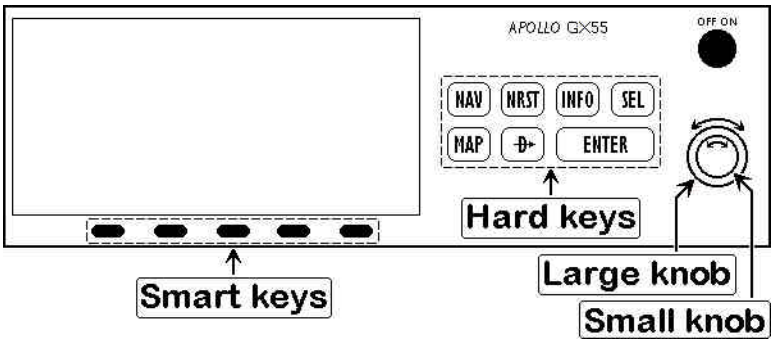
SHORTHAND GUIDE TO APOLLO GX55® GPS FOR MN WING CIVIL AIR PATROL SAR/DR



CAVEATS:

This guide doesn't cover all the features of the Apollo GPS. Use the Apollo manual for detailed information.

Never attempt to navigate using GPS if there are system fault or inadequate satellite coverage messages.

There's more than one way to skin a cat. The methods in this guide aren't the only way to get the job done.

Please bring any errors in this guide to the attention of Major Scott Sinks at 651-774-4075.

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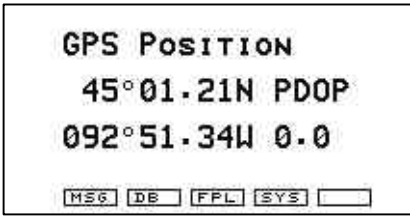
DISPLAY CURRENT POSITION

NAV to navigation screen


until GPS position is displayed

***P**osition **D**ilution **O**f **Precis**ion*
See page 45 of Apollo manual.



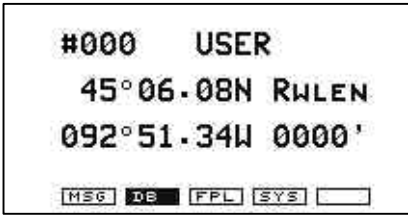
SAVE CURRENT POSITION TO A USER WAYPOINT OR CREATE A USER WAYPOINT*

NAV to navigation screen

DB to database screen


to Create User Waypoint by Lat/Lon screen

ENTER puts the position of the GPS at the moment it 's pushed as the default LAT/LON.



To enter a user waypoint with a specific LAT/LON rather than the current position, use the large and small knobs to move to the displayed LAT/LON numbers and enter individual characters.


to select individual characters at flashing cursor

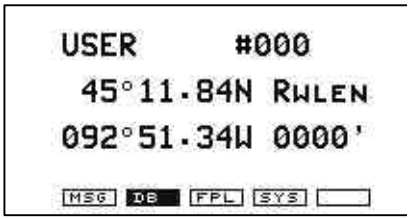

to move flashing cursor to next character position

ENTER to accept and save user waypoint

NAV ***aborts procedure***

**Current position can also be saved from the SAR maps. See MARK A SAR POSITION on page18 of this guide.*

RECALL A USER WAYPOINT



NAV to navigation screen

DB to database screen

to Access Database screen

ENTER selects and displays waypoint selection screen

until USER is displayed

to move flashing cursor to USER character

to select individual characters at flashing cursor

Use the large and small knobs to enter all the characters.

NAV ***aborts procedure***

User waypoint information can also be displayed from the MODIFY USER WAYPOINT screen. See pages 107-108 in the Apollo manual.

User waypoints can be deleted from the DELETE USER WAYPOINT screen. See pages 106-107 in the Apollo manual.

