Apollo GX 50/55
SAR Functions

Bob Wolin, Lt. Col. CAP
Sugar Land Composite Squadron

This presentation is based on materials from **Nighthawk Composite Squadron** - TX-413
Denton, Texas

Introduction

- Introduce the basics of the GX50/55 GPS in CAP SAR operations
- This presentation is not designed to replace hands on instruction and practice or the owners manual
- Always use the Quick Reference Guide for assistance until you are proficient using the SAR functions on the GPS

Introduction

- Simulator is available for download from the Garmin website http://www8.garmin.com/include/gxsimulator/SimulatorPopupGX.html

- Be sure that you have the SAR function checked under the options menu before you turn the simulator on

The GX 50

Moving map

Hard keys

On / Off

Soft smart keys

Data card

Large outer knob

Small inner knob

The GX 50 Terminology

“Chapters” selected by the buttons

“Pages” viewed by scrolling with the large and small knobs

Activating SAR Functionality

- Press the MAP hard key to reach the map functions
- Turn the large outer knob counter-clockwise to go to Map Setup page
- Turn the large outer and small inner knobs to set the following parameters:
  - Set route = Yes
  - Set orientation = Track
  - Set Reference = Plane

Activating SAR Functionality

- Turn the smaller inner knob counter-clockwise to go to Map Setup page
- Press SEL hardkey to activate the flashing cursor
- Turn the large outer and small inner knobs to set the following parameters:
  - SAR Map = On
  - Grid Type
    - **US** for 7.5 min grid
    - **Basic** for 15 min grid
  - Position –
    - Generally **HOU** (in this area) for 7.5 min grid;
    - **NW** for entire US with 15 min grid
- Press Enter

For 15 Minute Grids

- Turn smaller inner knob one click clockwise to get SAR Position set up page (for 15 min Basic grid only)
- Press SEL (for 15 min Basic grid only)
- Use larger outer knob and smaller inner knob to set following parameters (for 15 min Basic grid only):
  - Latitude: ”20” Covers most all of Tx; 20 deg to 29 deg Latitude
  - Longitude: “80” Covers most all of Tx; 80 deg to 89 deg Longitude
- Press ENTER (for 15 min Basic grid only)

SAR Setup

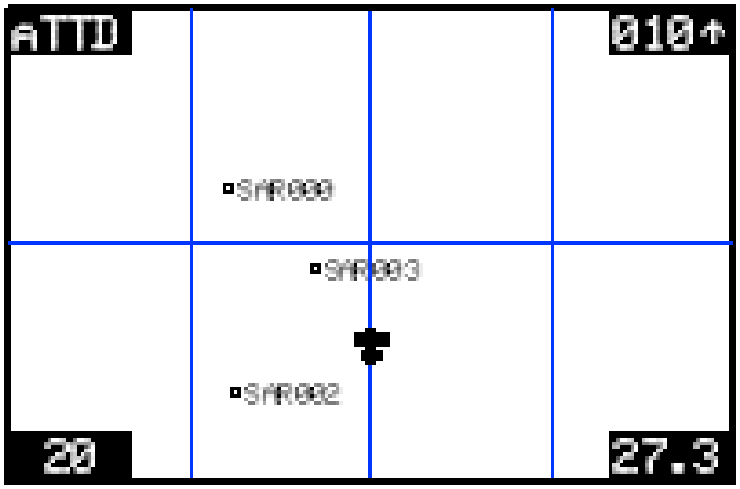
- For Parallel Searches using the Cell or LAT/LONG grid system –
  - set GRID TYPE to BASIC
  - set POSITION to NW which covers all of the US

SAR Setup

- For Parallel Searches using the CAP Grid System set GRID TYPE to US and POSITION to:
  - GSW for the DFW area
  - SAT for San Antonio area
  - ELP for El Paso area
  - **HOU for Houston area**

SAR Setup – Grid Options

GRID1

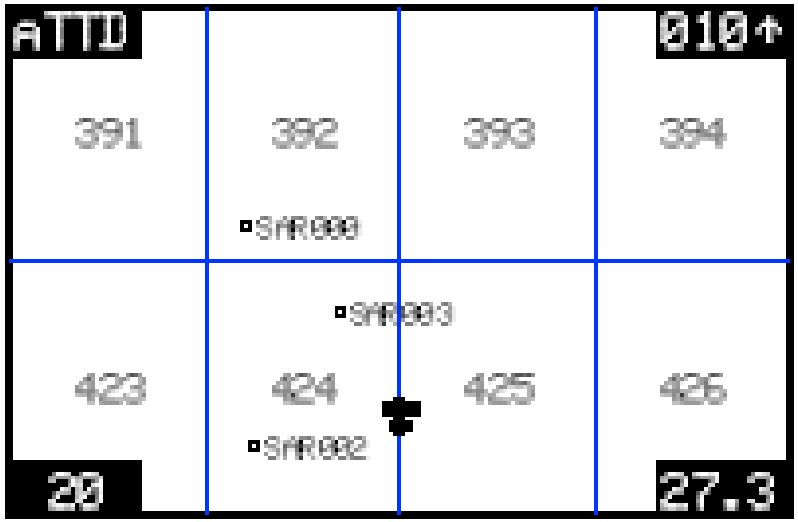


Map Display
Grid Lines
No Grid Number

The above grid is seen on the moving map in Grid 1 format while in the US (CAP) system

