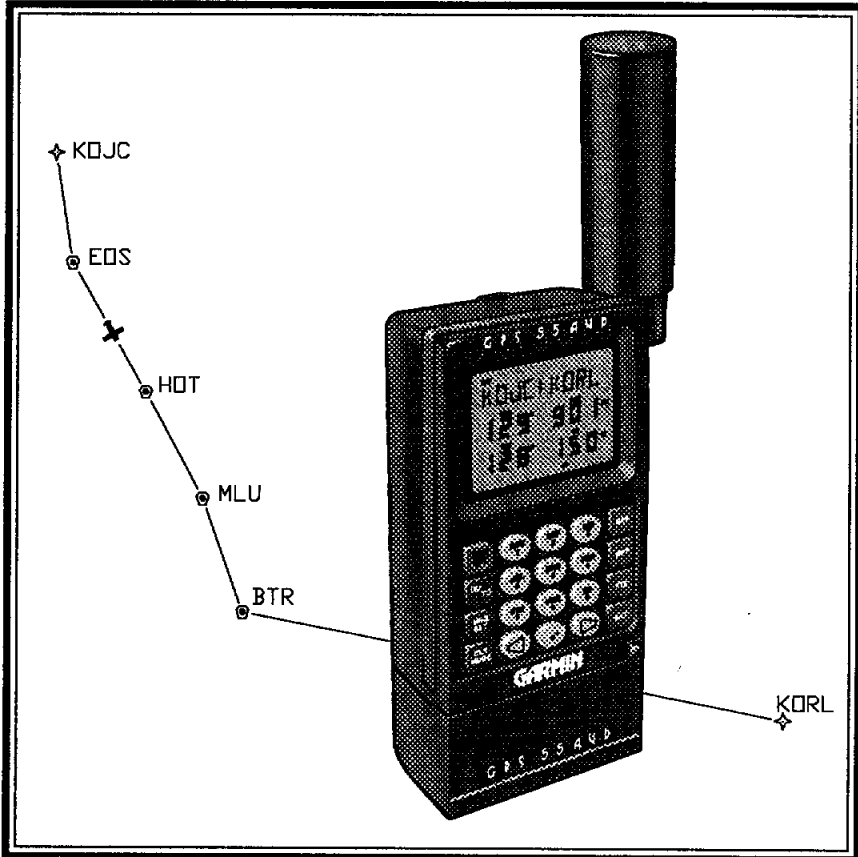


# GPS 55 AVD PERSONAL NAVIGATOR™ OWNER'S MANUAL



**GARMIN International, Inc.**



<sup>SM</sup>

*COMMUNICATION & NAVIGATION*

**GPS 55AVD**

**Personal Navigator™**

**OWNER'S MANUAL**

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October, 1992

190-00030-00 Rev. D

## PREFACE

GARMIN thanks you for selecting our high performance, full featured Personal Navigator™. The GPS 55 AVD represents our continued commitment to provide you with a portable aviation unit that is versatile, extremely accurate, and easy to use. We are confident you will enjoy using your unit for many years to come.

The GPS 55 AVD's rugged construction and quality components offer the reliability demanded by the harshest operating environments. When not being used in an aircraft, it may be removed for use in marine and land vehicles, as well as for hunting and hiking. The unit may be operated portably using its own battery pack, or it may use a 5-40 volt DC external power source for fixed mounted applications. You can even use a 115- or 230-volt battery charger for planning trips at home.

This manual and accompanying quick reference guide provide complete information on safely operating the GPS 55 AVD to its full potential. Two exciting practice trips have been planned for you to practice your navigation skills using the built-in simulator. Afterwards, try a trip of your own to realize the value of the GPS 55 AVD as your Personal Navigator™. If you have any questions or comments, our Customer Support Department is eager to serve you. GARMIN is fully committed to your satisfaction as a customer.

GARMIN International, Inc.  
9875 Widmer Road  
Lenexa, KS 66215

## CAUTION

The GPS system is operated by the government of the United States which is solely responsible for its accuracy and maintenance. The system is under development and is subject to changes which could affect the accuracy and performance of all GPS equipment. Although the GPS 55 AVD is a precision electronic NAVigation AID (NAVAID), any NAVAID can be misused or misinterpreted, and therefore become unsafe. Use the GPS 55 AVD at your own risk. To reduce the risk, carefully review and understand all aspects of this Owner's Manual and thoroughly practice operation using the simulator mode prior to actual use. When in actual use, carefully compare indications from the GPS 55 AVD to all available navigation sources including the information from other NAVAIDs, visual sightings, charts, etc. For safety, always resolve any discrepancies before continuing navigation.

The Jeppesen database incorporated in the GPS 55 AVD must be updated regularly in order to ensure that its information is current. GARMIN issues an update approximately every 28 days. Contact GARMIN or your local GARMIN aviation dealer for more information on GPS 55 AVD database updates. Pilots using an out-of-date database do so entirely at their own risk.

**NOTE:** This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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# CHAPTER 1

## INTRODUCING THE GARMIN GPS 55 AVD

### 1.1 CAPABILITIES

The GPS 55 AVD provides a host of powerful capabilities which were previously found only in much larger systems:

- **Performance:** State-of-the-art MultiTrac™ receiver tracks up to eight satellites while providing high receiver sensitivity, fast first fix, and continuous navigation updates.
- **Portability:** Goes where you go - on land, sea, or in the air. The built-in simulator allows you to plan your next trip or hone your navigation skills at home or in your office.
- **Navigation:** Illuminated keypad and display provide the navigation information you need at a glance. Store up to 250 alphanumeric waypoints and 10 reversible routes. The GOTO function sets an instantaneous course to the waypoint of your choice. The AutoStore™ function helps you build routes as you go. A flashing Message Annunciator and an audible message tone keep you fully informed of your navigation status.
- **Personalized:** Configure your unit the way you like by selecting nautical units, Course Deviation Indicator (CDI) sensitivity, keypad and display features, map datums, and interface options.
- **Low Power Consumption:** Battery Saver operation, which draws less than 1.1 watts, provides up to ten hours of continuous operation with four AA size alkaline batteries.
- **Trip Planning:** Analyze distance and time requirements for your trip. Compute the time of sunrise and sunset at your destination.
- **Alarms:** An alarm clock and timer allow the GPS 55 AVD to watch the clock for you. Arrival, anchor drag, CDI, and proximity alerts help you safely navigate your craft.
- **Interfaces:** Interface with graphics plotters as well as marine autopilots.

We encourage you to read through this manual and experiment using the built-in simulator. This will help you quickly master the power of the GPS 55 AVD.



## 1.2 AVIATION DATABASE

The GPS 55 AVD features a built-in Jeppesen NavData® database providing direct access to worldwide airport (with a runway of 1,000 feet or greater) and VOR locations. Two versions of the internal database are available to cover the entire world:

- **Americas:** Includes North, Central and South America.
- **International:** Includes everywhere except North, Central or South America.

This database may be updated by a GARMIN authorized service center on a one-time basis or every 28 days by subscription service. Contact GARMIN or your local GARMIN aviation dealer for more information on GPS 55 AVD database updates. (NOTE: Programmed routes and proximity alarms which contain database waypoints that are deleted or moved more than 0.33 arc minutes due to a database update will be deleted.)

## 1.3 OPERATIONS

You may use your GPS 55 AVD for both portable and fixed operations. The unit may be operated from external AC power using a battery charger, external 5-40 volt DC power using the power/data cable or cigarette lighter adapter, or using a battery pack.

### ***Handheld Operation:***

For handheld operation, the GPS 55 AVD is powered by a AA battery pack which should be filled with four high quality alkaline batteries commonly found at retail stores. (A rechargeable nicad battery pack is also available.)

In order to track GPS satellites, the unit must be situated with the antenna pointed straight up and should not be blocked by objects or people (signal reception through thin fabric such as canvas may be adequate but degraded). A lanyard is provided to prevent accidental dropping of your GPS 55 AVD. (Connect the lanyard to the eyelet on the back of the unit.)

### ***Aircraft Operation:***

A mounting bracket is supplied for fixed mount installation in an aircraft. Additionally, six feet cable with a suction cup and hardware is provided for remote mounting of the portable antenna. The unit may be operated using aircraft power through the power/data cable or it may be operated using the battery pack. While using aircraft power, you may wish to leave the battery

pack in the unit. In the event of aircraft power failure, the GPS 55 AVD will automatically switch to battery power.

***Marine/Land Operation:***

A universal mount is available for swivel mount installation in a boat or land vehicle. Additionally, a Marine/RV Remote Antenna is available for installations which require an external antenna for an unobstructed view of the sky. This weather-proof antenna includes 30 feet of low-loss antenna cable. The remote antenna has been constructed to thread onto a standard 1" antenna mount. Antenna mounts, commonly used to attach VHF radio antennas and Loran-C couplers, are readily available from your local marine accessories dealer.

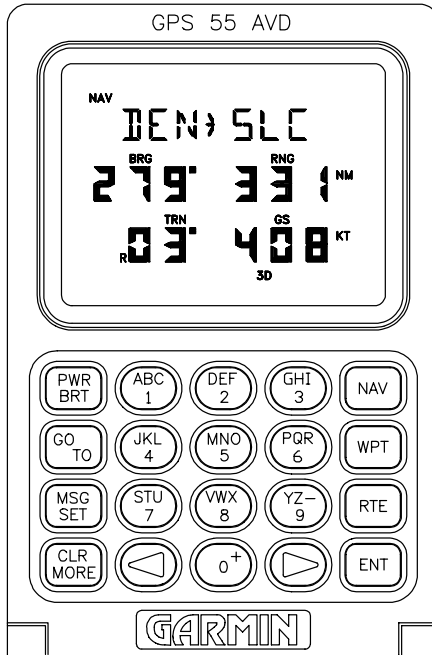
A Magnetic Mount Antenna is also available for attaching a remote antenna to a metallic surface. This weather-proof antenna includes 10 feet of low-loss antenna cable. A cigarette lighter adapter cable may be used to power the unit in vehicle applications.

In addition to supplying power to the unit, the power/data cable allows you to interface your GPS 55 AVD with other electronic devices such as graphical displays or marine autopilots.

# CHAPTER 2

## GETTING STARTED

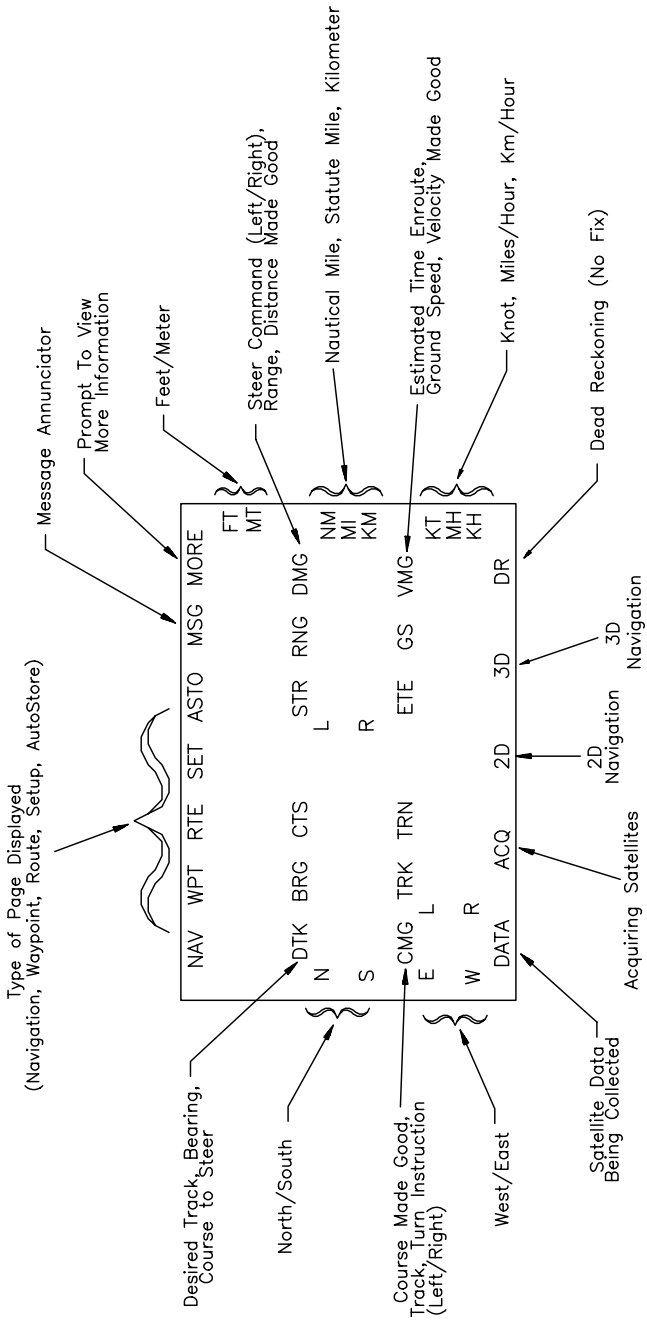
### 2.1 FRONT PANEL



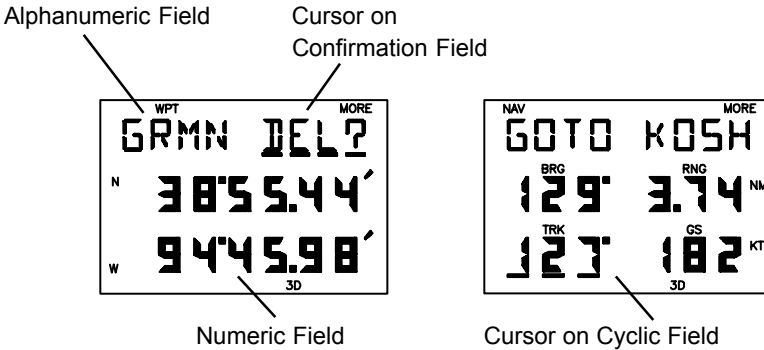
The front panel consists of a 20-key keypad and a LCD display which includes three lines of information and various banners. Both the display and keypad are illuminated for operating in darkness.

### 2.2 BANNERS

Information displayed on the LCD is commonly referred to as a “page”. A page consists of alphanumeric information and banners. Banners, illustrated below, are used to indicate the type of page, navigation units, and data displayed (see Appendix B). They also indicate navigation fix type, satellite tracking, and provide user prompting.



## 2.3 CURSOR AND FIELDS



The area of the page which is underlined is called the **cursor**. The cursor may be moved to locations on the page called **fields** which allow you to enter data. You will encounter four types of fields.

- **Numeric fields** accept numbers. For example, you will enter a waypoint's latitude in a numeric field.
- **Alphanumeric fields** accept numbers as well as letters. For example, you will enter a waypoint's name in an alphanumeric field.
- **Cyclic fields** allow you to select from one of several available options. For example, you may select between DTK (desired track), BRG (bearing to waypoint), or CTS (course to steer) using a cyclic field. Cyclic fields are indicated on the display by the "MORE" banner.
- **Confirmation fields** allow you to indicate your approval. For example, you will be asked to confirm that you want to delete a waypoint. Confirmation fields always end with a "?" character.

## 2.4 KEYPAD OPERATION



The PWR/BRT key is a dual function key that controls unit power and panel backlighting.

When the unit is on, pressing the PWR/BRT key will turn on the panel backlighting. Pressing the PWR/BRT key again will turn off the backlighting.

To turn the unit off, press and hold the PWR/BRT key for three seconds until the display is blank.



Pressing the MSG/SET key allows you to view new messages when the "MSG" banner is flashing. (See Section 2.6 and Appendix A.) Pressing the MSG/SET key also selects the Setup Pages which allow you to view satellite tracking status and customize the unit as you like. (See Section 3.2 and Chapter 4.)



Pressing the GOTO key once allows you to initiate the GOTO function, which will set an instantaneous course to any waypoint. (See Section 3.8.)



Pressing the NAV key selects the Navigation Pages which allow you to view navigation information and perform planning functions. (See Sections 3.3 and 3.5 and Chapter 5.)



Pressing the WPT key selects the Waypoint Pages which allow you to create, edit, delete, and rename waypoints. In addition, you may view your nearest waypoints and set waypoint proximity alarms. (See Sections 3.6, 3.7 and 3.9.)



Pressing the RTE key selects the Route Pages which allow you to edit, review, activate, and delete routes. (See Chapter 6.)



Pressing either of the arrow keys allows you to move the cursor, scroll through information lists, and enter letters of the alphabet.



The alphanumeric keys allow you to enter letters and numbers into the GPS 55.

If you want to enter a number in a numeric field, for instance "1", simply press the 1 key. If you want to enter a letter in an alphanumeric field, for example "A", press the 1 key to display B, then press the left arrow key once to select "A" (you may also press the right arrow key three times to display the "A").



Pressing the CLR/MORE key erases information in the cursor field. If the cursor is over a cyclic field, pressing the CLR/MORE key will toggle through several available options.



Pressing the ENT key completes the process of data entry. If the cursor is over a confirmation field, pressing the ENT key indicates your approval.

## 2.5 ENTERING DATA

To enter data you must first move the cursor under the desired field by pressing the right or left arrow key.

### To enter a number...

- Press the key that is labeled with the desired number. The numbers will fill in from the left side of the field similar to a typewriter. You must enter any leading zeros in the field. For example, if you wish to enter "51" in a three space field, you must press the 0, 5, and 1 keys in that order.
- Press the CLR key if you enter an incorrect number.
- Press the ENT key when you have filled all significant digits of the field with numbers (trailing zeros are automatically filled in by the GPS 55).

### To enter a letter...

- Press the key that is labeled with the desired letter.
- Press the right or left arrow key until the desired letter is displayed.
- Press the CLR key if you enter an incorrect letter.
- Press the ENT key when all the characters are entered.

