics. If you want to change the ID the statistics are kept under, enter the new ID here. If you do not specify a new version number, this field is required to be filled in.

New Version
: Enter a number here is you want to change the version number. This field is required if you do not enter a new userid. It is ignored if you have chosen the delete action.

New Mod
: Use a slash (/) to select this option. Deselect this option if you do not want to reset the modification level. A new version number is required to reset the modification level.

TSO Command

Figure 221 on page 374 shows the pop-up prompt window that appears when you choose **Command**, from the **File** action bar choice, then select **TSO Command** from the Command Action prompt panel.

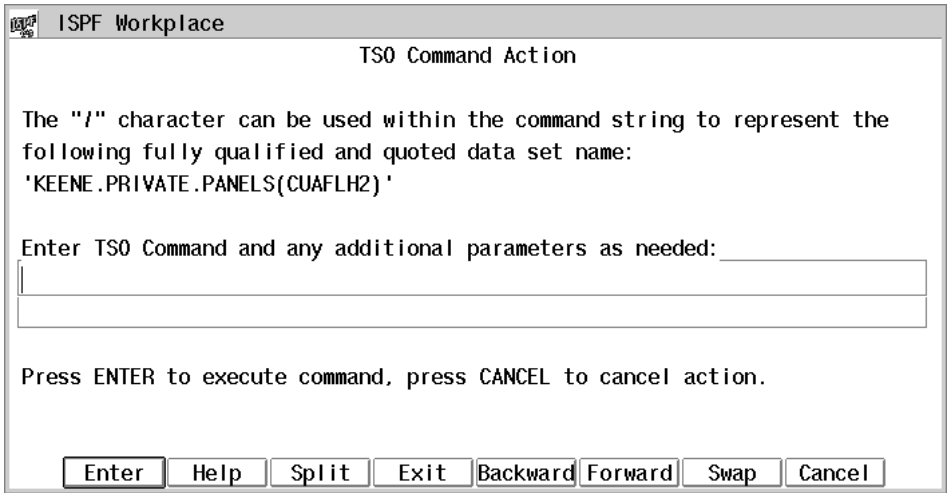

Figure 221. TSO Command panel

You can set the following items from this window:

TSO Command
The name of the TSO command you want to use. The command name can be followed by command paramaters with the / character appearing anywhere within the paramater string.

WS Command

Figure 222 shows the pop-up prompt window that appears when you choose **Command**, from the **File** action bar choice, then select **WS Command** from the Command Action prompt panel. You must have a workstation connection in place in order to use WS commands.

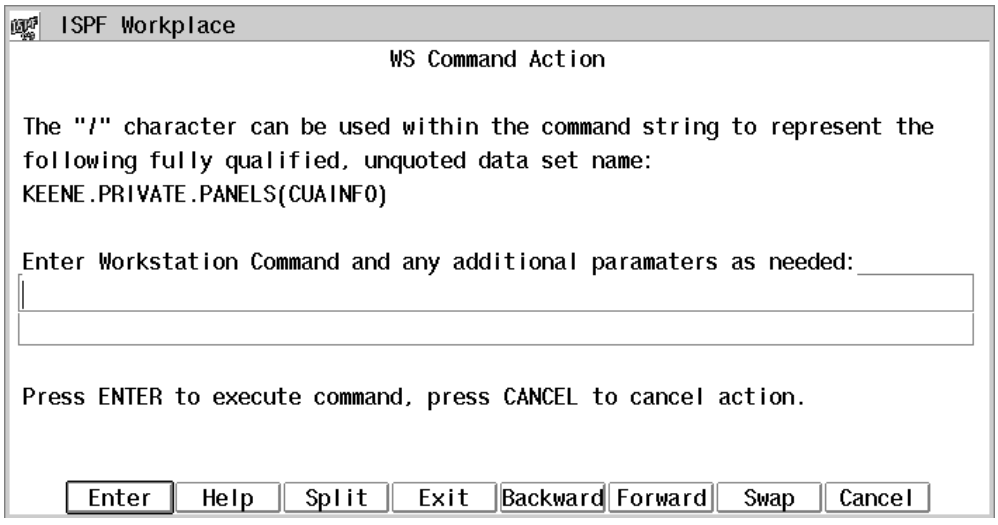

Figure 222. WS Command panel

You can set the following items from this window:

WS Command
The name of the WS command you want to use. The command name can

be followed by command paramaters with the / character appearing anywhere within the paramater string.

ISPF Command Shell

Figure 223 shows the pop-up prompt window that appears when you enter the ISPF command shell. To get to this window, choose **Command** from the File action bar choice, then choose **ISPF Command Shell** on the Command Action prompt panel.

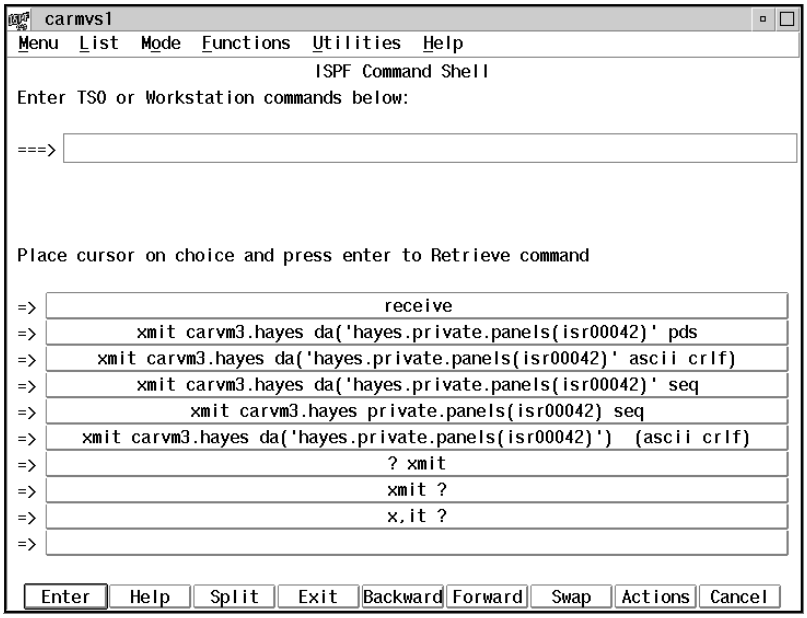

Figure 223. ISPF Command Shell panel

The ISPF Command Shell option enables you to run TSO commands, CLISTs, and REXX execs under ISPF. This panel has one input field. Type the command and its parameters into the input field, leaving at least one space between the command name and the first parameter. The input field continues for two full lines below the start of the input field. The maximum number of characters that you can enter is 234. For example:

```
Enter TSO or Work Station commands below

===> SEND 'THIS MESSAGE DEMONSTRATES THAT A TSO COMMAND ENTERED UNDER
ISPF CAN EXCEED ONE LINE ON THE 3270' USER(ALICE)
```

You can also enter ISPF commands, such as END or RETURN, in this field.

Note: If you enter a HELP or CANCEL command, it is interpreted as the ISPF help or cancel command. To issue TSO help or TSO cancel, enter: ===> TSO HELP xxxxx ===> TSO CANCEL xxxxx

The ISPF command shell option enables you to enter most TSO commands under ISPF. Following is a list of commands that are not supported:

- LOGON
- LOGOFF
- ISPSTART, PDF, and ISPF
- TEST
- Commands that you are restricted from using by TSO or PCF

- Commands requiring large parameter lists (234 characters is the maximum allowed, including command name)

You can run command procedures under ISPF, subject to the following restrictions:
- CLISTs and execs must not invoke restricted commands listed previously
- TERMIN command procedure statements are not supported

These restrictions also apply to commands entered from other panels.

After you type a command in the input field, press ENTER to start the command. If you are not operating in Session Manager mode, the cursor is positioned below the command input field. Line-at-a-time I/O from the command, if any, starts at the cursor position. When the command finishes, three asterisks (***) may appear on the screen. To return to ISPF full screen mode, press ENTER.

The ISPF command shell panel is then redisplayed with the command you entered displayed in the command list (unless you entered the TSO or WS prefix, or List mode is set to update off).

Move or Copy

Figure 224 shows the pop-up prompt window that appears when you choose **Move...** from the **File** action bar, after you choose a member to work with. The panel that appears when you choose **Copy...** is similar to this one.

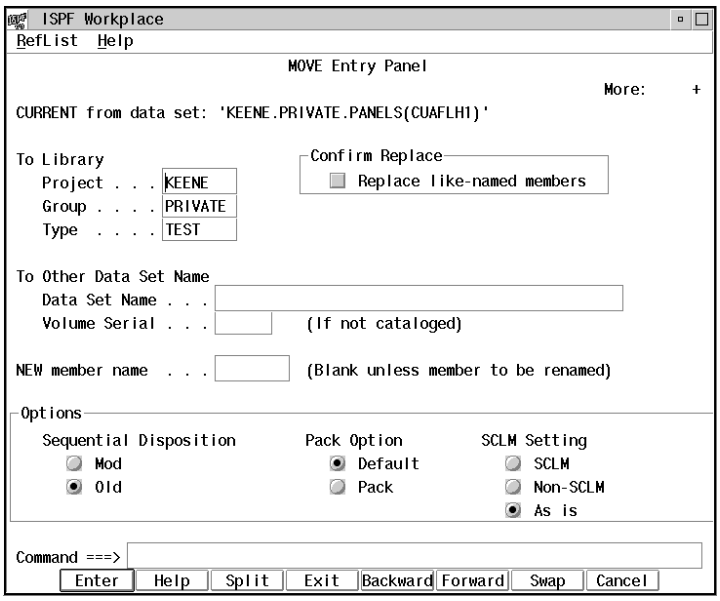

Figure 224. Move panel

For more information about the Move/Copy utility, see "Move/Copy Utility (Option 3.3)" on page 118. You can set the following items from this window:

To Library
the library to which you want to move or copy the selected data

To Other Data Set Name
the data set to which you want to move or copy the selected data

NEW member name
if the "to" and "from" data sets are the same, you can rename the member here.

Sequential disposition
select 1 if Mod, 2 if Old

1 Mod adds new data at the end of data currently contained in the data set.

2 Old begins placing new data at the beginning of the data set, writing over existing data.

Pack option
Indicates how you want the data to be stored in the "to" data set.

1 data set is packed according to your default settings

2 data set is packed

SCLM setting
Indicates how you want the data to be stored in the "to" data set.

1 SCLM

2 Non-SCLM

3 As is

Rename

Figure 225 shows the pop-up prompt window that appears when you choose **Rename...** from the **File** action bar, after you choose a member to work with.

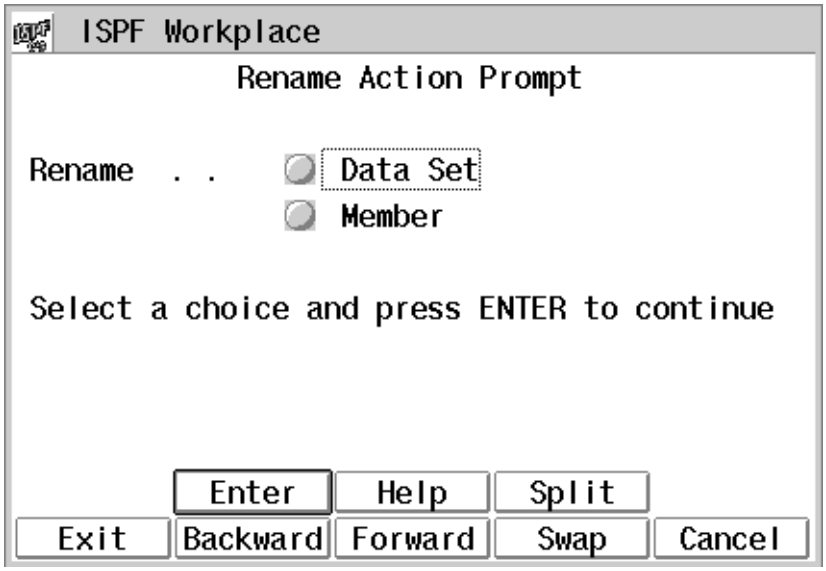

Figure 225. Rename prompt panel

You choose to rename either a data set or a member from this panel. If you choose data set, the panel in Figure 226 on page 378 appears.

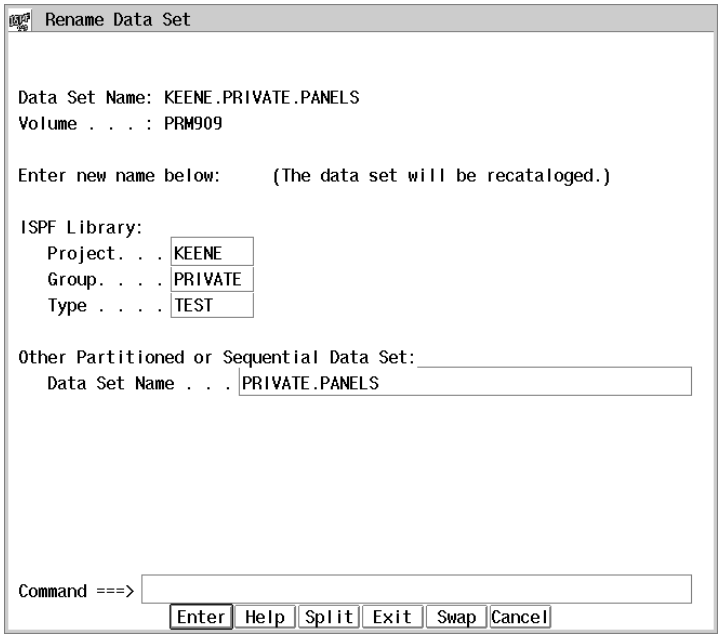

Figure 226. Rename data set panel

You can set the following items from this window:

New name
the name that you want to use for the renamed data set

If you choose member, the panel in Figure 227 appears.

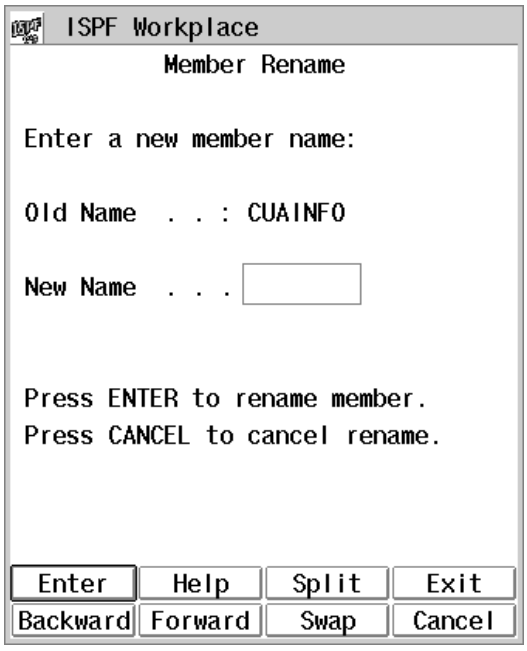

Figure 227. Rename member panel

You can set the following items from this window:

New name
the name that you want to use for the renamed member

Commands

You can use primary commands in the command area (Action line) of the Workplace entry panels.

You must be connected to the workstation to use any workstation file actions. You can configure your workstation editor choice by selecting the *Workstation* action bar from the Edit or View entry prompt panel or from the Workplace Settings panel.

Table 23. Workstation Commands

Command	Description	Valid For:
A	allocate	data sets
ACTBAR or NOACTBAR	display or do not display action bar on panel	action prompt
AP	allocate	action prompt
B	Browse	members and non-PDS data sets
C	Copy	members and non-PDS data sets
COLOR	global color change	action prompt
CP	command	action prompt
CUAATTR	CUA attributes	action prompt
D	Delete	members and non-PDS data sets
DF	delete	data sets
DL	DSLIST	data set name level
DP	delete	action prompt
DVT	VTOC summary	data summary
E	Edit	members and non-PDS data sets
EP	edit	action prompt
G	reset member statistics	members
I	full information	data sets
ICS	ISPF command shell	action prompt
ICT	ISPF command table	action prompt
IP	information	action prompt
J	Submit	members and non-PDS data sets
K	catalog	data sets
KEYLIST	keylist utility	action prompt
L	print data set	data sets
LOCATE, LOC, or L	Find a specified referral list in the scrollable display of referral lists	referral lists
LP	list	action prompt
LV or LISTVIEW	list view	action prompt
M	Move	members and non-PDS data sets

Table 23. Workstation Commands (continued)

Command	Description	Valid For:
ML	Member list	partitioned data sets
N	rename	data sets
O	Open	members and non-PDS data sets
OPD	personal data set lists	referral lists
OPL	personal library lists	referral lists
P	Print	members and non-PDS data sets
PDL	Print data set list	data sets
PP	print	action prompt
PSCOLOR	point and shoot	action prompt
PVT	Print VTOC information	data sets
Q	VSAM	data sets
R	Rename	members and non-PDS data sets
RP	rename	action prompt
S	short information	data sets
SC	SuperC	data sets
SCE	SuperC extended	data sets
SELECT, SEL, or S	Select a specified referral list in the scrollable display of referral lists	referral lists
SETTINGS	ISPF settings	action prompt
SF	SearchFor	data sets
SFE	SearchFor extended	data sets
T	TSO command	members and non-PDS data sets
U	uncatalog	data sets
V	View	members and non-PDS data sets
VP	view	action prompt
W	WS command	members and non-PDS data sets
WE	workstation file, edit on host	workstation files
WEW	workstation file, edit on workstation	workstation file
WPSET	workstation settings	action prompt
WV	workstation file, view on host	workstation files
WVW	workstation file, view on workstation	workstation files
X	print data set index	data sets
Y	allocate SMS (enhanced)	data sets
Z	compress	data sets

Table 23. Workstation Commands (continued)

Command	Description	Valid For:
= (equal sign)	Repeat last command. If no previous action, *view* is the default.	members and non-PDS data sets

Default CUA Function Key Settings

Table 24 shows how the function keys are defined for the main Workplace panel when the mode is set to keylist ON and function keys are set to primary LOWER.

Table 24. Workplace Function Key Settings

Key	Action	Description:
F1	Help	Workplace help
F2	Split	Split screen
F3	Exit	Exit Workplace
F4	Settings	ISPF Workplace settings
F5	PrvObj	Recall last object
F6	PrvAct	Repeat last action
F7	Backward	Scroll up Reflist
F8	Forward	Scroll down Reflist
F9	Swap	Swap screen
F10	Actions	Cursor to action bar
F11	ChgView	Change Workplace view
F12	Cancel	Exit Workplace
F13	Help	Help
F14	Split	Split
F15	End	End
F16	Return	Return
F17	Rfind	Repeat find
F18	Rchange	Repeat change
F19	Up	Up (Scroll up)
F20	Down	Down (Scroll down)
F21	Swap	Swap
F22	Left	Left (Scroll left)
F23	Right	Right (Scroll right)
F24	Cretriev	Cursor/retreive

Changing Workplace Settings

Figure 228 on page 382 shows the pop-up prompt window that appears when you choose the **Workplace Settings...** pull-down from the **Options** choice on the Workplace action bar. You can also start this function by typing **WPSET** on the command line and hitting enter. The workplace settings determine how your particular workplace behaves for various functions.

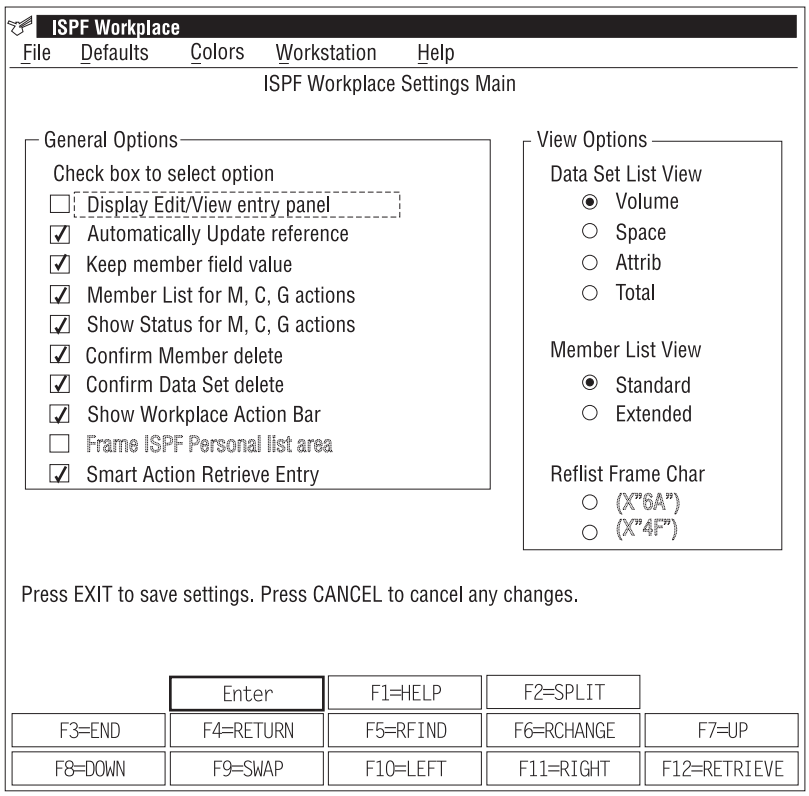

Figure 228. Workplace Settings panel (ISRUSETM)

You can set the following items from this window:

Display Edit/View entry panel
when selected, causes the Edit/View prompt panel to appear before you can start an edit or view action for a sequential data set. If you want to display a member list, the prompt panel is only displayed if a slash (/) is entered in the Prompt field of the member list.

The default for this setting is *selected*.

Automatically Update Reference List
when selected, specifies that any data set or library, or both, is added to the respective reference list.

The default for this setting is *selected*.

Keep member field value
when selected, specifies that the member name field for ISPF Library is not to be cleared upon return from a library action.

The default for this setting is *selected*.

List member for M,C,G actions
when selected, specifies that the actions Move, Copy, and Reset result in a member list. When not selected, these actions act upon a member pattern as a single object.

The default for this setting is *selected*.

Show Status for M,C,G actions
when selected, displays a status panel for the actions Move, Copy, and Reset. When not selected, no status panel is displayed.

The default for this setting is *selected*.

Confirm Member delete
when selected, specifies that the delete confirmation panel is displayed before a member is deleted.

The default for this setting is *selected*.

Confirm Data Set delete
when selected, specifies that the delete confirmation panel is displayed before a data set is deleted.

The default for this setting is *selected*.

Show Workplace Action bar
when selected, specifies that the action bar appears on the workplace panels.

The default for this setting is *selected*.

Frame ISPF Referral list area
when selected, specifies that the ISPF referral list area be framed, using the character specified in the **Reflist Frame Char** field.

Smart Action Retrieve Entry
when selected, specifies that ISPF executes the smart action option against the retrieved data set.

View Options
specifies how to display the data set list

volume
displays data set list with a volume view

space displays data set list with a space view

attrib displays data set list with an attribute view

total displays data set list in total view

Member List View
specifies how to display the member list

standard
displays a member list with a 1-character command entry field

extended
displays a member list with an 8-character command entry field

Reflist Frame Char
the character used to frame the ISPF referral list area on your workstation panels.

Workplace Settings Panel Action Bar

The following action bar choices appear on the Workplace Settings panel.

File the file pull-downs give you the options to either cancel or exit the current file.

Defaults
you can choose the default enter or open actions from these pull- downs:

Default Enter action
You can select a default action to perform automatically whenever you do an *Enter* action. The available actions are:
- Smart Action

The Smart Action enables ISPF to choose the action needed based on the characteristics of the object you are using. ISPF chooses the appropriate action according to the following rules:

Object type
Action selected by ISPF

ISPF Library
Member list

Partitioned Data Set
Member list

Pattern containing "*" or "%"
Data Set List

Volume (with no object name)
Data Set List

Member Object
User selectable *

Sequential Data Set
User selectable *

Workstation File
User selectable *

* Use the **Smart Action** action bar choice to select the action for member objects, sequential data sets and workstation files.

- Member List
- Data Set List
- Edit
- View
- Browse
- Rename member
- Move
- Copy
- Reset Stats
- Open
- Repeat action

Default Open action
You can select a default action to perform automatically whenever you do an *Open* action from the Workplace or workplace member lists. The available actions are:

- User command (a user defined command)
- Edit
- View
- Browse
- Delete member
- Rename member
- Move
- Copy
- Reset member
- Print member
- WS Cmd
- TSO Cmd

Colors you can choose the colors for the member list or the data set list from this action bar.

Workstation
you can connect your host and workstation with these choices:
1. Configure ISPF Workstation Tool Integration...
2. ISPF C/S Install...

Help provides general workplace settings help, and default enter and open help.

Workplace Example Scenario

The following scenario illustrates some of the advantages provided by the ISPF Workplace function. To provide you with a reference point of view, the scenario includes points on how you can accomplish the same task using ISPF in the traditional way.

For this example, say that your task is to:

1. Copy a sequential data set into a member of a concatenated ISPF Library
2. SuperC compare it to another member
3. Rename the member
4. Change the Version number in the ISPF statistics.

Subtask 1

Your first step is to copy a sequential data set into a member of a concatenated PDS.

Traditional ISPF: Use the 3.3 Move/Copy Utility.

Workplace: Use the Copy Action against the sequential data set object.

Choose the Workplace option (Option 11) on the main menu. Use the PF11 key to toggle to the data set view. In the Workplace you have a choice of working from a data set list or issuing commands against a single data set.

If you are list-oriented you can specify a wildcard pattern in the Object Name field (such as, 'USERID.*') to generate a data set list containing the sequential data set.

If you prefer to specify the sequential data set directly you can type it into the Object Name field either with or without single quotes (that is, SEQ.FILE or 'USERID.SEQ.FILE').

In either case the following accelerated methods can be alternatives to remembering and typing the input:

- You might be able to retrieve a recently referenced data set name or pattern from the REFLIST in the bottom half of the Workplace.
- You might be able to retrieve a recently referenced data set name or pattern using the recall key PF5.
- You might be able to retrieve a data set name or pattern from a personal list you previously created. These also appear in the bottom half of the Workplace.

Now that the Object has been specified you must specify the Action. In this example, the action is **COPY**. You can do this several ways, depending on your preferences.

- If you are in a list, you can use the CO line command to copy the data set, or you can put a slash (/) in the line command area to be prompted with a list of available commands to select.

- If you specified the ″from″ data set directly (not from a list) you can use the **Copy** pulldown choice from the FILE action bar choice, or you can type the **C** fast path command in the Action ==> field to copy the data set.

In either case, a pop-up panel prompts you for the target data set, member name, and other parameters.

Subtask 2

The second step is to SuperC compare one member of a concatenated PDS to another.

Traditional ISPF: Use the 3.13 SuperC compare utility.

Workplace: Use the Workplace-to-SuperC Interface.

Using PF11, toggle back to the Workplace ISPF Library View.

Specify the ISPF library concatenation and member name of the new member you just created by the COPY action. The following accelerated methods can be used as alternatives to remembering and typing the input:

- You might be able to retrieve a recently referenced ISPF Library concatenation from the REFLIST in the bottom half of the Workplace.
- You might be able to retrieve a recently referenced ISPF Library concatenation using the recall key PF5.
- You might be able to retrieve an ISPF Library concatenation from a personal list you previously created. These also appear in the bottom half of the Workplace.

Now that the Object has been specified you must specify the Action. The action at this point is SuperCE. Again, specifying this action can be done several ways depending on your preferences.

- You can use the **SuperCE** pulldown choice from the SUPERC action bar.
- You can type the ″SCE″ fast path command in the Action ==> field and press Enter.

In either case, Workplace enters the SuperCE dialog. Note that your ISPF Library concatenation is transferred to the correct New DSN fields in the SuperCE concatenation panel, so you do not have to type it yourself.

After running your compare, exit the SuperC Utility to return to Workplace.

Subtask 3

The next step is to rename a member of an ISPF Library.

Traditional ISPF: Use the 3.1 Library Utility.

Workplace: Use the Rename member Action.

The ISPF library concatenation and member name of the new member you just compared remains on the Workplace panel. Now you must specify the Rename Action.

How do you prefer to do this?

- You cay use the **Rename** pulldown choice from the FILE action bar.
- You can type the ″R″ fast path command in the Action ==> field, then press Enter.

- You can work from a member list and issue the ″R″ line command to rename the member.

Member lists can be created a number of ways in Workplace:

- Just press Enter if your default enter action is Smart Action, a mode that analyzes the object and selects an appropriate action. Select the **Workplace settings** pulldown choice from the OPTIONS action bar to view or change your defaults.
- Enter the **List** pulldown choice from the FILE action bar.
- Enter the ″ML″ fast path command.

In any case, Workplace displays a pop-up panel to prompt you for the new member name.

Subtask 4

The final step in this scenario is to change a member's Version number in the ISPF statistics.

Traditional ISPF: Use the 3.5 Reset Statistics Utility.

Workplace: Use the Reset Action.

The ISPF library concatenation and member name of the new member you just compared remains on the Workplace panel. Now you must specify the Reset Action.

Again you have a choice about how to do this:

- You can use the **Reset** pulldown choice from the FILE action bar.
- You can type the ″G″ fast path command in the Action ==> field and press Enter.
- You can work from a member list and issue the ″G″ line command to rename the member or specify the ″/″ line command to be prompted with an action selection list.

In all cases, Workplace displays a pop-up panel to prompt you for Reset parameters.

Part 2. Appendixes

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Appendix A. SuperC Reference

This Appendix contains General-use Programming Interface and Associated Guidance Information.

This appendix provides information about the SuperC return codes, process options, update data set control options, and process statements.

ISPF contains two utilities, SuperC (option 3.12) and SuperCE (option 3.13), that allow you to compare data sets for differences. Also, ISPF contains two other utilities, Search-For (option 3.14) and Search-ForE (option 3.15), that allow you to search data sets for strings of data.

All four of these utilities combine two major components to do their respective functions. The first component is a dialog that provides the data entry panels, selection panels, and messages. The second component is the program module - ISRSUPC. The CPI interface is through a standard OS/370 parameter list.

You can use the SuperC program without the ISPF utilities. To do this, however, your installation must customize a CLIST or REXX EXEC (for interactive use), or a PROCLIB procedure (for batch processing of a catalog procedure). A sample CLIST has been provided to show line command processing. A sample PROCLIB JCL catalog procedure has also been provided to show batch submission. The sample CLIST and PROCLIB JCL are located in the SAMPLIB data set as members ISRSCLST and ISRSPROC, respectively.

Utility Differences

The standard utilities, SuperC (option 3.12) and Search-For (option 3.14), are easy to use with somewhat reduced function. On the other hand, the extended utilities, SuperCE (option 3.13) and Search-ForE (option 3.15), fully exploit the SuperC program's capabilities.

Standard Utilities

The standard utilities are useful for ordinary comparisons and searches. The SuperC utility (option 3.12) uses a two-panel sequence: you specify the new input data set on the first panel and the old input data set on the second. The Search-For utility (option 3.14) uses an optional two-panel sequence: you can specify the input data set and one search string on the first panel, and use the second panel if you need to specify more than one search string.

You can enter additional information on these panels as they are displayed. If you are using the SuperC utility, you can enter the name of a previously prepared profile data set that contains additional information to specify the comparison.

Search-For does not use a profile data set. Also, Search-For finds all occurrences without case distinction when searching for a data string.

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Extended Utilities

The primary intent of the extended utilities is to provide maximum flexibility and access to all SuperC functions. Input fields are provided to allow you to use process options and statements. Also, the Search-ForE utility's ASIS fields allow you to specify mixed case search strings.

The input data set name fields differ from standard ISPF format because Project, Group, Type, and Member fields are not provided. Instead, you can enter input data set names horizontally using standard TSO naming conventions. This includes the use of a PDS member name, if desired, as part of a data set name.

