IntelliTrac

User Guide

Part No. 875-0308-000 Rev. A1

Hemisphere GPS

DRAFT DRAFT

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(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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Patents

The Outback S™ and S-Lite™ automated navigation and steering guide systems are covered by U.S. Patents No. 6,539,303 and No. 6,711,501. The Outback Hitch™ automated hitch control system is covered by U.S. Patent No. 6,631,916. The Outback eDriveTC™ GPS assisted steering system is covered by U.S. Patent No. 7,142,956. Hemisphere GPS products may be covered by one or more of the following U.S. Patents:

6,111,549	6,397,147	6,469,663	6,501,346	6,539,303
6,549,091	6,631,916	6,711,501	6,744,404	6,865,465
6,876,920	7,142,956	7,162,348	7,277,792	7,292,185
7,292,186	7,373,231	7,400,956	7,400,294	7,388,539
7,429,952	7,437,230	7,460,942		

Other U.S. and foreign patents pending.

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Contents

Chapter 1: Introduction

Product Features

Hemisphere DGPS Receiver Advantage

How IntelliTrac Uses DGPS

Welcome to IntelliTrac™, Hemisphere GPS' aerial guidance software that provides precise, flexible guidance technology for today's aerial spray market. IntelliTrac is included as part of the Hemisphere GPS Satloc® G4™ system, which allows you to fly and spray precise patterns using constant rate flow control—reducing fuel, flying time, and application costs.

This short introductory chapter lists IntelliTrac features, describes the advantages of differential GPS (DGPS), and explains how IntelliTrac uses DGPS.

The Satloc G4™ is the most complete and advanced aerial guidance system for aerial applicators. Satloc G4 is built with the top-of-the-line processing power of Intel® Dual-Core™ i7 processor and includes Windows® 7 64-bit operating system.

The Satloc G4 features a new 9-inch, 16:9 ratio touchscreen capable of providing faster video graphics as well as the latest in touchscreen technology. Use multi-touch gestures such as pinch-to-zoom, rotate and press and drag to access information. Experience improved connection speeds for downloading job and shape files and prescription maps. The Satloc G4 features video capabilities including Skype™ and Ethernet connectivity for cell-based modems. Background maps are available with Satloc G4 systems. Maps enhance flight navigation and confidence by allowing aerial applicators to view flight information such as spray, waypoints, and polygons on background maps.

Stay connected with HQ™, a real-time web-based asset tracking tool that allows companies to track the position and position-related data of aircraft and other assets, such as spotter vehicles and loader trucks.

The Satloc G4 system includes a 9-inch touch screen, CPU, A21™ antenna, and external CAN lightbar.

Product Features

IntelliTrac guidance software includes the following features:

- Touchscreen interface
- Multiple pattern types
- Variable rate flow control
- Dry flow control support
- Nighttime screen color options
- Receiving job files
- Transferring log files
- Variable rate prescription maps for variable rate flow control (software included)
- Advanced light bar setup and dimming capacity
- Programmable shortcut keys ('hotkeys')
- Ability to set a USB flash drive or the G4 hard drive as the logging read/write device (see "Starting IntelliTrac" on page 6)

Hemisphere DGPS Receiver Advantage

With a Hemisphere DGPS receiver, you will never be without a differential signal. Hemisphere GPS receivers support such differential signals as SBAS, L-band, and beacon. During a temporary signal outage, Hemisphere GPS' patented COAST™ technology enables you to use aging correction data for 40 minutes or more without significantly affecting positioning quality.

Hemisphere GPS receivers also support e-Dif®, a differential solution for areas where it is geographically difficult to obtain a good differential signal. With e-Dif, you can achieve GPS accuracy of a few feet without the need for a differential signal broadcast. e-Dif generates internal differential corrections based on your starting location. The corrections are modeled over time and applied to the GPS data to maintain a consistent relative position.

How IntelliTrac Uses DGPS

IntelliTrac uses DGPS data to provide highly accurate guidance to help you efficiently complete your spray jobs.

Once you establish a reference line, or starting location for your pattern, IntelliTrac can calculate exactly where your next swath should be based on your selected swath width and pattern using a GPS location it computes 5-20 times per second. The GPS location is made more accurate by applying DGPS corrections. The resulting light bar guidance cues reflect your real-time GPS data.

IntelliTrac also uses GPS data to guide you to specific waypoints—GPS coordinates of a specific location.

Chapter 2: Getting Started

Starting IntelliTrac

IntelliTrac Display

Setting Up IntelliTrac

Before You Start

Exiting IntelliTrac

This chapter provides an introduction to IntelliTrac and covers the following topics:

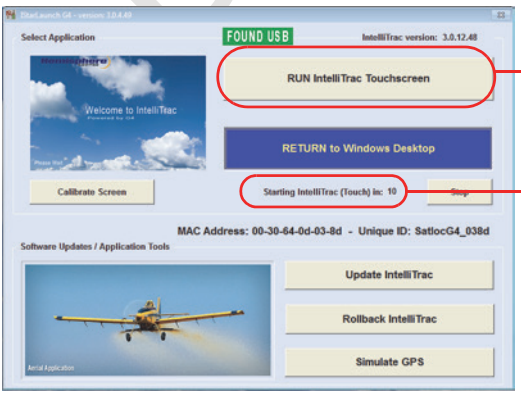
- Starting IntelliTrac
- Selecting default settings
- Basic setup options
- Overview of the IntelliTrac screen display
- Working with IntelliTrac (using the touchscreen, using an optional mouse and keyboard, entering data, etc.)

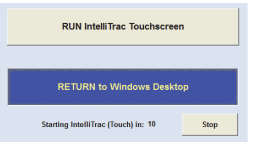
Starting IntelliTrac

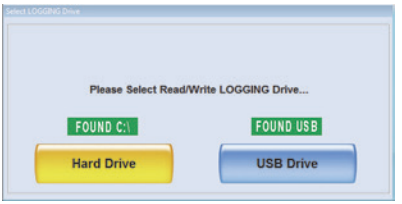
Refer to the G4 Installation Guide for more information on how to set up and power on your G4 system and how to start IntelliTrac. The G4 Installation Guide is available from the Hemisphere GPS website at www.hemispheregps.com.

When you first start IntelliTrac you select your logging read/write device.

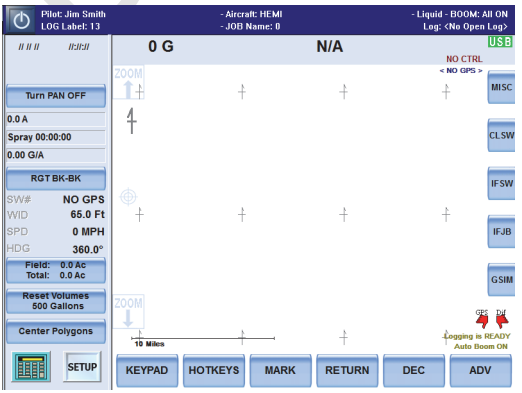
To start IntelliTrac:

Step	Button (when applicable)
1. Power on your G4 system. On the display console the Disclaimer window appears.	
	
2. Press **OK**. The window closes and the IStarLaunchG4 startup screen is visible.	OK
	

Step	Button (when applicable)
3. Run IntelliTrac using either of the following methods: • Press the **RUN IntelliTrac Touchscreen** button • Wait for IntelliTrac to finish counting down to zero A Hemisphere GPS splash screen appears followed by the Select LOGGING Drive window.	



4. Press the desired button for logging: • **Hard Drive** - Log data to the G4 hard drive • **USB Drive** - Log data to a USB flash drive **Note:** The Hard Drive option is always available ("FOUND" appears above the Hard Drive button). However, the USB Drive option is only available if a USB flash drive is inserted in one of the USB ports on the G4. "NO USB" (with a red background) appears above the USB Drive button if no USB drive is inserted. After you press either Hard Drive or USB Drive, the Select LOGGING Drive window closes and after several seconds the IntelliTrac Map screen appears.	  No USB flash inserted



IntelliTrac Display

The IntelliTrac display includes important status information and user-configurable display options. IntelliTrac includes a virtual keypad on the display screen that functions like a numeric keypad on a PC keyboard.

After you select your logging drive (hard drive or USB drive, see “Starting IntelliTrac” on page 6) IntelliTrac displays the Map screen.

Understanding the Map Screen

The Map screen is the main display screen in IntelliTrac and is divided into three areas: the “Data” area, the “Moving Map” area, and the “Header” area.

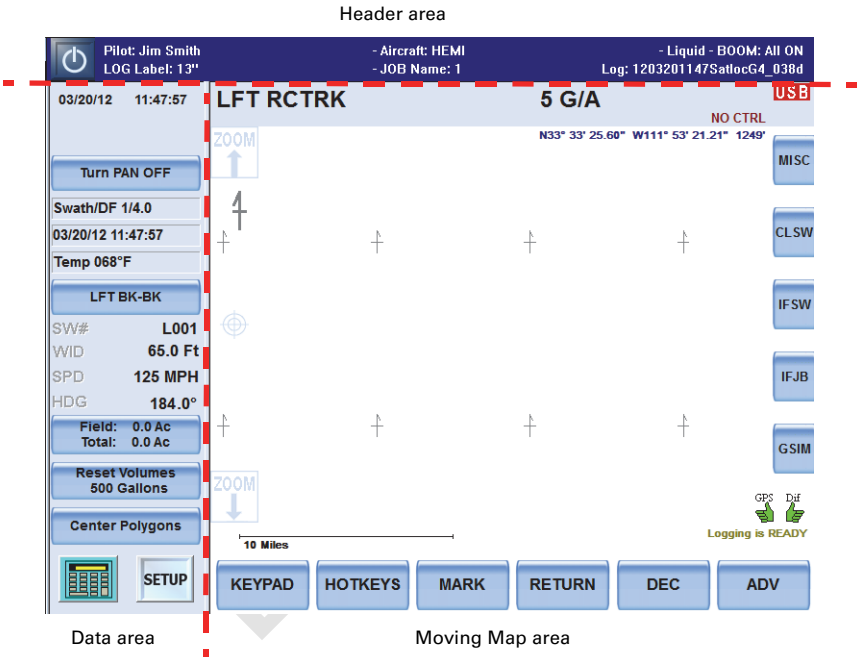


Figure 2-1: Map screen

Note: For a list of display options for the Moving Map area’s large format display fields and the Data area’s fields 1 – 3, see Appendix C, “Light Bar and Screen Display Options.”

Moving Map Area

The Moving Map area shows a GIS-generated map of the field when you create a job file or open a log. The map includes an outline of the field's shape and size, areas to spray and to not spray, and any marks in the field. The Moving Map area also shows your differential status and whether logging is on or off.

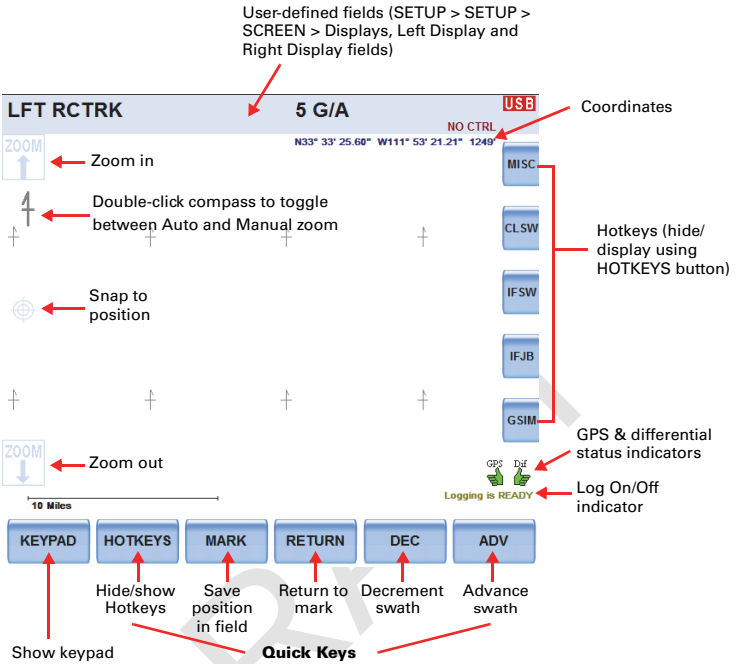


Figure 2-2: Moving Map area

Data Area

The Data area shows the current date and time, status information for special functions (such as waypoints and missions, help messages, GPS status), and your current job information including pattern, direction, swath width and number, speed, heading, and sprayed area.

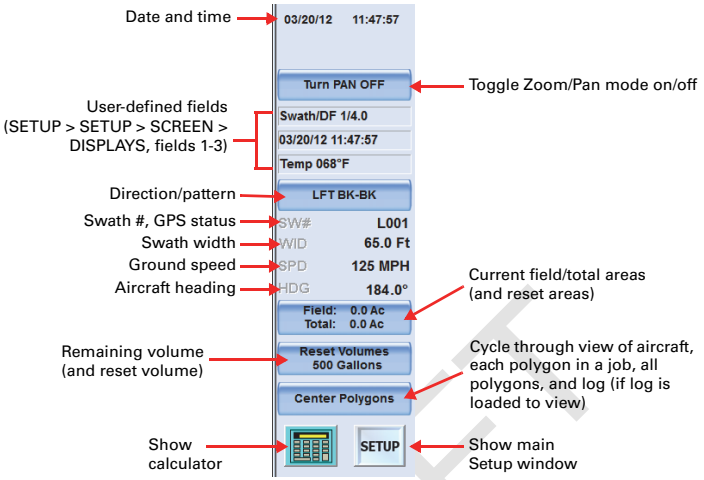


Figure 2-3: Data area

The Data area appears in different colors as follows:

- Blue when IntelliTrac is navigating to a point or mark
- Green when an A/B line is set or loaded
- Gray at all other times

Header Area

The Header area the following information along the top of the Map screen:

- Pilot name
- Log label
- Aircraft name
- Job name
- Liquid or dry material
- Log name (current log; if no open log then <No Open Log> appears)

Figure 2-4: Header area

Information in the Header area is read-only. You can change some of the data; you just cannot change the information from the Header area.

Pressing Buttons in IntelliTrac

This User Guide uses the following format to describe pressing buttons in succession:

Button1 > Button2 > Button 3, etc.

Table 2-1 provides examples of this format.

Table 2-1: Pressing buttons in IntelliTrac as described in this User Guide

To Do This	How Described in This User Guide
Press the SETUP button, press the next SETUP button, then press the SCREEN button	Press SETUP > SETUP > SCREEN
Press the KEYPAD button, press the CLEAR button, press the JOB button, then press the ENTER button	Press KEYPAD > CLEAR > JOB > ENTER

Using the Keypad

You enter custom setup options, values, and commands pressing buttons on the keypad.

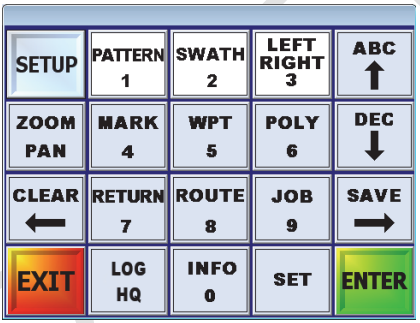
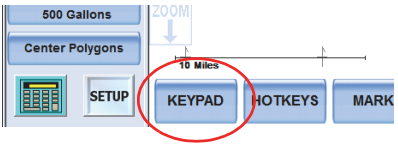


Figure 2-5: Keypad

To display the keypad:

- Press KEYPAD at the bottom of the Map screen



Note: In this User Guide, when describing procedures, buttons are referred to with their function or data type in uppercase and their numeric value. For example LEFT RIGHT\3 or MARK\4.

The most often used keys—PATTERN\1, SWATH\2, and LEFT RIGHT\3—are highlighted in white.Table 2-2 describes the function of each key on the keypad.

Table 2-2: Main menu keys and functions

Key	Function
SETUP	Display the main (first) IntelliTrac Setup window. You can also display the main Setup window by pressing SETUP at the bottom of the Data area.
PATTERN 1	Scroll through available patterns (the pattern name changes in the Data area). Also, numeric value 1
SWATH 2	Enter a swath width (the new value appears as the WID value in the Data area). Also, numeric value 2
LEFT RIGHT 3	Change direction (left to right or right to left) of the current pattern (the direction changes in the Data area). You are either flying to the left or to the right of the A|B line. Also, numeric value 3
ABC ↑	Create A, B, and C points when creating a pattern. Once you set the pattern this button functions as a swath advance button (if not using the ADV quick key or the remote swath advance switch).
ZOOM PAN	Display the Zoom/Pan window. See “Zooming and Panning the Moving Map Area” on page 18 for more information.
MARK 4	Display the Quick Marks window where you can quickly set a mark (1-9). Press this key after pressing an action key to: • Set a mark (MARK > SAVE) • Recall a mark (MARK > SET) • Delete a mark (MARK > CLEAR) Also, numeric value 4
WPT 5	Press this key after pressing an action key to: • Set a waypoint (WPT > SAVE) • Recall a waypoint (WPT > SET) • Delete a waypoint (WPT > CLEAR) Also, numeric value 5
POLY 6	Press this key after pressing an action key to: • Set a polygon (POLY > SAVE) • Recall a polygon (POLY > SET) • Delete a polygon (POLY > CLEAR) Also, numeric value 6
DEC ↓	Swath decrement (if not using the DEC quick key on the Map screen or the remote decrement switch).

Table 2-2: Main menu keys and functions (*continued*)

Key	Function
CLEAR ←	Used in conjunction with other keys to either clear a data type from the screen or delete a data type. For example: • To clear job data (polygons and patterns) from the screen: Press CLEAR > JOB > ENTER • To delete the job from the database (you have to confirm the deletion): Press CLEAR > JOB > n > ENTER (where n = the job number) You also use this button to exit IntelliTrac: • To close IntelliTrac and return to Windows: Press CLEAR > CLEAR > Exit To Windows • To close IntelliTrac and shut down Windows Press CLEAR > CLEAR > YES For important information on exiting IntelliTrac and powering off see "Exiting IntelliTrac" on page 28. ⚠WARNING: Make sure you understand the difference between clearing a data type from the screen or clearing (deleting) a data type from the database by entering its number. If you delete a job, you also delete the job's polygons and patterns.
RETURN 7	Press this key and then a number key (1 - 9) to return to a mark numbered 1 - 9. You cannot return to a mark > 9 because only the first digit counts. To return to a mark > 9 use SET (see SET later in this table). Also, numeric value 7
ROUTE 8	Press this key after pressing an action key to: • Set a route (ROUTE > SAVE) • Recall a route (ROUTE > SET) • Delete a route (ROUTE > CLEAR) Also, numeric value 8
JOB 9	Press this key after pressing an action key to: • Set a job (JOB > SAVE) • Recall a job (JOB > SET) • Delete a job (JOB > CLEAR) Also, numeric value 9
SAVE →	Used in conjunction with other keys to save a data type. For example, to save a mark press SAVE > POLY > n (where n = polygon #).
EXIT	Return to the Map screen (saving your changes).
LOG HQ	Display the Logging screen where you can: • Start a new log • Turn logging off/on • Upload files to or download files from Hemisphere GPS' HQ real-time web-based asset tracking tool

Table 2-2: Main menu keys and functions (*continued*)

Key	Function
	Used in conjunction with other keys to view data type information. For example, to display information about the mark in the data area press INFO > MARK.
	Used in conjunction with other keys to recall a specific data type. For example: • To provide guidance back to a mark press SET > MARK > n > ENTER (where n = Mark #). Use the RETURN key to return to marks numbered 1-9. • To switch the display between Normal (daytime) and Dark (nighttime) mode press SET > SET.
	Save changes (when you press a combination of buttons to perform a task) and return to the Map screen. For example, to create a mark numbered 10-99 press SAVE > MARK\4 > nn > ENTER.

Setting Up IntelliTrac

After you select your logging drive (hard drive or USB drive, see "Starting IntelliTrac" on page 6) IntelliTrac displays the Map screen.

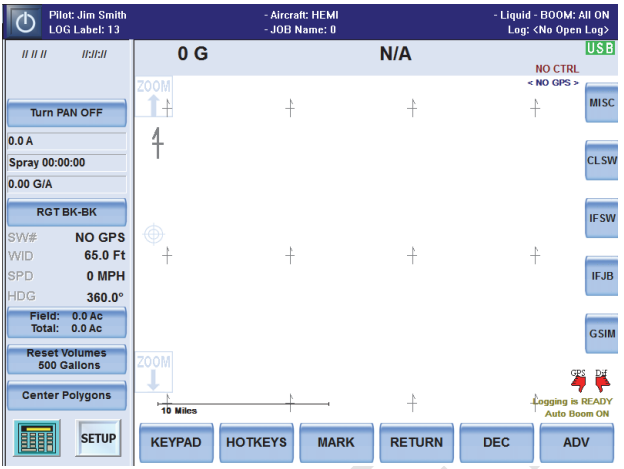


Figure 2-6: Map screen at startup

Note: Before you start using IntelliTrac Hemisphere GPS recommends you familiarize yourself with the various IntelliTrac screens illustrated in Appendix B, "G4 IntelliTrac Screen Map."

When you press the Setup button in the Data area the main IntelliTrac Setup window appears (see Figure 2-7). From this window you can drill-down into additional Setup windows. IntelliTrac Setup windows allow you to set up and customize IntelliTrac based on your installation.

