SATLOC®

G4 IntelliTrac
User Guide
PN 875-0308-000 Rev C

AgJunction®

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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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6501346	7373231	8000381	8271194	8649930	
6539303	7388539	8018376	8307535	8676620	
6549091	7400294	8085196	8311696	8718874	
6711501	7400956	8102325	8334804	8768558	
6744404	7429952	8138970	8489291	8781685	
6865465	7437230	8140223	8521372	RE41358	
6876920	7460942	8174437	8548649		
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IntelliTrac™ aerial guidance software provides precise, flexible guidance technology for today's aerial spray market. IntelliTrac is included as part of the Satloc® G4™ system that enables you to fly and spray precise patterns using constant rate flow control, thereby reducing fuel, flying time, and application costs.

What's In This Guide?

This user guide provides the following information to get you up and running quickly with IntelliTrac.

- This introductory chapter briefly outlines the contents of this manual, lists IntelliTrac features, introduces related Satloc products, and describes both the advantages of differential GPS (DGPS) and how it is used by IntelliTrac.
- Chapter 2, "Getting Started" describes how to start and exit IntelliTrac, provides an overview of IntelliTrac window (display) screen, describes how to set up IntelliTrac, and lists what you need to know before using IntelliTrac.
- Chapter 3, "Setup" Provides detailed information of the setup of global units, map display fields - setting and options; lightbar setup.
- Chapter 4, "Terminology and Basic Tasks" provides an overview of aerial guidance terms, describes how to quickly enter basic job details, describes jobs and logs and how they are related, and lists spray and boom options.
- Chapter 5, "Pattern Guidance" describes patterns, marks, and job and log data files.
- Chapter 6, "Routes, Waypoints and Marks" shows you how to work with marks and routes.
- Chapter 7, "Jobs and Polygons" describes how to work with jobs and polygons.
- Chapter 8, "Flow Control and Managing Prescription Maps", describes the screens used for the legacy flow control (IntelliFlow) and IntelliFlow 2 (IF2) liquid functionality. Menu maps assist with navigation through the various feature screens and tables provide details of all fields and options on the flow control screens. It also provides information on all aspects of prescription map management - importing and using.
- Chapter 9, "Advanced Setup and Customization" includes such tasks as entering subscriptions, configuring your lightbar, and changing logging defaults.
- Appendix A, "The Simulator Console" - provides information on all the flying simulator controls.
- Appendix B, "Hot Keys"- provides descriptions for all IntelliTrac hot keys

Product Overview

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 the Intel® Dual-Core™ i7 processor and includes the Windows® 7 64-bit operating system. G4 features a 9-inch, 16:9 ratio touchscreen that lets you use multi-touch gestures such as pinch-to-zoom, rotate, and press-and-drag to access information. G4 also supports Skype™ and Ethernet connectivity for cell-based modems.

You can download job files and shapefiles as well as prescription maps. Background maps are also available with G4 and enhance flight navigation and confidence by enabling aerial applicators to view such flight information as spray, waypoints, and polygons on background maps.

For flow control, G4/IntelliTrac manages the original 'legacy' IntelliFlow and IntelliFlow 2 (IF2) which manages both liquid and dry applications.

G4 also includes an A21™ antenna and external L7 lightbar.

IntelliTrac, the software that runs on the G4, enables you to do the following:

- Fly various pattern types, such as back-to-back and racetrack patterns
- Download job files, shapefiles, and prescription maps
- Transfer log files
- Use configurable shortcut keys (hot keys) to quickly perform common tasks
- Perform advanced lightbar setup and dimming functions
- Load background maps
- Push/pull data via Satloc HQ™ (see section following)
- Manage legacy (IntelliFlow) and IntelliFlow liquid/dry flow applications

Using Other Satloc Products with IntelliTrac

HQ and MapStar® are Satloc software products that you can use in conjunction with IntelliTrac to perform more advanced tasks.

- HQ is a real-time web-based asset tracking tool that enables companies to track the position and position-related data of aircraft and other assets, such as spotter vehicles and loader trucks.
- MapStar is pre-application mapping and post-application analysis log replay software that allows you to import/export common GIS file formats (such as CAD DXF, windowInfo MID/MIF, and Esri® shapefiles) as well as view, analyze, and export log data. MapStar also supports variable rate applications and prescription maps.

Differential GPS Receiver Advantage

The G4 differential GPS (DGPS) receiver supports such differential signals as SBAS, L-band, and beacon. IntelliTrac automatically detects the active signal from your receiver. If you lose satellite reception you may want to switch receiver applications—since you cannot switch receiver applications via IntelliTrac, see your receiver user guide for information on switching applications.

During a temporary signal outage, the receiver uses aging correction data for 40 minutes or more without significantly affecting positioning quality—meaning you will never be without a differential signal.

Your receiver also includes Hemisphere GNSS' e-Dif® technology—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 and these corrections are modeled over time and applied to the GPS data to maintain a consistent relative position.

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 lightbar 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

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

- Starting IntelliTrac
- Overview of the IntelliTrac display
- Setting up IntelliTrac, including how to enter values and navigate the display
- What to know before you begin using IntelliTrac
- Switching between IntelliTrac and the Windows desktop
- Exiting IntelliTrac

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 Satloc website at www.satloc.com.

To start IntelliTrac:

1. Power on your G4 system. After G4 completes its bootup sequence the DISCLAIMER window appears in front of the IStarLaunchG4 startup screen.

2. Press **OK**. The DISCLAIMER window closes and the full IStarLaunch G4 screen is visible.
3. Optional: **Select Simulate GPS**, see Appendix A, "The Simulator Console", page 161.
4. Run IntelliTrac using either of the following methods:
   - Press **RUN IntelliTrac Touchscreen**
   - Wait for IntelliTrac to finish counting down to zero

Press here

-or-

Wait for countdown

See "Starting the Simulator", next page

With either start method, after several seconds the IntelliTrac window screen appears with the [Pilot]: IntelliTrac Setup window displayed in front of it (you may briefly see some pop-up windows about 'Active Features' and job loading).

You are now ready to begin setting up IntelliTrac. However, you should read the "IntelliTrac Display Overview" section (page 8) to familiarize yourself with each section of the IntelliTrac display, including how to navigate the software.
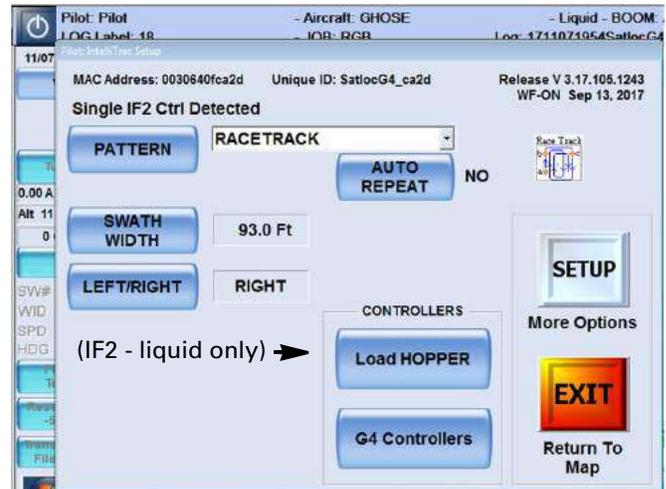
WARNING: *When you exit from this screen (and return to the map), you will see the 'Accept Message' if the G4 detects a network connection. Press* **Accept** *to acknowledge that any such connected device(s) must be removed before flying.*
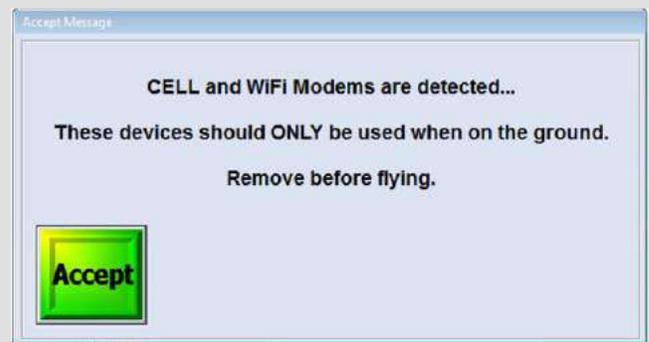
Starting the Simulator

If, for ground activities, you want to simulate GPS-guided flying using the simulator console, select Simulate GPS, then Internal GPS Simulator before running IntelliTrac. After startup, you will see an aircraft in the map and have the simulator console to control the aircraft (see Appendix A, "The Simulator Console"). After you select Internal GPS Simulator, you will need to press ACCEPT in the confirmation pop-up, acknowledging that you must not fly with the simulator active.
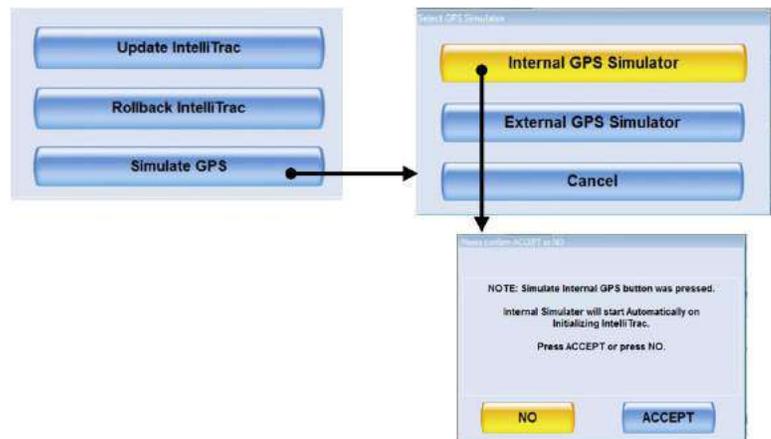
IntelliTrac Display Overview

The IntelliTrac display includes important status information and user-defined display options as well as Quick Keys and Hot Keys that enable you to quickly perform tasks.

Understanding the Map Screen

After startup (see "Starting IntelliTrac" on page 6) IntelliTrac displays the map screen.

The map screen is the main display screen in IntelliTrac and is divided into three areas: the moving map area (the 'map'), the data area, and the header area.

Header Area
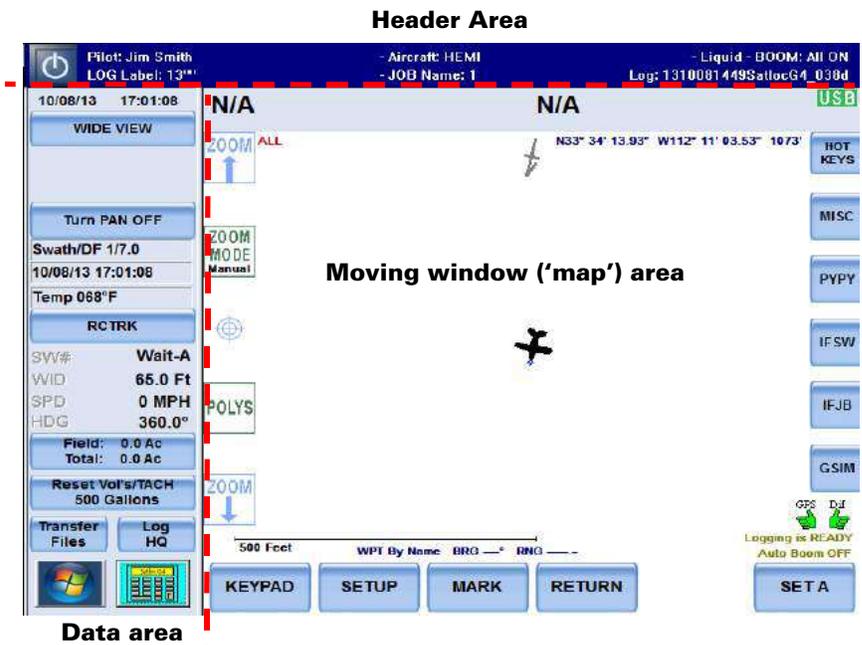
Figure 2-1: Map screen

Moving Map

The moving map area ('map') shows a GIS-generated map of the field when you fly a pattern, create a job file, or open a log. The map includes an outline of the field's shape and size, spray and no-spray areas, and any marks in the field. The map area also shows your differential status and whether logging is on or off.

Note: For a list of display options for the map's large format display fields, see "Screen Displays Window" on page 30.

User-defined fields (SETUP > SETUP > SCREEN > Displays, Left Display and Right Display fields)

Zoom in

Shows filename of each log or polygon you cycle through using POLYS button (shows ALL for all logs or polygons)

Cycle through zoom modes

Coordinates

Center aircraft in map

Aircraft

Cycle through polygons

Waypoint name or route#/waypoint#
Bearing angle
Range distance

Zoom out

Current zoom level

Hide/ display Hot Keys

Hot Keys

GPS and differential status indicators

Log On/Off indicator

Display Setup window

Save position in field

Return to mark

Set A point

Rtn/Mark mode

Show Keypad

Quick Keys

Note: Once you set a pattern the DEC and ADV Quick Keys appear at the lower right of the map.

Decrement swath

Increment swath

Quick Keys
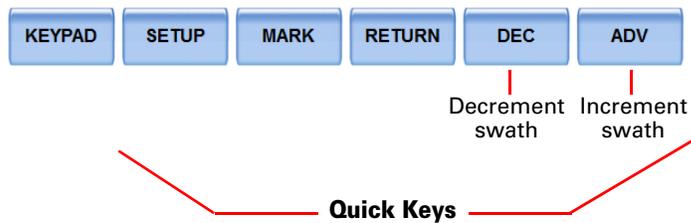
Figure 2-2: Moving map area

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.

Date and time

Toggle between Wide and Split views

Toggle Pan mode on/off

User-defined fields
(SETUP > SETUP > SCREEN >
DISPLAYS, fields 1-3)

Direction/pattern (press to change)

Swath #, GPS status

Swath width

Ground speed

Aircraft heading

Current field/total sprayed areas
(press to reset)

Remaining volume (press to reset
volume and TACH times)

Display File Transfer window

Display Logging window

Switch to Windows desktop

Show calculator

Figure 2-3: Data area

The data area appears in different colors:

- Blue - IntelliTrac is navigating to a point or mark (**A** at right)
- Green - an A|B line is set or loaded (**B**)
- Gray - all other time (**C**)

Note: For a list of display options for the data area's fields 1 – 3, see "Screen Displays Window" on page 30.

Figure 2-4: Data area colors - reflecting situations

Header

The header displays the following information along the top of the map:

- 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 2-5: Header

Information in the header is read-only. You can change some of the data, but you cannot use the header area itself to change the information—use the Logging Setup window. For example, you use the Logging Setup window to change the Pilot Name (see "Adding Job Information to the Log" on page 52).

Pressing Buttons in IntelliTrac

This manual uses the following format as well as screen captures of the buttons to describe pressing buttons in succession:

Button1 > Button2 > Button 3, etc.

Below are three examples of this format and their associated buttons:

- "Press the SETUP button, press the next SETUP button, then press the SCREEN button" is written as...

    Press **SETUP > SETUP > SCREEN**

    and is shown as...

- "Press the KEYPAD button, press the CLEAR button, press the JOB button, then press the ENTER button" is written as:

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

    and is shown as:

- "Path to Authorize Feature Unlocks: "

The last of the examples above ("Path to..." with button images only) is the most common representation of the button sequence when it introduces a window or a procedure.

Using the Keypad

You enter custom setup options, values, and commands by pressing buttons on the keypad.
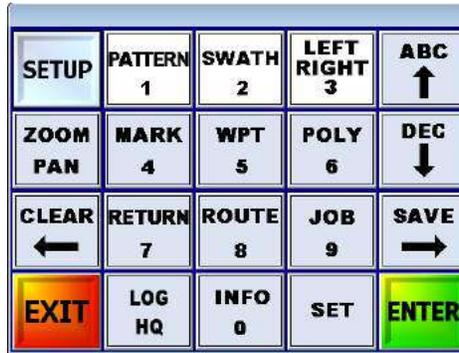
Figure 2-6: Keypad

To display the keypad, press KEYPAD at the bottom of the map.
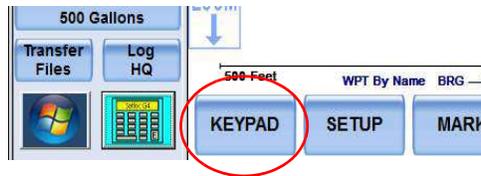
Note: Ten of the keypad buttons double as number buttons 1 - 0. The system detects when a numeric value is required in button sequences and uses the number value of the key pressed. In this manual, when button press sequences (as text, not button images) are included in procedures, the buttons are referred to only by their function (e.g. SWATH, MARK, POLY), that is, their number value is not included. For example, you will see MARK (not MARK 4) or PATTERN (not PATTERN 1) for the mark and pattern functions. When a number value is required, the sequence will show 'n' or 'nn' to indicate that the key's number value will be taken for those key presses in the sequence.

The most often used keys—SETUP, PATTERN, SWATH, and LEFT RIGHT—have a different background. Table 2-1 describes the function of each button on the keypad.

Table 2-1: Keypad keys and functions

Key	Function	
SETUP	Display the first IntelliTrac Setup window (see Figure 2-7 on page 16). You can also display the IntelliTrac Setup window by pressing SETUP at the bottom left of the map.	
PATTERN 1	Scroll through available patterns (the pattern name changes in the Data area). This key also functions as numeric value 1.	