SAR Setup – Grid Options

GRID2

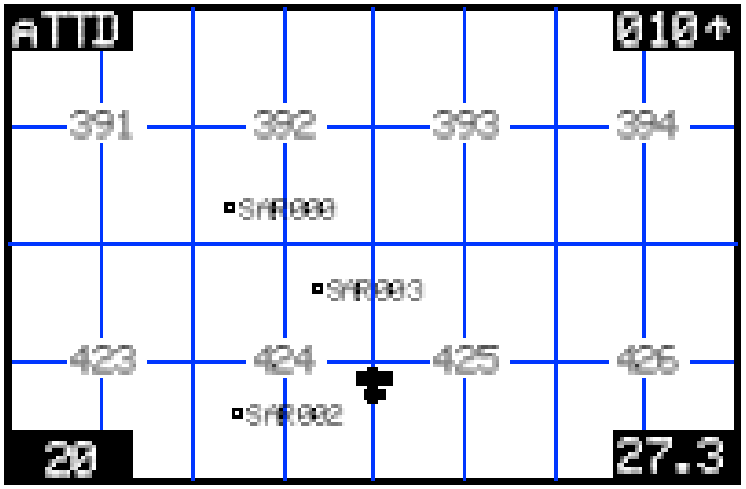


Map Display
Grid Lines
Grid Numbers

The above grid is seen on the moving map in Grid 2 format while in the US (CAP) system

SAR Setup – Grid Options

GRID3

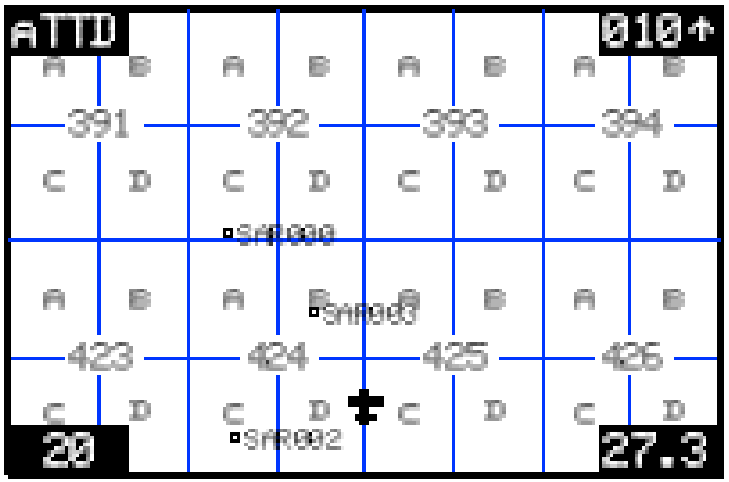


Map Display
Grid Lines
Grid Numbers
Quarter Grid Lines

The above grid is seen on the moving map in Grid 3 format while in the US (CAP) system

SAR Setup – Grid Options

GRID4



Map Display
Grid Lines
Grid Numbers
Quarter Grid Lines
Quarter Grid Letters

The above grid is seen on the moving map in Grid 4 format while in the US (CAP) system

SAR Setup

Set Route Line to YES

Set Map Orientation to TRACK
(Track Up)

SAR MAP

GRD controls grid line display

PAT is used to select a search pattern

MRK is used to mark a SAR position

Marking a SAR Find or Waypoint

While in the SAR screen press the MRK soft key

Marking a Find or SAR Waypoint

- A screen showing your current position will appear and it will ask you to name this SAR Waypoint
- Follow the same procedures as you would to name any other waypoint - Inner Knob to change, Outer Knob to move cursor, Enter to accept
- Write down the SAR # and Lat / Lon on your log before you leave this screen. You want to be sure that you have an accurate record of all possible finds!

Marking a SAR Find or Waypoint

Also note that the USR Soft Key has to be on to see user waypoints.

The USR Soft Key is found on page #2 of the Wide Screen or Split Screen Maps

SAR Waypoints do not show up on the SAR Map Screen when grids are displayed.
To see the SAR waypoint on the map, you must either turn off the grid display or turn the Outer Knob to one of the other Map Screens.