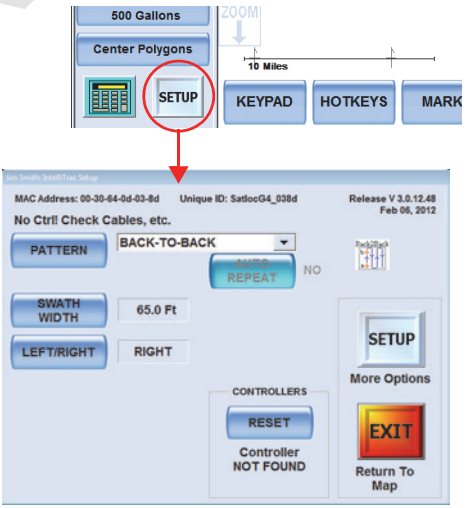


Figure 2-7: Main Setup window

You use the Setup windows (some of them shown in Figure 2-8) to set values or make selections for all the different options with IntelliTrac. You navigate through successive Setup screens via the following buttons:

- SETUP - press to display the next Setup window
- CLEAR - press to display the previous Setup window
- EXIT - press to close the current Setup window and return to the Map screen

There is no CLEAR button on the first Setup window, since going back one screen takes you to the map screen. To go back to the Map screen you press EXIT.

Additionally, when you press a field button (such as the UNITS button on the System Setup window) the resulting window contains a SETUP button that provides even more setup options.

Note: Remember that pressing CLEAR returns you to the previous window to better navigate through all the setup options. Also, refer to Appendix B, "G4 IntelliTrac Screen Map" for a complete overview and path for all the screens/ windows in IntelliTrac.

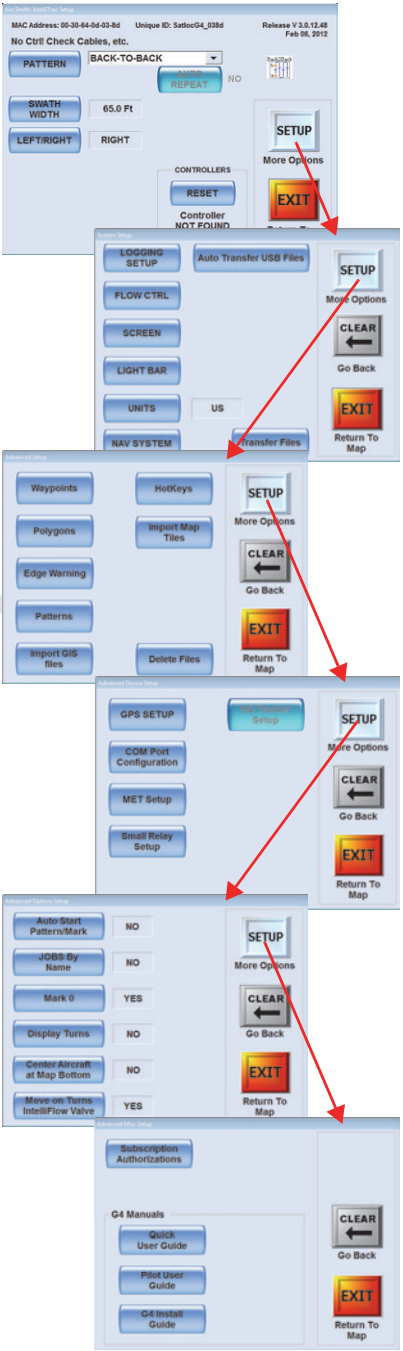
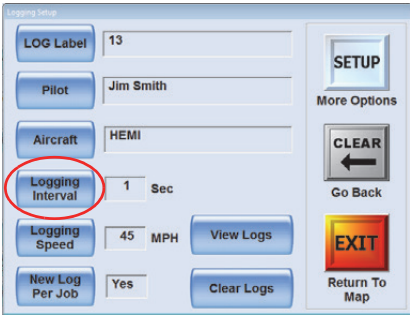


Figure 2-8: Setup windows

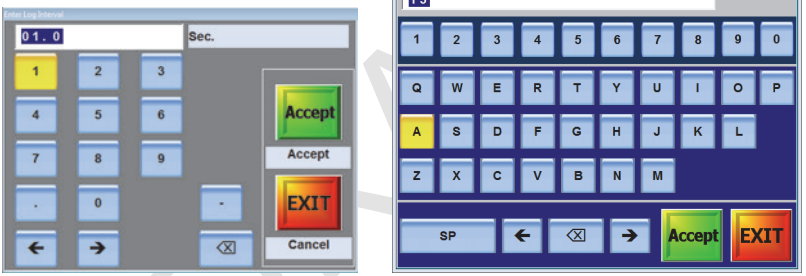
Entering Field Values

To enter field values in IntelliTrac, such as on the Logging Setup window (at right), press the button for the field. For example, to enter the Logging Interval value press the Logging Interval button (circled at right).



IntelliTrac then displays one of two types of data entry windows: numeric only or alphanumeric. IntelliTrac determines if the value for the field can be numeric only or alphanumeric and automatically displays the appropriate data entry window.

For example, on the Logging Setup window the Logging Interval and the Logging Speed fields can be only numeric values. If you press the button for either field, IntelliTrac displays the numeric entry window (left figure in Figure 2-9). Log Label, Pilot, and Aircraft, however, can all be alphanumeric values so when you press the buttons for these fields, IntelliTrac displays the alphanumeric data entry window (right figure in Figure 2-9).



Numeric only data entry window

Alphanumeric data entry window

Figure 2-9: Data entry windows

To enter values in either data entry window:

1. Press the button for the value you want to enter/change
2. Enter the desired value using the buttons in the data entry window.
3. Press **ENTER** (numeric only data entry window) or **Accept** (alphanumeric data entry window) to accept the entry (to save it). The dat entry window closes and the value you entered populates the appropriate field on the previous screen.

   or

   Press **EXIT** to cancel the entry (to not save it) and return to the previous screen.

Zooming and Panning the Moving Map Area

Zooming refers to making a section of the screen larger so you can see more detail (zoom in) or making the screen smaller so you can see a larger area (zoom out).

Panning refers to moving the screen in a specific direction (such as left or right) so you can see detail that may not be viewable on the current screen.

Figure 2-10 illustrates the zooming and panning features of IntelliTrac.

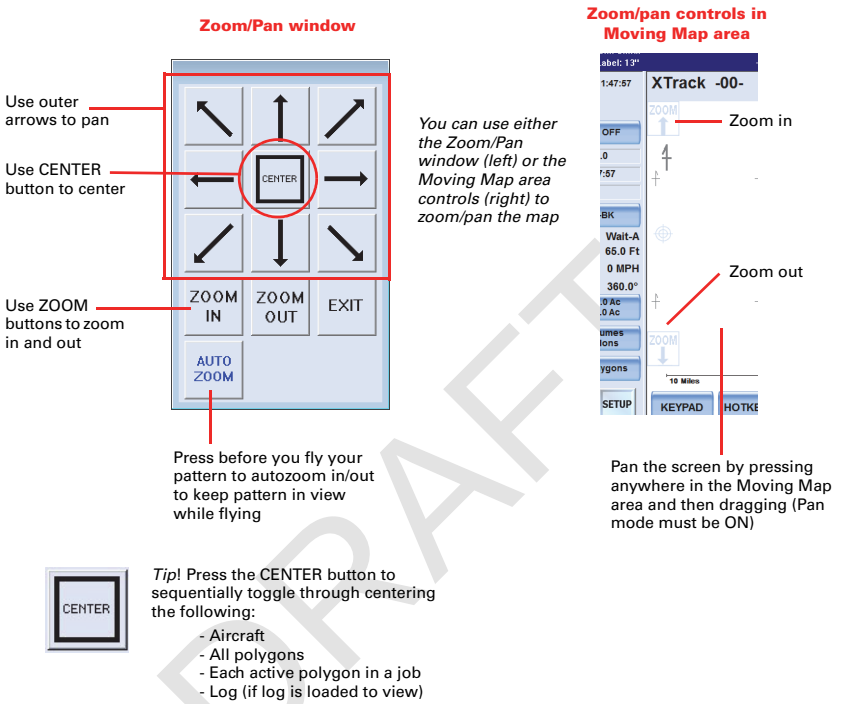


Figure 2-10: Zooming and panning

To zoom/pan the Moving Map area using the Zoom/Pan window:

1. Press **KEYPAD** > **ZOOM PAN**. The Zoom/Pan window appears.
2. Press the buttons in the Zoom/Pan window to zoom and pan as follows:
   - To pan the map:
     - Press the appropriate arrow button to pan the display in the direction of the arrow
     - Press (and hold) the map and drag in the map window (similar to dragging a mouse on a PC)
   - To zoom in/out, press a zoom button (**ZOOM IN** or **ZOOM OUT**)
   - To center the display on the aircraft, press **CENTER**. Continue pressing CENTER to toggle through the following centering options:
     - Prescription map (if active)
     - Each active polygon in a job

– Everything (such as prescription maps, polygons, and aircraft)

- To have IntelliTrac automatically zoom in/out to keep your pattern in view while spraying press **AUTO ZOOM** before you fly your pattern.

3. Press **EXIT** to close the ZOOM PAN window.

To zoom/pan the Moving Map area using the Moving Map area zoom/pan controls:

1. In the Data area make sure the Zoom/Pan button is on (it is on when the text on the button is 'Turn PAN OFF'). If the button text is 'Turn PAN ON' then press the button once to turn it on.
2. To pan the map press (and hold) the map and drag in the map window (similar to dragging a mouse on a PC).
3. To zoom in/out press a zoom key (Zoom in or Zoom out).

To have IntelliTrac automatically zoom in/out to keep your pattern in view while spraying press the Auto/manual zoom button before you fly your pattern.

Selecting the Screen Color

IntelliTrac has two screen color options: Normal (daytime) mode and Dark (nighttime) mode (see Figure 2-11). Normal is the default mode.

Day mode Night mode

Figure 2-11: Normal (day) mode vs. Dark (night) mode

To switch the screen mode using the KEYPAD:

1. On the Map screen press the **KEYPAD** button.
2. On the Main menu press **SET** twice. The Main menu closes and the screen color changes.

To switch the screen mode using the SETUP menus:

1. From the Map screen press **SETUP > SETUP > SCREEN > Mode**.
2. Select the desired mode and then press **EXIT** to return to the Map screen.

Setting the Hotkeys

IntelliTrac includes five Hotkeys - shortcut keys that provide access to frequently used functions. By default the Hotkeys appear along the right side of the Moving Map area. Pressing the Hotkey button at the bottom of the Moving Map area shows/hides the Hotkeys. Table 2-3 lists all the available hotkeys along with a description of each hotkey.

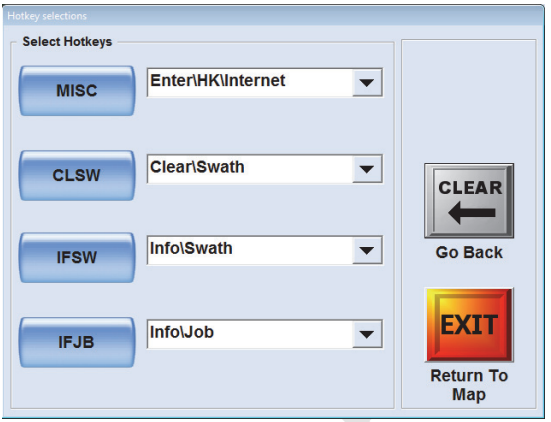
Table 2-3: Hotkey descriptions

Hotkey Name	Hotkey Text	Function
Clear\Pattern\Enter	CPTE	Clears the current pattern from the screen.
Clear\Pattern\Adv (UP)	CPTA	Calls Main Setup Menu so pilot can change (Move) Pattern to current line and change Swath as required.
Clear\Swath	CLSW	Clears the spray information from the screen.
Clear\Job\Enter	CJBE	Clears the current job information from the screen.
Clear\Job\Clear	CJCL	Displays the Jobs By Name List window where you can delete a job.
Clear\Waypoint\Enter	CWPE	Clears the current waypoints from the screen.
Clear\Route\Enter	CRTE	Clears the current route information from the screen.
Clear\Clear	CLCL	Exit IntelliTrac
Clear\Tracks	CLTK	Turn ON/OFF flight TRACKS (Turns) on map screen (leaving just painted swaths).
Poly\Poly	PYPY	Enter polygon creation mode
Enter\Poly\Pattern	EPYP	Enter “automatic swath” mode and displays the Poly Pattern area in place of the Data area on the Map screen.
Enter\Zoom	ZOOM	Displays the Zoom/Pan window.
Enter\EDif	EDIF	Displays the e-Dif Commands window, where you configure e-Dif.
Enter\AGDisp Model	DISP	Shortcut to AgDisp (Drift) modeling dialog, used by Bill Reynolds and his clients.
Enter\METData	METD	Displays the MET Setup window.
Enter\FLOW\CAL	FCAL	Shortcut to Flow CAL Dialog
Enter\HK\Internet	MISC	Displays a window over the Data area that contains the following tabs: HotKeys, Internet, Misc. Press the MISC Hotkey again to hide the window and show the Data area.
Enter\XM Radio\Weather	XMRW	Displays the XM Radio window, where you select an XM Radio channel.
Return\Mark\0	RTM0	Return to the Zero mark.
Info\Setup	IFSP	Displays the main Setup window.

Table 2-3: Hotkey descriptions (*continued)*

Hotkey Name	Hotkey Text	Function
Info\Info	IFIF	Displays the Flow Control Setup window
Info\Job	IFJB	Displays the Jobs By Name List window to view list of all jobs and load a job.
Info\Swath	IFSW	Displays the Unsprayed Swaths window.
Info\Pattern	IFPT	Displays the Pattern Options window.
Info\Mark	IFMK	Displays the Marks window.
Info\Waypoint	IFWY	Displays the Waypoints By Name window.
Set\Set	STST	Toggles the display between Normal (day) mode and Dark (night) mode.
Set\Swath\Enter	SSWE	Sets current swath as 'swath 1'.
Set\Pattern\Adv (UP)	SPTA	(Must be using a A/B/C pattern) advances the current A/B/C pattern to the new position according to the Left/Right Offset
Set\Pattern\Dec (DOWN)	SPTD	(Must be using a A/B/C pattern) decrements the current A/B/C pattern to the new position according to the Left/Right Offset
Set\Pattern\1	PAT1	Call Pattern 1 from current job
Set\Pan\ON/OFF	PANO	Toggles between Pan Mode ON and Pan Mode OFF (the Turn PAN ON/OFF button in the Data area shows the current setting - you can also use this button to toggle the setting ON/OFF).
Set\Zoom\MAN/AUTO	ZOMA	Toggles between Auto Zoom mode and Manual Zoom mode.
Set\AIMMS20\ON/OFF	AIMS	Shortcut to turn ON/OFF AIMMS20 device for AgDisp (Drift), used by Bill Reynolds and his clients.
Set\Preset Scale Ratio	SRAT	Shortcut to return to Preset Scale Ratio and ZOOM defaults as set in ZOOM dialog.
Hide\Show GPS SIM	GSIM	Shortcut to turn HIDE/SHOW visually the Internal Simulator when active.
Auto\USB\Files	AUSB	Shortcut to copy file from USB to C:\..Data folder.
Forward\Pattern	FWPT	Shortcut to advance Pattern Type before designating A/B.
Reverse\Pattern	RVPT	Shortcut to decrement Pattern Type before designating A/B.

To set the Hotkeys:

Step	Button (when applicable)
1. Press **SETUP** > **SETUP** > **SETUP** > **Hotkeys**. The Hotkeys selections window appears.	
	
2. Press the button for the Hotkey you want to change and select a Hotkey function from the drop-down list. For example (using the above screenshot), to change the first Hotkey press the MISC button and select the desired option from the drop-down list.	
3. Repeat step 2 for each Hotkey you want to change and then press **EXIT** when finished.	

Setting User-Defined Fields

IntelliTrac includes several fields that allow you to display specific data (such as flow rate, temperature, and GPS altitude) in the Data area and Moving Map area, as well as on the light bar. Figure 2-12 shows where these values appear in the Data and Moving Map areas.

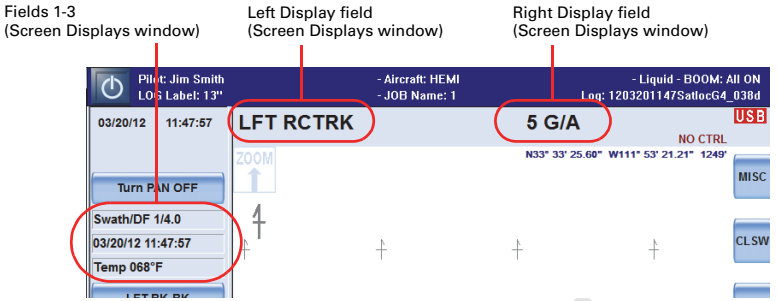
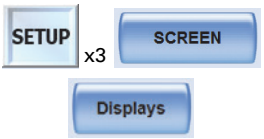
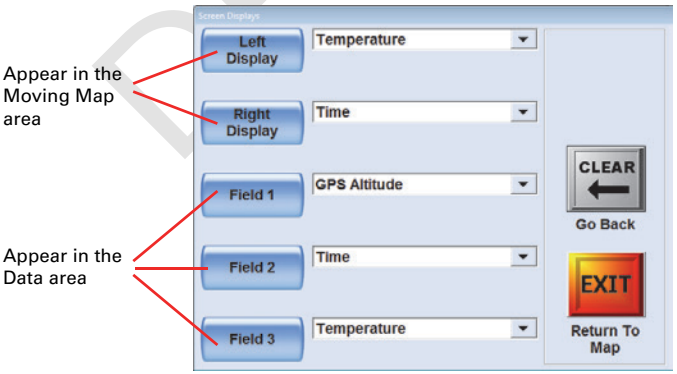
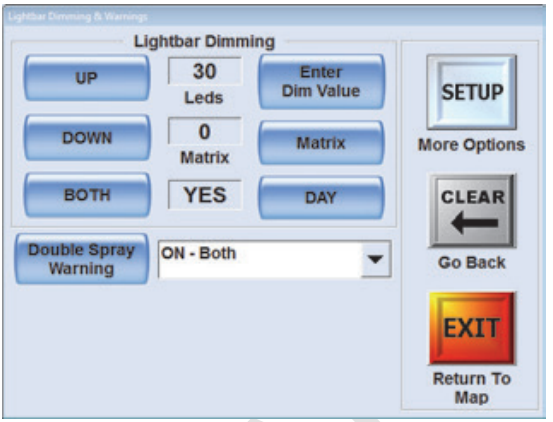
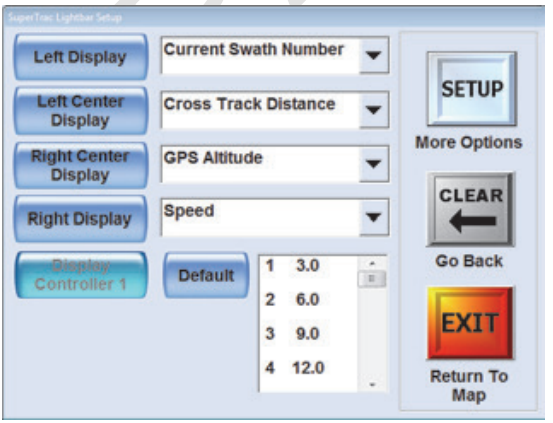


Figure 2-12: User-defined fields in Data area and Moving Map area

To set user-defined data for display in the Data Area and the Moving Map area:

Step	Button (when applicable)
1. Press **SETUP** > **SETUP** > **SCREEN** > **Displays**. The Screen Displays window appears.	
	
2. Press the button for the display data you want to change and select an option from the drop-down list. For example (using the screenshot in step 1), to change the Left Display field press **Left Display** and select an option from the drop-down list.	
3. Repeat step 2 for each field you want to change and then press **EXIT** when finished.	

To set user-defined data for display on the light bar:

Step	Button (when applicable)
1. Press **SETUP** > **SETUP** > **LIGHT BAR**. The Lightbar Dimming & Warnings window appears.	
	
2. Press **SETUP**. The SuperTrac Lightbar Setup window appears.	
	
3. Press the button for the light bar data you want to change and then select the desired option from the drop-down list.	
4. Repeat step 3 for each field you want to change and then press **EXIT** when finished.	

Before You Start

Each time you start IntelliTrac you select an external storage device (USB flash drive) or the IntelliTrac hard drive as the logging read/write device. The option you select affects various file transfer procedures. For more information see “Starting IntelliTrac” on page 6 and “Transferring Data Files” on page 64.

IntelliTrac’s default settings should meet most users’ needs. However, you will need to set some systemwide values and options to suit your local requirements. After setting these values or options, you can start using IntelliTrac.

Note: You can save customized settings and transfer them via USB flash drive to a PC or other G4 units. For more information see “Customized Settings” on page 104.

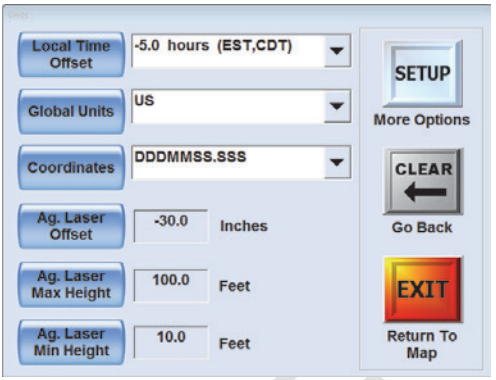
Understanding Systemwide Settings

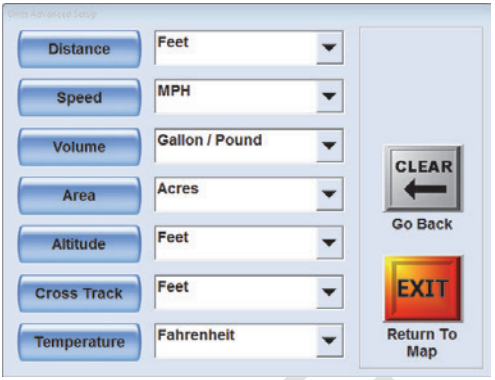
Table 2-4 describes the IntelliTrac systemwide settings you can select.