The GPS 55 features a keypad feedback tone which will sound each time you press a key. If you enter data which is not appropriate for the field, the feedback tone will quickly sound three times indicating an error. The keypad feedback tone can be turned off if you wish (see Section 4.5).

## 2.6 VIEWING MESSAGES

From time to time, the GPS 55 will use a message to tell you of conditions that need your attention. When the GPS 55 has a new message for you, the MSG banner will flash. When this occurs, press the MSG key to view new message(s). Continue to press the MSG key until the page you were viewing prior to pressing the MSG key is displayed.

While the MSG banner is flashing, the GPS 55 will also generate an audible tone to alert you of the message (if your unit is connected to an external alarm, it will also be activated). Messages that demand immediate attention such as an arrival alarm generate a quick tone that will not stop until you view the message. All other messages generate a slow tone that will cease after 15 seconds. The message tone may be turned off if you wish (see Section 4.5).

Important messages will remain on the Message Page after being viewed. If this occurs, the MSG banner will be in view but will not flash (if no messages exist, the MSG banner will not be visible). To review these messages, press the MSG key until the “MESSAGES” title is displayed. Then, press the MORE key until the “END MSGS” title is displayed.

Refer to Appendix A for a complete list of GPS 55 messages.

## 2.7 OPERATING MODES

Three modes are available which will allow you to operate your GPS 55 in the way which best suits your needs (see Section 4.2).

**Normal** mode is most suitable for high dynamics applications. The GPS 55 will typically operate up to six hours on a single pack of batteries.

**Battery Saver** mode is suitable for most applications and will extend the battery life to as much as ten hours.

**Simulator** mode allows you to simulate the operation of the GPS 55 while at home or in your office. The simulator mode can be used while learning to use your GPS 55 and is ideal for planning routes and entering waypoints. Keep in mind that the GPS 55 is not tracking satellites in the simulator mode. You should never attempt to use the simulator mode for actual navigation.

If you are using your GPS 55 for the first time, we encourage you to review Chapter 3 which introduces the GPS 55's basic features. Additionally, you may wish to review Chapter 4 on custom setups. Afterward, you may want to read through the rest of this manual and make further use of the built-in simulator to practice with the advanced features.

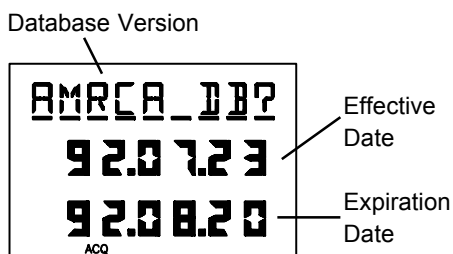


# CHAPTER 3

## BASIC OPERATION

### 3.1 POWER ON

After you turn your GPS 55 on, it will conduct a series of self tests and display the following notices: “VER x.xx”, “COPYRIGHT”, “1992”, and “GARMIN”. Following completion of the tests, the Database Page, which indicates the database version (Americas vs International), effective date, and expiration date will now be displayed.



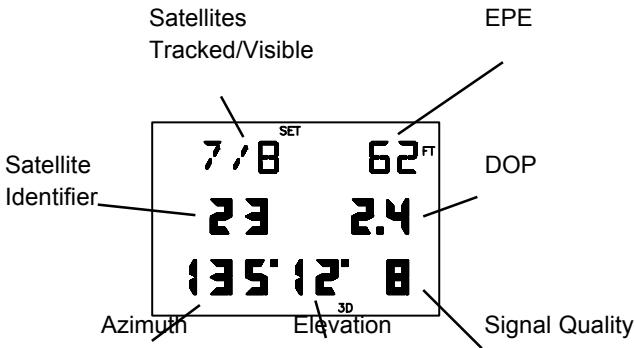
The GPS 55 will still function with a database which is out of date; however, you must exercise extreme caution and always verify that the database information is correct before use. (Warning: The accuracy of the database information is assured only if the database is current. Pilots using an out-of-date database do so entirely at their own risk.) After you press ENT to approve the database, the GPS 55 will begin acquiring satellites. This process is fully automatic and typically will take two minutes to obtain a position fix.

Initially, the GPS 55 will display the “ACQ” banner; it will inform you when a position fix is obtained by transitioning to either the “2D” or “3D” banner. When four or more satellites with good geometry are available, the GPS 55 will automatically operate in the 3D mode in which latitude, longitude, and altitude are computed. If only three satellites are available, the unit will operate in 2D mode in which only latitude and longitude are computed. When operating in the 2D mode, the unit will use the last computed altitude or your last entered altitude (Section 3.3 describes how you may enter the altitude). If less than three satellites with acceptable geometry are available, the “DR” banner will be displayed.

Your GPS 55 will automatically update satellite orbital data as it operates. If you have not operated your unit for a period of six months or longer, it will take approximately 12.5 minutes to search the sky and collect new orbital data. You will be informed when your unit is searching the sky with the message

“SRCH SKY”. Additionally, the “DATA” banner will be displayed. Once satellite orbital data is collected, it will be stored in battery backed up memory. This means the data will not be lost when you turn your GPS 55 off.

### 3.2 SATELLITE STATUS



#### SATELLITE STATUS PAGE

The Satellite Status Page may be displayed by pressing the SET key. This page shows the number of satellites tracked and visible, dilution of precision (DOP), and estimated position error (EPE). DOP is a measure of the satellite geometry quality and hence the relative accuracy of your position (1 meaning the best and 10 meaning poor). EPE, which is computed using the satellite geometry (DOP), signal, and data quality, receiver tracking status and other factors, is an overall measure of your position accuracy. DOP and EPE are advisory information only.

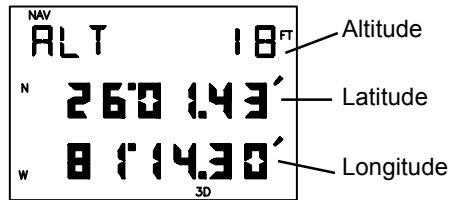
The Satellite Status Page also shows the identifier (1-32), azimuth, elevation, and signal quality of up to eight visible satellites. The azimuth is an angle from 000° to 359° which indicates the bearing from the present position to the satellite, with 000° representing true north. The elevation is an angle from 00° to 90° which indicates the height of the satellite above the horizon, where 00° indicates the horizon and 90° indicates a satellite is directly overhead. The azimuth and elevation are useful for determining whether a satellite signal is blocked by buildings, mountains, or other obstructions. The signal quality is a number from 1 through 9, with 9 indicating the strongest signal. If a satellite is visible but not tracked, the signal quality will be blank.

The Satellite Status Page will automatically display each satellite’s information for three seconds. You may also manually scroll through the list of visible satellites.

### To manually scroll through the visible satellite list...

- Use an arrow key to move the cursor under the satellite identifier.
- Press MORE to view each visible satellite's information.
- Press ENT to remove the cursor and return to automatic mode.

### 3.3 PRESENT POSITION



POSITION PAGE

The Position Page may be displayed by pressing the NAV key. This page displays your latitude and longitude relative to the selected earth datum (see Section 4.11). The altitude displayed is the elevation above mean sea level (MSL); it is NOT equivalent to the altitude displayed on pressure altimeters in aircraft and should not be used for vertical navigation. The displayed altitude is typically less accurate than latitude/longitude due to the arrangement of the orbiting satellites.

When the GPS 55 is performing 2D navigation, the last known altitude will be used in the latitude/longitude computation. If your speed is over 65 knots, the unit will ask you to update your altitude every ten minutes with the message "NEED ALT." If the altitude is not accurate within a few hundred feet, you should manually enter your altitude.

### To change the altitude...

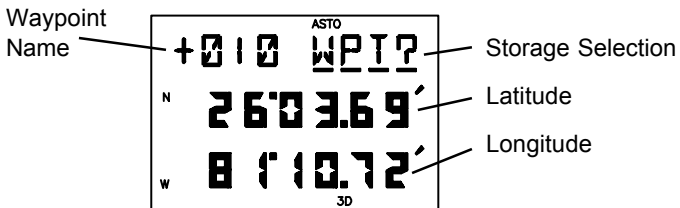
- Press NAV to display the Position Page.
- Use an arrow key to move the cursor under the altitude.
- Enter the altitude. If your antenna is mounted on a high mast, make sure you add the mast height. (Remember to complete the data entry by pressing ENT.)

During initial satellite acquisition, the displayed position is the last computed position stored in the GPS 55. If your position has moved more than 1000 nautical miles with the power off, you may wish to enter a more accurate initial position to speed up the acquisition process. (You may also change the position at any time when you are operating in simulator mode.)

## To change the latitude/longitude...

- Use an arrow key to place the cursor under the latitude field.
- Check the hemispheric designation (“N” or “S”) of the latitude. If it is correct, go to the next step. If it is incorrect, press the CLR key until the correct hemispheric designation is displayed.
- Enter the latitude (remember to complete the data entry by pressing ENT).
- Check the hemispheric designation (“E” or “W”) of the longitude. If it is correct, go to the next step. If it is incorrect, press the CLR key until the correct hemispheric designation is displayed.
- Enter the longitude (remember to complete the data entry by pressing ENT).

## 3.4 AUTOSTORE



### AUTOSTORE™ PAGE

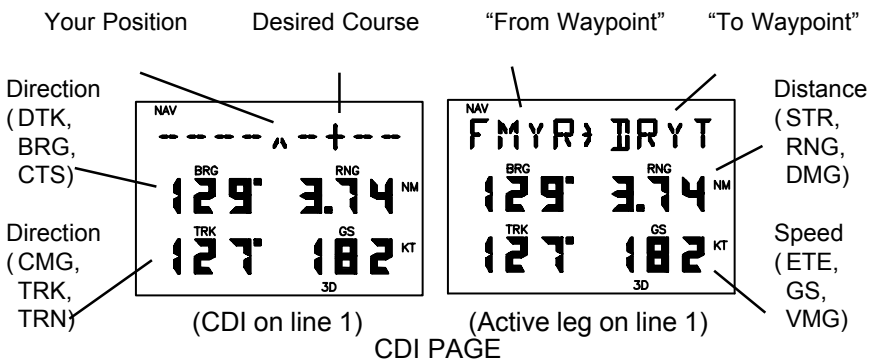
The AutoStore™ Page is displayed by pressing the ENT key while viewing the Position Page. This page allows you to capture your position at the touch of a button so that you may easily return later. Additionally, you may record your navigation path by inserting the captured waypoints into a route (see Section 6.5).

## To capture your present position...

- Press NAV until the Position Page is displayed.
- Press ENT. The AutoStore™ Page will be displayed with the default waypoint name on line one. The waypoint name begins with a “+” character followed by a 3-digit number, for example “+010”.
- If you wish to give the waypoint a name of your own, move the cursor under the waypoint name and enter the name of your choice.

- With the cursor under “WPT?” (the storage selection field), press ENT.

### 3.5 CDI AND NAVIGATION SUMMARY



The CDI Page may be displayed by pressing the NAV key. This page displays virtually all the information you need to guide your craft.

The CDI (Course Deviation Indicator) is oriented so that the center represents your position and the CDI hash represents your desired course. You must steer toward the hash to eliminate cross track error and stay on course. The to/from arrow in the center of the CDI indicates if you are navigating to the waypoint (up arrow) or if you have passed the waypoint (down arrow). You may set the CDI alarm and CDI scale from the Setup Pages (see Sections 4.3 and 4.7).

You may select the type of information you wish to see on each line. To make a change, place the cursor under the field and press the MORE key until the appropriate information is displayed. (See Appendix B for an illustration and further explanation of the selectable navigation information on lines two and three.)

On line one, you may elect to display a CDI or the active leg (see Chapter 6).

On line two, you may select one of three direction options (desired track, bearing, or course to steer). You may also select one of three distance options (steer direction and distance, range, or distance made good).

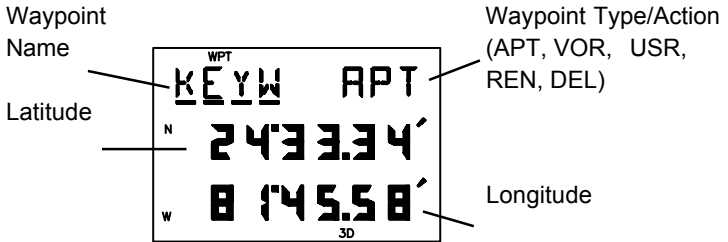
On line three, you may select one of three direction options (course made good, track, or turn instruction). You may also select estimated time enroute or one of two velocity options (ground speed or velocity made good).

During the process of acquiring satellites, the GPS 55 will not provide

navigation data. The CDI Page will indicate this condition by displaying “NO POSN” on line 1 and all navigation data on lines 2 and 3 will be blank. If the GPS 55 is not navigating to a waypoint, the CDI will indicate this condition by displaying “NO ACT WP” (no active waypoint) and all navigation data except speed and track will be blank.

### 3.6 WAYPOINTS

The GPS 55 contains a public database that provides airport and VOR locations. Additionally, it allows you to create, store, and use 250 alphanumeric user waypoints. A waypoint consists of a name (up to four letters or numbers), and its latitude/longitude location. You will have the opportunity to use waypoints extensively while operating the GPS 55. For example, you can navigate to a waypoint, build a route using waypoints, and perform trip planning using waypoints.



WAYPOINT DEFINITION PAGE

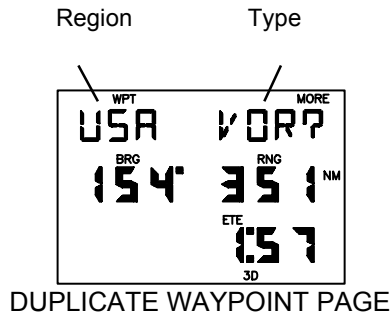
The Waypoint Definition Page may be displayed by pressing the WPT key. It allows you to review, create, modify, delete, and rename waypoints.

#### To create, modify, or review a waypoint

- With the cursor under the waypoint name field, enter the desired waypoint name.
- If the waypoint does not exist, the waypoint type on line 1 will be changed to “USR” (indicating user waypoint). You may then enter the waypoint latitude and longitude on lines 2 and 3 as described in Section 3.3.
- If the waypoint exists, the Waypoint Definition Page will display the waypoint type (“APT”, “VOR” or “USR”) and its latitude/longitude.
- To modify a user waypoint position, enter the waypoint latitude and longitude as described above. (NOTE: If a waypoint is being used for navigation, its position cannot be modified. An attempt to modify the

position of such a waypoint will result in the message “ACTV WPT”.)

Some waypoints in the database may have the same name. When you have entered a waypoint whose name is not unique, the Duplicate Waypoint Page will be displayed with a waypoint region (see Appendix E for a complete list of the abbreviations for the database regions), type (APT, VOR or USR) and bearing, range and ETE for you to select the desired waypoint:

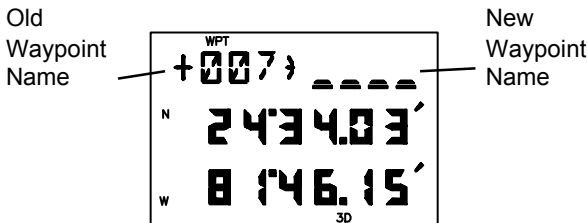


### To select the desired waypoint from a duplicate waypoint list...

- Press MORE or arrow keys to scroll through the list.
- Press ENT when the desired waypoint type and location is displayed.

### To rename a waypoint...

- While a user waypoint is displayed, move the cursor under the waypoint type/action field.
- Press MORE until “REN?” is displayed.
- Press ENT, the following page will be displayed.



- Enter the new waypoint name.

### To delete a waypoint from memory...

- While a user waypoint is displayed, move the cursor under the

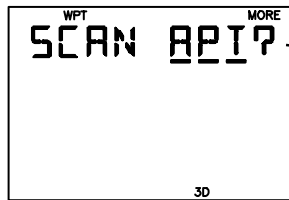
waypoint type/action field.

- Press MORE until “DEL?” is displayed.
- Press ENT, the waypoint is now deleted from memory. (NOTE: If you wish to delete a waypoint that is used in a route, first remove it from all routes before attempting to delete the waypoint. An attempt to delete a waypoint used in a route will result in the message “ROUTE WPT”.)

A stored waypoint is used by entering its alphanumeric name on a waypoint name field. (When a waypoint name which does not exist is entered, the error tone will sound.) As an alternative, the GPS 55 provides a scanning feature that allows you to select a waypoint by quickly scanning through the nearest waypoint list, followed by the entire list of waypoints in alphabetical order (numbers are ordered before the letters of the alphabet).

### To select a waypoint by scanning...

- With the cursor under a waypoint name field, press WPT to display the following page.



- Press MORE until the desired type (APT, VOR, or USR) appears. Press ENT to display the nearest waypoint of the selected type.
- Use the arrow keys to scan through the entire list of waypoints.
- With the desired waypoint shown, press ENT to select the waypoint (press CLR to cancel the scanning operation at any time).

For example, assume your unit has 15 waypoints, named A1, A2, A3, A4, A5, N1, N2, N3, N4, N5, Z1, Z2, Z3, Z4, and Z5. Among these waypoints, N1, N2, N3, N4, and N5 are in the nearest waypoint list in that order. Waypoint N1 will be displayed from the nearest waypoint list. Successive presses of the right arrow key will display the other waypoints in this order: N2, N3, N4, and N5 (from the nearest waypoint list) followed by A1, A2, A3, A4, A5, N1, N2, N3, N4, N5, Z1, Z2, Z3, Z4 and Z5 (from the alphabetical list). Press the ENT key when the desired waypoint is displayed.

To avoid scanning through the entire waypoint list, you may want to enter the first few characters of the waypoint name.