Table 2-1: Keypad keys and functions *(continued)*

Key	Function
SWATH 2	Display the Enter Swath Width window, where you enter a swath width. The value you enter appears as the WID value in the data area.

You can also enter the swath width in the IntelliTrac Setup window (see "Entering Basic Job Details (Quick Start)" on page 49).

This key also functions as numeric value 2.

| **LEFT RIGHT 3** | Change direction (left to right or right to left) of the current pattern. The pattern/direction button in the data area shows the current direction and pattern—LFT indicates you are flying to the left of the A|B line and RGT indicates you are flying to the right of the A|B line. |

Left and right back-to-back patterns

Left and right expand patterns

When you change the direction the new direction is shown on this button. For example, if you are flying an expand pattern and the current direction is Left, the direction/pattern button in the Data area shows LFT EXPND. Pressing the LEFT RIGHT button changes the direction to right and the direction/pattern button shows RGT EXPND.

Direction does not apply to all available pattern types. For example, you can change the direction of the expand (EXPND) pattern but not the squeeze (SQUEZ) pattern.

You can also press the pattern/direction button in the Data area to toggle between LFT and RGT for patterns that have the option to fly left or right.

This key also functions as 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 Map" on page 19 for more information. |

| **MARK 4** | Display the Quick Marks window where you can quickly set a mark (1-9).

Also, press this key after pressing an action key to (where 'n' is the mark number):
- Save a mark (SAVE > MARK > n > ENTER)
  Example: To save a mark as mark 2, press SAVE > MARK > 2 > ENTER
- Recall a mark (SET > MARK > n > ENTER)
  Example: To recall mark 2, press SET > MARK > 2 > ENTER
- Delete a mark (CLEAR > MARK > n > ENTER)
  Example: To delete mark 2, press DELETE > MARK > 2 > ENTER

See "Working with Marks (Return Points)" on page 94 for more information on marks, including working with marks numbered 10 and higher.

This key also functions as numeric value 4. |

Table 2-1: Keypad keys and functions *(continued)*

Key	Function
WPT 5	Press this key after pressing an action key to (where 'n' is the waypoint number): • Save a waypoint (SAVE > WPT > n > ENTER) *Example:* To save a waypoint as waypoint 3, press SAVE > WPT\5 > 3 > ENTER • Recall a waypoint (SET > WPT > n > ENTER) *Example:* To recall waypoint 3, press SET > WPT\5 > 3 > ENTER • Delete a waypoint (CLEAR > WPT > n > ENTER) *Example:* To delete waypoint 3, press DELETE > WPT\5 > 3 > ENTER See "Creating a Waypoint While Flying - Route-Based Only" on page 85 for more information on waypoints. This key also functions as numeric value 5.
POLY 6	Press this key after pressing an action key to (where 'n' is the polygon number): • Save a polygon (SAVE > POLY > n > ENTER) *Example:* To save a polygon as polygon 5, press SAVE > POLY > 5 > ENTER • Recall a polygon (SET > POLY > n > ENTER) *Example:* To recall polygon 5, press SET > POLY > 5 > ENTER • Delete a polygon (CLEAR > POLY > n > ENTER) *Example:* To delete polygon 5, press DELETE > POLY > 5 > ENTER See "Working with Polygons" on page 101 for more information on polygons. This key also functions as numeric value 6.
DEC ↓	Swath decrement (if not using the DEC Quick Key on the map or the remote decrement switch).
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 memory (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 and powering off IntelliTrac see "Exiting IntelliTrac" on page 23. **⚠ WARNING:** Make sure you understand the difference between clearing a data type from the screen and 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 greater than 9 because only the first digit counts. To return to a mark 10 and above use SET (see SET later in this table). This key also functions as numeric value 7.
ROUTE 8	Press this key after pressing an action key to (where 'n' is the route number): • Save a route (SAVE > ROUTE > n > ENTER) *Example:* To save a route as route 6, press SAVE > ROUTE > 6 > ENTER • Recall a route (SET > ROUTE > n > ENTER) *Example:* To recall route 6, press SET > ROUTE > 6 > ENTER • Delete a route (CLEAR > ROUTE > n > ENTER) *Example:* To delete route 6, press DELETE > ROUTE > 6 > ENTER This key also functions as numeric value 8.

Table 2-1: Keypad keys and functions *(continued)*

| Key	Function
JOB 9	Press this key after pressing an action key to (where 'n' is the job number): • Save a job (SAVE > JOB > n > ENTER) *Example:* To save a job as job 6, press SAVE > JOB > 6 > ENTER • Recall a job (SET > JOB > n > ENTER) *Example:* To recall job 6, press SET > JOB > 6 > ENTER • Delete a job (CLEAR > JOB > n > ENTER) *Example:* To delete job 6, press DELETE > JOB > 6 > ENTER This key also functions as numeric value 9.
SAVE →	Use in conjunction with other keys to save a data type. For example, to save a polygon press SAVE > POLY > n (where n = polygon number).
EXIT	Return to the map (saving your changes).
LOG HQ	Display the Logging window where you can: • Start a new log • Turn logging off/on • Upload files to or download files from HQ You can also display the Logging window by pressing Log HQ in the data area.
INFO 0	Use in conjunction with other keys to view data type information. For example, to display the Marks window that shows the mark number, log label, and log name of all marks, press INFO > MARK. You can also display the Flow Control Setup window by pressing INFO > INFO. This key also functions as numeric value 0.
SET	Use 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 is the mark number). 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.
ENTER	Save changes (when you press a combination of buttons to perform a task) and return to the map. For example, to create a mark numbered 10-99 press SAVE > MARK > nn > ENTER.
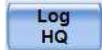
Working with IntelliTrac

After startup (see "Starting IntelliTrac" on page 6) IntelliTrac displays the map.
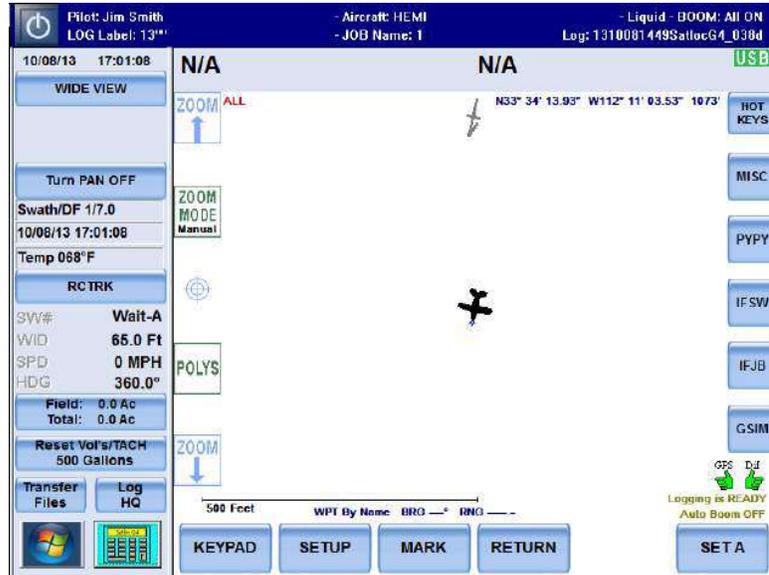
Figure 2-7: Map screen at startup

When you press the Setup button in the map the main IntelliTrac Setup window appears (Figure 2-8). From this window you can drill down into additional Setup windows. IntelliTrac Setup windows enable you to set up and customize IntelliTrac based on your installation.
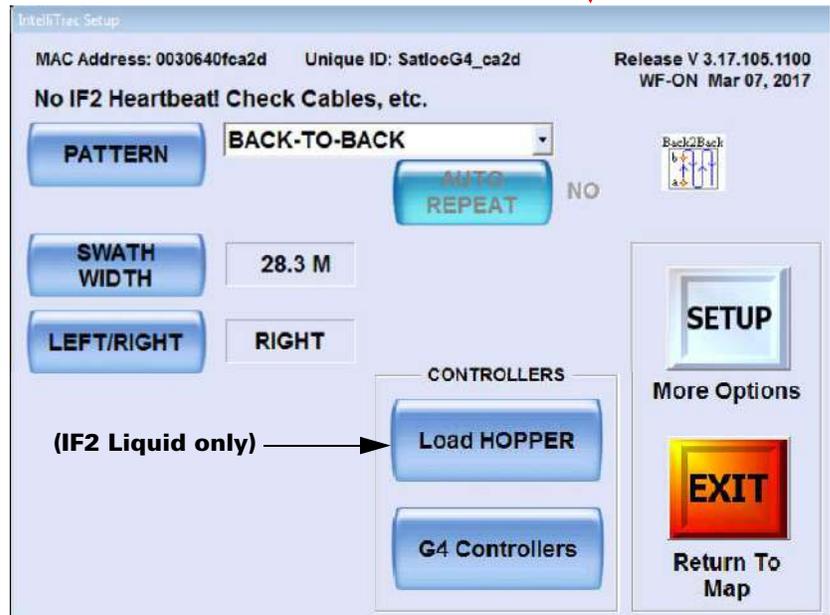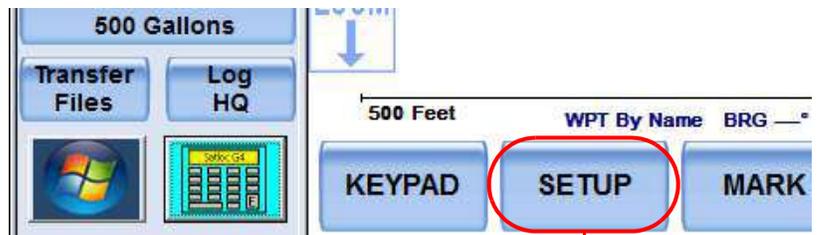
Figure 2-8: Main (first) setup window

You use the Setup windows (some of them shown in Figure 2-9) to set values or make selections for all the different options within IntelliTrac. You navigate through successive Setup windows via the following buttons:

- SETUP - displays the next Setup window
- CLEAR - displays the previous Setup window
- EXIT - closes the current Setup window and returns to the map.

There is no CLEAR button on the first Setup window because one window back is the map which EXIT takes you back to.

Additionally, when you press a field button (such as the UNITS button on the System Setup window) the resulting window may contain a SETUP button for accessing additional setup options.
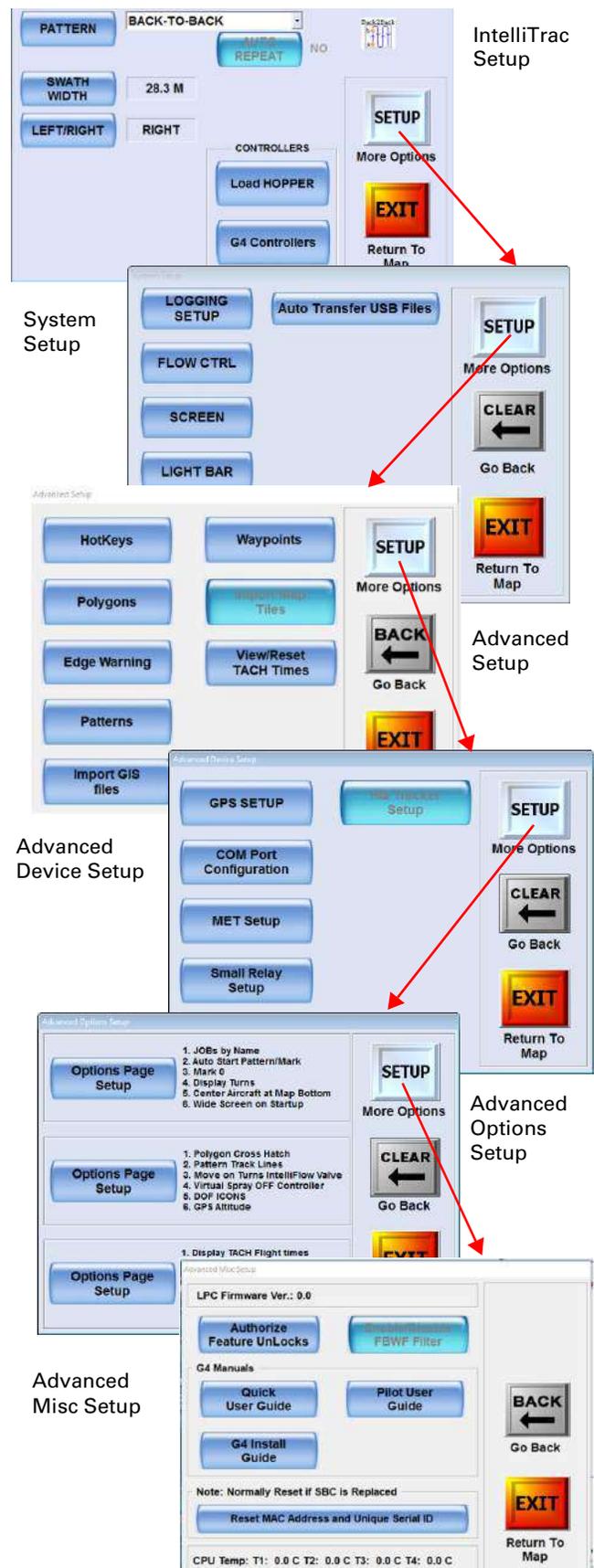
Figure 2-9: Setup windows

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).

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 a numeric data entry window (left window in Figure 2-10). LOG Label, Pilot, and Aircraft, however, can all be alphanumeric values so when you press the button for any of these fields IntelliTrac displays an alphanumeric data entry window (right window in Figure 2-10).
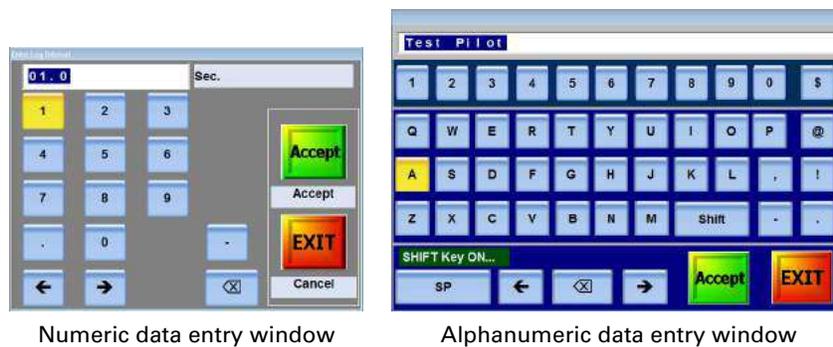
Numeric data entry window   Alphanumeric data entry window

Figure 2-10: Data entry windows

Note: The decimal point button is available only if non-integer values are valid.

To enter values in either data entry window:

1. Press the button for the field value you want to enter/change.
2. Enter a value using the buttons in the data entry window.
3. Press **Accept**. The data entry window closes and the value you entered populates the appropriate field on the previous window.

    or

    Press **EXIT** to cancel the entry and return to the previous window.

Zooming and Panning the Map

Zooming refers to increasing or decreasing (zooming in and out respectively) the magnification of the map. Panning refers to moving—or shifting—the screen in a specific direction (such as left or right) so you can see detail that may not be currently visible. Note that pan arrows point to the area of the map that will be shifted toward the center of the display; they do not indicate the shift direction. Anything on the screen moves in the direction *opposite to* the

Figure 2-11: Panning direc-

arrow's direction, (in the direction of the red arrows in Figure 2-11). For advanced zoom/pan options, see "Configuring Your Zoom and Pan" on page 159.