Table 2-4: IntelliTrac systemwide settings

Setting	Description
Local time offset	IntelliTrac is set to Greenwich Mean Time (GMT). To convert to local time, you must know the time difference between GMT and local time for both standard and daylight saving. For example, Arizona, U.S. is located in the Mountain time zone and does not observe daylight saving. So, to use IntelliTrac in Arizona, you would set the local time setting to -07:00 (7 hours behind GMT). **Note:** If you live in an area that observes daylight saving, you will need to set the local time twice a year.
Global units of measurement	IntelliTrac comes preset with imperial units (such as feet and pounds). To use metric units change the Global Units setting. You can also assign units to individual data types (such as speed and area) in the Units Advanced Setup screen.
GPS coordinates	You can display GPS coordinates in decimal degrees (default), decimal minutes, or decimal seconds.
Laser altimeter offset	*AgLaser is an optional product. To purchase AgLaser contact your dealer.* AgLaser is a laser altimeter used to provide IntelliTrac with a distance from the aircraft to the ground/crop canopy (see Note following). The offset is a number that you can set to offset the difference between the actual mounting location of the AgLaser (usually in the wing) and the lowest point of the aircraft (the landing gear) to determine exactly how high the lowest part of the plane is off the ground/crop canopy. **Note:** The laser will bounce off the ground or the canopy of the crop the plane is flying over if the vegetation is thick and hides the ground.

To select systemwide settings:

Step	Button (when applicable)
1. Press **SETUP** > **SETUP** > **UNITS**. The Units window appears.	SETUP x2 UNITS
	
2. Press **Local Time Offset** and select and offset from (+)14 hours to -12 hours in half hourly increments.	Local Time Offset
3. Press **Global Units** and select a format (US, Metric, or Nautical). 'Global' means all the units in IntelliTrac. You can override the global setting for individual units on the Units Advanced Setup screen (see step 8 below).	Global Units
4. Press **Coordinates** and select one of the following formats: DDD.DDDDDDD - decimal degrees DDDMM.MMMM - decimal minutes DDDMMSS.SSS - decimal seconds	Coordinates
5. Set your AgLaser options (only if installed) by pressing the appropriate button, entering a value in the data entry window that appears, and then press **Accept**. • **Ag. Laser Offset** - number to allow for the difference between the actual mounting location of the AgLaser (usually in the wing) and the lowest point of the aircraft (the landing gear). • **Ag. Laser Max Height** - maximum height is what you want to set for the height above ground. • **Ag. Laser Min Height** - used to allow you to get to a min above ground. it is basically used like a warning. **Note:** The AgLaser symbol appears on the right side of the Moving Map area. When you are within the Max and Min heights the symbol is green; otherwise, it is red.	Ag. Laser Offset Ag. Laser Max Height Ag. Laser Min Height

Step	Button (when applicable)
6. To override the global units for certain values, press **SETUP** on the Units window. The Units Advanced Setup window appears.	
	
7. Edit individual units as desired and then press **EXIT** to return to the Map screen.	

Detecting Your Flow Control System

IntelliTrac automatically detects if a flow control system is connected to the G4 and what type it is: AerialACE™, IntelliFlow®, or IntelliGate™. If IntelliTrac detects a flow control system it displays the type at the top of the Flow Control Setup window.

If IntelliTrac does not detect a flow control system, "No Ctrl! Check Cables, etc." appears at the top of the Flow Control Setup window. For more information see "Spray Options" on page 34 and "Flow Control" on page 104.

See Figure 3-3 on page 34 for an example of both messages (flow control detected and flow control not detected).

Exiting IntelliTrac

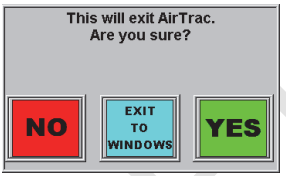
You have two options when exiting IntelliTrac:

- Exit IntelliTrac and return to Windows
- Exit IntelliTrac and shut down Windows

⚠WARNING: To protect your data, you must exit (shut down) IntelliTrac before you turn the power source off. If you power off without first exiting IntelliTrac you risk corrupting your data. Data integrity can be ensured only if you exit IntelliTrac before powering off.

To exit IntelliTrac:

1. On the Main menu press **CLEAR > CLEAR**. The exit window appears.



2. Press **YES** to exit IntelliTrac and shut down Windows.

   or

   Press **EXIT TO WINDOWS** to exit IntelliTrac and return to Windows.

Chapter 3: Work Options

Jobs in IntelliTrac

Entering Basic Job Details (Quick Start)

Understanding Job and Log Data

Spray Options

After you complete basic setup in IntelliTrac (see “Starting IntelliTrac” on page 6) the IntelliTrac Setup screen appears. On this screen you enter the following basic job details you need to quickly get to work:

- Pattern
- Swath width
- Direction (Left/Right)
- Logging on/off

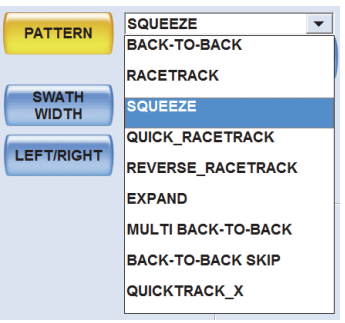
Jobs in IntelliTrac

A job is an IntelliTrac entity comprising one or more polygons and one or more flown patterns. You can save, delete, add to, and subtract from a job.

Note: If you exit IntelliTrac (exit IntelliTrac to and return to Windows or exit IntelliTrac and shut down Windows) with a saved job loaded, that job is still loaded when you restart IntelliTrac. If you exit with **<No Job>*** active, you will see JOB 000 loaded. (You get <No Job>* active by pressing CLEAR > JOB > ENTER).

Entering Basic Job Details (Quick Start)

The following steps outline how to quickly enter basic job details. For more information on job functionality, see “Working with Jobs” on page 80.

Step	Button (when applicable)
1. Press **SETUP**. The IntelliTrac Setup window appears.	
2. Press **PATTERN** and select the desired pattern type from the drop-down list.	
	

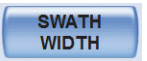
Step	Button (when applicable)
3. If the AUTO REPEAT button is set to NO press the button to toggle the setting to YES to repeat the current pattern when you complete it. If auto repeat is NO, IntelliTrac reverts to a Back-to-Back pattern when you have completed the current pattern.	

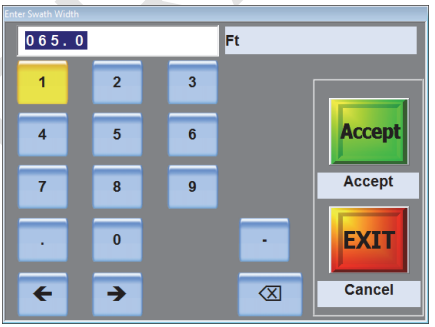
Note: You can auto-repeat the following patterns (the AUTO REPEAT button is enabled if any of the following patterns is selected):

RACETRACK
SQUEEZE
QUICK_RACETRACK
REVERSE_RACETRACK

You cannot auto-repeat the following patterns (the AUTO REPEAT button is disabled if any of the following patterns is selected):

BACK-TO-BACK
EXPAND
MULTI BACK-TO-BACK
BACK-TO-BACK SKIP
QUICKTRACK_X

4. Press **SWATH WIDTH** to display the Enter Swath Width window. a. Enter a swath width. b. Press **Accept** to accept the value and close the window.	



5. Press **LEFT/RIGHT** to select a direction (pressing the button toggles the setting between LEFT and RIGHT).	

Understanding Job and Log Data

If logging is enabled (default setting), IntelliTrac automatically creates a log file for each job flown, assigning the time/date stamp of each new log as the log file name. You can enter additional (optional) details to your job, such as a name/number, pilot name, and aircraft name/number.

To turn logging off:

- Press **KEYPAD > LOG HQ > Turn Logging Off**

To turn logging back on:

- Press **KEYPAD > LOG HQ > Start New Log**

Log Data

Log data includes exact positioning and rate of spray application, precise time and date record, flight speed, altitude, patterns flown, and GPS position quality. IntelliTrac records this information in the log any time you are above a pre-designated airspeed. The default is 45 mph but you can change this in SETUP > SETUP > LOGGING SETUP, Logging Speed field. For more information see “Changing Logging Defaults” on page 103.

Adding Job Information to the Log

You add Job information to a log in the Logging Setup window (SETUP > SETUP > LOGGING SETUP).

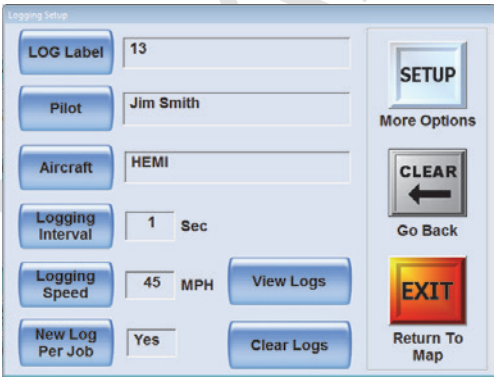
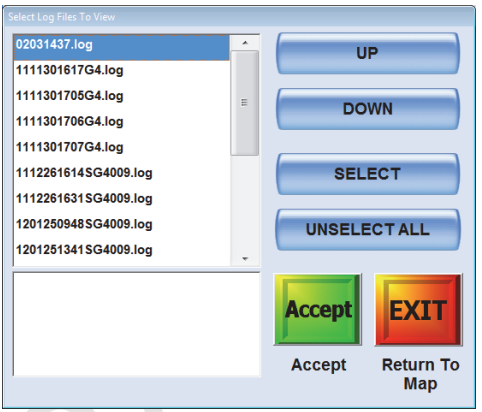


Figure 3-1: Logging Setup window

Table 3-1: Logging Setup window button/field descriptions

Button/Field	Description
LOG Label	Job name (appears in the Header area of the Map screen, see “Header Area” on page 10 for more information)
Pilot	Pilot name (appears in the Header area of the Map screen)
Aircraft	Aircraft name (appears in the Header area of the Map screen)
Logging Interval	How often you want G4 to log data to the specified logging device (hard drive or USB drive)

Table 3-1: Logging Setup window button/field descriptions

Button/Field	Description
Logging Speed	Minimum speed you must be traveling before G4 logs data. The default is 45 mph.
New Job Per Log	Set to Yes means so that every time you start a new log you also start a new job. Set to No so that when you start a new log it becomes part of the current job you are working on.
View Logs	Displays the Select Log Files to View window, where you can select on or more (or all) log files to view.  See “Viewing Log Data” on page 61 for more information.
Clear Logs	Displays the Log Clear window, where you can select specific logs to delete or delete all logs.  **⚠WARNING:** Once you delete a log it is deleted from the logging device. You cannot retrieve it (there is no undo). See “Clearing Log Data” on page 62 for more information.

Spray Options

You set your spray options in the Flow Control Setup window.

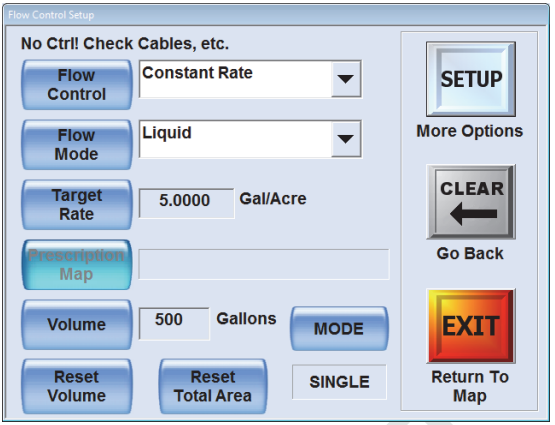


Figure 3-2: Flow Control Setup window

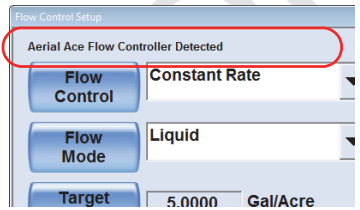
To display the Flow Control screen (from the Main menu):

- Press **SETUP > SETUP > FLOW CTRL**

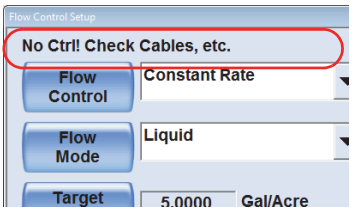
  or

- Press **KEYPAD > INFO\0 > INFO\0** (press INFO\0 twice)

IntelliTrac automatically detects if a flow control system is connected and what type it is: IntelliFlow, IntelliGate, AerialACE, or AutoCal™. As shown in Figure 3-3 IntelliTrac displays the flow control system name (if detected) or an error message (no flow control system detected).



Flow control system detected



No flow control system detected

Figure 3-3: Flow control system detection message

IntelliTrac supports constant rate and variable rate flow control, as well as liquid and dry application (flow mode).

If you have a flow control system installed, you will need to set your basic job spray options in IntelliTrac, including:

- Spray application type (liquid or dry - displays in the Header area as LIQUID or DRY)
- Target spray rate (Gal/Acre liquid; Lb/Acre dry - US units)
- Spray volume

You can also set IntelliTrac to spray with the entire boom (default setting) or only the left or right boom (shows in the Header area as BOOM:ALL/LEFT /RIGHT).

If defining and flying polygons, you may also want to set the flow control system to automatically turn on/off when entering/leaving a polygon.

Finally, you can change your flow lead time, which represents the flow control system's reaction time to reach the proper rate at the proper location.

Table 3-2: Logging Setup window button/field descriptions

Button/Field	Description
Flow Control	Select from the following: • Constant Rate - Constant rate flow control • Constant Rate Poly - Constant rate flow control that automatically turns on/off at polygon borders. • Monitor Only - You monitor the flow system, controlling the flow manually. For example, use this mode to calibrate your flow meter or for logging rates if using AutoCal. – Variable Rate - Automatically adjusts the flow rate based on the prescription map you upload. For variable rate spray applications you can select a prescription map from the Prescription Map screen. In this screen you can load a map initially, or replace the current map with another one, by pressing ENTER with your required map selected. – Clear the currently loaded map (so no map on screen) by pressing ENTER with <Clear current PMap> selected. • OFF
Flow Mode	Select Liquid or Dry to match your spray application type in the Flow Mode field.
Target Rate	Set your target rate in gallons per acre for liquid applications or pounds per acre for dry applications (US units).
Prescription Map	Displays the loaded prescription map. You can also select a different prescription map. Note: You must have an active prescription map subscription for this field to be active (to use prescription maps).
Volume	Set the beginning hopper volume. This value counts down as material is sprayed.
Reset Volume	If you refill the hopper with the same amount you can reset the volume to the last amount you entered using the Reset Volume button. The volume resets to the default value of 500 gallons.
Reset Total Area	You can also reset the total sprayed area (as shown in the Data window) back to 0. The Total Area counter resets to 0.
MODE	Toggle between SINGLE and DUAL mode

Table 3-3 summarizes the flow control options and how the various parameters you can select in the two Flow Control setup windows affect each option. The defaults shown in Table 3-3 are recommended, but may not be suitable for all applications.

Table 3-3: Flow control options summary

	Default Lead Time (Variable Rate)	Default Lead Time (Edge)	Auto Boom Yes/No Option	Target Rate
Variable Rate	0.5 s	0.1 s	YES - Pump On, Valve Static NO - Valve Closed, Rate 0	N/A
Constant Rate Poly	N/A	0.1 s	YES - Pump On, Valve Static NO - Valve Closed, Rate 0	N/A
Constant Rate Manual	N/A	N/A	N/A	Actual Spray Rate

Setting Spray Options - Volume

You set the beginning hopper volume in the Volume field. This value counts down as material is sprayed. If you refill the hopper with the same amount you can reset the volume to the last amount you entered using the Reset Volume button. You can also reset the total sprayed area (as shown in the Data window) back to 0.

To reset the spray volume or area counters, press Reset Volume or Reset Total Area. The volume resets to the default value of 500 gallons and the Total Area counter resets to 0.

Note: When AutoCal reports that it is using dry flow control, the volume and rate is based on weight (volume = 1000 kg; rate=100 kg/h).

Spray Boom Settings

Your boom options determine which booms are active (spraying) during full and half-boom spraying operations. You set spray boom options in the Spray Boom Setup window, shown in Figure 3-4.

Figure 3-4: Spray Boom Setup window

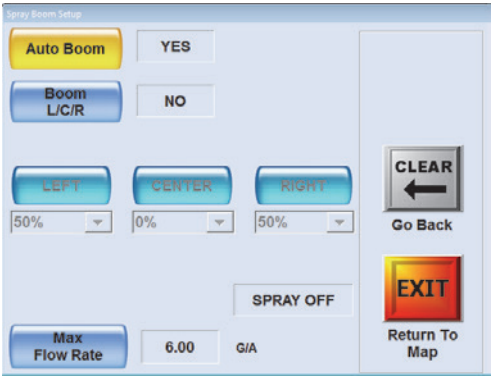
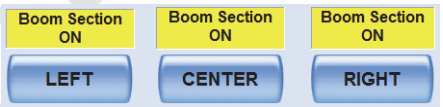
- If a boom switch is in the “on” position, the Spray Boom Setup window displays a yellow message indicating that the left, center, or right boom section is “ON”.
- If the switch is in the off position, the system will display a red message indicated that particular boom is “OFF”.

You can adjust the spray volume for the Right, Left and Center boom sections. The Right and Left booms spray the same percentage (from 10% to 50%) together. For instance, if you set the Right boom to 20%, the Left boom will automatically adjust to 20%. The Center boom can be adjusted independently (from 0% to 80%.) All three booms must total 100%. When they do, IntelliTrac displays a green message stating ‘Total Spray BOOM 100%’ and if they do not total 100% IntelliTrac will display a red warning message stating the total.

The Max Flow Rate field is the maximum rate of flow through the valve. The default is 6.0 gallons/acre (G/A) for liquid flow mode and 50.07 pounds/acre (Lb/A) for dry flow mode.

To set spray boom settings:

Step	Button (when applicable)
1. Press **SETUP > SETUP > FLOW CTRL > SETUP > SETUP**. The Spray Boom Setup window appears.	SETUP x3, FLOW CTRL, SETUP x2

Step	Button (when applicable)
	
2. Press **Auto Boom** to toggle the value between YES (on) and NO (off).	
3. Press **Boom L/C/R** to toggle the value between YES (on) and (NO) off. • When set to YES the LEFT, CENTER, and RIGHT buttons are available. • When set to NO the LEFT, CENTER, and RIGHT buttons are dimmed and available.	
4. With Boom L/C/R set to YES set the desired spray percentage for the left, right, and center boom sections:  a. Press the desired boom section button. b. Select the desired percentage from the drop-down list.	
5. Set the maximum flow rate: a. Press **Max Flow Rate**. b. In the Enter Max Flow Rate Through Valve window enter a rate and press **Accept**.	

Changing the Flow Lead Time

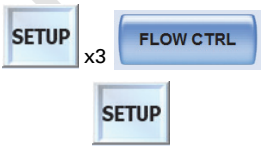
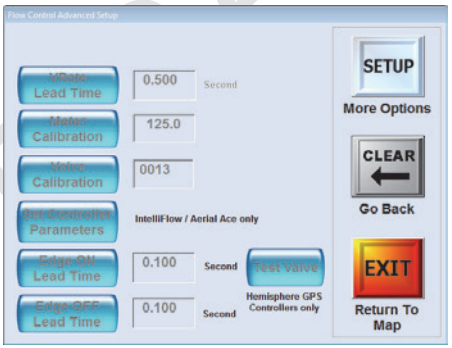
There are two types of flow lead time: variable rate lead time and edge lead time.

- Vrate Lead Time - Vrate (Variable Rate) Lead Time is the time in seconds it takes the system to switch rates. However, you shouldn't need to adjust this setting - IntelliTrac's default setup is designed to adjust for the rate changes automatically based on typical flight speeds.

  Note: Vrate Lead Time will be grayed out unless you are running in variable rate mode.

- Edge Lead Time (On/Off) - edge lead time 'On' represents how early the flow control reacts to reach the proper rate at the proper location. Edge lead time 'Off' represents how early the flow control begins to turn off when exiting a polygon or prescription map.

To change the flow lead time:

Step	Button (when applicable)
1. Press **SETUP > SETUP > FLOW CTRL > SETUP**. The Flow Control Advanced Setup screen appears.	
	
2. For the flow lead time field (VRate Lead Time, Edge ON Lead Time, Edge OFF Lead Time) you want to set a value: a. Press the desired flow lead time button. b. Enter a value (in seconds) in the data entry window. c. Press **Accept**.	

Chapter 4: Pattern Guidance

Open and Closed Patterns
Flying Patterns
Available Pattern Types Overview
Flying the Available Pattern Types
Understanding Marks (Return Points)
Managing Data and Log Files

This chapter covers patterns—the pattern types and how you set them and fly them. It also covers data and log files—how you view, delete and transfer them.

Open and Closed Patterns

There are two basic classifications of patterns in IntelliTrac:

- Open patterns - In an open pattern, you can fly an unlimited, or "open" number of swaths because the pattern is not dependent on the size of the field.
- Closed patterns - In a closed pattern, the number of swaths you can fly is limited, or "closed". The number of swaths you can fly is limited because in closed patterns you define the width of the field.

Both open and closed patterns need an initial guideline on which to base the pattern's GPS coordinates. In IntelliTrac, this initial guideline is called the A|B line. Closed patterns need an additional defining point—C.

After entering the number of points required for a pattern—two or three—IntelliTrac places an array of swath guidelines on the screen with the A|B line in red.

Understanding the A|B Line - Open Patterns

In an open pattern, point A of the A|B line is the beginning of the line; point B is the end of the line. All swaths you fly will be parallel to this initial A|B line.

Note: The A|B line may be inside or outside the field. Points A and B should be as far apart as possible to ensure the accuracy of the line. Establishing A and B points too close together may result in a small error that will create a large divergence over a long distance.

Understanding the A|B Line - Closed Patterns

In a closed pattern, you also set points A and B to define your A|B line. However, in a closed pattern, you define the width of your field by setting a third point - the "C" point.