## To scan waypoints with specified initial characters...

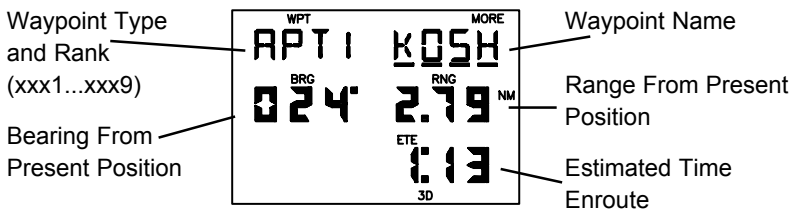
- Enter the desired number of initial characters of the waypoint name into a waypoint field as when normally entering a waypoint name.
- Press the WPT key to display the first waypoint that begins with the character(s) you have entered.
- Use the arrow keys to scan through the list of the waypoints that match the entered characters.
- With the desired waypoint shown, press the ENT key to select the waypoint (use the CLR key to cancel the scanning operation at any time).

For example, assume your unit has the 15 waypoints mentioned previously. To limit the scan to the waypoints beginning with the letter “Z”, enter the letter “Z”, then press the WPT key. Waypoint Z1 will be displayed. Successive presses of the right arrow key will display the other waypoints in this order: Z2, Z3, Z4, and Z5. Press the ENT key when the desired waypoint is displayed.

Variable rate scanning is implemented to allow you to quickly go through the list. When the arrow keys are pressed briefly, you step through the waypoints one at a time. As the arrow keys are held for a longer period of time, the waypoint list scrolls more rapidly; the longer the arrow keys are held, the larger the step through the list.

### 3.7 NEAREST WAYPOINTS

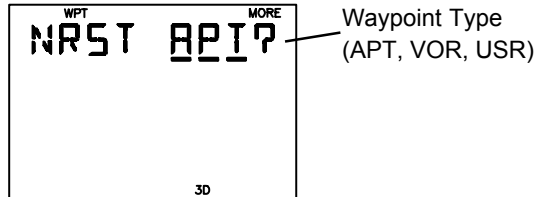
An important feature of the GPS 55 is the ability to display up to nine waypoints for each type of waypoint nearest to your position (but not further than 200 nautical miles). In an emergency, you may use the nearest waypoint feature to find the closest point of safety in your area.



NEAREST WAYPOINT PAGE

The GPS 55 provides the waypoint name and bearing/range/estimated time enroute from present position. The entire list of nearest waypoints (indicated by xxx1 through xxx9) may be viewed by pressing the MORE key while the cursor is under the waypoint name.

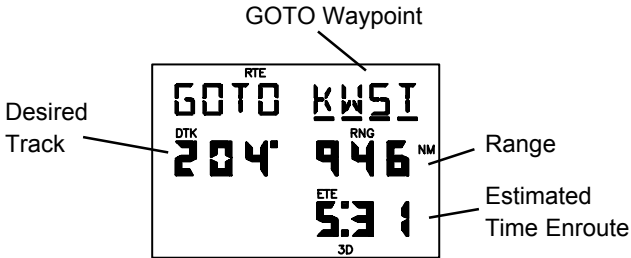
**To view nearest waypoint lists...**



- Press WPT repeatedly until the above page appears.
- Press MORE until the desired type (APT, VOR, or USR) appears.
- Press ENT to display the Nearest Waypoint Page.

**3.8 NAVIGATE TO A WAYPOINT**

The GOTO function allows you to quickly set a course from your position to any waypoint.



ACTIVE ROUTE PAGE (GOTO MODE)

**To activate the GOTO function...**

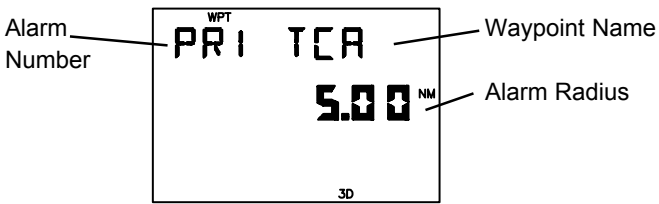
- Press GOTO. The Active Route Page will be displayed with the cursor under the GOTO waypoint field. If the GPS 55 is currently navigating to a waypoint, that waypoint will be offered as the default GOTO waypoint.
- Confirm the default GOTO waypoint by pressing the ENT key (this will re-center CDI on the CDI page) or enter the desired GOTO waypoint name. The CDI Page will be displayed.

Alternatively, the GOTO function may be quickly activated from any page (e.g. the Nearest Waypoint Page) by placing the cursor under the desired waypoint name and pressing the GOTO key. The Active Route Page will be displayed with the cursor under the GOTO waypoint name. The GOTO function will be activated when the ENT key is pressed.

### To cancel the GOTO function...

- Press GOTO.
- Press CLR, the GOTO waypoint name will become blank.
- Press ENT. The GPS 55 will start to navigate using the active route, if it has been programmed (see Chapter 6). Otherwise, the GPS 55 will cease the computation of all waypoint navigation data.

## 3.9 PROXIMITY ALARM WAYPOINTS



PROXIMITY WAYPOINT PAGE

The Proximity Waypoint Page may be displayed by pressing the WPT key. It allows you to define an alarm circle around a waypoint (you may define a maximum of nine proximity waypoints). For instance, you may wish to define a proximity alarm waypoint around a restricted use airspace such as a MOA or TCA. If you enter the alarm circle, the GPS 55 will notify you with an alarm tone and the message "PROX \_\_\_\_" (where the blank will be filled in with the waypoint name).

The Proximity Waypoint Page displays one proximity waypoint at a time. Additional waypoints are viewed by pressing the MORE key while the cursor is under the alarm number.

### To add a waypoint to the proximity list...

- Scroll through the list until the page is displayed with a blank waypoint name.
- Enter the desired waypoint name and the radius of the alarm circle.

If the newly entered proximity circle overlaps with any existing circle, you will be informed with the message “PRX OVRLP”. This message will also be displayed each time you turn the GPS 55 on as long as the overlap remains. (WARNING: If you enter the overlap area, the unit will only inform you of the nearest proximity waypoint.)

### To remove a waypoint from the proximity list...

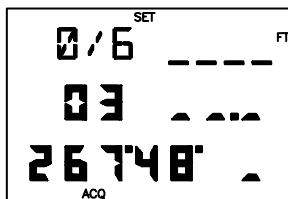
- Place the cursor under the waypoint name you wish to delete.
- Press CLR, the waypoint name will blank.
- Press ENT, the waypoint will be removed from the list.

## 3.10 SAMPLE TRIP

Now that you have gained a basic understanding of the GPS 55, you are ready to embark on a sample trip! (The sample illustrations in this section assume that the factory default settings have not been changed. If you have changed these parameters, the unit may display slightly different data than presented here.)

Your GPS 55 is factory initialized with a position of N39°, W095°. A waypoint named GRMN, located at GARMIN’s Lenexa, Kansas facilities, is also provided (GARMIN is located 109°, 11.8 nautical miles from the initial position).

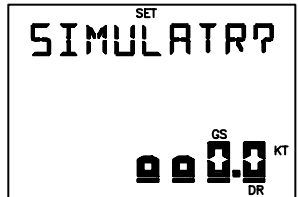
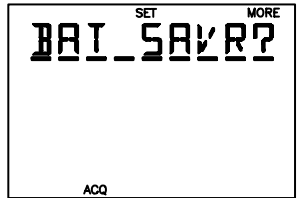
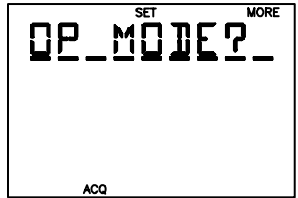
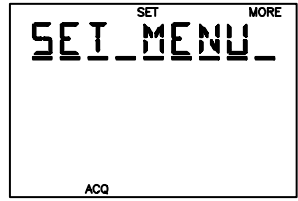
Just for fun, let’s go to GARMIN! Turn on your GPS 55. The power on notices will be displayed followed by the Satellite Status Page as illustrated below.



The GPS 55 is ready to accept your commands!

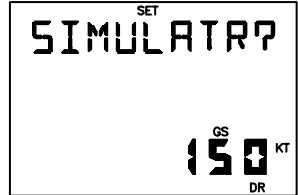
### Select the simulator mode...

- Press SET until the Set Menu is displayed.
- Press MORE until “OP MODE?” is displayed.
- Press ENT to display the Operating Mode Page.
- Press MORE until “SIMULATR?” is displayed, then press the ENT key. You have just selected simulator mode.



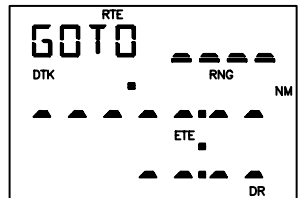
### Set the simulation speed...

- With the cursor under the ground speed field, press 1, 5, 0, followed by the ENT key, to indicate 150 knots (you may enter any speed you wish up to 999 knots). The simulation speed is now set.

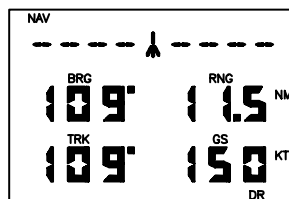
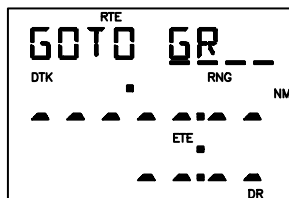


### GOTO GARMIN...

- Press GOTO. The Active Route Page will be displayed with the cursor under the GOTO waypoint name.



- With the cursor under the GOTO waypoint name, enter the waypoint name GRMN. Begin by pressing the 3 key (which also has a “G” printed on it). The letter “H” is displayed. Press the left or right arrow key until “G” is displayed. Press the 6 key followed by the left or right arrow key until “R” is displayed. Press the 5 key followed by the left or right arrow key until “M” is displayed. Press the 5 key. The letter “N” is displayed. When finished, press the ENT key. The CDI Page will be displayed which indicates your present speed (GS), track (TRK), range (RNG), and bearing (BRG) to the waypoint GRMN.



### Examine navigation information...

- Press an arrow key to place the cursor under line one. Press MORE to view the GOTO waypoint.
- Use the arrow keys to move the cursor under the fields on lines two and three. Press MORE to select a different display option.

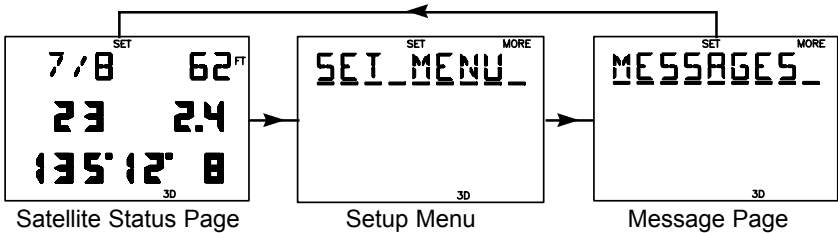
### Experiment with your GPS 55!

- Now that you are on your way to GARMIN, why don't you take some time to experiment with the GPS 55? Press each page selection key to become familiar with available pages. Practice using the cyclic fields to display new information. If you want, change the simulation speed.
- Create a waypoint of your own and GOTO it.
- If you have not customized your unit, this may be a good time to review Chapter 4 for information concerning custom settings. Doing so will help you understand what each setting will do.
- If you wish to stop the simulation, simply turn the GPS 55 off.

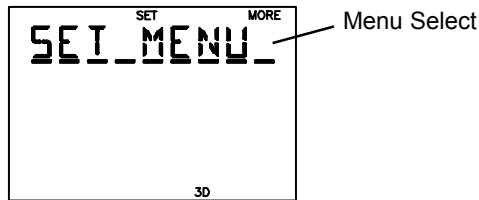
# CHAPTER 4

## UNIT CUSTOMIZATION

The GPS 55 is designed for maximum flexibility. The unit features Setup Pages which allow you to customize your unit by setting a wide variety of parameters. You may cycle through the Satellite Status, Setup Menu, and Message Pages as illustrated below by pressing the SET key repeatedly until the desired page is displayed.



### 4.1 SETUP MENU

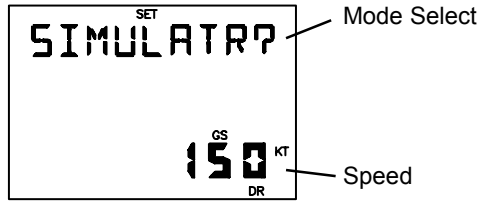


### SETUP MENU

The Setup Menu displays the "SET MENU" title to let you access the underlying functions. To select a function from the menu, press the MORE key until the desired function is displayed, then press the ENT key. The available function selections are: "OP MODE?", "ALARMS?", "BACKLGH?", "AUDIO?", "UNITS?", "CDI?", "MAG VAR?", "FILTERS?", "OUTPUT?", and "MAP DATM?".

As you change setup parameters, keep in mind the changes you make become effective immediately if the option does not have a "?". Otherwise, if the option has a "?", you must press the ENT key to confirm it before the change becomes effective.

## 4.2 OPERATING MODE



OPERATING MODE PAGE

The GPS 55 provides you with the capability to select from three modes which will allow you to operate your unit in the manner which best suits your needs.

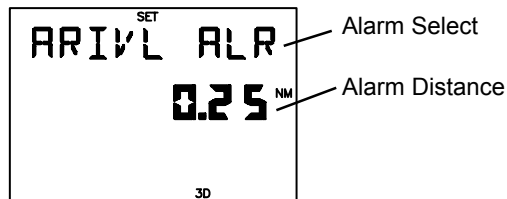
### To select the operating mode...

- With the cursor under the mode select field, press MORE until the desired operating mode is displayed (Normal, Battery Saver, or Simulator mode as described in Section 2.7).
- Press ENT. The GPS 55 will now transition to the selected operating mode. (NOTE: Changing modes will cause a momentary interruption in navigation while the GPS 55 acquires satellites and recomputes navigation information.)

### To enter simulation speed...

- With the cursor under the ground speed field, enter your desired speed. The GPS 55 will now simulate a moving craft and compute navigation information using the speed.

## 4.3 USER SELECTABLE ALARMS



ALARM PAGE

The Alarm Page features three alarms: anchor drag, arrival, and CDI.



### To arm/disarm the anchor drag alarm (marine feature)...

- Press MORE until “ANCHR ALR” is displayed. Press the right arrow key to move the cursor to line two.
- To arm the anchor drag alarm, enter a non-zero distance. If your boat drifts away from the anchored position more than the specified distance, you will be informed with an alarm tone and the message “ANCHR ALR”.
- To disarm the alarm, enter zero for the distance.

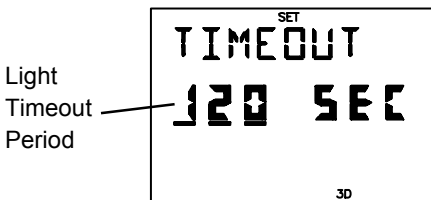
### To arm/disarm the arrival alarm...

- Press MORE until “ARIVL ALR” is displayed. Press the right arrow key to move the cursor to line two.
- To arm the arrival alarm, enter a non-zero distance. The arrival alarm will inform you with an alarm tone and the message “ARIV \_\_\_\_” when you reach your destination. The alarm distance will also be used to inform you when you approach a route waypoint with the message “APCH \_\_\_\_”.
- To disarm the alarm, enter zero for the distance.

### To arm/disarm the CDI alarm...

- Press MORE until “CDI ALARM” is displayed. Press the right arrow key to move the cursor to line two.
- To arm the CDI alarm, enter a non-zero distance. The CDI alarm will notify you with an alarm tone and the message “CDI ALARM” if your craft has deviated from course beyond the limit you set. (This can be useful while flying in an airway or navigating a narrow channel.)
- To disarm the alarm, enter zero for the distance.

## 4.4 BACKLIGHTING TIMEOUT



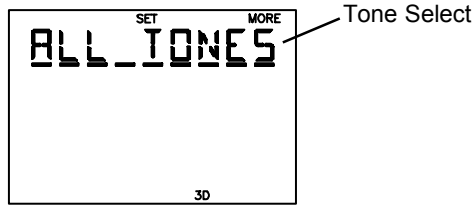
BACKLIGHTING PAGE

The GPS 55 will automatically turn the backlighting off after a specified number of seconds (backlighting is restored by pressing any key). If you are using battery power, this feature will help you extend battery life.

### To change the timeout period...

- With the cursor under the light timeout period, enter a non-zero value.
- To disable the backlighting timeout, simply enter zero (this means the backlighting will never turn off while the unit is operating).

## 4.5 AUDIO SETTINGS



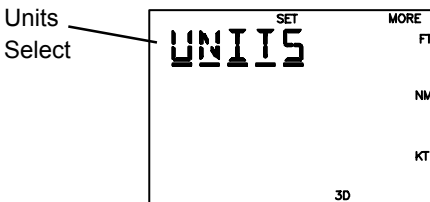
AUDIO SETUP PAGE

The Audio Setup Page allows you to select the characteristics of the audio tones.

### To select audio tones...

- With the cursor under the tone select field, press MORE until the desired tone setting is selected. Select “ALL TONES” to turn on both message and keypress feedback, “MSG TONE” to turn on message tone only, or “NO TONES” to turn off both.

## 4.6 NAVIGATION UNITS



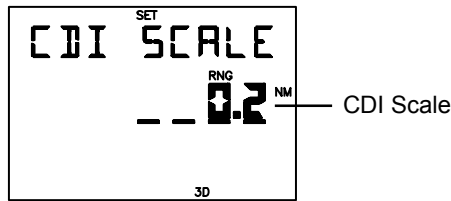
UNITS PAGE

The GPS 55 allows you to select the distance, speed, and altitude units that best suit your needs.

### To select navigation units...

- Press MORE to select the desired combination of distance, speed, and altitude units. You may select from Nautical units (nm, kt, ft), Statute units (mi, mh, ft), or Metric units (km, kh, mt).