SAR Functions

- The GX 50 SAR module helps automate the flying of four search patterns
  - Route Search with offset
  - Creeping Line Search
  - Expanding Square Search
  - Parallel or Grid Search

Route Search Setup

Press Nav

Press FPL

It is nothing more than programming a flight plan

Route Search Setup

Turn Outer Knob to Create Flight Plan

Press SEL and enter a FPL name

Route Search Setup

Turn Inner Knob
to select first letter

Press Enter

Turn Small Knob

Outer Knob to move to next position
Repeat until done

Press Select

Press Enter

Route Search Setup

Select start point using Inner and Outer knobs

Hit Enter to load next waypoint
Repeat last steps

Press Enter when done

Your Flight Plan is now loaded into the database and can be retrieved at any time

Once you have your waypoints loaded hit Select to accept the flight plan

Route Search Setup
Activate the Flight Plan (FPL)

NAV

Select

Turn Outer Knob to the desired flight plan

Enter to activate

Flight plan is now active

Route Search Setup
Setting the Route Offset

NAV

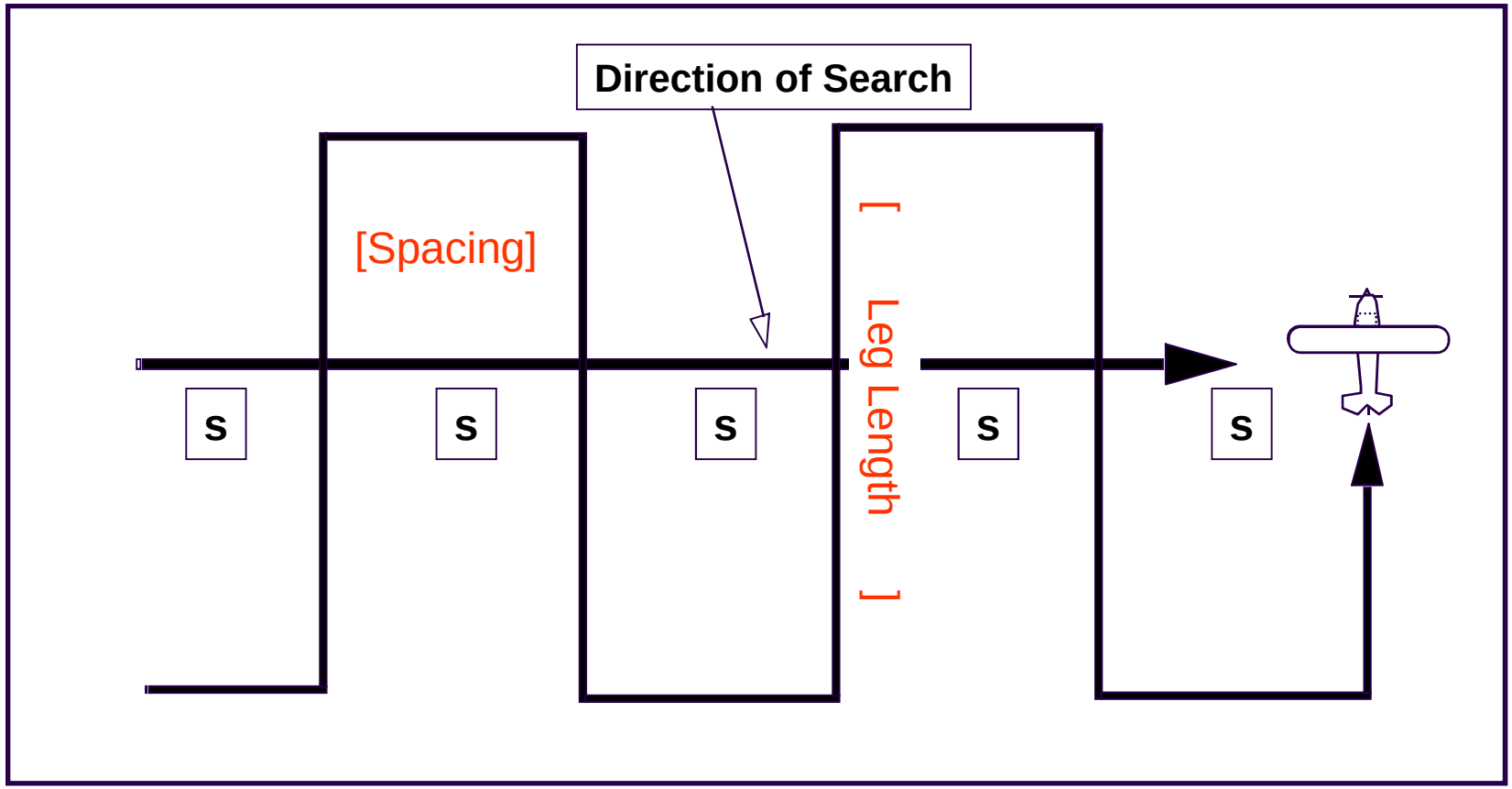
SEL

Outer Knob to Parallel Track

Use Outer Knob to move between fields – Inner Knob to change

Press Enter to complete setup

Creeping Line Search Setup



Creeping Line Search Setup

Make sure that SAR mode setup is in place
Press MAP to start on the Map screen
Turn large knob counterclockwise to SAR Map page (has PAT softkey on the bottom)
Press the pattern soft key (PAT)

Creeping Line Search Setup

Turn the Small Knob until you see
Creeping Line Search Page

Press ENTER to select the Creeping Line pattern

Creeping Line Search Setup

Press SEL to select a starting waypoint
Press Enter to select waypoint
Use large and small knobs to select type and name of waypoint