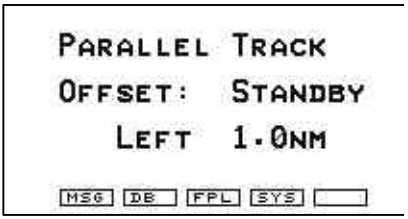
CREATING AND ACTIVATING A FLIGHT PLAN

See pages 20-21 of the Apollo manual for creating and activating a flight plan. If the flight plan incorporates USER waypoints, they must be entered into the database first.

SET PARALLEL TRACK OFFSET

FROM and TO waypoints must be defined in a flight plan to use parallel track offset. This function isn't available for a "direct-to" flight plan or when turns to the next waypoint exceed 120°.

See pages 20-21 of the Apollo manual for creating and activating a flight plan.



NAV to navigation screen

 to Parallel Track setup screen

SEL enables editing parallel track options

 to move to option to modify

 to change options

ENTER to accept changes and return to navigation screen

NAV ***aborts procedure***

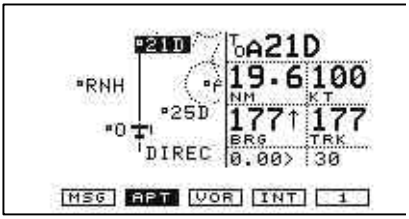
Navigation screen CDI and map screens will present course line information offset to the left or right of the direct course between waypoints.

Orientation for left or right offset is always viewed as FROM to TO waypoints.

CAUTION: Using "direct-to" or editing the flight plan cancels the parallel track offset.

See pages 43-45 of the Apollo manual for Parallel Track details.

MOVING MAP OVERVIEW



MAP to map screens

selects different map screens

sets scale for moving map

1 toggles smart keys to NDB USR SCAN

2 toggles smart keys to APT VOR INT

APT no airports displayed

APT airport locations displayed

APT airport locations and identifiers displayed

VOR no VORs displayed

VOR VOR locations displayed

VOR VOR locations and identifiers displayed

INT no intersections displayed

INT intersection locations displayed

INT intersection locations and identifiers displayed

NDB no NDBs displayed

NDB NDB locations displayed

NDB NDB locations and identifiers displayed

USR no USER waypoints displayed

USR USER waypoint locations displayed

USR USER waypoint locations and identifiers displayed

SCAN enables highlighting/selecting a waypoint on the moving map

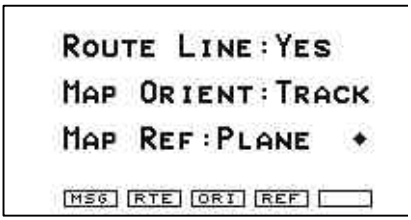
highlights/selects waypoints on moving map

sets “direct-to” flight plan to selected waypoint

MOVING MAP SETUP

MAP to moving map screen

to moving map setup



RTE toggles display of route line to next waypoint on and off

ORI sets orientation of map so track flown, desired track or north point to the top of the display

REF sets the center reference point of the map as either the plane or destination waypoint

MAP returns to map screen

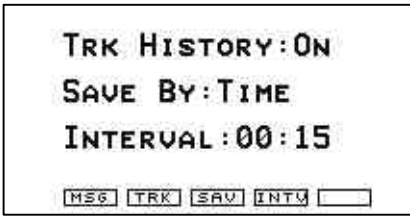
A diamond displayed in the lower right corner of the display indicates turning the small knob can access additional pages.

TRACK HISTORY

MAP to moving map screen

to moving map setup

to Track History



TRK toggles display of track history on and off

SAV toggles track history from time to distance intervals

INTV enables changing the time or distance between dots

changes interval

ENTER accepts interval

TRACK HISTORY STRATEGY

MAP to moving map screen

to moving map setup

to track Strategy screen

STR sets strategy to record history until memory is full or to overwrite previous track information as necessary

CLR clears track history from memory

%USED is the percent of memory used to save the track history.