IntelliTrac automatically prompts you to set your A, B, and when applicable, C points according to the pattern you select.

Note: You can have IntelliTrac automatically place an A|B line for you. If you load a job that has a polygon or polygons saved with it, when you press ENTER > POLY > PATTERN, IntelliTrac places an A|B line on the optimal side of the active polygon. You can move the A|B line to other sides as required. For a full description of this figure, see "Rotating the A|B Line Around a Polygon" on page 93.

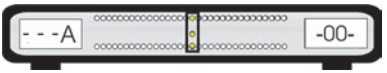
Flying Patterns

After you set your job options (see Chapter 3, “Work Options”), you are ready to begin flying with IntelliTrac. The following example uses a back-to-back (BK-BK) pattern.

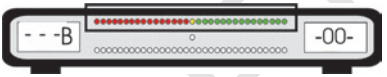
Note: The following example uses factory default settings. If you change the default setup you may see different data in your light bar.

Flying a Basic Pattern

1. Begin flying. Your light bar prompts you to set point A of the A|B line (notice “- - -A” in the left LED display).

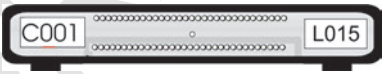


2. Fly to the beginning of your A|B line and press the remote swath advance button to set your A point. The light bar prompts you to set your B point by flashing the upper row of LEDs.



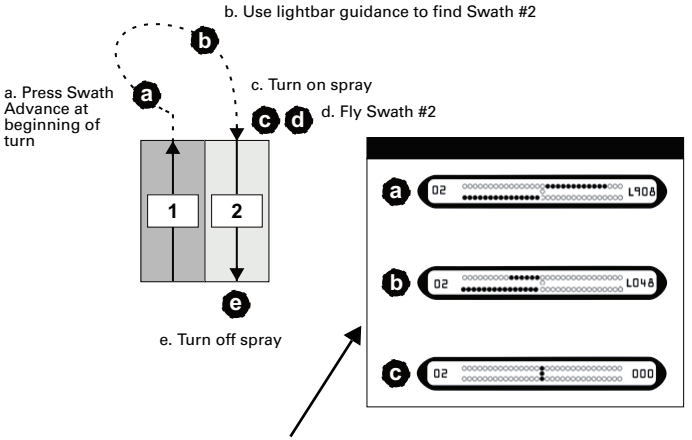
3. Turn on your spray as you enter the field.
4. Press the remote swath advance to set your B point.

   If you are flying a closed pattern, the light bar next prompts you to set your C point. “C” appears in the left display followed by your current swath number. Press the remote swath advance button to set your C point.



5. Turn off the spray as you leave the field.
6. Press the remote swath advance button to advance to Swath #2.

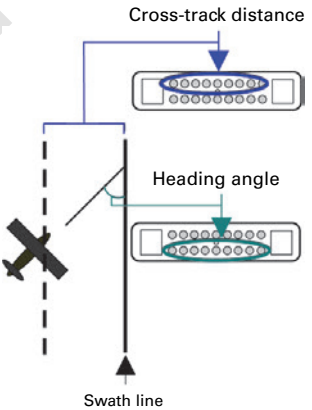
7. Make the turn onto your next swath using the light bar for guidance.

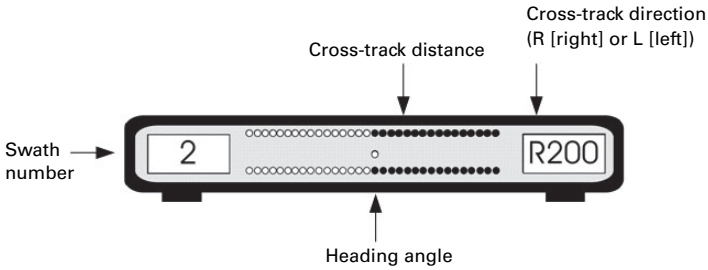


Lightbar guidance: the top row of LEDs shows cross-track distance and direction to target swath; the bottom row of LEDs shows the heading (angle of intercept) to your target swath. LEDs lined up in the center (c.) means you are lined up on the swath.

8. Turn the spray on as you enter the field.
9. Fly Swath #2 using light bar guidance. The top row of LEDs show you the distance and direction (right or left) you need to fly to get to the target swath line. The default right display tells you the exact cross-track distance.

   The bottom row of LEDs tells you the heading angle needed to intercept the target swath line. The default left display tells you the current swath number.

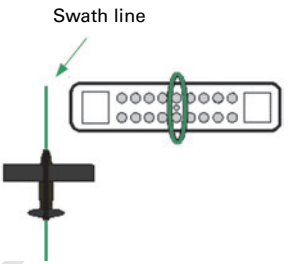




Each LED represents a certain distance. For example:

- For cross-track distance (top row of LEDs), the more you are off-track, the more LEDs are lit. When you are closer to your target, fewer LEDs are lit.
- For heading angle, the farther off-center the lit LED is, the farther you are off from the required heading angle needed to intercept the target swath.

When the center vertical row of light bar LEDs is lit, you are on the target swath.



10. Continue to fly the rest of your swaths using light bar guidance.

Common Pattern Flying Tasks

Table 4-1 provides information on common pattern flying tasks.

Table 4-1: Common pattern flying tasks

Task	How To (from the Main menu)
Changing direction	To change direction at any time while flying a pattern, from flying to the right of the A|B line to flying to the left of it (or vice versa): • Press LEFT RIGHT\3 IntelliTrac transfers the swath guidance grid to the other side of the A|B line.
Advancing/ decrementing swaths	To change your remote swath advance button to a swath decrement button: • Press SET > DEC To change it back to swath advance: • Press SET > ABC
Resetting the current pattern	To reset the current pattern: • On the keypad press CLEAR > PATTERN\1 > ENTER "Waiting A" appears on the light bar. Your current spray data remains visible in the map window.
Recalling a saved pattern	To recall a saved pattern: • Press SET > PATTERN\1 n > ENTER
Clearing the aircraft swath mark display	To clear the aircraft swath mark display in the map window: • Press CLEAR > SWATH\2

Table 4-1: Common pattern flying tasks (*continued)*

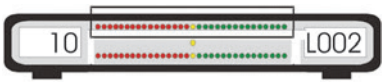
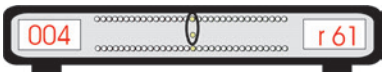
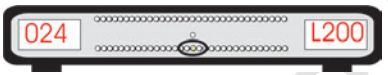
Task	How To (from the Main menu)
Clearing or replacing a prescription map	To clear the active prescription map from the map display, return to the Prescription Map window in the Flow Control Setup screen by pressing INFO\0 > INFO\0 and selecting Prescription Map. In the Prescription Map screen press Clear current PMap to clear the current (active) prescription map.

Troubleshooting

When flying a pattern, you may get a light bar warning. Warnings include spraying a previously sprayed swath (double-spray warning), invalid or poor DGPS reception, or distance/time to polygons or waypoints.

When IntelliTrac generates a warning your active guidance display disappears from the light bar. In its place you see flashing LEDs and/or additional error information in the left and right display screen.

Table 4-2: Troubleshooting lightbar warnings

Light bar Display	Warning Message
	Swath Double Spray Upper LED row flashes when spray on is detected on a previously sprayed swath. This will flash until the swath number is changed. (By default this is turned on. You can turn this feature off in SETUP > SETUP > LIGHT BAR, *Double Spray Warning* field.)
	Extrapolated GPS Center yellow LEDs blink. Reboot system and check for receiver and power status lights. Refer to your receiver owner's manual for more information on status indicators.
	Poor DOP (Dilution of Precision) Lower center yellow LED flashes. Check status lights on receiver. Reboot and wait up to 5 minutes for a better solution. Increasing or decreasing your mask angle may also improve DOP. To change your mask angle, see your receiver owner's manual.

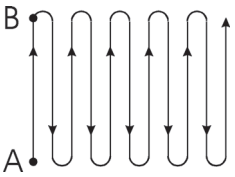
Available Pattern Types Overview

IntelliTrac supports ten pattern types (both open and closed), providing the flexibility to fly any field shape. This section describes the ten patterns and how you fly them.

Keep in mind that although IntelliTrac includes ten pattern types, you can store as many as a hundred flown patterns—flown jobs—in a job.

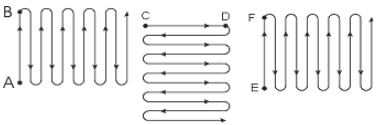
Available Pattern Types

This section describes each of the ten available pattern types.



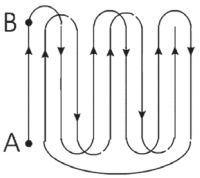
Back-to-Back (BK-BK)

Fly consecutive swaths parallel to the A|B line.



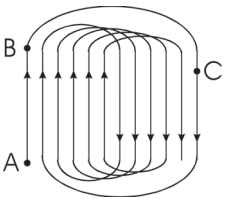
Multi Back-to-Back (MB2BK)

Fly multiple Back-to-Back patterns. Tell IntelliTrac the number of fields you want to fly (up to 9) and whether you want to full rotate (123, 123) or half rotate (123, 321). IntelliTrac automatically rotates your A|B line for each field and provides guidance accordingly.



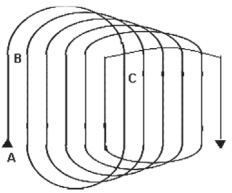
Back-to-Back Skip (BKBKS)

Fly the odd-numbered swaths first, then the even numbered swaths.



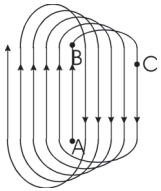
Racetrack (RCTRK)

Fly each side of a field, then alternately work from Swath #2 to the middle, and from the middle toward the other end of the field. This pattern is useful for flying wide, smooth turns.



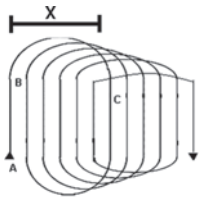
Quick Racetrack (QKRTK)

Fly a pattern similar to the Racetrack, but set your C point in the middle of the field.



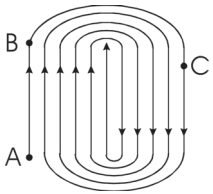
Reverse Racetrack (RVTRK)

Fly a pattern similar to the Racetrack. This is called the “Reverse” Racetrack because you are flying in one direction, but swaths are incrementing in the opposite direction. In this pattern, you set your A|B line in the center of the field. This pattern is useful for flying circular fields or other fields where the center line is clearly visible.



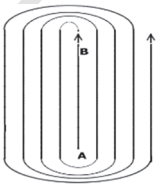
QuickTrack X (Quicktrac X)

Fly a pattern similar to the Quick Racetrack. You specify the 'C' point for Quicktrack X patterns by the number of swaths or the distance from A-B to the furthermost swath in the pattern. After you have set the A and B points, fly the pattern like a Quick Racetrack: the second swath is in the middle of the field, the third is swath #2, and so on.



Squeeze (SQUEZ)

Fly loops of decreasing size, from the outside of the field to the middle of the field. This pattern allows you to make wide turns at the beginning of a job when carrying a heavy load, and narrower turns as your load becomes lighter.



Expand (EXPND)

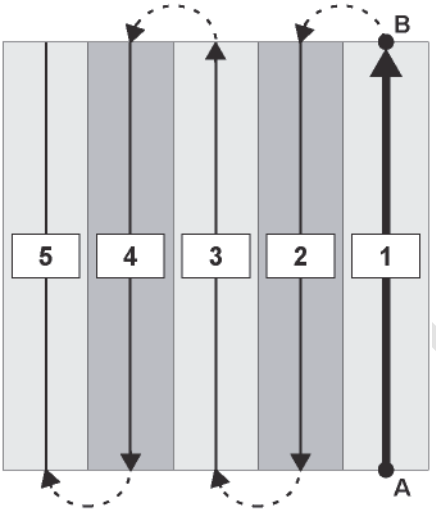
Fly successive swaths outward from the center of the field. This pattern is useful for fields with a visible center line or a long, irregular shape.

Flying the Available Pattern Types

This section reiterates the main points about each pattern and describes how to fly the patterns.

Back-to-Back Patterns

Fly consecutive swaths parallel to the A|B line



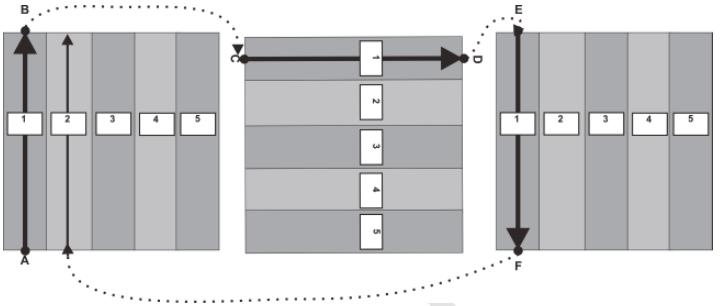
1. Set your A|B line.
2. Fly swaths consecutively: 1, 2, 3, and so on.

Multi Back-to-Back Patterns

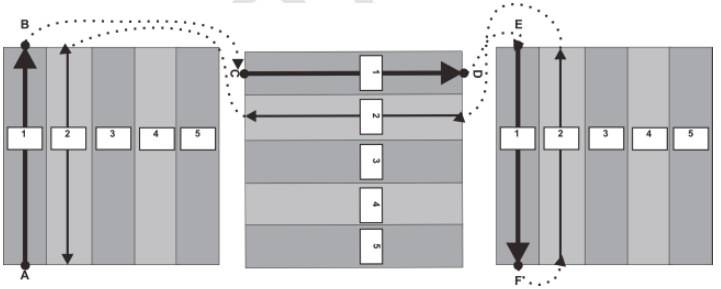
Fly back-to-back patterns over a maximum of nine fields. Multi back-to-back patterns can be full rotate or half rotate patterns.

Note: In the two pattern examples below, the bold and the italic text highlights the difference in the swath order between full rotate and half rotate patterns. Regular text indicates swaths are flown in the same order in both patterns.

Back-to-back full rotate pattern: Field 1-Swath 1, Field 2-Swath 1, Field 3-Swath 1; **Field 1-Swath 2**, Field 2-Swath 2, *Field 3-Swath 2*



Back-to-back half rotate pattern: Field 1-Swath 1, Field 2-Swath 1, Field 3-Swath 1; *Field 3-Swath 2*, Field 2-Swath 2, **Field 1-Swath 2**.



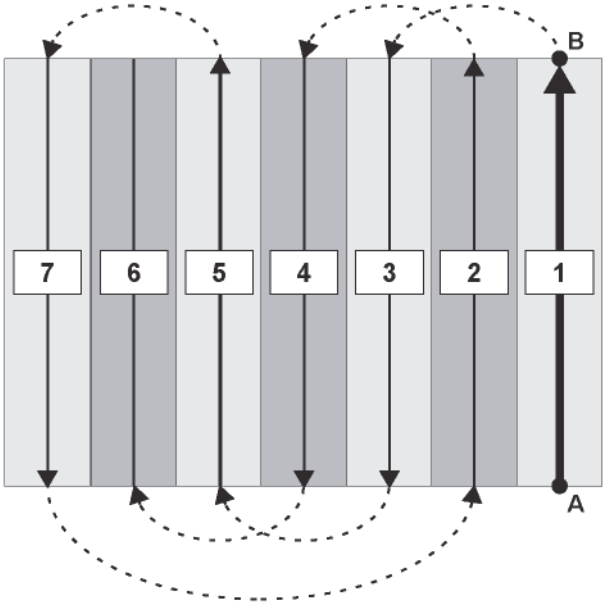
IntelliTrac automatically rotates your A|B line for each field and provides guidance accordingly.

To fly a multi back-to-back pattern:

1. Enter the number of fields you wish to fly at the menu prompt.
2. Select either full rotate or half rotate.
   - Full rotate means you fly the first swath of each field and then fly the second swath of each field starting again at field 1 (such as 123, 123).
   - Half rotate means you fly the first swath of each field, and then fly the second swath of each field in the opposite direction beginning with field 3 (such as 123, 321).
3. Set your A|B line for each consecutive field.
4. Follow the guidance prompts to complete flying your pattern.

Back-to-Back Skip Patterns

Fly the odd-numbered swaths first, then the even numbered swaths in a back-to-back pattern.

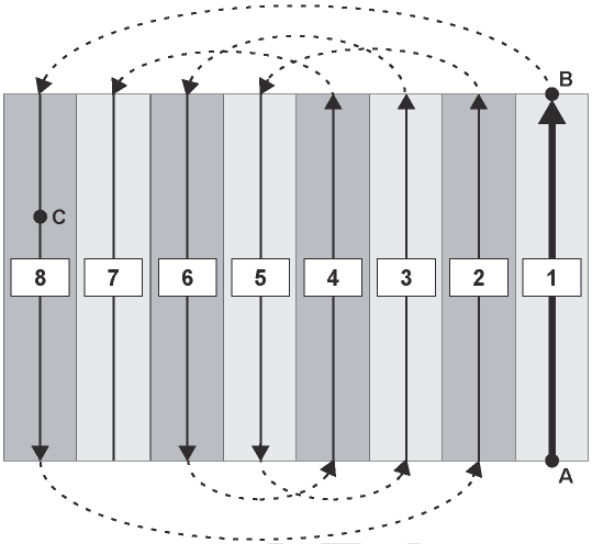


To fly a back-to-back skip pattern:

1. Set your A|B line.
2. Fly your odd numbered swaths first.
3. To switch from odd to even numbered swaths, press ENTER.
4. Fly your even numbered swaths.

Racetrack Patterns

Fly a series of loops, or "racetracks." This results in wider, smoother turns. In a Racetrack pattern, you first fly each side of a field, then alternately work from Swath #2 to the middle, and from the middle toward the other end of the field.



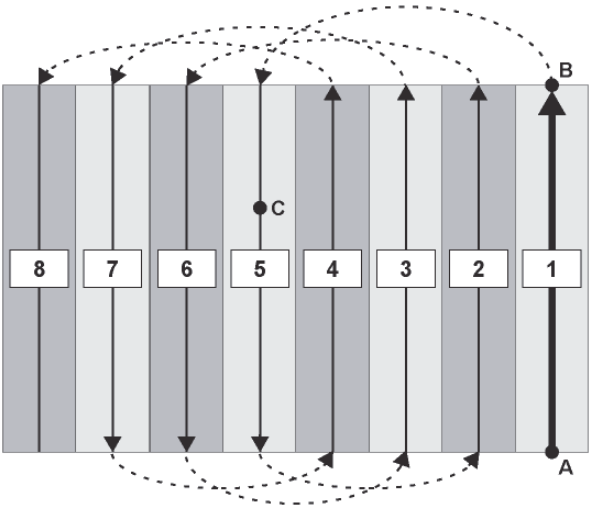
To fly a racetrack pattern:

1. Set your A|B line.
2. Fly swaths in the following order: 1, 8, 2, 5, 3, 6, 4, 7.

Quick Racetrack Patterns

These are similar to the racetrack pattern; however, in a quick racetrack pattern you set your C point in the center of the field, not at the end. This is called a “quick” racetrack because you do not have to fly to the end of the field to press the C point.

In the quick racetrack pattern you fly a constant size loop after setting the A, B, and C points. Point C is the swath on or after the field center line.



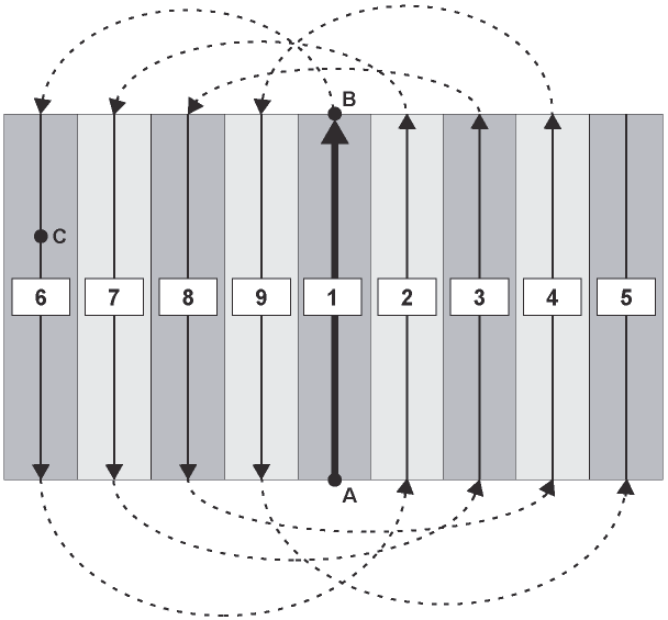
To fly a quick racetrack pattern:

1. Set your A, B, and C points.
2. Fly swaths in the following sequence: 1, 5, 2, 6, 3, 7, 4, 8.

Reverse Racetrack Patterns

These are also similar to the racetrack pattern. They are called a “reverse” racetrack because you are flying one direction, but swaths are incrementing in the opposite direction. In this example, we are flying to the left, but the swaths are incrementing to the right.

Unlike the racetrack pattern, in reverse racetrack, you set your A|B line in the middle of the field. Point C is still on the edge of the field. This pattern is recommended for circular fields or other fields where the center line is clearly visible.



To fly a reverse racetrack pattern:

1. Set your A|B line.
2. For a 9-swath *right reverse racetrack* pattern, spray the swaths in the following sequence: 1, 6, 2, 7, 3, 8, 4, 9, 5.

QuickTrac X Patterns

These are similar to the quick racetrack pattern. You specify point C for the quicktrac X pattern by either the number of swaths or by the distance from the A|B line to the furthermost swath in the pattern. After the A|B points are set, you fly the pattern like a quick racetrack.