The concatenation of input data sets is also different. Up to four data set names, as opposed to the standard four ISPF library groups, can be entered as new or old data sets. This allows data sets with the same attributes to be concatenated. For example, PANELS and MSGS data sets could be concatenated for searching.

Besides compare functions, the SuperCE Utility panel provides access to the Search-ForE utility (option 3.15). This gives you the added advantage of the ability to search for a data string without having to leave SuperCE, in addition to access to more functions than Search-For (option 3.14) provides.

Program Description

The SuperC program is a fast and versatile program that can process:
- Two sequential data sets
- Two complete partitioned data sets
- Members of two partitioned data sets
- Concatenated data sets.

In fact, any data set that can be processed by ISPF can be processed by the SuperC program.

Note: ISPF does not support tape data sets.

SuperC can compare data sets even when there are many differences and redundant data. Some examples of redundant data are blank lines, duplicate words, and binary data with many duplicate characters.

Unlike many compare programs, SuperC is not limited to comparing data sets on a line-by-line basis. Instead, it allows you to choose between the following four comparison levels. The compare type you select determines which kinds of data differences are presented by SuperC. See "Why Compare Types May Produce Different Comparison Results" on page 462 for more information about comparison results.

- File comparisons produce summary information about the differences between the data sets being compared.
- Line comparisons are record-oriented and show matching, inserted, deleted, and reformatted lines. This level is most useful for comparing lines of program source code. It provides the least output difference information and is least sensitive to resynchronization.
- Word comparisons show differences between data strings that are delimited by blanks or nonalphanumeric characters, such as commas. Matching words are found, even if they are not on the same line. This level is most useful for comparing text data sets.

- Byte comparisons determine byte differences. It is most useful for comparing unformatted and machine-readable data.

The SuperC program requires only the names of the input data sets. However, the utility you are using may require other information, such as a listing type. Also, you can enter the following types of processing information and options on the utility data entry panels:
- Compare type
- Listing data set name or destination
- Process options
- Statements or profile data set name
- Browse output choice.

The SuperC program allows you to create two kinds of output:
- A listing that shows the results of the comparison or search and
- A structured data set that contains update information.

Within these two categories, you can create many kinds of output that make it easy to see where your data differs. To see your comparison results, you can generate listings that show:
- An overall summary of total changes
- The actual source code where deltas (differences) were found
- The deltas plus up to 10 (the default) matching lines before and after
- The deltas plus all matching lines.

You also have a choice between listings that show differences either sequentially or side-by-side.

In an update data set, output lines are identified and results are put in specific columns. An update data set is especially useful as input to a user-written application program. It allows a program to customize what you see, changing generalized output to information that is specific to a particular application.

The SuperC utility (options 3.12, 3.13, and 3.14) CLISTs allocate or free space under the following DDNAMEs: SYSIN, SYSIN2, OLDDD, NEWDD, OUTDD, and DELDD.

SuperC Features for the Year 2000 Transition

Using SuperC features specifically designed to help you manage the Year 2000 transition, you can:

- Specify a 100-year period (or “year window”) so that, for dates that have only a 2-digit year, the century can be determined. This can be based on either:
  - A “fixed” year window (with a fixed starting year), or
  - A “sliding” year window (starting at a specified number of year prior to the current year).
- Compare 2-digit year values in one data set with 4-digit year values in another data set.
- Compare compressed year values in one data set with uncompressed year values in another data set.
- Filter cosmetic differences caused by adding century digits to 2-digit years, so that you can more easily identify real differences in content.

Applications

You can use the SuperC program for many applications other than comparing two source data sets. This section lists some specific applications for general users, writers and editors, and programmers and systems administrators.

General users can:

- Compare two data sets that have been reformatted. Reformatted data sets contain such differences as indentation level changes, spaces inserted or deleted, or lines that have been reformatted and moved to other parts of the data set.

  SuperC detects and classifies reformatted lines as special changes. You can list these lines in the output, along with the normal insert/delete changes, or eliminate them from the listing. Reducing the number of flagged lines may help you focus on real, rather than cosmetic, changes.
- Determine whether two PDSs, or a concatenation of PDSs, have corresponding like-named members.

  Members absent from one data set but present in the other are listed, as is all change activity between like-named members. The comparison can show changes caused by creating or deleting PDS members.

Writers and editors can:

- Detect word changes within documents.

  SuperC finds word differences even if the words have been moved to different lines.
- Verify that only designated areas are changed.

  SuperC comparison results show all areas affected. Changes made to restricted areas may be invalid. Therefore, unintended changes can be detected so that a complete document need not be checked for errors again.
- Create a utility that automatically inserts SCRIPT revision codes.

  You could write a program that uses Word compare to find where words in the new data set are different, makes a copy of the new data set, and then inserts SCRIPT revision codes (.RC) before and after the changed words. This utility could eliminate the need to insert SCRIPT revision codes manually.

Programmers and systems administrators can:

- Generate management reports that show the quantity and type of changes in program source code.

  SuperC can count the changed and unchanged lines of code in an application program. Therefore, comparison results could be used to summarize the changes between different versions of a program.
- Retain a record of change activity.

  Listing data sets can be collected and retained as a permanent record of the changes made before a new program is released. Source code differences can help detect regressions or validate the appropriateness of any code modifications.
- Rewrite a listing data set, including additional headers or change delimiters.

  Some SuperC listings may need to be rewritten before you accept the results. For example, some installations may require security classifications. Others may require a listing created using the WIDE process option to have box delimiters surrounding changed sections.
- Compare data sets across nonconnected systems.

SuperC can generate a 32-bit hash sum per data set or member using the File compare type. Data sets compared on a nonconnected processor, using SuperC, should have the same hash sums if they are identical. A File comparison of any data set to determine a hash sum can be done by specifying the same data set as both new and old.

- Develop additional uses for update data sets.

  SuperC produces general results with generalized reports. However, your installation may have additional requirements. There are many specialized update formats that you can use to produce listings that match these requirements. Normal SuperC listings may not fit this type of application, but the update data sets are more structured and should be easier to use as data input. See *ISPF Dialog Developer's Guide and Reference* for explanations and examples of the update data sets.

Process Options

Option P on either the SuperCE Utility panel or the Search-ForE Utility panel provides one or more panels from which you can select process options. For SuperCE, the options displayed are compatible with the compare type (File, Line, Word, or Byte) that you specified in the Compare Type field. The compare type that you select determines the available process options (Table 25).

Table 25. Summary of Process Options

Process Option		Valid For				
		Compare Type				
Keyword	**Description**	**FILE**	**LINE**	**WORD**	**BYTE**	**Search**
ALLMEMS	All members	✓	✓	✓	✓	✓
ANYC	Any case		✓	✓		✓
APNDLST	Append listing output	✓	✓	✓	✓	✓
APNDUPD	Append update		✓	✓	✓	✓
CKPACKL	Check for packed format		✓	✓		
CNPML [1]	Count non-paired member/file lines		✓			
COBOL [2]	For COBOL source files		✓	✓		✓
COVSUM	Conditional summary	✓	✓	✓	✓	
DLMDUP	Do not list matching duplicate lines		✓			
DLREFM	Do not list reformatted lines		✓			
DPACMT	Do not process asterisk (*) comment lines		✓	✓		✓
DPADCMT	Do not process ADA-type comments		✓	✓		✓

Table 25. Summary of Process Options (continued)

Process Option		Valid For				
		Compare Type				
Keyword	**Description**	**FILE**	**LINE**	**WORD**	**BYTE**	**Search**
DPBLKCL	Do not process blank comparison lines		✓	✓		✓
DPCBCMT	Do not process COBOL-type comment lines		✓	✓		✓
DPCPCMT	Do not process C++ -type comment lines		✓	✓		✓
DPFTCMT	Do not process FORTRAN-type comment lines		✓	✓		✓
DPMACMT	Do not process PC Assembly-type comment lines		✓	✓		✓
DPPLCMT	Do not process PL/I-type comments		✓	✓		✓
DPPSCMT	Do not process Pascal-type comments		✓	✓		✓
FMSTOP	Stop on first mismatch	✓				
FMVLNS	Flag moved lines		✓			
GWCBL	Generate WORD/LINE comparison change bar listing		✓	✓		
IDPFX	Identifier -prefixed listing lines					✓
LMTO [3]	List group member totals					✓
LNFMTO [3]	List not-found member totals only					✓
LOCS	List only changed entries in summary	✓	✓	✓	✓	
LONGLN [4]	Long lines		✓			✓
LPSF [3]	List previous -search -following lines					✓
LTO [3]	List totals only					✓

Table 25. Summary of Process Options (continued)

Process Option		Valid For				
		Compare Type				
Keyword	**Description**	**FILE**	**LINE**	**WORD**	**BYTE**	**Search**
MIXED	Mixed input (single/double byte) text		✓	✓		
NARROW [4]	Narrow (side -by -side) listing		✓			
NOPRTCC	No printer control columns	✓	✓	✓	✓	✓
NOSEQ [2]	No sequence numbers	✓	✓	✓	✓	✓
NOSUMS	No summary section		✓	✓	✓	✓
REFMOVR	Reformat override		✓			
SDUPM	Search duplicate members					✓
SEQ [2]	Ignore standard sequence number columns		✓	✓		✓
UPDCMS8 [5]	Update CMS8 format		✓			
UPDCNTL [5]	Update control		✓	✓	✓	
UPDLDEL [5]	Update long control		✓			
UPDMVS8 [5]	Update MVS8 format		✓			
UPDPDEL [5]	Update prefixed delta lines		✓			
UPDREV [5]	Update revision		✓	✓		
UPDREV2 [5]	Update revision (2)		✓	✓		
UPDSEQ0 [5]	Update sequence 0		✓			
UPDSUMO [5]	Update summary only		✓	✓	✓	
WIDE [4]	Wide (side -by -side) listing		✓			
XREF	Cross reference strings					✓
XWDCMP	Extended word comparison			✓		
Y2DTONLY [6]	Year 2000 Compare Dates Only		✓			

Table 25. Summary of Process Options (continued)

Process Option		Valid For				
		Compare Type				
Keyword	Description	FILE	LINE	WORD	BYTE	Search

Note:

1. Valid for group LINE comparisons only.
2. COBOL, SEQ, and NOSEQ are mutually exclusive.
3. LMTO, LNFMTO, LPSF, and LTO are mutually exclusive.
4. LONGLN, NARROW, and WIDE are mutually exclusive.
5. All update (UPD) process options are mutually exclusive. Also, they cannot be used with the process option Y2DTONLY.
6. Y2DTONLY is not supported for change bar listing (process option GWCBL).

The SuperC process options are listed alphabetically and defined below:

ALLMEMS
All members. Compare all members including alias entries. This functions as though all directory entries were selected from a member list.

ANYC Any case. SuperC converts the lowercase alphabetic characters (a-z) in source data sets to uppercase (A-Z) before comparing the data sets (the actual input data sets are not modified). Use this option to cause strings such as “ABC”, “Abc”, “ABc”, ... to compare equally.

Notes:

1. ANYC has the lowest priority operation affecting the SuperC process. For example, it does not affect any of the strings used in SuperC compare process statements (except SRCHFOR).
2. The ANYC process option does not apply to characters in DBCS text strings.

See Figure 229 on page 459 for more information.

This option is valid for the Line or Word compare types.

APNDLST
Append the listing output to the specified or default listing data set. If the data set does not exist, it is allocated as new. Some data sets cannot be appended because of the append listing attributes and new compare listing attribute requirements. SuperC returns an error code for this condition without adding to the output data set.

Normally, APNDLST allows you to collect listings from separate comparisons into one named listing data set (a MOD function). You can sometimes do this without using the APNDLST option by using the SELECT process statement. This allows you to identify any number of members. This produces a single composite listing of a complete or partial PDS with a single SuperC invocation.

This option is valid for all compare types.

APNDUPD
Append the update output to the specified or default update data set. If the data set does not exist, it is allocated as new.

APNDUPD allows you to collect updates from multiple comparisons into one update data set. You can also do this without using the APNDUPD

option by using the SELECT process statement that identifies different members and produces a single composite update data set.

This option is valid for Line, Word, or Byte Compare.

CKPACKL
Check for packed format. This option determines if the member or sequential data set has the standard ISPF packed header format. If required, SuperC unpacks the input data set or member during the comparison.

This option is valid for Line and Word compare types.

CNPML
Count non-paired PDS member lines for the group summary listing section. This option is useful for totaling the overall number of lines processed, "don't process" lines, and changed lines. Otherwise, only the paired members are processed and included in the overall statistics. Members (with CNPML) always count as changes (inserted or deleted) to the total number of lines.

Only valid for a PDS group Line compare.

COBOL
Ignore columns 1–6 in both F 80 data sets. Data changes in columns 1–6 are ignored.

This option is valid for the Line or Word compare types.

COVSUM
Conditional summary section. List the final summary section and/or the update file for the option UPDSUMO only if there are differences. This is useful when used in combination with APNDLST or APNDUPD.

Valid for File, Line, Word, and Byte compare types.

DLMDUP
Don't list matching duplicate lines. SuperC omits the old data set source lines and new data set source lines that match from the side-by-side output listing. This reduces the redundant lines in the side-by-side old data set source lines columns. It puts more emphasis on the old data set changed lines and sections of changes.

This option is valid for the Line compare type in combination with the WIDE or NARROW process option.

DLREFM
Don't list old data set reformatted lines. This option omits reformatted old data set lines from the output listing. They usually appear as separate lines under new reformatted lines. Only the new reformatted lines are listed in the output.

Note: DLREFM should not be confused with two other related process options—REFMOVR and DLMDUP. REFMOVR temporarily changes the reformatted line status so that lines can be listed (or excluded) as matched lines. DLMDUP pertains only to duplicate matched lines for the Wide or Narrow listing types.

This option is valid only for the Line compare type.

DPACMT
Don't process asterisk (*) comment lines. Lines with an asterisk in column

1 are excluded from the compare set. Other forms of assembler or macro comments are unaffected. SuperC does not filter out assembler comments appearing on the same line as an assembler statement or directive.

This option is valid for the Line or Word compare types.

DPADCMT
Don't process ADA-type comments. ADA comments are whole or partial lines that appear after the special "--" sequence. Blank lines are also considered part of the comment set. This option produces a comparison listing with all comments removed and blanked. The DPADCMT process option does not recognize comments within DBCS text strings.

This option is valid for the Line or Word compare types.

DPBLKCL
Don't process blank compare lines. Source lines in which all of the compare columns are blank are excluded from the compare set. It is redundant, but not incorrect, to use this option with DPADCMT, DPPLCMT, and DPPSCMT.

Note: The CMPCOLM process statement can be used to control the compare columns inspected. It is possible for the DPBLKCL option to exclude a line that contains non-blank data when you use the CMPCOLM statement to limit the column range of the comparison.

Do not assume that DPBLKCL only excludes complete input blank lines. For example, a blank line could have sequence numbers in columns 73-80 and you could compare the data sets with the SEQ process option.

This option is valid for the Line or Word compare types.

DPCBCMT
Don't process COBOL-type comment lines. COBOL source lines with an asterisk in column 7 are excluded from the compare set.

This option is valid for the Line or Word compare types.

DPCPCMT
Don't process C++ end-of-line type compiler comments. These are "//" delimited comments. DPPLCMT may also be used with DPCPCMT when the source file contains "/* ... */" comments delimiters.

Valid for LINE and WORD compare types.

DPFTCMT
Don't process FORTRAN-type comment lines. FORTRAN source lines with a "C" in column 1 are excluded from the compare set.

This option is valid for the Line or Word compare types.

DPMACMT
Do not process PC Assembly-type comments. Lines with an "*" in column 1 are excluded.

Valid for LINE and WORD compare types.

DPPLCMT
Don't process PL/I-type comments. PL/I, C, and REXX comments (that is, /* ... */ and blank lines) are excluded from the compare set. This option

produces a listing with comments removed and part comments blanked. Blank lines are defined as lines with blanks in all compare column positions.

Notes:

1. The SuperC program detects most cases including multiline, statement embedded, and most quote dependency comments. However, SuperC may exclude some lines that are not comments or include comment lines that should have been excluded. For instance, lines that contain comment delimiters enclosed within quotes appearing on separate lines are difficult to parse and may present recognition problems.
2. The DPPLCMT process option does not recognize comments within DBCS text strings.

This option is valid for the Line or Word compare types.

DPPSCMT

Don't process PASCAL-type comments. PASCAL-type comments of the type "(* . . . *)" are filtered and excluded from the compare set as are blank compare lines. This option produces a comparison listing with comments removed and part comments blanked. The DPPSCMT process option does not recognize comments within DBCS text strings.

Note: Both DPPSCMT and DPPLCMT may be a required combination for filtering certain nonstandard PASCAL compiler comments. The combination is allowed. Either may start a comment but only the starting delimiters type may terminate the comment.

This option is valid for the Line or Word compare types.

FMSTOP

Stop the compare on the first mismatch in the data set or PDS member. This option is valid only for a file compare.

FMVLNS

Flag moved lines. Identifies inserted lines from the new data set that match deleted lines from the old data set. Inserted-moved lines are noted with "IM-" and deleted-moved lines are noted with "DM-" in the listing. These lines are special cases of inserted or deleted paired lines.

This option is valid for the Line compare type.

GWCBL

Generates Word or Line compare change bar listings. SuperC lists new data set lines with change bars ("|") in column 1 for lines that differ between the new and old data sets. Most deleted lines are indicated by flagging the lines following the deletion (if possible).

Line compare and Word compare may give slightly different results. It is a recommended process option to use on text data sets. GWCBL allows you to see which lines have changes without the distraction of seeing deleted text lines. Blank lines in the listing should never be flagged.

This option is valid for the Line or Word compare types.

LMCSFC

Load Module CSECT file compare list. This option lists the name, number of bytes, and hash sum for each PDS load module CSECT. Unchanged paired CSECTS are omitted when you specify the LOCS process option.

This option is only valid for a File compare.

LOCS List only changed entries in the MEMBER SUMMARY LISTING section. Unchanged paired entries and non-paired new and old data set entries are omitted. Preceding the names of these pairs is a CHNG field to indicate whether they compare the same or differently.

This option is valid for all compare types.

LONGLN

LONGLN causes SuperC to create a listing with 203 columns, reflecting up to 176 columns from the source lines. The output data set may require special print handling as it might exceed the maximum number of columns handled unless special setup is arranged.

LONGLN and WIDE both generate wide listings. LONGLN is for the normal listing format while WIDE is for a side-by-side listing.

This option is valid for the Line compare type.

MIXED

This option indicates that the input text may be a mixture of both single and double byte (DBCS) text. Double byte strings are recognized and handled differently than if MIXED were not specified. For instance, single byte characters are not valid within double byte strings. Special terminals (for example, 5520) allow entry of DBCS characters.

This option is valid for the Line and Word compare types.

NARROW

Narrow side-by-side listing. Creates a 132/133 variable listing data set with only 55 columns from each source data set. Inserted and deleted lines are flagged and appear side-by-side in the listing output.

This option is valid for the Line compare type.

NOPRTCC

No printer control columns. SuperC generates “normal” or NARROW listing data sets with record lengths of 133 columns, or WIDE or LONGLN listing data sets with 203 columns. These listings contain printer control columns and page separators. NOPRTCC eliminates both the page separators and the control column 1. With NOPRTCC, “normal” and NARROW listings are 132 columns, and WIDE and LONGLN listings are 202 columns. However, initial title lines and section separators are still generated.

This option produces a data set that is better for online “browsing” because it does not have interspersed page separator title lines.

Note: It is possible to use a high LNCT value to achieve the same purpose as NOPRTCC. However, NOPRTCC is a process option, is easier to specify, and does not require a separate LNCT process statement in a process statement data set.

This option is valid for all compare types.

NOSEQ

No sequence numbers. SuperC Processes F 80 standard sequence number columns as data. This option is extraneous for variable length records and non-F 80 attribute data sets.

This option is valid for all compare types.

NOSUMS
No summary listing section. This option omits the summary section including the statistics, options, warning, and error messages from the listing output.

This option is valid for the Line, Word, and Byte compare types.

REFMOVR
Reformat override. Reformatted lines are not flagged in the output listing. They are, however, counted for the overall summary statistics and influence the return code since they are a special case of an insert/delete pair.

This is an important output filter option. You may wish to accept formatted lines as changes but not want to browse a change listing with formatted lines annotated. The option is also useful when used in combination with some higher level language “don’t process” comment filter such as DPPLCMT.

This option is valid for the Line compare type.

SEQ Sequence numbers. Ignore F 80 standard sequence number columns. Sequence number column changes in columns 73-80 are ignored with F 80 and columns 1-8 in V 255 records. This is the SuperC default for F 80/V 255 data sets when the compare type is Line. It is not the default for Word compare. SEQ is not valid for any data set that does not have an attribute of F 80/V 255.

This option is valid for the Line or Word compare types.

UPDCMS8
Update CMS Sequenced 8. Produces a data set that contains both control records and new data set source lines. Columns 73-80 from the old DS lines are used as references. Only fixed 80 data sets are allowed.

SuperC may change the status of matched lines to insert/delete pairs, enlarging the sequence number gaps of the old data set. The CMS update data set (when properly named) can be used as input to CMS XEDIT. For information and an example of this update data set, see Figure 242 on page 481.

This option is valid for the Line compare type.

UPDCNTL
Update control. Produces a control data set which relates matches, inserts, deletes, reformats, and “don't process” lines (Line compare only) using relative line numbers (for Line compare), relative word positions (for Word compare), or relative byte offsets (for Byte compare) within the new and old data sets. No source or data from either input data set is included in the output data set. For information and an example of this update data set, see “UPDCNTL—Update Control” on page 481.

Note: UPDCNTL is the only output to directly display “don’t process” line numbers and lengths from each DP (don’t process) or MOVED line span. Top inserts or deletes reference line 1. Bottom inserts or deletes reference the maximum line value plus 1. Normal compare listings do not directly indicate DP lines since they have been excluded from the compare set. They may be indirectly detected because most line number reference columns (normally on the extreme right of a listing) refer to the actual line number. You may detect a “don’t process” gap in the reported line number values.

This option is valid for the Byte, Line, or Word compare types.

UPDLDEL
Source data set with delta changes. UPDLDEL produces a control data set that combines new source matched lines and changes from the new and old source data sets. The control lines are titled as follows:

Title	Control line
***HDR1, *HDR2, and *HDR3**	Header titles and data
***M-**	Matched line sequence header
***I-**	Inserted line sequence header
***I-RP**	Inserted line sequence header for replacement lines
***I-RF**	Inserted line sequence header for reformatted lines
***D-**	Deleted line sequence header
***D-RP**	Deleted line sequence header for replacement lines
***D-RF**	Deleted line sequence header for reformatted lines.

Header control records delimit the copied data set lines. This allows you to quickly find changed areas. The lines are full length records. The lines appear similar to the information on a LONG listing. The two input data sets must have the same fixed LRECL or each have a variable RECFM.

You should be able to edit this data set to obtain a final composite source data set including all the change activity of two different developers. For information and an example of this update data set, see "UPDLDEL—Update Long Source and Delta Data Set" on page 485.

This option is valid for the Line compare type.

UPDPDEL
Update prefixed delta lines. This option produces a control data set containing header records and complete (up to 32K line length limit) delta lines from the input source data sets. Each output record is prefixed with identification and information. The update data set is a variable length data set reflecting the input source data set characteristics. For information and an example of this update data set, see "UPDPDEL—Prefixed Delta Lines" on page 486.

This option is valid for the Line compare type.

UPDMVS8
Update MVS Sequenced 8. Produces a data set that contains both control and new data set source lines. New data set sequence numbers columns 73-80 are used (when possible) as insert references while deletes are from old line columns 73-80. The format is compatible for MVS IEBUPDTE input. Only fixed 80 DS are allowed. For information and an example of this update data set, see Figure 246 on page 485.

This option is valid for the Line compare type.

UPDREV
Update Revision. UPDREV produces a copy of the *new* data set with SCRIPT/VS *.rc on/off* or BookMaster *:rev/:erev* revision codes delimiting most script lines that contain changes.

You may wish to contrast the source lines delimited by the UPDREV option and a similar flagging of the lines with changes from the output listing data set as produced by the GWCBL process.

Note: The revision character used is controlled by using the REVREF process statement. For details, see "REVREF—Revision Code Reference" on page 433.

A REVREF process statement (for example, `REVREF REFID=ABC` or `REVREF RCVAL=1`) is used to define the revision level (SCRIPT/VS tags) or reference ID (BookMaster tags). Alternatively, SCRIPT/VS .rc delimiters may be controlled by the first record in the *new* data set. (For example, `.rc 2 ¦` as the first record causes level 2 to be used).

Note: BookMaster requires the REFID value to be defined with a *:revision* tag and "RUN=YES" attribute to have the change character inserted in the processed document.

For information and an example of this update data set, see "UPDREV—Update Revision" on page 487.

Valid for LINE and WORD compare types.

UPDREV2

Update Revision (2). UPDREV2 is identical to UPDREV with the exception that data between the following BookMaster tags are not deleted in the update data set:

```
:cgraphic.
:ecgraphic.
:fig.
:efig.
:lblbox.
:elblbox.
:nt.
:ent.
:screen.
:escreen.
:xmp.
:exmp.
```

Valid for Line and Word compare types.

UPDSEQ0

Update data set using no column number (zero) references. UPDSEQ0 produces a control data set that relates inserts and deletes to the relative line numbers of the old data set. Both control records and new data set source lines are included in the output data set. This option is similar to UPDCMS8 except it uses relative line numbers (starting with zero) instead of sequence numbers from columns 73-80. Both fixed and variable record length lines are allowed. Fixed LRECL < 80 are padded to 80 characters. Insert lines are full fixed- or variable-length copies of the new input data set lines. Fixed-length record data sets with an LRECL <=80 produce a fixed-length data set with the same record length. For information and an example of this update data set, see Figure 251 on page 490.

This option is valid for the Line compare type.

UPDSUMO

Update Summary only. UPDSUMO produces an Update data set of four lines (New-dataset-id, Old-dataset-id, totals header, single summary line).

The summary line is tagged with a "T" in column 1 and the summary statistics are located at fixed offsets in the output line. The data set has an LRECL of 132. For information and an example of this update data set, see "UPDSUMO—Update Summary Only" on page 490.

This option is valid for the Line, Word, or Byte compare types.

WIDE Wide side-by-side listing. Creates a 202/203 listing data set with up to 80 columns from each source data set line. Inserted and deleted lines are flagged and appear side-by-side in the listing output.

This option is valid for the Line compare type.

XWDCMP
Extended Word compare. The "word" character set contains all letters, numbers and the national characters ("$", "#", and "@"). SuperC interprets all other characters as word delimiters. For example:

" ABCD(EFGH) JKL "

would be two words using normal word compare, but five (three words and two delimiters) with the XWDCMP process option. Consecutive delimiters are interpreted as part of the same pseudo-word.

This option is valid for the Word compare type.

Y2DTONLY
Year 2000 Compare Dates Only. Indicates that the comparison process is to be performed only on the dates defined by the Year 2000 Date Definition process statements. That is, all data in the input files will be ignored in the comparison process apart from that defined by NY2C, NY2Z, NY2D, NY2P, OY2C, OY2Z, OY2D, and OY2P process statements. For further details on these process statements, see "NY2C, NY2Z, NY2D, NY2P, OY2C, OY2Z, OY2D, OY2P —Year 2000 Date Definitions" on page 430.

Notes:

1.

Note: Y2DTONLY causes a "record-for-record" comparison to be performed between the two input files, whereby dates are simply checked for being equal or unequal. (The "high/low" comparison logic that SuperC normally uses is not applied in the case of Y2DTONLY and, as such, the relative *values* of the dates have no bearing on the result of the comparison.)

2.

Note: Y2DTONLY is not supported for the process option GWCBL (change bar listing).

Valid for LINE compare type.

SuperC Process Statements

This section lists the process statements in alphabetic order, showing their syntax, operand definitions, and examples. All process statements that are shown with a Compare syntax can be:

- Used in a profile data set with the SuperC utility (option 3.12).
- Entered in a statements data set with the SuperCE utility (option 3.13).

All process statements that are shown with a Search syntax can be entered in a statements data set and used with the Search-ForE utility (option 3.15), but not with the Search-For utility (option 3.14).

Each process statement description contains the following information:

Description
A description of function and operation of the statement. This description may also refer to other statements that can be used with or affected by this statement.

Examples
Sample usage of the statements.

Syntax
Diagrams for coding the statement, using either Compare syntax, Search syntax, or both if applicable, according to the conventions listed in "Process Statement Notation Conventions".

Operands
A description of any required or optional keywords or operands.

Process Statement Notation Conventions

This section uses the following notation conventions to describe the syntax of the process statements:

- Process statements and keywords are shown in uppercase to help you differentiate between them and their operands, which are shown in lowercase. However, you can enter them in any case you like.
- Operands shown in brackets ([ ]) are optional.
- Stacked operands shown in brackets indicate the optional operands from which you can select one or none.
- Stacked operands shown in braces ({ }) are required operands from which you must select one.
- Syntax diagrams that end with an ellipsis (...) allow you to repeat operands more than once.
- If a statement contains a KYWD operand, this keyword must precede any repetition of the operands that follow.

The compare type that you select determines the process statements available (Table 26).

Table 26. Summary of Process Statements

Process Statement		Valid For				
		Compare Type				
Keyword	**Description**	**FILE**	**LINE**	**WORD**	**BYTE**	**Search**
NCHGT	Change text: new or search file		✓	✓		✓
OCHGT	Change text: old file		✓	✓		
CHNGV	Change listing value		✓	✓	✓	
CMPBOFS	Compare byte offsets				✓	

Table 26. Summary of Process Statements (continued)

Process Statement		Valid For				
		Compare Type				
Keyword	**Description**	**FILE**	**LINE**	**WORD**	**BYTE**	**Search**
CMPCOLM	Compare (search) columns: new, old, search files		✓	✓		✓
CMPCOLMN	Compare columns: new file		✓	✓		
CMPCOLMO	Compare columns: old file		✓	✓		
CMPLINE	Compare lines		✓	✓		✓
CMPSECT	Compare sections		✓	✓		
COLHEAD [1]	Define column headings		✓			
DPLINE	Do not process lines (containing a string)		✓	✓		✓
DPLINEC	Do not process lines—continuation		✓	✓		✓
NEXCLUDE [2]	Exclude data: new file	✓	✓			
OEXCLUDE [2]	Exclude data: old file	✓	✓			
NFOCUS [2]	Focus on data: new file	✓	✓			
OFOCUS [2]	Focus on data: old file	✓	✓			
LNCT	Line count	✓	✓	✓	✓	✓
LPSFV	List previous -search -following value					✓
LSTCOLM	List columns		✓			✓
REVREF	Revision code reference		✓	✓		
SELECT	Select PDS members (MVS)	✓	✓	✓	✓	✓
SLIST	Statements listing option	✓	✓	✓	✓	✓
SRCHFOR	Search for a string					✓
SRCHFORC	Search for a string—continuation					✓
NTITLE	Alternative listing title: new file	✓	✓	✓	✓	✓

Table 26. Summary of Process Statements (continued)

Process Statement		Valid For				
		Compare Type				
Keyword	**Description**	**FILE**	**LINE**	**WORD**	**BYTE**	**Search**
OTITLE	Alternative listing title: old file	✓	✓	✓	✓	
NY2AGE	Year 2000 aging option: new file		✓			
OY2AGE	Year 2000 aging option: old file		✓			
NY2C	Year 2000 date definition: new file, character format		✓			
NY2Z	Year 2000 date definition: new file, zoned decimal format		✓			
NY2D	Year 2000 date definition: new file, unsigned packed decimal format		✓			
NY2P	Year 2000 date definition: new file, packed decimal format		✓			
OY2C	Year 2000 date definition: old file, character format		✓			
OY2Z	Year 2000 date definition: old file, zoned decimal format		✓			
OY2D	Year 2000 date definition: old file, unsigned packed decimal format		✓			
OY2P	Year 2000 date definition: old file, packed decimal format		✓			
Y2PAST	Year 2000 global date option		✓			
*	Process Statement comment to be printed	✓	✓	✓	✓	✓

Table 26. Summary of Process Statements (continued)

Process Statement		Valid For				
		Compare Type				
Keyword	Description	FILE	LINE	WORD	BYTE	Search
.*	Process Statement comment not to be printed	✓	✓	✓	✓	✓

Note:

1. Valid only for listing types DELTA and LONG.
2. FILE compare type is valid only with ROWS option of NEXCLUDE, OEXCLUDE, NFOCUS and OFOCUS.