MAP returns to map screen

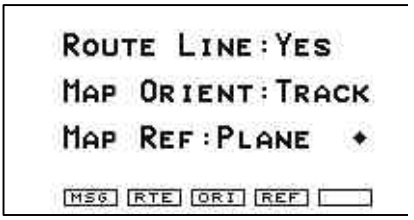
AIRSPACE DISPLAY

There are multiple screens controlling the types of airspaces displayed and the alerts that can be programmed. See pages 72-75 of the Apollo manual for details.

MAP to moving map screen

to moving map setup

to desired airspace setup



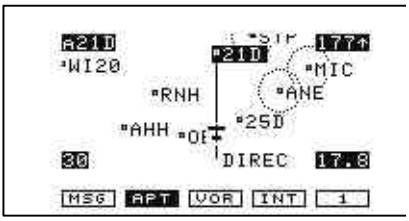
Airspace displays include Airspace Setup, Airspace Buffers, ATC Rings, Class B Airspace, Class C Airspace, MOA Airspace, Training Areas, Unknown Airspace, Alert Areas, Caution Areas, Danger Areas, Restricted Areas, Prohibited Areas and Warning Areas.

MAP returns to map screen

FULL SCREEN MOVING MAP

MAP to moving map screen

to full screen moving map



Next waypoint identifier is in the upper left corner.

Bearing to next waypoint is in upper right corner.

Display scale is in lower left corner.

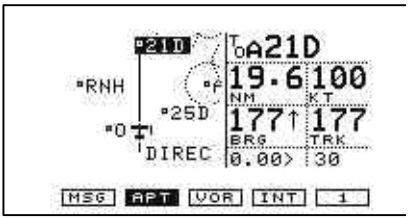
Distance to next waypoint is in lower right corner.

See pages 63-64 of the Apollo manual for detailed information.

PARTIAL SCREEN MOVING MAP

MAP to moving map screen

to partial screen moving map



Moving map is on the left of display with flight information on the right.

Flight information includes the next waypoint identifier on top followed by distance to next waypoint, ground speed, bearing to next waypoint, bearing of current track, distance and direction from desired track and display scale.

See pages 65-66 of the Apollo manual for detailed information.

INITIALIZING SAR FUNCTIONS

The SAR functions of the Apollo GPS aren't enabled when the unit is installed. If you're certain the SAR functions aren't enabled and are comfortable with the GPS and its controls, use the following steps to set up the SAR functions.

1. Press and hold the first and last smart keys while turning unit on.
2. Turn the large knob to the INSTALL OPTIONS page.
3. Press the SELECT button.
4. Turn the large knob to highlight SAR option.
5. Turn small knob to set SAR option to YES.
6. Press the ENTER button.
7. Turn the GPS off.

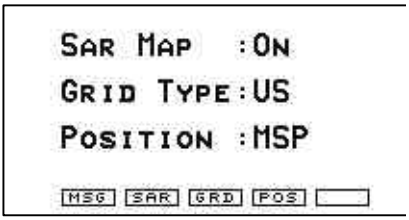
Apollo technical support can talk you through the procedure. Use a cellular or portable phone so you can call from the aircraft. Support is available 0800-1630 Pacific time at 800-525-6726.

SAR MAP SETUP

MAP to moving map screen

to moving map setup

to SAR Map setup screen



SAR toggles SAR map functions On or Off

GRD toggles Grid Type from US to Basic. US grid type is based on aeronautical charts. Basic grids are based on Lat/Lon coordinates.

POS selects aeronautical sectional for US grids or quadrant for Basic grids. When using Basic grids, set quadrant to NW.

See pages 81 of the Apollo manual for a table of sectional aeronautical charts and grids for US grid type. See pages 79-80 and 92-93 of the Apollo manual for details on the basic grid type.

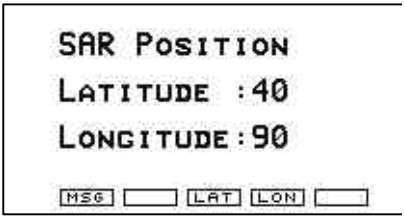
SAR POSITION FOR BASIC GRID TYPE

The SAR position defines the SE corner of a 10° by 10° grid.