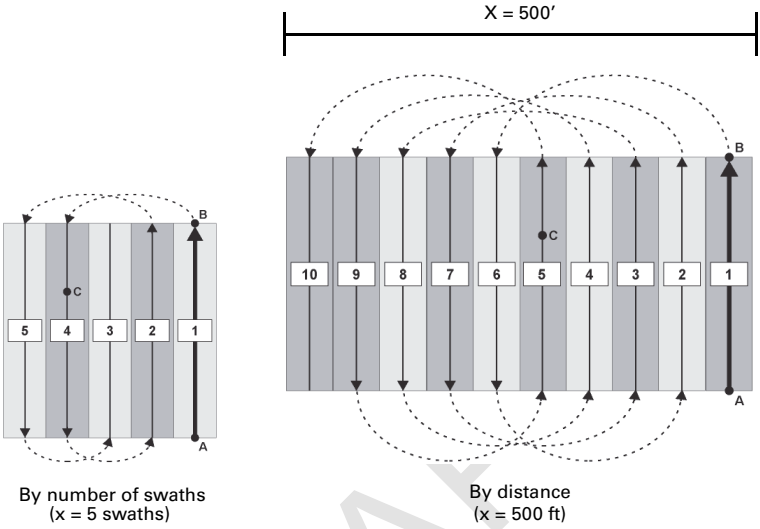


Figure 4-1: QuickTrac X patterns

To fly a quicktrac X pattern:

1. Enter a value and select either Distance or Total Swaths at the prompt.
2. Set your A, B, and C points.
3. Fly the rest of the pattern according to guidance cues:
   - If x = total swaths: For example, if x = 5 (total swaths), fly the swaths in the following order: 1, 4, 2, 5, 3

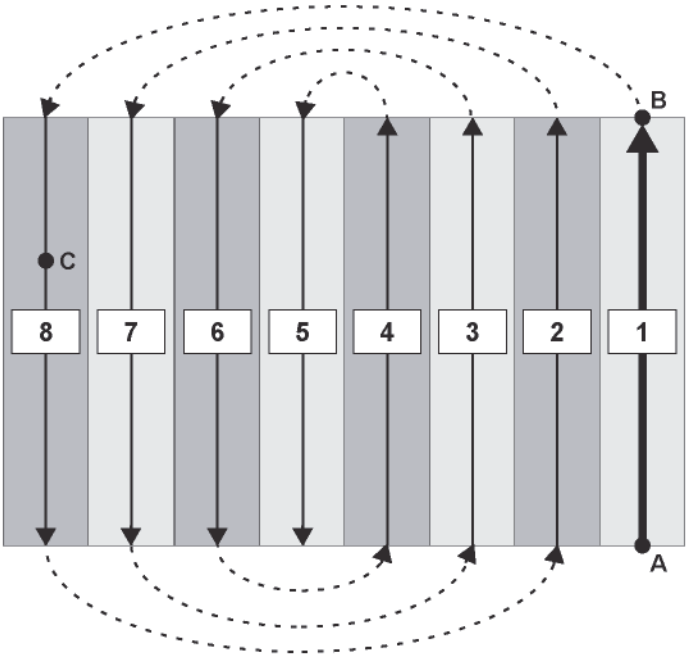
     Note: To repeat the quicktrac X pattern after flying the initial defined number of swaths, press the ABC button. The pattern repeats on swaths 6-10 (so 6, 9, 7, 10, 8), then 11-15 and so on.

   - If x = distance: For example, if x = 500’ (Swath Width set at 50’), fly the swaths in the following order: 1, 6, 2, 7, 3, 8, 4, 9, 5, 10

Squeeze (SQUEZ) Patterns

These consist of loops of decreasing size, from the outside of the field to the middle of the field. In a squeeze pattern, you define the outside edges of your field (the largest loop) by your A|B|C points.

In the squeeze pattern, you to make wide turns at the beginning of your spray job when your load is heavy then make narrower turns as your load becomes lighter.

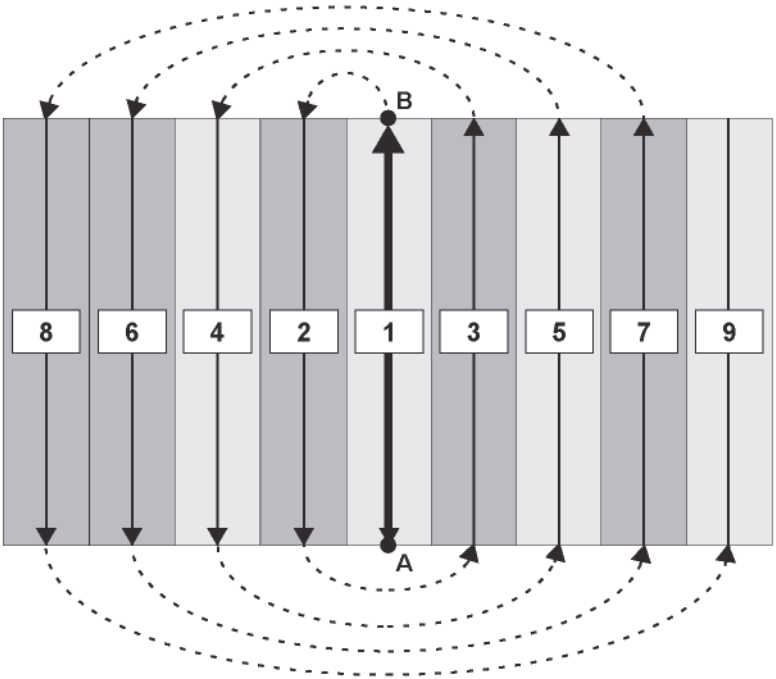


To fly a squeeze pattern:

1. Set your A|B line.
2. For an 8-swath field, spray the swaths in the following sequence:
   1, 8, 2, 7, 3, 6, 4, 5

Expand Patterns

These begin with the A|B line in the center of the field. Successive swaths increase outward. Expand patterns are useful for fields with a visible center line or with a long, irregular shape.



To fly an expand pattern:

1. Set your A|B line.
2. For a 9-swath *Expand Left* pattern, spray the swaths in the following sequence:

   1, 2, 3, 4, 5, 6, 7, 8, 9

Understanding Marks (Return Points)

Marks are points to which you want to return. When you create a mark, IntelliTrac saves the following current swathing information:

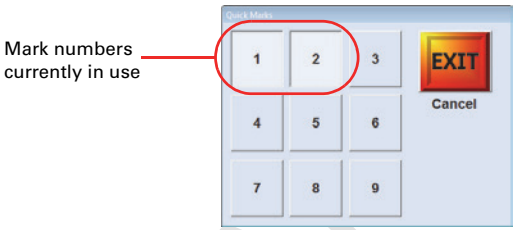
Swath number	Pattern
A|B line	Direction
Job ID	Acreage
Swath width	Spray information

Creating a Mark

You create a mark in two ways: one for marks 1 to 9, one for marks 10 to 99.

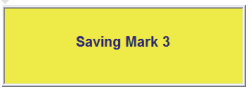
To create a mark numbered 1-9:

1. Press the **MARK** quick key. The Quick Marks window appears.



   Mark numbers that are already in use are shown as depressed numbers; however, you can reuse them to reposition a mark (to overwrite its position to the new position).

2. Press the button corresponding to the numbered mark you want to create. A message appears indicating IntelliTrac is saving that numbered mark (Mark #3 in the figure below), the Quick Marks window closes, and the new mark appears in the Map window.



To create a mark numbered 10-99:

- Press **KEYPAD > SAVE > MARK\4 nn > ENTER**. A message appears indicating IntelliTrac is saving that numbered mark, the Main menu closes, and the new mark appears in the Moving Map area (for example, Mark #1 appears as **M1**).

Note: IntelliTrac automatically saves your last sprayed point (last spray off point) as mark zero (M0), but this mark is overwritten each time the spray is turned off. If you want to keep a spray off point marked, manually give it a mark number (n) immediately after turning spray off. You will get M0 and Mn (almost) together and Mn will stay while M0 will become the next spray off point. To return to the last sprayed mark, press KEYPAD > RETURN\7 > INFO\0. The light bar provides guidance back to the mark.

Returning to a Mark

You return to a mark in two ways:, one for marks numbered 1-9, one for marks numbered 10-99.

To return to marks numbered 1-9:

- Press **KEYPAD > RETURN\7 n**

To return to marks numbered 10-99:

- Press **KEYPAD > SET > MARK\4 nn > ENTER**

While returning to a mark, the light bar displays heading and distance to the mark. Press ENTER to cancel the guidance.

Note: If you select the wrong mark to return to, you do not have to cancel guidance to that mark—just use either return method above for guidance to a different mark.

Clearing a Mark

To clear a mark permanently from IntelliTrac's memory:

- Press **KEYPAD > CLEAR > MARK\4 n > ENTER**

Managing Data and Log Files

IntelliTrac enables you to transfer the following data types between an external storage device (USB flash drive) and the G4 hard drive:

Logs
Jobs
Marks (marks.dat files)
Waypoints (wypts.dat files)
Pilot settings (Itrac.ini file)

You can transfer data from the flash drive to a PC and view data in MapStar as well as transfer MapStar data back to IntelliTrac using the flash drive.

Note: If you select the G4 hard drive as the logging read/write device (see "Starting IntelliTrac" on page 6) you must transfer data from the hard drive to the USB flash drive before transferring it to your PC.

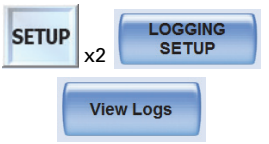
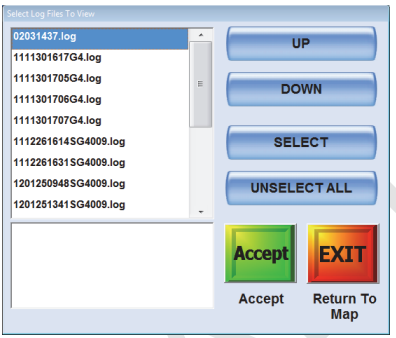
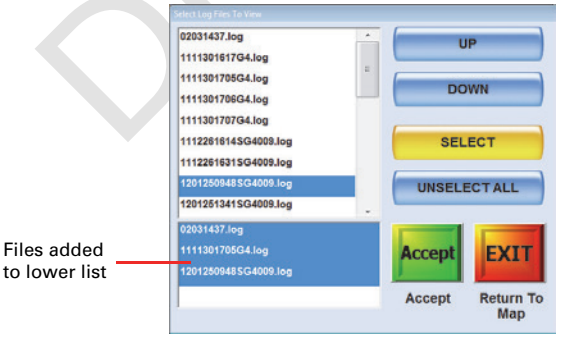
About Log Data Files and Job Data Files

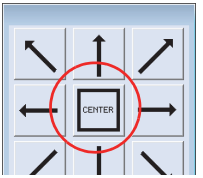
Log files and job files are independent of each other. A job file contains polygons and patterns. A log file contains the spray information that comes from spraying a pattern and any additional optional information that you entered, such as the pilot's name or aircraft ID. Although the job file is used as a boundary to spray in, the log file that is created from spraying is not linked to that file. This means opening one does not open the other.

You can open any job at any time, and you can view any log at any time. If you want to view a log file and a job file, for example to make sure that you have sprayed the full field, you need to ensure that the log file is from the field that the job file represents.

Viewing Log Data

Viewing log data enables you to see a physical representation of where you sprayed, how much you sprayed, and if you missed anything.

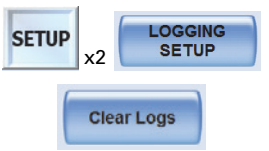
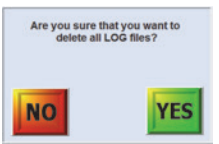
Step	Button (when applicable)
1. Press **SETUP** > **SETUP** > **LOGGING SETUP** > **View Logs**. The Select Log Files to View window appears.	
	
2. Select a log file in the upper list (select the file or press **UP** or **DOWN** to highlight the file) and then press **SELECT**. The selected log file is added to the lower list. Repeat this step for each log file you want to view.	
	
3. Press **Accept** and then press **EXIT** to return to the Map screen.	

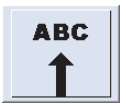
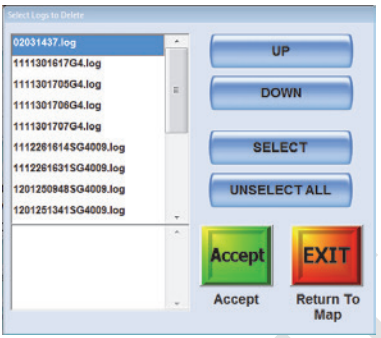
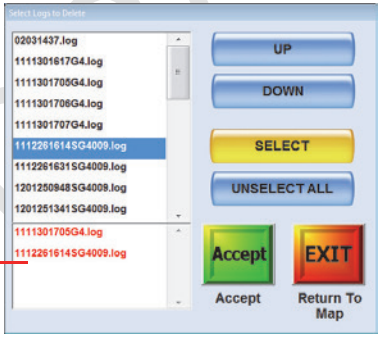
Step	Button (when applicable)
4. After selecting the files you want to view, press **OK** to return to the Map screen. The log with the lowest number is displayed on the screen. Press the **CENTER** button in the Zoom\Pan window to cycle through the selected logs. See "Zooming and Panning the Moving Map Area" on page 18 for more information.	

Clearing Log Data

IntelliTrac can store up to 1,000 hours of log time—depending on the storage capacity of your USB flash drive—before you need to clear storage space by deleting some or all of your log files. You can delete all logs or specific logs.

WARNING: Clearing logs permanently erases them from IntelliTrac's memory.

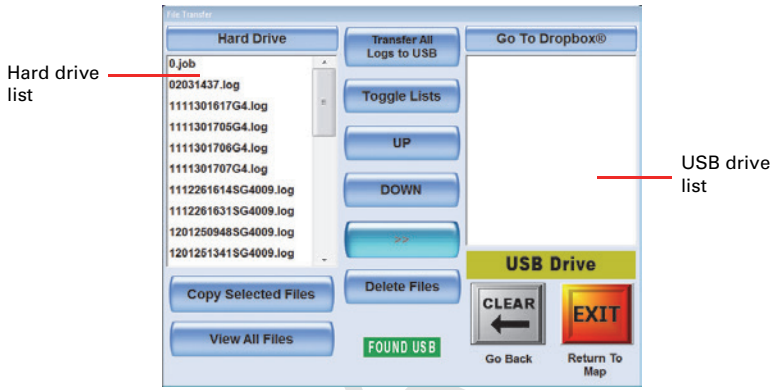
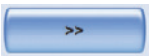
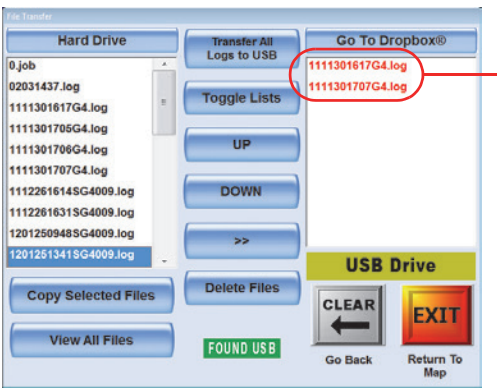
Step	Button (when applicable)
1. Press **SETUP** > **SETUP** > **LOGGING SETUP** > **Clear Logs**. The Log Clear window appears.	
	
2. To clear all logs: a. Press **DEC**. A confirmation screen appears. b. Press **YES** to confirm the deletion; press **NO** to cancel.	 

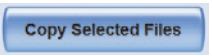
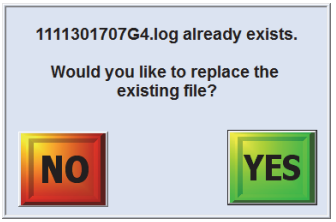
Step	Button (when applicable)
To clear selected logs: a. Press **ABC**. The Select Logs to Delete window appears.	
	
b. Select the desired log file in the upper list (by pressing the file or pressing the **UP** and **DOWN** buttons to highlight the file) and then press **SELECT**. The selected log file is added to the lower list. Repeat this step for each log file you want to delete.	
Files added to lower list 	
c. Press **Accept** to delete the selected logs and return to the Map screen.	

Transferring Data Files

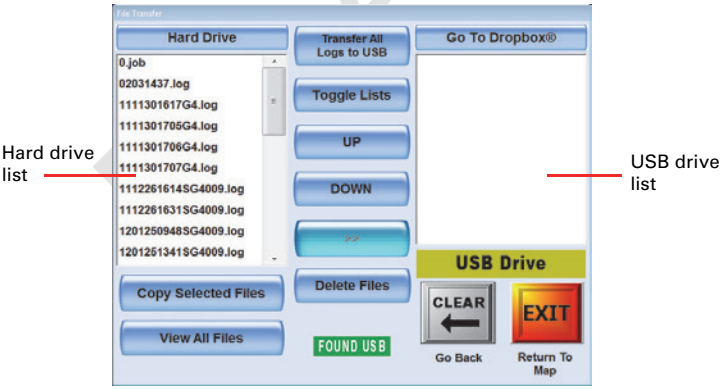
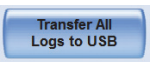
IntelliTrac allows you to transfer the following data files (logs, jobs, marks, waypoints, pilot settings) between the G4 hard drive and your USB flash drive.

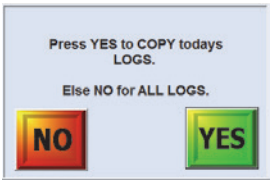
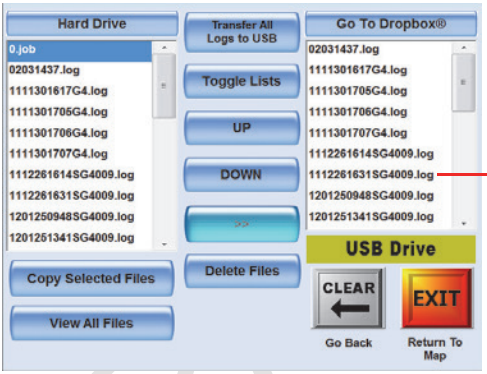
To transfer selected files between the G4 hard drive and USB flash drive:

Step	Button (when applicable)
1. Press **SETUP > SETUP > Transfer Files**. The File Transfer window appears.	
	
2. **To transfer files from the hard drive to the USB drive** select a file in the Hard Drive list and then press the arrow button. or **To transfer files from the USB drive to the hard drive** select a file in the USB Drive list and then press the arrow button. Repeat this step for each file you want to transfer. The files to be transferred will appear in red on the list.	 The arrows on the button point to the right when you select a hard drive file and point to the left when you select a USB drive file.
	

Step	Button (when applicable)
3. Press **Copy Selected Files**. G4 checks for duplicate files on the destination drive. If a duplicate file is found the following message appears. Press YES to replace the existing file; press No to cancel transferring that file.	
	

To transfer all log files to the USB flash drive:

Step	Button (when applicable)
1. Press **SETUP > SETUP > Transfer Files**. The File Transfer window appears.	
	
2. Press **Transfer All Logs to USB**. A message appears asking if you want to copy all log files to the USB drive.	

Step	Button (when applicable)
	
3. Press **YES** to transfer the files; press **NO** to cancel transferring the files. If you press yes the transferred files appear in the destination list (USB drive list in the example below).	
	

Transferring Logs to Your Personal Computer (PC)

Note: If, on startup, you selected the G4 hard drive as the logging read/write device, you will need to transfer the data from the hard drive to the USB flash drive before you can transfer it to your PC. See step 1.

1. If necessary, transfer the logs to your USB flash drive (see “Transferring Data Files” on page 64.
2. Remove the USB drive from the G4 controller.
3. Insert the USB drive into a USB port on your PC.
4. Open MapStar to view the log data.

Chapter 5: Advanced Navigation

Working with Waypoints and Routes
Working with Jobs
Working with Polygons
Saving and Recalling Patterns

Advanced navigation features enable you to manage multiple jobs and pilots. Using IntelliTrac with MapStar, you can plan and program an entire spray job from start to finish. IntelliTrac includes the following advanced navigation features:

- You can add **waypoints and routes** during a flight or beforehand by either manually entering coordinate values or by using a mapping program. You can then navigate to the waypoints or along routes.
- **Jobs** enable you to save pattern information (type/direction, swath width, A and B points, offset, and field width) and multiple polygons.
- **Polygons** enable you to set the polygon points of any field or spray area and save them. Like waypoints, you can add them during flight or beforehand by either manually entering coordinate values or using a mapping program.
- **Missions** (created in MapStar and moved to IntelliTrac) are a useful feature, especially for night flying. You can pre-establish a mission (including the flight path and A|B line) by flying the mission or by entering the coordinates. The mission then provides guidance cues based on the pre-established path.
- In conjunction with MapStar, IntelliTrac supports common **GIS file** formats for import/export. GIS files can include new polygons or other graphics and you can convert an existing job to GIS file format for use in third-party software packages.

Working with Waypoints and Routes

A waypoint represents the GPS coordinates (latitude and longitude) of a significant location. Examples of waypoints you might set are the beginning or end of your spray job or a marker along a route at which you will stop or change course.

A route consists of individual waypoints. Each waypoint is automatically assigned to a route in IntelliTrac—even if there is only one waypoint.

A radius value tells IntelliTrac to automatically provide guidance to the next waypoint when you are within the radius (for example, 1320.0 feet) of the current waypoint.

Managing Waypoints

IntelliTrac enables you to number and name each waypoint you create and associate it with a particular route. You can either set your waypoints while flying or by entering the coordinates into IntelliTrac.