## 4.7 CDI SCALE



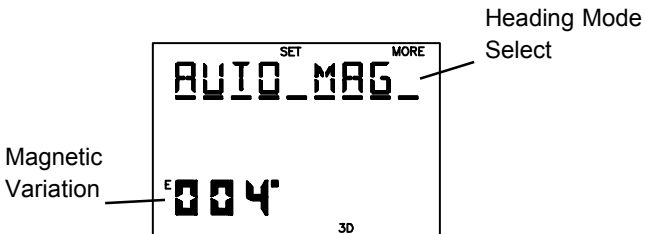
CDI SCALE PAGE

The GPS 55 allows you to set the scale for the CDI displayed on the CDI Page (see Section 3.5). The CDI scale refers to the distance that is represented by the CDI. For example, if your CDI scale is set to 1.0 nautical mile, the ends of the CDI represent left and right 1.0 nautical mile of cross track error.

### To set the CDI scale...

- With the cursor under the CDI scale field, enter the desired value.

## 4.8 MAGNETIC VARIATION



MAGNETIC VARIATION PAGE

The GPS 55 offers you three magnetic variation options. You may select true, automatic magnetic, or user magnetic heading correction for all track, course, and heading information. If you select true heading, all information displayed on other pages will be referenced to the true North pole. If you select automatic magnetic heading, all information will be corrected with the magnetic variation computed by the GPS 55. If you select user magnetic heading, all information will be corrected by the magnetic variation you enter.

### To select true heading...

- With the cursor under the heading mode select field, press MORE until “TRUE HDG” is displayed.

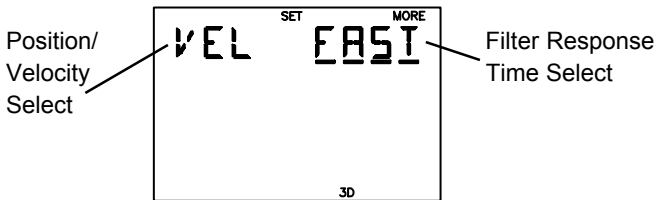
### To select automatic magnetic heading...

- With the cursor under the heading mode select field, press MORE until “AUTO MAG” is displayed. The computed magnetic variation at the present position will be displayed.

### To select user magnetic heading...

- With the cursor under the heading mode select field, press MORE until “USER MAG?” is displayed. Press ENT.
- With the cursor under the magnetic variation field, enter the desired value. (If the direction [E, W] is incorrect, press CLR until the correct direction is displayed, then enter the numeric value.)

## 4.9 FILTER SETTINGS



### FILTER SETTINGS PAGE

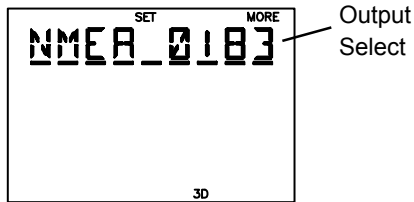
The GPS 55 allows you to choose the filter response time for position and velocity outputs. This may aid you in smoothing the data in rough seas or for sail boating.

### To select filter response time...

- With the cursor under the position/velocity select filter, press MORE to select “VEL” or “POSN”. Press ENT.
- Press MORE to select FAST (3 seconds), MED (20 seconds), SLOW (120 seconds), or AUTO.

Typical users will want to choose the “Auto” setting for optimal position and velocity filtering. This will allow the GPS 55 to respond quickly to changes in heading and speed while providing smooth data during cruise.

## 4.10 OUTPUTS



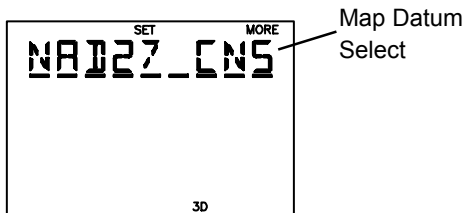
### OUTPUT PAGE

You may select the output data format for your interface requirements.

#### To select the GPS 55 output format...

- Press MORE until the desired output format is displayed. “NMEA 0180”, “NMEA 0182” (also known as NMEA 0180 Complex) and “NMEA 0183” are available for interfacing with other electronic devices (see Appendix C for more information on NMEA interfaces). Alternatively, you may select “NO OUTPUT” if you do not use the interface (this will help extend battery life).

## 4.11 MAP DATUM



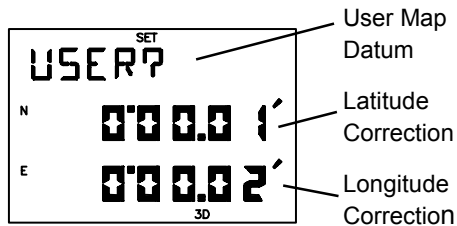
### MAP DATUM PAGE

The GPS 55 calculates your position based on the WGS-84 map datum. If your charts (or other electronic devices) are created using a different datum, you must set the GPS 55 map datum for consistency (a position in the WGS-84 datum could differ by 1000 feet or more from one calculated using another datum). The GPS 55 provides 101 standard map datums and allows you to enter your own, if necessary. Check the datum in the legend of your chart and the manuals of your other navigation equipment interfaced to the GPS 55 and set the map datum accordingly.

### To select a standard map datum...

- With the cursor under the map datum select field, press MORE or the arrow keys until the desired map datum is displayed. Refer to Appendix C for a list of the standard map datums.

### To select a user map datum...

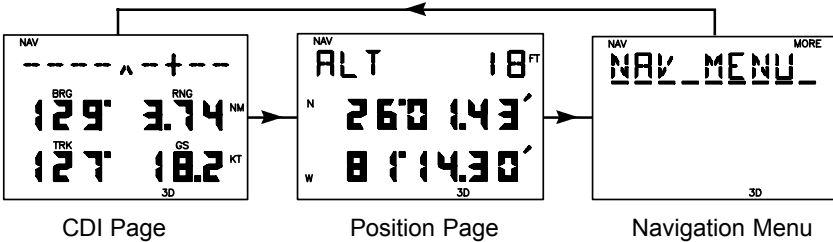


- With the cursor under the map datum select field, press MORE until "USER?" is displayed. Press ENT.
- Enter the latitude and longitude corrections in the appropriate fields. (Remember, if the direction [E, W, N, S] is incorrect, press CLR until the correct direction is displayed, then enter the numeric value.)

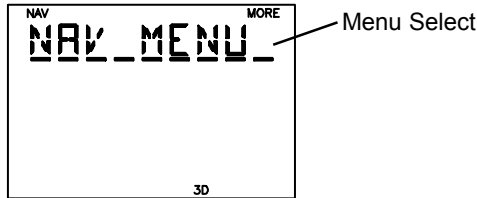
# CHAPTER 5

## NAVIGATION PLANNING

The GPS 55 provides a menu page under the NAV key which allows you to select from a menu of time and planning functions. You may cycle through the Navigation Pages by pressing the NAV key repeatedly until the desired page is displayed.



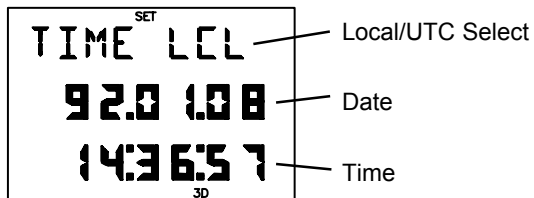
### 5.1 NAVIGATION MENU



NAVIGATION MENU

The Navigation Menu displays the “NAV MENU” title to let you access the underlying functions. To select a function from the menu, press the MORE key until the desired function is displayed, then press the ENT key. The available function selections are: “DATE TIME?” (current date/time), “TIMER?” (count down/elapsed timer), “TRIP PLN?” (trip planning), “SUN CALC?” (sunrise/sunset time calculation), and “ALRM CLK?” (alarm clock).

### 5.2 DATE AND TIME



DATE/TIME PAGE

The Date/Time Page displays the date and time in either UTC or local format. In addition, the format you select on this page is used for time displays on other pages.

### To change the time display...

- Press MORE to select either “LCL” (local) or “UTC”.

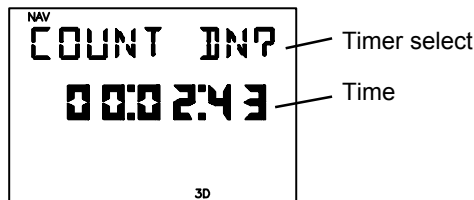
The GPS 55 will keep track of local as well as UTC time. UTC, which is essentially the same as Greenwich Mean Time (GMT), does not change with local time zones. It is the time at 0 degrees longitude which passes through the city of Greenwich, England. The GPS 55 automatically corrects the UTC date and time with information received from the satellites.

Due to the irregular nature of time zones, the GPS 55 does not attempt to correct your local time when you pass from one time zone to another.

### To update your local date and time...

- Press MORE until “LCL” is displayed in the time selection field.
- With the cursor under the date field, enter your local date in year, month, day format.
- With the cursor under the time field, enter your local time in 24-hour format.

## 5.3 EVENT TIMER



EVENT TIMER PAGE

The GPS 55 features a timer which can be used as either an elapsed timer or count down timer.

### To set the count down timer...

- With the cursor under the time field, enter the count down time in hours, minutes, and seconds.
- With the cursor under the selection field, press MORE until “COUNT DN?” is displayed.

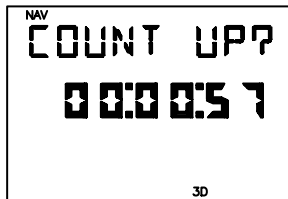


- Press ENT. The timer will start counting down. When the timer reaches zero, you will be informed with the message “TIMER EXP” and the timer will begin to count up showing you the elapsed time since the timer has expired.

### **To stop the count down timer...**

- With the cursor under the selection field, press MORE until “STOP?” is displayed.
- Press ENT. The count down timer will freeze at its last value.

The elapsed timer counts up instead of counting down. It does not generate a message, but simply measures time from the point at which it was started.



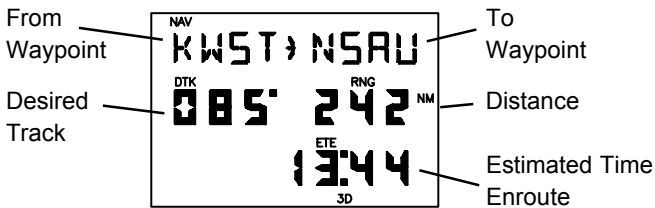
### **To start the elapsed timer...**

- With the cursor under the time field, enter the start time in hours, minutes, and seconds (you may start or restart the elapsed timer from a non-zero time).
- With the cursor under the selection field, press MORE until “COUNT UP?” is displayed.
- Press ENT. The timer will start counting up.

### **To stop the elapsed timer...**

- With the cursor under the selection field, press MORE until “STOP?” is displayed.
- Press ENT. The elapsed timer will freeze at its last value.

## 5.4 TRIP PLANNING



TRIP PLANNING PAGE

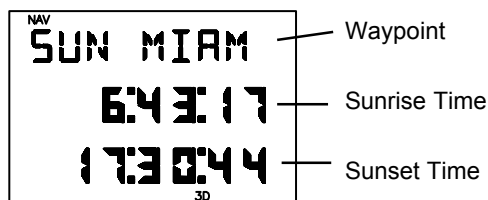
The Trip Planning Page allows you to calculate the distance, desired track, and time requirement between any two waypoints.

### To perform trip planning...

- Enter the from waypoint. If you wish to use your present position, leave it blank.
- Enter the to waypoint. If you wish to use your present position, leave it blank.

The GPS 55 will display the great circle distance and bearing between the two geographical points. In addition, the time requirement will be displayed based on your present speed.

## 5.5 SUNRISE/SUNSET



SUNRISE/SUNSET PAGE

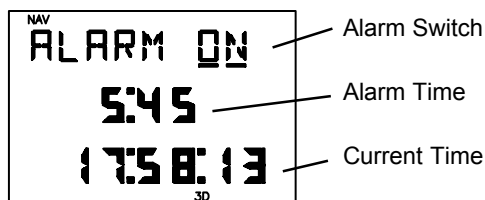
The Sunrise/Sunset Page will display sunrise and sunset times for any waypoint. This can be helpful if you wish to be at the airport at the crack of dawn, or if you wish to return home before dark.

### To calculate sunrise and sunset times...

- Enter the desired waypoint name. If you wish to use your present position, leave it blank. The GPS 55 will display the sunrise and sunset

times for the current date at the waypoint. The sunrise and sunset times will be displayed in local or UTC time based on your selection on the Date/Time Page (see Section 5.2).

## 5.6 ALARM CLOCK



ALARM CLOCK PAGE

The Alarm Clock Page on the GPS 55 allows you to concentrate on other important tasks while the GPS 55 watches the clock for you!

### To set the alarm clock...

- Press MORE to select “ON” for the alarm clock.
- Enter the desired alarm time in 24-hour format (line three displays the current time). Enter local or UTC time based on your selection on the Date/Time Page (see Section 5.2). When the alarm time has been reached, the GPS 55 will inform you with the message “ALARM CLK”.

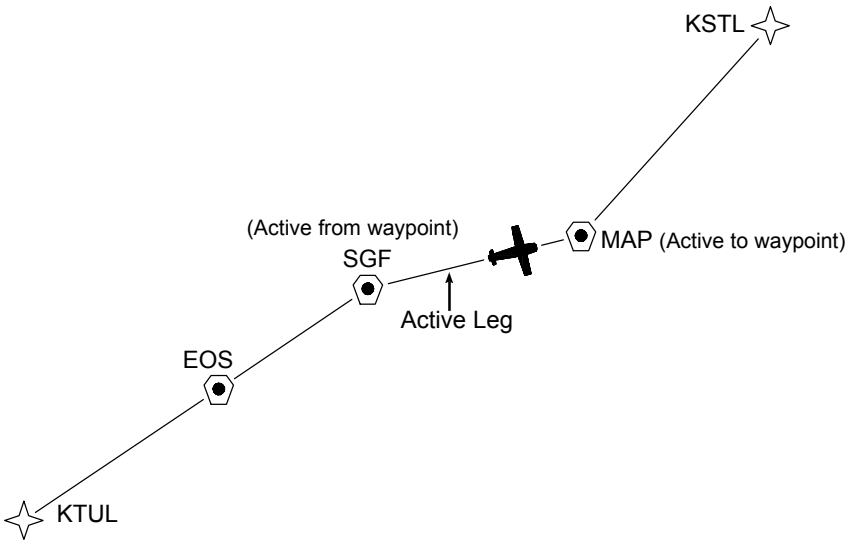
### To cancel the alarm clock...

- Press MORE to select “OFF” for the alarm clock.

# CHAPTER 6

## ROUTES

### 6.1 NAVIGATING USING ROUTES

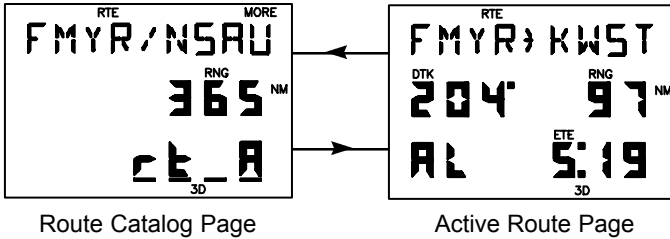


The GPS 55 offers a route navigation feature for you to navigate along a pre-defined sequence of waypoints.

The GPS 55 route capability allows you to create and store ten routes, each containing up to nine waypoints. Routes 1 to 9, the storage routes, can be activated to travel either in the order you defined the waypoints or in reverse order. Route A, the active route, is the route you are navigating. The waypoint toward which you are navigating is called the “active to” waypoint. The waypoint immediately behind you is called the “active from” waypoint. The line that connects the “active from” and “active to” waypoints is called the “active leg”.

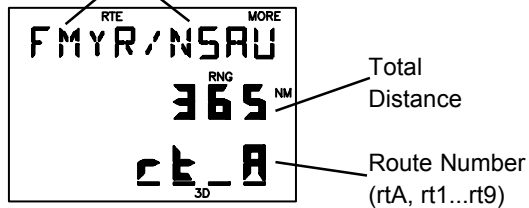
The GPS 55 features automatic leg selection which will select the route segment closest to your position as the active leg. The GPS 55 also features automatic leg sequencing. As you pass a waypoint in the route, the unit will automatically select the next waypoint as the “active to” waypoint. If your speed is greater than 65 knots, the GPS55 will provide smooth steering around the turn.

You may alternate between the two route pages as illustrated below by pressing the RTE key.



## 6.2 ROUTE CATALOG

First and Last Route Waypoints

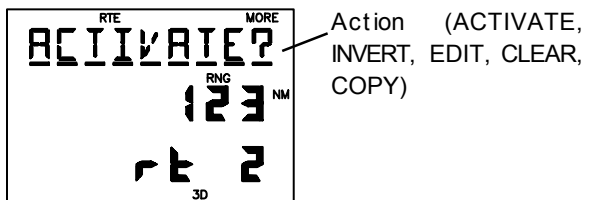


### ROUTE CATALOG PAGE

The Route Catalog Page provides a list of the routes stored in the GPS 55. This page shows the route number, first/last waypoints in the route, and the total distance traversed by the route. For example, in the illustration above, route A begins at FMYR (Fort Myers, Florida), ends at NSAU (Nassau in the Bahamas), and is 365 nautical miles long.

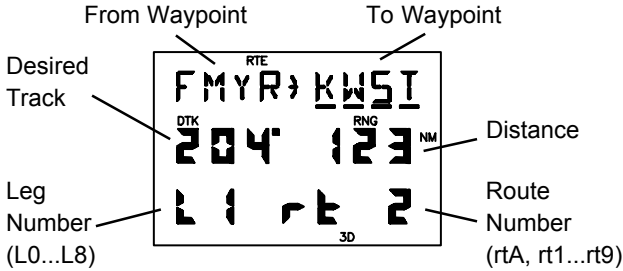
The Route Catalog Page displays one route at a time. Additional routes may be displayed by pressing the MORE key while the cursor is under the route number. Alternatively, you may press number key 1 through 9 (or 0 for active route) to select your desired route.