You must include these statements in an input control data set. The process statements data set can be fixed or variable, and its record length can be large, but you must enter process statements only in columns 1 through 72. Only one process statement can be entered per line. SuperC checks process statements and required operands for completeness before beginning a comparison. Comments are not allowed at the end of the line after the statement has been completed. Comment lines should be separate statements. Some statements cause an error message if comments are included on the same line.

You can enter some process statements several times in the statements data set (DPLINE or CMPLINE) as they define independent actions to be taken in the comparison. Others redefine their process scope after their first inclusion (LNCT). Including more than one redefining statement is not recommended but is not reported as an error. There is also no specific rule concerning which statement definition (or re-definition) prevails—the first (least often) or last (most often).

Note: It is best to retain and inactivate old process statements rather than deleting them from the statement data set. This can be easily done by putting a period and an asterisk (.*) in the first two character positions. These statements are ignored and not listed by the SuperC program when the data set is used as a statement data set.

CHNGV - CHNG (Compare Type) Line Value

Specifies the maximum number of match lines to precede or follow changed lines in the output listing. This process statement has no formatting effect if you do not use the CHNG listing type. The default value is 10.

Compare Types: Line, Word, and Byte

Examples

`CHNGV 5`	SuperC includes up to 5 match lines before and after a changed line in the output listing.

Syntax

```
CHNGV num
```

Operand Description

num A decimal number between 1 and 1000.

CMPBOFS - Compare Byte Offsets

Compares a data set between byte limits. The start/stop reference values must be hexadecimal values without quotes. Zero (0) is the lowest hexadecimal offset value that you can specify. The statement may be specified on one complete line or may have separate CMPBOFS statements enabling the limits to be fully specified within the 72-character statement line. There are keyword operands: TOP, BTM, NTOP, NBTM, OTOP, and OBTM.

Compare Type: Byte

Examples

`CMPBOFS NTOP 1000 OTOP 5E00`	SuperC interprets the two CMPBOFS statement sequences as compare from hex offset 1000 to the last byte of the new data set and from hex offset 5E00 to the last byte of the old data set.
`CMPBOFS NTOP 1000 CMPBOFS OTOP 5E00`	Performs the same function as the statement in the previous example but it is specified as two separate statements.

Syntax

```
CMPBOFS KYWD  hex-offset [ ...]
```

Operand Description

KYWD

The keyword may be one of the following:

TOP New Top and Old Top specification. Defines the byte offset (zero based) to start the Byte compare for both data sets or members.

BTM New Bottom and Old Bottom specification. Defines the byte offset (zero based) to end the Byte compare for both data sets or members. This value may be greater than the data set size but the omission of the BTM specification accomplishes the same objective.

NTOP New Top. Defines the byte offset (zero based) to start the Byte compare for the new data set or member.

OTOP Old Top. Same as NTOP but refers to the old data set or member.

NBTM

New Bottom. Defines the last byte position to end the Byte compare in the new data set or members.

OBTM

Old Bottom. Same as NBTM but refers to the old data set or member.

Hex offset

A hexadecimal value without quotes.

Note: If you do not specify “TOP”, “NTOP”, or “OTOP”, SuperC defaults to the top of the data set. If you do not specify “BTM”, “NBTM”, or “OBTM”, SuperC defaults to the last byte of the data set.

CMPCOLM, CMPCOLMN, CMPCOLMO - Compare Columns

CMPCOLM
Applies to the columns in both the new (or search) data set and old data set

CMPCOLMN
Applies to the columns only in the new data set

CMPCOLMO
Applies to the columns only in the old data set.

SuperC compares the data from the columns of the input data set. Up to 15 compare ranges/individual-columns are allowed and may be entered on additional CMPCOLM, CMPCOLMN, or CMPCOLMO statements. The column values and ranges must be in ascending order.

Note: Some process options (SEQ, NOSEQ, and COBOL) also define CMPCOLMS. The CMPCOLMS statement overrides all of these options.

Compare Types: Line and Word

Examples

`CMPCOLM 25:75`	Compares columns 25 through 75 in both data sets.
`CMPCOLM 30:60,75`	Compares columns 30 through 60 and column 75 in both data sets.
`CMPCOLM 30:60 75`	Performs the same function as the previous example. Notice that the comma and space are equivalent.
`CMPCOLMN 1:72 CMPCOLMO 9:80`	Compare different columns from each data set.

Syntax

```
CMPCOLM  start-colm[:stop-colm][,...]

CMPCOLMN start-colm[:stop-colm][,...]

CMPCOLMO start-colm[:stop-colm][,...]
```

Operand Description

start-colm
A number that identifies the column in which SuperC begins the comparison.

stop-colm
A number that identifies the column in which SuperC ends the comparison. This number is separated from the start-colm value by a colon (:).

CMPLINE - Compare Lines

Compares two data sets between line limits. The reference values may be line numbers or data patterns. The statement may be specified on one complete line or may have separate CMPLINE statements for each of the keyword operands: TOP, BTM, NTOP, NBTM, OTOP, and OBTM.

Compare Types: Line and Word

Examples

`CMPLINE  TOP 55 BTM 99`	Compares lines 55 through 99 in both data sets.
`CMPLINE  NTOP 55 NBTM 99`	Limits the comparison to lines 55 through 99 in the new data set.
`CMPLINE  NTOP 'ABCD',5:66`	Starts the comparison when the first ″ABCD″ is detected in columns 5 through 69.
`CMPLINE  OTOP 'ABCD'`	Starts the comparison when SuperC detects the first “ABCD” in any column of the old data set.

Syntax

```
CMPLINE KYWD {rel-line-#                        }[ ...]
     {,'string'[,start-colm[:stop-colm]]}
```

Operand Description

KYWD

The keyword may be one of the following:

TOP New and Old Top. Defines the beginning line in both data sets or members.

BTM New and Old Bottom. Defines the ending line in both data sets or members.

NTOP New Top. Defines the beginning line in the new data set.

NBTM
New Bottom. Defines the ending line in the new data set.

OTOP Old Top. Defines the beginning line in the old data set.

OBTM
Old Bottom. Defines the ending line in the old data set.

rel-line-#

The relative number of the record in the data set or member.

string Character string enclosed within single quotes. For embedded single quotes, use two consecutive quotes ('). For example, enter `'don''t'` for the string “don’t”.

start-colm

A number that identifies the column in which SuperC begins its search for *string*. All columns to the left of this column are ignored.

stop-colm

A number that identifies the column in which SuperC ends its search for *string*, but only for that record. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used. For example, if you

specify 'ABCD' as a string that must exist between columns 5 and 69, the search really includes columns 5 to 72. Therefore, the string can be found even if the first character is in column 69, with the others in columns 70, 71, and 72.

Notes:

1. If SuperC does not find the “top” condition you specify (for example, a pattern is incorrect), the compare continues but usually reports zero lines processed for this data set.
2. If you do not specify “TOP”, “NTOP”, or “OTOP”, SuperC defaults to the top of the data set. If you do not specify “BTM”, “NBTM”, or “OBTM”, SuperC defaults to the end of the data set.

CMPSECT - Compare Sections

Compares multiple sections from one sequential or PDS member to another sequential or PDS member. It is not valid for a PDS group compare of more than one member. It is functionally similar to CMPLINE but requires a section ID name to associate all keyword operands to a particular compare section.

Compare Types: Line and Word

Examples

`CMPSECT SECT01 TOP 25 BTM 50`	Compares lines 25 through 50 in both data sets or members.
`CMPSECT SECT02 NTOP 60 NBTM 70 CMPSECT SECT02 OTOP 65 OBTM 75`	Compares lines 60 through 70 in the new data set to lines 65 through 75 in the old data set.
`CMPSECT SECTX TOP 'PART1:',2:10 CMPSECT SECTX BTM 'END PART1:',2:10`	Starts the comparison of both data sets when SuperC detects the string "PART1:" in columns 2 through 10 and ends the comparison when SuperC detects the string "END PART1:" in columns 2 through 10.
`CMPSECT SECTY NTOP 'PART2:',2:10 CMPSECT SECTY OTOP 'PART2:',6:20 CMPSECT SECTY BTM 'END PART2:',2:10`	Compares a section in the new data set to a section in the old data set. The section in the new data set begins with the string "PART2:" in columns 2 through 10 and ends with the string "END PART2:" in columns 2 through 10. The section in the old data set begins with the string "PART2:" in columns 6 through 20 and ends with the string "END PART2:" in columns 2 through 10.

Note: All of the previous statements could be combined to compare multiple sections of the new and old data sets.

Syntax

```
CMPSECT KYWD {section-id             }[...          ]
     {,'string'[,start-colm[:stop-colm]]}[...]
```

Operand Description

KYWD

The keyword may be one of the following:

TOP New and Old Top. Defines the beginning line in both compare sections.

BTM New and Old Bottom. Defines the ending line in both compare sections.

NTOP New Top. Defines the beginning line in the new compare section.

NBTM
New Bottom. Defines the ending line in the new compare section.

OTOP Old Top. Defines the beginning line in the old compare section.

OBTM
Old Bottom. Defines the ending line in the old compare section.

section-id

The relative number of the record in the data set or member.

string Character string enclosed within single quotes. For embedded single quotes, use two consecutive quotes ('). For example, enter `'don''t'` for the string “don’t”.

start-colm
A number that identifies the column in which SuperC begins its search for *string*. All columns to the left of this column are ignored.

stop-colm
A number that identifies the column in which SuperC ends its search for *string*, but only for that record. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used. For example, if you specify `'ABCD'` as a string that must exist between columns 5 and 69, the search really includes columns 5 to 72. Therefore, the string can be found even if the first character is in column 69, with the others in columns 70, 71, and 72.

Note: If a “top” condition is not found (for example, a pattern is incorrect), the compare continues but will usually report zero lines processed for this data set.

COLHEAD—Define Column Headings

Defines column headings and specifies the location and format of the corresponding data to be displayed. For an example of a listing with column headings, see Figure 235 on page 471.

Note: COLHEAD is not available for side-by-side listings. (See "Side-By-Side Listings" on page 476).

Compare Types

LINE only.

Syntax

```
COLHEAD heading1, heading2, start-print-column:end-print-column,
        N start-column:end-column data-format-indicator,
        O start-column:end-column data-format-indicator
```

Operand Description

heading1 The heading to appear on the first line for the print column.

heading2 The heading to appear on the second line for the print column.

start-print-column The starting print column for the heading specified.

end-print-column The ending print column for the heading specified. (Must be separated from the *start-print-column* by a colon.)

Note: If the print-column range is shorter than the heading specified, the heading will be truncated.

N Indicates the operands following relate to the *new* data set.

start-column The starting position in the *new* data set of the data to be displayed.

end-column The ending position in the *new* data set of the data to be displayed. (Must be separated from the *start-column* by a colon.)

Data Format Indicator The format of the data in the *new* data set to be displayed:

C Character
B Binary
D Unsigned packed decimal
P Packed decimal
Z Zoned decimal

O Indicates the operands following relate to the *old* data set.

start-column The starting position in the *old* data set of the data to be displayed.

end-column The ending position in the *old* data set of the data to be displayed. (Must be separated from the *start-column* by a colon.)

Data Format Indicator

The format of the data in the *old* data set to be displayed (as for the *new* data set).

Example

```
COLHEAD 'START','DATE',1:7,N 1:6 P,O 11:16
```

Description

Defines a print column with a heading of “START” in the first line and “DATE” in the second heading line, headings to start in print column 1. The data to be displayed from the new data set is in positions 1 through 6 and is in packed format. The data to be displayed from the old data set is in positions 11 through 16 and is in (the default) character format.

DPLINE, DPLINEC - Don't Process Lines

DPLINE
Don't Process Lines

DPLINEC
Don't Process Lines Continuation Condition.

The Don't Process Line statement removes from the compare set lines that can be recognized by either a unique character string or a combination of related strings. DPLINEC is the continuation of the immediately preceding DPLINE or DPLINEC process statement. All the strings in a DPLINE/DPLINEC sequence must be found on the same input line for the line to be excluded.

A start-column or range can also be used to restrict the columns scanned. Relative start-columns and relative stop-columns are valid only on DPLINEC statements. This allows you to specify a relative start position depending on the end of the previous DPLINE/DPLINEC in the sequence relationship. Normal scanning starts at the beginning of the input line (resulting in the first found string) unless restricted by user column specifications or the relative operator.

Notes:

1. DPLINE and DPLINEC columns are not restricted by compare columns. The data patterns are also not affected by the ANYC process option. See Figure 229 on page 459 for more information.
2. The relative start operator "+" introduces another important capability of backtrack and retry by advancing the starting scan position. Backtrack allows you to identify a string through a sequence of DPLINE/DPLINEC statements and have a number of similar strings (all on the same line) be examined until the correct sequence is found. This contrasts to the "first found" DPLINE/DPLINEC string and a non-relative DPLINEC rejection when the DPLINEC condition is not met.

Compare Types: Line and Word

Examples

`DPLINE 'ABCDE' DPLINE 'ABCDE',1:99999`	Each of the following two statements exclude lines containing the string "ABCDE" from the compare set.
`DPLINE 'AbCde',2 DPLINE 'AbCde',2:2`	Each of the following two statements exclude lines where the string "ABCDE" starts in column 2.
`DPLINE 'ABCDE' DPLINEC 'BDEF '`	Both statements exclude lines that contain the strings "ABCDE" and "BDEF ".
`DPLINE 'ABCDE',2:50`	Excludes lines where the string "ABCDE" starts in columns 2 through 50.
`DPLINE 'AB'CD',2:50`	Excludes lines where the string "AB'CDE" starts in columns 2 through 50.
`DPLINE X'C1C27BF1',2:50`	Excludes lines where the string "AB,1" starts in columns 2 through 50.
`DPLINE 'ABC' DPLINEC 'BDEF',+`	Exclude lines containing the string "ABC" followed in the same line by the string "BDEF".
`DPLINE 'ABC's DPLINEC 'BDEF',+5`	Exclude lines containing the string "ABC" and "BDEF" when the string "BDEF" starts in the same line 5 columns after the end of the string "ABC".

Syntax

```
DPLINE  'string'[,start-colm[:stop-colm]]

DPLINEC 'string'[,start-colm[:stop-colm]]
[,+start-colm[:+stop-colm]]
[,+]
```

Operand Description

string Character string enclosed within single quotes. For embedded single quotes, use two consecutive quotes ('').

start-colm
A number that identifies the column in which SuperC begins its search for *string*. All columns to the left of this column are ignored.

stop-colm
A number that identifies the column in which SuperC ends its search for *string*, but only for that record. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used. This causes a search of a single column for the first character of *string*.

All columns to the right of the column that the last character of *string* can occupy are ignored. For example, if you specify `'ABCD'` as a string that must exist between columns 5 and 69, the search really includes columns 5 to 72. Therefore, the string can be found even if the first character is in column 69, with the others in columns 70, 71, and 72.

+start-colm
The relative column following the end of the previous "Don't process" string in which this *string* must start.

+stop-colm
The relative column following the end of the previous "Don't process" string in which SuperC ends the search for *string*.

+ Following the previous "Don't process" string, scan to the end of the line for *string* (same as + 1:99999).

LNCT - Line Count

Specifies the number of lines per page in the listing output. Ignored if the NOPRTCC process option is specified. The default value is 55 lines.

Compare Types: File, Line, Word, and Byte

Examples

`LNCT 66`	Lists up to 66 lines per page.

Syntax

```
LNCT num
```

Operand Description

num A decimal number between 15 and 999999.

LSTCOLM - List Columns

Selects a range of columns to be listed in the output. This statement overrides the SuperC convention of generating a listing starting with column 1 from the input source data set.

LSTCOLM column selections must be contiguous and can be no wider than the output listing line without truncation.

Compare Types: Line only

Examples

`LSTCOLM 20:90`	Lists columns 20 through 90 in the output listing.

Syntax

```
LSTCOLM range
```

Operand Description

range Two column numbers separated by a single colon (:). Do not leave blanks on either side of the colon.

NCHGT, OCHGT - Change Text

NCHGT
Change new input text string

OCHGT
Change old input text string.

Change the input source image before performing the comparison. More than one change text statement can be contained in the statements data set.

The find-mask and replacement string need not be the same length. The replacement string may even indicate a null string. Unequal replacements result in either blank insertions on short replacements (at the end of the found word) or downstream blank deletions to accommodate larger replacements (deleted blanks are selected from downstream blank pairs). The net effect of a longer string replacement of a shorter string shows as a reformat of the original line. The replaced text line appears in the output instead of the input text.

One or more question marks ("?") can be used as "wildcard" characters in the find-mask or string. A wildcard in the output string stores the input character "as is".

Compare Types: Line and Word

Examples

`NCHGT 'ABCD','XXXX'`	Changes all "ABCD"s to "XXXX" (exclude) in the new data set.
`OCHGT 'ABCD','XXXX',1:50`	Restricts the mask search to columns 1 through 50 in the old data set.
`OCHGT 'ABCD',',1:50`	Changes string "ABCD" to a null string in columns 1 through 50 in the old data set.
`NCHGT X'7B01',':1',6`	Uses the hexadecimal string change convention.
`NCHGT 'PREF???','NPREF'`	Changes the string "PREF" and the wild card characters to the string "NPREF".
`NCHGT 'PREF???','NPREF??'`	Changes the string "PREF" and the first wild card character to the string "NPREF". The second and third wildcard characters are not changed.

Syntax

```
NCHGT 'find-mask','string'[,start-colm[:stop-colm]]

OCHGT 'find-mask','string'[,start-colm[:stop-colm]]
```

Operand Description

find-mask
The change text string to be replaced. The *find-mask* must be in single quotes. Use two consecutive single quotes for quotes within the *find-mask*.

string A character string that replaces the contents of *find-mask* before a comparison or search. Single quotation marks are required. If the character string contains a single quotation mark, you must enter it in the process statement as two single quotation marks.

You can include one or more question marks in the *string*. It shows that the position it occupies can be filled by any character, one character per question mark.

If there is not enough space for the string to be substituted, the substitution does not occur. Instead, a warning message is printed at the bottom of the listing.

start-colm
A number that identifies the column in which SuperC begins its search for *string*. All columns to the left of this column are ignored.

stop-colm
A number that identifies the column in which SuperC ends its search for *string*, but only for that record. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used. This causes a search of a single column for the first character of *string*.

All columns to the right of the column that the last character of *string* can occupy are ignored. For example, if you specify `'ABCD'` as a string that must exist between columns 5 and 69, the search really includes columns 5 to 72. Therefore, the string can be found even if the first character is in column 69, with the others in columns 70, 71, and 72.

Notes:

1. Having a string replacement that is longer than the replaced string is not always possible with some lines. A warning message signals when this happens and the problem change-text statement will be designated in the summary section.
2. A string replacement using the “null” character notation does not always work as first envisioned. Nulling a character string only shifts following characters up through the next blank character. One or more blank pad characters are applied to take up the null positions of the original string. Entire lines are not shifted — only non-blank character strings.

```
NCHGT ' ','

blank insertion.

NCHGT '???','
```

NEXCLUDE, OEXCLUDE —Exclude Data:

NEXCLUDE—Exclude applies to the new data set
OEXCLUDE—Exclude applies to the old data set

Excludes rows or columns of data from the comparison. Up to 254 "exclude" statements can be entered for each data set.

Notes:

1. NEXCLUDE and OEXCLUDE statements are mutually exclusive to NFOCUS and OFOCUS statements respectively if using the same operand keyword (ROWS or COLS).
2. Do not use the NEXCLUDE or OEXCLUDE process statement if the Y2DTONLY process statement has been specified.

Compare Types

FILE (ROWS option only) and LINE.

Syntax

```
xEXCLUDE KYWD start-position:end-position
```

where **x**EXCLUDE can be either **N**EXCLUDE (new data set) or **O**EXCLUDE (old data set), and **KYWD** can be either **ROWS** or **COLS**. COLS is not valid for a FILE compare.

Operand Description

start-position — If ROWS operand used, the first row (record) to be excluded from the comparison. If COLS operand used, the first column to be excluded from the comparison.

end-position — If ROWS operand used, the last row (record) to be excluded from the comparison. If COLS operand used, the last column to be excluded from the comparison. (Must be separated from the *start-position* by a colon.)

Example	Description
`NEXCLUDE ROWS 5:900`	Excludes rows (records) 5 through 900 on the new data set.
`OEXCLUDE ROWS 1:900`	Excludes rows (records) 1 through 900 on the old data set.
`OEXCLUDE COLS 100:199`	Excludes columns 100 through 199 on the old data set.

NFOCUS, OFOCUS— Focus on Data

NFOCUS—Focus applies to the new data set
OFOCUS—Focus applies to the old data set

Selects (or "focuses on") rows or columns of data to be compared. In other words, only these rows or columns are considered when performing the comparison (or search) process and all other rows or columns are ignored. Up to 254 "focus" statements can be entered for each data set.

Notes:

1. NFOCUS and OFOCUS statements are mutually exclusive to NEXCLUDE and OEXCLUDE statements respectively if using the same operand keyword (ROWS or COLS).
2. Do not use the NFOCUS or OFOCUS process statement if the Y2DTONLY process statement has been specified.

Compare Types

FILE (ROWS option only) and LINE.

Syntax

```
xFOCUS KYWD start-position:end-position
```

where **x**FOCUS can be either **N**FOCUS (new data set) or **O**FOCUS (old data set), and **KYWD** can be either **ROWS** or **COLS**. COLS is not valid for a FILE compare.

Operand Description

start-position — If ROWS operand used, the first row (record) to be selected for the comparison. If COLS operand used, the first column to be selected for the comparison.

end-position — If ROWS operand used, the last row (record) to be selected for the comparison. If COLS operand used, the last column to be selected for the comparison. (Must be separated from the *start-position* by a colon.)

Example	Description
`NFOCUS ROWS 28:90`	Selects rows (records) 28 through 90 on the new data set.
`OFOCUS ROWS 150:165`	Selects rows (records) 150 through 165 on the old data set.
`OFOCUS COLS 10:18`	Selects columns 10 through 18 on the old data set.

NTITLE, OTITLE - Alternate Listing Title

NTITLE
New listing data set title identification
OTITLE
Old listing data set title identification.

Allows you to specify an alternate data set identification in the output listing (54-character limit for each title identifier). This replaces the data set and library names used in the compare.

Note: This option is most useful when a single non-group compare is done on a temporary data set. The NTITLE/OTITLE identification may be more meaningful than the actual data set names used in the compare. This is only allowed for single members or sequential data sets.

Compare Types
File, Line, Word, and Byte

Examples

```
NTITLE 'New Substitution Name'
OTITLE 'Old Substitution Name'
```

Change the titles in the output listing of the new and old data set.

Syntax

```
NTITLE 'string'

OTITLE 'string'
```

Operand Description
string The string can be up to 54 characters and must be delimited by single quotes. Use two consecutive single quotes for each embedded quote. The string is not checked for valid MVS data set name characters.

NY2AGE, OY2AGE —Year 2000 Aging Option

NY2AGE—Aging applies to the new data set
OY2AGE—Aging applies to the old data set

Ages all of the defined dates in either the new or old data set. That is, the number of years specified is added to the "year" portion of each defined date in the data set concerned.

Note: Dates are *defined* by the Year 2000 Date Definition process statements NY2C, NY2Z, NY2D, NY2P, OY2C, OY2Z, OY2D and OY2P; see "NY2C, NY2Z, NY2D, NY2P, OY2C, OY2Z, OY2D, OY2P —Year 2000 Date Definitions" on page 430.

Compare Types

LINE

Syntax

```
NY2AGE years
OY2AGE years
```

Operand Description

years A number (0 to 999) indicating the number of years by which all defined dates in the data set are to be aged.

Example	Description
`OY2AGE 28`	Ages all defined dates in the "old" data set by 28 years before being compared. The listing will show the original date. For example, a defined date in the "old" data set with a value equating to March 1, 1997, would be aged to March 1, 2025 before being compared to its equivalent in the "new" data set.

NY2C, NY2Z, NY2D, NY2P, OY2C, OY2Z, OY2D, OY2P —Year 2000 Date Definitions

NY2C—New data set, date in character format
NY2Z—New data set, date in zoned decimal format
NY2D—New data set, date in unsigned packed decimal format
NY2P—New data set, date in packed decimal format

OY2C—Old data set, date in character format
OY2Z—Old data set, date in zoned decimal format
OY2D—Old data set, date in unsigned packed decimal format
OY2P—Old data set, date in packed decimal format

Notes:

1. If any Year 2000 Date Definition process statements are used, a Y2PAST process statement should also be used so that the "century" portion of the date can be determined where necessary. (If a Y2PAST process statement is not present, a default fixed window based on the current year is used.)
2. For a description of each date format (character, zone, decimal and packed), see "Date Formats (Keyword suffixes: C, Z, D, P)" on page 432.
3. If any Year 2000 Date Definition process statements are used, an *information line* is generated on the listing output.
4. Do not use any Year 2000 Date Definition process statements if using the COLHEAD process statement.

Defines the location and format of a date field on the input data set. Up to 254 date definition statements can be entered for each data set. The matching of the new to the old dates is performed according to the sequence that the statements are entered. That is, the first defined *old* date is matched to the first defined *new* date.

If the number of date definition statements for one data set differ to the number of date definition statements for the other data set, the location and format details for the "missing" date definition statements are assumed to be the same as their counterpart date definition statements for the other data set.

Compare Types

LINE

Syntax

```
xY2y start-column:end-column date-format EMPTY
```

where **x**Y2y can be either **N**Y2y (new data set) or **O**Y2y (old data set), and **y** can be either **C** (character format), **Z** (zoned decimal format), **D** (unsigned packed decimal format), or **P** (packed decimal format).

Note: The EMPTY keyword, when used, must be preceded by a space.

Operand Description

start-column	The first position of the date in the input data set.
end-column	The last position of the date in the input data set. (Must be separated from the *start-column* by a colon.)

date-format

A mask representing the format of the date.

For a Julian date, the mask must be either YYDDD or YYYYDDD.

For date formats other than Julian, the mask must contain 2 "D"s (representing the day part of the date field), 2 "M"s (representing the month), and either 2 or 4 "Y"s (representing the year) or, if the date contains a year only, it must contain either 2 or 4 "Y"s.

If the date is character, there may also be a separator between the different parts. In this case, you can represent the position of the separators by one of the following:

S
. (period)
/ (forward slash)
: (colon)

Note: The length of the *date-format* mask must correspond to the length of the date in the input data set as indicated by the values of *start-column* and *end-column*.

EMPTY

This keyword is optional. If it is entered, the defined date field is checked for containing zeroes, spaces, low-values, or high-values before commencing the comparison process. If any of these values are found, the date will not be converted according to the Y2PAST criteria but will instead be converted to an extended format with the initial value. For example, a date defined by the process statement `OY2C YYMMDD` which contains all zeroes will be compared as "YYYYMMDD" with a value of zeroes.

Example	Description
`NY2C 1:8 MMDDYYYY 9:16 MMDDYYYY 21:28 YYYYMMDD`	The new data set has dates in character format in columns 1 to 8, 9 to 16 and 21 to 28.
`OY2P 5:8 YYMMDD 9:12 YYMMDD`	The old data set has dates in packed decimal format in columns 5 to 8 and 9 to 12.
`OY2P 101:104 MMDDYY`	The old data set has a date in packed decimal format in columns 101 to 104,
`NY2Z 101:108 YYYYMMDD`	The new data set has a date in zoned decimal format in columns 101 to 108.
`NY2C 101:110 YYYY.MM.DD`	The new data set has a date in character format (with separators) in columns 101 to 110.
`OY2C 93:98 DDMMYY EMPTY`	The old data set has a date in character format in columns 93 to 98. If the date field contains zeroes, spaces, low-values, or high-values, the date in the old data set is converted before being compared to an extended format (DDMMYYYY) with a value of all zeroes, spaces, low-values, or high-values respectively.

Date Formats (Keyword suffixes: C, Z, D, P):

C Character date data.

Examples:
'96' is represented as hexadecimal X'F9F6'
If using a MMDDYY format, March 21, 1996 is represented as hexadecimal X'F0F3F2F1F9F6'

Z Zoned decimal date data. The date can be represented as follows:

X'xyxy' to X'xyxyxyxyxyxyxyxy'

y is hexadecimal 0–9 and represents a date digit. x is hexadecimal 0–F and is ignored.

Examples:
'96' is represented as hexadecimal X'F9C6' or X'0906'
'03211996' is represented as hexadecimal X'F0F3F2F1F1F9F9C6' or X'0003020101090906'

P Packed decimal date data. The date can be represented as follows:

X'zyyx' to X'zyyyyyyyyx'

y is hexadecimal 0–9 and represents a date digit. x is hexadecimal A–F and is ignored. The z part is normally zero but will not be ignored.

Examples:
'96' is represented as hexadecimal X'z96F' or X'z96C'
'1996' is represented as hexadecimal X'z1996C'
'03211996' is represented as hexadecimal X'z03211996x' (the x part is ignored).
'96203' (a Julian date) is represented as hexadecimal X'96203C'

D Unsigned packed decimal date data. The date can be represented as follows:

'yy' to 'yyyyyyyy'

y is hexadecimal 0–9 and represents a date digit.

Examples:
'96' is represented as hexadecimal X'96'
'03211996' is represented as hexadecimal X'03211996'

REVREF—Revision Code Reference

Identifies the revision type (BookMaster or SCRIPT/VS) and level-ID for delimiting UPDREV and UPDREV2 output changes. The revision delimiter may, alternatively, be specified or indicated by using a SCRIPT/VS `.rc` definition statement as the first line of the *new* input data set.

If either the UPDREV or UPDREV2 process option is specified and no REVREF process statement is in the statements data set, or the first *new* data set source line is not a `.rc` script definition statement, SuperC defaults the revision definition to a SCRIPT/VS specification of `.rc 1 ¦`.

Note: BookMaster requires the REFID value to be defined with a `:revision` tag. Do not forget the "RUN=YES" attribute if you want your document to have the change-bar inserted in the processed document.

Compare Types

LINE, WORD

Syntax

```
REVREF REFID=name
       RCVAL=number
```

Operand Description

REFID=*name* Name of the revision identifier for the BookMaster :rev/:erev. tags.

RCVAL=*number* Numeric revision code for SCRIPT/VS revision tags.

Example	Description
`REVREF REFID=ABC`	BookMaster example—`:rev refid=ABC.` and `:erev refid=ABC.` tags.
`REVREF RCVAL=5`	SCRIPT/VS example—`.rc 5` on/off delimiters.

SELECT - Select PDS Members

This process statement allows you to specify members to select from a PDS. You can specify as many member names as will fit on one line. Therefore, if you need to select additional members, enter a new SELECT statement.

For comparisons, the new members are normally compared with old members that have the same names. Use the colon character (:) to compare members that are not named alike. SELECT is valid with all compare types.