Tasks you may need to perform for waypoints include:

- Setting a waypoint while flying
- Setting a waypoint by entering GPS coordinates
- Recalling a waypoint
- Editing a waypoint
- Deleting a waypoint

Setting a Waypoint While Flying

When you set a waypoint while flying the Moving Map area displays a waypoint saved notification (in the format "Waypoint n saved.") and a route-waypoint indicator (in the format route-waypoint). For example, Figure 5-1 shows the Moving Map area after adding Waypoint #4 to Route #1. The route number is based on

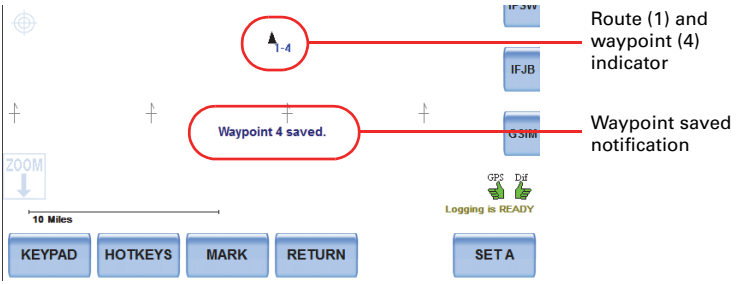


Figure 5-1: Saved waypoint and route-waypoint indicators

To set a waypoint while flying:

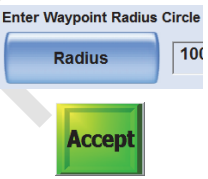
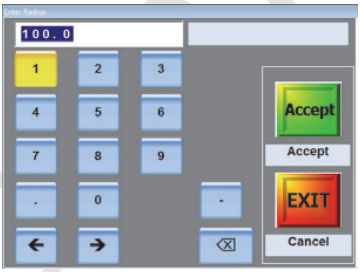
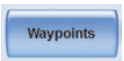
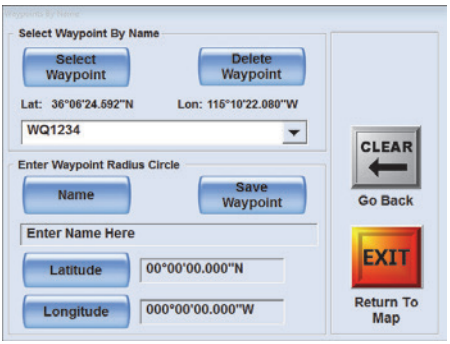
- Press **KEYPAD > SAVE > WPT\5 n > ENTER**

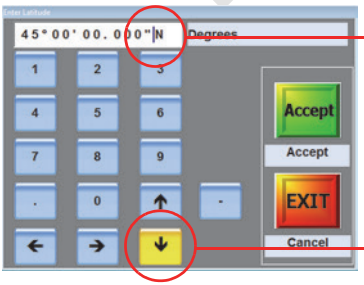
  where **n** is the route number

Setting a Waypoint Manually by Name

As an alternative to entering waypoints while flying, you can enter waypoint coordinates manually.

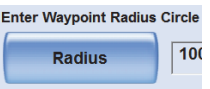
Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > WAYPOINTS**. The Select Waypoints Mode window appears.	
	

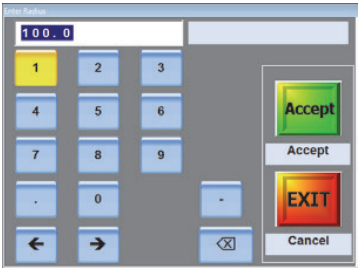
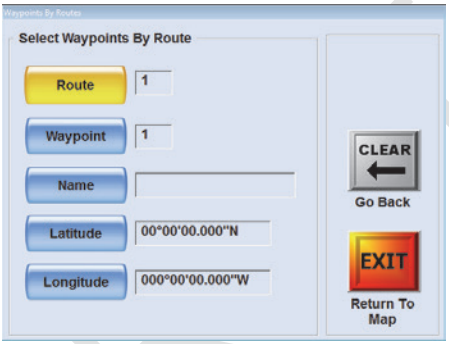
Step	Button (when applicable)
2. Press **Waypoints MODE** to set the mode to BY NAME. **Note:** Pressing this button toggles the mode between BY ROUTE and BY NAME and this setting determines the window that appears when you then press the Waypoints button. Pressing the Waypoints button while in BY NAME mode displays the Waypoints By Name window, where you select, delete, or create waypoints by name. Pressing the Waypoints button while in BY ROUTE mode displays the Waypoints By Routes window, where you create waypoints by route.	
3. Under *Enter Waypoint Radius Circle* press **Radius**. In the Enter Radius window that appears enter the distance to the current waypoint you will reach before receiving guidance to the next one (for example, 1640.0 feet) and press **Accept**. For more information see “Setting up Automatic Guidance” on page 79.	
	
4. Press **Waypoints**. The Waypoints By Name window appears.	
	

Step	Button (when applicable)
5. Complete the following steps to enter the waypoint name and coordinates. a. Press **Name**. In the data entry window enter a waypoint name and press **Accept**.	
	
b. Press **Latitude** and in the Enter Latitude window enter the desired value and press **Accept**. c. Press **Longitude** and in the Enter Longitude window enter the desired value and press **Accept**. Make sure your coordinates are in the proper format before entering. See “Understanding Systemwide Settings” on page 25 for more information. When entering the latitude and longitude you also enter the direction (N or S for latitude and E or W for longitude). To enter this value move the cursor to just before the current direction setting (by entering values or pressing the Right Arrow button) and then press the Down Arrow button to toggle between the two values.	
 Make sure cursor is just before the direction indicator Press the Down Arrow Arrow button to toggle between values	
6. Press **Save Waypoint**. The waypoint name appears in the drop-down list.	

Setting a Waypoint Manually by Route

As an alternative to entering waypoints while flying, you can enter waypoint coordinates manually and assign a name to the waypoint. If you assign a name to the waypoint you can recall the waypoint by that name.

Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > WAYPOINTS**. The Select Waypoints Mode window appears.	
	
2. Press **Waypoints MODE** to set the mode to BY ROUTE. **Note:** Pressing this button toggles the mode between BY ROUTE and BY NAME and this setting determines the window that appears when you then press the Waypoints button. Pressing the Waypoints button while in BY NAME mode displays the Waypoints By Name window, where you select, delete, or create waypoints by name. Pressing the Waypoints button while in BY ROUTE mode displays the Waypoints By Routes window, where you create waypoints by route.	
3. Under *Enter Waypoint Radius Circle* press **Radius**. In the Enter Radius window that appears enter the distance to the current waypoint you will reach before receiving guidance to the next one (for example, 1640.0 feet) and press **Accept**. For more information see “Setting up Automatic Guidance” on page 79.	

Step	Button (when applicable)
	
4. Press **Waypoints**. The Waypoints By Route window appears.	
	
5. For each of the following fields press the corresponding button, enter a value in the data entry window, and then press **Accept**. Route Waypoint Name Latitude Longitude For example, to set the Route number: a. Press **Route** (shown at right). b. Enter a value in the Enter Route Number window. c. Press **Accept** (shown at right). For information on entering waypoint values see the procedure for “Setting a Waypoint Manually by Name” on page 69.	

Recalling a Waypoint

When you recall a waypoint you are automatically provided with guidance to that waypoint and the Moving Map area displays the following information:

- Waypoint guidance notification (in the format "Guiding to Waypoint n.")
- Guidance line connecting your current location to the recalled waypoint
- Bearing and range show (also appears in the light bar)

Figure 5-2 shows an example of the Moving Map area after recalling Waypoint #1.

Note: You only receive navigation to a waypoint during a non-swathing mode—there is no guidance to a waypoint if you are flying a pattern.

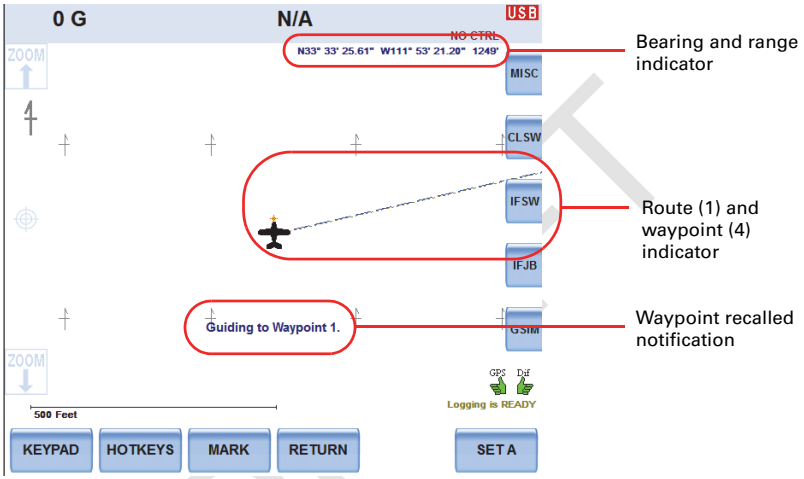


Figure 5-2: Recalled waypoint and bearing/guidance indicators

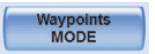
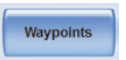
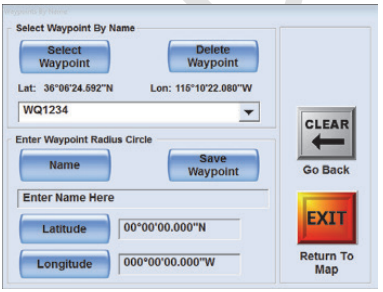
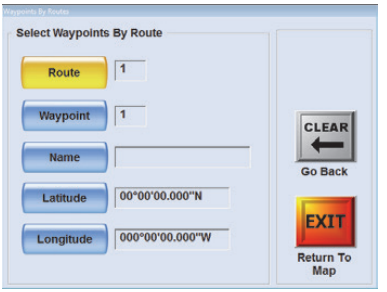
To recall a waypoint:

- Press **KEYPAD > SET > WPT\5 n > ENTER**

  where **n** is the waypoint number

Editing a Waypoint

To edit a waypoint:

Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > WAYPOINTS**. The Select Waypoints Mode window appears.	
	
2. Press **Waypoints MODE** to set the mode to: • BY NAME to select the waypoint by name • BY ROUTE to select the waypoint by route	
3. Press **Waypoints**. • If you set the mode to BY NAME the Waypoints By Name window appears. • If you set the mode to BY ROUTE the Waypoints By ROUTE window appears.	
 Waypoints By Name window	 Waypoints By Route window

Step	Button (when applicable)
4. In the Waypoints By Name window complete the following steps to edit the waypoint by name: a. Press **Select Waypoint** and select the waypoint from the drop-down list. The latitude and longitude of the selected waypoint appear below the Select Waypoint and Delete Waypoint buttons. b. Press **Latitude** and in the Enter Latitude window enter the desired value and press **Accept**. c. Press **Longitude** and in the Enter Longitude window enter the desired value and press **Accept**. or In the Waypoints By Route window complete the following steps to edit the waypoint by number: a. For the Route and Waypoint fields press the corresponding button, enter the value in the data entry window that corresponds to the waypoint you want to edit, and then press **Accept**. The Name, Latitude, and Longitude values for the waypoint are populated. b. For the Name, Latitude, and Longitude fields press the corresponding button, enter a value in the data entry window, and then press **Accept**.	  
5. Press **CLEAR** or **EXIT**.	

Deleting a Waypoint

WARNING: Deleting a waypoint removes it from IntelliTrac's memory. You cannot undo this action.

You can delete a waypoint in two ways:

- Delete by waypoint number using the Keypad
- Delete by waypoint name using SETUP windows

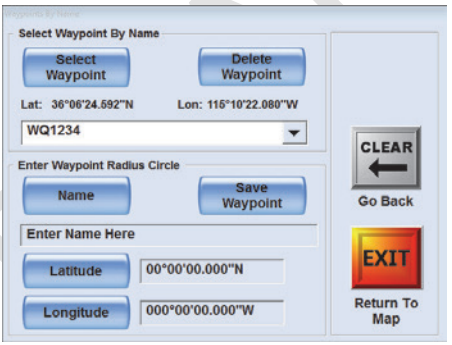
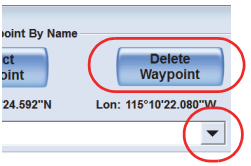
To delete a waypoint by waypoint number using the Keypad:

- Press **KEYPAD > CLEAR > WPT\5 n > ENTER**

  where **n** is the waypoint number

To delete a waypoint using the SETUP windows:

Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > WAYPOINTS**. The Select Waypoints Mode window appears.	

Step	Button (when applicable)
	
2. Make sure Waypoints MODE is set to BY NAME and then press Waypoints. If Waypoints MODE is set to BY ROUTE press **Waypoints MODE** to toggle it to BY NAME.	
3. Press **Waypoints**. The Waypoints By Name window appears.	
	
4. In the *Select Waypoints By Name* area; a. From the drop-down list select the waypoint you want to delete. b. Press **Delete Waypoint**.	

Managing Routes

A route is made up of a single waypoint or a series of waypoints. Waypoint created by route are always associated with that route.

Setting Waypoints for a Route Other Than Route 1

If setting a single waypoint, use Route 1. If defining multiple routes, associate each waypoint with the appropriate route.

To set waypoints for a route other than Route 1:

- Assign the desired route number in the Waypoints By Route window when creating waypoints. See “Setting a Waypoint Manually by Route” on page 72 for more information.

Assigning a Waypoint to a Route

A waypoint is automatically assigned to the current route when you set a waypoint while flying.

Recalling a Route

When you recall a route all the waypoints on the route are also recalled.

To recall a route:

- Press **KEYPAD > SET > ROUTE\8 n > ENTER**

  where **n** is the route number

To change your currently selected route:

- Press **KEYPAD > ROUTE\8**

  Each press cycles through the routes you have defined—the route number shows in the Data area of the Map screen. When you change routes in this manner, IntelliTrac automatically provides guidance to waypoint 01 for that route.

For example, if you recall Route 02 (press KEYPAD > SET > ROUTE\8 2 > ENTER) you will see ROUTE 02 in the Data area. If you then press KEYPAD > ROUTE\8 again, you will see RT / WPT 03 /01 in the Data area and you will be under guidance to waypoint 1 in route 2.

To change the waypoint you want guidance to:

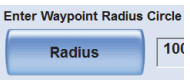
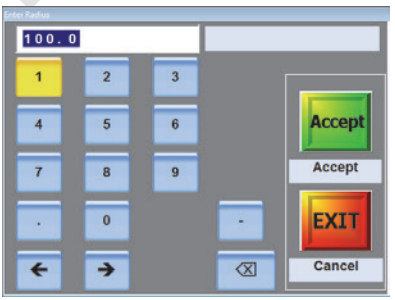
- Press **KEYPAD > SET > WPT\5 n > ENTER**

Setting up Automatic Guidance

You can set automatic guidance along a route by setting a radius value. When you are within the designated radius (distance) from the target waypoint, IntelliTrac displays guidance to the next waypoint in your route.

The radius you specify shows as a dotted circle around the waypoint you are receiving guidance to. When you arrive at the radius the message “Advancing to next waypoint in Route” appears briefly in the Moving Map area. The bearing and range update in the Data area and on the light bar.

To set up automatic guidance:

Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > WAYPOINTS**. The Select Waypoints Mode window appears.	
	
2. Under *Enter Waypoint Radius Circle* press **Radius**. The Enter Radius window appears.	
	
3. Enter the distance from the current waypoint you want to be before IntelliTrac switches to guidance to the next waypoint in the data window and then press **Accept**.	

Working with Jobs

A job can include up to 99 patterns (type/direction, swath width, A and B points, offset, and field width) and 99 polygons.

You can perform the following job tasks:

- Save a job - By default, any job you fly in IntelliTrac is saved as “JOB 00” or the *active* job. JOB 00 is overwritten by the next job you fly unless you save that next job with a new job number between 1 and 999.
- Recall a job
- Clear a job - this clears the job from your current workspace (<No JOB Name> appears in the Header area)
- Delete all jobs - Once you delete all jobs you cannot recall any of them (the job is removed from IntelliTrac’s memory).

In each of the following procedures (except “Clearing a Job”) **n** is the job number.

To save a job:

- Press **KEYPAD > SAVE > JOB\9 n > ENTER**

To recall a job:

- Press **KEYPAD > SET > JOB\9 n > ENTER**

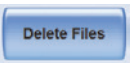
  “Job n loaded.” appears in the Moving Map area.

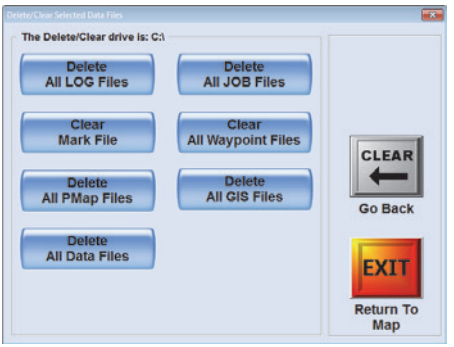
To clear a job:

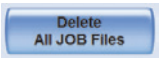
- Press **KEYPAD > CLEAR > JOB\9 > ENTER > EXIT**

  “Current JOB and/or Pattern are cleared.” appears in the Moving Map area.

To delete all jobs:

Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > Delete Files**. The Delete/Clear Selected Data Files window appears.	 x3 



Step	Button (when applicable)
2. Press **Delete All JOB Files**. A confirmation message appears.	
	
3. Press **YES**.	

Working with Polygons

A polygon is the shape of a field (or other area, such as a forest plot) that you define. In IntelliTrac you can create two types of polygons (inclusion, exclusion) and import one type (open):

- Inclusion polygon (enclosed area you spray)
- Exclusion polygon (enclosed area you do not spray)
- Open polygon (not actually a closed area, but a multi-point line created in MapStar and imported into IntelliTrac)

Inclusion and exclusion polygons visually show you the borders of your spray/no-spray areas in the Moving Map area (see Figure 5-3).

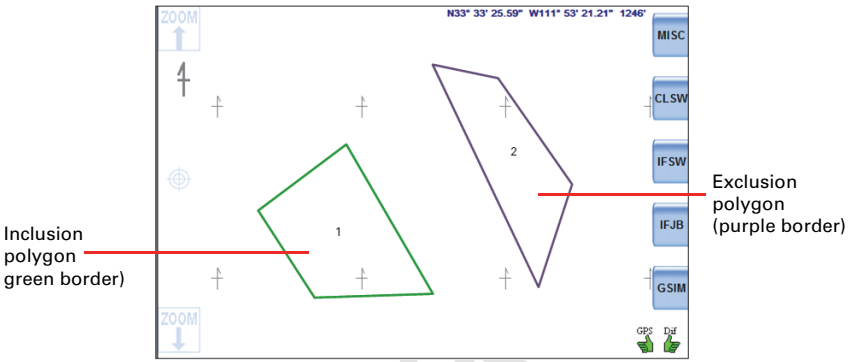


Figure 5-3: Inclusion and exclusion polygons

Table 5-1 provides more detailed polygon information.

Table 5-1: Types of polygons

Type	Description
Inclusion	IntelliTrac saves any polygon with three or more points as an inclusion polygon. Inclusion polygons define spray areas and are shown with a green border in the Moving Map area. IntelliTrac sums the areas of multiple inclusion polygons in a job. You can select Total Polygon Area as an onscreen or light bar display (see
Exclusion	You convert an inclusion polygon to an exclusion polygon by changing the polygon's type: Press **SETUP > SETUP > SETUP > Polygons > Type** and select a type. Exclusion polygons are shown on screen with a purple border. Exclusion polygon areas wholly or partially within an inclusion polygon subtract from the total polygon area (see "Calculating Total Polygon Area" on page 88).
Open	Open polygons are multi-point polylines. You create them in MapStar and then transfer them to IntelliTrac. Use them, for example, to mark roads or other similar ground features. Multi-point open polylines created in MapStar become open polygons in IntelliTrac.

Using Polygons

In addition to using polygons to define the shape of your spray/no spray area(s) you can have IntelliTrac automatically apply an A|B line to your polygons. See “Managing A|B Lines with Polygons” on page 92.

You can use your Distance/Time to Edge display options to warn you when you are approaching or leaving a polygon, so you know when to manually turn your spray on or off, respectively. If you are using automatic spray on/off (or off/on) functionality, IntelliTrac will turn spray on as you enter an inclusion polygon and turn it off when you leave it. If there is an exclusion polygon (or part of one) within the inclusion polygon, IntelliTrac will turn spraying off as you enter the exclusion polygon and back on as you leave it.

Setting Polygon Points

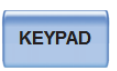
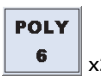
You can set a polygon’s points in three ways:

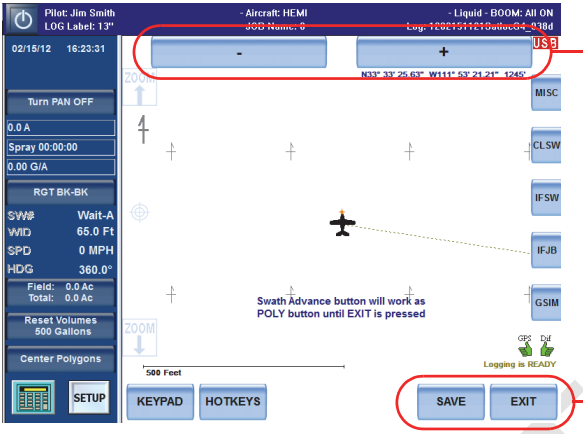
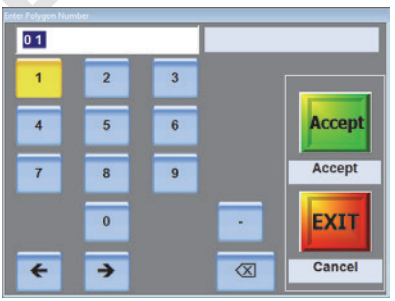
- As you fly
- By entering the polygon’s GPS coordinates manually
- By importing a shape (GIS) file from MapStar (or other third-party mapping software)

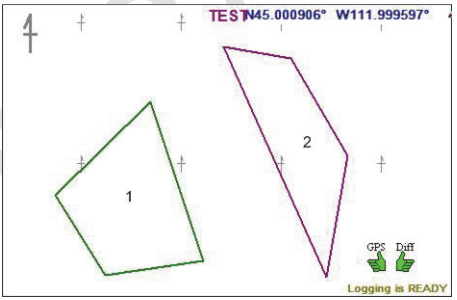
Setting Polygon Points as You Fly

When setting polygon points while flying, on entry of the third point IntelliTrac creates a triangle onscreen by joining the third point to the first point and displays the enclosed area. As you add points IntelliTrac joins the last point to the start point so gives you, progressively, a quadrilateral, a pentagon, a hexagon, a heptagon and so on depending on the number of points you set. The enclosed area is updated with each added point.