Creeping Line Search Setup

Press ENTER to accept the starting waypoint

Creeping Line Search Setup

Use large knob and small knob to set search parameters:
Turn SMALL KNOB to change the track spacing (0.2 – 5.0 NM)
Then Large KNOB to move flashing cursor to Direction

Creeping Line Search Setup

Turn SMALL KNOB to change the course heading (DIRECTION) you want to fly across
Press ENTER to accept
(note diamond on lower right of screen)
Turn SMALL KNOB to go to the next page for LEG LENGTH and start turn

Creeping Line Search Setup

Press SEL
Turn SMALL KNOB to bring up next page
Press SEL
Use Large Knob and small knob to set leg length (0.1 – 9.9 NM)
Turn LARGE KNOB to move flashing cursor to Start side
Turn SMALL KNOB to select left or right for the first turn

Creeping Line Search Setup

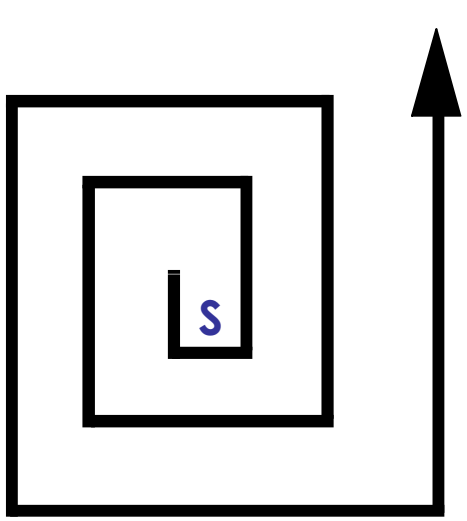
Press ENTER to save your information
Press ENTER again to activate the search pattern and return to the map page where your Creeping Line search course will be displayed

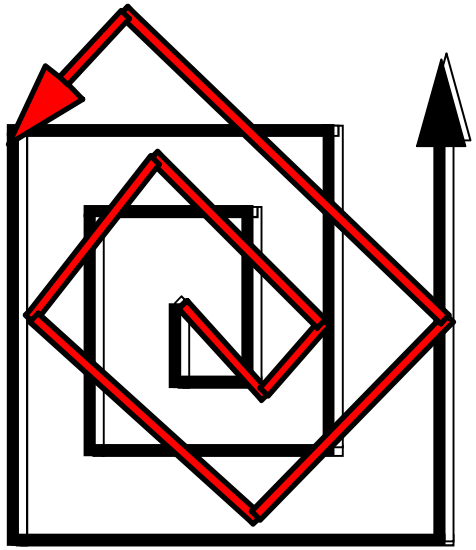
Creeping Line Search Setup

Activate HOLD ASAP (Press GPS SEQ key on panel – OBS Hold light on)
(note GX55 hold procedure is different)
If not directed to Waypoint 1, activate FPL 0 to 1 leg
Use small knob to select scale
Press GRD to view Grid Lines
After passing waypoint 0, remove HOLD (GPS SEQ key on panel)
Press PAT when you desire to abort search pattern

Expanding Square Search Setup

Spacing is constant but leg length increases with each turn





Expanding Square Search Setup

Make sure SAR mode setup is in place
Press MAP to get Map screen
Turn the Large Knob counterclockwise to the SAR map page
In the SAR map page press the PAT soft key

Expanding Square Search Setup

Turn the SMALL KNOB until you see the Expanding Square page then press ENTER

Expanding Square Search Setup

Press SEL and then ENTER to select the start waypoint

Expanding Square Search Setup

Turn SMALL KNOB to select the type of waypoint (APT, VOR, USER, etc.)

Turn LARGE KNOB to move the flashing cursor and enter the waypoint name

Press ENTER to accept the starting waypoint

Expanding Square Search Setup

Use Large Knob and Small Knob to set origin waypoint
Turn LARGE KNOB to move the flashing cursor
Turn SMALL KNOB to set the Spacing (0.2 – 5.0 NM)
Turn LARGE KNOB to move the flashing cursor