You can zoom in and out using buttons in the Zoom/Pan window and in the map (Figure). You can also 'pinch' to zoom in and out on the map area:

- To pinch to zoom in place your thumb and index finger far apart on the map then drag (slide) your thumb and finger closer together
- To pinch to zoom out place your thumb and index finger close together on the map area then drag (slide) your thumb and finger farther apart

Figure 2-12 illustrates the zooming and panning features of IntelliTrac.
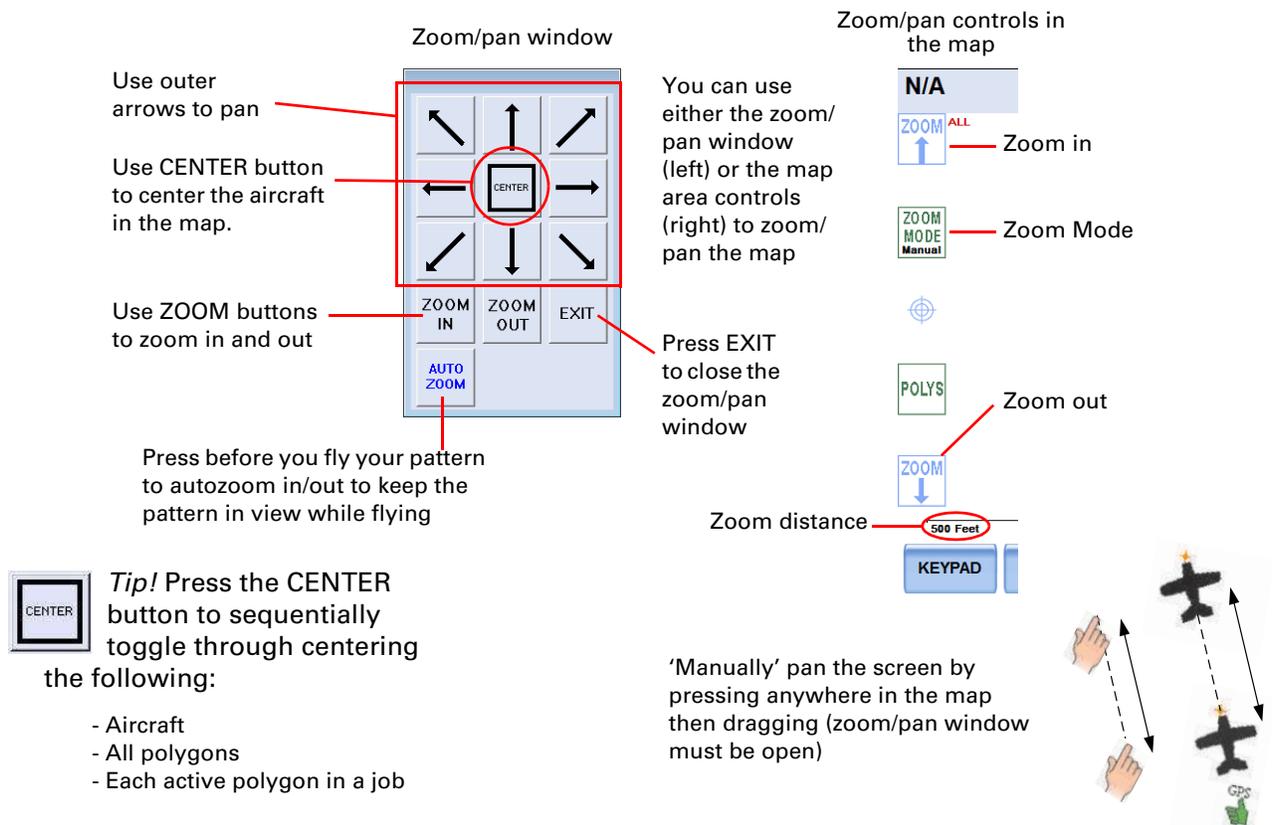
Figure 2-12: Zooming and panning

The status of the ZOOM MODE button in the map determines what buttons are active in the Zoom/Pan window. You can press the ZOOM MODE button (to change the zoom mode) while the Zoom/Pan window is visible.

ZOOM MODE Manual   ZOOM MODE Manual Locked   ZOOM MODE Auto
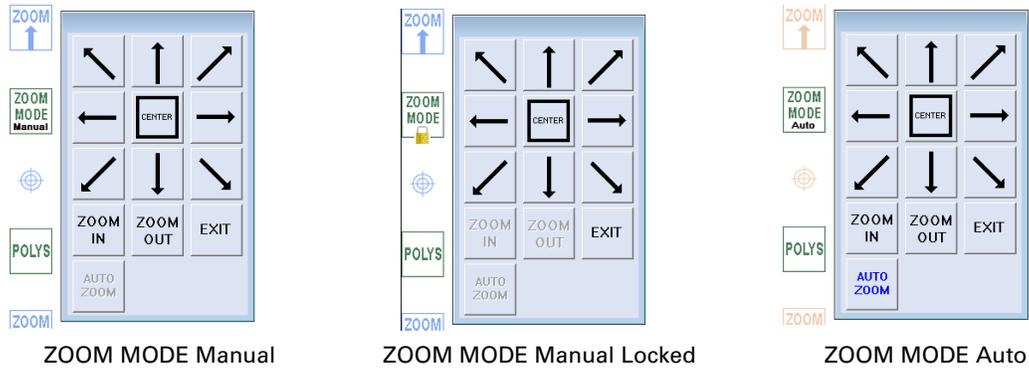
Figure 2-13: ZOOM MODE button and related Zoom/Pan window features

To pan using the map:

1. Verify the Pan ON/OFF button in the data area displays 'Turn PAN OFF' (meaning Pan mode is on). If Pan mode is off (the button displays 'Turn PAN ON') press the button.

2. Press (and hold) your finger on the map and drag in the desired direction.
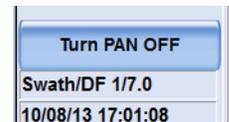
To pan the map area using the Zoom/Pan window:

1. Press **KEYPAD** > **ZOOM PAN** to display the Zoom/Pan window.

2. Press the appropriate arrow button to pan the display in the *opposite* direction of the arrow (the arrow indicates the map content that will be moved, not the direction the map content will move).

3. Press **EXIT** to close the Zoom/Pan window.

To manually zoom in/out using the ZOOM buttons on the map area:

1. Verify the ZOOM MODE button is set to Manual or Manual Locked. You cannot manually zoom if the button is set to Auto.

Manual zooming

Enabled   Disabled

2. On the left edge of the map area, press the zoom in button (up arrow) or the zoom out button (down arrow) as many times as needed. Each time you press either button the zoom distance indicator at the bottom left of the map area decreases (zooming in) or increases (zooming out).

Zoom distance indicator
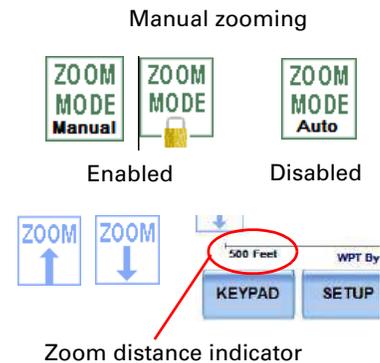
To zoom in/out using the zoom/pan window:

1. Press **KEYPAD** > **ZOOM PAN** to display the Zoom/Pan window (see Figure on page 19).

2. Press **ZOOM IN** or **ZOOM OUT** (as many times as needed). Each time you press either button the zoom distance indicator at the bottom left of the map decreases (pressing ZOOM IN) or increases (pressing ZOOM OUT).
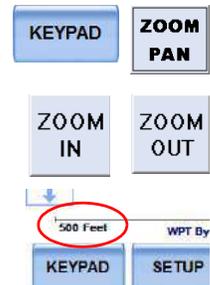
To have IntelliTrac automatically zoom in/out to keep your pattern in view while spraying, press the **ZOOM MODE** button until 'Auto' appears on the button.

Using Hot Keys

IntelliTrac includes five hot keys—shortcut keys that provide access to frequently used functions—along the right side of the map. Pressing the HOT KEYS (top) button shows/hides the hot keys.

The figure at right shows five specific hot keys; you can set each one to your preferred functionality. See Appendix "Hot Keys", page 163 for detailed information on all hot keys.

You can set hot keys singly in the map area (shortcut method) or in multiples from a Setup window.
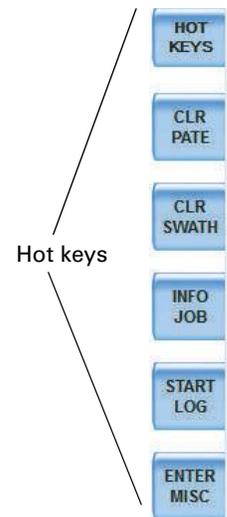
Hot keys

To set a single hot key (shortcut method):

1. Double-tap the hot key you want to set. The Hotkey selection window (for that hot key) appears.
2. Select the new functionality from the drop-down list. The abbreviation for the functionality appears on the button.
3. Press **Accept**. The hot key is newly labeled.

To set multiple hot keys:

Press [SETUP] [SETUP] [SETUP] [HotKeys]. The Hotkey selections window appears.

1. Press the button for the hot key you want to change and select a function from the drop-down list. For example (using the screenshot at right), to change the first hot key press **MISC** then select a new function from the drop-down list.
2. Repeat step 1 for each hot key you want to change.

Before You Start Using IntelliTrac

IntelliTrac's default settings should meet most users' needs. However, you can set some system-wide 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 drive to a PC or other G4 units. For more information see "Customized Settings" on page 160.

Detecting Your Flow Control System

IntelliTrac automatically detects if a flow control system is connected to the G4 and what type it is. 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.

Switching Between IntelliTrac and the Windows Desktop

You can switch between IntelliTrac and the Windows desktop without closing IntelliTrac.

To switch to the Windows desktop from IntelliTrac, on the map, press the Windows button in the lower left of the data area.

To switch to IntelliTrac from the Windows desktop, on the Windows taskbar, double-tap the IStarLaunch button.

Exiting IntelliTrac

You can exit IntelliTrac and either:

- Display the Windows desktop
- 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. Press, [KEYPAD] > [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 display the Windows desktop.

Exiting IntelliTrac and Jobs

- If you have cleared the last active job (KEYPAD > CLEAR > JOB> ENTER), **<No JOB Name>** shows in the header. On restart, '**JOB: 0**' shows in the header (top two images at right).

If you exit IntelliTrac with a job active (Job 10 in the example), on restart that job will still be active. If the active job had a pattern loaded, and/or a log loaded at shutdown, neither the pattern nor the log will be reloaded on restart—only the job (and its polygon(s) will be (still) loaded (bottom two images at right).

No job active on exit/restart

Job (#) active on exit/restart
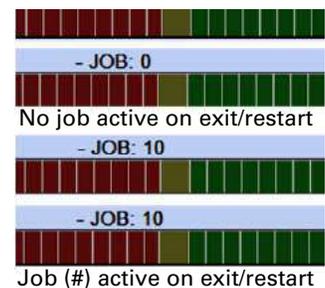
Chapter 3: Setup

Adjusting Systemwide Settings (Units)

Setting up the Screen

Setting up the Lightbar

This chapter describes how to adjust systemwide settings and set up your display, lightbar, and flow controller. The features are those accessed from the Setup 2 window.

Path to the Setup 2 window: SETUP SETUP

Adjusting Systemwide Settings (Units)

Table 3-1 describes the available IntelliTrac systemwide settings.

Table 3-1: IntelliTrac systemwide settings

Field	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 hrs behind GMT).
	You can select an offset from (+)14 hours to (-)12 hours in half hourly increments.
	Note: If you live in an area that observes daylight saving, you will need to set the local time twice a year.
Global Units	IntelliTrac uses U.S. standard units (such as feet and pounds) as the default. Use the Global Units field to change this setting to Metric or Nautical.
	You can also assign units to individual data types (such as speed and area) in the Units Advanced Setup window (see step 3 on page 27).
Coordinates	You can display GPS coordinates as one of the following:
	DDD.DDDDDDD - decimal degrees (default) DDDMM.MMMM - decimal minutes DDDMMSS.SSS - decimal seconds
Ag. Laser Offset Ag. Laser Max Height Ag. Laser Min Height (laser altimeter fields)	**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. 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.

Path to setting systemwide settings (Units window):

SETUP SETUP UNITS .

1. For the following press the appropriate button then select an option from the drop-down list. See Table 3-1 on the previous page for information on these fields.
   - Local Time Offset
   - Global Units
   - Coordinates

2. If AgLaser is installed press the appropriate button, enter a value in the data entry window that appears, 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 above ground
   - Ag. Laser Min Height—used to allow you to get to a minimum above ground (generally used as a warning mechanism)

IntelliTrac displays an AgLaser range bar on the left side of the map area—at right this range is from 2 (Min Height) to 16 (Max Height). When you are within the Min and Max values the bar is blue; when you are outside the range, the bar is red.

Within Min/Max range   Outside Min/Max range
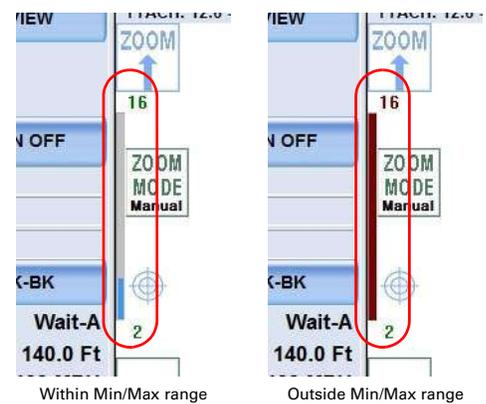
3. To override the global units for certain values, press **SETUP** on the Units window. The Units Advanced Setup window appears.

4. For each value you want to change press the appropriate button and select an option from the drop-down.
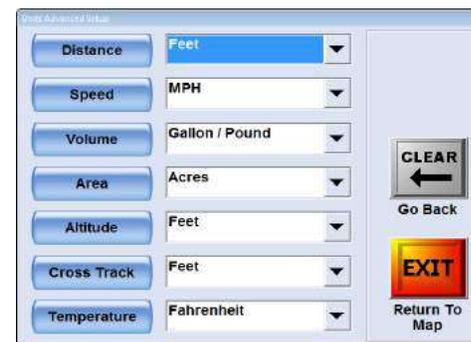
Setting up the Screen

Screen setup relates to all areas of your main display, which comprises the header, the map and the data panel. Full screen setup is established through three windows:

1. Screen Setup
2. Screen Displays
3. Screen Advanced Setup
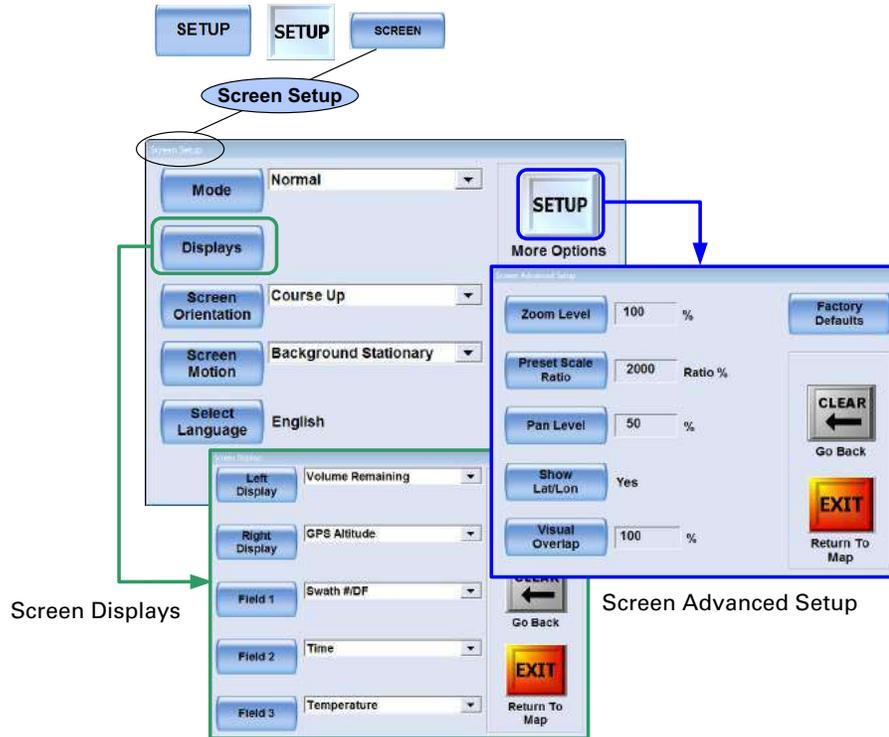
Figure 3-1: Screen setup windows

Screen Setup Window

Path to the Screen Setup window:
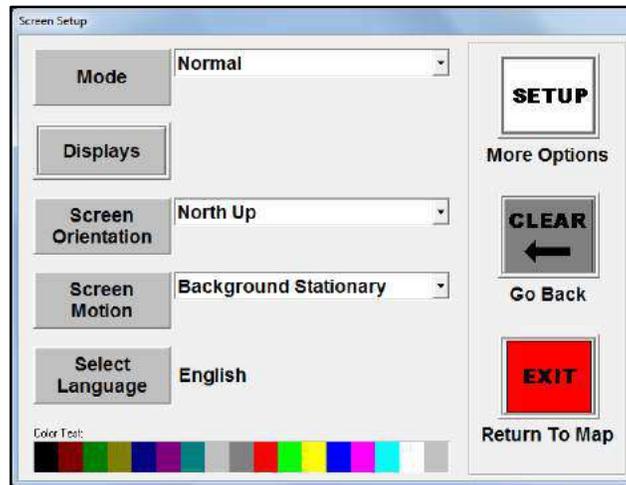
Figure 3-2: Screen Setup window

Table 3-2 describes the fields of the Screen Setup window. For mode, screen orientation and screen motion, you can press the button or the field's drop-down list button (down arrow) to see the options.

Table 3-2: Screen Setup window

Item	Description
Mode	Normal (daytime) or Dark (nighttime)
	(KEYPAD > SET > SET also switches the screen modes).
Displays	Select what you want to appear in user-set fields (two just below the header and three in the data panel)—see next section, "Screen Displays Window".
Screen Orientation (vertical direction/ movement on screen)	• AB Line Up - A|B line is vertical onscreen (after you set pattern) • Course Up - aircraft is vertical and screen (background) changes direction • North Up - north is vertical and aircraft changes direction
Screen Motion	• Aircraft Stationary - aircraft remains in center of screen as you fly; the background moves under the aircraft. • Background Stationary - background remains stationary as you fly; aircraft moves over the background. If you fly off the screen you reappear at the center of the opposite side of the screen traveling in the same direction as when you flew off the screen.
Select Language	Select from English and other languages.
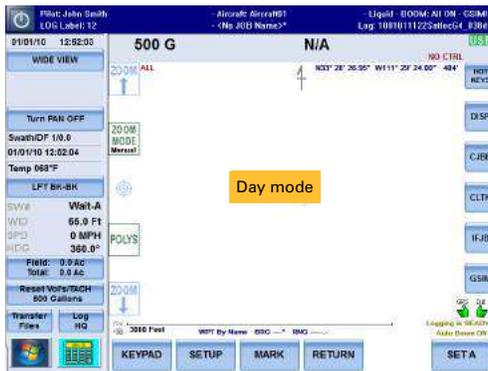
Screen Displays Window

Use the Screen Displays window to set five fields to display such data as flow rate or GPS altitude above the map and in the data panel.
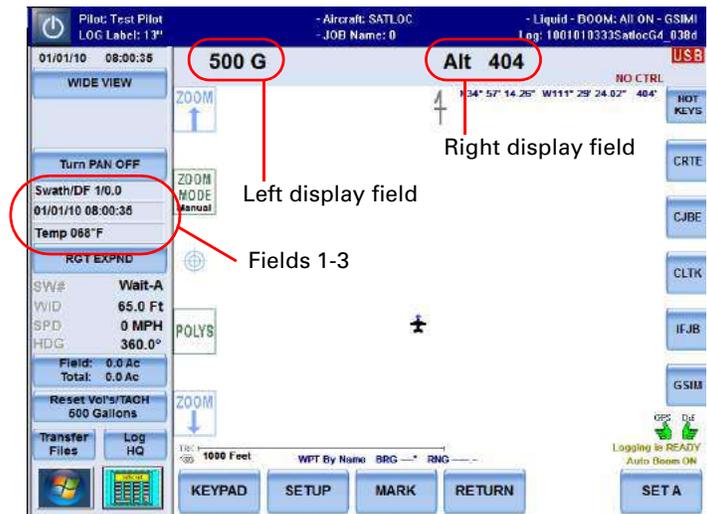
Figure 3-3: User-defined fields

Path to the Screen Displays window:

.