The Route Catalog Page allows you to initiate various operations on the route you have selected. By pressing ENT, the Route Catalog Page will change as illustrated below.



You may press the MORE key to select route editing, activation, copy and deletion functions.

### 6.3 EDITING ROUTES

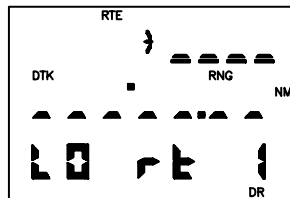


ROUTE REVIEW PAGE

The Route Review Page displays the waypoints of a route and allows you to create, change, and review routes. It shows the route and leg numbers, the two waypoints composing the leg, and the distance and desired track between the two waypoints. This page shows one leg at a time. You may press the arrow keys to review additional legs. (As you scroll past the first or last waypoint, it will return to the Route Catalog Page.)

#### To create a route...

- Select an empty route on the Route Catalog Page and press ENT. The Route Review Page will be displayed as illustrated below.



- With the cursor under the "to waypoint", enter up to nine waypoints to create the route.
- Press RTE to return to the Route Catalog Page when editing is completed.

#### To display the Route Review Page...

- Select the desired route on the Route Catalog Page and press ENT.

- Press MORE until “EDIT?” is displayed. Press the ENT key. The Route Review Page will be displayed showing the waypoints of the first leg. You may view additional legs by pressing the left or right arrow key while the cursor is under the “to waypoint.”
- Press RTE to return to the Route Catalog Page. To insert a waypoint into a route...

### **To insert a waypoint into a route...**

- Select the desired route on the Route Catalog Page and press ENT.
- Press MORE until “EDIT?” is displayed. Press ENT. The Route Review Page will be displayed.
- With the cursor under the “to waypoint”, press the arrow keys to scroll through the waypoints until the waypoint where you wish to insert appears.
- Enter the new waypoint. The existing waypoints will shift to the right to make room for the new waypoint. (If you attempt to add a waypoint in a route that already contains nine waypoints, you will be informed with the message “RTE FULL”. )
- Press RTE to return to the Route Catalog Page when editing is completed.

### **To delete a waypoint from a route...**

- Select the desired route on the Route Catalog Page and press ENT.
- Press MORE until “EDIT?” is displayed. Press ENT. The Route Review Page will be displayed.
- With the cursor under the “to waypoint”, press the arrow keys to scroll through the waypoints until the waypoint you wish to delete appears.
- Press CLR followed by ENT to delete the waypoint.
- Press RTE to return to the Catalog Page when editing is completed.

### **To clear a route...**

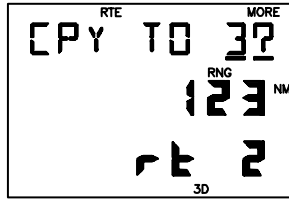
- Select the desired route on the Route Catalog Page and press ENT.
- Press MORE until “CLEAR?” is displayed. Press ENT. All waypoints are cleared from the route.

The waypoints of an existing route may be copied to an empty route using the Route Catalog Page. This is useful if you wish to store the contents of

the active route (route A) before activating another route. Also, you may copy a route and then make changes to form a new route.

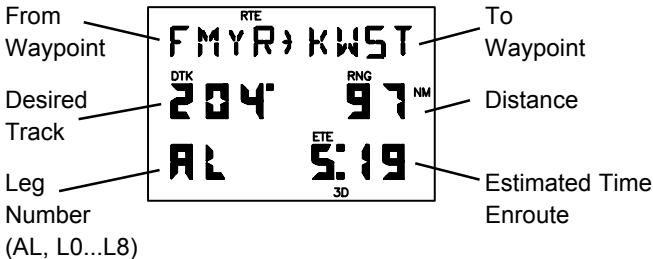
### To copy a route...

- Select the desired route on the Route Catalog Page and press ENT.
- Press MORE until “COPY?” is displayed. Press ENT. The Route Catalog Page will appear as illustrated below.



- Press MORE until the route number of the empty route to which you wish to copy is displayed, then press ENT. (If no empty routes are available, you will be informed with the message “NO EMP RT.”)

## 6.4 ACTIVATING ROUTES



ACTIVE ROUTE PAGE

Routes are activated using the Route Catalog Page. You may activate any route in the displayed order or in reverse order. (NOTE: When a new route is activated, the previous contents of route A will be overwritten. If you wish to save route A, be sure to copy it to an empty route first.)

### To activate a route...

- Select the desired route on the Route Catalog Page and press ENT.
- If you wish to activate the route in the displayed order, press MORE until “ACTIVATE?” is displayed, then press ENT.
- If you wish to activate the route in reverse order, press MORE until “INVERT?” is displayed, then press ENT.



Immediately after activating a route, the Active Route Page will be displayed. This page displays the leg number (L1 to L8, meaning legs 1 through 8 of the selected route, or AL meaning the active leg), the two waypoints composing the leg, the desired track between the two waypoints, and the enroute distance and time from your present position to the “to waypoint”.

Notice the “AL” in the above illustration. This indicates the displayed leg is the “active leg”, where FMYR is the “active from” waypoint and KWST is the “active to” waypoint. (NOTE: When activating a route, check the active leg to be sure you agree with the selection. If not, use the GOTO function to select the “active to” waypoint you desire.) You may view additional route legs by pressing the left or right arrow key while the cursor is under the “to waypoint”.

### **To add a waypoint to the active route...**

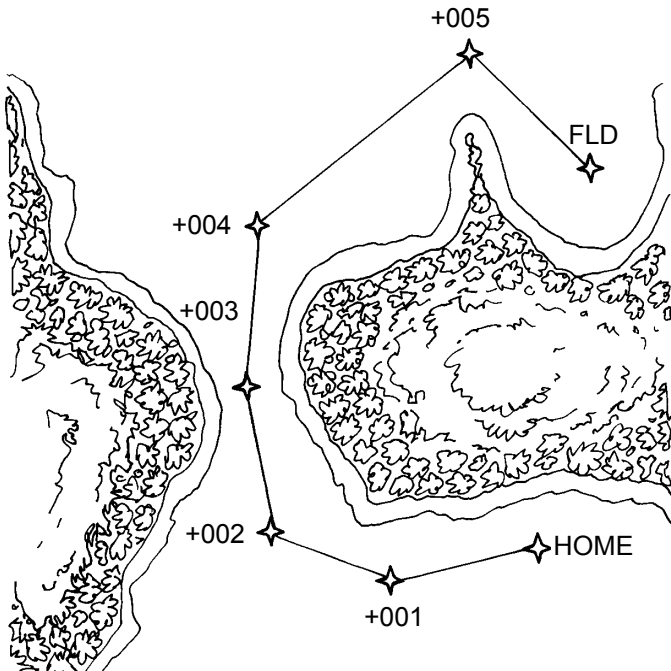
- Use the cursor under the “to waypoint”, press the arrow keys to scroll through the waypoints until the waypoint where you wish to insert the new waypoint appears.
- Enter the waypoint name. The existing waypoints will shift to the right to make room for the new waypoint.

### **To delete a waypoint from the active route...**

- With the cursor under the “to waypoint”, press the arrow keys to scroll through the waypoints until the waypoint you wish to delete appears.
- Press CLR followed by ENT to delete the waypoint.

## 6.5 BUILDING ROUTES USING AutoStore™

GARMIN's AutoStore™ feature, introduced in Section 3.4, allows you to capture your position and store it in the route of your choice at the touch of a button. By doing so, you are building a route consisting of waypoints stored along the path you travel.

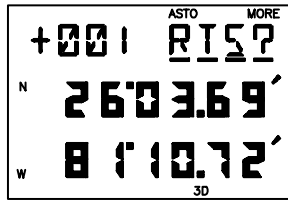


Suppose you are heading out for a trip and want to record your path as you proceed to your destination so that you can safely return from the opposite direction. Simply use the AutoStore™ function to record strategic waypoints as you travel and insert these waypoints in an empty route from the AutoStore™ Page.

### To record your route...

- Press NAV until the Position Page is displayed.
- Press ENT. The AutoStore™ Page will be displayed with the default waypoint name.
- If you wish to give the waypoint a name of your own, move the cursor under the waypoint name and enter the name of your choice.

- With the cursor under the storage select field, press MORE until the desired route is displayed (e.g., Route 5 as illustrated below).



This route will be the default storage selection for subsequent AutoStore™ operations until it is changed or the route becomes full.

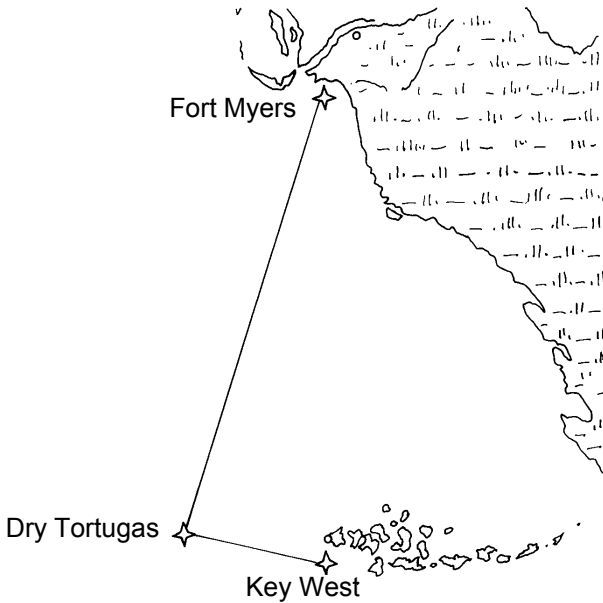
- With the desired route selected, press ENT. The AutoStore™ waypoint will be stored in the waypoint memory and appended to the selected route.

When you are ready to return, use the Route Catalog Page to activate the route you created in reverse order. The GPS 55 will automatically guide you back to your destination by passing over the waypoints you created! As an added benefit, you now have a route that will take you back at any time.

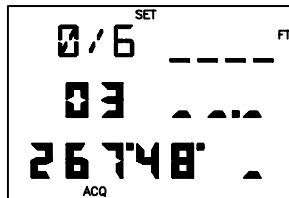
# CHAPTER 7

## SAMPLE SIMULATED TRIP

Now that you have gained a good understanding of the GPS 55 advanced features, you are ready to embark on a sample route navigation trip! (The sample illustrations in this chapter assume that the factory default settings have not been changed. If you have changed these parameters, the unit may display slightly different data than presented here.)



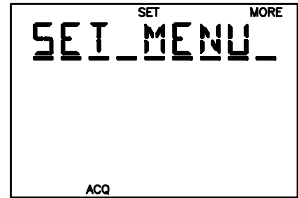
You are planning a trip from Ft. Myers, Florida to the Dry Tortugas and then on to Key West, Florida. Turn on your GPS 55. The power on notices will be displayed followed by the Satellite Status Page as illustrated below.



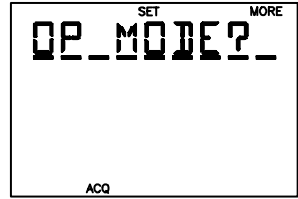
The GPS 55 is ready to accept your commands!

## Select the simulator mode...

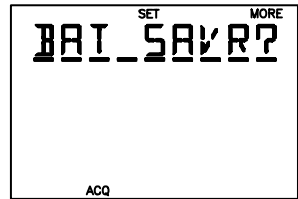
- Press SET until the Set Menu is displayed.



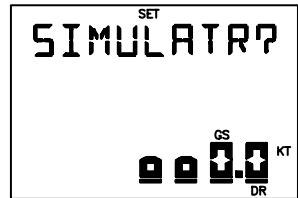
- Press MORE until "OP MODE?" is displayed.



- Press ENT to display the Operating Mode Page.

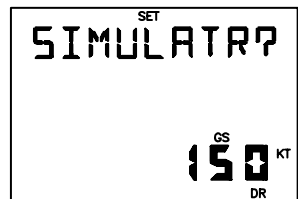


- Press MORE until "SIMULATR?" is displayed, then press ENT. You have just selected the simulator mode.



## Set the simulation speed...

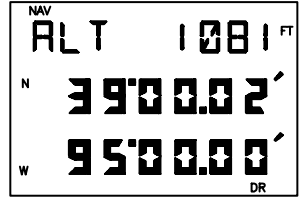
- With the cursor under the speed field, press 1, 5, 0, followed by the ENT key, to indicate 150 knots (you may enter any speed you wish up to 999 knots). The speed is now set.



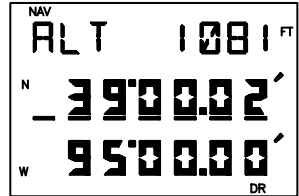
Since your trip starts at Ft. Myers, you need to set your GPS 55 position to that location.

### Set your GPS 55 position...

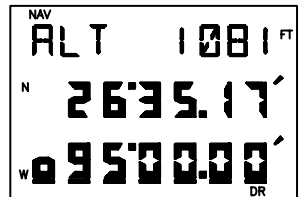
- Press NAV until the Position Page is displayed. NOTE: The position will be changing by your entered speed.



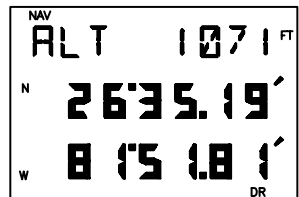
- Press an arrow key to move the cursor under the latitude.



- Press CLR until the "N" hemispheric designation is displayed, then press the 2, 6, 3, 5, 1, 7 keys to enter N26°35.17'. Press ENT to complete the latitude. The cursor will move to the longitude.



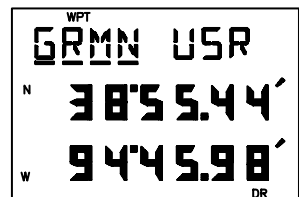
- Press CLR until the "W" hemispheric designation is displayed, then press the 0, 8, 1, 5, 1, 8, 1 keys to enter W081°51.81'. Press ENT to complete the longitude. Your position is now initialized to Fort Myers, Florida.



Now you need to create the waypoints used in the sample trip.

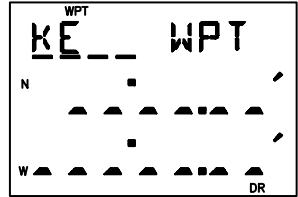
### Create waypoints...

- Press WPT to display the Waypoint Definition Page.

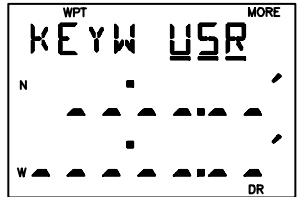


Create a waypoint named KEYW, the Key West International Airport. (If your GPS 55 contains the Americas version database, KEYW should already be stored as one of the published airports. You will not need to create the waypoint.)

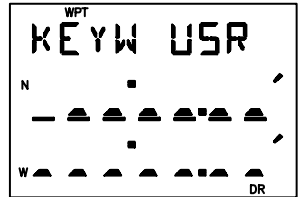
- With the cursor under the waypoint name, enter KEYW. Begin by pressing the 4 key (which also has a “K” printed on it). The letter “K” is displayed. Press the 2 key (which also has an “E” printed on it). The letter “E” is displayed. Press the 9 key (which also has a “Y” printed on it) followed by the left arrow key. The letter “Y” is displayed. Press the 8 key (which also has a “W” printed on it). The letter “W” is displayed. When finished, press the ENT key. The cursor will move under the view select field.



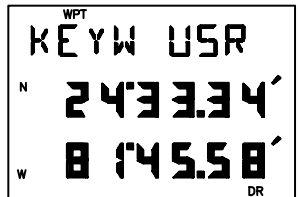
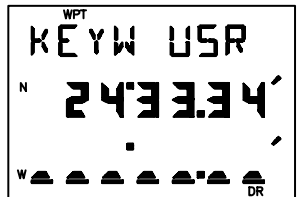
- Press ENT. The cursor will move under the latitude field.



- Enter the latitude of Key West International (N24°33.34') by pressing 2, 4, 3, 3, 3, 4. Press ENT when you are finished. The cursor will automatically move under longitude.



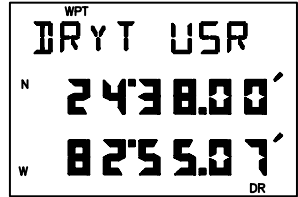
- Enter the longitude of Key West International (W081°45.58') by pressing 0, 8, 1, 4, 5, 5, 8. Press ENT when you are finished. You have just created the waypoint KEYW.



Create a waypoint named DRYT which will be located in the Dry Tortugas area of the Gulf of Mexico.

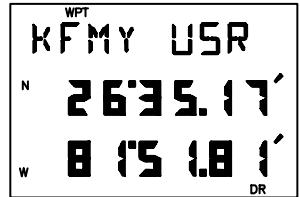
- Move the cursor back under the waypoint name field.

- Enter the waypoint name DRYT, latitude (N24°38.00') and longitude (W082°55.07').



Create a waypoint named KFMY which is the name for Fort Myers Airport. (This waypoint should already be stored in the Americas version database.)

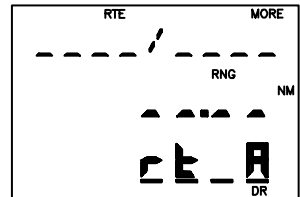
- Move the cursor back under the waypoint name field.
- Enter the waypoint name KFMY, latitude (N26°35.17'), and longitude (W081°51.81').



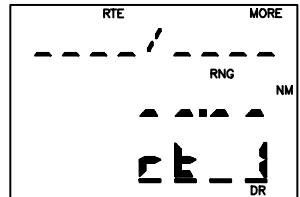
Now that the sample waypoints are in memory, create the sample route using these waypoints.