To set polygon points as you fly:

Step	Button (when applicable)
1. Press **KEYPAD > POLY > POLY**. The Moving Map area displays the message “Swath Advance button will work as POLY button until EXIT is pressed”. In the Moving Map area the - (minus) and + (plus) buttons appear at the top and the SAVE and EXIT Quick Keys appear at the lower right.	  x2

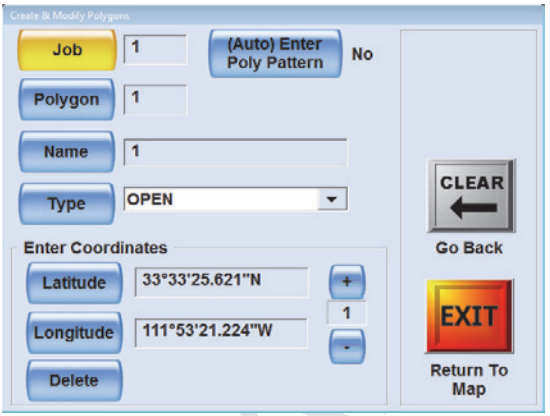
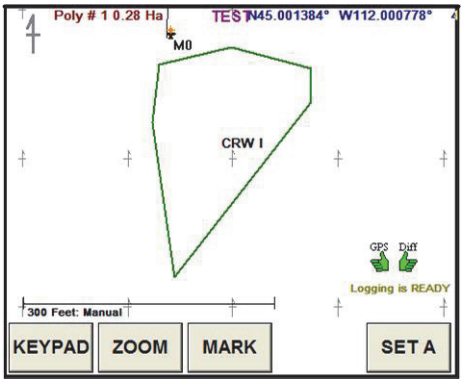
Step	Button (when applicable)
	Buttons for adding a polygon point (+) and canceling a polygon point (-) Press SAVE to save a polygon; press EXIT to cancel creating a polygon
2. Enter polygon points as you fly. You can enter polygon points while flying by: • Using the remote swath advance switch • Pressing the + button (the minus button removes the last polygon point you entered) • Pressing KEYPAD > ABC (which acts as the swath advance button during this operation)	
3. After you enter the last polygon point: a. Press **SAVE**. The Enter Polygon Number window appears. b. Enter a polygon number and press **Accept**.	
	
4. (Optional) To save the new polygon to a job press **KEYPAD > SAVE > JOB n > ENTER**. See “Working with Jobs” on page 80 for more information on saving jobs.	

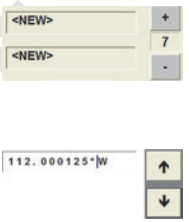
Step	Button (when applicable)
5. (Optional) You can also assign a name to the polygon, convert the polygon to an exclusion or open polygon, and change the latitude and longitude of each polygon point. a. Press **SETUP > SETUP > SETUP > Polygons**. The Create & Modify Polygons window appears. b. Press **Name** and in the date window enter a polygon name and press **Accept**. The default name is the polygon number. c. Press **Type** and select the desired type from the drop-down list. d. Press **Latitude** and in the data window enter a new latitude and press **Accept**. Press **Longitude** and in the data window enter a new longitude value and press **Accept**. Repeat this step for each polygon point (press the **+** or **-** buttons to cycle through the points). Exclusion polygons' sides are purple on the map screen. If an exclusion polygon is wholly or partially inside an inclusion polygon, the area of the exclusion polygon inside the inclusion polygon is subtracted from the total polygon area. See "Calculating Total Polygon Area" on page 88.	 x3 
	

Tip! *To see the total cumulative area of your inclusion polygons, set your left or right large format display, or one of your field (fields 1-3) displays, to* ***Total Polygon Area*** *through SETUP > SETUP > SCREEN > DISPLAYS. The total polygon area is the sum of the inclusion polygon areas less the area of any exclusion polygons wholly or partially inside an inclusion polygon (see "Calculating Total Polygon Area" on page 88).*

Entering GPS coordinates manually

To manually enter the GPS coordinates of the polygon:

Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > Polygons**. The Create & Modify Polygons window appears.	SETUP x3, Polygons
	
2. Select the job and polygon number as required. The default job is the currently active job (the job loaded on the map screen). The default polygon number is 1.	
3. Give the polygon a name as required. The name ("CRW I" in the example) replaces the polygon's number within the polygon in the map screen. The information **Poly # n [Area]** at the top left of the Moving Map area retains the polygon's number (Poly # 1 in the example, see Figure).	
	

Step	Button (when applicable)
4. Set the polygon type to INCLUSION, EXCLUSION, or OPEN. • Inclusion - the area of the polygon is included in the total polygon area calculation. • Exclusion - the area of the polygon is excluded from the total polygon area calculation. (See "Calculating Total Polygon Area" on page 88 for more information on the effect of exclusion polygons on the total polygon area calculation.) • Open - this is an open-ended polygon. You can use an open polygon as a drawing tool to show objects such as roads (see "Open" on page 82 for more information).	
5. Set the latitude and longitude for each polygon point using the numeric keypad. Use the + button to create a new point (the field will show <NEW> initially). Thereafter, the + and - buttons cycle through the polygon points in ascending and descending order, respectively. The up and down arrows in the numeric keypad toggle between N and S for latitudes, E and W for longitude when the cursor is to the left of the N, S, E or W value.	

Importing Coordinates from a GIS File

To import a shape (GIS) file (including using MapStar):

Step	Button (when applicable)
1. Remove the USB flash drive from the G4.	
2. Insert the flash drive into the personal computer (PC) that the shape or GIS file resides on. If using MapStar, go to step 4.	
3. Save the shape (GIS) file to the flash drive. Make sure you save the shape file with a "**n.job**" extension (where n = Job number). Continue from step 5.	
4. Open MapStar, then a. Press the GIS button. b. Open the shape file. c. Select File > Save As and save the file to the flash drive. When using MapStar, the file is automatically saved with the .job extension.	
5. Remove the flash drive from the PC.	

Step	Button (when applicable)
6. Insert the flash drive into IntelliTrac. Your job file is now ready to open in IntelliTrac.	
7. Open the job file by pressing SET > JOB\9 n **>** ENTER. IntelliTrac opens the plot containing the shape file.	

Tip! *If using MapStar, you can edit the GIS shape file to reduce the number of polygon points in a polygon (remember, a polygon can only have up to 250 points), or to break a shape file into separate jobs. For example if contracting multiple pilots, you may want to break a region into quadrants. See your MapStar manual for help with editing shape files in MapStar.*

Calculating Total Polygon Area

The total polygon area is the sum of the areas of all the inclusion polygons in a job less the area of any part of an exclusion polygons within the inclusion polygon(s).

From the total area of the inclusion polygons, IntelliTrac subtracts the:

- Area of any external polygon wholly within an inclusion polygon
- Area of any part(s) of an exclusion polygon within an inclusion polygon (or polygons)

Figure 5-4 shows how IntelliTrac calculates the total polygon area. Polygons 1, 3, and 4 are inclusion polygons; polygon 2 is an exclusion polygon.

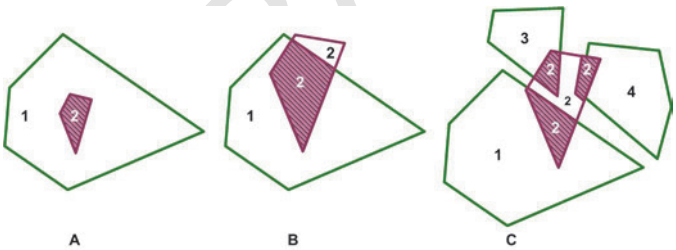


Figure 5-4: Total polygon area calculations

In A, the total polygon area is Area Polygon 1 minus Area Polygon 2.

In B, the total polygon area is Area Polygon 1 minus the shaded area of polygon 2.

In C, the total polygon area is the sum of Area Polygons 1, 3 and 4 minus the three shaded areas of polygon 2.

Note: Total Polygon Area is one of your many on-screen or light bar display options.

Saving Polygons

While setting up your polygons while flying, there is a SAVE quick key on the screen. When you have set all your polygon points, use the SAVE quick key to save the polygon with the number you give it.

Polygons are normally components of a job (as are flown patterns) so if you are creating polygons to save with a job save the job as well as the polygons:

1. Press the **SAVE** quick key to first save the polygon
2. Press **KEYPAD > SAVE > JOB n** (where 'n' is the job number) to save the job.

The number you give a polygon shows on screen within its boundary (see Figure on page 85) when you first save the polygon's parent job. Once the job is saved, new polygons saved with that job display their number as they are saved.

You can create, save, and use polygons without making them components of a job (see following two sections).

Saving/using a polygon without a job - single session

If you want to create and use a polygon but do not want to keep the polygon after you shut down follow this procedure.

Step	Button (when applicable)
1. Press **KEYPAD > CLEAR** > **JOB** > **ENTER** to clear all jobs. <No Job Name>* is displayed in the Header area.	
2. Press **KEYPAD > POLY > POLY** twice then use the swath advance buttons to define your polygon points. (See Step 1 of "Setting Polygon Points as You Fly" on page 83).	POLY 6 x2
3. When you have finished defining your polygon, do not use the SAVE quick key. Instead, press **KEYPAD** > **SAVE** > **POLY** > **EXIT** (so do not enter a poly number). This allows you to keep the polygon on screen but without a number (think of it as a temporary save). IntelliTrac returns you to the map screen with the polygon still there and with the **SET A** button available. The polygon swath setup buttons are no longer on screen.	
4. Set your A, B (and C if necessary) points and fly your swath guidance lines in pattern order. **Note:** You cannot use the Enter Poly Pattern feature with these temporarily saved polygons. When you shut down, your temporarily saved/used polygon is cleared from IntelliTrac's memory.	

Saving/using a polygon without a job - multiple sessions

If you want to create and use a polygon and want to keep the polygon after you shut down, without saving the polygon to a job, follow this procedure.

Note: In this procedure the polygon is, in fact, being saved to a job but it is not you doing the saving. IntelliTrac saves the polygon as a component of JOB 00 (000). It will remain a component of JOB 00 until you overwrite JOB 00.

Step	Button (when applicable)
1. Press **KEYPAD > CLEAR** > **JOB** > **ENTER** to clear all jobs. <No Job>* shows in the Flight Data Bar.	
2. Press **KEYPAD > POLY > POLY** then use the swath advance buttons to define your polygon points. (See Step 1 of "Setting Polygon Points as You Fly" on page 83).	POLY 6 x2
3. When you have finished defining your polygon, press: **KEYPAD > SAVE** > **POLY n** > **ENTER** IntelliTrac returns you to the map screen with the polygon still there with the **SET A** button available and the polygon setup swath buttons cleared from the screen. Do not save the job.	
4. Set your pattern points (A, B and C if necessary) and fly your swath guidance lines in order. **Note:** You can use the ENTER POLY PATTERN feature with polygons saved like this. See "Managing A|B Lines with Polygons" on page 92. When you shut down, IntelliTrac automatically saves your polygon to JOB 000 and when you restart IntelliTrac, JOB 000 is on screen with your polygon (ZOOM > CENTER if necessary). The polygon will remain a component of JOB 000 until you save JOB 000 with new components.	

Displaying Time and Distance to Polygons

Time to Edge and Edge Distance are display options for the map screen and light bar. The values show when a polygon side is in your flight path. If you keep flying as you cross the polygon's edge, and are inside the polygon, the display changes to the time and distance to the next side in your flight path.

To get Time to Edge and Edge Distance to show in the light bar, you must go into guidance mode first.

1. Press **KEYPAD > SET > POLY\6 n > ENTER** to get the bearing and range showing.
2. Press **KEYPAD > ENTER** to cancel the guidance mode.

Editing a Polygon

You edit all aspects of a polygon. To edit a polygon:

Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > Polygons**. The Create & Modify Polygons window appears. The Job and Polygon fields default to the current job and polygon 1 in that job.	 x3, 
2. See "Entering GPS coordinates manually" on page 86 for instructions on entering/editing polygon information.	

Deleting a Polygon

WARNING: Since you can use the same polygon numbers in multiple jobs, make sure you delete a polygon from the correct job. The number you enter is the number of the polygon in the current job.

To delete a polygon:

1. Press **KEYPAD > CLEAR > POLY n > ENTER**.
2. Press **YES** to confirm the deletion.

Navigating to a Polygon

To receive guidance to a polygon:

1. Load the job the polygon is saved in (loading a job provides access to all polygons in the job).
2. Press **KEYPAD > SET > POLY\6 n**.

   IntelliTrac displays a dotted line to the center of the polygon and the light bar provides guidance to the center of the polygon. The light bar and the data window will show bearing and range (BRG and RNG in the data window.)

To cancel guidance to the polygon:

- Press **KEYPAD > ENTER**

  The map screen will show the message "Return to Mark cancelled".

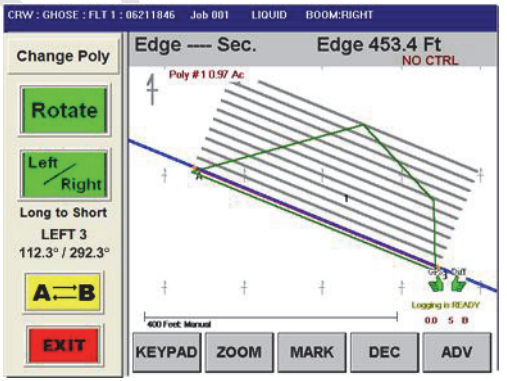
Managing A|B Lines with Polygons

When you create a polygon and save it with a job, IntelliTrac can apply an A|B line to one side of the polygon. If required, you can move the auto-applied A|B line sequentially around the polygons sides.

Auto-applying A|B Lines to a Polygon

When IntelliTrac automatically applies an A|B line to a polygon side it also automatically provides a swath guidance array from that A|B line. This eliminates the need for you to manually create (fly) an A|B line. By default, IntelliTrac applies the A|B line to the job's lowest numbered polygon (you can change this) and the side of that polygon that results in the least number of swaths to cover the polygon area. You can, however, change the polygon side that the swath array is based upon (see "Rotating the A|B Line Around a Polygon" on page 93).

To use this feature, generally referred to as 'Enter Poly Pat', you need to first load a job that has a polygon or polygons saved with it.

Step	Button (when applicable)
1. Load a job that has polygons saved with it. Press **KEYPAD > SET > JOb\9 n**	
2. If necessary select the pattern type you want to fly (see "Entering Basic Job Details (Quick Start)" on page 30 for the pattern setup procedure).	
3. Press **KEYPAD > ENTER > POLY\6 > PATTERN\1**. IntelliTrac returns you to the map window and applies an A|B line on the side of the lowest numbered polygon that will result in the least number of swaths. IntelliTrac also provides an array of guidance lines and a poly pattern window in place of the data window.	
	
4. Press **Change Poly** to apply the A|B line to a different polygon if your job has multiple polygons. The A|B line and guidance array shift to the next polygon and the on-screen polygon data updates (for example to Poly # 2 1.5 Ac).	

Step	Button (when applicable)
5. Press **Rotate** to move the A|B line counter-clockwise to the next longest side of the polygon (see "Rotating the A|B Line Around a Polygon" below.)	
6. Press **Left/Right** to switch the guidance array to the left or right of the A|B line.	
7. Press **AB** to switch to the opposite side of the polygon. The A and B points reverse so that the guidance array stays on the correct side of the A|B line.	

Rotating the A|B Line Around a Polygon

After IntelliTrac has applied the A|B line you can rotate it around the polygon to suit the prevailing conditions.

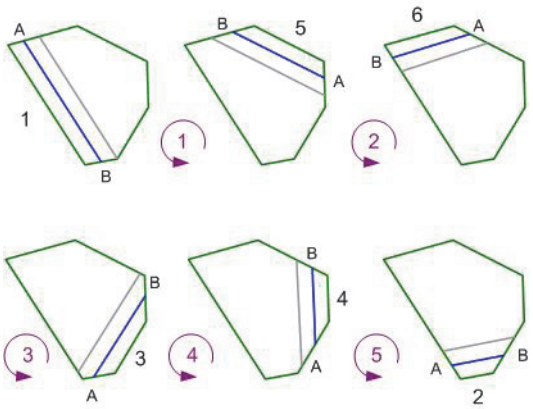


Figure 5-5: Rotating the A|B Line around your polygon

Figure 5-5 shows the counter-clockwise order in which IntelliTrac applies the A|B line to the polygon sides using the Long(est) to Short(est) rule. IntelliTrac has initially applied the A|B line to side 1—the side that results in the least number of swaths. Each time you press the **Rotate** button (in this example) IntelliTrac applies the A|B line in the order longest side to shortest side, that is in the order side 5, 6, 3, 4, 2. (Only one guidance line is shown after the A|B line to indicate that the guidance array is to the left of the A|B line.)

- 1 is the side that will require the least number of swaths to complete the spraying (it is also the longest side in the example but it may not be).
- 2–6 are the polygon sides by decreasing length.

Each time you press the Rotate button the A|B line rotates counter-clockwise to the polygon side in the order shown.

Saving and Recalling Patterns

A pattern in IntelliTrac refers to the spray pattern you use to spray your field. You can to store up to 99 patterns per job with IntelliTrac. See “Flying Patterns” on page 43 for an overview of IntelliTrac pattern types.

Saving Patterns

To save a pattern to a polygon:

- Press **KEYPAD > SAVE > PATTERN\1 > n > ENTER**

Recalling a Saved Pattern

To recall a saved pattern:

- Press **KEYPAD > SET > PATTERN\1 n > ENTER**

Chapter 6: Advanced Setup and Customization

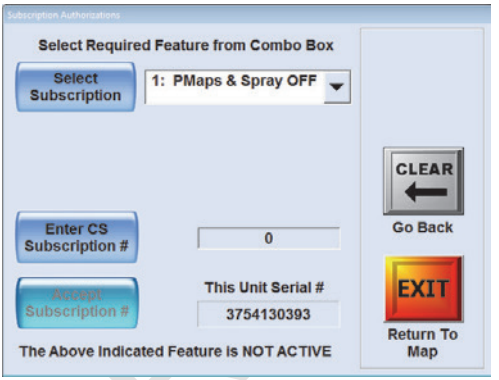
Entering Subscription Information
Understanding the Light Bar
Understanding Guidance Delay
Configuring Your Display
Changing Logging Defaults
Flow Control
Differential GPS
Customized Settings

With IntelliTrac you can customize the default factory settings and perform other advanced tasks.

Entering Subscription Information

IntelliTrac allows you to enter subscription information for such features as prescription maps, AgLaser, moving maps, and HQ..

To enter subscription information:

Step	Button (when applicable)
1. Press **SETUP > SETUP > SETUP > SETUP > SETUP > SETUP > Subscription Authorizations**. The Subscription Authorizations window appears.	
	
2. Press **Select Subscription** and then select a subscription option from the drop-down list.	
3. Press **Enter CS Subscription #** to display the **Enter Customer Service Authorization #** window.	
4. Enter your subscription number and press **Enter**. The numeric keypad closes, the subscription number appears to right of the Enter CS Subscription # button, and the Accept Subscription # button is active (no longer dimmed).	
5. Press **Accept Subscription #**. The text at the bottom of the screen changes from "The Above Indicated Feature is NOT ACTIVE." to "The Above Indicated Feature is ACTIVE." If you enter an invalid subscription number and press Accept Subscription # the following message appears at the bottom of the window: "Sorry no subscription, please try again"	

Understanding the Light Bar

Light bar setup options include:

- Setting the left and right light bar displays
- Desensitizing the light bar LEDs when navigating to a mark or waypoint
- Turning the swath Double-Spray Warning off/on (the default is on)
- Setting the upper and lower LEDs to:
  - Display as a solid bar of lights
  - Use the outermost LED only that represents your current cross-track distance or heading angle
- Changing the LED cross-track distance and heading angle values
- Setting a guidance delay - the delay in milliseconds between the time the light bar shows a guidance cue and when you need to react

Light bar setup comprises basic settings and advanced settings.

Setting Up the Light Bar - Basic

Press **SETUP > SETUP > LIGHT BAR** to display the Lightbar Dimming & Warnings window. Table 6-3 describes the how to set the fields in the Lightbar Dimming & Warnings window

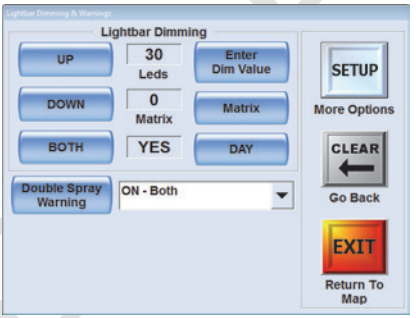


Figure 6-1: Lightbar Dimming & Warnings window

Table 6-1: Lightbar Dimming & Warnings window fields

Button/Field	Description
UP DOWN	Press UP to increase the Leds and Matrix values individually or together, depending on the BOTH setting. Press DOWN to decrease the Leds and Matrix values individually or together, depending on the BOTH setting.
BOTH	Set Both to YES to increase/decrease the Leds and Matrix values together using the UP/DOWN buttons. Set Both to NO to increase/decrease the Leds and Matrix values individually using the UP/DOWN buttons.
Enter Dim Value	Press to open a data entry window where you enter a lightbar dimming value.