Figure 3-4: Setting the screen display for the user-defined fields

Table 3-3 lists the field options in drop-down list order (left columns) and alphabetical order (right columns).

Table 3-3: User-defined (screen) display options

Drop-down List Order		Alphabetical Order	
Cross Track Distance	Total Polygon Area	Amount Per Minute	Laser Altimeter
Current Swath Number	Polygon In/Out	Amount Per Swath	Pattern Type & Direction
Swath Width	Polygon ID	Arrival Time	Polygon Entry #
Speed	Spray Time	Barometric Pressure	Polygon ID
Pattern Type & Direction	Swath Heading	Bearing	Polygon In/Out
Heading	Wind Speed/Dir	Blank	Radius Circle WPT
Field Area	Temperature	Course Deviation	Route/Waypoint
Total Area	Barometric Pressure	Cross Track Distance	Speed
Edge Distance	Humidity	Current Modem Data Sent	Spray Time
Time To Edge	DOP/DF	Current Swath Number	SV/DF
Distance To AB	SV/DF	Desired Flow Rate	Swath #/DF
Distance to P1	Swath #/DF	Distance from Spray-on	Swath Heading
Distance to P2	Arrival Time	Distance To AB	Swath Width
Distance to P1 or P2	Route/Waypoint	Distance to Mark/Wpt	Temperature
Distance from Spray-on	Radius Circle WPT	Distance to P1	Time
Volume Sprayed	Distance to Mark/Wpt	Distance to P1 or P2	Time To Edge
Volume Remaining	Bearing	Distance to P2	Total Area
Amount Per Swath	HSI	DOP/DF	Total Modem Data Sent
Amount Per Minute	Course Deviation	Edge Distance	Total Polygon Area
Flow Rate	GPS Altitude	Field Area	Valve\Encoder Position
Desired Flow Rate	Current Modem Data Sent	Flow Rate	Volume Remaining
Valve\Encoder Position	Total Modem Data Sent	GPS Altitude	Volume Sprayed
Time	Blank	Heading	Wind Speed/Dir
Laser Altimeter		HSI	
Polygon Entry #		Humidity	
(continued next column)		(continued next column)	

Setting up the Lightbar

IntelliTrac includes several windows that enable you to set such lightbar options as:

- Lightbar displays fields
- Dimming levels and warnings
- Desensitizing the lightbar LEDs when navigating to a mark or waypoint
- Swath double-spray warning (on or off)
- Upper and lower rows of LEDs to display as a progressively longer or shorter ('solid' = Yes) bar of lights or use the outermost LED only that represents your current cross-track distance or heading angle ('Solid' = No)
- LED cross-track distance and heading angle values and how they appear in the LEDs
- Guidance delay—the delay in milliseconds between the time the lightbar shows a guidance cue and when you need to react

Figure 3-5 shows the windows you use to set lightbar options for both the Lightbar VI lightbar and the L7 lightbar setup windows.
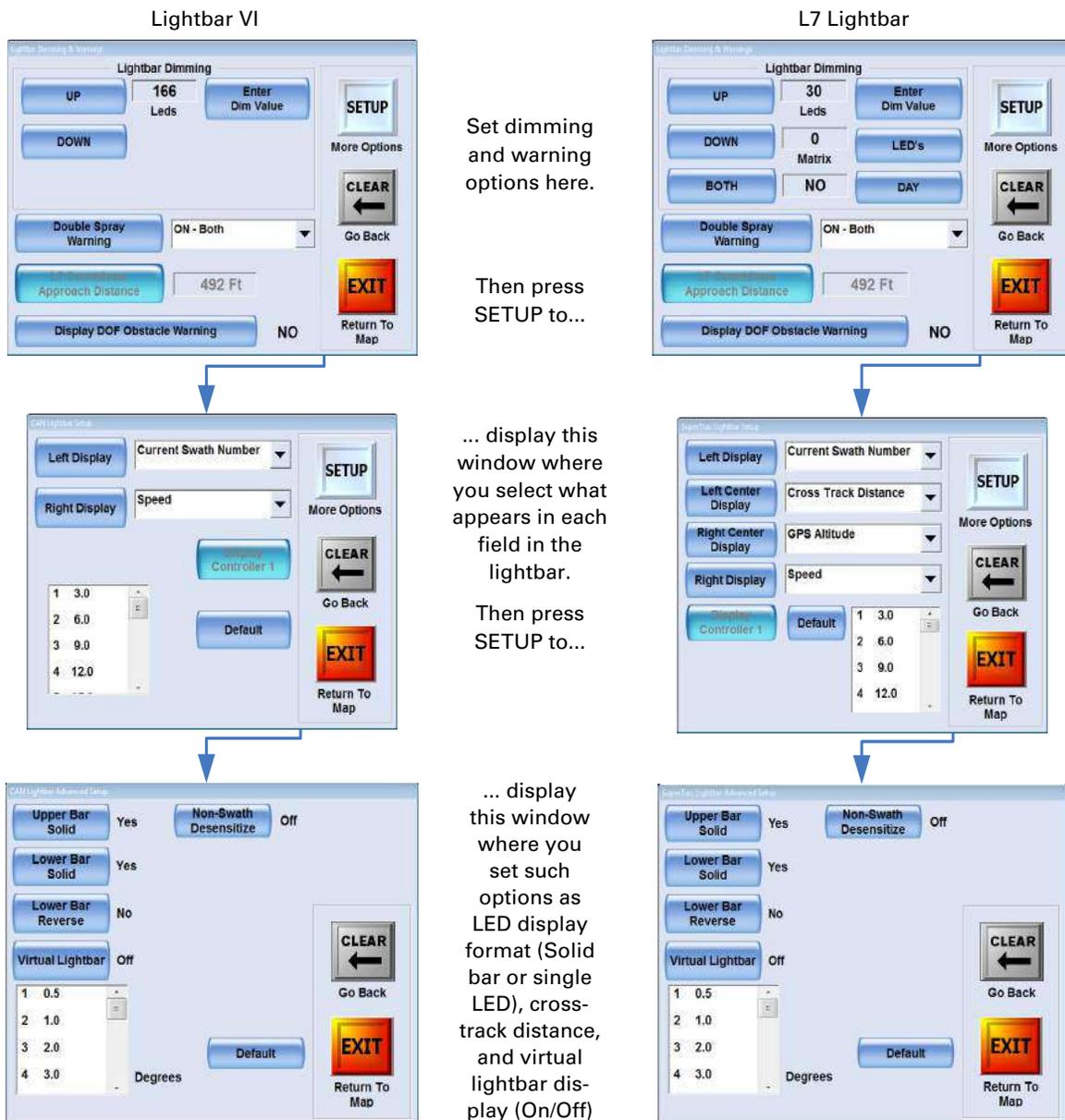
Figure 3-5: Lightbar setup windows

Configuring Lightbar Dimming and Warnings

You use the Lightbar Dimming & Warnings window (Figure 3-6) to set the following:

- Dimming level of the LEDs
- Dimming level of the Matrix (L7 lightbar only)
- Day or Night mode (L7 lightbar only)—see DAY button in Figure 3-6
- Double-spray warning
- DOF obstacle warnings (display or not display) for all known obstacles contained in the U.S. Federal Aviation Administration's Digital Obstacle File
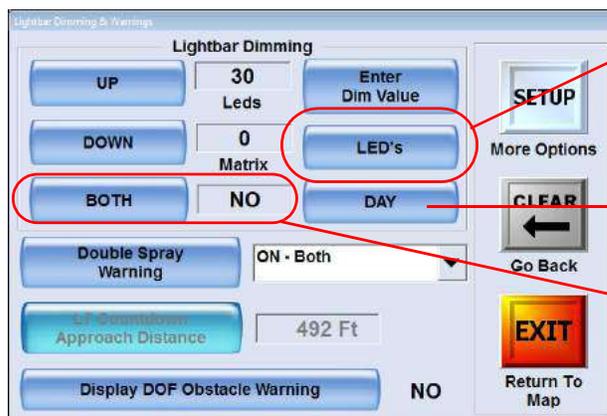
Press to switch between LEDs and Matrix; what shows on this button determines what you adjust with the UP/DOWN, Enter Dim Value, and Both buttons

Press to toggle between NIGHT and DAY settings, where NIGHT reduces the intensity level to 50%

Press to switch between YES and NO...YES enables you to adjust the LEDs and Matrix dimming simultaneously, while NO enables you to adjust each dimming individually

Figure 3-6: Lightbar Dimming & Warnings window

Path to the Lightbar Dimming & Warnings window:

Setting LED or Matrix Dimming Level

On the L7 you can set the LED dimming level and the Matrix dimming level individually. For the Lightbar VI you can only set the LED dimming level (it does not include a Matrix dimming setting).

In the Lightbar Dimming & Warnings window (Figure 3-6 above).

- *(L7 only)* Press the **LED's/Matrix** button to select the level you want to adjust.

  (L7 only) Make sure **BOTH** is set to NO (if set to YES, press the button to switch to NO).

- *(VI and L7)* Press **UP** to increase the dimming level or press **DOWN** to decrease the level.

  or

  Press **Enter Dim Value** to display the Enter Lightbar DIMMING Value window (at right), enter a value, then press **Accept**.

Setting LED and Matrix Dimming Levels Simultaneously (L7)

You can set both dimming levels simultaneously on the L7 lightbar only (this feature is not available on the Lightbar VI because it does not include a Matrix setting).

In the Lightbar Dimming & Warnings window (Figure 3-6, page 33).

- Make sure **BOTH** is set to YES (if set to NO, press the button to switch to YES).
- Press **UP**/**DOWN** to increase/decrease both dimming levels.

Setting a Double-Spray Warning

A double-spray warning appears (if set to ON, see below) when you approach a previously sprayed area. When you come into contact with your previous swath width.

You can set the double-spray warning to any of the following:

- OFF
- **ON - Lightbar Warning** - warning appears on the lightbar only
- **ON - Screen Warning** - warning appears on the map only
- **ON - Both** (default) - warning appears on the map and the lightbar

In the Lightbar Dimming & Warnings window (Figure 3-6 on page 33), press **Double Spray Warning** then select an option from the drop-down list.

Setting the DOF Obstacle Warning

The Digital Obstacle File (DOF) is provided by the U.S. Federal Aviation Administration and contains obstacle warnings for all known obstacles (throughout the U.S. as well as other parts of North America) that may affect aviators. You can download the DOF at https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dof/. Before setting DOF obstacle warnings you must load the warnings file into IntelliTrac.
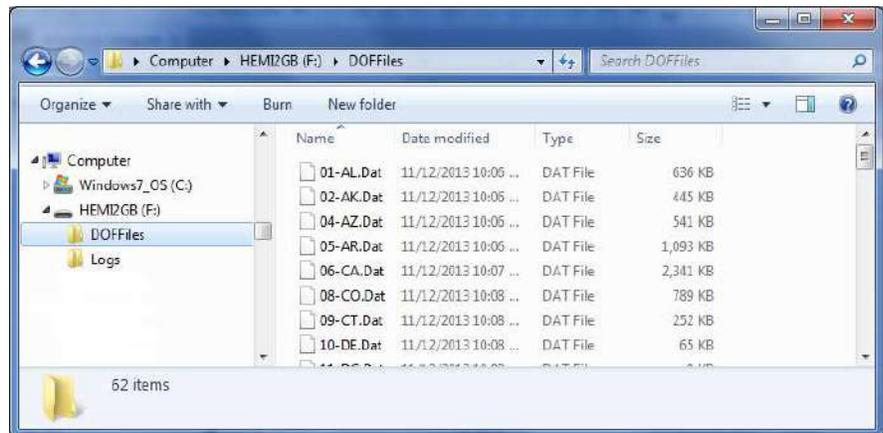
The DOF file is actually a group of files. To import the files from a USB drive into IntelliTrac you must place the files in a folder named DOFFiles. The procedure is shown, with notes, in Figure 3-7 on page 35.

Path to importing DOF files (Import GIS Files window):

SETUP SETUP SETUP Import GIS files (**1**)

Press **DOF Data Setup** (**2**), the Digital Obstacle File DOF (FAA) Setup window appears (**3**).

Press **Import DOF Files from USB** (**4**). A progress bar at the bottom of the window shows the download status (**5**).

With the download complete, in the **Import GIS Files** window (**6**), set the DOF obstacle warning by pressing **DOF Data Setup** (**7**). The Digital Obstacle File DOF (FAA) Setup window (re)appears (**8**).

Press **Select DOF Obstacle File** (**9**). The Select SHAPE Background File(s) window appears (**10**).

Select the appropriate file (**11**) and press **Accept**. The window closes and the map displays the obstacles from the selected file (if you are flying in that area - **12**).

Example: The figure at right shows obstacles located in Phoenix, Arizona centered around the airport.
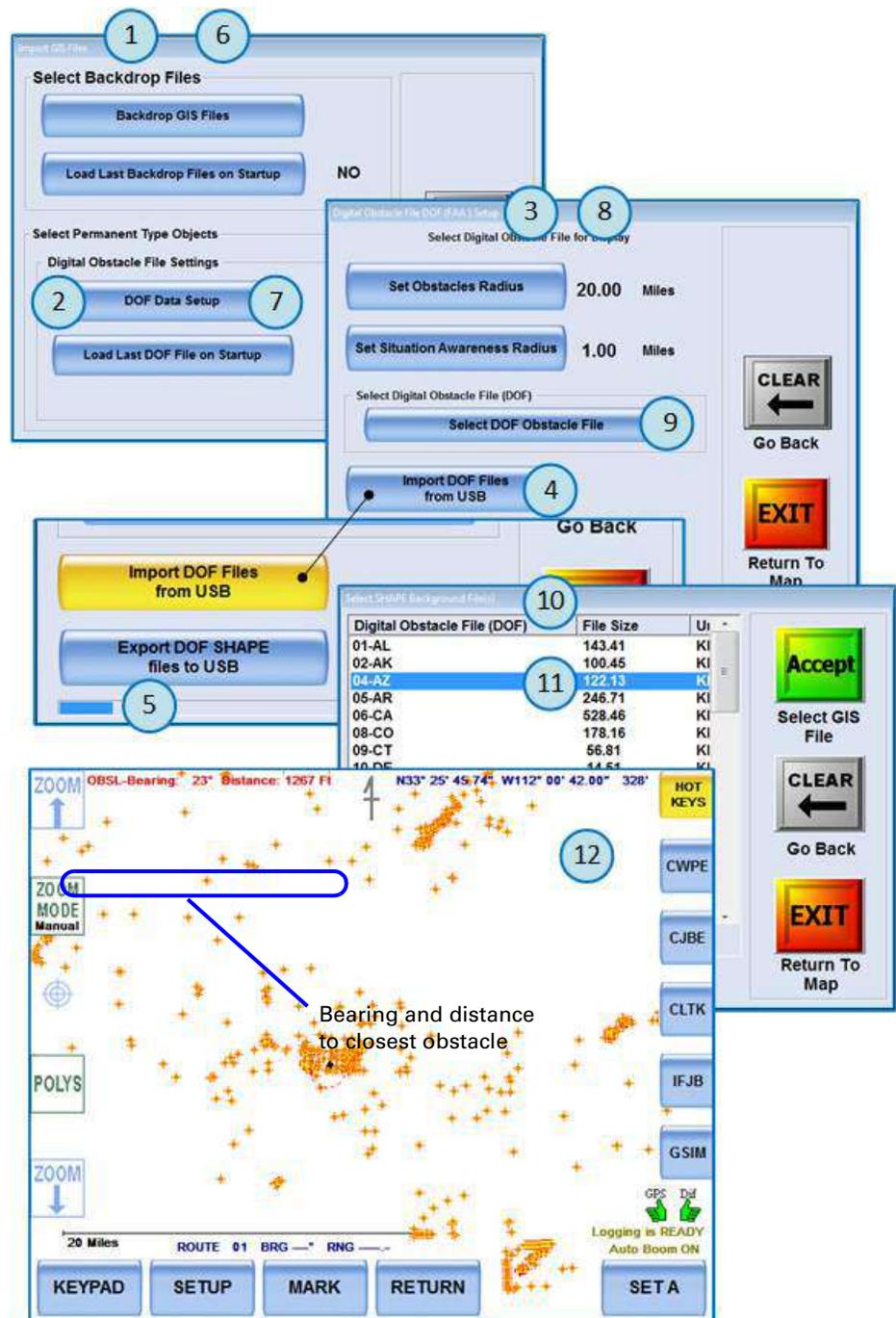
Figure 3-7: DOF Import and Load

Lightbar Setup - Basic: Display Fields, Crosstrack Values

Note: The figures and procedures in this section are for the L7 lightbar—procedures for the Lightbar VI are similar.