Compare Types

File, Line, Word, and Byte

Examples

```
SELECT PROG1,NEWPROG2:OLDPROG2,PROG3
```

Tells SuperC to make the following one-to-one comparisons:

```
NEW MEMBER           OLD MEMBER
----------           ----------
PROG1      ─ÕÕÕÕÕ► PROG1
NEWPROG2   ─ÕÕÕÕÕ► OLDPROG2
PROG3      ─ÕÕÕÕÕ► PROG3
```

Syntax

```
SELECT new-member[:old-member],...
```

Operand Description

new-member

The name of a new PDS member that is to be compared to an old PDS member.

old-member

The name of an old PDS member that does not have a like-named member in the new PDS. This member name, if entered, must be separated from the new-member name by a colon (:).

If the old-member name is not used, SuperC attempts to compare the new-member to a like-named member of the old PDS.

Y2PAST—Year 2000 Global Date Option

Specifies a 100-year period (used for determining the century-part of a date when only a 2-digit year has been specified). The Y2PAST process statement uses either a fixed or sliding window.

Note: The Y2PAST process statement should always be used if any of the Year 2000 Date Definition process statements (NY2C, NY2Z, NY2D, NY2P, OY2C, OY2Z, OY2D, OY2P) have also been used.

Compare Types

LINE

Syntax

```
Y2PAST fixed
       sliding
```

Operand Description

fixed A 4-digit number indicating a fixed window.

sliding
A 1-digit or 2-digit number indicating a sliding window.

Example	Description
`Y2PAST 1986`	A fixed window specifying a 100-year period from 1986 to 2085.
`Y2PAST 70`	A sliding window specifying (based on the current year being 1997) a 100-year period from 1927 (70 years in the past) to 2026.
`Y2PAST 5`	A sliding window specifying (based on the current year being 1997) a 100-year period from 1992 (5 years in the past) to 2091.

SLIST - Statements File Listing Control

Turns on or off the printing of process statements in the output listing. The initial state of the control is “on”.

This statement is useful when there are many process statements and the listing of these statements in the summary section is not required for problem determination. For example, a large number of data set selections via SELECT statements would already be indirectly indicated in the group summary listing section. The SELECT statement list would then be redundant and generate extra lines in the listing.

Compare Types

File, Line, Word, and Byte

Examples

`SLIST OFF`	Does not list the process statements that follow this statement.

Syntax

```
SLIST {ON }
      {OFF}
```

Operand Description

ON Causes the lines in the process statements data set following the SLIST statement to be listed in the output listing.

OFF Causes the lines in the process statements data set following the SLIST statement to be suppressed in the output listing.

* and .* - Comment Lines (SuperC Listing)

An asterisk as the first character on a process statement line begins a printable comment line. A period-asterisk (.*) as the first 2 characters on a process statement line begins a comment that is not printed in the SuperC listing.

Note: Embedding comments as separate lines in the statements data set is a good programming practice. Period-asterisk comments are useful for inactivating but retaining old statements in a standard statements data set. These statements do not get lost, will not appear in the summary section, and can be reactivated simply by blanking out the period-asterisk characters in columns 1 and 2.

Compare Types: File, Line, Word, and Byte

Examples

```
*  This comment prints in the Search-For listing.
.* This comment does not print in the Search-For listing.
```

Syntax

```
{* } comment
{.*}
```

Operand Description

* Must be in column 1.

.* Must be in columns 1 and 2.

Search-For Process Options

Table 27 lists all of the process options for Search-For.

Table 27. Search-For Process Options

ALLMEMS	ANYC	APNDLST	CKPACKL	COBOL	DPACMT	DPADCMT	DPBLKCL
DPCBCMT	DPCPCMT	DPFTCMT	DPMACMT	DPPLCMT	DPPSCMT	FMSTOP	
IDPFX	LMTO	LNFMTO	LONGLN	LPSF	LTO		
MIXED	NOPRTCC	NOSEQ	NOSUMS	SDUPM	SEQ	XREF	

You can enter process options in the **Process Options** field of the Search-For Utility panel or select them from one of two Search-For process options panels.

ALLMEMS
All members. Search all members including alias entries. This functions as though all directory entries were selected from a member list.

ANYC Any case. Lowercase alphabetic characters (a-z) in source data sets are translated to uppercase (A-Z) before Search-For processing (the actual input data sets are not modified).

Notes:

1. ANYC has the lowest priority operation affecting the SuperC process. For example, it does not affect any of the strings used in SuperC compare process statements (except SRCHFOR).
2. The ANYC process option does not apply to characters in DBCS text strings.

Use this option to find all strings such as “ABC”, “Abc”, “ABc”.

APNDLST
The APNDLST process option appends the listing output to the specified or default listing data set. If the data set does not exist, it is allocated as new. Some data sets cannot be appended because of the append listing attributes and Search-For listing attribute requirements. There is an error notification for this condition.

Normally, APNDLST allows you to collect listings from separate searches into one named listing data set (that is, a MOD function). This objective can sometimes be done without using the APNDLST option by using multiple SELECT process statements. This allows you to identify any number of members. It produces a single composite listing with a single Search-For invocation.

CKPACKL
Check for packed format. This option determines if the member or sequential data set has the standard ISPF packed expansion trigger format. If required, Search-For unpacks the input data set or member during the search.

COBOL
Ignore columns 1-6 in F 80 data sets. Data in columns 1-6 are excluded from the search set.

DPACMT
Don’t process asterisk (*) comment lines. Lines with an asterisk in column 1 are excluded from the search set. Other forms of assembler comments are

unaffected. Hence, it is not possible to have Search-For filter out assembler comments appearing on the same line as an assembler statement or directive.

DPADCMT
Don't process ADA-type comments. ADA comments are whole or part lines that appear after the special "--" sequence. Blank lines are also considered part of the comment set. This option produces a listing with all comments removed and blanked.

DPBLKCL
Don't process blank lines. Source lines in which all of the search columns are blank are excluded from the Search-For set. It is redundant, but not incorrect, to use this option with DPADCMT, DPPLCMT, and DPPSCMT.

Note: The CMPCOLM process statement can be used to control the columns inspected. It is possible to have a line with non-blank data but filtered by the DPBLKCL option due to the column range values specified on the CMPCOLM statement. This may contradict the user assumption that DPBLKCL only excludes complete input blank lines. Another example of this would be a blank line that has sequence numbers in columns 73-80 and the Search-For run with the SEQ process option.

DPCBCMT
Don't process COBOL type comment lines. COBOL source lines with an asterisk in column 7 are excluded from the search set.

DPCPCMT
Don't process C++ end-of-line type compiler comments. These are "//" delimited comments. DPPLCMT may also be used with DPCPCMT when the source file contains "/* ... */" comments delimiters.

DPFTCMT
Don't process FORTRAN type comment lines. FORTRAN source lines with a "C" in column 1 are filtered and excluded from the search set.

DPMACMT
Don't process PC Assembly-type comments. Lines with an "*" in column 1 are excluded.

DPPLCMT
Don't process PL/I-type comments. PL/I, C and REXX comments (that is, /* ... */ and blank lines) are filtered and excluded from the search set. This option produces a listing with all comments removed and partial comments blanked.

Notes:

1. The Search-For program detects most cases including multiline, statement embedded, and most quote dependency comments. However, Search-For may exclude some lines that are not comments. For instance, lines that contain comment delimiters that are enclosed in quotes.
2. The DPPLCMT process option does not recognize comments within DBCS text strings.

DPPSCMT
Don't process PASCAL-type comments. PASCAL-type comments of the type "(* . . . *)" are filtered and excluded from the Search-For set as are blank compare lines. This option will produce a listing with comments

removed and part comments blanked. The DPPSCMT process option does not recognize comments within DBCS text strings.

Note: DPPSCMT and DPPLCMT may be required to filter certain non-standard PASCAL compiler comments. The combination is allowed. Either may start a comment but only the starting delimiters type may terminate the comment.

FMSTOP
Stop the search on the first occurrence of the search string in the data set or PDS member.

IDPFX
Identifier prefixed. ID or member-name is prefixed to the search string lines of the listing.

LMTO
List group member totals only. Lists only the member summary totals and the overall summary totals for the entire data set or group.

LNFMTO
List not-found member or data set totals only. This is a tabular list of members or data sets where the string was not found. It shows the total lines searched.

LONGLN
Long lines. LONGLN causes the Search-For program to create a listing with up to 203 columns, reflecting up to 176 columns from the source data sets. This data set may exceed the maximum number of columns handled by many printers.

LPSF List previous Search-For following lines. Lists the matched string line and up to six preceding and six following lines for context. The LPSFV process statement can be used to change the default value of six preceding and following lines to any value from 1 to 50.

LTO List totals only. Lists the overall summary totals for the entire data set group. Does not list member totals.

MIXED
This option indicates that the input text may be a mixture of both single- and double-byte (DBCS) text. Double-byte strings are recognized and handled differently than if MIXED were not specified. For instance, single-byte characters are not valid within double-byte strings. Special terminals (for example, 5520) allow entry of DBCS characters.

NOPRTCC
No printer control columns. Search-For generates a “normal” listing data set with record lengths of 133 columns, or a LONGLN listing with 203 columns. These listings contain printer control columns and page separators. NOPRTCC eliminates both the page separators and control column 1. With NOPRTCC, “normal” listings are 132 columns, and LONGLN listings are 202. Section separators and title lines are still generated. This data set may be better for online browsing. It is easier to browse listings without interspersed page separator titles.

NOSEQ
No sequence numbers. Search-For processes F 80 standard sequence number columns as data. This option is extraneous for variable length records and non-fixed F 80 attribute data sets.

NOSUMS
No summary listing section. This option omits the summary section including the statistics, options, warning, and error messages from the listing output.

SDUPM
Search duplicate members. Searches all members found in concatenated PDS data sets, even if the members have the same name and are at a higher level. Search duplicate names even if the search is for a single member or if members are specified using the SELECT process statement.

SEQ Sequence numbers. Ignore F 80 standard sequence number columns. Sequence number column changes in columns 73-80 are ignored with F 80 and columns 1-8 in V 255 records. This is the SuperC default for F 80/V 255 data sets when the compare type is Line. It is not the default for Word compare. SEQ is not valid for any data set that does not have an attribute of F 80/V 255.

XREF Cross reference strings. Creates a cross reference index listing by search string. You can use XREF with IDPFX, LMTO, LNFMTO, and LTO.

The XREF option can be useful when more than one search string (or search condition) is specified. The XREF listing is implemented using a multiple pass operation for listing the "lines found" for each individual string. Note that XREF adds some additional processing overhead to the normal search process.

Search-For Process Statements

Table 28 lists all of the Search-For utility process statements.

Table 28. Summary of Search-For Process Statements

CMPCOLM	CMPLINE	DPLINE	DPLINEC	LNCT	LPSFV	LSTCOLM
NCHGT	NTITLE	SELECT	SLIST	SRCHFOR	SRCHFORC	.*
*						

You must include these statements in an input control data set. The process statements data set can be fixed or variable, and its record length can be large, but you must enter process statements only in columns 1 through 72. Only one process statement can be entered per line. Search-For checks process statements and required operands for completeness before beginning a comparison. Comments are not allowed at the end of the line after the statement has been completed. Comment lines must be separate statements.

You can enter process statements in the statements data set more than once (for example, DPLINE, SELECT, or CMPLINE) as they define independent actions to be taken. Others redefine their process scope after their first inclusion (for example, LNCT). Including more than one redefining statement is not recommended but is not reported as an error. There is also no specific rule concerning which statement definition (or redefinition) prevails—the first (least often) or last (most often).

Note: It is best to inactivate old process statements that you do not need rather than deleting them from the statement data set. This can be easily done by putting a period and an asterisk (.*) in the first 2 character positions. These statements will be ignored by the Search-For program when the data set is used as a statement data set.

Process Statement Notation Conventions

This section uses the following notation conventions to describe the syntax of the process statements:

- Process statements and keywords are shown in uppercase to help you differentiate between them and their operands, which are shown in lowercase. However, you can enter them in any case you like.
- Operands shown in brackets ([ ]) are optional.
- Stacked operands shown in brackets indicate the optional operands from which you can select one or none.
- Stacked operands shown in braces ({ }) are required operands from which you must select one.
- Syntax diagrams that end with an ellipsis (...) allow you to repeat operands more than once.
- If a statement contains a KYWD operand, this keyword must precede any repetition of the operands that follow.

CMPCOLM - Compare (Search) Columns

Causes a search of the data between column limits of the input data set. Up to 15 search ranges or individual columns are allowed and may be entered on additional CMPCOLM statements. The column values and ranges must be in ascending order.

Examples

`CMPCOLM 25:75`	Searches columns 25 through 75.
`CMPCOLM 30:60,75`	Searches columns 30 through 60 and column 75.
`CMPCOLM 30:60 75`	Performs the same function as the previous statement.

Syntax

```
CMPCOLM  start-colm[:stop-colm][,...]
```

Operand Description

start-colm

A number that identifies the column in which Search-For begins the search. All columns to the left of this column are ignored.

stop-colm

A number that identifies the column in which Search-For ends its search. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used.

Note: CMPCOLM is an overall limit value for selecting a range of columns to be searched. SRCHFOR and SRCHFORC statements have optional column limits that override the CMPCOLM process statement, SEQ process option, NOSEQ process option, and COBOL process option limits.

CMPLINE - Compare (Search-For) Lines

Searches a data set between line limits. The reference values may be line numbers or data patterns. The statement can be specified on one complete line or have separate CMPLINE statements for each of the two keyword operands NTOP or NBTM.

Examples

`CMPLINE  NTOP 55 NBTM 99`	Search new data set between lines 55 through 99.
`CMPLINE  NTOP 'ABCD',5:66`	Start new data set search when SuperC detects the first “ABCD” in columns 5 through 69.
`CMPLINE  NBTM 'ABCD'`	End new data set search on first “ABCD” found in any column.

Syntax

```
CMPLINE KYWD {rel-line-#                        }[ ...]
     {,'string'[,start-colm[:stop-colm]]}
```

Operand Description

KYWD

The keyword may be one of the following:

NTOP New Top. Defines the beginning line in the new (search) data set.

NBTM

New Bottom. Defines the ending line in the new (search) data set.

rel-line-#

The relative number of the record in the data set or member.

string Character string enclosed within single quotes. For embedded single quotes, use two consecutive quotes ('). For example, enter `'don't'` for the string “don’t”.

start-colm

A number that identifies the column in which Search-For begins looking for *string*. All columns to the left of this column are ignored.

stop-colm

A number that identifies the column in which Search-For ends its search for *string*, but only for that record. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used. This causes a search of a single column for the first character of *string*.

All columns to the right of the column that the last character of *string* can occupy are ignored. For example, if you specify `'ABCD'` as a string that must exist between columns 5 and 69, the search really includes columns 5 to 72. Therefore, the string can be found even if the first character is in column 69, with the others in columns 70, 71, and 72.

DPLINE, DPLINEC - Don't Process Lines

DPLINE
Don't Process Lines

DPLINEC
Don't Process Lines Continuation Condition.

Removes from the search set a line that can be recognized by either a unique character string or combination of related strings all appearing on the same input line. DPLINEC is the continuation of the immediately preceding DPLINE or DPLINEC process statement. All the strings in a DPLINE/DPLINEC sequence must be found on the same input line for the line to be excluded.

A start-column or stop-column can also be used to restrict the columns scanned. Relative start-columns and relative stop-columns are valid only on DPLINEC statements. You can specify a relative start position depending on the ending of the previous DPLINE/DPLINEC in the sequence relationship. Normal scanning starts at the beginning of the input line (resulting in the first found string) unless restricted by user column specifications or the relative operator.

Examples

`DPLINE 'ABCDE' DPLINE 'ABCDE',1:99999`	Both statements exclude lines containing the string "ABCDE" from the compare set.
`DPLINE 'AbCde',2 DPLINE 'AbCde',2:2`	Both statements exclude lines where the string "ABCDE" starts in column 2.
`DPLINE 'ABCDE' DPLINEC 'BDEF '`	Exclude lines that contain the strings "ABCDE" and "BDEF ".
`DPLINE 'ABCDE',2:50`	Excludes lines where the string "ABCDE" starts in columns 2 through 50.
`DPLINE 'AB'CD',2:50`	Excludes lines where the string "AB'CDE" starts in columns 2 through 50.
`DPLINE X'C1C27BF1',2:50`	Excludes lines where the string "AB,1" starts in columns 2 through 50.
`DPLINE 'ABC' DPLINEC 'BDEF',+`	Exclude lines containing the string "ABC" followed in the same line by the string "BDEF".
`DPLINE 'ABC's DPLINEC 'BDEF',+5`	Exclude lines containing the string "ABC" and "BDEF" when the string "BDEF" starts in the same line 5 column positions after the end of the string "ABC".

Syntax

```
DPLINE  'string'[,start-colm[:stop-colm]]

DPLINEC 'string'[,start-colm[:stop-colm]]
[,+start-colm[:+stop-colm]]
[,+]
```

Operand Description

string Character string enclosed within single quotes. For embedded single quotes, use two consecutive quotes ('').

start-colm
A number that identifies the column in which Search-For begins looking for *string*. All columns to the left of this column are ignored.

stop-colm
A number that identifies the column in which Search-For ends its search

for *string*, but only for that record. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used. This causes a search of a single column for the first character of *string*.

All columns to the right of the column that the last character of *string* can occupy are ignored. For example, if you specify `'ABCD'` as a string that must exist between columns 5 and 69, the search really includes columns 5 to 72. Therefore, the string can be found even if the first character is in column 69, with the others in columns 70, 71, and 72.

+start-colm
The relative column following the previous "Don't process" string in which Search-For begins the search for *string*.

+stop-colm
The relative column following the previous "Don't process" string in which Search-For ends the search for *string*.

+ Following the previous "Don't process" string, scans to the end of the line for *string* (same as + 1:99999).

Notes:

1. DPLINE and DPLINEC columns are not restricted by search columns. The data patterns are also not affected by the ANYC process option.
2. The relative start operator "+" introduces another important capability of backtrack and retry by advancing the retry starting scan position. Backtrack allows you to identify a string through a sequence of DPLINE/DPLINEC statements and to search a number of similar strings (all on the same line) until the correct sequence is found. This contrasts to the "first found" DPLINE/DPLINEC string and a non-relative DPLINEC rejection when the DPLINEC condition is not met.

LNCT - Line Count

Specifies the number of lines per page in the listing output. This process option is ignored if NOPRTCC process option is specified. The default value is 55 lines.

Examples

`LNCT 66`	Lists up to 66 lines per page.

Syntax

```
LNCT num
```

Operand Description

num A decimal number between 15–999 999.

LPSFV - LPSF Count Value

Specifies the maximum number of lines to be used with the process option LPSF. This number replaces the default value of up to six lines before and six lines after the line containing the search string. This process statement has no formatting effect if you do not use the LPSF process option.

Examples

`LPSFV 2`	Lists up to 2 lines before and after the line where Search-For finds the search string.

Syntax

```
LPSFV num
```

Operand Description

num A decimal number between 1 and 50.

LSTCOLM - List Columns

Selects a range of columns to be listed in the output. This statement overrides the Search-For convention of listing lines starting with column 1 from the input source data set.

LSTCOLM column selections must be contiguous and can be no wider than the output listing line without truncation.

Examples

`LSTCOLM 20:90`	Lists columns 20 through 90 in the output listing.

Syntax

```
LSTCOLM range
```

Operand Description

range Two column numbers separated by a single colon (:). Do not leave blanks on either side of the colon.

NCHGT - Change Text of New (Search) Text String

Changes the input source image before performing the search. More than one change text statement may be contained in the statements data set.

The find-mask and replacement string need not be the same length. The replacement string may even indicate a null string. Unequal replacements result in either blank insertions on short replacements (at the end of the found word) or downstream blank deletions to accommodate larger replacements (deleted blanks are selected from downstream blank pairs). The net effect of a longer string replacement of a shorter string shows as a reformat of the original line. The replaced text line appears in the output instead of the input text.

One or more question marks ("?") can be used as "wildcard" characters in the find-mask or string. A wildcard in the output string stores the input character *as is*.

Examples

`NCHGT 'ABCD','XXXX'`	Changes all "ABCD"s to "XXXX"s (exclude) in the new data set.
`NCHGT 'ABCD','XXXX',1:50`	Restricts the mask search to columns 1 through 50.
`NCHGT 'ABCD',',1:50`	Changes string "ABCD" to a null string in columns 1 through 50.
`NCHGT X'7B01',':1',6`	Uses the hexadecimal string change convention.
`NCHGT 'PREF???','NPREF'`	Changes the string "PREF" and the wild card characters to the string "NPREF".
`NCHGT 'PREF???','NPREF??'`	Changes the string "PREF" and the first wild card character to the string "NPREF". The second and third wildcard characters are not changed.

Syntax

```
NCHGT 'find-mask','string'[,start-colm[:stop-colm]]
```

Operand Description

find-mask
The change text string to be replaced. The find-mask must be in single quotes. Use two consecutive single quotes for quote characters within the find-mask.

string A character string that is to replace the contents of *find-mask* before a comparison or search. Single quotation marks are required. If the character string contains a single quotation mark, you must enter it in the process statement as two single quotation marks.

You can include one or more question marks in the *string*. It indicates that the position it occupies can be filled by any character, one character per question mark.

If there is not enough space for the string to be substituted, the substitution does not occur. Instead, a warning message is printed at the bottom of the listing.

start-colm
A number that identifies the column in which Search-For begins looking for *string*. All columns to the left of this column are ignored.

stop-colm

A number that identifies the column in which Search-For ends its search for *string*, but only for that record. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used. This causes a search of a single column for the first character of *string*.

All columns to the right of the column that the last character of *string* can occupy are ignored. For example, if you specify `'ABCD'` as a string that must exist between columns 5 and 69, the search really includes columns 5 to 72. Therefore, the string can be found even if the first character is in column 69, with the others in columns 70, 71, and 72.

Notes:

1. Replacing a string with a longer string is not always possible with some lines. A warning message appears when this happens and the problem change-text statement is designated in the summary section.
2. A string replacement using the "null" character notation does not always work as first envisioned. Nulling a character string only shifts following characters up through the next blank character. One or more blank pad characters are applied to take up the null positions of the original string. Only non-blank character strings are shifted, not entire lines.

   ```
   NCHGT ' ','

   blank insertion.

   NCHGT '???','
   ```

NTITLE - Alternate Listing Title

NTITLE — listing data set title identification.

Allows you to specify an alternate data set identification in the output listing (54-character limit for each title identifier). This replaces the data set and library names used in the search.

Note: This option is most useful when a single non-group search is done on a temporary data set. The NTITLE identification may be more meaningful than the actual data set names used in the search.

Examples

`NTITLE 'New Substitution Name'`	Change the titles in the output listing of the data set.

Syntax

```
NTITLE 'string'
```

Operand Description

string The string can be up to 54 characters and must be delimited by single quotes. Use two consecutive single quotes for each embedded quote. The string is not checked for valid MVS data set name characters.

SELECT - Select PDS Members

This process statement allows you to specify members to select from a PDS. You can specify as many member names as will fit on one line. Therefore, if you need to select additional members, enter a new SELECT statement.

Examples

`SELECT PROG1,NEWPROG2,PROG3`	Selects PDS members PROG1, NEWPROG2, and PROG3 to be searched.

Syntax

```
SELECT new-member[...]
```

Operand Description

new-member

The name of the PDS member that is to be searched.

SLIST - Statements File Listing Control

Turns on or off the printing of process statements in an output listing. The initial state of the control is “on”.

This statement is useful when there are many process statements and the listing of these statements in the summary section is not required for problem determination.

Examples

`SLIST OFF`	Does not list the process statements that follow this statement.

Syntax

```
SLIST {ON }
      {OFF}
```

Operand Description

ON Causes the lines in the process statements data set following the SLIST statement to be listed in the output listing.

OFF Causes the lines in the process statements data set following the SLIST statement to be suppressed in the output listing.

SRCHFOR, SRCHFORC - Search for Strings in the Input Files

SRCHFOR
Searches for a text string in the input data set

SRCHFORC
Searches for a text string continuation condition.

Specifies the string and the string type (P - prefix, W - word, S - suffix, or blank - for any occurrence of the string). SRCHFORC is the continuation of the immediately preceding SRCHFOR or SRCHFORC process statement. All the strings in a SRCHFOR/SRCHFORC group must be found on the same input line.

A start-column or start-range can also be used to restrict the columns. Relative start-columns and start-ranges are valid only on SRCHFORC statements.

Examples

`SRCHFOR 'ABC'`	Searches for string “ABC” within search columns.
`SRCHFOR 'ABC',W`	Searches for “ABC” as word string.
`SRCHFOR X'4004'`	Searches for hex string within search columns.
`SRCHFOR 'A'bc'`	Searches for string “A'bc”.
`SRCHFOR 'ABC',5:10`	“ABC” starts within 5:12 of search columns.
`SRCHFOR 'ABC',W,5`	Word “ABC” starts in column 5.
`SRCHFOR 'ABC' SRCHFORC 'DEF'`	Finds “ABC” and “DEF” on same line within the search search columns.
`SRCHFOR 'ABC' SRCHFORC 'DEF',+`	Finds “DEF” to the right of first “ABC” string.
`SRCHFOR 'ABC' SRCHFORC 'DEF',+1:9999`	Same as above example.
`SRCHFOR 'ABC' SRCHFORC 'DEF',W,+`	Same as above, but “DEF” must be a word.
`SRCHFOR 'ABC' SRCHFORC 'DEF',+5`	Same as above, but “DEF” must start in fifth column after “ABC”.
`SRCHFOR 'ABC' SRCHFORC 'DEF',+5 SRCHFORC 'GKL'`	Same as above, but “GKL” must also be found on the same line.

Syntax

```
SRCHFOR 'string'[,P][,start-colm[:stop-colm]]
[,S]
[,W]


SRCHFORC 'string'[,P][,start-colm[:stop-colm]]
 [,S][,+start-colm[:+stop-colm]]
 [,W][,+]
```

Operand Description

string Character string enclosed within single quotes. For embedded single quotes, use two consecutive single quotes ('').

P Prefix. String begins a word, but is not the complete word (Example: string “abc” is a prefix to the word “abcdef”).

S Suffix. String ends a word, but is not the complete word (Example: string “def” is a suffix to the word “abcdef”).

W Word. String is a complete word. Words are delimited by blanks, or end-of-line characters.

start-colm
A number that identifies the column in which Search-For begins looking for *string*. All columns to the left of this column are ignored.

stop-colm
A number that identifies the column in which Search-For ends its search for *string*, but only for that record. If the data set contains more records, the search continues with the next record, beginning with the column specified as the start-colm.

This number is separated from the start-colm value by a colon (:). All columns to the right of this column are ignored. If the colon and stop-colm are not entered, only the start-colm value is used. This causes a search of a single column for the first character of *string*.

All columns to the right of the column that the last character of *string* can occupy are ignored. For example, if you specify `'ABCD'` as a string that must exist between columns 5 and 69, the search really includes columns 5 to 72. Therefore, the string can be found even if the first character is in column 69, with the others in columns 70, 71, and 72.

+start-colm
The relative column (starting from the column where the string of SRCHFOR/SRCHFORC ended) in which the string must start for the multiple statement relation to be met. Only SRCHFORC statements can contain relative start-columns.

+stop-colm
The number that identifies the relative column (starting from the column where the string of the last SRCHFOR/SRCHFORC ended) in which Search-For ends its search for *string*. Only SRCHFORC statements can contain a relative stop-colm.

+ Continues the scan after the pattern to the end of the line (same as +1:99999).

* and .* - Comment Lines (Search-For Listing)

An asterisk as the first character on a process statement line begins a printable comment line. A period-asterisk (.*) as the first two characters on a process statement line begins a comment that is not printed in the Search-For listing.

Note: Embedding comments as separate lines in the statements data set is a good programming practice. Period-asterisk comments are useful for inactivating but retaining old statements in a standard statements data set. These statements do not get lost, will not appear in the summary section, and can be reactivated simply by blanking out the period-asterisk characters in columns 1 and 2.

Examples

```
*  This comment prints in the Search-For listing.
.* This comment does not print in the Search-For listing.
```

Syntax

```
{* } comment
{.*}
```

Operand Description

* Must be in column 1.

.* Must be in columns 1 and 2.

Return Codes

Results from calling the SuperC program are returned as condition codes from SuperC. The SuperC and SuperCE utilities generate a short message and a long message to interpret the results for you. However, only the long message displays the return codes, which are:

0 Normal completion. No differences were found in the input data sets.

1 Normal completion. Differences were found in the input data sets.

4 Warning. Erroneous or conflicting input options were detected by the SuperC program. Data sets were compared, but should be checked for results consistent with those expected. Check listing for more details.

6 Warning. The old data set did not contain proper sequence numbers, or the sequence number intervals were not large enough to contain insert activity. This return code applies only to results from the UPDCMS8, UPDMVS8, and UPDSEQ0 process options.

8 Error. Error on old input data set. The data sets were not compared. Check output for more information.

12 Error. Inconsistent data set organizations. The new and old data sets are not both PDSs or sequential data sets. The compare was not run.

16 Error. Error on new input data set. The data sets were not compared. Check output for more information.

20 Warning. Error on update data set; one of the following:
- Missing DELDD
- I/O error
- Append to PDS
- Incorrect attributes on an append or PDS output operation.

Processing was completed with the update options reset and ignored. The error can also be returned if an update data set is being used simultaneously as the listing data set.

24 Error. Error occurred during open or during writing to the listing data set. The error can also be returned because of a new or old input data set simultaneously being used as the listing data set. No additional information is generated to better define the error condition.

25 Error. The listing data set was not allocated because of a conflict with the logical record length (LRECL), record format (RECFM), or data set organization. A listing can be saved only in a PDS that has the same LRECL or RECFM; a listing can never be appended to a PDS by using the APNDLST process option; a listing can be appended by using the APNDLST process option only to a sequential data set that has the same LRECL or RECFM. No output was generated.

SCLM Version Compare considerations

This return code is expected if the listing data set is partitioned but the member name is omitted. Correct the specification and try again.

26 Error. The listing data set could not be extended and is full (E37 condition). The results are truncated and incomplete.

28 Error. No data was compared because the old and new data sets were empty. Member names were invalid or there was nothing left to compare after input filtering. See the listing for more information.

32 Error. Insufficient storage was available for the SuperC program to run. The user region size was either too small or storage was too fragmented.

SuperC and Search-For Technical Overview

This section describes the following SuperC and Search-For processes:

- How SuperC and Search-For filter input file lines
- How SuperC matches input file lines
- How SuperC partitions and processes large files
- Why SuperC compare types may produce different results
- How to directly invoke the SuperC and Search-For programs.

How SuperC and Search-For Filter Input File Lines

The SuperC and Search-For utilities apply process options and process statements to the input file or files in a specific order. Figure 229 shows schematically the effects, in the order that they occur, of the various "filtering" process options and process statements, on the compare and Search-For input lines. The options and statements nearer the top affect the input line before options or statements nearer the bottom.