Expanding Square Search Setup

Turn SMALL KNOB to set the Direction (heading) of the first leg

Press ENTER to accept then press ENTER again to go back to the map page

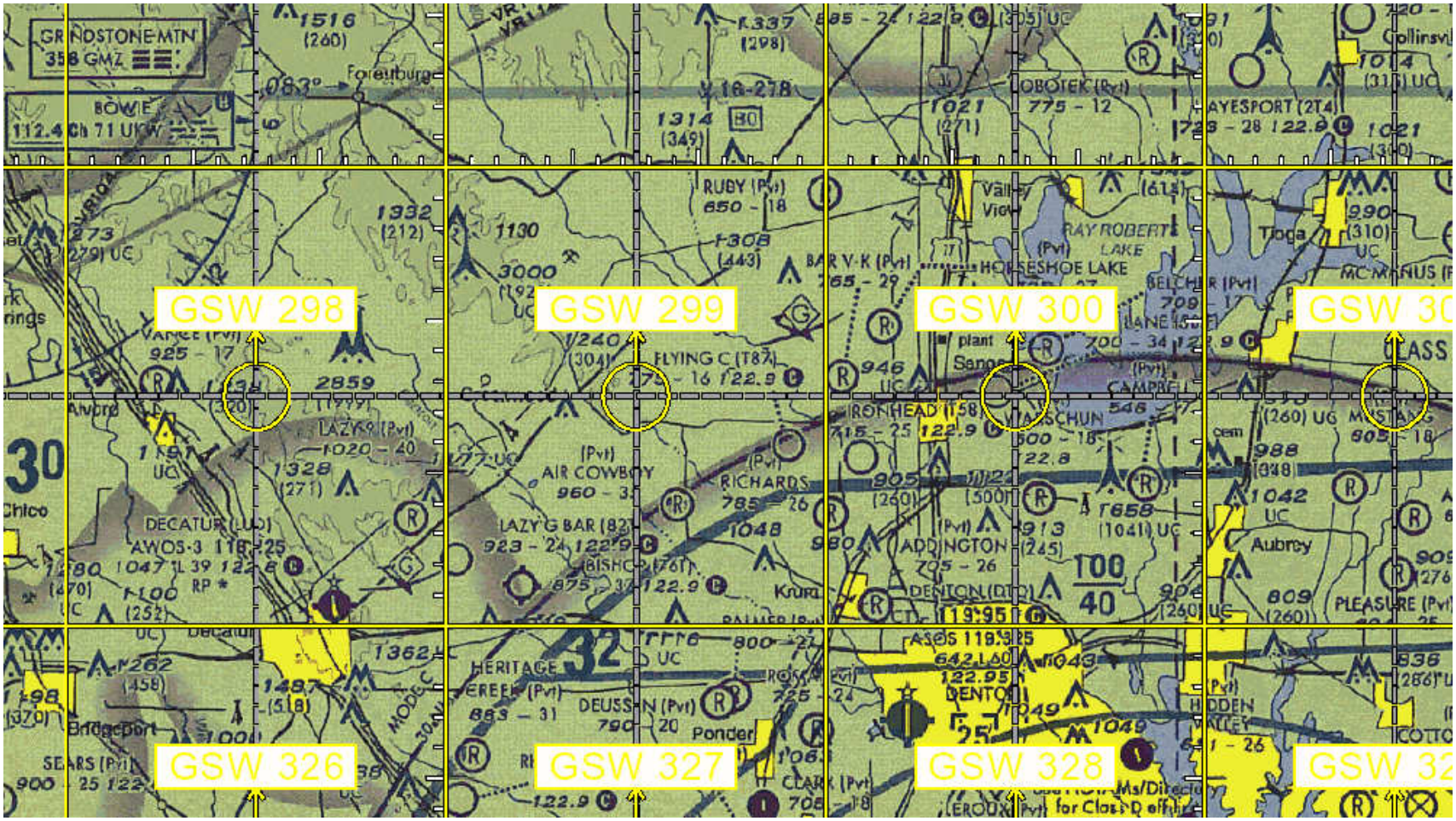
Expanding Square Search Setup

Activate HOLD ASAP (Press GPS SEQ key on panel – OBS Hold light on) (note GX55 hold procedure is different)
If not directed to Waypoint 1, activate FPL 0 to 1 leg
Use small knob to select scale
After passing waypoint 0, remove HOLD
Press PAT when you desire to abort search pattern