The LEDs on an IntelliTrac lightbar are separated into sections (fields) as shown in Figure 3-8 (see Table 3-4 on page 37 for the full list of display options).
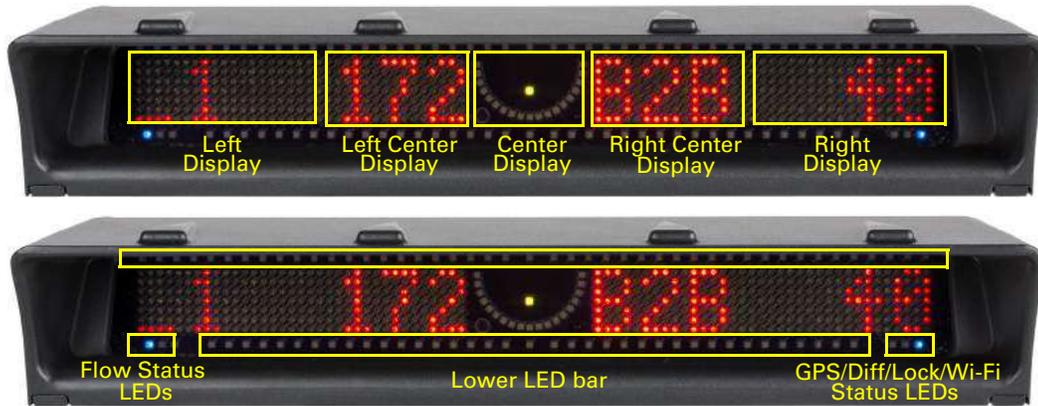
Figure 3-8: L7 lightbar field LEDs (top) and status LEDS (bottom)

IntelliTrac has two windows that enable you to set what appears in the field and status LED sections: the Lightbar Setup window (for 'CAN' and 'SuperTrac' lightbars) and the Lightbar Advanced Setup window (Figure 3-5, page 32).

Use the SuperTrac Lightbar Setup window to configure the four display fields and the LED cross-track representation (Lightbar V1 has only two fields, see inset).

Display fields

(Four for SuperTrac; two for Lightbar VI)

For the display fields, press a button and select an option from the adjacent drop-down list

LED cross-track representation

Press to reset the values in the list box—the left column represents each cross-track LED and the right column represents the cross-track distance from center of each LED
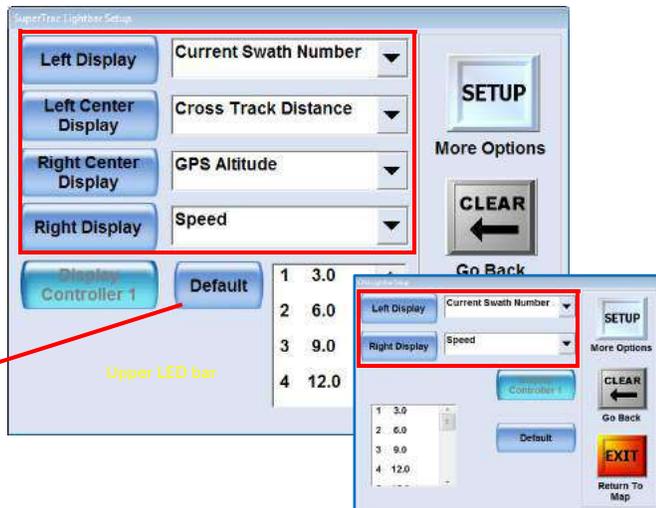
Figure 3-9: SuperTrac Lightbar Setup window (Lightbar VI inset)

Path to setting lightbar display fields and LED cross-track representation (SuperTrac Lightbar Setup window - Figure 3-9, page 36):

For the left, left center, right center, and right display fields, press the appropriate button and select a display option from the drop-down list (Table 3-4). See Figure 3-9, page 36 for LED cross-track representation.

Table 3-4: User-defined (screen) display options

Drop-down List Order		Alphabetical Order	
Cross Track Distance	Total Polygon Area	Amount Per Minute	Laser Altimeter
Current Swath Number	Polygon In/Out	Amount Per Swath	Pattern Type & Direction
Swath Width	Polygon ID	Arrival Time	Polygon Entry #
Speed	Spray Time	Barometric Pressure	Polygon ID
Pattern Type & Direction	Swath Heading	Bearing	Polygon In/Out
Heading	Wind Speed/Dir	Blank	Radius Circle WPT
Field Area	Temperature	Course Deviation	Route/Waypoint
Total Area	Barometric Pressure	Cross Track Distance	Speed
Edge Distance	Humidity	Current Modem Data Sent	Spray Time
Time To Edge	DOP/DF	Current Swath Number	SV/DF
Distance To AB	SV/DF	Desired Flow Rate	Swath #/DF
Distance to P1	Swath #/DF	Distance from Spray-on	Swath Heading
Distance to P2	Arrival Time	Distance To AB	Swath Width
Distance to P1 or P2	Route/Waypoint	Distance to Mark/Wpt	Temperature
Distance from Spray-on	Radius Circle WPT	Distance to P1	Time
Volume Sprayed	Distance to Mark/Wpt	Distance to P1 or P2	Time To Edge
Volume Remaining	Bearing	Distance to P2	Total Area
Amount Per Swath	HSI	DOP/DF	Total Modem Data Sent
Amount Per Minute	Course Deviation	Edge Distance	Total Polygon Area
Flow Rate	GPS Altitude	Field Area	Valve\Encoder Position
Desired Flow Rate	Current Modem Data Sent	Flow Rate	Volume Remaining
Valve\Encoder Position	Total Modem Data Sent	GPS Altitude	Volume Sprayed
Time	Blank	Heading	Wind Speed/Dir
Laser Altimeter		HSI	
Polygon Entry #		Humidity	
(continued next column)		(continued next column)	

Lightbar Setup - Advanced: Cross-track, Heading Indicators

Use the SuperTrac Lightbar Advanced Setup window to configure the upper (cross-track) and lower (heading) row LEDs, set the virtual (onscreen) lightbar to on/off as well as its cross-track LED distance, and turn non-swath desensitization on/off.

Press to set the upper and lower LEDs to display as a progressively longer or shorter row (bar) or a single LED. Upper LED bar default is Yes; lower LED bar default is No

Reverses the lower LED bar from left-to-right to right-to-left (flips your cross-track)

Toggle between On/Off—when On, the virtual lightbar appears along the bottom of the Header area

Angle of intercept in degrees (bottom LED row)—each LED is set to a degree (which you can change) allowing you to know what the angle is when you are approaching your next swath
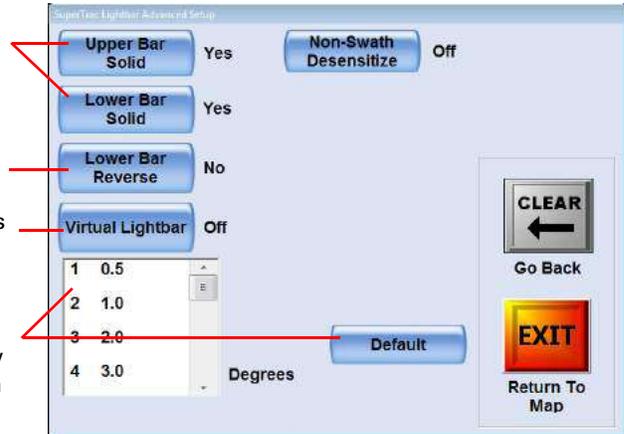
Figure 3-10: SuperTrac Lightbar Advanced Setup window

Setting Lightbar Status LEDs

You can set the upper and lower rows of LEDs on the lightbar to display as a variable length row of LEDs or as a single, repositioning LED using the Upper Bar Solid and Lower Bar Solid fields of the SuperTrac Lightbar Advanced Setup window (Figure 3-10).

Path to setting lightbar status LEDs (Lightbar Advanced Setup window - Figure 3-10, page 38):

Press **Upper Bar Solid** and/or **Lower Bar Solid** to set the upper LED row (cross-track) and/or lower LED row (heading angle) to YES or NO.

- Set to YES to show as a progressively longer or shorter row (bar) of LEDs. As the cross-track distance or heading angle increases, more LEDs are lit (from center outward); as the distance or angle decreases, fewer LEDs are lit.

- Set to NO to show as a single LED. As the cross-track distance or heading angle increases, the single illuminated LED is farther from the center; as the distance or angle decreases, the LED is closer to the center.
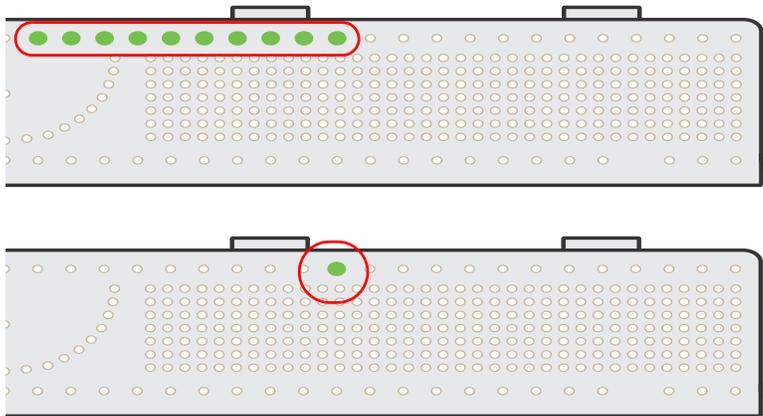
Displaying/Hiding the Virtual Lightbar

When displayed the virtual lightbar appears along the bottom edge of the header area on the map.
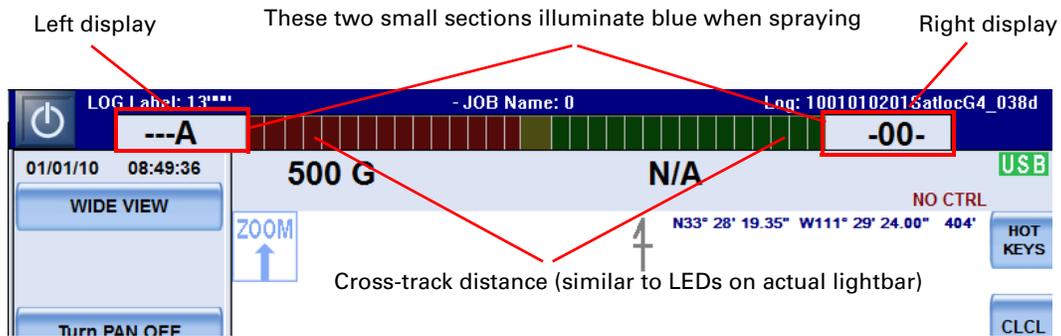
Figure 3-11: Virtual lightbar

Path to displaying/hiding the virtual lightbar (Lightbar Advanced Setup window - Figure 3-10, page 38):

Press **Virtual Lightbar** to switch On/Off.

Setting the Cross-Track Sensitivity

Cross-track is the perpendicular distance between you and your active (target) swath line. Cross-track sensitivity refers to the relationship between how far you are off your swath line and how this distance is represented by LEDs on the lightbar (or LED indicators on the virtual lightbar).

The default lightbar cross-track sensitivity is 3 ft per LED and is shown in the list box (at right) of the SuperTrac Lightbar Setup window. The first LED illuminates when the cross-track distance reaches 3 ft, the second when the distance reaches 6 ft, and so forth. There are 15 settings; one for each LED. You can change any of the values. To reset all the values to their defaults, press **Default**.

Path to setting cross-track sensitivity (SuperTrac Lightbar Setup window - Figure 3-9, page 36):

Press the number in the list box that corresponds to the LED number you want to change, the Enter Angle window appears. Enter a new value then press **Accept**. The new value appears next to the LED number.

To reset the cross-track distance settings to the factory defaults, press **Default** in the SuperTrac Lightbar Setup window.

Setting the Lightbar Edge Warning

Setting an edge warning enables you to receive a visual warning when you get within a certain distance or time of a polygon. The visual warning is a flashing 'U' in the center of lightbar and a flashing yellow center segment of virtual lightbar. The start trigger determines when the flashing starts; the end trigger determines when the flashing stops.

The start of the flashing lets you know you are getting close; the end of the flashing lets you know you are at the point where you need to take action to, for example, set an A|B line or turn on spray.

Set the edge warning to one of the following:

- OFF
- Time - warning appears when you are within a certain time of a polygon (based on your current speed and your distance from the polygon).
- Distance - warning appears when you are a certain distance from a polygon
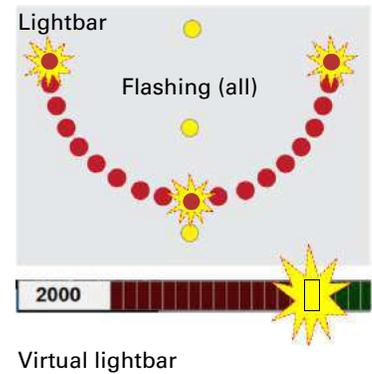
Notes: (i) The default edge warning setting is Off (the Start Trigger and End Trigger buttons are disabled); (ii) You can display the edge warning distance (Edge Distance) and edge warning time (Time To Edge) in the lightbar display fields.

Path to setting the lightbar edge warning (Edge Warning Setup window):

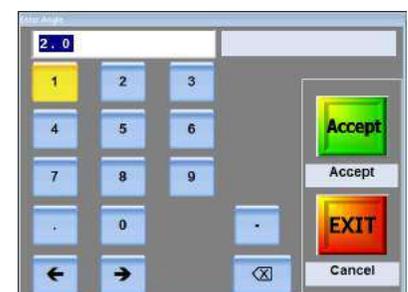**To set the lightbar edge warning**

1. Press **Edge Warning**. The Edge Warning Setup window appears.
2. Press **Edge Warning Type** (or use the drop-down) then select:
   - OFF
   - Time
   - Distance

   For Time and Distance, the **Start Trigger** and **End Trigger** buttons are enabled.
3. For each trigger, press the appropriate button, enter a value in the data entry window, then press **ENTER**

Note: The start trigger for both distance and time must be greater than the end trigger; if it isn't a message appears (inset at above right). You can reset the triggers (NO) or reset to the defaults (YES).

Desensitizing the LEDs

Desensitizing the LEDs relates to when you navigate to a mark or waypoint allowing you to navigate to/from a mark or waypoint with less sensitive LED distance warnings. When set to On, you then set a desensitize factor and the distance each lightbar LED represents is multiplied by this factor. For example, if the first LED is set to 3 ft and you enter "20" in the Desensitize Factor field, the first LED will not illuminate until you are within 60 ft (3 x 20) of a swath.

Note: As soon as you press ABC ADV (or the remote Swath Advance button) to enter the "A" point of a pattern, desensitizing is disabled.

Path to desensitizing factor (SuperTrac Lightbar Advanced Setup window):

Press **Non-Swath Desensitize**. The setting changes to On and the **Desensitize Factor** button appears (not shown). Press the button, the Enter Desense Factor window appears (inset at right). Enter a value then press **Accept.**
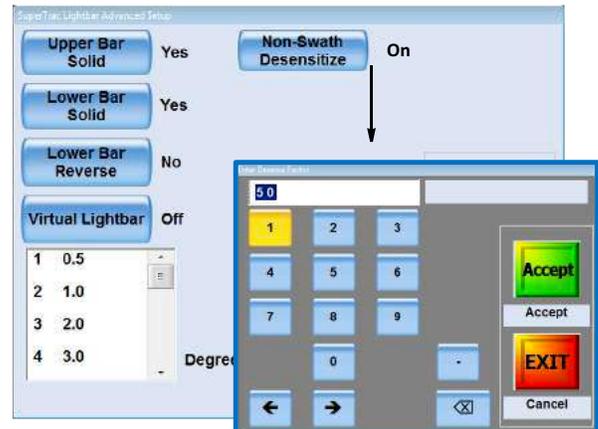
Chapter 4: Terminology and Basic Tasks

Aerial Guidance Terms and IntelliTrac
Automatic Guidance
Entering Basic Job Details (Quick Start)
Managing Data and Log Files

Before using IntelliTrac, make sure you have a clear understanding of the aerial guidance terms used within IntelliTrac and this user guide, and the automatic guidance features IntelliTrac provides. These are covered in the first two sections of this chapter. The rest of the chapter provides basic information on how to start using IntelliTrac to perform common tasks: setting up a job, logging data, and setting up your flow control system.

Note: The schematics and examples provided for some features are illustrative only; as such, while often not authentic examples of actual operations, they do indicate the key points of the feature.

Aerial Guidance Terms and IntelliTrac

IntelliTrac uses common aerial guidance terms on the map and in the various windows you can display. This section provides a brief summary of these common terms and how they are used in IntelliTrac. The remaining sections of this chapter and the chapters that follow provide detailed information on how these terms apply to using IntelliTrac and all its advanced features.