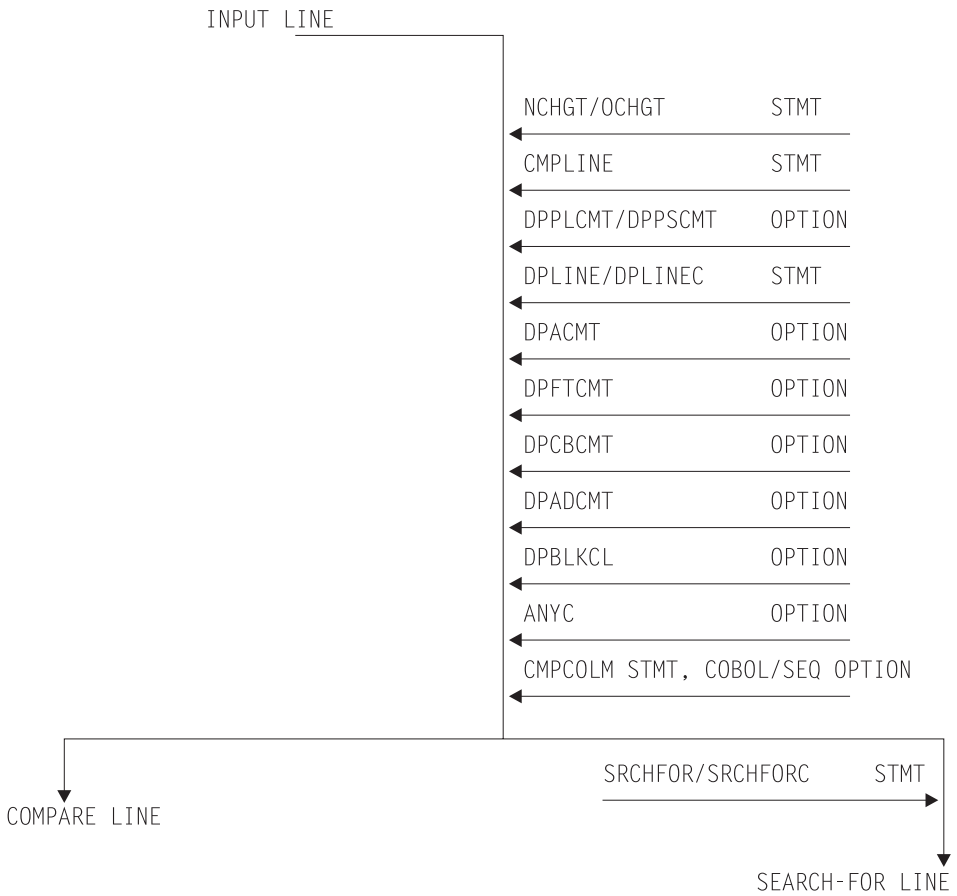

Figure 229. Priority for Filtering Input Lines

How SuperC Matches Input Files

When SuperC compares files, it determines matching and missing lines or words based only on the data content of the input files. It does not use any synchronization data, such as column or sequence numbers, to find matching file sections. It does not use the common “start at the top”, then look-ahead or look-back method to determine large sections of matching data. Neither does it sort the data before comparing.

SuperC is unique in that, except for files that are identical, it does not determine matching sections until it has completely read both files. Missing data units are units that are out of sequence, as opposed to units that have been deleted from a file. During a comparison, SuperC finds all matches, locates the largest set of matching data units, and recursively allows this compare set to divide the file into additional partitioned subsections. All new subsections are processed for corresponding matches. The subprocess ends when no more matches can be found within corresponding *new* and *old* file partitioned subsections. Sections classified as inserted or deleted are corresponding areas for which SuperC could not find a match.

Figure 230 shows an example of a comparison of two files that are identified as having lines represented by A, B, C, ... F. The SuperC algorithm attempts to find the best match set from the input lines. Notice how the match set requires consideration of duplicate lines.

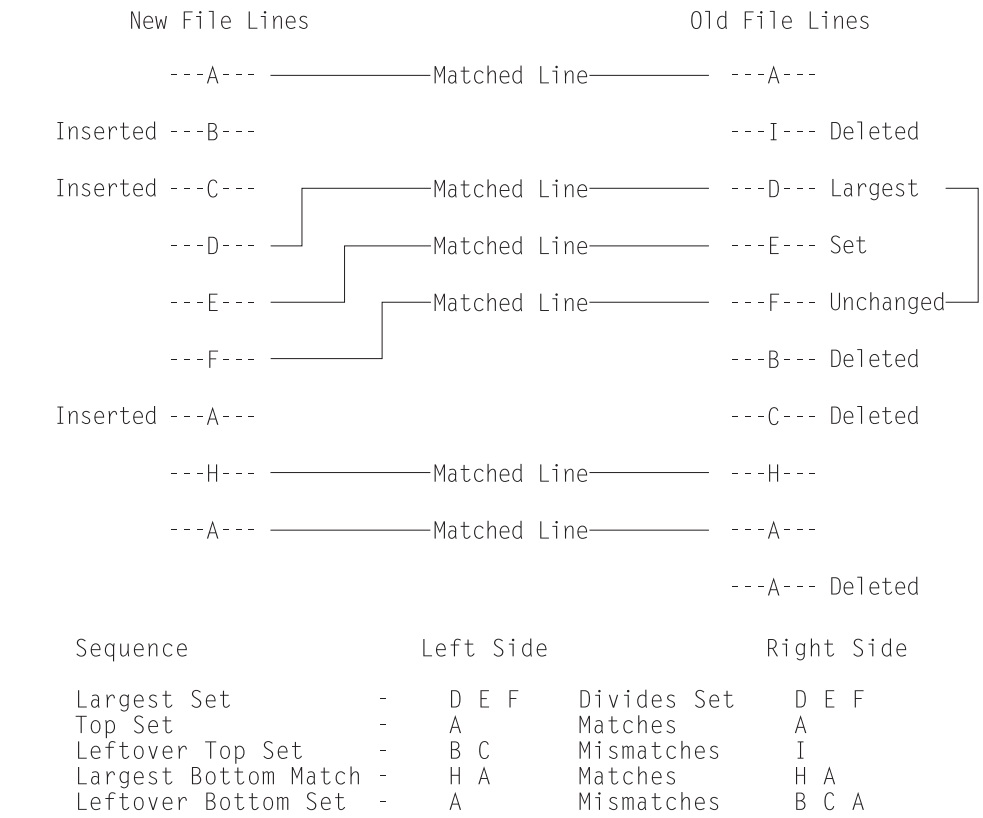

Figure 230. Find Match Example

How SuperC Corrects False Matches

Occasionally, SuperC reports that it has detected a false line or word match and has corrected the results in the listing and summary report. Any affected matched pair has been reclassified as an insert/delete pair. Any resulting error might be in the masking of potential matches that would be overlooked due to the early false match coupling. That is an equivalent yet undiscovered match may be overlooked due to the premature false matching. The condition should be of minor importance since it happens so rarely and the masking effect has a low probability of affecting the final results.

An equally important SuperC concern would be whether it finds the best match set and whether it finds all matches. Unfortunately, the match-finding algorithm is not perfect. Ignoring the false match masking problem, and the large number of duplicate source lines obscuring the match set possibilities, occasional matches can be overlooked.

Many Artificial Intelligence (AI) computer programs, like SuperC, only approximate the human intellect that can sometimes make a better match set selection. Furthermore, these same computer programs are designed for speed and efficiency. They necessarily make certain simplifying assumptions and contain additional operational weaknesses. SuperC , however, does not fail to correctly classify mismatches and does not incorrectly classify a mismatch as a match.

How SuperC Partitions and Processes Large Files

In SuperC, there is no limit on the size of files processed in terms of lines, words or bytes. Yet it had an internal methodology based upon a maximum field size for each work area storage structure (for example, array size and precision of variables). A method was developed to do the overall comparison process by breaking very large files into smaller comparison partitions and combining the intermediate results into one overall result. The process had to be done carefully so that it did not look as if the file partitioning was determined after some arbitrary limit was reached. That could affect the results on either side of the break point. The partitioning had to be done heuristically based upon the comparison results from the previously inspected intermediate process.

A fixed partitioning size of 32K lines/words/bytes was selected that was based on some test studies. The compare processes up to this limit and iteratively adjusts the intermediate ending break point of the pass by an adaptive method. Continuation from the adjusted end point is the basis for the next pass. That end point might even be adjusted to some previous records that had already been processed. The objective is to achieve the next best compare set for future unprocessed records.

The overall process ends when both files reach the End-of-File during a pass. The results from the intermediate passes are combined into one user end result. Most large compares are never suspected to have been partitioned and recombined.

The unlimited file size solution may appear, at first, unnecessary for Line compare using a virtual address space that is nearly unlimited. Yet there often has to be some limit—even if it is a high value. Programs need to store data with predetermined precision limits and programs work better with limits that are reasonable. Word compare and Byte compare eventually needed a partitioning limit for the compare as the number of words and bytes become large even for small file sizes.

Why Compare Types May Produce Different Comparison Results

Different comparison types often give you slightly different results. Here are some of the reasons:

- File comparisons inspect the complete data set (every byte) for differences. Line and Word comparisons use designated columns that are either the user specifications or SuperC defaults—possibly excluding sequence number columns 73–80.
- Line comparisons pad records with blanks when lines with different lengths are compared. However, Byte comparisons can find blank characters only if they are included in the input data sets.
- For data sets with input line lengths <= 256, Line comparison is done after the lines are padded with blanks to the longest line length. Lines originally of unequal length can compare equally if the blanks at the end of the longer line coincide with the shorter line's blank padding.
- For data sets with input line lengths > 256, Line comparison is done on the lines without blank padding. Lines of unequal length are always mismatches.
- Different comparison types have different sensitivity to being resynchronized. Line comparison synchronization begins at the beginning of a line and ends at the end of a line. Word comparison synchronization begins anywhere on a line on any word boundary and ends at the end of a word. Byte comparison synchronizes after each character.

  Word comparisons at the end of a line might change the size of the word comparison set but would have no effect on a Line comparison. The output reports could look very different.
- Line comparisons may produce different results because SuperC detects lines that have been reformatted. Reformatted lines have no effect on Word comparisons because Word comparisons ignore blank characters and blank lines.
- Results may differ depending on which compared data set is specified as new and which is specified as old. The matching algorithm is sensitive to the largest matched set it finds between data sets. There may be occasions where this set has alternatives of equal lengths. The rules for deciding which set to choose among the equals depend upon the actual content in the data set; therefore, data set dependencies do exist.

Comparing and Searching Alias Members

When you compare or search all of the members of two partitioned data sets using the command **S *** (to select all entries in the directory) on the member list, any members that have alias entries are processed once for the real name, and once for each alias entry. For compare, unpaired aliases appear in the same list as unpaired real members as *NON-PAIRED NEW FILE MEMBERS* or *NON-PAIRED OLD FILE MEMBERS*.

When you compare or search entire data sets by using an asterisk (*) for a member name pattern, only real members, not aliases, are processed. For compare, all directory entries (for both real members and aliases) are analyzed. Messages appear at the end of the SuperC output listing that give information about unpaired alias entries for paired real members as follows:

```
"NEW" PAIRED MEMBERS WITH "NEW" ALIAS MEMBERS NOT PAIRED FOLLOW:
        MEMBER1/ALIAS1  MEMBER1/ALIAS2  MEMBER2/ALIAS1 ...
    or
"OLD" PAIRED MEMBERS WITH "OLD" ALIAS MEMBERS NOT PAIRED FOLLOW:
        MEMBER1/ALIAS1  MEMBER1/ALIAS2  MEMBER2/ALIAS1 ...
```

followed by a listing of the unpaired member/alias entries.

Note: Consider the ALLMEMS process option if you want to compare all directory entries, including aliases, but do not want to select them from a member list. This is useful for batch comparisons of entire load modules.

Comparing Load Modules

SuperC compare of load module data might show unexpected differences. This is because SuperC compares all the data in the load module as it is found on DASD, and does not attempt to decode which portions are executable, and which might contain uninitialized storage.

The complex data format on DASD is dependent on the load module data set block size, and defined storage definitions which are controlled by the linkage editor. The size stored by the linkage editor in the PDS directory may differ from the DASD data byte count reported by SuperC and Browse depending on the characteristics of the load module.

If load modules are exact copies of each other, SuperC should find no differences. If load modules have been link-edited from the same object but with different blocksizes, SuperC will probably report they are different.

Because of the relative DASD addresses (TTRs) in load modules, the recommended procedure for comparing load modules which have not been reblocked is to use the AMBLIST utility with LISTLOAD OUTPUT=MODLIST against both load modules, then use SuperC to compare the two AMBLIST outputs. There is no easy way to compare load modules with different internal record sizes such as occurs when COPYMOD or LINKEDIT processes them.

Comparing CSECTs

SuperC compare of PDS Load Module Csects (using the LMCSFC Process Option) can return unexpected differences. SuperC looks at the length of the Csect from the control record immediately preceding the Csect data record in the load module. This physical data length can differ from the logical Csect data length in the load module header that the AMBLIST utility uses to report the length of the Csect.

SuperC always compares all of the physical data in each Csect. You can use SuperC Byte compare to examine the Csect data content in detail.

Note: This option is only valid for PDS load modules.

How to Directly Invoke SuperC and Search-For

You can run the SuperC and Search-For programs directly without using the ISPF-provided utilities (Options 3.12, 3.13, 3.14, or 3.15). This requires an installation (or system programmer) to customize a CLIST (for interactive usage) or a PROCLIB procedure (for batch execution of a catalog procedure). Although these

methods are not warranted by the ISPF product, a sample CLIST and a sample PROCLIB procedure are distributed as an aid in the SAMPLIB data set as members ISRSCLST and ISRSPROC.

The sample CLIST allows a TSO user to enter a line command to communicate the operational parameters directly to the SuperC program without displaying the ISPF panels. The sample CLIST will request entry of a search pattern or string. A sample SuperC call as entered on the terminal might look like:

```
superc newfile(.newdata.file) oldfile(ludlow.olddata.file)
```

or

```
exec clist(superc) 'new(.newdata.file) old(ludlow.olddata.file)'
```

where *superc* is the command and *newfile* and *oldfile* are the keywords for the input files.

The SuperC load module may be supported using a private library or a concatenated system library. The installation is responsible for making the corresponding changes to the sample CLIST.

The sample CLIST uses the following format:

```
SUPERC NEW(dsn) OLD(dsn) {keyword(parameter) .... }
```

The keywords and parameters are:

CTYPE
Specifies the compare type. The parameter can be one of the SuperC compare types (File, Line, Word, or Byte). To call the Search-For program, use CTYPE(SRCH).

LISTING
Specifies the listing type. The parameter can be one of the SuperC listing types.

OUTDD
Specifies the name of the Listing Data Set. Use a fully qualified *dsn* or use a period (.) to precede the *dsn* with SYSPREF. The use of the period is a compromise because fully qualified names enclosed in quotes are difficult to pass in CLISTs.

BROWSE
Specifies the auto display program.

SYSIN
Specifies whether SuperC prompts the user for the process statements or uses a statements data set. The parameters can be `PROMPT` or the name of the statements data set.

DELDD
Specifies the name of the update data set.

PROCESS
Specifies the process options. The parameter can be a SuperC or Search-For process option. Not all options are allowed with each compare type (for example, GWCBL is valid only with Line and Word compare) or with other options (for example, you cannot use SEQ with COBOL). Refer to "Process Options" on page 395 and "Search-For Process Options" on page 438 for additional information.

Examples

The following example shows a SuperC compare JCL sequence:

```
//COMPARE  EXEC PGM=ISRSUPC,PARM=('LINECMP,CHNGL,UPDCNTL')
//STEPLIB  DD   DSN=ISPF.LOAD,DISP=SHR
//NEWDD    DD   DSN=DLUDLOW.PDS(TEST1),DISP=SHR
//OLDDD    DD   DSN=DLUDLOW.PDS(TEST2),DISP=SHR
//OUTDD    DD   SYSOUT=A
//DELDD    DD   DSN=DLUDLOW.UCTL1,DISP=OLD
//SYSIN    DD   *
   CMPCOLM 2:72
/*
```

The sequence allows the SuperC program to compare two input data sets and generates a line compare CHANGE type listing to the spool output queue and a separate UPDCNTL update control data set output using source columns 2 through 72.

A catalog procedure is a set of "canned" JCL statements that you can invoke as an extension of your own JCL. A simplified JCL sequence appears below:

```
//SUPERC JOB
//       EXEC  SUPERC,
//       NEWFILE='DLUDLOW.GROUP.DATA1',
//       OLDFILE='MFRAME.GROUP.DATA2',
//       LISTING=DELTA
```

The keywords NEWFILE, OLDFILE, and LISTING cause symbolic substitution prior to the job submittal.

Note: A sample catalog procedure is contained in the SAMPLIB member ISRSPROC.

A simplified Search-For JCL sequence follows. The SRCHFOR process statement used in the search is part of the JCL instead of a separate SYSIN data set. Concatenated data sets are also shown as part of the JCL.

```
//         JOB
//SEARCH   EXEC PGM=ISRSUPC,PARM=('SRCHCMP,ANYC')
//STEPLIB  DD   DSN=ISPF330.LOAD,DISP=SHR
//NEWDD    DD   DSN=USERID.PDS,DISP=SHR
//         DD   DSN=USERID.PDS2,DISP=SHR
//OUTDD    DD   SYSOUT=*
//SYSIN    DD     *
 SRCHFOR 'NEEDLE',W,10:20
/*
//
```

A very simplified Search-For sample CLIST follows:

```
   PROC 0
   FREE   FI(NEWDD,SYSIN,OUTDD,SYSIN2)
   ALLOC  FI(NEWDD) DA('USERID.PDS(TEST1)')        REUSE SHR
   ALLOC  FI(SYSIN) DA('USERID.SYSIN.DATA(STMTS)') REUSE SHR
   DELETE              'USERID.USER.PDS'
   ALLOC  FI(OUTDD) DA('USERID.USER.LIST') SPACE(10,20) RECFM(F B) +
   REUSE TRACKS RELEASE
   CALL 'USERID.ISPF.LOAD(ISRSUPC)' 'SRCHCMP,ANYC'
/*****************************************************/
/* SIMPLE CLIST WITH MINIMUM STATEMENTS.             */
/* "USERID.SYSIN.DATA(STMTS)" MUST CONTAIN SRCH STMTS.*/
/*****************************************************/
```

Appendix B. SuperC Listings

The SuperC program allows you to produce four kinds of listings, differing generally depending on the compare type, process options, and process statements used. They range from OVSUM, which shows none of the source data, to LONG, which shows all of it.

Note: Listing types are not applicable for the File compare type. For information about File compare listings, see "Effect of File Compare Type on SuperC Listings" on page 477.

OVSUM

Lists only an overall summary of the results of the comparison without showing the differences themselves.

For example, an OVSUM listing of a Line comparison shows how many lines matched, how many were reformatted, how many were inserted, and so forth.

DELTA

Lists only the differences between the source data sets or members being compared, followed by overall summary results. Differences are flagged to the left of each output line.

For example, a DELTA listing of a Line comparison shows only the individual lines in each data set or member that are different.

CHNG

Same as the DELTA listing, plus up to 10 matching lines, words, or bytes before and after the differences. This shows the differences within the context of the surrounding lines.

For example, suppose a comparison of two data sets shows that each has 15 lines that match, followed by one or more lines that are different, followed by 15 more lines that match. A CHNG listing of a Line comparison of these data sets would show the lines in each data set or member that are different, plus 10 of the 15 lines that match, both before and after.

LONG

Same as the CHNG listing, except this listing shows the entire new data set, plus any data from the *old*, or original, data setthat is not in the *new*, or changed, data set.

If we borrow the example used in the CHNG listing definition, a LONG listing would include all 15 matching lines, not just 10.

The following sections begin by explaining the information displayed in the titles lines and at the bottom of the listings. Then, each listing type is discussed in more detail, with examples of listings and descriptions of the listing sections.

The examples were created by comparing two PDSs. The first, USERID.TEST1.SCRIPT, is considered the old data set and contains members DATA, ABEOLD, and WORDSOLD. USERID.TEST2.SCRIPT, the new data set, contains members DATA, ABENEW, and WORDSNEW.

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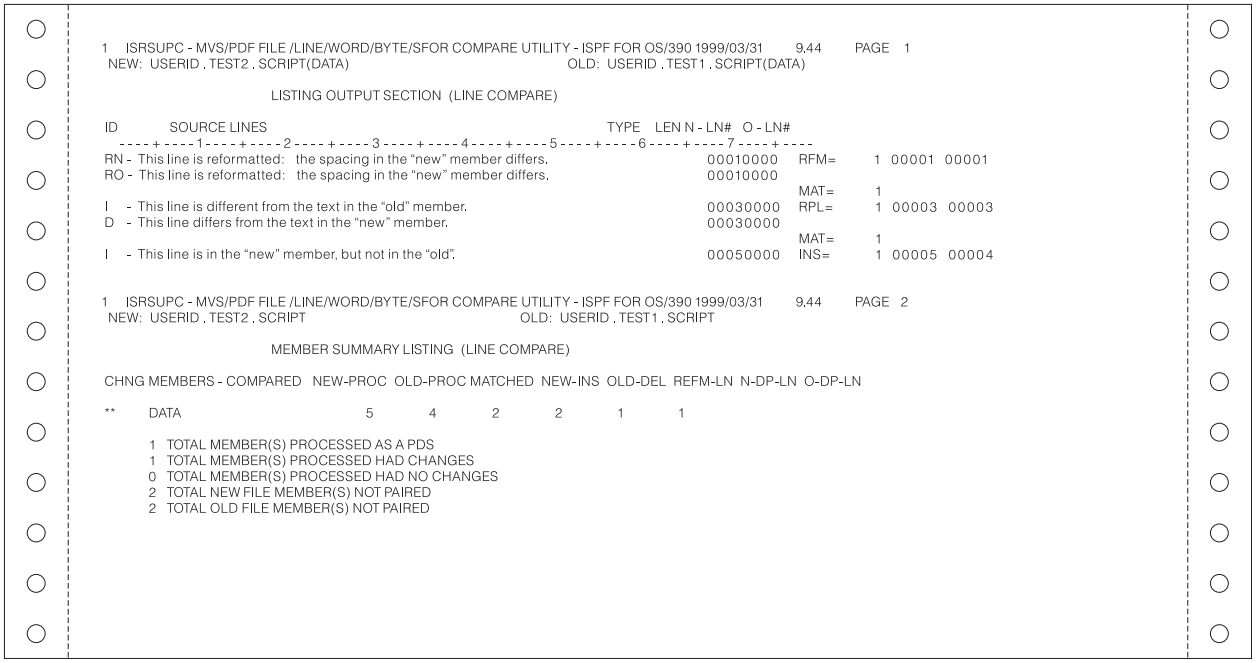
DATA, as the only member name common to both data sets, is the only member compared. Figure 231 shows the source data for both the old and new versions of DATA. Figure 232 shows the results of an OVSUM comparison of the two versions.

```
  File  Edit  Confirm  Menu  Utilities  Compilers  Test  Help
-------------------------------------------------------------------------------
EDIT       USERID.TEST1.SCRIPT(DATA) - 01.02               Columns 00001 00072
****** ***************************** Top of Data ***************************
000100 This line is reformatted; the  spacing  in  the  "new"  member  differs.
000200 This line is the same in both members.
000300 This line differs from the text in the "new" member.
000400 This line is the same in both members.
Command ===> ____________________________________________ Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  File  Edit  Confirm  Menu  Utilities  Compilers  Test  Help
-------------------------------------------------------------------------------
EDIT       USERID.TEST2.SCRIPT(DATA) - 01.02               Columns 00001 00072
****** ***************************** Top of Data ***************************
000100 This line is reformatted; the spacing in the "new" member differs.
000200 This line is the same in both members.
000300 This line is different from the text in the "old" member.
000400 This line is the same in both members.
000500 This line is in the "new" member, but not in the "old".
****** *************************** Bottom of Data ***************************
Command ===> ____________________________________________ Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
```

Figure 231. Split Screen Showing Source Data for SuperC Listings

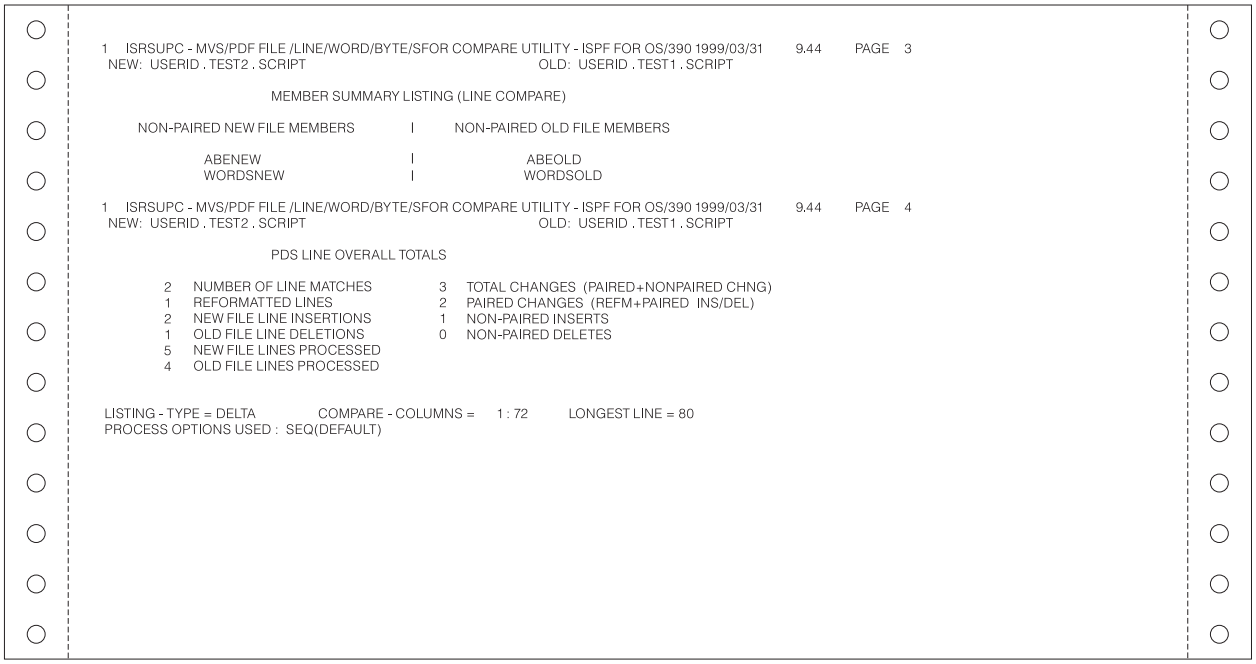
```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   1
 NEW:  USERID . TEST2 . SCRIPT(DATA)                          OLD:  USERID . TEST1 . SCRIPT(DATA)

                        LINE COMPARE SUMMARY AND STATISTICS

          2    NUMBER OF LINE MATCHES                  3    TOTAL CHANGES  (PAIRED+NONPAIRED CHNG)
          1    REFORMATTED LINES                       2    PAIRED CHANGES  (REFM+PAIRED  INS/DEL)
          2    NEW FILE LINE INSERTIONS                1    NON-PAIRED INSERTS
          1    OLD FILE LINE DELETIONS                 0    NON-PAIRED DELETES
          5    NEW FILE LINES PROCESSED
          4    OLD FILE LINES PROCESSED


LISTING - TYPE = OVSUM            COMPARE - COLUMNS =     1 : 72        LONGEST LINE = 80
PROCESS OPTIONS USED :  SEQ(DEFAULT)
```

Figure 232. OVSUM Listing of a LINE Comparison of Two PDS Members



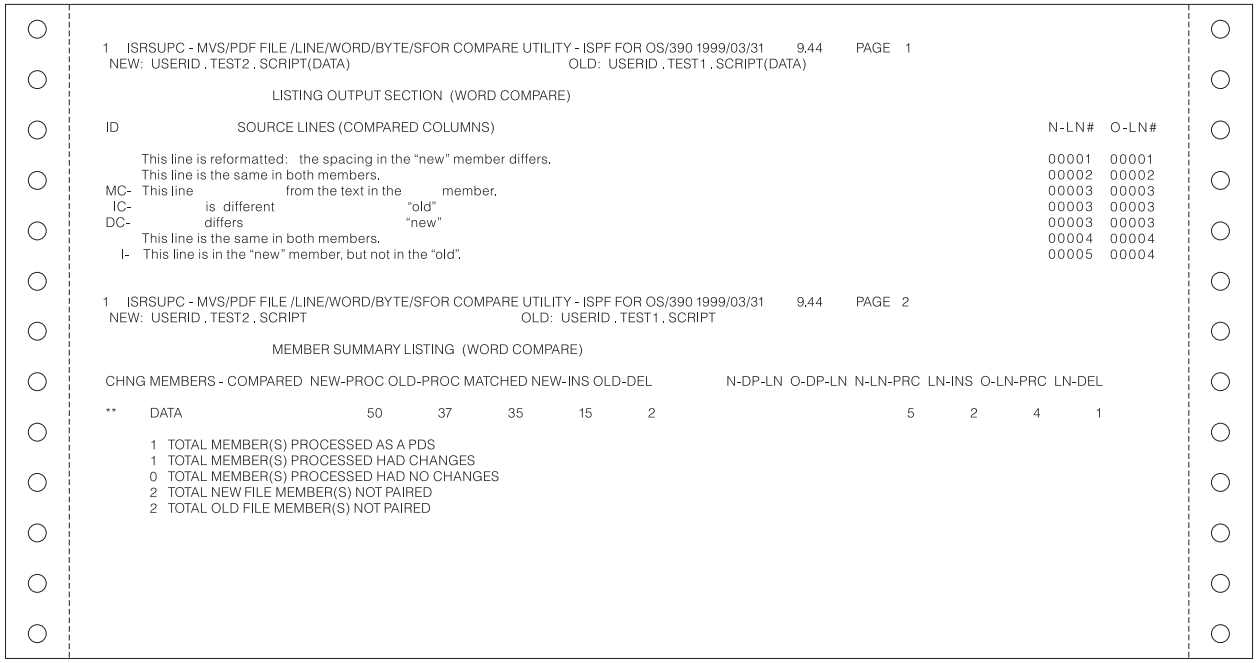
```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31       9.44       PAGE   1
 NEW:  USERID . TEST2 . SCRIPT(DATA)                                  OLD:  USERID . TEST1 . SCRIPT(DATA)

                          LISTING OUTPUT SECTION  (LINE COMPARE)

ID          SOURCE LINES                                                    TYPE    LEN N - LN#   O - LN#
   ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----
RN -  This line is reformatted:   the spacing in the "new" member differs.          00010000    RFM=       1  00001  00001
RO -  This line is reformatted:   the spacing in the "new" member differs.          00010000
                                                                                   MAT=       1
I    -  This line is different from the text in the "old" member.                  00030000    RPL=       1  00003  00003
D    -  This line differs from the text in the "new" member.                       00030000
                                                                                   MAT=       1
I    -  This line is in the "new" member, but not in the "old".                    00050000    INS=       1  00005  00004


1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31       9.44       PAGE   2
 NEW:  USERID . TEST2 . SCRIPT                                        OLD:  USERID . TEST1 . SCRIPT

                          MEMBER SUMMARY LISTING  (LINE COMPARE)

CHNG MEMBERS - COMPARED   NEW-PROC  OLD-PROC MATCHED  NEW-INS  OLD-DEL  REFM-LN  N-DP-LN  O-DP-LN

**       DATA                              5         4         2         2         1         1

         1  TOTAL MEMBER(S) PROCESSED AS A PDS
         1  TOTAL MEMBER(S) PROCESSED HAD CHANGES
         0  TOTAL MEMBER(S) PROCESSED HAD NO CHANGES
         2  TOTAL NEW FILE MEMBER(S) NOT PAIRED
         2  TOTAL OLD FILE MEMBER(S) NOT PAIRED
```

Figure 233. DELTA Listing of a LINE Comparison of Two PDSs (Part 1 of 2)