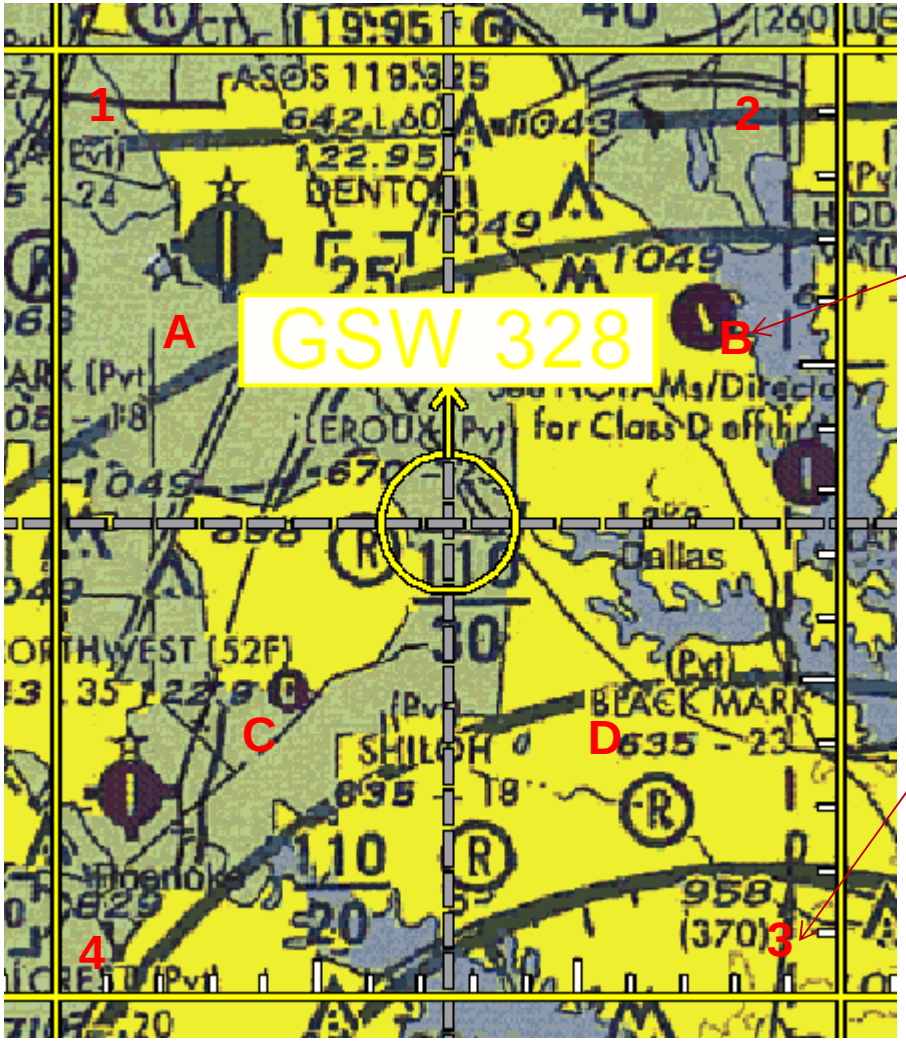
Expanding Square Search Setup

The Expanding Square is displayed on the map page and the data is sent to the GPS CDI (no GPS CDI in N1472F)

Parallel (Grid) Search Setup



Parallel (Grid) Search Setup



Full 15’x15’ grid is subdivided into four 7.5’x7.5 minute grids labeled A-B-C-D

The Apollo SAR software further designates the entry point corners of the grid as 1-2-3-4

Parallel (Grid) Search Setup

For Parallel Searches using the CAP Grid System set GRID TYPE to US and POSITION to:

- Ø GSW for the DFW area
- Ø SAT for San Antonio area
- Ø ELP for El Paso area
- Ø HOU for Houston area

Parallel (Grid) Search Setup

Parallel Search using CAP Grid System

Make sure that SAR mode setup is in place
Press MAP to start on Map screen
Turn large knob counterclockwise to SAR Map page (has PAT softkey)
In the SAR map page press the PAT soft key

Parallel (Grid) Search Setup

Parallel Search using CAP Grid System

Turn the SMALL KNOB until you see the Parallel Line page
Press ENTER to grid setup

Parallel (Grid) Search Setup

Parallel Search using CAP Grid System

Press SEL then use the SMALL KNOB to change data and the LARGE KNOB to move the flashing cursor

Set the Grid (and sub-grid if needed) and the entry point corner
1 = NW, 2 = NE, 3 = SE, 4 = SW

Set the track spacing (0.2 – 5.0 NM)

Set the search track direction N/S or E/W

Parallel (Grid) Search Setup

Parallel Search using CAP Grid System

Press ENTER to accept your entry
Press ENTER again to return to activate the search and to display the map page where the Parallel Search is shown

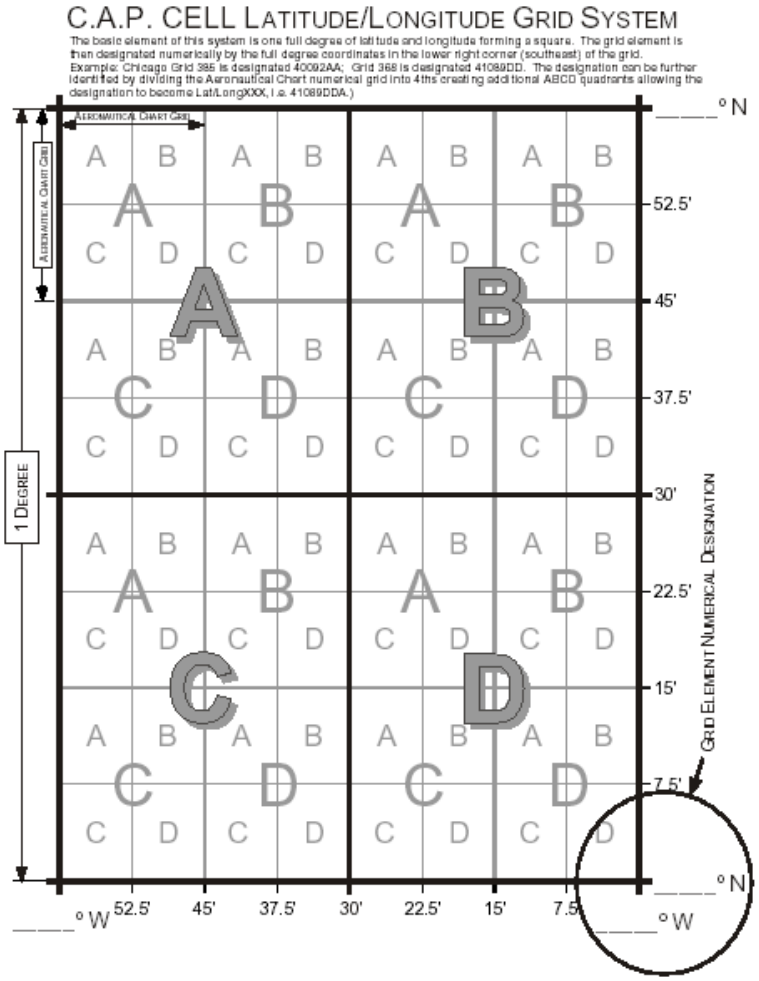
The data is sent to the GPS CDI and the GPS will call your turns based on your current speed via the MSG function