The SAR Position page is only available when the Basic grid type is selected on the SAR Map setup page.

MAP to moving map screen

to moving map setup



LAT enables selection of latitude of SE corner of basic grid

changes latitude in increments of 10°

ENTER accepts latitude

LON enables selection of longitude of SE corner of basic grid

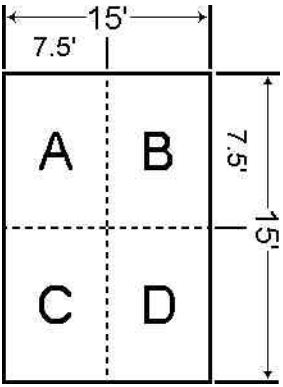
changes latitude in increments of 10°

ENTER accepts longitude

MAP returns to map screen

US GRID TYPE CONVENTIONS

The correct aeronautical sectional must be entered in the SAR Map setup page before using US grid types.



US Grids are 15' by 15' and assigned a specific number. They're subdivided into 7.5' quadrants. See the back page of this guide for a map of US grids in Minnesota.

Corners of the quadrants are identified as 1 through 4 beginning in the NW corner then moving clockwise around the quadrant. (i.e. 1=NW corner, 2=NE corner, 3=SE corner and 4=SW corner)

CREATE A USER WAYPOINT BY US GRID

A user waypoint set to a US Grid coordinate allows including it in a flight plan or flying directly to the corner of a grid or quadrant.

NAV to navigation screen

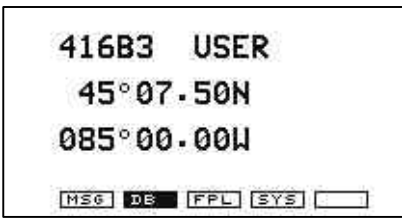
DB display database screens

to Create User Waypoint by US Grid

ENTER to enter US grid identifier

to select individual characters at flashing cursor

to move flashing cursor to next character position



ENTER to accept changes and save waypoint

- continued on next page -

US Grid waypoints have a specific format consisting of the grid number, quadrant letter and corner number.

Examples:

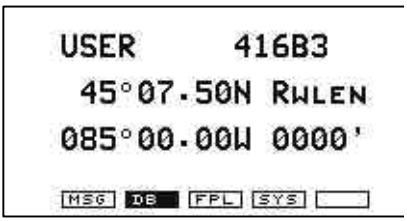
> *To specify the SE corner of quadrant B of MSP grid 416 as a US Grid waypoint, set the position in the SAR Map setup (see SAR MAP SETUP) for the MSP sectional then create a US grid waypoint with the identifier 416B3.*
>
> *A US Grid waypoint identifier of 223C4 designates grid 223, quadrant C, southwest corner for the sectional setup on the SAR Map Setup page.*

The correct aeronautical sectional must be selected in the SAR Map setup page before using US grid user waypoints.

See page 91 of the Apollo manual for details on setting up US grid user waypoints.

FLY DIRECTLY TO A US GRID WAYPOINT

The US Grid waypoint must be in the user database and the correct aeronautical sectional must be selected in the SAR Map setup page before using US grid user waypoints.