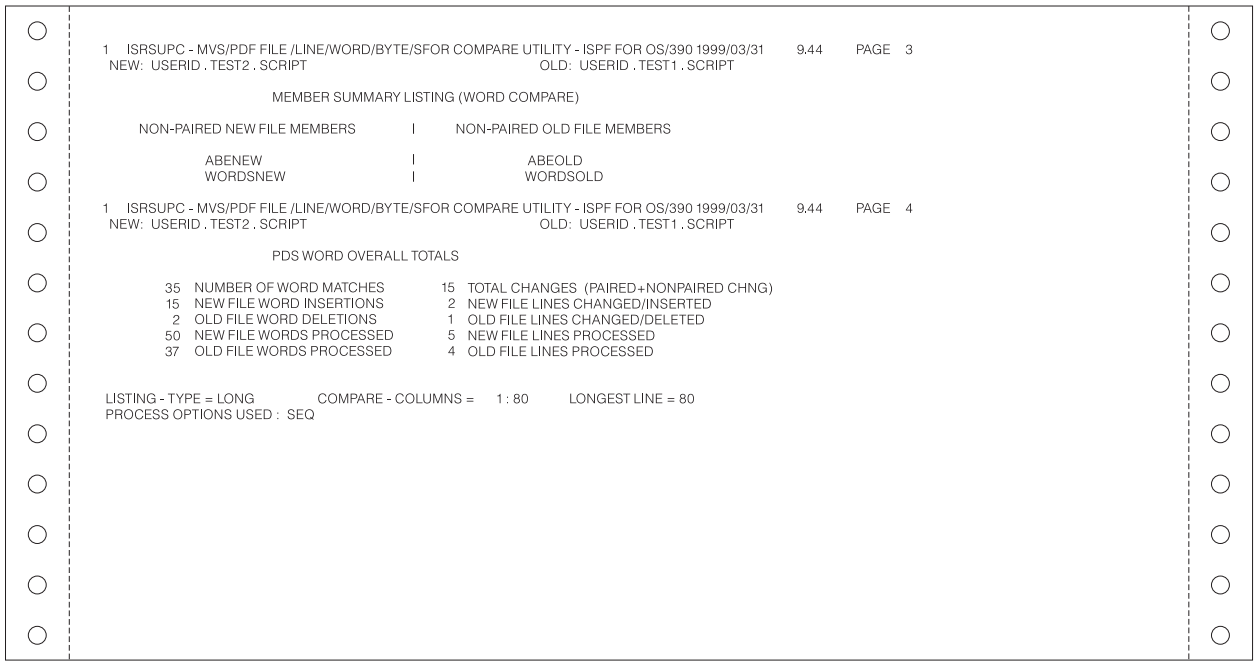
```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31       9.44       PAGE   3
 NEW:  USERID . TEST2 . SCRIPT                                        OLD:  USERID . TEST1 . SCRIPT

                          MEMBER SUMMARY LISTING (LINE COMPARE)

      NON-PAIRED NEW FILE MEMBERS          I       NON-PAIRED OLD FILE MEMBERS

                ABENEW                     I                 ABEOLD
                WORDSNEW                   I                 WORDSOLD

1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31       9.44       PAGE   4
 NEW:  USERID . TEST2 . SCRIPT                                        OLD:  USERID . TEST1 . SCRIPT

                          PDS LINE OVERALL TOTALS

          2    NUMBER OF LINE MATCHES          3    TOTAL CHANGES  (PAIRED+NONPAIRED CHNG)
          1    REFORMATTED LINES               2    PAIRED CHANGES  (REFM+PAIRED  INS/DEL)
          2    NEW FILE LINE INSERTIONS        1    NON-PAIRED INSERTS
          1    OLD FILE LINE DELETIONS         0    NON-PAIRED DELETES
          5    NEW FILE LINES PROCESSED
          4    OLD FILE LINES PROCESSED

LISTING - TYPE = DELTA          COMPARE - COLUMNS =     1 : 72        LONGEST LINE = 80
PROCESS OPTIONS USED :  SEQ(DEFAULT)
```

Figure 233. DELTA Listing of a LINE Comparison of Two PDSs (Part 2 of 2)



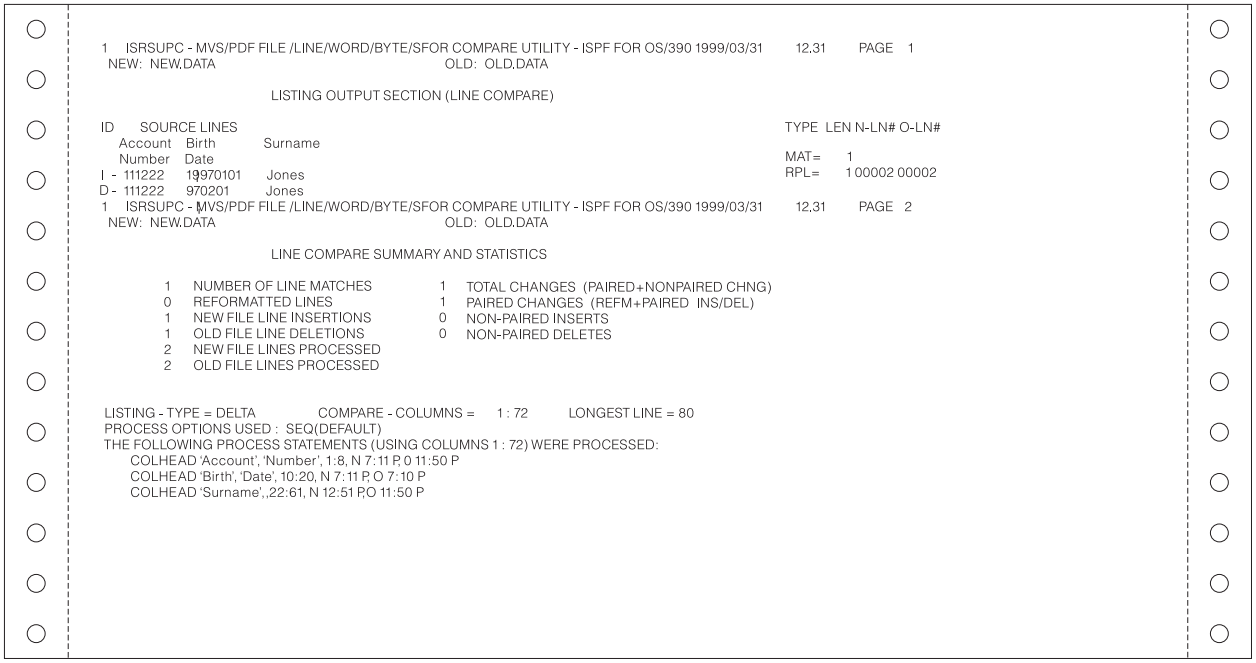
```
1   ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   1
 NEW:  USERID . TEST2 . SCRIPT(DATA)                                    OLD:  USERID . TEST1 . SCRIPT(DATA)

                          LISTING OUTPUT SECTION  (WORD COMPARE)

ID                  SOURCE LINES (COMPARED COLUMNS)                                                          N-LN#   O-LN#

       This line is reformatted:   the spacing in the "new" member differs.                                  00001   00001
       This line is the same in both members.                                                                00002   00002
MC-    This line                 from the text in the        member.                                         00003   00003
 IC-              is  different                  "old"                                                        00003   00003
DC-               differs                        "new"                                                        00003   00003
       This line is the same in both members.                                                                00004   00004
   I-  This line is in the "new" member, but not in the "old".                                               00005   00004

1   ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   2
 NEW:  USERID . TEST2 . SCRIPT                                          OLD:  USERID . TEST1 . SCRIPT

                          MEMBER SUMMARY LISTING  (WORD COMPARE)

CHNG MEMBERS - COMPARED  NEW-PROC OLD-PROC MATCHED NEW-INS OLD-DEL          N-DP-LN  O-DP-LN  N-LN-PRC  LN-INS  O-LN-PRC  LN-DEL

**      DATA                        50        37        35        15        2                                  5        2        4        1

        1  TOTAL MEMBER(S) PROCESSED AS A PDS
        1  TOTAL MEMBER(S) PROCESSED HAD CHANGES
        0  TOTAL MEMBER(S) PROCESSED HAD NO CHANGES
        2  TOTAL NEW FILE MEMBER(S) NOT PAIRED
        2  TOTAL OLD FILE MEMBER(S) NOT PAIRED
```

Figure 234. LONG Listing of a Word Comparison of Two PDSs (Part 1 of 2)



```
1   ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   3
 NEW:  USERID . TEST2 . SCRIPT                                          OLD:  USERID . TEST1 . SCRIPT

                          MEMBER SUMMARY LISTING (WORD COMPARE)

      NON-PAIRED NEW FILE MEMBERS          |       NON-PAIRED OLD FILE MEMBERS

                ABENEW                     |                ABEOLD
                WORDSNEW                   |                WORDSOLD

1   ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   4
 NEW:  USERID . TEST2 . SCRIPT                                          OLD:  USERID . TEST1 . SCRIPT

                          PDS WORD OVERALL TOTALS

          35   NUMBER OF WORD MATCHES          15   TOTAL CHANGES  (PAIRED+NONPAIRED CHNG)
          15   NEW FILE WORD INSERTIONS         2   NEW FILE LINES CHANGED/INSERTED
           2   OLD FILE WORD DELETIONS          1   OLD FILE LINES CHANGED/DELETED
          50   NEW FILE WORDS PROCESSED         5   NEW FILE LINES PROCESSED
          37   OLD FILE WORDS PROCESSED         4   OLD FILE LINES PROCESSED

LISTING - TYPE = LONG          COMPARE - COLUMNS =     1 : 80        LONGEST LINE = 80
PROCESS OPTIONS USED :  SEQ
```

Figure 234. LONG Listing of a Word Comparison of Two PDSs (Part 2 of 2)



```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      12.31       PAGE   1
 NEW:  NEW.DATA                                        OLD:  OLD.DATA

                          LISTING OUTPUT SECTION (LINE COMPARE)

ID     SOURCE LINES                                                                    TYPE  LEN N-LN# O-LN#
   Account   Birth          Surname
    Number   Date                                                                     MAT=     1
I  - 111222    19970101     Jones                                                    RPL=     1 00002 00002
D  - 111222    970201       Jones
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      12.31       PAGE   2
 NEW:  NEW.DATA                                        OLD:  OLD.DATA

                          LINE COMPARE SUMMARY AND STATISTICS

          1    NUMBER OF LINE MATCHES              1    TOTAL CHANGES  (PAIRED+NONPAIRED CHNG)
          0    REFORMATTED LINES                   1    PAIRED CHANGES  (REFM+PAIRED  INS/DEL)
          1    NEW FILE LINE INSERTIONS            0    NON-PAIRED INSERTS
          1    OLD FILE LINE DELETIONS             0    NON-PAIRED DELETES
          2    NEW FILE LINES PROCESSED
          2    OLD FILE LINES PROCESSED


LISTING - TYPE = DELTA              COMPARE - COLUMNS =     1 : 72          LONGEST LINE = 80
PROCESS OPTIONS USED :  SEQ(DEFAULT)
THE FOLLOWING PROCESS STATEMENTS (USING COLUMNS 1 : 72) WERE PROCESSED:
     COLHEAD 'Account', 'Number', 1:8, N 7:11 P,0 11:50 P
     COLHEAD 'Birth', 'Date', 10:20, N 7:11 P,O 7:10 P
     COLHEAD 'Surname',,22:61, N 12:51 P,O 11:50 P
```

Figure 235. Comparison Listing with Column Headings (Using COLHEAD)

Figure 235 shows how COLHEAD process statements have been used to generate column headings (*Account Number*, *Birth Date*, and *Surname*) for the corresponding input data. For more information, see "COLHEAD—Define Column Headings" on page 418.

SuperC Listing Title Lines

SuperC listings contain two title lines. Figure 233 on page 469 shows an example. The first title line shows the following information:

- The name of the SuperC program, which is described as a file/line/word/byte/s for the compare utility for ISPF for OS/390.
- The date and time the listing was produced. The date is shown according to the format used by your country. The time is shown in 24-hour format, with the hours and minutes separated by a period.
- The page number.

The second title line shows you the names of the new and old data sets that were compared when the listing was created.

Listing Output Section

The Listing Output Section shows any lines, words, or bytes that were found to be different, depending on the compare type being used. For a Word comparison, the source lines that appear in the listing show only the columns of data that were really compared. See Figure 234 on page 470 for an example and *ISPF User's Guide* for more information.

The Listing Output Section flags changes by using:

- Listing prefix codes
- Type-of-difference codes.

Listing Prefix Codes

SuperC output lines are flagged with the following prefix codes listed under the ID column:

blank *Match*—No prefix code means the data is the same in both data sets.

I *Insert*—Data that is in the new data set, but not in the old data set.

D *Delete*—Data that is in the old data set, but not in the new data set.

DR *Delete Replace*—For Byte compare listings only. A byte(s) in the old data set that was replaced by the byte(s) shown in the preceding insert (I) line.

MC *Match Compose*—For Word compare listings only.A line containing words that match. The line may also contain spaces to show the relationship between the matching words and any inserted or deleted words. Inserted and deleted words are shown in following insert compose (IC) and delete compose (DC) lines.

IC *Insert Compose*—For Word compare listings only.A line containing words from the new data set that are not in the old data set. This line usually follows a match compose (MC) line.

DC *Delete Compose*—For Word compare listings only. A line containing words from the old data set that are not in the new data set. This line usually follows a match compose (MC) or insert compose (IC) line.

IM *Insert Matching*—For compare listings created by using the FMVLNS (flag moved lines) process option. A line in the new data set that also appears in the old data set, but has been moved. If the line was reformatted, this is shown by a flag to the right of the listing.

DM *Delete Matching*—For compare listings created by using the FMVLNS (flag moved lines) process option. A line in the old data set that also appears in the new data set, but has been moved. If the line was reformatted, this is shown by a flag to the right of the listing.

RN *Reformat New*—For Line compare listings only. A reformatted line in the new data set. This line contains the same data as the old data set line, but with different spacing.

RO *Reformat Old*—For Line compare listings only. A line in the old data set that has been reformatted in the new data set. To keep this line out of your output listing, use the DLREFM (delete reformatted line) process option.

| *Change Bar*—For compare listings created by using the GWCBL (generate Word change bar listing) process option.A change bar showing that words were either inserted or deleted. Figure 236 on page 473 provides an example.

Type-of-Difference Codes

At the far right of some listings are headings that provide additional information about the types of differences SuperC has found. Headings you may see are:

TYPE An abbreviation that identifies the type of difference:

MAT= Matched lines.

RFM= Reformatted lines.

RPL= Replaced lines.

INS= Lines that are in the new data set, but not in the old data set.

DEL= Lines that are in the old data set, but not in the new data set.

IMR= Lines in the new data set that have been moved from where they were in the old data set and reformatted. Listing should show a matching DMR= flag for a line in the old data set.

DMR=
Lines in the old data set that have been moved and reformatted in the new data set. Listing should show a matching IMR= flag for a line in the new data set.

IMV= Lines in the new data set that have been moved from where they were in the old data set. Listing should show a matching DMV= flag for a line in the old data set.

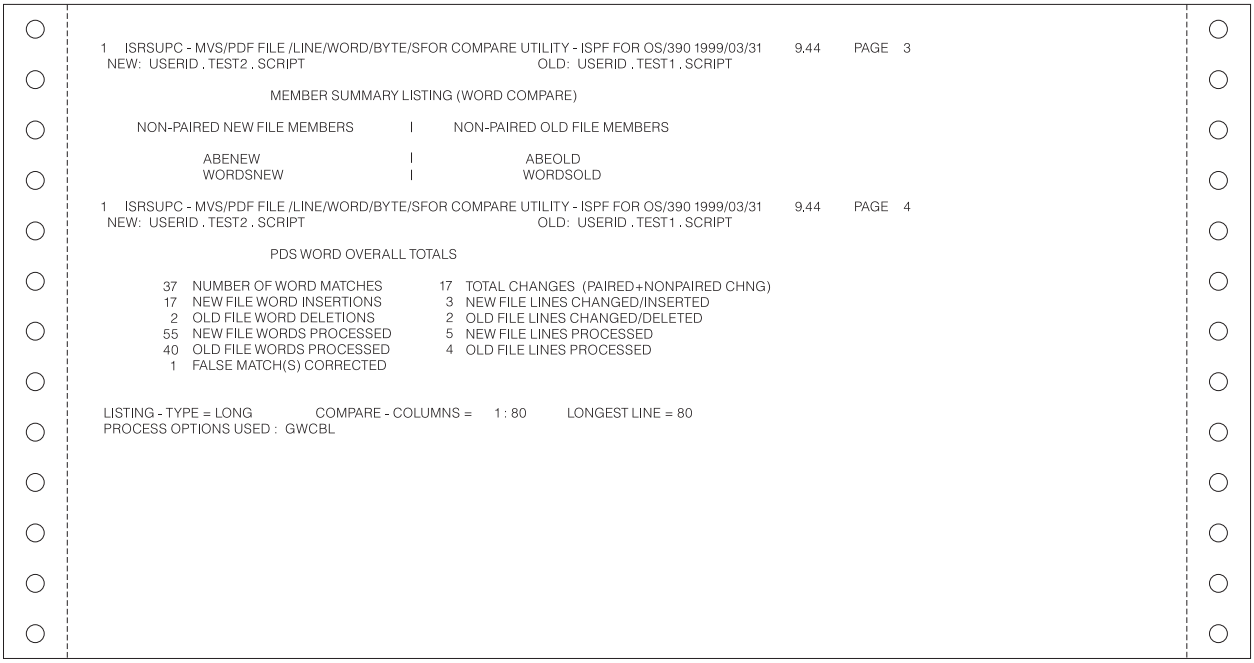
DMV=
Lines in the old data set that have been moved in the new data set. Listing should show a matching IMV= flag for a line in the new data set.

LEN The number of consecutive lines flagged by one of the TYPE abbreviations.

N-LN# and O-LN#
The line number(s) where the flagged line appears in either or both data sets. For insertions, the O-LN# column shows where the line would have appeared in the old data set. For deletions, the N-LN# column shows where the line would have appeared in the new data set.

```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44       PAGE   1
 NEW:  USERID . TEST2 . SCRIPT(DATA)                                    OLD:  USERID . TEST1 . SCRIPT(DATA)

                         LISTING OUTPUT SECTION  (WORD COMPARE)

ID          SOURCE LINES

I   - This line is reformatted:  the spacing in the "new" member differs.          00010005
      This line is the same in both members.                                      00020000
I   - This line is different from the text in the "old" member.                   00030000
      This line is the same in both members.                                      00040000
I   - This line is in the "new" member, but not in the "old".                     00050000

1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44       PAGE   2
 NEW:  USERID . TEST2 . SCRIPT                                          OLD:  USERID . TEST1 . SCRIPT

                         MEMBER SUMMARY LISTING  (WORD COMPARE)

CHNG MEMBERS - COMPARED   NEW-PROC  OLD-PROC MATCHED  NEW-INS  OLD-DEL          N-DP-LN  O-DP-LN  N-LN-PRC  LN-INS  O-LN-PRC  LN-DEL

**      DATA                          55          40          37          17          2                                  5          3          4          2

        1  TOTAL MEMBER(S) PROCESSED AS A PDS
        1  TOTAL MEMBER(S) PROCESSED HAD CHANGES
        0  TOTAL MEMBER(S) PROCESSED HAD NO CHANGES
        2  TOTAL NEW FILE MEMBER(S) NOT PAIRED
        2  TOTAL OLD FILE MEMBER(S) NOT PAIRED
```

Figure 236. Word Comparison of Two PDSs Using Change Bar to Show Differences (Part 1 of 2)



```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   3
 NEW:  USERID . TEST2 . SCRIPT                                    OLD:  USERID . TEST1 . SCRIPT

                          MEMBER SUMMARY LISTING (WORD COMPARE)

       NON-PAIRED NEW FILE MEMBERS          |       NON-PAIRED OLD FILE MEMBERS

                 ABENEW                     |                 ABEOLD
                 WORDSNEW                   |                 WORDSOLD

1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   4
 NEW:  USERID . TEST2 . SCRIPT                                    OLD:  USERID . TEST1 . SCRIPT

                          PDS WORD OVERALL TOTALS

          37   NUMBER OF WORD MATCHES          17   TOTAL CHANGES  (PAIRED+NONPAIRED CHNG)
          17   NEW FILE WORD INSERTIONS         3   NEW FILE LINES CHANGED/INSERTED
           2   OLD FILE WORD DELETIONS          2   OLD FILE LINES CHANGED/DELETED
          55   NEW FILE WORDS PROCESSED         5   NEW FILE LINES PROCESSED
          40   OLD FILE WORDS PROCESSED         4   OLD FILE LINES PROCESSED
           1   FALSE MATCH(S) CORRECTED

LISTING - TYPE = LONG            COMPARE - COLUMNS =     1 : 80        LONGEST LINE = 80
PROCESS OPTIONS USED :  GWCBL
```

Figure 236. Word Comparison of Two PDSs Using Change Bar to Show Differences (Part 2 of 2)

Member Summary Listing

The information shown in the Member Summary Listing depends on the compare type used. For example, PAGE 2 in Figure 236 on page 473 shows the number of words that were processed, matched, inserted, deleted, reformatted, and excluded from processing by a process option or statement, such as the DPLINE process option.

This part also shows how many members were processed, had changes, had no changes, and were not paired, with the last category provided for both new and old members.

As the sample listing shows, one member was processed and had changes. It also shows that both PDSs contain two *non-paired* members. The non-paired heading means that these members were not included in the comparison because they were not paired with members in the other PDS. The names of these members are shown in the second part of the Member Summary Listing, PAGE 3 of Figure 236 on page 473.

Summary and Statistics/PDS Overall Totals

Many SuperC listings contain an overall summary showing totals that are compiled for the compare type being used. For comparisons of sequential data sets or membered PDSs, this summary is called:

```
XXXX COMPARE SUMMARY AND STATISTICS
```

However, for comparisons of complete PDSs, as PAGE 4 of Figure 236 on page 473 shows, the summary is called:

```
PDS XXXX OVERALL TOTALS
```

In both headings, the `XXXX` is replaced by the compare type being used, such as `WORD`. As the sample listing shows, the left side of a LONG listing of a Word

comparison shows how many words were matched, inserted, deleted, and processed. Several of these categories are related. For instance, the number of lines processed in the new data set should be equal to the number of line matches, the reformatted lines, and the new file line insertions. The number of processed lines does not include lines that were excluded from processing by a process option or statement, such as the DPLINE process option.

The left side of the sample listing also shows that the SuperC program corrected a *false match*, which it occasionally may detect on the first pass and reclassify as an insert/delete pair. The new classification is correct, but may have caused the process to overlook an alternate match. However, this condition should not occur frequently, which means your comparison results probably will not be affected. The SuperC program never incorrectly calls a data unit (file, line, word, or byte) a match when it should be a mismatch.

On the right side, the listing shows the total number of changes, the number of lines classified as changed/inserted and changed/deleted, and the number of lines processed. In a Line comparison listing, as shown in Figure 233 on page 469, these are called *paired* changes. Paired changes show, for example, that a line inserted in the new data set corresponds to a line deleted from the old data set. The opposite would be true for non-paired insertions or deletions.

The number given as total changes should be the sum of the paired changes, non-paired insertions, and non-paired deletions. For example, in Figure 233 on page 469 , the right-side totals are the equivalent of the following:

```
  2  PAIRED CHANGES
  1  NON-PAIRED INSERTS
+ 0  NON-PAIRED DELETES
 --
  3  TOTAL CHANGES
```

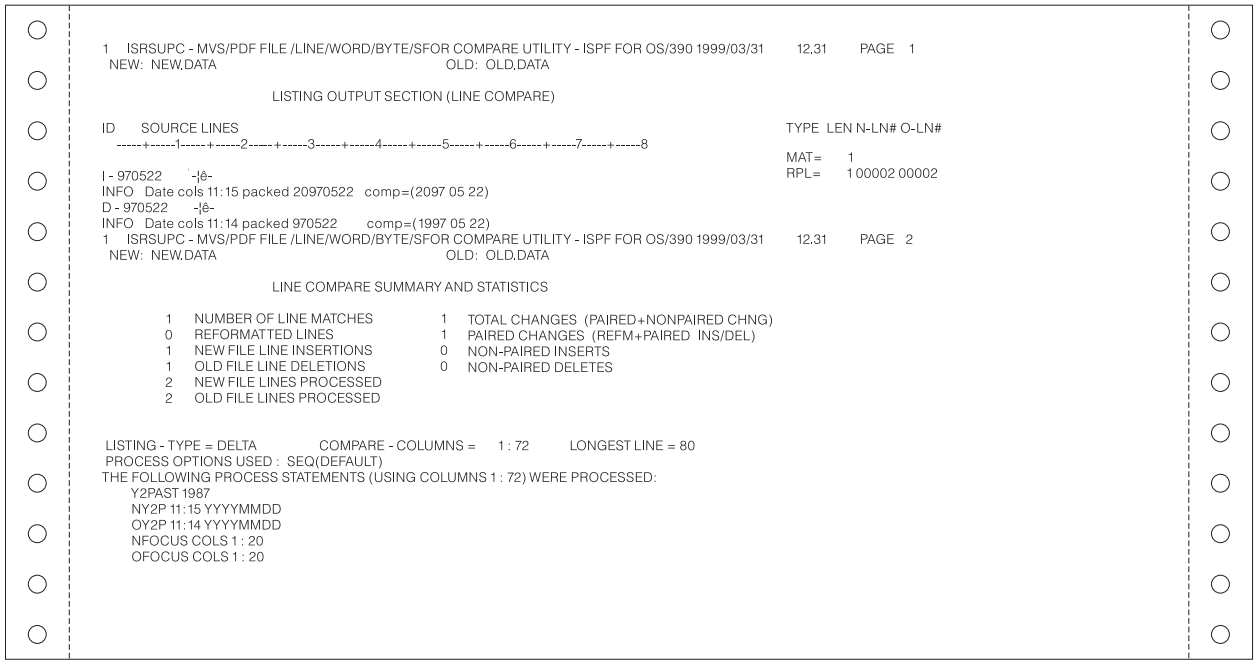
Bottom-of-Listing Information

The following list describes information that may appear at the bottom of your SuperC listings. Figure 236 on page 473 shows an example.

- The LISTING-TYPE generated: OVSUM, DELTA, CHNG, or LONG
- The COMPARE-COLUMNS, or the range of columns compared, expressed as two numbers separated by a colon. For example, `1:76` means SuperC compared columns 1 to 76 in both data sets. If two column ranges are shown, the first is the range compared in the new data set or member and the second is the range compared in the old data set or member.
- The length in bytes of the LONGEST-LINE found in any data set or member compared
- A list of the PROCESS OPTIONS USED
- A list of the PROCESS STATEMENTS USED
- Warnings and error messages.

Note: For Byte comparisons, the COMPARE-COLUMNS information is not shown because column ranges are not applicable during Byte comparisons.

Y2K Comparison



```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      12.31       PAGE   1
 NEW:  NEW.DATA                                          OLD:  OLD.DATA

                          LISTING OUTPUT SECTION (LINE COMPARE)

ID      SOURCE LINES                                                                    TYPE  LEN N-LN# O-LN#
   -----+-----1-----+-----2-----+-----3-----+-----4-----+-----5-----+-----6-----+-----7-----+-----8
                                                                                       MAT=      1
I - 970522      `-¦ê-                                                                   RPL=      1 00002 00002
INFO   Date cols 11:15 packed 20970522   comp=(2097 05 22)
D - 970522      -¦ê-
INFO   Date cols 11:14 packed 970522       comp=(1997 05 22)
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      12.31       PAGE   2
 NEW:  NEW.DATA                                          OLD:  OLD.DATA

                          LINE COMPARE SUMMARY AND STATISTICS

          1    NUMBER OF LINE MATCHES              1    TOTAL CHANGES  (PAIRED+NONPAIRED CHNG)
          0    REFORMATTED LINES                   1    PAIRED CHANGES  (REFM+PAIRED  INS/DEL)
          1    NEW FILE LINE INSERTIONS            0    NON-PAIRED INSERTS
          1    OLD FILE LINE DELETIONS             0    NON-PAIRED DELETES
          2    NEW FILE LINES PROCESSED
          2    OLD FILE LINES PROCESSED


LISTING - TYPE = DELTA              COMPARE - COLUMNS =      1 : 72          LONGEST LINE = 80
PROCESS OPTIONS USED :  SEQ(DEFAULT)
THE FOLLOWING PROCESS STATEMENTS (USING COLUMNS 1 : 72) WERE PROCESSED:
      Y2PAST 1987
      NY2P 11:15 YYYYMMDD
      OY2P 11:14 YYYYMMDD
      NFOCUS COLS 1 : 20
      OFOCUS COLS 1 : 20
```

Figure 237. Comparison Listing with Y2000 Dates Being Compared

Figure 237 shows how the two Year 2000 date definition process statements have each caused an information (*INFO*) line to be generated. The information line shows:

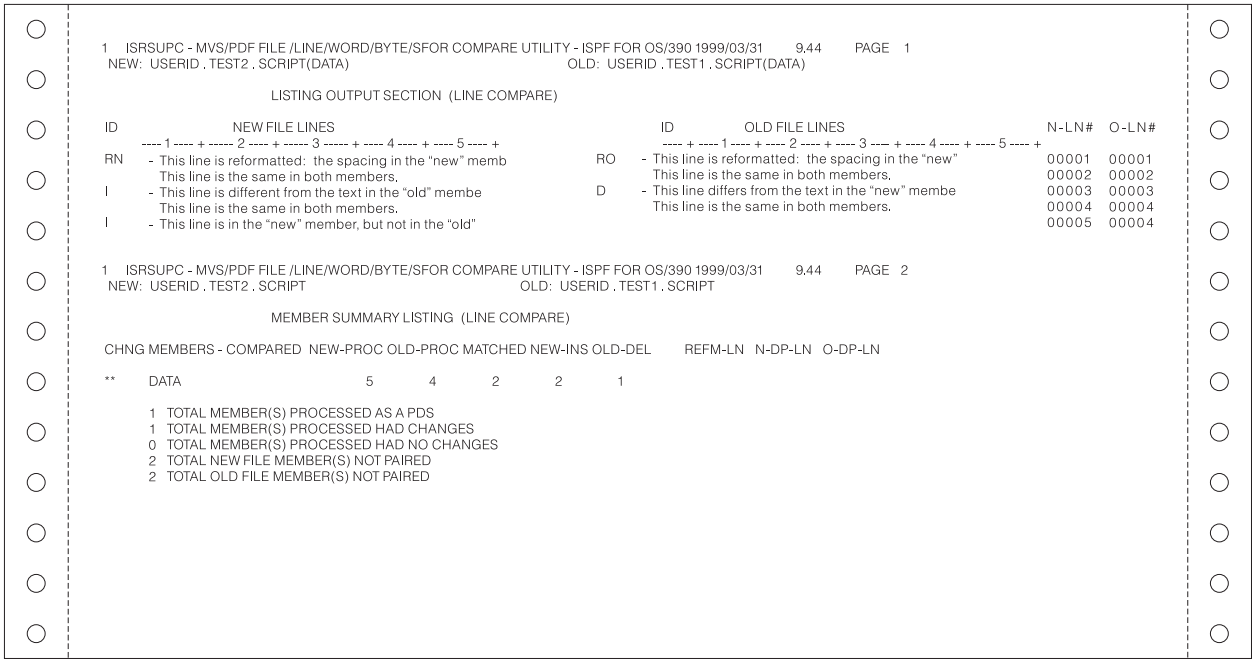
- the position of the defined date in the record
- the contents of the defined date field
- the date as it was ***actually compared***. In the second information line, you can see the defined date has a 2-digit year portion (″97″) but has actually been compared using a 4-digit year protion (″1997″).