Routes and Waypoints

Route: A group of waypoints to which IntelliTrac can provide sequential guidance during the flying of the route. (You *can* have a route with only one waypoint but in practice a route with only one waypoint may as well be a 'mark' - see "Working with Marks (Return Points)" on page 94.) All waypoints are associated with (are part of) a route. When a route is active, IntelliTrac displays the route-waypoint ID for each waypoint in the route in the format R#-W# (Route #1 with its three waypoints is shown at right). You can add names to waypoints and they will also display when their route is active (not shown at right). See Chapter 6, "Routes, Waypoints and Marks."

Waypoint: A point on a route that represents the GPS coordinates of a significant location you want to record (that is, save). You can create/save waypoints while flying or in a dedicated routes/waypoints window. Waypoints may be part of a route or freestanding (not be part of a route). When you set a waypoint while flying, a message briefly appears on the screen indicating the waypoint number being saved ("**Waypoint 3 saved**." above). A saved waypoint becomes part of the currently active route (if a route is active), or Route 1 if no route is currently active. See Chapter 6, "Routes, Waypoints and Marks."
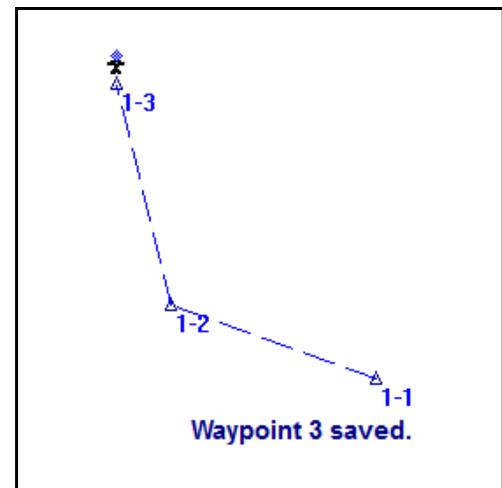
Polygons and Patterns

Polygon: Saved with 'boundary-defined' jobs, polygons are the shapes of a field (or other area, such as a forest plot) that you define. You can create two types of polygons in IntelliTrac—inclusion polygons (enclosed areas you spray, shown at right) and exclusion polygons (enclosed areas you do not spray). Inclusion and exclusion polygons visually show you the borders of your spray/no-spray areas in the map. Just as a route is made up of one or more waypoints, a polygon is made of multiple poly points that you set.

Pattern: ('Flying pattern', not to be confused with a polygon's fill pattern - solid or hatch). The order (the sequence) in which, on demand, IntelliTrac guides you to the swaths that make up the area to be sprayed. Guidance comprises heading and cross-track as well as a visual display of your aircraft (in its current position) and your target (start of swath). The swath array to which IntelliTrac applies the pattern's sequence is generated by either the auto-application of an array to a polygon (see "Auto-applying a Swath Array to a Polygon" on page 111) or the creation of an A|B line (and addition of a C point where applicable - see 'closed patterns' in "Patterns Overview" on page 64).
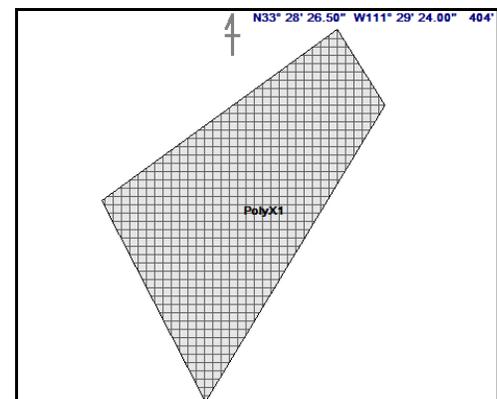
IntelliTrac includes several built-in patterns. For example, a back-to-back pattern (shown at right) where you fly consecutive swaths parallel to the A|B line. There are two types of patterns in IntelliTrac—an open pattern (requires only A and B points), where you can fly an unlimited ('open') number of swaths because the pattern is not dependent on the size of the field, and a closed pattern (requires A, B and C points), where the number of swaths you can fly is limited ('closed') because you define the width of the field. See Chapter 5, "Pattern Guidance."

Using a special feature (generally referred to as "Enter Poly Pat") you can have IntelliTrac optimally auto-apply the pattern of your choice to a polygon. And, within the feature, you can adjust the auto-application to suit prevailing conditions. See "Auto-applying a Swath Array to a Polygon" on page 111

5 swaths; A|B line is swath 1

Jobs and Logs

Job: An entity within IntelliTrac comprising spray and non-spray areas and spray patterns (in this sense an IntelliTrac job can be regarded as a template for a spraying operation). You can define spray/non-spray areas in various ways, and you can specify the spraying operation's pattern—the sequence in which guidance to swaths is provided (and flown/sprayed if followed).

While you can predefine spray and non-spray areas with polygons, and specify the spray pattern, you can instead, while flying (i) specify a pattern, (ii) set your pattern limits (with an A|B line—sometimes a C point also), (iii) fly/spray 'the 'job' and (iv) save the job. The predefined, 'polygon jobs' may be referred to as 'boundary-defined' jobs, the others as 'pattern-defined' jobs. You can save, delete, and add or subtract (areas and patterns) to or from a job. See Chapter 7, "Jobs and Polygons."

Log: A set of position-specific data that always includes exact positioning and rate of spray application, precise time and date record, flight speed, altitude, patterns flown, and GPS position quality. IntelliTrac logs this data while you are at or above a preset airspeed (default or user-set). You can have job-related information included with the standard logged information (see "Adding Job Information to the Log" on page 52).

Note: Logging (such as speed and spray rate) occurs during a spray operation associated with, or saved as a job (spray area and pattern being job data). Logged data however—being position-specific data—is not stored as part of the job. But you can bring jobs and logs together. See following section.
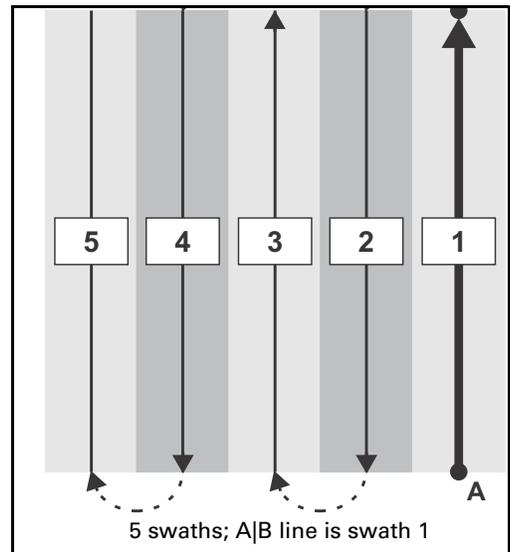
Bringing Jobs and Logs Together

If you want a complete display of a job, its pattern and the spray as applied, you need to bring the job and the related log together. That means you need to know the log number for the flying/spraying operation and load it (view it) with the job (which loads with its polygon) and the job's pattern.

Job in IntelliTrac

KEYPAD
SET
JOB
1 - 4

In the schematic at right (with IntelliTrac menu navigation shown): (**1**) is Job 14 with its polygon (1) loaded in IntelliTrac; (**2**) is Job 14 with its pattern (1) also loaded in IntelliTrac (left image) and MapStar (right image); (**3**) is Job 14, pattern #1 and log 02281753 loaded ("Select Log Files To View", etc.) in IntelliTrac (left) and MapStar (right).

KEYPAD
SET
PATTERN
1

Job and Pattern in IntelliTrac and MapStar

When you bring jobs and logs together in this way, it is with a new log active. Any further logging, and only further logging, will be part of the currently active log. The 'viewed' log data (**3** is an example) remains the content of the viewed log—see schematic next page.

KEYPAD
INF
LOG
SELECT
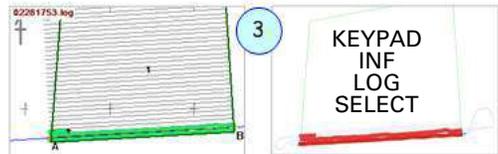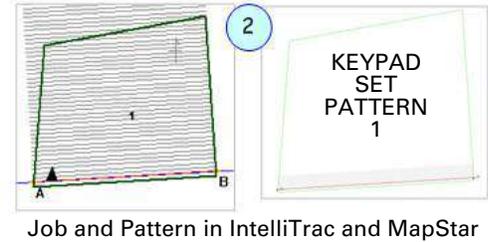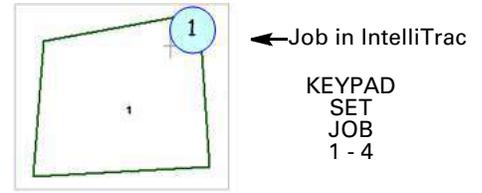
Log 02281753 added in IntelliTrac & MapStar

Thus, you cannot directly continue (add to) a log through menu options such as "KEYPAD > (RE)SET > LOG > n". But you can reload a log to active status using the return to mark feature with mode 4 active. See "Original or Current Log Modes (4-6)" on page 154.

Other Guidance Terms

Swath: A strip or row of a field that you fly. For example, in the pattern on page 44 there are five swaths.

A|B line: The initial guideline of a pattern. Each subsequent swath of the pattern is based on this initial guideline. You set points A and B and a line (A|B line) extends through both points. For example, in the pattern on page 44, the A|B line is swath 1.

Cross-track: The perpendicular distance between you and your target swath.

Heading angle: The 'heading error'; the angular difference between your current heading and the heading of the target swath line in the direction of travel (see schematic bottom of page 68). When the heading angle is zero, you are on or parallel to the target swath (the cross-track will also be zero if you are *on* the target swath).

Mark: A point to which you want to return, such as a last sprayed point, like M2 at right. When you create a mark, IntelliTrac saves (as exists): the swath number, pattern, A|B line, direction, job ID, acreage, swath width, and spray information.
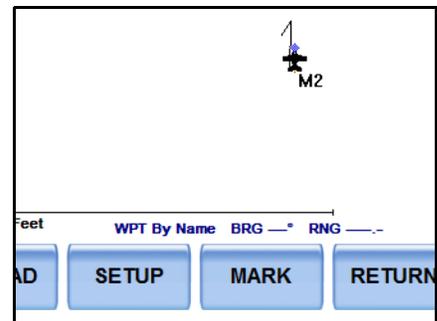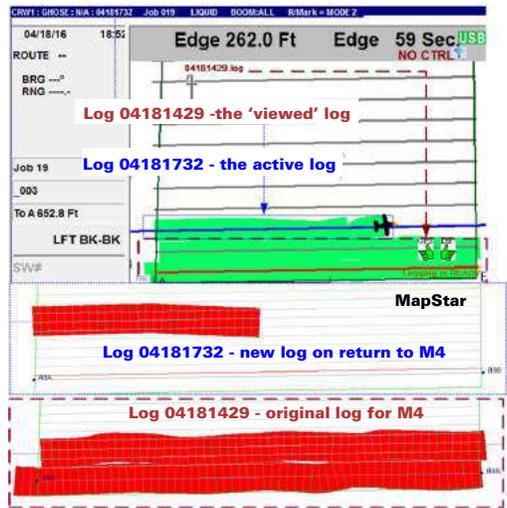
Automatic Guidance

Guidance in IntelliTrac refers to navigational cues that help you fly to a specific set of coordinates. These cues include bearing and range and a visual indicator—a direct line from you to the coordinates.

IntelliTrac can provide guidance to the following points:

- Mark
- Waypoint
- Polygon (to the center of)
- Pattern (to the point where you start/resume flying your pattern)

Table 4-1: Automatic guidance cues

Item	Cues	More Information
Mark	Dotted line guides you to mark. 	"Returning to a Mark" on page 95.
Waypoint	Dotted line guides you to the waypoint (as opposed to the dashed lines that connect waypoints). A dotted (radius) circle appears around the waypoint. If there are multiple waypoints in a route, when you reach the dotted circle of the first waypoint, a dotted line guides you to the next waypoint and a dotted (radius) circle appears around that waypoint. 	Next page at "Waypoint radius example" and "Recalling a Route-Based Waypoint" on page 89 and "Recalling a By-Name Waypoint" on page 90
Polygon/ Pattern	Dotted line guides you to the center of the polygon or the A point of an A|B line. Center of polygon Point A KEYPAD > SET > POLY > 1 KEYPAD > SET > PATTERN > 1 (Job # loaded) (Job # loaded)	"Press ENTER for swath guidance" on page 49, "Receiving Guidance to a Polygon" on page 109 and "Recalling/ Loading a Pattern" on page 72.

Waypoint radius example

In (**1a**) in the figure at right, guidance to waypoint 1 of route 1 (1-1) is almost complete. The circle around 1-1 represents the radius value you set in the "Select Waypoints Mode" window (**1b**) (SETUP x 3 > Waypoints - 1320 in the example). The radius value ("Radius Circle WPT") has been user-set for display in Field 3 of the data panel (**1c**). Note that the route and current waypoint, and bearing (BRG) and range (RNG) are displayed at the bottom of the map (**1d**).

- So, if you recall (set) a waypoint and you are outside the radius circle of that point, a dotted line appears around the point.

- When you reach the radius circle of that point:
  - "Advancing to next waypoint in route" appears for several seconds, (**2a**) and (**3a**).
  - The dotted radius circle appears around the next waypoint (1-2) and the screen message changes to "Guiding to Waypoint n", (**2b**).
  - Rt / Wpt in the data panel (if a user-set display option, (**2c**) and (**3c**), and RT / Wpt at the bottom of the map, (**1d**), indicate guidance to that waypoint.
  - You receive guidance (dotted line) to that waypoint.
  - BRG and RNG values at the bottom of the map update, (**3b**).

- When you approach the last waypoint in a route and reach the radius circle around that point:
  - The radius circle disappears.
  - "Arrived at end of route" appears for several seconds then disappears, (**4a**).
  - In the data panel, the Rt/Wpt display becomes route number and waypoint 1, and distance and radius become blank (----) (**4b**). BRG and RNG have no values, (**4c**), because there are no more waypoints to which to receive guidance.
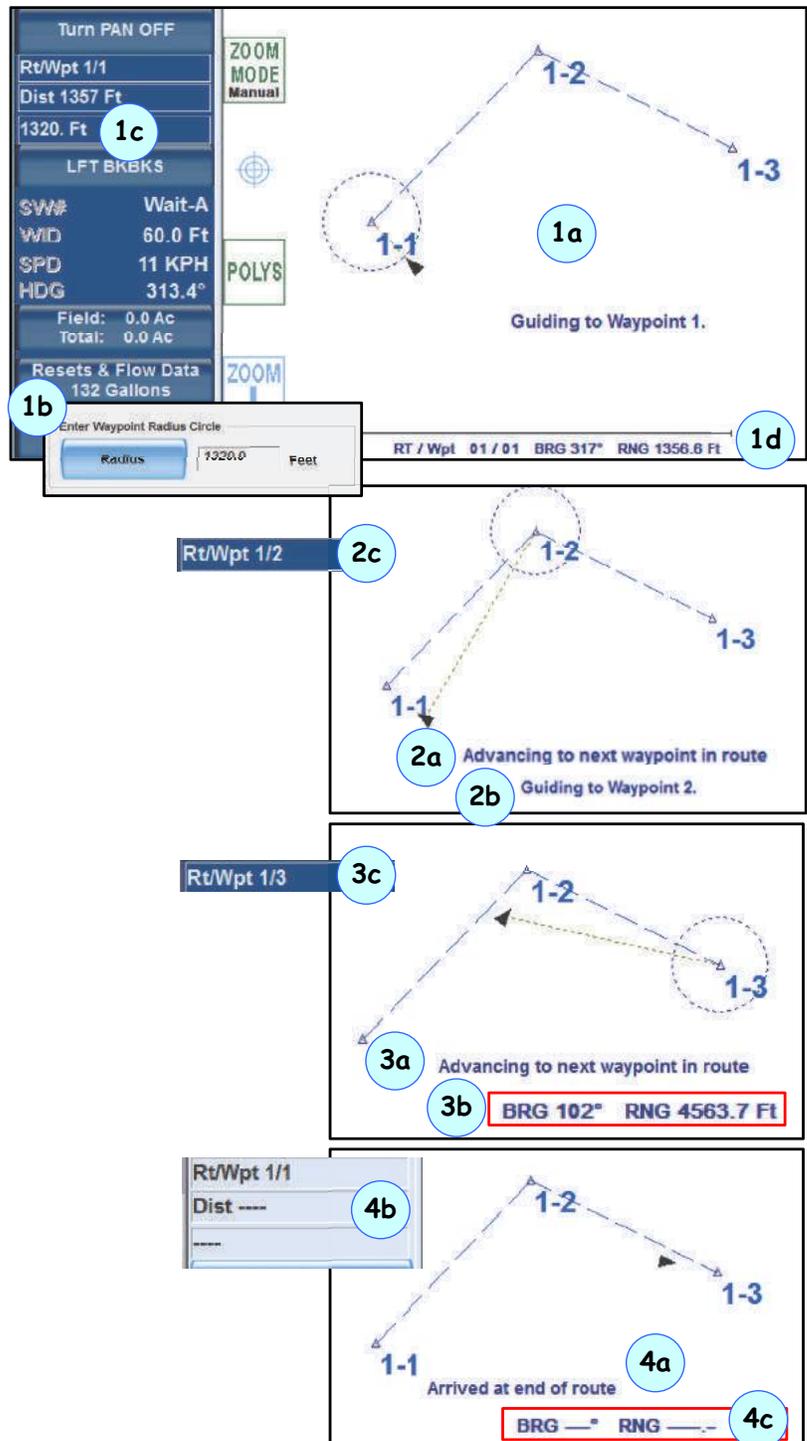
Press ENTER for swath guidance

When you first set guidance to a pattern (KEYPAD > SET > PATTERN 'n'), the guidance line is to the A point of the pattern's A|B line, irrespective of any previous spraying operations on this pattern. If you press **ENTER**, the guidance line disappears and the pattern (swath array) appears with (i) the A|B line in red (between the A and B points) and (ii) the last swath in blue (extending beyond the swath array - top image at right). If the pattern has never been sprayed, the A|B line will be blue and red (red within the pattern - bottom image at right).