to display waypoint screen

to USER type waypoint

to move flashing cursor to next character position

to select individual characters at flashing cursor

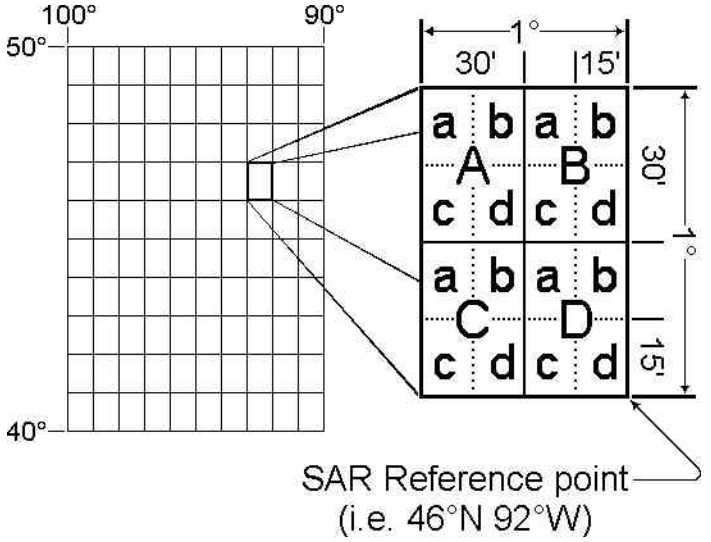
ENTER to activate flight plan and return to navigation screen

NAV ***aborts procedure***

BASIC GRID TYPE CONVENTIONS

Basic grid types are 1° by 1°. They're subdivided into 30' quadrants. The 30' quadrants are subdivided into 15' quadrants.

Basic grids are referred to by the latitude and longitude of the southeast corner of the grid followed by the 30' quadrant letter then the 15' quadrant letter if used.



In this example the arrow points to grid 4692 for the entire grid, 4692D for the entire southeast 30' quadrant and 4692DD for the southeast 15' quadrant.

Corners of the quadrants are identified as 1 through 4 beginning in the northwest corner then moving clockwise around the quadrant. (i.e. 1=NW corner, 2=NE corner, 3=SE corner and 4=SW corner)

See pages 92-94 of the Apollo manual for details on setting up basic grid user waypoints.

CREATE A USER WAYPOINT BY BASIC GRID

A user waypoint set to a BASIC grid coordinate allows including it in a flight plan or flying directly to the corner of a grid or quadrant.

NAV to navigation screen

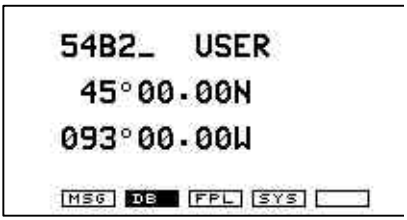
DB to display database screens

to Create User Waypoint by Basic Grid

ENTER to enter Basic grid identifier*****

to select individual characters at flashing cursor

to move flashing cursor to next character position



ENTER to accept changes and save waypoint

Basic Grid waypoints have a specific format consisting of the last digit of latitude degrees, the last digit of longitude degrees, the 30' quadrant letter, 15' quadrant letter and the corner number.

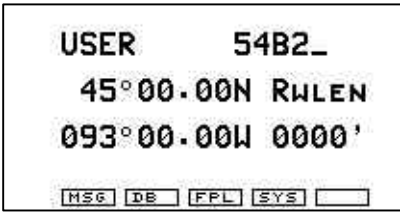
Examples:

> *To create a waypoint at the NE corner of 4692B, set latitude 40°N and longitude 90°W on the SAR Position page then create a Basic grid user waypoint with an identifier of 62B2.*
>
> *To create a waypoint at the SE corner of 4593AD, set latitude 40°N and longitude 90°W on the SAR Position page then create a Basic grid user waypoint with an identifier of 53AD3.*

**** The Apollo GX Series Simulator Version 1.0 incorrectly sets the Basic grid user waypoint coordinates. The coordinates shown here are from that simulator and incorrect.***

FLY DIRECTLY TO A BASIC GRID WAYPOINT

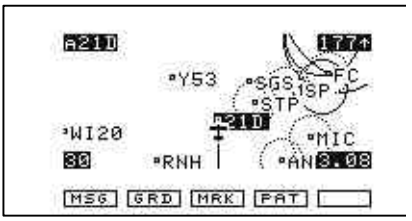
The Basic Grid waypoint must be in the user database and the correct latitude and longitude must be in the SAR Position page before using Basic grid waypoints.