### Create the sample route...

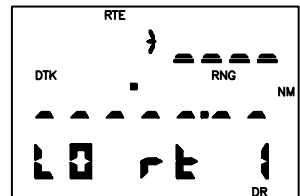
- Press RTE until the Route Catalog Page is displayed.



- Press MORE until the route 1 is displayed. (NOTE: This example assumes route 1 is empty.)

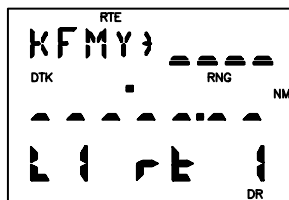


- Press ENT. You have just selected the Route Review Page for route 1. Notice that the route does not contain any waypoints ("L0" indicates leg 0 is displayed).

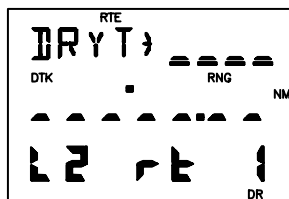




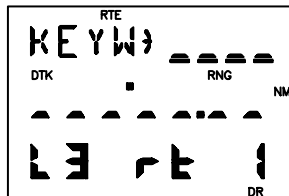
- Enter the waypoint name KFMY followed by the ENT key. You have just entered Ft. Myers as the waypoint from which your trip will start.



- Enter DRYT as the second waypoint of the route.



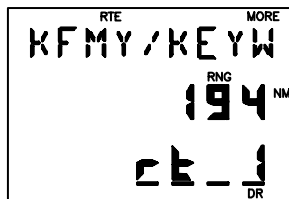
- Enter KEYW as the third waypoint of the route. This is the waypoint where your trip will end.



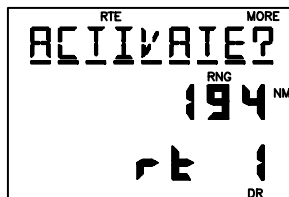
If you haven't already guessed, you have just created a route that will take you from Fort Myers to the Dry Tortugas and on to Key West. You may review the route leg information (including desired track and range) by pressing the left arrow key to scroll through the route waypoints.

### Activate the sample route...

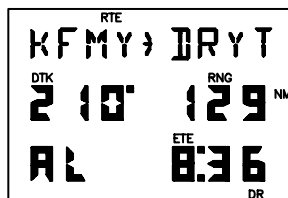
- Press RTE to display the Route Catalog Page again.



- Press ENT.



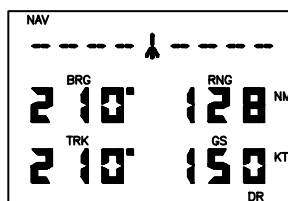
- With the cursor under “ACTIVATE?”, press ENT to activate the sample route. The Active Route Page will be displayed.



The sample route is now active. This page displays the waypoint you are going from (KFMY) and the waypoint you are going to (DRYT) on line one as well as desired track, distance and time information on lines two and three.

### Examine navigation information...

- Press NAV to display the CDI Page. The page will indicate CDI, bearing, range, track and speed information.

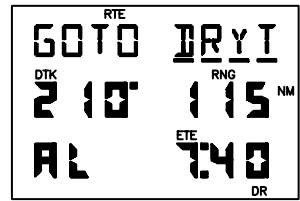


- Press an arrow key to place the cursor under line one. Press MORE to view the active leg. Press the MORE key again to view the CDI.
- Use the arrow keys to move the cursor under the fields on lines two and three. Press MORE to select a different display option.

### Experiment with your GPS 55!

- Now that you have started on your fantasy trip to the Dry Tortugas, why don't you take some time to experiment with the GPS 55? Press each page selection key to become familiar with available pages. Practice using the cyclic fields to display new information. Examine the Active Route Page as the simulation progresses. If you want, change the simulation speed.
- As you progress through the simulation, the GPS 55 will alert you with a message when you are within one minute of reaching the waypoint DRYT. When passing DRYT, the GPS 55 will automatically sequence to the next waypoint which is KWST.

- At some point during the simulation, you may wish to try the GOTO function. Suppose severe weather in the Dry Tortugas area was reported over your VHF com. You may wish to shorten your trip by heading directly to Key West, Florida. Simply press GOTO. The Active Route Page will be displayed.



- Enter KWST. The GPS 55 will set an instantaneous course and you are on your way to Key West!

# APPENDIX A

## MESSAGES

The GPS 55 uses the Message Page to communicate important information to you. Some messages are advisory in nature, others are warnings that may require your intervention. This appendix provides a complete list of GPS 55 messages and their meanings. Please pay careful attention to all messages.

**ACTV WPT** - An attempt has been made to modify the position of the “active to” or “active from” waypoint. The GPS 55 will not allow the modifications.

**ADJST OSC** - The GPS 55 has detected excessive drift in its internal crystal oscillator which may result in longer acquisition time. The unit should be taken to an authorized GARMIN service center as soon as possible.

**ALARM CLK** - The alarm clock time has been reached.

**ANCHR ALR** - Your craft has drifted outside the anchor drag alarm radius set on the Alarm Page.

**APCH \_\_\_\_** - You are less than one minute from reaching the indicated waypoint or your craft has entered the arrival alarm circle for the waypoint.

**ARIV \_\_\_\_** - Your craft has entered the arrival alarm circle for the waypoint.

**BATT LOW** - The battery pack is low on power. AA batteries should be replaced or the rechargeable battery pack should be recharged.

**CDI ALARM** - Your course deviation has exceeded the limit you specified on the Alarm Page.

**DATA LOST** - Stored user data, including waypoints, routes, and satellite orbital data has been lost due to a low memory battery.

**EXST \_\_\_\_** - You have renamed the waypoint on the AutoStore™ Page or Waypoint Definition Page with a name that already exists in memory. Enter a waypoint name that does not exist.

**HIGH EPE** - The accuracy of the GPS 55 position is degraded beyond 500 meters due to satellite geometry or data quality. Additional cross checking should be performed by the user to verify the integrity of the GPS 55 position.

**MEM BATT** - The battery that sustains user memory is low and should be replaced by an authorized GARMIN service center as soon as possible. Failure to do so may result in loss of stored data, including all waypoints and routes.

**MEM FULL** - The waypoint memory is full. You should delete unused waypoints to make room for new waypoints.

**NEED ALT** - The GPS 55 needs altitude input in order to start or continue 2D navigation. Press NAV to enter altitude on the Position Page.

**NO EMP RT** - There are no empty routes available into which another route may be copied.

**POOR CVRG** - The GPS 55 cannot acquire sufficient satellites necessary to provide navigation.

**PROX \_\_\_\_** - Your craft has penetrated the alarm circle of the proximity waypoint. Press WPT to view your position relative to the waypoint.

**PROX WPT** - An attempt has been made to delete a waypoint which is a member of the proximity list. You must remove the waypoint from the proximity list before the waypoint can be deleted.

**PRX OVRLP** - The circles defined by two proximity waypoints overlap. When entering the area of the overlap, the GPS 55 will alarm you of the closest proximity waypoint, but not both. You should be certain this condition is desirable.

**RCVR FAIL** - The GPS 55 has detected a failure in the receiver hardware. If the message persists, the GPS 55 is unusable and should be taken to an authorized GARMIN service center.

**RE-INIT** - The GPS 55 is unable to compute a position. Initialize the position on the Position Page to within 1000 nautical miles of your actual position.

**ROM FAILD** - The GPS 55 has detected a failure in its memory. The unit is unusable and should be taken to an authorized GARMIN service center.

**ROUTE WPT** - An attempt has been made to delete a waypoint which is a member of one or more routes. You must remove the waypoint from all routes before the waypoint can be deleted.

**RTE FULL** - An attempt has been made to add more than nine waypoints to a route. The GPS 55 will not allow more than nine waypoints per route.

**SHORT LEG** - The upcoming leg is too short for smooth waypoint transitions. Expect a rapid change in the CDI.

**SRCH SKY** - The GPS 55 is in search-the-sky mode. Allow the unit to complete its data collection before turning it off.

**STEEP TRN** - This message appears one minute prior to a turn that requires a bank angle in excess of 25 degrees in order to stay on course.

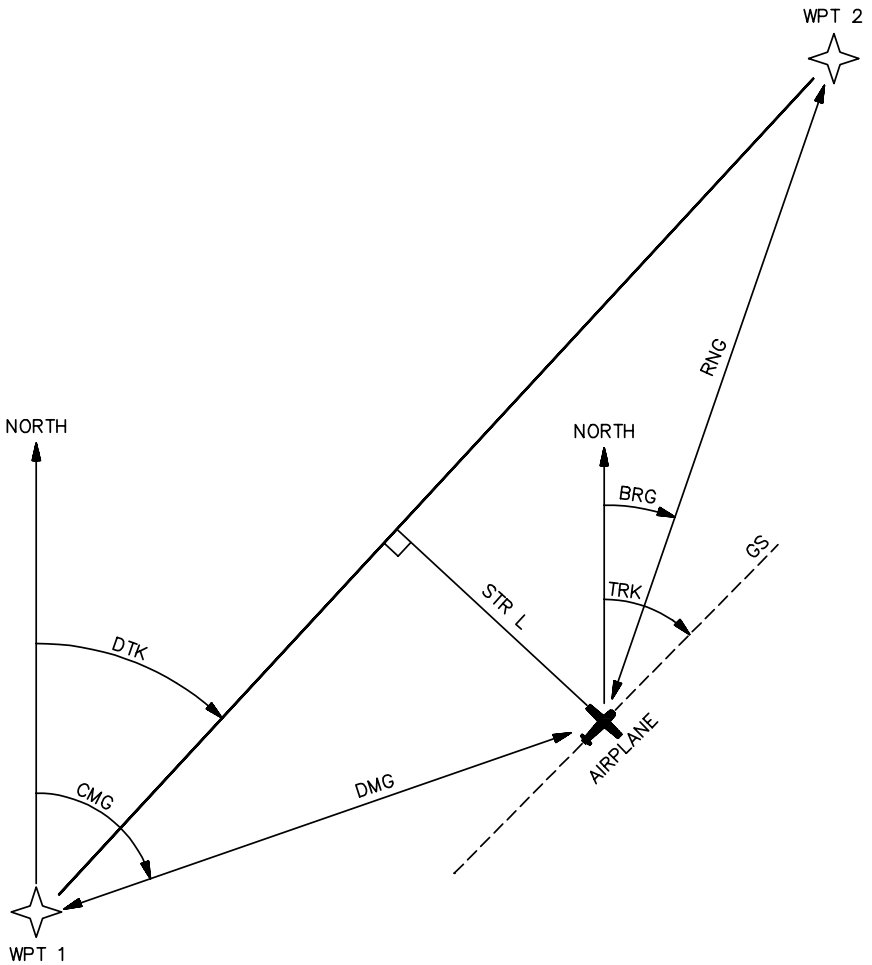
**TIMER EXP** - The count down timer has expired.

# APPENDIX B

## NAVIGATION TERMS

### B.1 DEFINITIONS

This section provides an illustration of and definitions for the navigation terms used in this manual.



Velocity/time terms:

- GS** Ground speed. GS is the speed measured relative to the ground; also known as velocity over ground (VOG).
- VMG** Velocity made good. VMG is velocity in the direction of the desired course. It is the speed at which you are closing on the “active to” waypoint.
- ETE** Estimated time enroute. ETE is the time it will take to reach the “active to” waypoint based on VMG.

Direction terms:

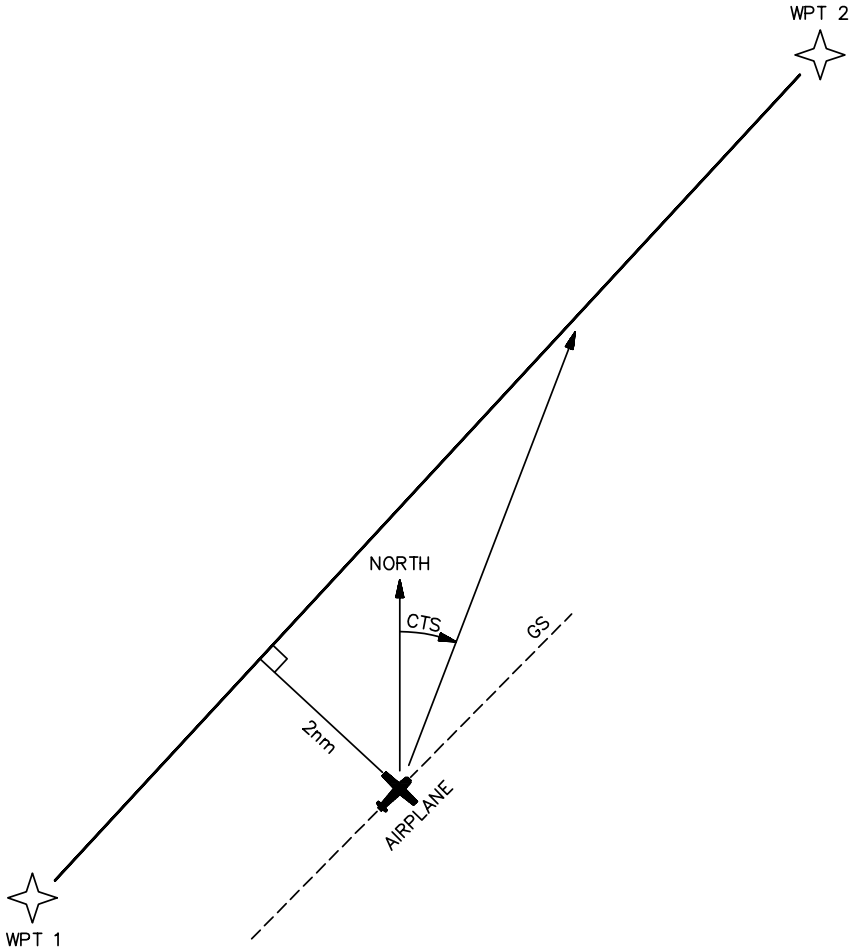
- DTK** Desired track. DTK is the course between the “from” and “to” waypoints.
- BRG** Bearing. BRG is the direction from your position to the “active to” waypoint.
- CTS** Course to steer. CTS is the recommended direction to steer in order to reduce cross track error and stay on course (see Section B.2 for an example using CTS).
- CMG** Course made good. CMG is the bearing from the “active from” waypoint to your position.
- TRK** Track. TRK is the direction of movement relative to the ground.
- TRN** Turn instruction. TRN is the difference between BRG or CTS (whichever you have displayed) and TRK. “L” indicates you should turn to the left, “R” indicate you should turn to the right. The degrees indicate the angle you are off course.

Distance terms:

- RNG** Range. RNG is the great circle distance from your position to the “to” waypoint.
- DMG** Distance made good. DMG is the distance from the “active from” waypoint to your position.
- STR** Steer direction and distance. “L” indicates you should steer to the left, “R” indicates you should steer to the right. The distance indicates how far you are off course.

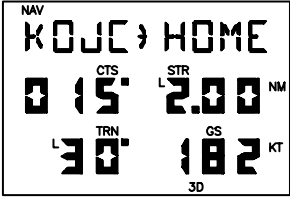
## B.2 COURSE TO STEER (CTS)

Course To Steer is a GARMIN exclusive that recommends an optimal direction to steer that will guide you to the course and proceed efficiently along your route.





As an example, suppose you activate the route illustrated above. The GPS 55 chooses the closest leg with a desired track of 45 degrees but your position happens to be two nautical miles off course. The unit will automatically compute the optimal course to steer (which is 15° in this example). Press the NAV key until the CDI Page is displayed, then select “CTS” on line two and “TRN” on line three. Turn your craft according to the TRN direction until the TRN angle reaches zero. Continue to follow the TRN guidance, thus matching your track (TRK) with the recommended course to steer.



As you approach the course, CTS will slowly change and, once on course, will be identical to the desired track.

# APPENDIX C

## INSTALLATION AND MAINTENANCE

### C.1 SPECIFICATIONS

#### GPS 55 SPECIFICATIONS\*

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##### PHYSICAL

Case:	Main Unit: Waterproof Battery Pack: Splash Proof
Size:	Portable: 3.23"w x 6.26"h x 1.46"d (82mm x 159mm x 37mm) Fixed: 3.23"w x 4.87"h x 1.46"d (82mm x 124mm x 37mm)
Weight:	14 ounces (0.4 kg) without battery pack 19.5 ounces (0.55) with battery pack

##### POWER

Input	Alkaline battery pack (4 AA size) Rechargeable battery pack 12- or 24-volt DC with power cable (5-40 VDC) 115- or 230-volt AC with battery charger
Consumption	1.1 watts in Normal mode (without backlighting)

##### ENVIRONMENTAL

Temperature:	-15°C to +70°C (+5°F to +158°F ) operating -40°C to +70°C (-40°F to +158°F) storage
Humidity:	95% non-condensing

##### PERFORMANCE

Receiver:	MultiTrac™, tracking up to 8 satellites
Frequency:	L1, 1.57542 GHz
Acquisition Time: (typical)	2 minutes 2D 2.5 minutes 3D 15 seconds Warm Start (with ephemeris)

Update Rate: Once per second, continuously  
Accuracy: Position: 15 meters (49 ft) RMS\*\*  
Velocity: 0.1 knots RMS steady state  
Dynamics: 695 knots velocity, 3g dynamics

## INTERFACES

NMEA 0180

NMEA 0182

NMEA 0183 (Version 1.5; December 1987)

Approved sentences:

GPBWC, GPGLL, GPRMB, GPRMC, GPR00, GPWPL, GPXTE

Proprietary sentences:

PGRMA

Transmission rate:

GPBWC, GPGLL, GPRMB, GPRMC, GPXTE, and PGRMA transmitted once every two seconds.