For more information, see “NY2C, NY2Z, NY2D, NY2P, OY2C, OY2Z, OY2D, OY2P —Year 2000 Date Definitions” on page 430.

Note: Occasionally, you might see some ″unusual″ characters on the inserted (I) and deleted (D) lines. These characters simply represent data that is in a non-character (and therefore not directly printable) format in the input record. You can ignore them.

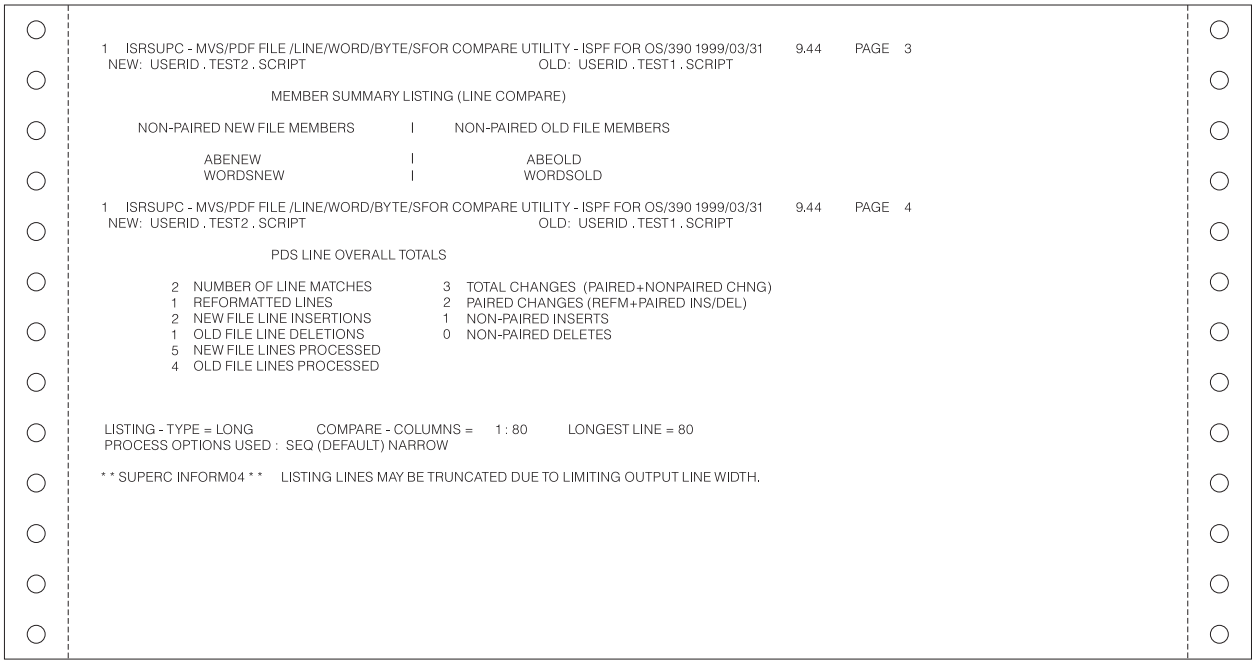
Side-By-Side Listings

Two process options, NARROW and WIDE, let you produce listings that show source data side-by-side (Figure 238 on page 477) instead of interspersed (Figure 233 on page 469). The NARROW process option shows up to 55 columns from each member, while the WIDE process option shows up to 80. The listing is truncated if it exceeds the line length of the process option being used.



```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31       9.44       PAGE   1
 NEW:  USERID . TEST2 . SCRIPT(DATA)                                    OLD:  USERID . TEST1 . SCRIPT(DATA)

                         LISTING OUTPUT SECTION  (LINE COMPARE)

ID                  NEW FILE LINES                                          ID            OLD FILE LINES                          N-LN#   O-LN#
        ---- 1 ---- + ----- 2 ---- + ----- 3 ----- + ---- 4 ---- + ---- 5 ---- +          ---- + ---- 1 ---- + ---- 2 ---- + ---- 3 ---- + ---- 4 ---- + ---- 5 ---- +
RN      - This line is reformatted:  the spacing in the "new" memb        RO     - This line is reformatted:  the spacing in the "new"        00001   00001
          This line is the same in both members.                                   This line is the same in both members.                    00002   00002
I       - This line is different from the text in the "old" membe          D      - This line differs from the text in the "new" membe        00003   00003
          This line is the same in both members.                                   This line is the same in both members.                    00004   00004
I       - This line is in the "new" member, but not in the "old"                                                                           00005   00004

1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31       9.44       PAGE   2
 NEW:  USERID . TEST2 . SCRIPT                                          OLD:  USERID . TEST1 . SCRIPT

                         MEMBER SUMMARY LISTING  (LINE COMPARE)

CHNG MEMBERS - COMPARED  NEW-PROC OLD-PROC MATCHED NEW-INS OLD-DEL       REFM-LN   N-DP-LN   O-DP-LN

**      DATA                          5         4         2         2         1

        1   TOTAL MEMBER(S) PROCESSED AS A PDS
        1   TOTAL MEMBER(S) PROCESSED HAD CHANGES
        0   TOTAL MEMBER(S) PROCESSED HAD NO CHANGES
        2   TOTAL NEW FILE MEMBER(S) NOT PAIRED
        2   TOTAL OLD FILE MEMBER(S) NOT PAIRED
```

Figure 238. Side-By-Side LINE Comparison Using the NARROW Process Option (Part 1 of 2)



```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31       9.44       PAGE   3
 NEW:  USERID . TEST2 . SCRIPT                                          OLD:  USERID . TEST1 . SCRIPT

                         MEMBER SUMMARY LISTING (LINE COMPARE)

      NON-PAIRED NEW FILE MEMBERS          |       NON-PAIRED OLD FILE MEMBERS

                ABENEW                     |                ABEOLD
                WORDSNEW                   |               WORDSOLD

1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31       9.44       PAGE   4
 NEW:  USERID . TEST2 . SCRIPT                                          OLD:  USERID . TEST1 . SCRIPT

                         PDS LINE OVERALL TOTALS

            2   NUMBER OF LINE MATCHES          3   TOTAL CHANGES  (PAIRED+NONPAIRED CHNG)
            1   REFORMATTED LINES               2   PAIRED CHANGES (REFM+PAIRED INS/DEL)
            2   NEW FILE LINE INSERTIONS        1   NON-PAIRED INSERTS
            1   OLD FILE LINE DELETIONS         0   NON-PAIRED DELETES
            5   NEW FILE LINES PROCESSED
            4   OLD FILE LINES PROCESSED


LISTING - TYPE = LONG          COMPARE - COLUMNS =     1 : 80        LONGEST LINE = 80
PROCESS OPTIONS USED :  SEQ (DEFAULT) NARROW

* * SUPERC INFORM04 * *    LISTING LINES MAY BE TRUNCATED DUE TO LIMITING OUTPUT LINE WIDTH.
```

Figure 238. Side-By-Side LINE Comparison Using the NARROW Process Option (Part 2 of 2)

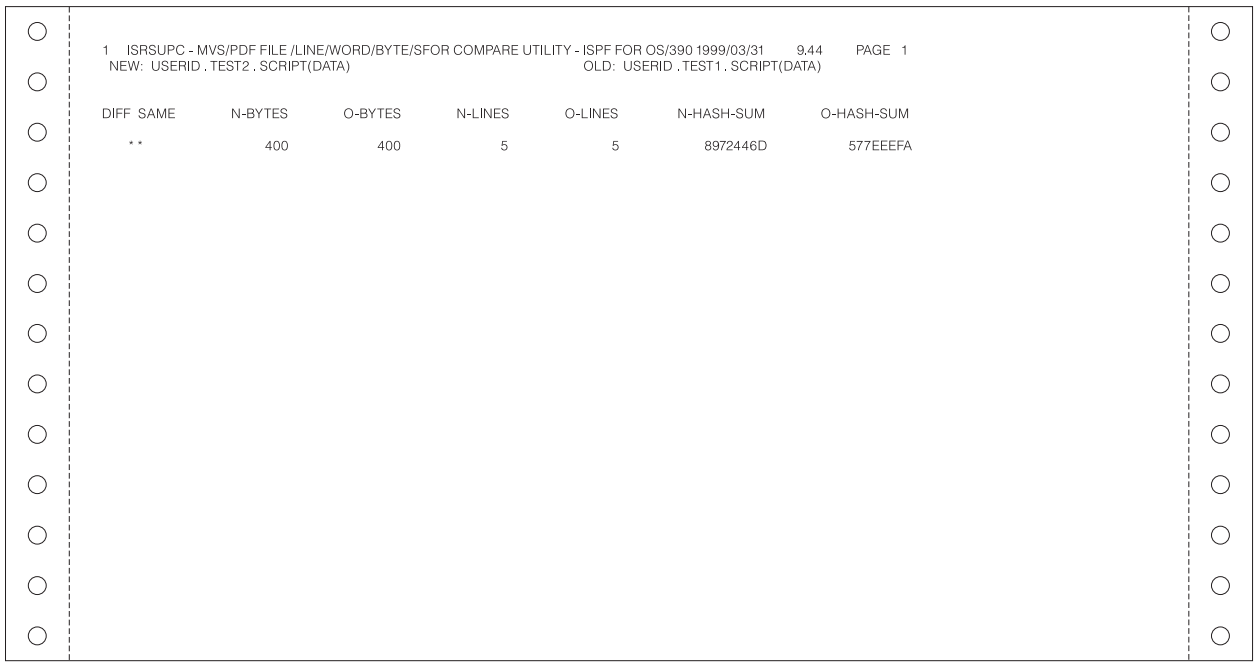
Effect of File Compare Type on SuperC Listings

Listing types are not applicable for the File compare type. The information included in a File compare listing depends on whether the data sets being compared are sequential/membered or partitioned, and on the process options and/or statements used, if any.

File Comparison of a Sequential Data Set or Membered PDS

This type of comparison is usually the fastest because it shows you only the most basic information about two data sets or members. As Figure 239 shows, this information includes the following for the new and old data sets or members:

- Whether the data sets or members are different (DIFF) or the same (SAME), shown by asterisks
- The number of bytes (N-BYTES, O-BYTES) and lines (N-LINES, O-LINES)
- The hash sum values (N-HASH-SUM, O-HASH-SUM). These values are 32-bit numeric representations of the contents of the new and old data sets, respectively. The values shown in these fields provide a general indication of whether two data sets on two different systems are different. If the values are different, the two data sets are different. If the values are the same, the two data sets may be identical, but not necessarily.



```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE  1
 NEW:  USERID . TEST2 . SCRIPT(DATA)                                OLD:  USERID . TEST1 . SCRIPT(DATA)

DIFF  SAME          N-BYTES          O-BYTES          N-LINES          O-LINES          N-HASH-SUM          O-HASH-SUM

      **                400              400                5                5            8972446D            577EEEFA
```

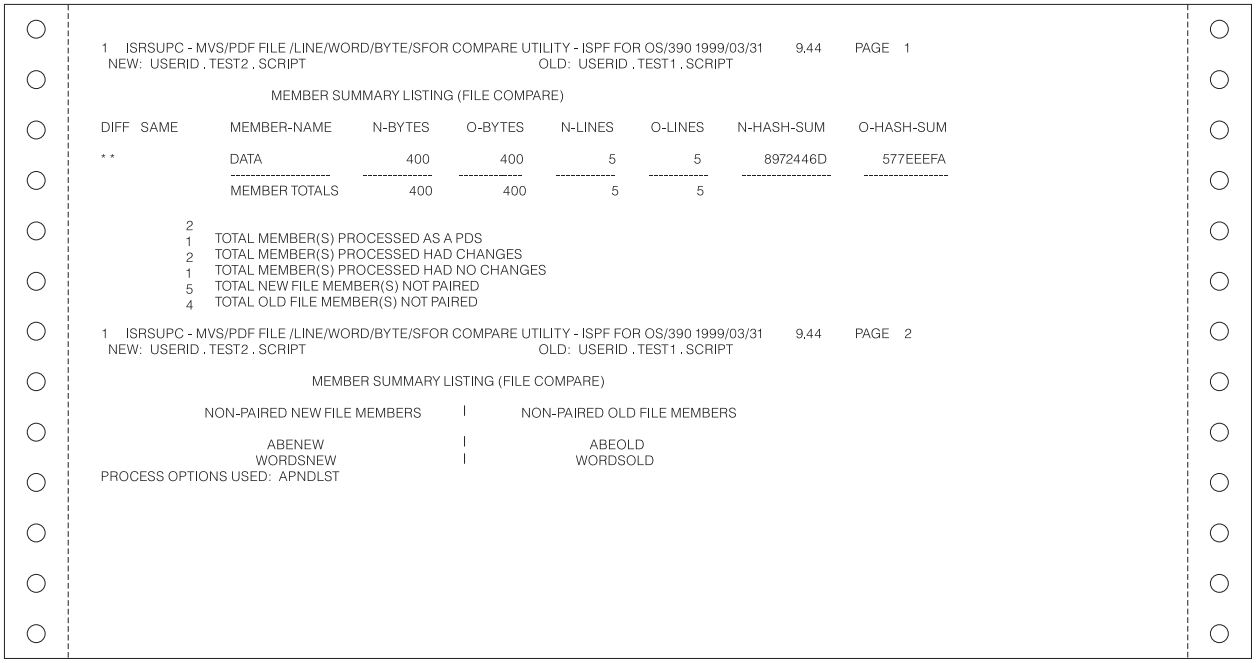
Figure 239. File Comparison of a Membered PDS

File Comparison of a Complete PDS

This type of comparison includes the Member Summary Listing section. As the **Function Keys** section of the ***ISPF User Interface*** chapter of the *ISPF User's Guide Volume I* shows, the first information is the same as for a sequential/membered data set comparison, except the totals and hash sums are separated according to member name. Additional totals show how many members were:

- Processed and, of those, how many had changes
- Paired
- Not paired.

The names of the paired and non-paired members are listed at the bottom.

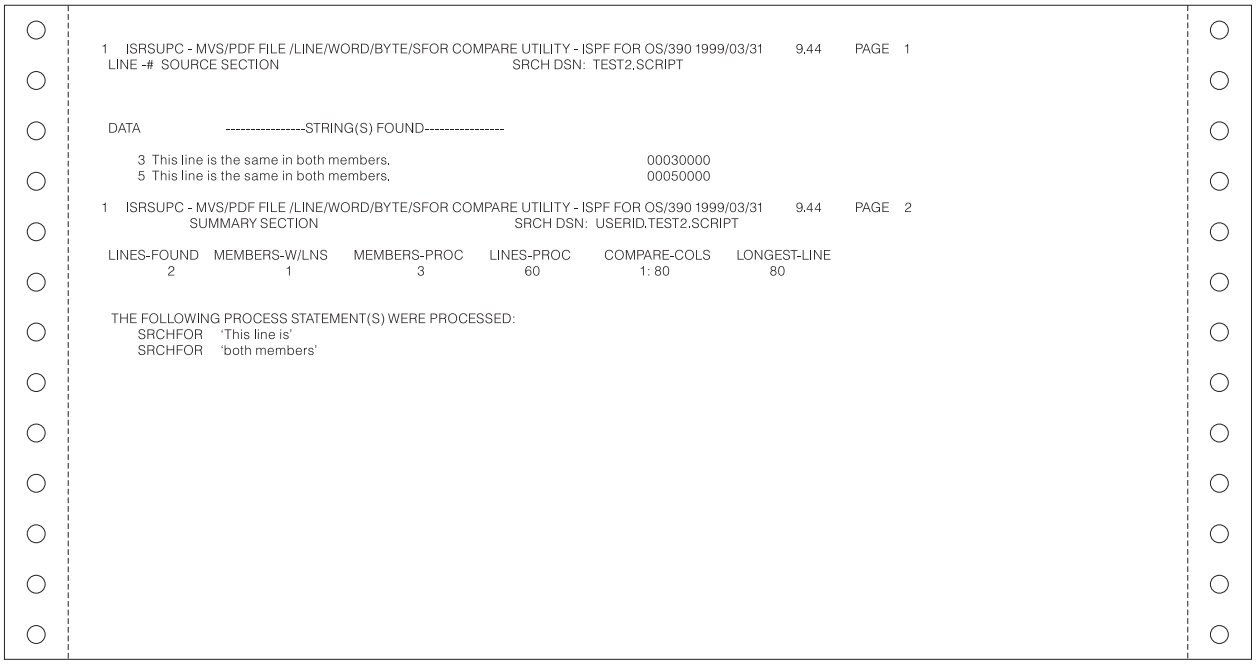


```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   1
 NEW:  USERID . TEST2 . SCRIPT                                    OLD:  USERID . TEST1 . SCRIPT

                         MEMBER SUMMARY LISTING (FILE COMPARE)

DIFF   SAME        MEMBER-NAME       N-BYTES      O-BYTES      N-LINES      O-LINES      N-HASH-SUM      O-HASH-SUM

* *                DATA                  400          400            5            5        8972446D        577EEEFA
                   -------------------  -------------  -------------  -------------  -------------  -------------------  -------------------
                   MEMBER TOTALS         400          400            5            5

              2
              1    TOTAL MEMBER(S) PROCESSED AS A PDS
              2    TOTAL MEMBER(S) PROCESSED HAD CHANGES
              1    TOTAL MEMBER(S) PROCESSED HAD NO CHANGES
              5    TOTAL NEW FILE MEMBER(S) NOT PAIRED
              4    TOTAL OLD FILE MEMBER(S) NOT PAIRED

1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   2
 NEW:  USERID . TEST2 . SCRIPT                                    OLD:  USERID . TEST1 . SCRIPT

                         MEMBER SUMMARY LISTING (FILE COMPARE)

              NON-PAIRED NEW FILE MEMBERS      |      NON-PAIRED OLD FILE MEMBERS

                     ABENEW                    |                ABEOLD
                    WORDSNEW                   |               WORDSOLD
PROCESS OPTIONS USED:  APNDLST
```

Figure 240. File Comparison of a Complete PDS

Search-For Listings

You can also produce listings by using the Search-For utility (option 3.14) and the Extended Search-For utility (option 3.13.S). A sample listing is shown in Figure 241.



```
1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   1
 LINE -#  SOURCE SECTION                                    SRCH DSN:  TEST2.SCRIPT


 DATA              ----------------STRING(S) FOUND----------------

      3  This line is the same in both members.                                  00030000
      5  This line is the same in both members.                                  00050000

1    ISRSUPC - MVS/PDF FILE /LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR OS/390 1999/03/31      9.44      PAGE   2
              SUMMARY SECTION                                    SRCH DSN:  USERID.TEST2.SCRIPT

 LINES-FOUND   MEMBERS-W/LNS    MEMBERS-PROC    LINES-PROC     COMPARE-COLS    LONGEST-LINE
          2              1               3            60             1: 80              80


 THE FOLLOWING PROCESS STATEMENT(S) WERE PROCESSED:
      SRCHFOR    'This line is'
      SRCHFOR    'both members'
```

Figure 241. Search-For Listing

SuperC Listings

This listing was produced by searching all the members of a PDS named USERID.TEST.SCRIPT and by using the **ASIS** fields on the Extended Search-For Utility panel, as follows:

```
ASIS . . . . 'This line is'
ASIS . . . . 'both members' c
```

PAGE 1 of the listing shows that both strings were found in lines 3 and 5 of member DATA. However, instead of just showing the strings that were being searched for, the listing shows each line in its entirety.

PAGE 2 shows the following information:

- Two lines were found.
- One member of the PDS had lines that contained the search string.
- Three members of the PDS were searched and 60 of the lines those members contained were processed.
- In each member, columns 1 to 80 were searched.
- The longest line in any member was 80 bytes.

No process options were specified on the Extended Search-For Utility panel. However, the bottom of PAGE 2 shows that the SuperC program automatically used the SRCHFOR process option because a search was requested. The SRCHFORC process option also was used because the C (continuation) keyword was specified at the end of the second **ASIS** field.

Update Data Set Control Output Examples

This section provides examples of the process options that are used to create update data sets. You cannot enter two different process options that begin with UPD. These options are compare options only, for use with the SuperCE utility (option 3.13).

Each description except APNUPD is accompanied by at least one sample update data set. All the samples were created by comparing member DATA, a PDS member common to both USERID.TEST1.SCRIPT and USERID.TEST2.SCRIPT. Figure 231 on page 468 shows the contents of this member in both PDSs.

Notes:

1. An update compare using the process options UPDCMS8 or UPDMVS8, that result in no differences found, creates an empty update output data set.
2. All “don’t process” options, and DPLINE or CMPLINE process statements are invalid when used with the process options UPDCMS8, UPDMVS8, UPDSEQ0, UPDLDEL, and UPDPDEL. The “don’t process” options are cancelled with an error notification.

APNDUPD—Append Update Data Set

This process option appends the incremental results of the current compare to an existing update report. It allows you to collect multiple update results under one data set name. However, the width of the update data set being appended must be the same as the width of the original listing. Therefore, update options (UPDxxxx) that would change the width cannot be used with APNDUPD unless the original listing was produced by the same options.

The APNDUPD process option is available with the Line, Word, and Byte compare types.

UPDCMS8—Update CMS Sequenced 8

This process option produces a data set that contains both control statements and new data set source lines using sequence numbers from old data set columns 73-80. It is available with the Line compare type only.

All UPDCMS8 control statements are identified by the characters "./" in columns 1 and 2 of the 80-byte record, followed by one or more blanks and additional blank-delimited fields. The control statements are sequence (S), insert (I), delete (D), replace (R), and comment (*).

Data sets created with the UPDCMS8 process option can be used as input to the CMS UPDATE command, as described in *VM/SP CMS Command Reference* and *VM/SP CMS Macros and Functions Reference* Figure 242 shows an example of an UPDCMS8 update data set.

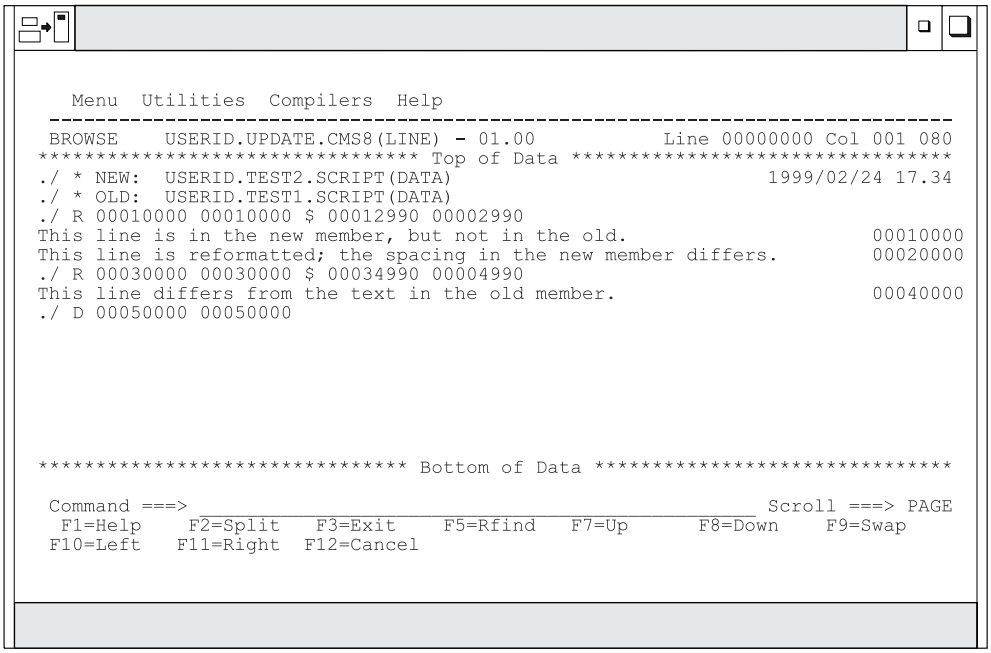


Figure 242. UPDCMS8 Update Data Set

The record attributes for both input data sets must be F 80. They must also contain sequence numbers.

UPDCNTL—Update Control

This process option produces a control data set that relates matches, insertions, deletions, and reformats to:

- The relative line numbers of the old and new data sets (Line compare)
- The relative word position of the old data set (Word compare)
- The relative byte offset (Byte compare).

No source or data from either input data set is included. The following panels show the format used with each of these compare types.

UPDCNTL Data Set Using Line Compare

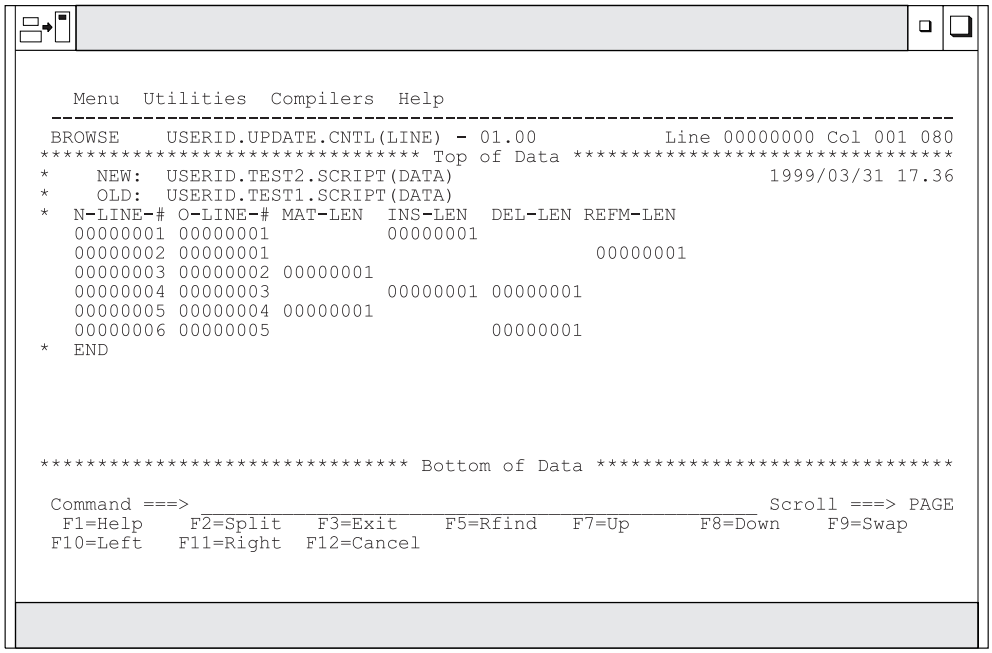


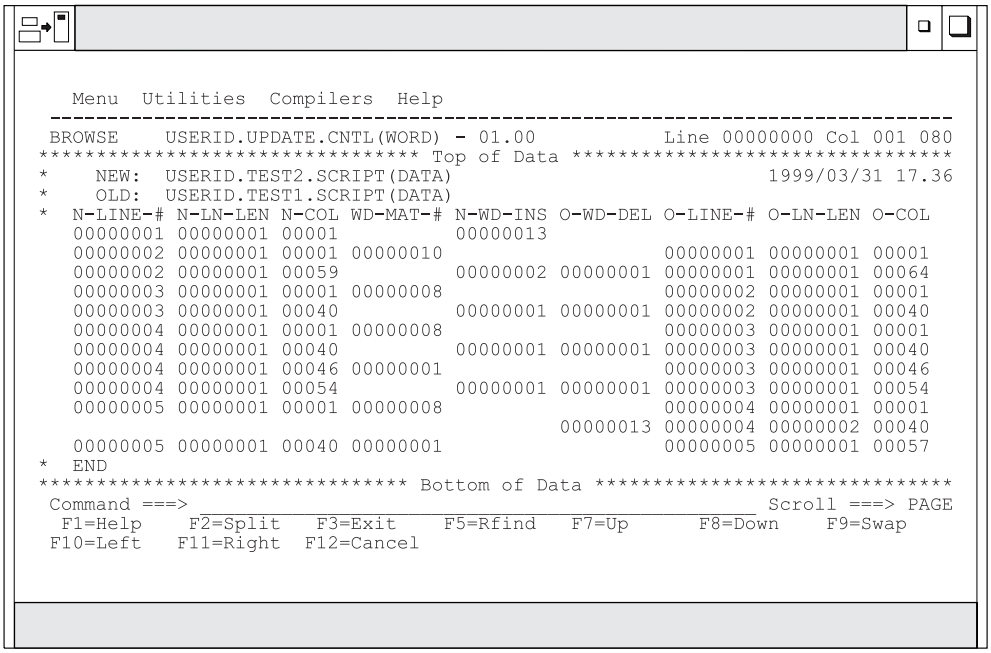
Figure 243. UPDCNTL Data Set Using Line Compare

The top of Figure 243 shows the names of the new and old input data sets, along with the date and time the update data set was created. Table 29 shows the column numbers used to display the update information:

Table 29. UPDCNTL Format Using Line Compare

Column Numbers	Data Item
4–11	New line number
13–20	Old line number
22–29	Match length
31–38	Insert length
40–47	Delete length
49–56	Reformat length

UPDCNTL Data Set Using Word Compare



```
  Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    USERID.UPDATE.CNTL(WORD) - 01.00          Line 00000000 Col 001 080
******************************** Top of Data ********************************
*    NEW:  USERID.TEST2.SCRIPT(DATA)                          1999/03/31 17.36
*    OLD:  USERID.TEST1.SCRIPT(DATA)
*  N-LINE-# N-LN-LEN N-COL WD-MAT-# N-WD-INS O-WD-DEL O-LINE-# O-LN-LEN O-COL
   00000001 00000001 00001           00000013
   00000002 00000001 00001 00000010                   00000001 00000001 00001
   00000002 00000001 00059           00000002 00000001 00000001 00000001 00064
   00000003 00000001 00001 00000008                   00000002 00000001 00001
   00000003 00000001 00040           00000001 00000001 00000002 00000001 00040
   00000004 00000001 00001 00000008                   00000003 00000001 00001
   00000004 00000001 00040           00000001 00000001 00000003 00000001 00040
   00000004 00000001 00046 00000001                   00000003 00000001 00046
   00000004 00000001 00054           00000001 00000001 00000003 00000001 00054
   00000005 00000001 00001 00000008                   00000004 00000001 00001
                                               00000013 00000004 00000002 00040
   00000005 00000001 00040 00000001                   00000005 00000001 00057
*  END
******************************** Bottom of Data ********************************
 Command ===> _____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
```

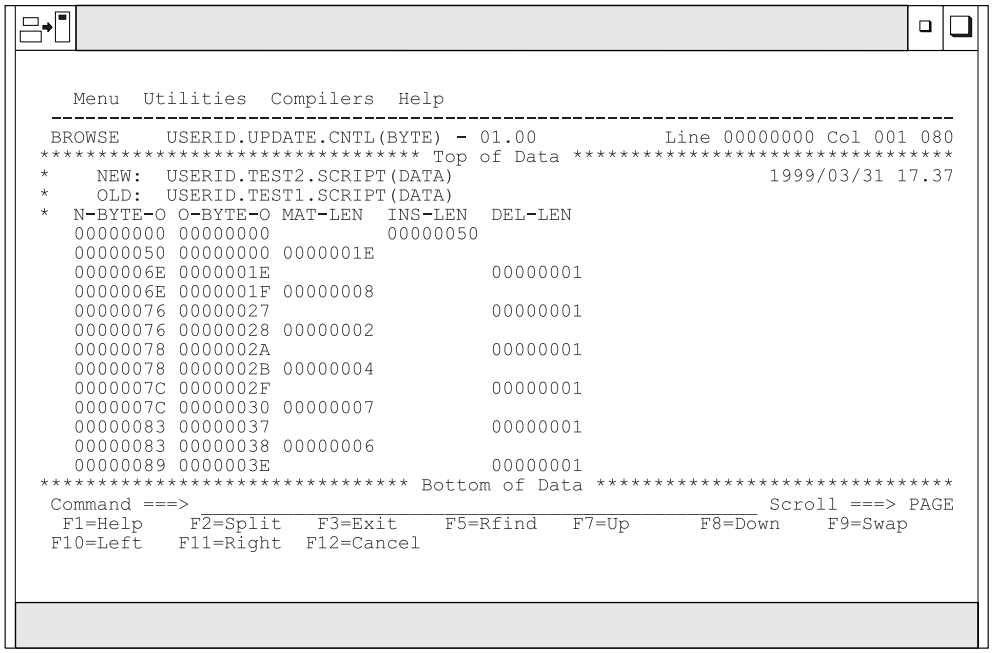
Figure 244. UPDCNTL Listing Using Word Compare