Swath #3

A|B line and

swath 1
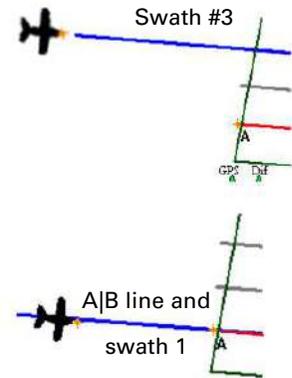
Entering Basic Job Details (Quick Start)

Note: If you exit IntelliTrac with a saved job active, that job is active when you restart IntelliTrac. If you exit with no job active (<No JOB Name>* is displayed in the header), Job 000 is displayed in the header when your restart IntelliTrac. See "Exiting IntelliTrac" on page 23.

After you complete basic setup in IntelliTrac (see "Starting IntelliTrac" on page 6) and each time you start IntelliTrac thereafter, the IntelliTrac Setup window appears in front of the map (see at right).

In addition to being the starting point to all other setup windows, the IntelliTrac Setup window enables you to enter the following basic job information (for more information on jobs, see "Working with Jobs" on page 98):

- Pattern, with or without auto-repeat (additional Pattern Setup button available for QUICKTRACK X pattern only—not shown at right)
- Swath width
- Direction (left/right) of subsequent swaths (left or right of the A|B line as set, that is, in the direction of A to B)
- Rotation and total (number of) fields (Multi Back-to-Back pattern only - see at right, bottom).

Tip! *If you installed a Flow controller and IntelliTrac and the controller stop communicating, "Controller NOT FOUND" appears below the RESET button. Press RESET to re-establish the connection.*

To enter basic job information, press the **SETUP** hotkey, the IntelliTrac Setup window appears.

Visible only when pattern is MULTI BACK-TO-BACK
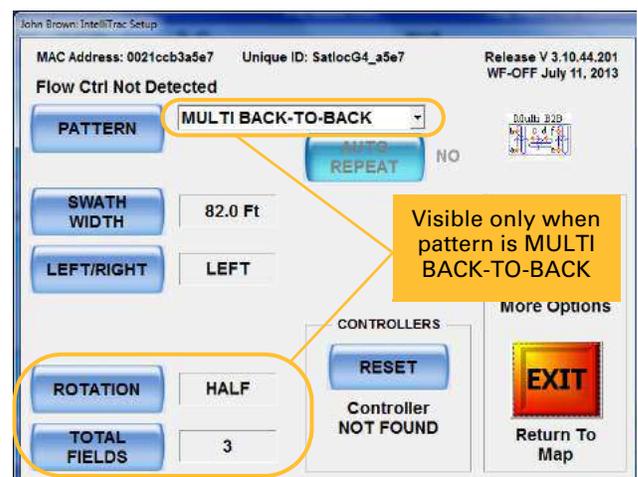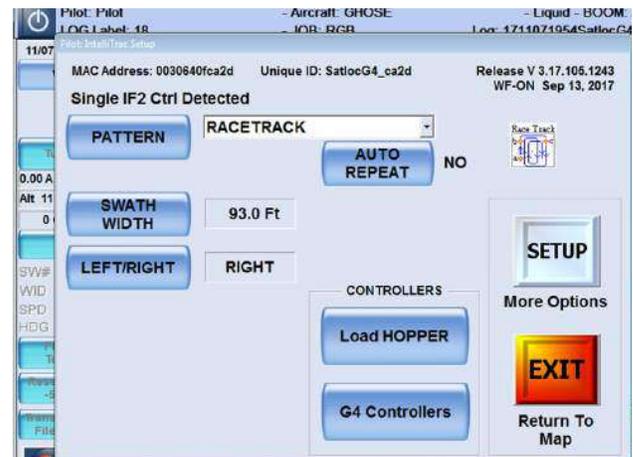
1. Press **PATTERN** (**1**) and select a pattern type from the drop-down. Additional buttons/fields appear when you select QUICKTRACK_X or MULTI BACK-TO-BACK (see bullets following).

   - If you select QUICKTRACK_X, (**2a**) the **PATTERN SETUP** button (**2b**) appears below the drop-down.

     Press PATTERN SETUP (**2b**). The Quicktrack X Settings window appears (**2c**).

     Press either **Total Swaths** or **Distance from A-B** (**2d**) then in the data entry window that appears enter a value and press **Accept**. For the value you do set IntelliTrac recalculates the other value. For example, if Total Swaths is 10 and you set it to 6 IntelliTrac reduces the Distance from A-B value accordingly.

   - If you select MULTI BACK-TO-BACK (**3a**), the ROTATION and TOTAL FIELDS buttons appear in the bottom left of the window (**3b**).

     Press **ROTATION** to toggle between HALF and FULL.

     Press **TOTAL FIELDS**, and in the data entry window that appears enter a value then press **Accept**.

2. Press **AUTO REPEAT** (**4**) (closed patterns only - see note below) to switch between YES and NO. When YES, IntelliTrac re-presents the current pattern's swath array (that is, presents a new closed set) when you select ADV after working the last swath of the current closed pattern. When NO, IntelliTrac reverts to a back-to-back pattern on completion of the current pattern.

   With auto-repeating patterns:

   - When you advance to the last swath in the closed array, if you have 'Current Swath Number' as one of your lightbar displays, you will see LAST displayed alternately (switching) with the last swath's number (L# or R#). 'LAST' is not displayed in any of the five screen display fields if they are set to display 'Current Swath Number': it's a lightbar only feature.

   - When you have worked the last swath in your closed array, the pattern's closed array is re-presented to the left or right of the finished array depending on the direction set for your pattern.

   > Note: You **can** auto-repeat (AUTO REPEAT enabled) only:
   >
   > RACETRACK; SQUEEZE; QUICK_RACETRACK and REVERSE_RACETRACK (that is all 'C' patterns except QUICKTRACK_X)
   >
   > You **cannot** auto-repeat (AUTO REPEAT disabled):
   >
   > BACK-TO-BACK; EXPAND; MULTI BACK-TO-BACK; BACK-TO-BACK SKIP and QUICKTRACK_X (the only 'C' pattern you cannot auto-repeat)
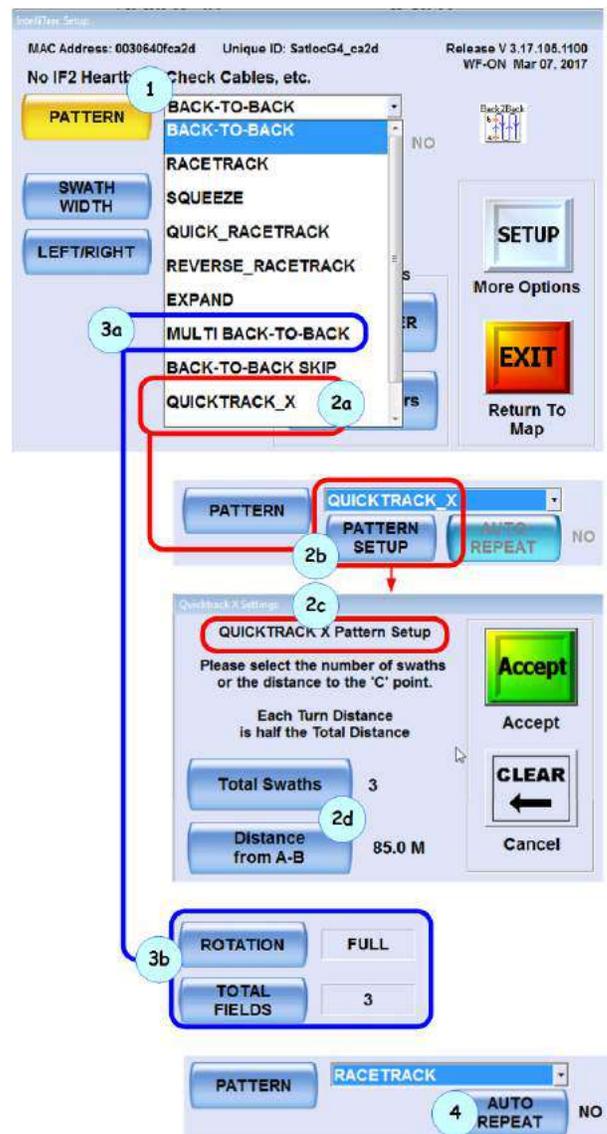
3. Press **SWATH WIDTH**, enter a swath width, then press **Accept**.

4. Press **LEFT/RIGHT** to toggle the direction. The key points about direction are:
    - For open patterns (A|B only), the direction dictates which side of the A|B line the swath array is presented once you've entered your B point. You can switch sides at any time.
    - For closed patterns (A, B and C), except reverse racetrack (see next point), the direction is the side of the A|B line you *intend* to set your C point and the side the swath array is presented if you do set C that side (if you set your C point to the other side, the left/right direction simply switches).
    - For the reverse racetrack closed pattern, in which the swath array is presented on both sides of the A|B line, the direction also dictates whether the A|B line is L001 or R001.
    - With patterns set to auto-repeat, the direction also dictates to which side of the A|B line (and the previous swath array) repeating (finite) swath arrays are presented.

Logging Data

With logging enabled (default setting) and your airspeed above a preset level, IntelliTrac automatically creates or continues 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 (but see note following) and this information is stored in the log file (and is included in multiple reports - particularly MapStar reports).

Note: You must enter the pilot name and aircraft number for HQ to be active.

To turn logging off/on, press:
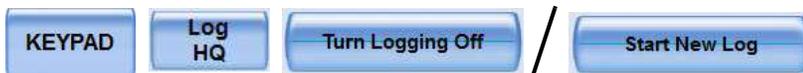
When you turn logging off/on, IntelliTrac displays a brief message.

| Appears after turning logging off | Appears after turning logging on |
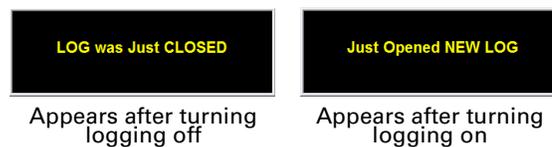
Note: The two messages above are also displayed briefly, in sequence, if New Log Per Job is set to Yes and you set (load/reload) an existing job. See "New Log Per Job - Yes" on page 53.

What Data is Logged?

Log data includes the following information:

- Exact positioning
- Rate of spray application
- Precise time and date record
- Flight speed, altitude, patterns flown
- GPS position quality

IntelliTrac logs this data when you are at or above a preset logging speed (default 45 mph). See "Adding Job Information to the Log" on the next page).

Note: IntelliTrac does not record any data while you are below the logging speed (KEYPAD > SETUP > SETUP > LOGGING SETUP)

Adding Job Information to the Log

In addition to the default information that IntelliTrac logs (see "What Data is Logged?" on the previous page) you add specific job information to a log via the Logging Setup window.

The LOG Label, Pilot, and Aircraft values appear in the header—see "Header" on page 11 for more information.

Path to the Logging Setup window
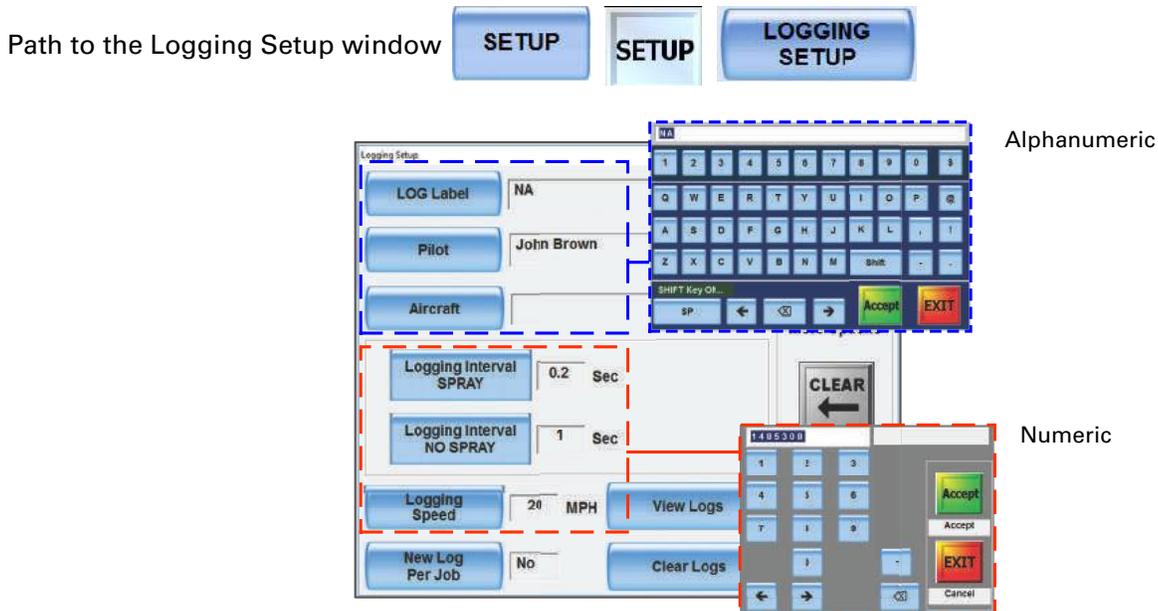
Figure 4-1: Logging Setup window

Table 4-2: Logging Setup window (* indicates data is logged)

Item	Description
Log Label*	Name associated with the log number (log label appears in header).
Pilot*	Pilot name (appears in header).
Aircraft*	Aircraft name (appears in header).
Logging Interval (spray/no spray)	How often you want IntelliTrac to log data to the specified logging device. You can have a different logging interval for spraying and non-spraying flying.
Logging Speed*	Minimum speed you must be traveling before IntelliTrac logs data (default is 45 mph).
New Log Per Job	Set to Yes to start a new log each time you load—'set'—an existing job. (In this sense, 'new' means 'newly loaded into the map'). Set to No to continue the current log even when an existing job is loaded. See also "New Log Per Job - Yes" on page 53 and "New Log Per Job - No" on page 54.
View Logs	View log files (see "Viewing Log Data" on page 56).
Clear Logs	Clear (delete) log files (see "Deleting Log Files - Quick Method" on page 61).

To add the job information (Log Label, Pilot, Aircraft, Logging Interval, Logging Speed) to a log, press the button, enter a value in the data entry window that appears, then press **Accept** or **ENTER** as applicable.

For entering these values IntelliTrac displays either an alphanumeric or a numeric data entry window. See "Entering Field Values" on page 18 for more information on data entry windows. Values in these fields also appear on various MapStar reports.

New Log Per Job - Yes

Note: Irrespective of the New Log Per Job setting (Yes or No), you can start a new log at any time with KEYPAD > LOG HQ> Start New Log.

Set to Yes, IntelliTrac closes the current log and starts a new one each time you:

- Set an existing job active (load an existing job).
- Restart IntelliTrac. On restart, if a saved job was active at shutdown, that job will be reloaded; if <No Job> was active at shutdown, (unsaved) Job 0 is loaded on restart. In either case, IntelliTrac treats this as a 'new' job and starts ('opens') a new log.

Figure 4-2 shows Job 75 (**1**) with log 1511 (**2** - MapStar image). After clearing Job 75 from the screen (KEYPAD > CLEAR > JOB > ENTER), the map status is <No Job> (**3**). With a map status of <No Job>, a new A|B line has been set, swaths have been sprayed and the work saved as Job (and Pattern) 76 (**4**). All logged data for Jobs 75 and 76 is in log 1511 (**5**)—because no (existing) job was set (loaded) between Job 75 and 76. The purple box (**6** - KEYPAD > INFO> JOB) shows Job 75 has a pattern and a polygon, Job 76 has only a pattern.
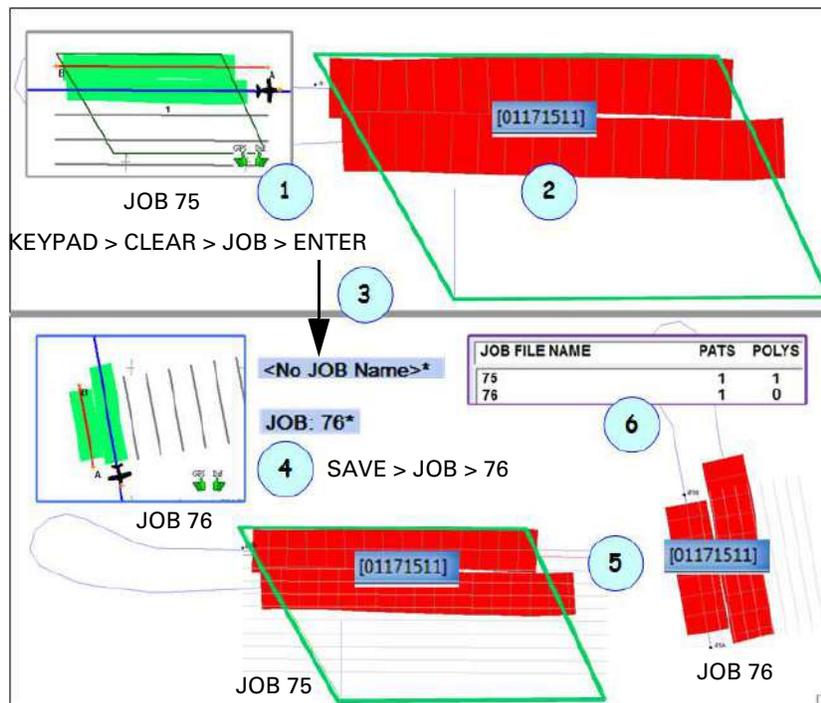
Figure 4-2: One Log, two Jobs: New Log Per Job - Yes

In the schematic at right (for Jobs 77 [top] and 78):

(**1**) Setting (loading/reloading) a new job (Job 77 and 78).