Parallel (Grid) Search Setup

Parallel Search using CAP Grid System

Activate HOLD ASAP (Press GPS SEQ key on panel – OBS Hold light on)
(note GX55 hold procedure is different)
If not directed to Waypoint 1, activate FPL 0 to 1 leg
Press GRD to view grid lines
Use small knob to select scale
After passing waypoint 0, remove HOLD (Press GPS SEQ key on panel)
Press PAT when you desire to abort search pattern

Parallel (Grid) Search Setup



This is the current grid system used in Texas Wing and nationally by CAP

Parallel (Grid) Search Setup

For Parallel Searches using Cell or LAT/LONG set GRID TYPE to BASIC and POSITION to NW which covers all of the US

Parallel (Grid) Search Setup

Parallel Search using Cell Grid System

Turn the SMALL KNOB to the SAR Position page

Press SEL and use the SMALL KNOB to change the data and the LARGE KNOB to move the flashing cursor

Set the LAT/LONG to the 10^0 x 10^0 grid nearest your search area and press ENTER to accept

Parallel (Grid) Search Setup

Parallel Search using Cell Grid System

In the SAR map page press the PAT soft key

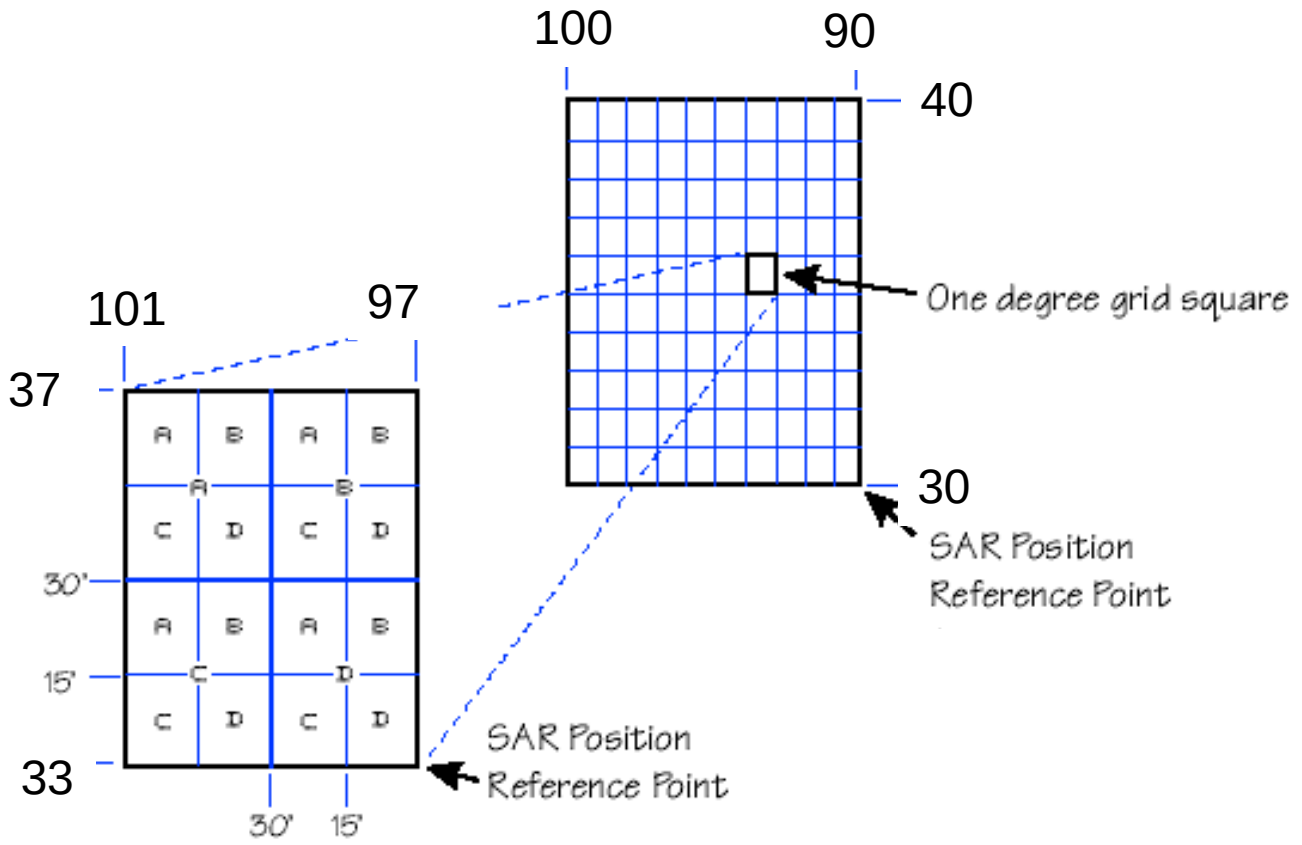
Parallel (Grid) Search Setup

Parallel Search using Cell Grid System

Turn the SMALL KNOB until you see the Parallel Line page then press ENTER