- to display waypoint screen
- to USER waypoint*****
- to move flashing cursor to next character position
- to select individual characters at flashing cursor
- ENTER to activate flight plan and return to navigation screen
- NAV ***aborts procedure***

****The Apollo GX Series Simulator Version 1.0 incorrectly sets the Basic grid user waypoint coordinates. The coordinates shown here are from that simulator and incorrect.***

SAR MOVING MAP



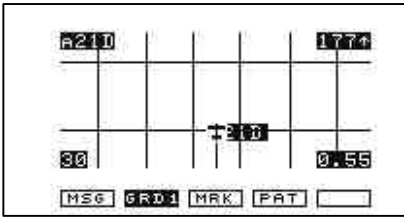
MAP to moving map screen

to SAR map

MRK stores current position in a SAR user waypoint

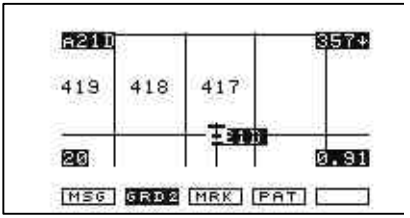
PAT enters screen to setup a parallel, creeping line or expanding square search pattern

GRD no grid information displayed



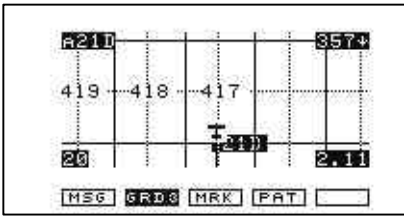
GRD1 displays grid lines for US grid or 1° lines for Basic grid type

Grid information isn't displayed until the GPS is in the area specified in theSAR Map setup. See page 10.

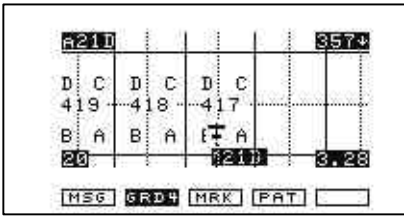


GRD2 displays grid lines and grid numbers for US grid or 30' lines for Basic grid type

Grid information isn't displayed if the scale is set too large.



GRD3 displays grid lines, numbers and quadrant lines for US grid or 15' lines for Basic grid type



GRD4 displays grid lines, numbers, quadrant lines and quadrant letters for US grid type.

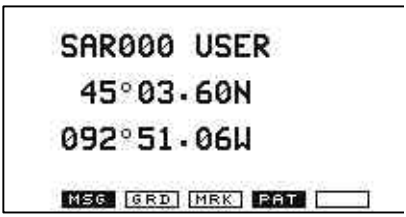
See pages 77-78 of the Apollo manual for details.

MARK A SAR POSITION

The current position of the aircraft can be quickly saved to a user waypoint by pressing the MARK smart key available on the SAR Map page. An identifier name is automatically assigned and incremented to prevent overwriting previously saved positions.

MAP to moving map screen

to SAR map



MRK brings up user waypoint screen and puts the position of the GPS at the moment the smart key was pressed as the default LAT/LON and a default user waypoint identifier

ENTER to save waypoint and return to SAR map

When the Mark function is first used, the default name is SAR000 and is incremented with every use (i.e. SAR001, SAR002 …). The large and small knobs can change the name and LAT/LON.

to select individual characters at flashing cursor

to move flashing cursor to next character position

ENTER to accept changes, save waypoint and return to SAR map

The display of SAR waypoints is controlled by the USR *smart key located on the moving map screens.*

Although SAR waypoints can be recalled, edited and deleted like any other waypoint, they can't be overwritten.

EXPANDING SQUARE SEARCH

MAP to map screens

to SAR map screen

PAT to Search page setup

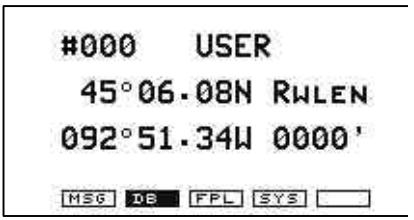
to Expanding Square

ENTER to expanding square setup

SEL ENTER to select waypoint

Use small and large knobs to select type and name of waypoint.