Table 6-1: Lightbar Dimming & Warnings window fields

Button/Field	Description
Matrix/LED	Press to toggle between Matrix and LEDs. • When set to Matrix and BOTH is set to NO, pressing the UP/DOWN buttons adjusts the Matrix value individually. • When set to LED and BOTH is set to NO, pressing the UP/DOWN buttons adjusts the Leds value individually.
DAY	Press to toggle between day and night.
Double Spray Warning	Select a warning option from the drop-down list: • Turn the warning off • Turn the light bar warning on for either the light bar or the display screen • Turn the light bar warning on for both the light bar and the display screen

Setting Up the Light Bar - SuperTrac Lightbar Basic

Press **SETUP > SETUP > LIGHT BAR > SETUP** to display the SuperTrac Lightbar Setup window. Table 6-3 describes the how to set the fields in the SuperTrac Lightbar Setup window

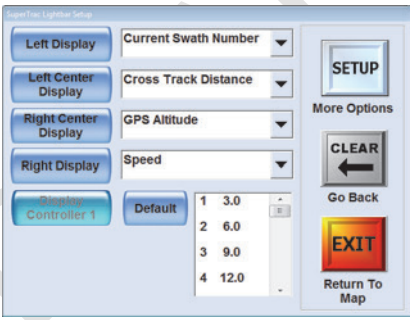


Figure 6-2: SuperTrac Lightbar Setup window

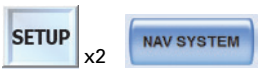
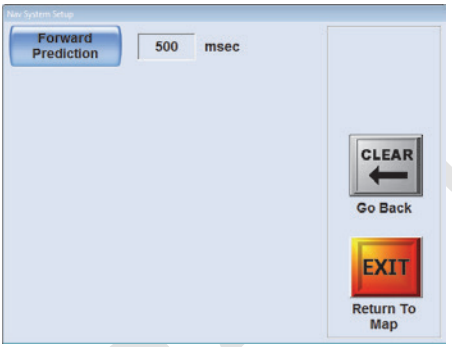
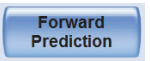
Table 6-2: SuperTrac Lightbar Setup window fields

Button/Field	Description
Left Display	Select a left display option.
Left Center Display	Select a left center display option.
Right Center Display	Select a right center display option.
Right Display	Select a right display option.

Understanding Guidance Delay

Guidance delay or 'forward prediction' in IntelliTrac is the delay in seconds between when the light bar displays a guidance prompt and when you need to react. For example, if you set this value to "500," the light bar will prompt you 500 msec before you need to react.

To set a guidance delay:

Step	Button (when applicable)
1. Press **SETUP** > **SETUP** > **NAV SYSTEM**. The Nav System Setup window appears.	
	
2. Press **Forward Prediction** and in the data entry window that appears: a. Enter the guidance delay value. b. Press **Accept**. **Note:** The default 500 msec guidance delay is geared toward the average airspeed.	

Configuring Your Display

IntelliTrac provides the following screen configuration options:

- Mode (Normal [daytime] colors or Dark [nighttime] colors)
- User-defined fields that appear on the Map screen
- Screen orientation (course up, north up, or A=B line up)
- Screen motion (background or aircraft stationary)
- Language
- Setting the zoom and pan options (advanced setup)

Setting Up the Display Screen

Press **SETUP > SETUP > SCREEN** to display the Screen Setup window. Table 6-3 describes the how to set the fields in the Screen Setup window.

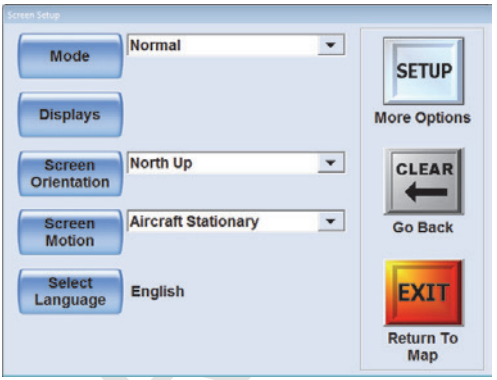
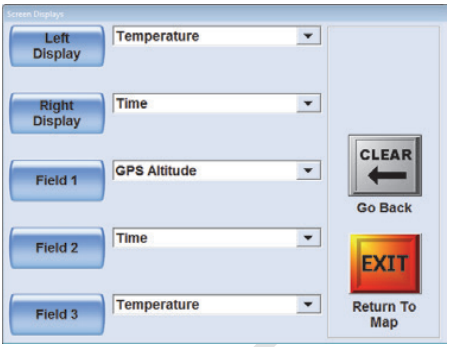
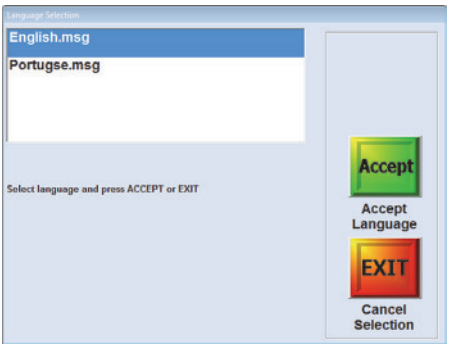


Figure 6-3: Screen Setup window

Table 6-3: Screen Setup window fields

Button/Field	Description
Mode	Press **Mode** to display a drop-list where you select Normal for daytime colors or Dark nighttime screen colors, respectively. You can also switch between the daytime and nighttime colors by pressing **KEYPAD > SET > SET**

Table 6-3: Screen Setup window fields

Button/Field	Description
Displays	Press **Displays** to open the Screen Displays window.  For each button/option press the button and select an item from the drop-down list: • Left Display and Right Display correspond to data that appears at the top of the Moving Map area. See "Moving Map Area" on page 9. • Field 1, Field 2, and Field 3 correspond to data that appears in the Data window. See "Data Area" on page 10.
Screen Orientation	Press **Screen Orientation** to display a drop-list where you select course up, north up, or A|B line up.
Screen Motion	Press **Screen Motion** to display a drop-list where you select background stationary or aircraft stationary.
Select Language	Press Select Language to open the Language Selection window.  Select a language and press **Accept**.

Changing the Zoom/Pan Options

Press **SETUP > SETUP > SCREEN > SETUP** to display the Screen Advanced Setup window. Table 6-4 describes the fields in the Screen Advanced Setup window.

Figure 6-4: Screen Advanced Setup window

Table 6-4: Screen Advanced Setup window fields

Button/Field	Description
Zoom Level	Press to open a data entry window where you enter the percentage each zoom in/out moves the display.
Preset Scale Ratio	Press to open a data entry window where you enter a value that for the scale ratio of the screen.
Pan Level	Press to open a data entry window where you enter the percentage the screen moves in the direction of the arrow you press.
Show Lat/Lon	Press to toggle between Yes (show lat/lon) and No (do not show lat/lon).
Visual Overlap	Press to open a data entry window where you enter the spray overlap percentage you want to view in the map window. In the map window, the spray overlap visually represents the distance beyond the spray boom that spray is applied. If you enter this percentage as "0," the map window will only show spray applied as the length of the boom. For example, a 65-foot spray width with a spray overlap of 10% will display a 6.5-foot total spray overlap (3.25 feet on each side of the spray boom). **Note:** Visual overlap applies to the display in the map window only. It does not apply to guidance or logged data.
Factory Defaults button	Press to restore the advanced setup settings to the factory defaults.

Changing Logging Defaults

As described in “Understanding Job and Log Data” on page 32, logging is a valuable way to track information for each job, such as spray data, pattern details, time, and location. By default, IntelliTrac starts logging flight data once you are flying at or above 45 mph (72.4 km/h and spray distance and area every 2 sec.

Press **SETUP > SETUP > LOGGING SETUP** to display the Logging Setup window. To change logging defaults.

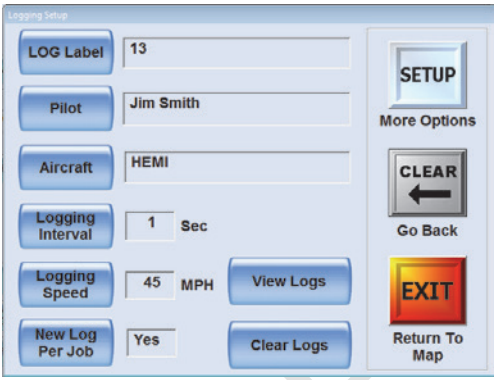


Figure 6-5: Logging Setup window:

Table 6-5: Logging Setup window fields

Button/Field	Button (when applicable)
LOG Label	Press to open a data entry window where you enter the job name (logs are automatically time/date stamped with the file name).
Pilot (optional)	Press to open a data entry window where you the pilot name.
Aircraft (optional)	Press to open a data entry window where you enter the aircraft name.
Logging Interval	Press to open a data entry window where you enter a logging interval.
Logging Speed	Press to open a data entry window where you enter a logging speed.
New Log Per Job	Press to toggle between Yes and No (set to Yes to have IntelliTrac start a new log each time a job is reloaded).
View Logs	Press to open the Select Log Files To View window. See “Viewing Log Data” on page 61 for more information.
Clear Logs	Press to open the Log Clear window. See “Clearing Log Data” on page 62 for more information.

Flow Control

IntelliTrac supports several flow control options. If you have a flow control system installed, flow data is collected and displayed via the IntelliTrac interface. For detailed information on flow control options, see the following Hemisphere GPS documentation available from the Hemisphere GPS website at www.hemispheregps.com:

- AerialACE User Guide, Part No. 875-0135-002
- IntelliFlow User Guide, Part No. 875-0180-000
- IntelliGate User Guide, Part No. 875-0193-000

Differential GPS

SBAS Receiver Applications

Hemisphere GPS receivers come with two receiver applications.

You may want to switch SBAS receiver applications if you lose satellite reception. Since you cannot switch receiver application via IntelliTrac, refer to your receiver user guide for information on switching applications.

IntelliTrac automatically detects the active signal from your receiver.

Using e-Dif with IntelliTrac

To use e-Dif with IntelliTrac, you simply select e-Dif as the differential source on the Settings screen. See “Starting IntelliTrac” on page 6.

Customized Settings

When you customize settings the changes are saved to either the USB flash drive or the G4 hard drive, depending on the logging read/write device you selected at startup (see “Starting IntelliTrac” on page 6). The user settings are stored in the .ini file. Because the changes can be saved to the flash drive, you have the following benefits:

- You can change settings on one system and transfer the new settings into another G4 system. You then can begin using the second system immediately without having to change the setup.
- You can store different settings on different flash drives and swap the drives depending on the job and settings you want to access.

Note: If IntelliTrac does not find an .ini file on the flash drive, it will copy the .ini file found on the hard drive to the flash drive. Also, if there is no flash drive detected in the G4, IntelliTrac will use the .ini file on the hard drive. Finally, if neither .ini file exists (as is the case with a new installation), the settings are defaulted.

Tip: *To copy the customized settings from the flash drive to the hard drive, press SAVE > SETUP. To restore default factory settings, select SETUP > SETUP > SCREEN, and press the Factory Defaults button.*

Index

P

R

S

T

U

W

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18. PROPRIETARY RIGHTS INDEMNITY. Hemisphere shall indemnify, defend and hold harmless Licensee from and against any and all actions, claims, demands, proceedings, liabilities, direct damages, judgments, settlements, fines, penalties, costs and expenses, including royalties and attorneys' fees and related costs, in connection with or arising out of any actual infringement of any third party patent, copyright or other intellectual property right by the Software or by its use, in accordance with this Agreement and documentation, PROVIDED THAT: (a) Hemisphere has the right to assume full control over any action, claim, demand or proceeding, (b) Licensee shall promptly notify Hemisphere of any such action, claim, demand, or proceeding, and (c) Licensee shall give Hemisphere such reasonable assistance and tangible material as is reasonably available to Licensee for the defense of the action, claim, demand or proceeding. Licensee shall not settle or compromise any of same for which Hemisphere has agreed to assume responsibility without Hemisphere's prior written consent. Licensee may, at its sole cost and expense, retain separate counsel from the counsel utilized or retained by Hemisphere.
19. INFRINGEMENT. If use of the Software may be enjoined due to a claim of infringement by a third party then, at its sole discretion and expense, Hemisphere may do one of the following: (a) negotiate a license or other agreement so that the Product is no longer subject to such a potential claim, (b) modify the Product so that it becomes non-infringing, provided such modification can be accomplished without materially affecting the performance and functionality of the Product, (c) replace the Software, or the Product, with non-infringing software, or product, of equal or better performance and quality, or (d) if none of the foregoing can be done on a commercially reasonable basis, terminate this license and Licensee shall stop using the Product and Hemisphere shall refund the price paid by Licensee less an amount on account of amortization, calculated on a straight-line basis over a deemed useful life of three (3) years.

    The foregoing sets out the entire liability of Hemisphere and the sole obligations of Hemisphere to Licensee in respect of any claim that the Software or its use infringes any third party rights.

20. INDEMNIFICATION. Except in relation to an infringement action, Licensee shall indemnify and hold Hemisphere harmless from any and all claims, damages, losses, liabilities, costs and expenses (including reasonable fees of lawyers and other professionals) arising out of or in connection with Licensee's use of the Product, whether direct or indirect, including without limiting the foregoing, loss of data, loss of profit or business interruption.

21. TERMINATION. Licensee may terminate this Agreement at any time without cause. Hemisphere may terminate this Agreement on 30 days notice to Licensee if Licensee fails to materially comply with each provision of this Agreement unless such default is cured within the 30 days. Any such termination by a party shall be in addition to and without prejudice to such rights and remedies as may be available, including injunction and other equitable remedies. Upon receipt by Licensee of written notice of termination from Hemisphere or termination by Licensee, Licensee shall at the end of any notice period (a) cease using the Software; and (b) return to Hemisphere (or destroy and provide a certificate of a Senior Officer attesting to such destruction) the Software and all related material and any magnetic or optical media provided to Licensee. The provisions of Sections 6), 7), 8), 9), 10), 15), 21), 26) and 27) herein shall survive the expiration or termination of this Agreement for any reason.

22. **EXPORT RESTRICTIONS**. Licensee agrees that Licensee will comply with all export control legislation of Canada, the United States, Australia and any other applicable country's laws and regulations, whether under the Arms Export Control Act, the International Traffic in Arms Regulations, the Export Administration Regulations, the regulations of the United States Departments of Commerce, State, and Treasury, or otherwise as well as the export control legislation of all other countries.

23. **PRODUCT COMPONENTS.** The Product may contain third party components. Those third party components may be subject to additional terms and conditions. Licensee is required to agree to those terms and conditions in order to use the Product.

24. **FORCE MAJEURE EVENT.** Neither party will have the right to claim damages as a result of the other's inability to perform or any delay in performance due to unforeseeable circumstances beyond its reasonable control, such as labor disputes, strikes, lockouts, war, riot, insurrection, epidemic, Internet virus attack, Internet failure, supplier failure, act of God, or governmental action not the fault of the non-performing party.

25. **FORUM FOR DISPUTES**. The parties agree that the courts located in Calgary, Alberta, Canada and the courts of appeal there from will have exclusive jurisdiction to resolve any disputes between Licensee and Hemisphere concerning this Agreement or Licensee's use or inability to use the Software and the parties hereby irrevocably agree to attorn to the jurisdiction of those courts. Notwithstanding the foregoing, either party may apply to any court of competent jurisdiction for injunctive relief.

26. **APPLICABLE LAW**. This Agreement shall be governed by the laws of the Province of Alberta, Canada, exclusive of any of its choice of law and conflicts of law jurisprudence.

27. **CISG.** The United Nations Convention on Contracts for the International Sale of Goods will not apply to this Agreement or any transaction hereunder.

28. **GENERAL.** This is the entire agreement between Licensee and Hemisphere relating to the Product and Licensee's use of the same, and supersedes all prior, collateral or contemporaneous oral or written representations, warranties or agreements regarding the same. No amendment to or modification of this Agreement will be binding unless in writing and signed by duly authorized representatives of the parties. Any and all terms and conditions set out in any correspondence between the parties or set out in a purchase order which are different from or in addition to the terms and conditions set forth herein, shall have no application and no written notice of same shall be required. In the event that one or more of the provisions of this Agreement is found to be illegal or unenforceable, this Agreement shall not be rendered inoperative but the remaining provisions shall continue in full force and effect.

Warranty Notice

COVERED PRODUCTS: This warranty covers all products manufactured by Hemisphere GPS and purchased by the end purchaser (the "Products"), unless otherwise specifically and expressly agreed in writing by Hemisphere GPS.

LIMITED WARRANTY: Hemisphere GPS warrants solely to the end purchaser of the Products, subject to the exclusions and procedures set forth below, that the Products sold to such end purchaser and its internal components shall be free, under normal use and maintenance, from defects in materials, and workmanship and will substantially conform to Hemisphere GPS's applicable specifications for the Product, for a period of 12 months from delivery of such Product to such end purchaser (the "Warranty Period"). Repairs and replacement components for the Products are warranted, subject to the exclusions and procedures set forth below, to be free, under normal use and maintenance, from defects in material and workmanship, and will substantially conform to Hemisphere GPS's applicable specifications for the Product, for 90 days from performance or delivery, or for the balance of the original Warranty Period, whichever is greater.

EXCLUSION OF ALL OTHER WARRANTIES. The LIMITED WARRANTY shall apply only if the Product is properly and correctly installed, configured, interfaced, maintained, stored, and operated in accordance with Hemisphere GPS's relevant User's Manual and Specifications, AND the Product is not modified or misused. The Product is provided "AS IS" and the implied warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE and ALL OTHER WARRANTIES, express, implied or arising by statute, by course of dealing or by trade usage, in connection with the design, sale, installation, service or use of any products or any component thereof, are EXCLUDED from this transaction and shall not apply to the Product. The LIMITED WARRANTY is IN LIEU OF any other warranty, express or implied, including but not limited to, any warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE, title, and non-infringement.

LIMITATION OF REMEDIES. The purchaser's EXCLUSIVE REMEDY against Hemisphere GPS shall be, at Hemisphere GPS's option, the repair or replacement of any defective Product or components thereof. The purchaser shall notify Hemisphere GPS or a Hemisphere GPS's approved service center immediately of any defect. Repairs shall be made through a Hemisphere GPS approved service center only. Repair, modification or service of Hemisphere GPS products by any party other than a Hemisphere GPS approved service center shall render this warranty null and void. The remedy in this paragraph shall only be applied in the event that the Product is properly and correctly installed, configured, interfaced, maintained, stored, and operated in accordance with Hemisphere GPS's relevant User's Manual and Specifications, AND the Product is not modified or misused. NO OTHER REMEDY (INCLUDING, BUT NOT LIMITED TO, SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR CONTINGENT DAMAGES FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE TO PURCHASER, even if Hemisphere GPS has been advised of the possibility of such damages. Without limiting the foregoing, Hemisphere GPS shall not be liable for any damages of any kind resulting from installation, use, quality, performance or accuracy of any Product.

HEMISPHERE IS NOT RESPONSIBLE FOR PURCHASER'S NEGLIGENCE OR UNAUTHORIZED USES OF THE PRODUCT. IN NO EVENT SHALL HEMISPHERE GPS BE IN ANY WAY RESPONSIBLE FOR ANY DAMAGES RESULTING FROM PURCHASER'S OWN NEGLIGENCE, OR FROM OPERATION OF THE PRODUCT IN ANY WAY OTHER THAN AS SPECIFIED IN HEMISPHERE GPS'S RELEVANT USER'S MANUAL AND SPECIFICATIONS. Hemisphere GPS is NOT RESPONSIBLE for defects or performance problems resulting from (1) misuse, abuse, improper installation, neglect of Product; (2) the utilization of the Product with hardware or software products, information, data, systems, interfaces or devices not made, supplied or specified by Hemisphere GPS; (3) the operation of the Product under any specification other than, or in addition to, the specifications set forth in Hemisphere GPS's relevant User's Manual and Specifications; (4) damage caused by accident or natural events, such as lightning (or other electrical discharge) or fresh/salt water immersion of Product; (5) damage occurring in transit; (6) normal wear and tear; or (7) the operation or failure of operation of any satellite-based positioning system or differential correction service; or the availability or performance of any satellite-based positioning signal or differential correction signal.

THE PURCHASER IS RESPONSIBLE FOR OPERATING THE VEHICLE SAFELY. The purchaser is solely responsible for the safe operation of the vehicle used in connection with the Product, and for maintaining proper system control settings. UNSAFE DRIVING OR SYSTEM CONTROL SETTINGS CAN RESULT IN PROPERTY DAMAGE, INJURY, OR DEATH. The purchaser is solely responsible for his/her safety and for the safety of others. The purchaser is solely responsible for maintaining control of the automated steering system at all times. THE PURCHASER IS SOLELY RESPONSIBLE FOR ENSURING THE PRODUCT IS PROPERLY AND CORRECTLY INSTALLED, CONFIGURED, INTERFACED, MAINTAINED, STORED, AND OPERATED IN ACCORDANCE WITH HEMISPHERE GPS'S RELEVANT USER'S MANUAL AND SPECIFICATIONS. Hemisphere GPS does not warrant or guarantee the positioning and navigation precision or accuracy obtained when using Products. Products are not intended for primary navigation or for use in safety of life applications. The potential accuracy of Products as stated in Hemisphere GPS literature and/or Product specifications serves to provide only an estimate of achievable accuracy based on performance specifications provided by the satellite service operator (i.e. US Department of Defense in the case of GPS) and differential correction service provider. Hemisphere GPS reserves the right to modify Products without any obligation to notify, supply or install any improvements or alterations to existing Products.

GOVERNING LAW. This agreement and any disputes relating to, concerning or based upon the Product shall be governed by and interpreted in accordance with the laws of the State of Arizona.

OBTAINING WARRANTY SERVICE. In order to obtain warranty service, the end purchaser must bring the Product to a Hemisphere GPS approved service center along with the end purchaser's proof of purchase. Hemisphere GPS does not warrant claims asserted after the end of the warranty period. For any questions regarding warranty service or to obtain information regarding the location of any of Hemisphere GPS approved service center, contact Hemisphere GPS at the following address:

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