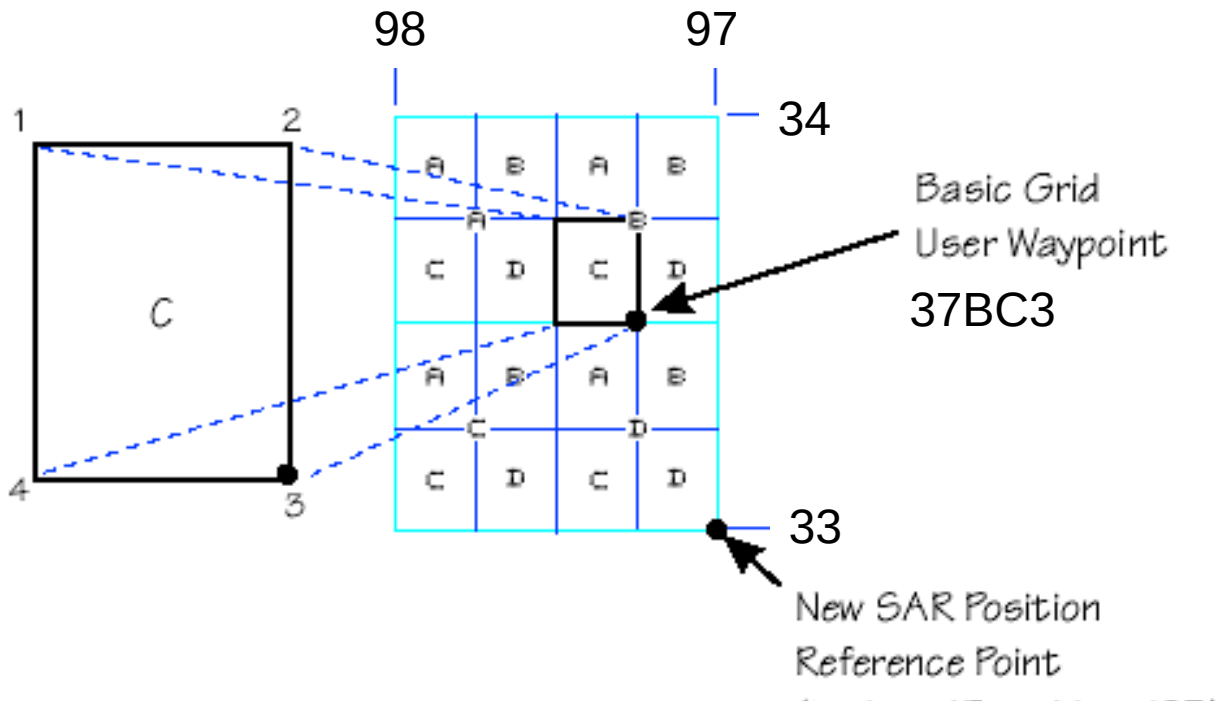
Parallel (Grid) Search Setup

Parallel Search using Cell Grid System



Parallel (Grid) Search Setup

Parallel Search using Cell Grid System



33 Lat and 97 Long

Parallel (Grid) Search Setup

Parallel Search using Cell Grid System

Press SEL
Use the SMALL KNOB to change data the LARGE KNOB to move the flashing cursor

Set the Grid to 37BC1

Set the track spacing (0.2 – 5.0 NM)

Set the search track direction N/S or E/W

Parallel (Grid) Search Setup

Parallel Search using Cell Grid System

Press ENTER to accept the entry
Press ENTER again to activate the search pattern and return to the map page where your Parallel Search is shown

The data is sent to the GPS CDI and the GPS will call your turns based on your current speed via the MSG function

Parallel (Grid) Search Setup

Parallel Search using Cell Grid System

Activate HOLD ASAP (Press GPS SEQ key on panel – OBS Hold light on)
(note GX55 hold procedure is different)
If not directed to Waypoint 1, activate FPL 0 to 1 leg
Use small knob to select scale
Press GRD to view grid lines
After passing waypoint 0, remove HOLD (Press GPS SEQ key on panel)
Press PAT when you desire to abort search pattern

Questions?