GPR00 transmitted once every  $(\# \text{ of route waypoints} + 1) * 2$  seconds. e.g., if there are two route waypoints, this sentence will be transmitted once every six seconds.

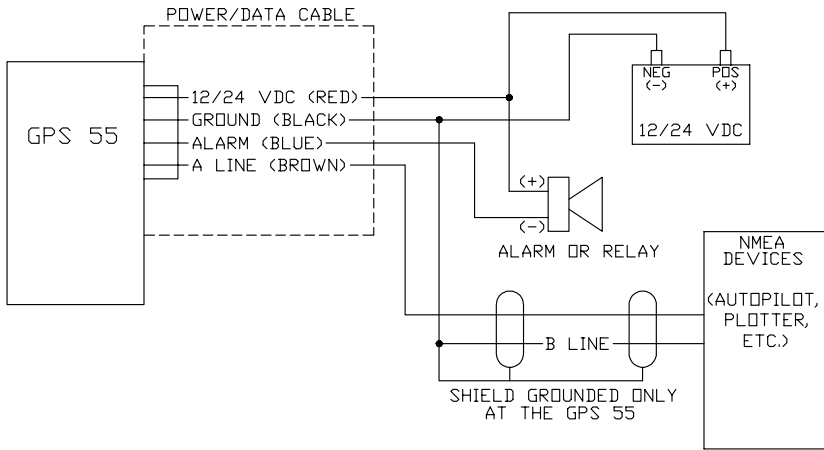
GPWPL transmitted  $\# \text{ of route waypoints times in } (\# \text{ of route waypoints} + 1) * 2$  seconds. e.g., if there are two route waypoints, this sentence will be transmitted twice every six seconds.

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## NOTES:

- \* All specifications are subject to change without notice.
- \*\* Subject to accuracy degradation to 100m 2DRMS under the United States Department of Defense imposed Selective Availability program.

## C.2 ELECTRICAL WIRING



The GPS 55 power/data cable allows you to connect the unit to vehicle power systems, other electronics, and a remote alarm/beeper. The harness will plug into the connector located on the rear panel of the GPS 55. (Note that the white wire and the red/black stripe wire are not functional and should not be connected.)

### To connect to vehicle power systems...

- Connect the RED harness lead (with fuse) to the positive (+) side of a 5-40 volt DC power source.
- Connect the BLACK harness lead to the negative (-) side of the 5-40 volt DC power source.

The GPS 55 will drive a remote alarm or relay that requires no more than 100 milliamps of current. (**WARNING:** Devices which draw current in excess of 100 milliamperes may damage your unit and will void your warranty. Consult the instructions included with the remote alarm or relay for current drain information.)

### To connect to a remote alarm system...

- Connect the BLUE harness lead to the negative side of a transistor alarm or relay switch.
- Connect the positive side of the alarm or relay to the positive side of the 5-40 volt DC power source.

The GPS 55 may be connected to other electronics such as a marine autopilot or plotter which use an NMEA 0180, NMEA 0182 or NMEA 0183

data interface. The unit can provide data for up to three NMEA “listeners” simultaneously. Refer to installation instructions of these devices for further information.

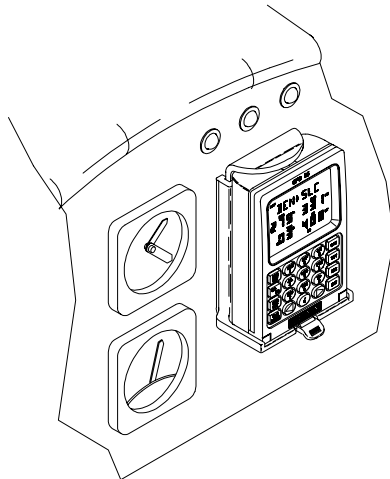
### **To connect the GPS 55 to an NMEA electronic device...**

- Connect the BROWN harness lead to the NMEA “A” line of a two-wire, shielded cable.
- Connect the BLACK harness lead to the NMEA “B” line of the shielded cable.
- Connect the BLACK harness lead to the shield of the shielded cable. (The opposite end of the shield should not be grounded.)

### **C.3 SURFACE MOUNT INSTALLATION**

The GPS 55 is equipped with a mounting bracket for fixed installations. The mount may be attached to a surface as shown below.

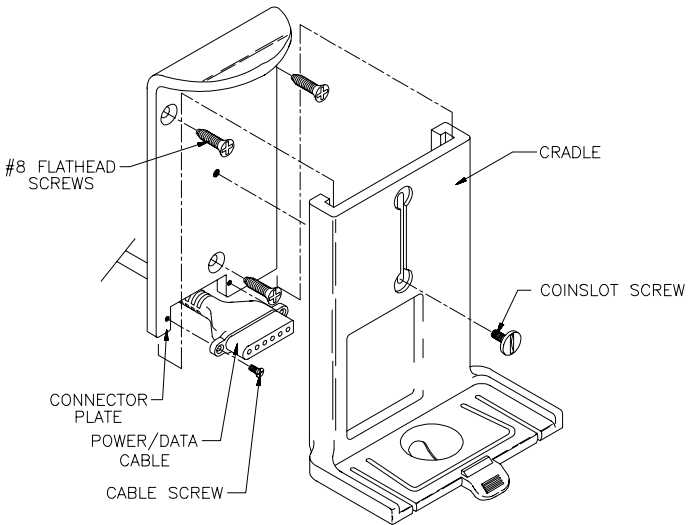
Although your GPS 55 is designed to withstand the harshest environments, it is recommended that it be mounted in a location which provides protection from sun and spray. Before permanent mounting, you may wish to apply power to the unit and look at the display in the desired mounting location to ensure you have the desired viewing angle.



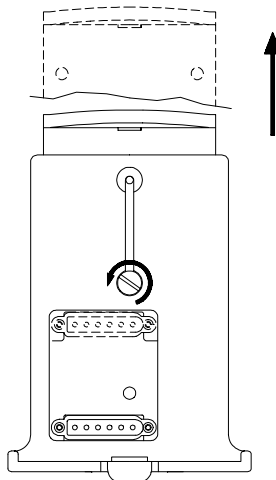
### **To install the surface mount...**

- Remove the screws which mount the power/data cable and remove the cable.
- Unscrew the coin slot screw and remove the cradle.

- Drill an oblong hole in the mounting surface to allow clearance for the power/data cable and connector.
- Mount the connector plate to the mounting surface using appropriate screws (#8 flat head screws are recommended).
- Slide the cradle onto the connector plate and install the coinslot screw.
- Install the power/data cable.



**To adjust the surface mount...**



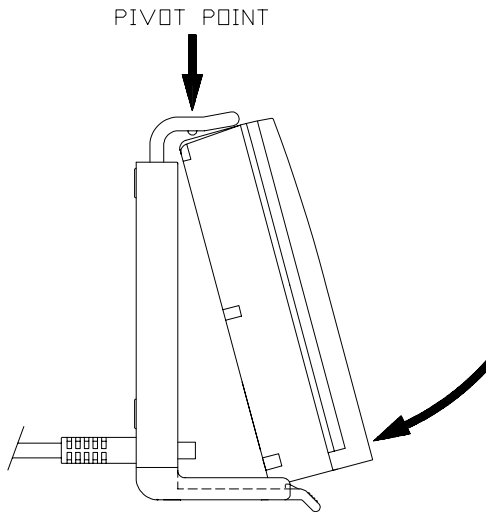
The surface mount has been designed to allow the GPS 55 to be installed either with or without the battery pack attached. To adjust the surface mount

to accept the GPS 55 with the battery pack attached:

- Loosen the coinslot.
- Lower the cradle to its lowest position.
- Tighten the coinslot screw. When adjusted properly, the coinslot screw should fit completely into the counterbore in the cradle so that all surfaces are flush.

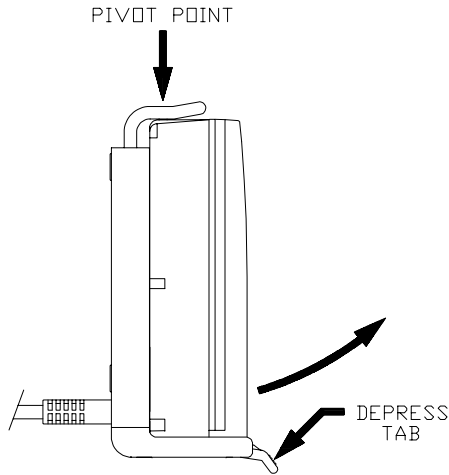
The surface mount has been designed for easy insertion and removal of your GPS 55 if you wish to use the unit in another airplane, boat or vehicle, plan at home, or prevent theft.

### To insert the GPS 55 into the surface mount...



- Tilt the top of the GPS 55 into the surface mount as shown.
- Engage the slot in the top of the GPS 55 into the raised bump in the surface mount.
- Rotate the bottom of the GPS 55 into the mount until the unit latches securely into place.
- Connect the antenna or antenna cable. No other electrical connections are required; all power and data connections are made through the 6-pin connector installed in the surface mount.

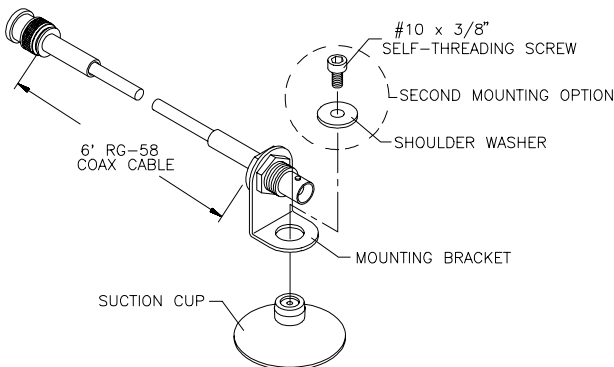
## To remove the GPS 55 from the surface mount...



- Disconnect the antenna or antenna cable.
- Apply enough force to the release tab to allow the unit to pass as shown above.
- Pull the bottom of the GPS 55 out, then rotate the top downward and out.

## C.4 PORTABLE ANTENNA INSTALLATION

The GPS 55 is supplied with a portable antenna mount that allows the antenna to be affixed to a windshield or any smooth surface using a suction cup mount and a six foot extension cable. As an alternative, the suction cup can be removed and replaced with the plastic shoulder washer and self-threading screw to permanently attach the mounting bracket to the glare shield.

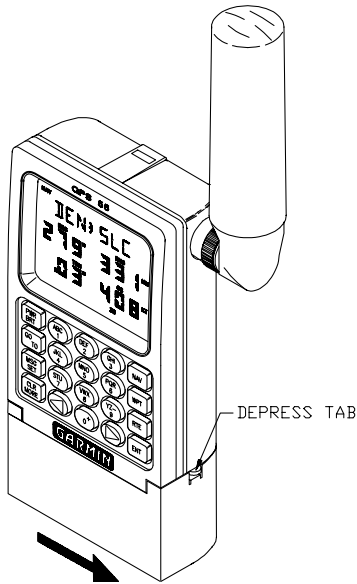




## C.5 BATTERY PACK OPERATION

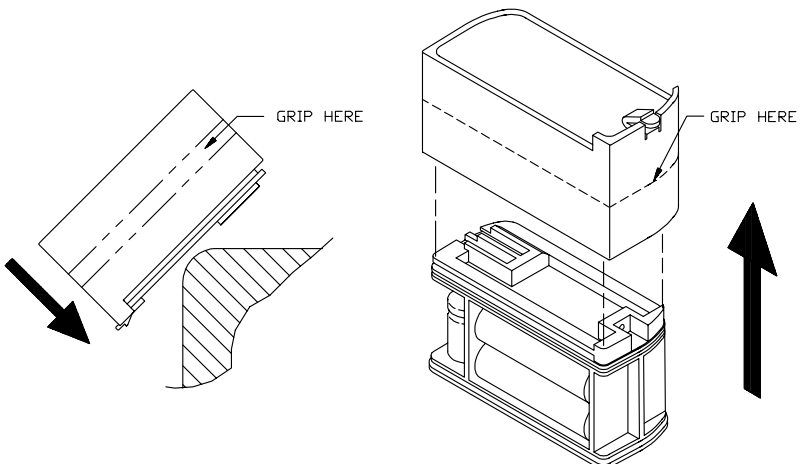
The GPS 55 is supplied with a 4-cell alkaline battery pack. The battery pack must be removed from the unit in order to replace the cells.

**To remove the battery pack...**



- Push down on the spring tab on the right side of the battery pack.
- Pull the battery pack off the right side of the unit.

**To replace the alkaline batteries...**



- Grip the battery pack around the outside edge (not the bottom).
- Push the top of the battery pack against the edge of a hard surface which will not mar the plastic. The outer sleeve will slide off the cage, revealing the batteries inside.
- Replace the batteries, observing the polarity diagram engraved in the plastic.
- Slide the sleeve over the cage until it snaps into place, taking care that you do not tear the gaskets which provide the battery pack seal.

## **C.6 MAINTENANCE**

The GPS 55 is constructed of high quality material and should not require user maintenance. Please refer any repairs to an authorized GARMIN service center. (The unit contains no user serviceable parts, do not attempt repairs yourself.)

Never allow gasoline or solvents to come into contact with your unit. Damage to the case may occur which is not covered by your warranty.

The waypoints, routes, custom settings, and other data stored in the GPS 55 are maintained by an internal battery. (These data will not be lost even if you remove the AA or rechargeable battery pack for separate storage.) The internal memory battery should typically last three to five years. If the GPS 55 detects a low memory battery, you will be informed with the message "MEMBATT". You should return your unit to an authorized GARMIN service center as soon as possible for service. Failure to do so may result in loss of data each time you turn your unit off (indicated by the message "DATA LOST").

Your GPS 55 contains a highly accurate crystal oscillator which may drift after many years of operation. If the unit detects excessive oscillator drift, you will be informed with the message "ADJST OSC". You should return your unit to an authorized GARMIN service center as soon as possible. Failure to do so may result in degraded acquisition performance.

## **C.7 CUSTOMER SUPPORT**

Should you require additional assistance, please call our Customer Support Department. Customers in the continental United States may use our toll free number: 1-800-800-1020. Customers outside the continental United States may call 1-913-599-1515.

# APPENDIX D

## MAP DATUMS

The following is a list of the GPS 55 map datum selections and the corresponding map datum name (including the area of application):

ADINDAN	ADINDAN - Ethiopia, Mali, Senegal, Sudan
AFGOOYE	AFGOOYE - Somalia
AIN ELABD	AIN EL ABD 1970 - Bahrain Island, Saudi Arabia
ANNA1ASTR	ANNA 1 ASTRO 1965 - Cocos Islands
ARC 1950	ARC 1950 - Botswana, Lesotho, Malawi, Swaziland, Zaire, Zambia, Zimbabwe
ARC 1960	ARC 1960 - Kenya, Tanzania
ASCNSN IS	ASCENSION ISLAND 1958 - Ascension Island
ASTR BECN	ASTRO BEACON "E" - Iwo Jima Island
ASTRSOROL	ASTRO B4 SOROL ATOLL - Tern Island
ASTRO DOS	ASTRO DOS 71/4 - St. Helena Island
ASTRO STN	ASTRONOMIC STATION 1952 - Marcus Island
ASTRLN 66	AUSTRALIAN GEODETIC 1966 - Australia, Tasmania Island
ASTRLN 84	AUSTRALIAN GEODETIC 1984 - Australia, Tasmania Island
BELLEVUE	BELLEVUE (IGN) - Efate and Erromango Islands
BERMUDA	BERMUDA 1957 - Bermuda Islands
BOGOTA OB	BOGOTA OBSERVATORY - Colombia
CAMPO INC	CAMPO INCHAUSPE - Argentina
CANTON 66	CANTON ASTRO 1966 - Phoenix Islands
CAPE	CAPE - South Africa
CAP CNVRL	CAPE CANAVERAL - Florida, Bahama Islands
CARTHAGE	CARTHAGE - Tunisia
CHATHM 71	CHATHAM 1971 - Chatham Island (New Zealand)
CHUA ASTR	CHUA ASTRO - Paraguay
CREGO ALG	CORREGO ALEGRE - Brazil
DJAKARTA	DJAKARTA (BATAVIA) - Sumatra Island (Indonesia)
DOS 1968	DOS 1968 - Gizo Island (New Georgia Islands)
EASTER IS	EASTER ISLAND 1967 - Easter Island
EUROPE 50	EUROPEAN 1950 - Austria, Belgium, Denmark, Finland, France, Germany, Gibraltar, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland

EUROPE 79	EUROPEAN 1979 - Austria, Finland, Netherlands, Norway, Spain, Sweden, Switzerland
FIN HYFRD	FINLAND HAYFORD 1910 - Finland
GANDAJIKA	GANDAJIKA BASE - Republic of Maldives
GEOD 49	GEODETIC DATUM 1949 - New Zealand
GUAM 1963	GUAM 1963 - Guam Island
GUX ASTRO	GUX 1 ASTRO - Guadalcanal Island
HJORSY 55	HJORSEY 1955 - Iceland
HONG KONG	HONG KONG 1963 - Hong Kong
INDN TLND	INDIAN - Thailand, Vietnam
INDN BLDS	INDIAN - Bangladesh, India, Nepal
IRELND 65	IRELAND 1965 - Ireland
ISTS ASTR	ISTS O73 ASTRO 1969 - Diego Garcia
JHNSTN IS	JOHNSTON ISLAND 1961 - Johnston Island
KANDAWALA	KANDAWALA - Sri Lanka
KERGLN IS	KERGUELEN ISLAND - Kerguelen Island
KERTAUI 48	KERTAUI 1948 - West Malaysia, Singapore
LC5 ASTRO	L.C. 5 ASTRO - Cayman Brac Island
LIBRIA 64	LIBERIA 1964 - Liberia
LUZN PHLP	LUZON - Phillippines (excluding Mindanao Island)
LUZN MNDN	LUZON - Mindanao Island
MAHE 1971	MAHE 1971 - Mahe Island
MARCO AST	MARCO ASTRO - Salvage Islands
MASSAWA	MASSAWA - Eritrea (Ethiopia)
MERCHICH	MERCHICH - Morocco
MIDWAY 61	MIDWAY ASTRO 1961 - Midway Island
MINNA	MINNA - Nigeria
NHRN MSRH	NAHRWAN - Masirah Island (Oman)
NHRN UAE	NAHRWAN - United Arab Emirates
NHRN SADI	NAHRWAN - Saudi Arabia
NAPARIMA	NAPARIMA, BWI - Trinidad and Tobago
NAD27 CNS	NORTH AMERICAN 1927 - Mean Value (CONUS)
NAD27 ALA	NORTH AMERICAN 1927 - Alaska
NAD27 BHM	NORTH AMERICAN 1927 - Bahamas (excluding San Salvador Island)
NAD27 SSI	NORTH AMERICAN 1927 - San Salvador Island
NAD27 CAN	NORTH AMERICAN 1927 - Canada (including Newfoundland Island)
NAD27 C Z	NORTH AMERICAN 1927 - Canal Zone
NAD27 CAR	NORTH AMERICAN 1927 - Caribbean (Barbados, Caicos Islands, Cuba, Dominican Republic, Grand Cayman, Jamaica, Leeward Islands, Turks Islands)

NAD27 C A	NORTH AMERICAN 1927 - Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua)
NAD27 CUB	NORTH AMERICAN 1927 - Cuba
NAD27 GRN	NORTH AMERICAN 1927 - Greenland (Hayes Peninsula)
NAD27 MEX	NORTH AMERICAN 1927 - Mexico
NAD83	NORTH AMERICAN 1983 - Alaska, Canada, Central America, CONUS, Mexico
OBSERV 66	OBSERVATORIO 1966 - Corvo and Flores Islands (Azores)
OLD EGYPT	OLD EGYPTIAN - Egypt
OLD HAWAI	OLD HAWAIIAN - Mean Value
OMAN	OMAN - Oman
GRT BT 36	ORDNANCE SURVEY OF GREAT BRITAIN 1936 - England, Isle of Man, Scotland, Shetland Islands, Wales
PICO NIEV	PICO DE LAS NIEVES - Canary Islands
PITCRN 67	PITCAIRN ASTRO 1967 - Pitcairn Island
RT90	SWEDEN
S CHILE	PROVISIONAL SOUTH CHILEAN 1963 - South Chile
S AMER 56	PROVISIONAL SOUTH AMERICAN 1956 - Bolivia, Chile, Colombia, Ecuador, Guyana, Peru, Venezuela
PURTO RIC	PUERTO RICO - Puerto Rico, Virgin Islands
QATAR NTL	QATAR NATIONAL - Qatar
QORNOQ	QORNOQ - South Greenland
REUNION	REUNION - Mascarene Island
ROME 1940	ROME 1940 - Sardinia Island
SANTO DOS	SANTO (DOS) - Espirito Santo Island
SAO BRAZ	SAO BRAZ - Sao Miguel, Santa Maria Islands (Azores)
SAPR HILL	SAPPER HILL 1943 - East Falkland Island
SCHWARZCK	SCHWARZECK - Namibia
S AMER 69	SOUTH AMERICAN 1969 - Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Venezuela, Trinidad and Tobago
S ASIA	SOUTH ASIA - Singapore
SE BASE	SOUTHEAST BASE - Porto Santo and Madeira Islands
SW BASE	SOUTHWEST BASE - Faial, Graciosa, Pico, Sao Jorge, and Terceira Islands (Azores)
TIMBLI 48	TIMBALAI 1948 - Brunei and East Malaysia (Sarawak and Sabah)
TOKYO	TOKYO - Japan, Korea, Okinawa
TRISTN 68	TRISTAN ASTRO 1968 - Tristan da Cunha

VITI LEVU	VITI LEVU 1916 - Viti Levu Island (Fiji Islands)
WAK-ENWTK	WAKE-ENIWETOK 1960 - Marshall Islands
ZANDERIJ	ZANDERIJ - Surinam
WGS 72	WORLD GEODETIC SYSTEM 1972
WGS 84	WORLD GEODETIC SYSTEM 1984

# APPENDIX E

## ABBREVIATIONS FOR DATABASE REGIONS

AFGN	Afghanistan	CHLE	Chile/Easter Island
AILA	Anguilla	CHNA	China
ALBN	Albania	CIS	Amenia/Azerbaijan/ Georgia/Kazakhstan/ Kirgizia/ Moldavia/Ukraine/ Uzbekistan/Tadzhikistan/ Turkmenistan
ALGR	Algeria	CNIS	Canary Island
ANGL	Angola	COL	Colombia/San Andres
ANT	Antarctica	CONG	Congo
ANTG	Antigua	COOK	Cook Islands
ARGN	Argentina	CPVR	Cape Verde
ARUB	Aruba/Neth Antilles	CRI	Costa Rica
AUST	Australia	CROA	Croatia
AUT	Austria	CUBA	Cuba
AWSM	American Samoa/Western Samoa	CYMN	Cayman island
BEL	Belgium	CYPR	Cyprus/Turkey
BELZ	Belize	CZSK	Czechoslovakia
BEN	Benin	DJIB	Djibouti
BHMS	Bahamas	DMCA	Dominica
BHRN	Bahrain	DNK	Denmark/Faroe Island
BHTN	Bhutan	DOMR	Dominican Republic
BIOT	Chagos Archipelago/British Indian Ocean Territory	ECUA	Ecuador
BLGR	Bulgaria	EGYP	Egypt
BNGL	Bangladesh	EQGU	Equitorial Guinea
BOLV	Bolivia	ETHP	Ethiopia
BRAZ	Brazil	FALK	Falkland Islands
BRBD	Barbados	FIJI	Fiji Island/Tonga
BRDI	Burundi	FIN	Finland
BRMD	Bermuda	FRAN	France
BRUN	Brunei/Malaysia	FRGU	French Guiana
BRVG	British Virgin Islands	GABN	Gabon
BTWA	Botswana	GER	Germany
BURK	Burkina Faso	GHAN	Ghana
CAFR	Central African Republic	GIBR	Gibraltar
CAMR	Cameroon	GLPE	Guadeloupe/Martinique
CAN	Canada		
CHAD	Chad		

GMBA	Gambia	MALI	Mali
GN-B	Guinea-Bissau	MCRO	Caroline Islands/ Micronesia/Palau
GREC	Greece	MELA	Melilla
GR	Greenland	MEX	Mexico
GRND	Grenada	MIDW	Midway Islands
GTML	Guatemala	MLDV	Maldives
GUAM	Guam/Mariana Islands	MLTA	Malta
GUIN	Guinea Republic	MLWI	Malawi
GUYN	Guyana	MLYS	Malaysia
HATI	Haiti	MNGL	Mongolia
HKNG	Hong Kong	MOZB	Mozambique
HNDR	Honduras	MRCO	Morocco/Ad Dakhla/ La'Youn
HUNG	Hungary	MRTN	Mauritania
INDA	India	MSHL	Marshall Islands
INDN	Indonesia	MSRT	Montserrat Island
IRAN	Iran	MUS	Mauritius
IRAQ	Iraq	MYAN	Myanmar/Burma
IRL	Ireland	NAM	Namibia/South African Republic
ISL	Iceland	NARU	Nauru
ISRL	Israel/Jerusalem	NCL	New Caledonia
ITAL	Italy	NEPL	Nepal
IVC	Ivory Coast	NGER	Niger
JAM	Jamaica	NICA	Nicaragua
JAPN	Japan	NIGA	Nigeria
JORD	Jordan	NIUE	Niue
JTN	Johnston Atoll	NKOR	North Korea
KENY	Kenya	NLD	Netherlands
KIRI	Kiribati/Tuvalu	NOR	Norway
KITT	St Kitts/Nevis Islands	NZL	New Zealand
KMPC	Kampuchea	OMAN	Oman
KUWT	Kuwait	PAKI	Pakistan
LAOS	Laos	PANA	Panama
LBYA	Libya, Spa Jamahiriya	PERU	Peru
LCIA	St Lucia	PHIL	Philippines
LEBN	Lebanon	PNG	Papua New Guinea
LIBR	Liberia	POL	Poland
LNKA	Sri Lanka	PRGY	Paraguay
LSO	Lesotho	PRI	Puerto Rico
LUX	Luxembourg	PRTG	Portugal/Azores/Madeira Islands
MAC	Macau		
MADG	Madagascar/Comoros/ Reunion/Mayotte Islands		



PYFR	French Polynesia/Society Islands/Tuamotu Islands	USA	United States of America
QATR	Qatar	VENZ	Venezuela
ROM	Romania	VIRG	Virgin Islands (U.S.)
RUSS	Belorussia/Latvia/Lithuania/Russia/Estonia/Kazakhstan	VTNM	Vietnam
RWAN	Rwanda	VUTU	Vanuatu
SAUD	Saudi Arabia	WAKE	Wake Island
SENG	Senegal	WL/F	Wallis Island/Futuna Island
SEYC	Seychelles	YEMR	Yemen Arab Rep
SKOR	South Korea	YMD	Democratic Yemen
SLEO	Sierra Leone	YUGO	Yugoslavia
SLOV	Slovenia	ZAIR	Zaire
SLV	El Salvador	ZAMB	Zambia
SNGP	Singapore	ZBWE	Zimbabwe
SOLI	Solomon Island		
SOML	Somalia		
SP/M	St Pierre Island/Miquelon Island		
SPAN	Spain		
ST/P	Sao Tome/Principe		
STHN	Ascension Island/St Helena Island		
SUDN	Sudan		
SURN	Suriname		
SVCT	St Vincent/The Grenadines		
SWAZ	Swaziland		
SWE	Sweden		
SWTZ	Switzerland		
SYR	Syria		
T/CA	Turks Island/Caicos Island		
TANZ	Tanzania		
THAI	Thailand		
TOGO	Togo		
TTOB	Trinidad and Tobago		
TUN	Tunisia		
TURK	Turkey		
TWAN	Taiwan		
UAE	United Arab Emirates		
UGAN	Uganda		
UK	United Kingdom		
URGY	Uruguay		

# APPENDIX F

## AIRPORT IDENTIFIER PREFIX CODES

Most airport identifiers in the database use the International Civil Aviation Organization (ICAO) assigned prefix. Use the following rules to determine the ICAO prefix for a country's airport identifiers.

### Continental U.S.

Airport identifiers which contain only alphabetic characters are prefixed with a "K" followed by the FAA-standard three-character identifier. For example, the FAA identifier for Johnson County Executive is "OJC". Use "KOJC" when entering the airport identifier.

Airport identifiers which contain numeric characters do not require the "K" prefix.

### Outside Continental U.S.

Find the country (or state) name in the table below and use the associated prefix(es) to identify the airports.

<b>A</b>		<b>B</b>	
Afghanistan	OA	Bahamas	MY
Alaska (U.S.)	PA, PO, PP	Bahrain	OB
Albania	LA	Baker Island (U.S.)	PB
Algeria	DA	Bangladesh	VG
American Samoa	NS	Barbados	TB
Angola	FN	Belgium	EB
Anguilla Island (U.K.)	TQ	Belize	MZ
Antigua and Barbuda	TA	Belorussia	UM
Argentina	SA	Benin	DB
Armenia	UG	Bermuda (U.K.)	TX
Aruba (Netherlands)	TN	Bhutan	VQ
Ascension Island (U.K.)	FH	Bolivia	SL
Australia	AB, AD, AM, AP, AS	Botswana	FB
Austria	LO	Brazil	SB
Azerbaijan	UB	British Indian Ocean Territory	FJ
Azores (Portugal)	LP	Brunei	WB
		Bulgaria	LB
		Burkina Faso	DF
		Burundi	HB

<b>C</b>		France	LF
Cameroon	FK	French Antilles	TF
Canada	CU, CW, CY, CZ	French Guiana	SO
Canary Island (Spain)	GC	French Polynesia	NT
Cape Verde	GV		
Cayman Island (U.K.)	MW	<b>G</b>	
Central African Republic	FE	Gabon	FO
Chad	FT	Gambia	GB
Chile	SC	Georgia	UG
China	ZB, ZG, ZH, ZL, ZP, ZS, ZU, ZW, ZY	Germany	ED, ET
		Ghana	DG
Colombia	SK	Gibraltar (U.K.)	LX
Comoros	FM	Greece	LG
Congo	FC	Greenland (Denmark)	BG
Cook Islands	NC	Grenada	TG
Costa Rica	MR	Guam (U.S.)	PG
Croatia	LD	Guatemala	MG
Cuba	MU	Guinea Republic	GU
Cyprus	LC	Guinea-Bissau	GG
Czechoslovakia	LK	Guyana	SY
<b>D</b>		<b>H</b>	
Democratic Yemen	OD	Haiti	MT
Denmark	EK	Hawaii (U.S.)	PH
Djibouti	HF	Honduras	MH
Dominica	TD	Hong Kong	VH
Dominican Republic	MD	Hungary	LH
<b>E</b>		<b>I</b>	
East Timor	WP	Iceland	BI
Easter Island (Chile)	SC	India	VA, VE, VI, VO
Ecuador	SE	Indonesia	WA, WI, WR
Egypt	HE	Iran	OI
El Salvador	MS	Iraq	OR
Equatorial Guinea	FG	Ireland	EI
Estonia	UL	Israel	LL
Ethiopia	HA	Italy	LI
		Ivory Coast	DI
<b>F</b>		<b>J</b>	
Falkland Islands (U.K.)	SF	Jamaica	MK
Faroe Island (Denmark)	EK	Japan	RJ, RO
Fiji Island	NF	Johnston Island (U.S.)	PJ
Finland	EF	Jordan	OJ

<b>K</b>		Mozambique	FQ
Kampuchea (Cambodia)	VD	Myanmar (Burma)	VY
Kazakhstan	UA, UR, UT		
Kenya	HK	<b>N</b>	
Kirgizia	UA	Namibia	FA
Kiribati	NG, PL	Nauru	AN
Kuwait	OK	Nepal	VN
		Netherlands	EH
<b>L</b>		Netherlands Antilles	TN
Laos	VL	New Caledonia (France)	NW
Latvia	UM	New Zealand	NZ
Lebanon	OL	Nicaragua	MN
Lesotho	FX	Niger	DR
Liberia	GL	Nigeria	DN
Libyan Arab Jamahiriya	HL	Niue Island (N.Z.)	NI
Line Islands (U.S.)	PL	North Korea	ZK
Lithuania	UM	Norway	EN
Luxembourg	EL		
		<b>O</b>	
<b>M</b>		Oman	OO
Macau (Portugal)	VM		
Madagascar	FM	<b>P</b>	
Madeira Islands (Portugal)	LP	Pakistan	OP
Malawi	FW	Panama	MP
Malaysia	WB, WM	Papua New Guinea	AY
Maldives	VR	Paraguay	SG
Mali	GA	Peru	SP
Malta	LM	Philippines	RP
Mariana Islands (U.S.)	PG	Phoenix Island (U.K.)	PC
Marshall Islands (U.S.)	PK	Poland	EP
Mauritania	GQ	Portugal	LP
Mauritius	FI	Puerto Rico (U.S.)	TJ
Mayotte (France)	FM		
Melilla (Spain)	GE	<b>Q</b>	
Mexico	MM	Qatar	OT
Micronesia	PT		
Midway Islands (U.S.)	PM	<b>R</b>	
Moldavia	UK	Reunion (France)	FM
Monaco	LN	Romania	LR
Mongolia	ZM	Russia	UE, UH, UI, UL, UM, UN,
Montserrat Island (U.K.)	TR		UO, UR, US, UU, UW
Morocco	GM	Rwanda	HR

<b>S</b>		Turks/Caicos Islands (U.K.)	MB
Sahara Occidental	GS	Tuvalu	NG
Samoa	NS		
San Andres Island (Colombia)	SK	<b>U</b>	
Sao Tome & Principe	FP	Uganda	HU
Saudi Arabia	OE	Ukraine	UK
Senegal	GO	United Arab Emirates	OM
Seychelles	FS	United Kingdom	EG
Sierra Leone	GF	United States	K
Singapore	WS	Uruguay	SU
Slovenia	LJ	Uzbekistan	UT
Society Islands	NT		
Solomon Islands	AG	<b>V</b>	
Somalia	HC	Vanuatu	NV
South African Republic	FA	Venezuela	SV
South Korea	RK	Vietnam	VV
Spain	LE	Virgin Islands (U.K.)	TU
Sri Lanka	VC	Virgin Islands (U.S.)	TI
St. Helena Island (U.K.)	FH		
St. Kitts and Nevis	TK	<b>W</b>	
St. Lucia	TL	Wake Island (U.S.)	PW
St. Pierre/Miquelon Is. (France)	CF	Wallis/Futuna Islands (France)	NL
St. Vincent and the Grenadines	TV		
Sudan	HS	<b>Y</b>	
Suriname	SM	Yemen	OY
Swaziland	FD	Yugoslavia	LY
Sweden	ES		
Switzerland	LS	<b>Z</b>	
Syria	OS	Zaire	FZ
		Zambia	FL
		Zimbabwe	FV
<b>T</b>			
Tadzhikistan	UT		
Taiwan	RC		
Tanzania	HT		
Thailand	VT		
Togo	DX		
Tonga	NF		
Trinidad and Tobago	TT		
Tuamotu Islands	NT		
Tunisia	DT		
Turkey	LT		
Turkmenistan	UT		

# APPENDIX G

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