The top of Figure 244 shows the names of the new and old input data sets, along with the date and time the update data set was created. Table 30 shows the column numbers used to display the update information:

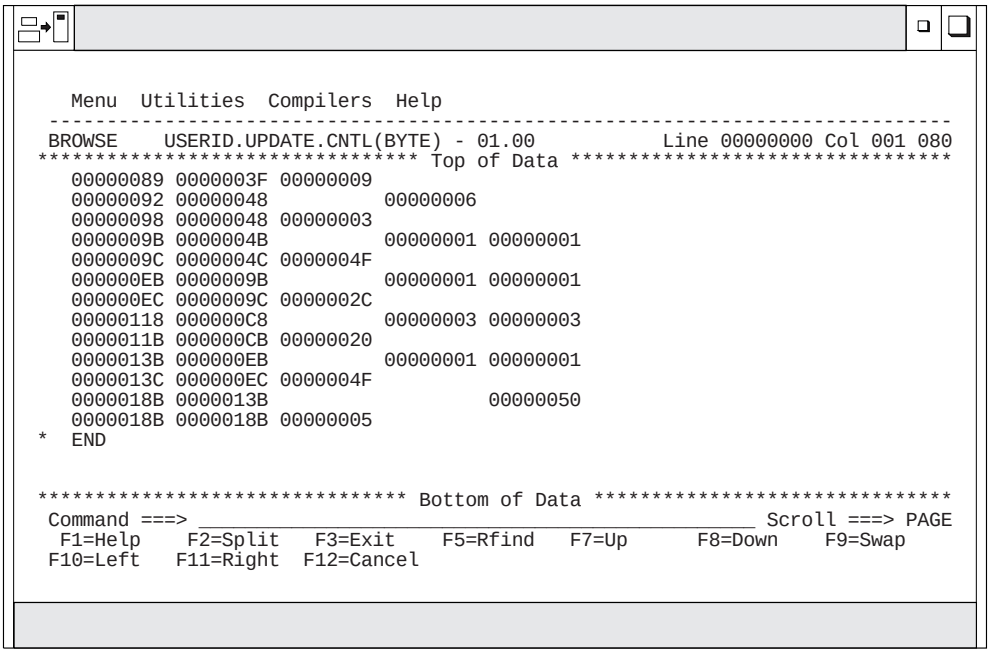
Table 30. UPDCNTL Format Using Word Compare

Column Numbers	Data Item
4–11	Beginning new line number
13–20	Number of lines
22–26	New column number (beginning of word)
28–35	Number of matching words
37–44	Number of new inserted words
46–53	Number of old deleted words
55–62	Beginning old line number
64–71	Number of old lines
73–77	Old column number

UPDCNTL Data Set Using Byte Compare



```
   Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    USERID.UPDATE.CNTL(BYTE) - 01.00          Line 00000000 Col 001 080
******************************** Top of Data ********************************
*    NEW:  USERID.TEST2.SCRIPT(DATA)                          1999/03/31 17.37
*    OLD:  USERID.TEST1.SCRIPT(DATA)
*  N-BYTE-O O-BYTE-O MAT-LEN  INS-LEN  DEL-LEN
   00000000 00000000          00000050
   00000050 00000000 0000001E
   0000006E 0000001E                    00000001
   0000006E 0000001F 00000008
   00000076 00000027                    00000001
   00000076 00000028 00000002
   00000078 0000002A                    00000001
   00000078 0000002B 00000004
   0000007C 0000002F                    00000001
   0000007C 00000030 00000007
   00000083 00000037                    00000001
   00000083 00000038 00000006
   00000089 0000003E                    00000001
******************************* Bottom of Data ********************************
 Command ===> _____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
```



```
   Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    USERID.UPDATE.CNTL(BYTE) - 01.00          Line 00000000 Col 001 080
******************************** Top of Data ********************************
   00000089 0000003F 00000009
   00000092 00000048          00000006
   00000098 00000048 00000003
   0000009B 0000004B          00000001 00000001
   0000009C 0000004C 0000004F
   000000EB 0000009B          00000001 00000001
   000000EC 0000009C 0000002C
   00000118 000000C8          00000003 00000003
   0000011B 000000CB 00000020
   0000013B 000000EB          00000001 00000001
   0000013C 000000EC 0000004F
   0000018B 0000013B                   00000050
   0000018B 0000018B 00000005
*  END


******************************* Bottom of Data ********************************
 Command ===> _____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
```

Figure 245. UPDCNTL Listing Using Byte Compare

The top of the first panel in Figure 245 shows the names of the new and old input data sets, along with the date and time the update data set was created. The second panel shows the result of scrolling down to see the remainder of the data set.

Table 31 on page 485 shows the column numbers used to display the update information:

Table 31. UPDCNTL Format Using Byte Compare

Column Numbers	Data Item
4–11	New byte offset
13–20	Old byte offset
22–29	Number of matching bytes
31–38	Number of inserted bytes
40–47	Number of deleted bytes

UPDMVS8—Update MVS Sequenced 8

This process option produces a data set that contains both control statements and new data set source lines using sequence numbers from old data set columns 73-80. This process option is available for the Line compare type only.

The format of the generated data may be suitable as input to the IEBUPDTE utility. Refer to *OS/VS2 MVS Utilities* for information about the contents of this data set. Figure 246 shows an example of an UPDMVS8 update data set.

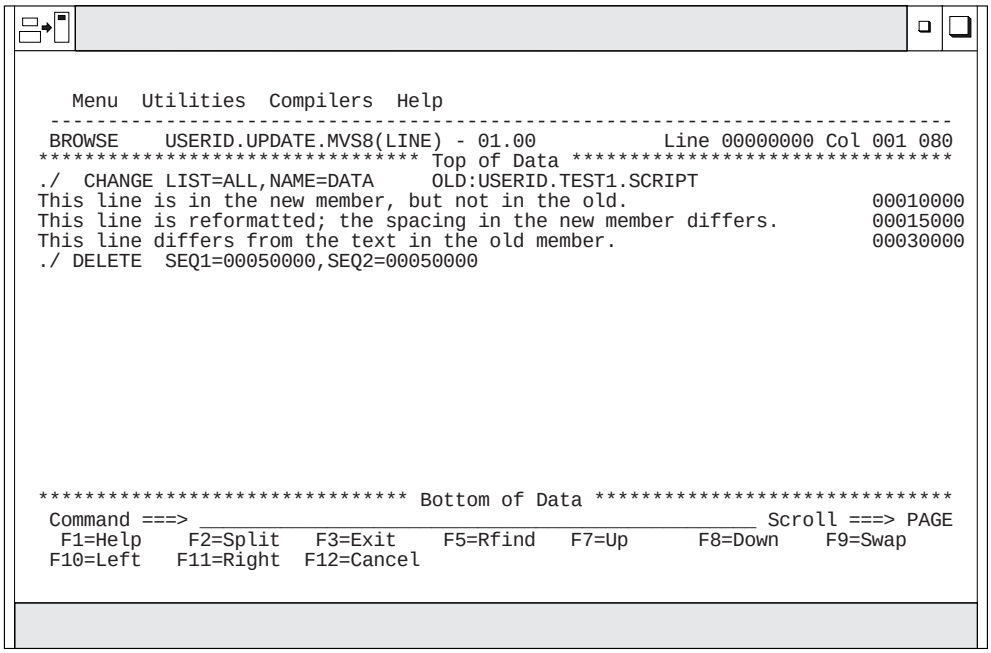


Figure 246. UPDMVS8 Update Data Set Listing

The data sets to be compared must have a record format of F 80. They must also contain sequence numbers.

UPDLDEL—Update Long Source and Delta Data Set

This process option produces a data set that contains both control statements, matching new data set source lines, inserted new data set source lines, and deleted old data set source lines. This process option is available for the Line compare type only.

The format of the generated data may be suitable for direct editing. Figure 247 on page 486 shows an example of an UPDLDEL update data set.

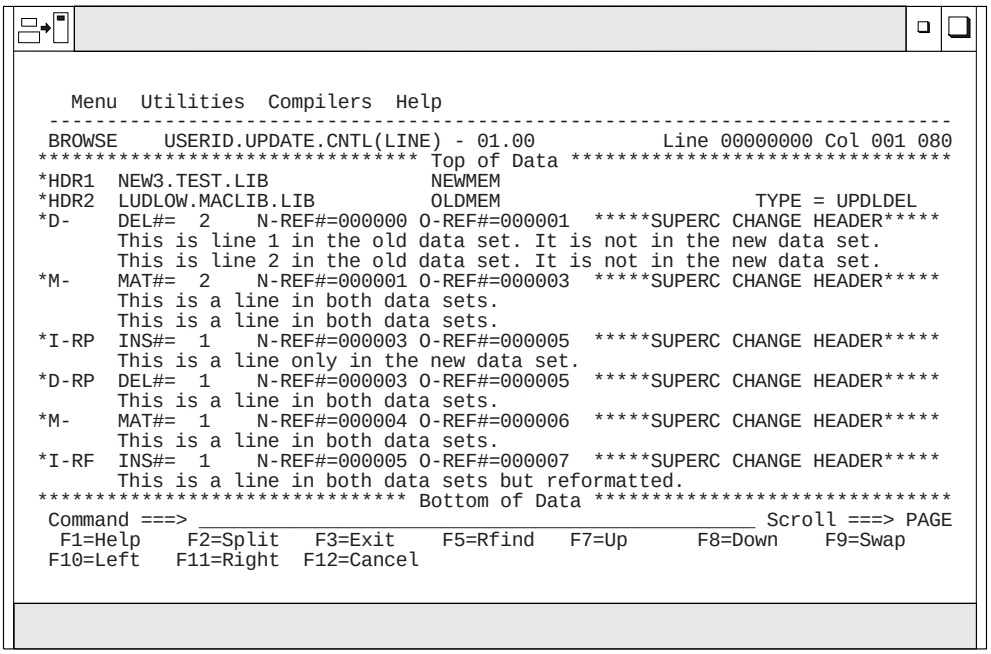
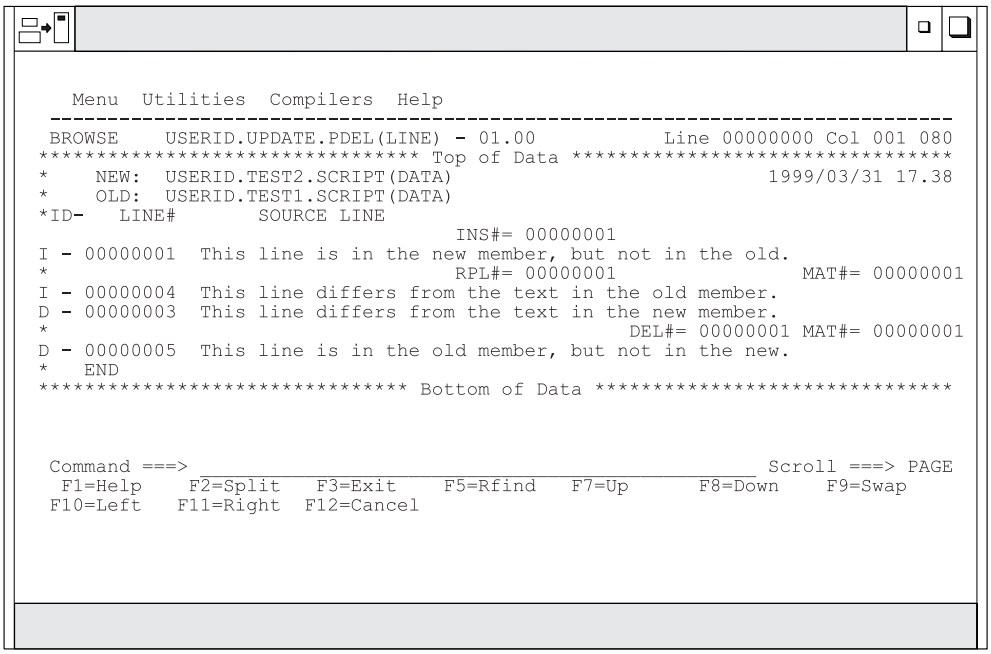


Figure 247. UPDLDEL Update Control Data Set

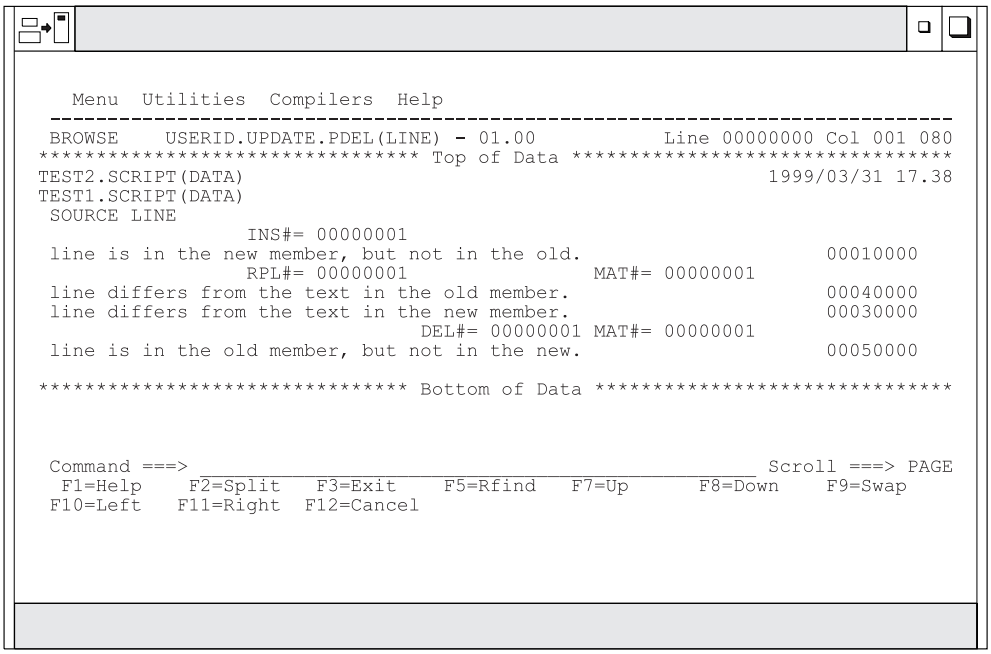
UPDPDEL—Prefixed Delta Lines

This process option produces a data set that contains header records and complete delta lines from the input source data sets, up to a maximum of 32K columns in each output line. It is available for the Line compare type only.

The data set produced is a variable length data set that reflects the input source data set's characteristics. Prefix codes, such as `I` for insert, and the line number precede lines from the source data sets. Abbreviations show the total number of consecutive lines flagged as changed, such as `INS#=` for the number of consecutive inserted lines. The number of replaced lines (`RPL#=`) always refers to consecutive pairs of inserted and deleted lines. Figure 248 on page 487 shows an example of an UPDPDEL update data set. The first panel shows only the first 80 columns; the second panel shows the result of scrolling right to see the remainder of the member.



```
  Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    USERID.UPDATE.PDEL(LINE) - 01.00          Line 00000000 Col 001 080
******************************** Top of Data ********************************
*    NEW:  USERID.TEST2.SCRIPT(DATA)                          1999/03/31 17.38
*    OLD:  USERID.TEST1.SCRIPT(DATA)
*ID-   LINE#       SOURCE LINE
                                  INS#= 00000001
I - 00000001  This line is in the new member, but not in the old.
*                                 RPL#= 00000001                MAT#= 00000001
I - 00000004  This line differs from the text in the old member.
D - 00000003  This line differs from the text in the new member.
*                                                DEL#= 00000001 MAT#= 00000001
D - 00000005  This line is in the old member, but not in the new.
*   END
******************************** Bottom of Data ********************************


 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
```



```
  Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    USERID.UPDATE.PDEL(LINE) - 01.00          Line 00000000 Col 001 080
******************************** Top of Data ********************************
TEST2.SCRIPT(DATA)                                                1999/03/31 17.38
TEST1.SCRIPT(DATA)
 SOURCE LINE
                 INS#= 00000001
 line is in the new member, but not in the old.                        00010000
                 RPL#= 00000001              MAT#= 00000001
 line differs from the text in the old member.                         00040000
 line differs from the text in the new member.                         00030000
                               DEL#= 00000001 MAT#= 00000001
 line is in the old member, but not in the new.                        00050000

******************************** Bottom of Data ********************************


 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
```

Figure 248. UPDPDEL Update Data Set Listing

UPDREV—Update Revision

This process option produces an update file containing a copy of the *new* source text with revision tags delimiting the changed text lines.

The UPDREV process option is available for LINE and WORD compare types.

UPDREV supports two different types of revision tags, one for SCRIPT/VS data sets and one for BookMaster data sets. (Use the REVREF process statement to specify which type of revision tag you want—see "REVREF—Revision Code Reference" on page 433).

Figure 249 shows a SuperC UPDREV data set with SCRIPT/VS revision tags (.rc on/off).

```
.rc 1 ¦
.rc 1 on
This line is reformatted; the spacing in the "new" file differs.
.rc 1 off
This line is the same in both files.
.rc 1 on
This line differs from the text in the "old" file.
.rc 1 off
This line is the same in both files.
.rc 1 on
This line is in the "new" file, but not in the "old".
.rc 1 off
```

Figure 249. Example of a UPDREV Update File for SCRIPT/VS Documents

When the UPDREV update file in Figure 249 is subsequently processed by SCRIPT/VS, the final scripted output will have "¦" revision characters in the left margin of the output document identifying the changed lines (those between the SCRIPT/VS revision tags `.rc 1 on` and `.rc 1 off`).

Note: The revision character ("¦" in the example in Figure 249) can be specified either by using a REVREF process statement (see "REVREF—Revision Code Reference" on page 433) or by having a SCRIPT/VS `.rc.` revision tag as the first record in the *new* data set. Subsequent changes to the source can therefore be separately identified by using different revision characters.

Figure 250 shows a SuperC UPDREV data set with BookMaster revision tags (:rev/:erev).

```
:rev refid=ABC.
This line is reformatted; the spacing in the "new" file differs.
:erev.
:rev refid=ABC.
This line is the same in both files.
:erev.
:rev refid=ABC.
This line differs from the text in the "old" file.
:erev.
:rev refid=ABC.
This line is the same in both files.
:erev.
:rev refid=ABC.
This line is in the "new" file, but not in the "old".
:erev.
```

Figure 250. Example of a UPDREV Update Data Set for BookMaster Documents

When the UPDREV update data set in Figure 250 is subsequently processed by BookMaster, the final formatted output will have the revision character associated with the revision ID `abc` (as specified by a `:revision.` &bookie tag in the *new*

input data set) in the left margin of the output document identifying the changed lines (those between the BookMaster revision tags `:rev` and `:erev`).

Note: The revision ID (`abc` in the example in Figure 250 on page 488) is controlled by the REVREF process statement—see "REVREF—Revision Code Reference" on page 433. Subsequent changes to the source can therefore be separately identified by using different revision IDs (which are associated with unique revision characters).

UPDREV2 - Update Revision (2)

UPDREV2 is identical to UPDREV with the exception that data between the following BookMaster tags are not deleted in the update data set:

```
:cgraphic.
:ecgraphic.
:fig.
:efig.
:lblbox.
:elblbox.
:nt.
:ent.
:screen.
:escreen.
:xmp.
:exmp.
```

UPDSEQ0—Update Sequenced 0

This process option produces a control data set that relates insertions and deletions to the relative line numbers of the old data set. It is available for the Line compare type only. UPDSEQ0 is similar to UPDCMS8, but uses relative line numbers instead of sequence number columns from the old data set.

This update data set is characterized by control statements followed by source lines from the new data set. All UPDSEQ0 control statements are identified by the characters `./` in columns 1 and 2 of the 80-byte record, followed by one or more blanks and additional blank-delimited field s. The control statements are insert (I), delete (D), replace (R), and comment (*). Control statement data does not extend beyond column 50. Figure 251 shows an example of a UPDSEQ0 update data set listing.

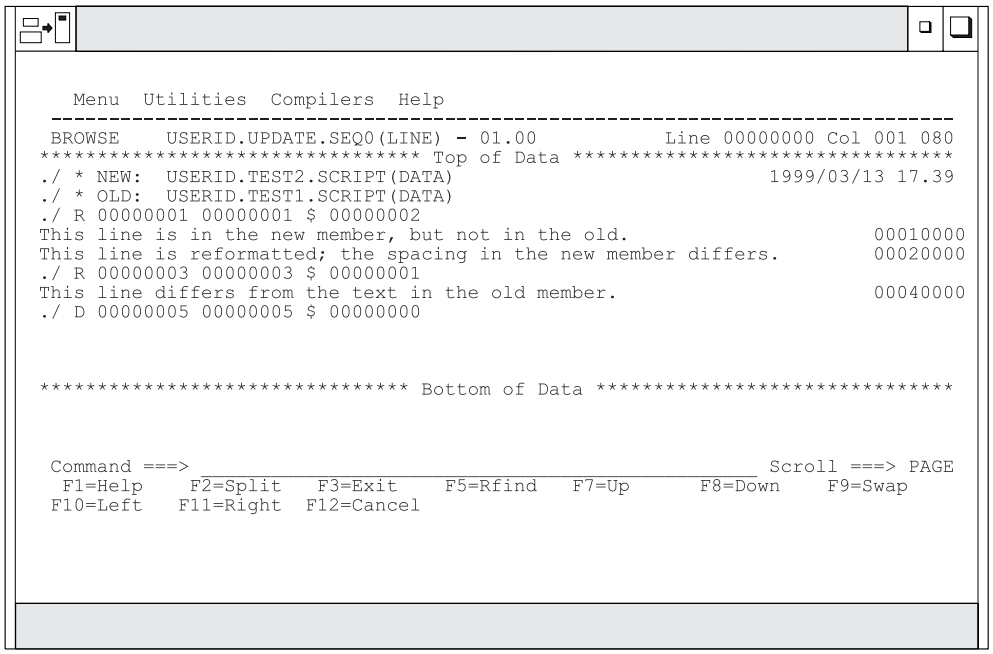


Figure 251. UPDSEQ0 Update Data Set

UPDSUMO—Update Summary Only

This process option produces an update data set of four lines: new data set name, old data set name, column headers, and a summary totals line. It is available for the Line, Word, and Byte compare types.

The summary totals line has a `T` in column 1. The summary statistics are located at fixed offsets in the output line. The data set has a line length of 132 bytes.

UPDSUMO Data Set Using Line Compare

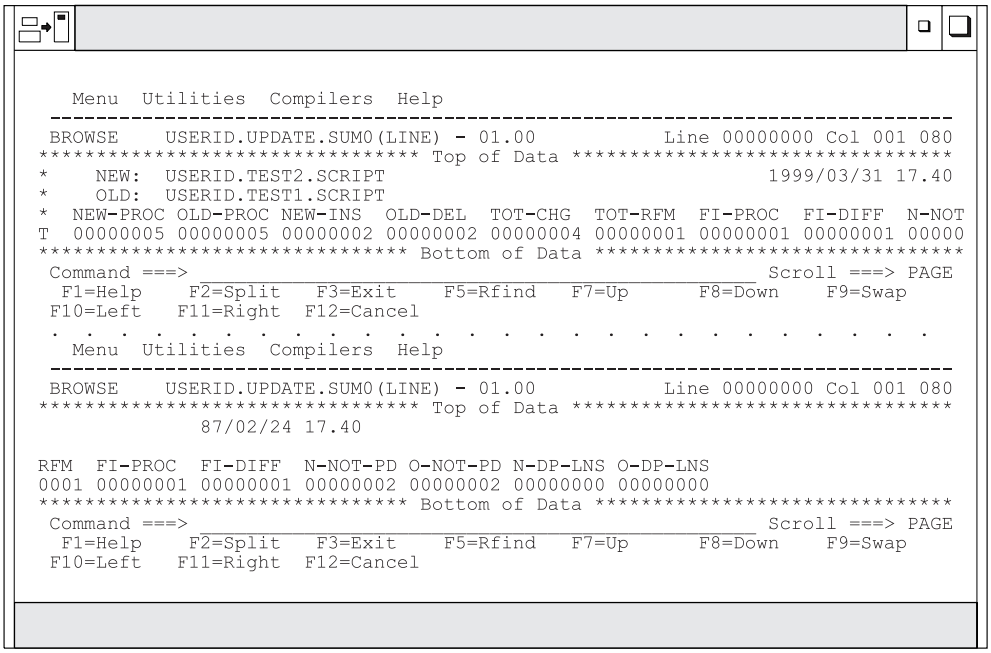


Figure 252. UPDSUMO Data Set Using Line Compare

In Figure 252, the member is shown in split screen mode. The bottom half of the screen shows the result of scrolling right to see the remainder of the member. Table 32 shows the column numbers used to display the update information:

Table 32. UPDSUMO Format Using Line Compare

Column Numbers	Data Item
4–11	Number of new lines processed
13–20	Number of old lines processed
22–29	Number of new line insertions
31–38	Number of old line deletions
40–47	Total number of line changes
49–56	Total number of reformats
58–65	Total number of members processed
67–74	Total number of members different
76–83	Total new members not processed
85–92	Total old members not processed
94–101	Total number of new lines that are not to be processed
103–110	Total number of old lines that are not to be processed

UPDSUMO Data Set Using Word Compare

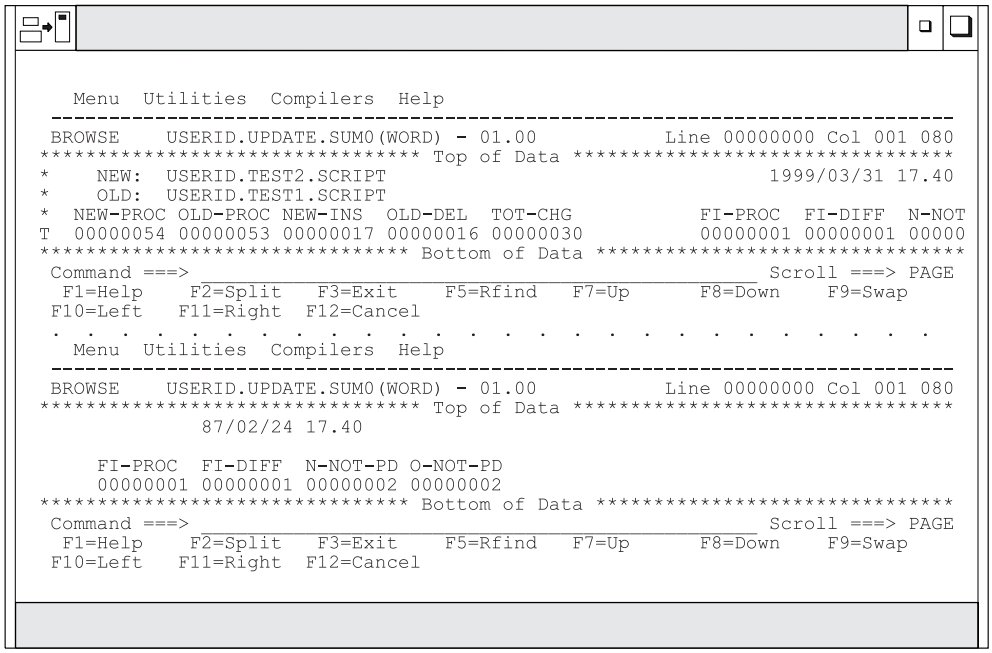


Figure 253. UPDSUMO Data Set Using Word Compare

In Figure 253, the member is shown in split screen mode. The bottom half of the screen shows the result of scrolling right to see the remainder of the member. Table 33 shows the column numbers used to display the update information:

Table 33. UPDSUMO Format Using Word Compare

Column Numbers	Data Item
4–11	Number of new words processed
13–20	Number of old words processed
22–29	Number of new word insertions
31–38	Number of old word deletions
40–47	Total number of word changes
49–56	Blank space. No reformat columns are represented in Word compare.
58–65	Total number of members processed
67–74	Total number of members different
76–83	Total new members not processed
85–92	Total old members not processed

UPDSUMO Data Set Using Byte Compare

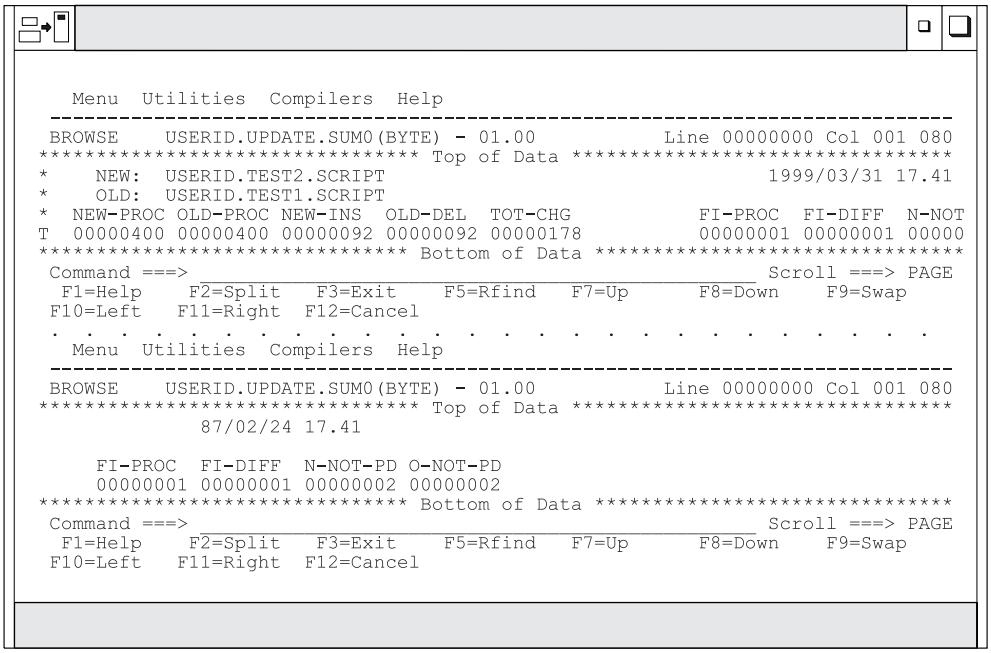


Figure 254. UPDSUMO Data Set Using Byte Compare

In Figure 254, the member is shown in split screen mode. The bottom half of the screen shows the result of scrolling right to see the remainder of the member. Table 34 shows the column numbers used to display the update information:

Table 34. UPDSUMO Format Using Byte Compare

Column Numbers	Data Item
4–11	Number of new bytes processed
13–20	Number of old bytes processed
22–29	Number of new byte insertions
31–38	Number of old byte deletions
40–47	Total number of byte changes
49–56	Blank space. No reformat columns are represented in Byte compare.
58–65	Total number of members processed
67–74	Total number of members different
76–83	Total new members not processed
85–92	Total old members not processed

SuperC Listings

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Interactive System Productivity Facility (ISPF)
User's Guide Volume II
z/OS Version 1 Release 1.0

Publication No. SC34-4823-00

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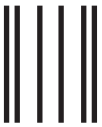

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File Number: S370/4300-39
Program Number: 5694-A01

Printed in the United States of America
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