ENTER to accept waypoint and return to expanding square setup



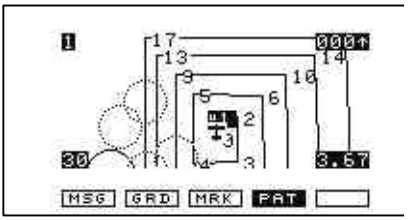
to set track spacing (0.2 – 9.9 nm)

to accept track spacing and move flashing cursor to Direction and enter heading of first track (0 - 359°)

to select individual characters at flashing cursor

to move flashing cursor to next character position

ENTER ENTER to accept changes and return to SAR map



PAT **aborts search pattern**

PARALLEL LINE SEARCH

The correct grid type, sectional (for US Grid) or SAR Position (for BASIC Grid) must be setup and the grid user waypoint entered in advance.

MAP to map screens

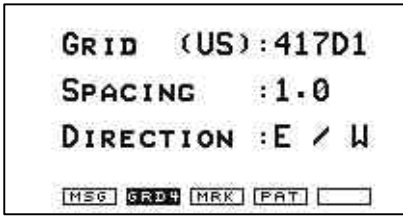
to SAR map screen

PAT to Search page setup

to Parallel Line

ENTER to Grid setup

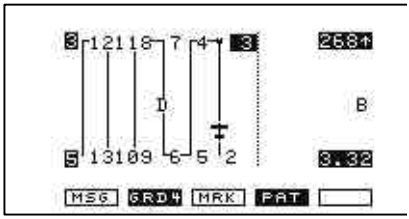
SEL to enter grid waypoint, track spacing (0.2 – 9.9 nm) and direction of tracks (E/W or N/S)



to select individual characters or set values at flashing cursor

to move flashing cursor to next character or data position

ENTER ENTER to accept changes and return to SAR map



PAT **aborts search pattern**

CREEPING LINE SEARCH

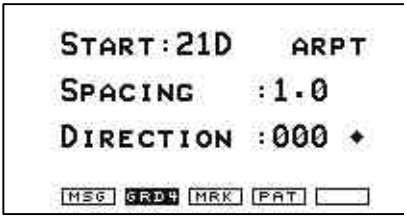
MAP to map screens

to SAR map screen

PAT to Search page setup

to Creeping Line

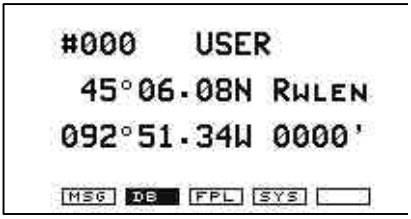
ENTER to creeping line setup



SEL ENTER to select waypoint

Use small and large knobs to select type and name of waypoint.

ENTER to accept waypoint and move to Spacing



to set track spacing (0.2 - 9.9 nm)

to accept track spacing and move to Direction

*Use small and large knobs to set Direction of route creeping line search is to follow (0 - 359°).**

ENTER **to accept direction**

- continued on next page -

The Apollo GX Series Simulator Version 1.0 incorrectly uses the Direction heading as the heading for the first track.

to Leg Length and Start turn*

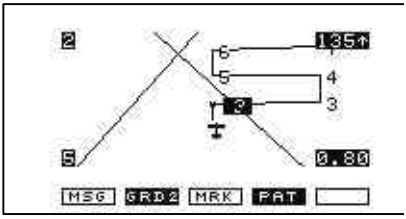
SEL to enable setting Leg Length

to set leg length (1.0 - 9.9 nm)

to move to the Start side of the route to search

to specify starting on the left or right side of the route to search

ENTER ENTER to accept changes and return to SAR map



PAT **aborts search pattern**

The Apollo GX Series Simulator Version 1.0 Leg Length page differs from the Apollo GX55 units.

NOTES:

MINNESOTA US GRIDS