(**2**) Setting a new job automatically closes the active job (or 'No Job') and its log.

(**3**) New log opens for the newly loaded job.

(**4**) Log shows in KEYPAD > INFO > LOG.

(**5**) Partial spray job.

(**6**) Job and log in MapStar.

(**7**) Two jobs/logs (77/1850 and 78/1942) in MapStar.

Job 77

Job 78 (and 77)
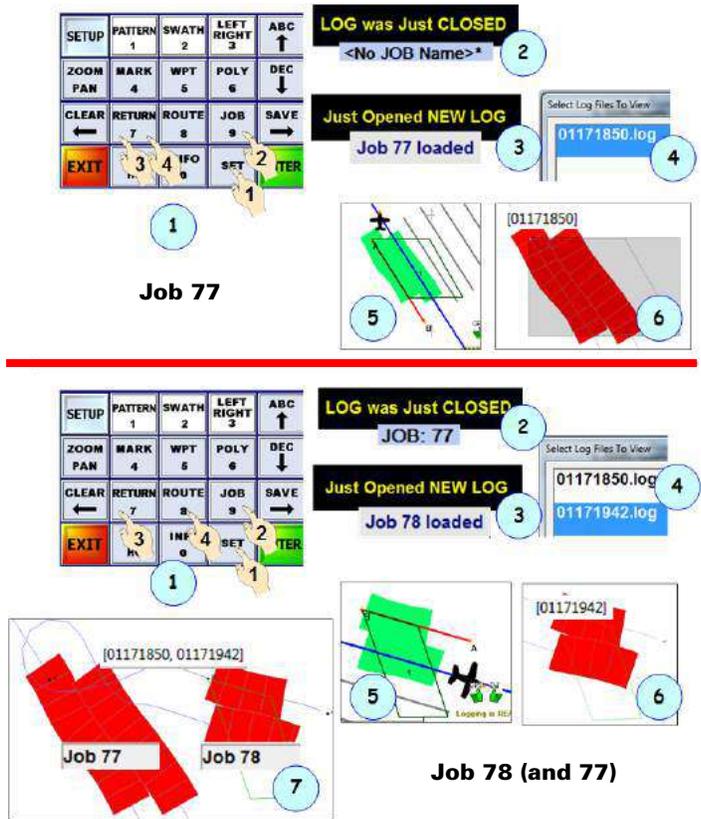
New Log Per Job - No

Set to No, IntelliTrac will keep a log open and add to it (at or above logging speed) when you:

- Set an existing job active (a boundary or a pattern-defined job).
- Create a new job (freeform).

Figure 4-3 shows how one log (1408) has remained open and been added to over three (partial) spray operations in three boundary-defined jobs.

Figure 4-3: One log, three jobs: New Log Per Job - No

Managing Data and Log Files

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

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

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

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 any areas.

You can open and view one log, multiple logs, or all open logs.

Path to viewing logs (Select Log Files To View window)
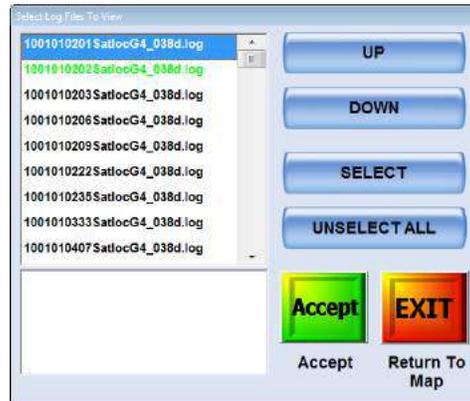
The active log filename appears green in the list. You cannot view the active log—if you select the current log IntelliTrac displays:

Cannot be selected...
Is Current LOG file

1. Select a log file in the upper list (press the file or press **UP** or **DOWN** to highlight the file) then press **SELECT**. The selected log file is added to the lower list. Repeat this step for each log file you want to view.
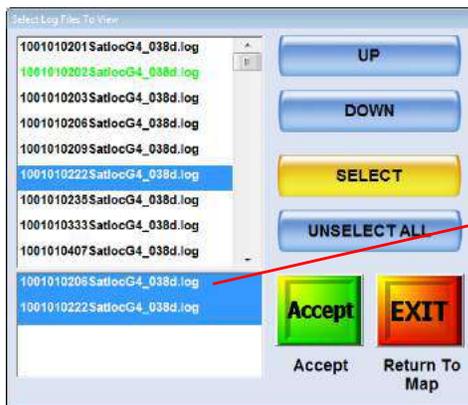
Selected files are added to the lower (view) list

2. Press **Accept**. A "Reading log" message appears then the message and the Select Log Files To View window close.

   • If you selected only one log file in step 2 that log is displayed in the map.

   • If you selected multiple log files in step 2 the log with the lowest number is displayed in the map—proceed to step 4 for how to cycle through multiple log files in the map.

Reading log
C:\Program Files\Hemisphere
S\Data\1001010222SatlocG4_038d

In either scenario the file name of the displayed log file appears in the upper left of the map.

3. Press the **POLYS** button repeatedly to cycle through multiple log files on the map.

When you reach the last log file (in order of alphabetical filename) ALL appears in place of the filename—this means all logs are visible on the map. For example, if you have three log files in different geographical areas and you sprayed in each area, you can zoom out to see all three sprayed areas when ALL appears.

To get back to the first log press **POLYS** when ALL is displayed.
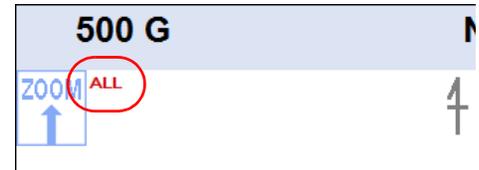
Transferring Data Files

Paths to the File Transfer window:

In the data panel [**Transfer Files**] [**Log HQ**] **or** [**SETUP**] **>** [**SETUP**] **>** [**Transfer Files**]

You can transfer logs, jobs, marks, waypoints, and pilot settings between the G4 hard drive and a USB drive and/or your Dropbox account (see "Transferring Files Between Hard Drive and Your Dropbox" on page 59 for more information).

You use the File Transfer window (Figure 4-4) to perform file transfers.

Toggles focus between Hard Drive and USB/Dropbox/WiFi list boxes so you can use the UP and DOWN buttons to select a file in the list with the focus

Toggles between Dropbox and WiFi folders

Hard drive file list

USB drive or Dropbox file list

>> << move files from/to in direction of arrows

Copies selected files to destination drive/folder

Displays the Delete/Clear Selected Data Files window where you delete files

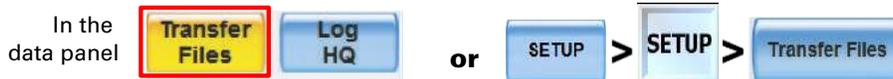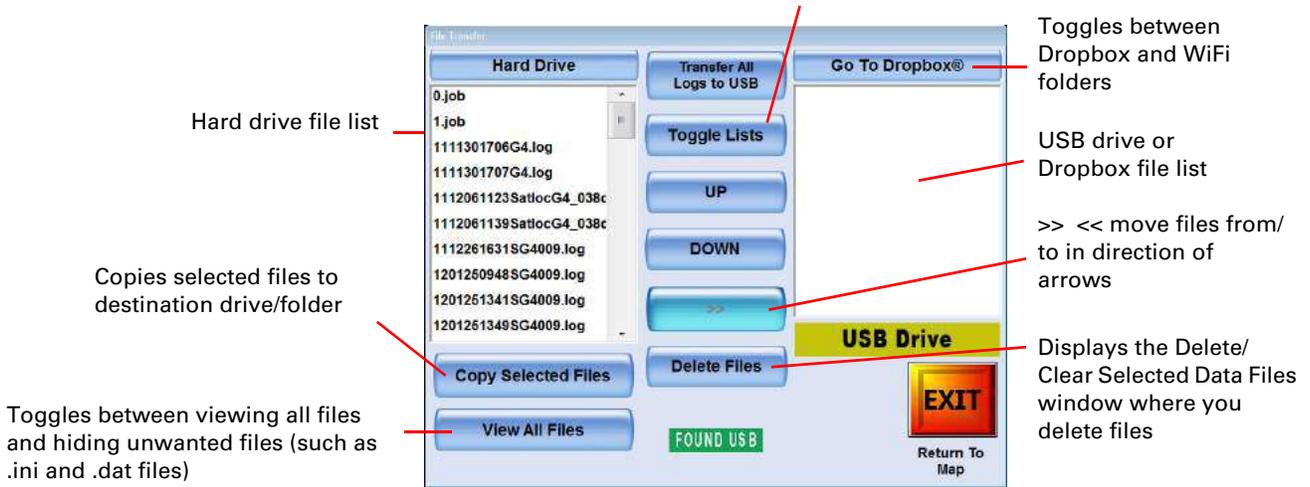Toggles between viewing all files and hiding unwanted files (such as .ini and .dat files)

Figure 4-4: File Transfer window

You can transfer specific files, all log files, or all files as described in the following sections.

### Transferring Specific Files between Hard Drive and USB Drive

To prepare files for transfer (you actually *copy* them, the original files stay where they are), you 'move' them from where they are—the source—to where you want the copy—the destination. If you don't want the originals after copying them, delete them (see "Deleting Files (All Types)" on page 61).

In the File Transfer window (**1** - see paths at top of page 58) select files from the **Hard Drive** area (**2a**) to transfer to the **USB Drive** area, or from the USB area (**2c**) (none shown) to transfer to the G4's hard drive. Press (**2b**) (showing **>>** or **<<** accordingly) to add your selection to the destination area.

(**3**) shows the result of preparing for a hard drive to USB transfer (**2b >>**). Selected/moved files show as red in the destination area.

If IntelliTrac detects a duplicate file in the destination drive, you'll see the NO/YES confirmation window (**4**). Select NO or YES accordingly. The replacing file shows in red in the destination area (**5** - as do all files selected for copying)—it is the red version that will be copied, overwriting the existing file in the destination.

To complete the process, press **Copy Selected Files** (**6**). A message confirms completion of the transfer/copy process (**7**).
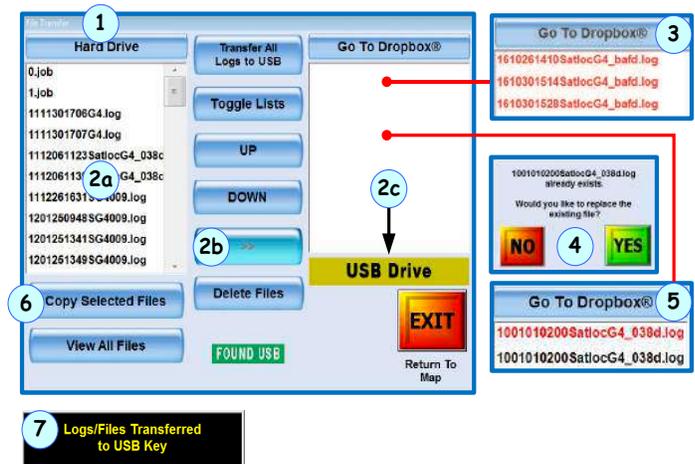
Transferring All Log Files Hard Drive to USB Drive

Instead of selecting log files in the hard drive area and moving them to the USB drive area one at a time, you can quickly select all (but only) the log files currently in the hard drive area and move them all to the USB drive area (you actually *copy* them, the original files stay where they are—see previous section for details). Before the log files are moved to the USB drive area, you have a secondary option to transfer only the current date's ('today's') logs.

In the File Transfer window (**1** - see paths at top of page 58), press **Transfer All Logs to USB** (**2**).

A NO/YES message window enables you to copy only today's log files (YES) or all the log files (NO) (**3**).

Depending on your response, the USB drive area is populated with today' s or all the logs on the hard drive (**4**).

(Note that the logs selected for 'mass' transfer are not red as they are when individually selected.)

Complete the process by pressing **Copy Selected Files** (**5**). A message confirms completion of the transfer/copy process (**6**).
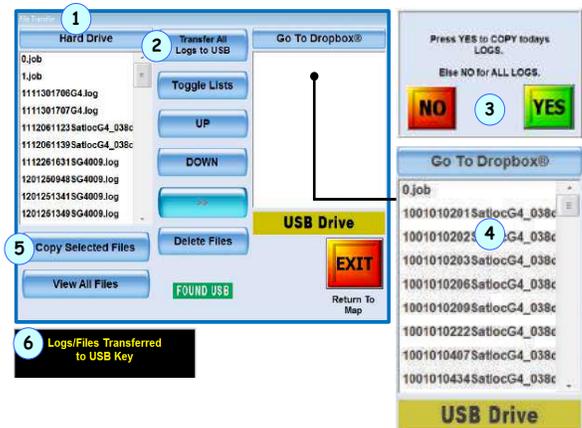
Transferring Files Between Hard Drive and Your Dropbox

Dropbox is a file hosting service that provides cloud storage and file synchronization, allowing you to store files "in the cloud" (in networked external storage) and access these files from multiple devices. There is already a Dropbox account assigned to each G4 (the account is G4-specific). For more information on using Dropbox visit www.dropbox.com.

The following procedure assumes you have set up your own Dropbox account.

To transfer files from the hard drive to your Dropbox account:

1. In the data panel press **Transfer Files**. The File Transfer window appears (see Figure 4-4 on page 58).

2. Press **Go To Dropbox**. The bottom of the right list displays Dropbox Folder (previously displayed USB Drive) indicating your Dropbox connection is established.
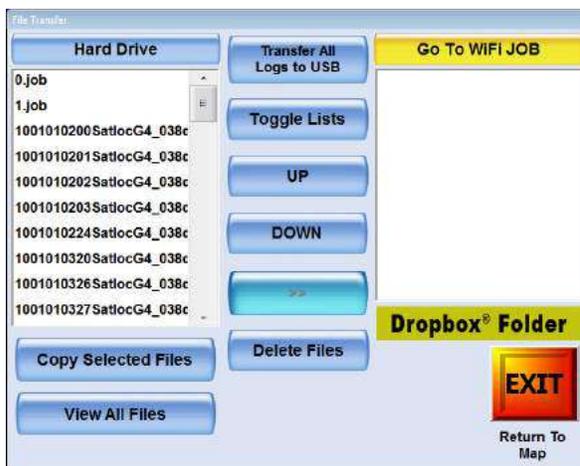
3. **To transfer files from the hard drive to your Dropbox account** select a file in the Hard Drive file list then press the arrow button.

    or

    To transfer files from your Dropbox account to the hard drive select a file in the Dropbox Folder list then press the arrow button.

The arrows on the button point in the direction of the file transfer

Repeat this step for each file you want to transfer. The files to be transferred appear in red in the list to which you are transferring files.

Files waiting to be transferred are red
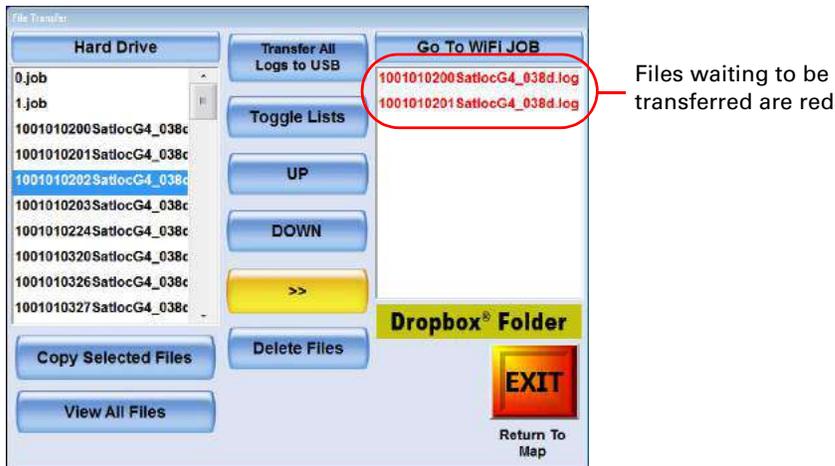
IntelliTrac checks for duplicate files on the destination drive. If a duplicate file is found the message below left appears. Press **YES** to replace the existing file; press **No** to cancel transferring that file.

If you press YES both the current and replacement file (same filenames) appear in the right list (below right).

Replacing a log file
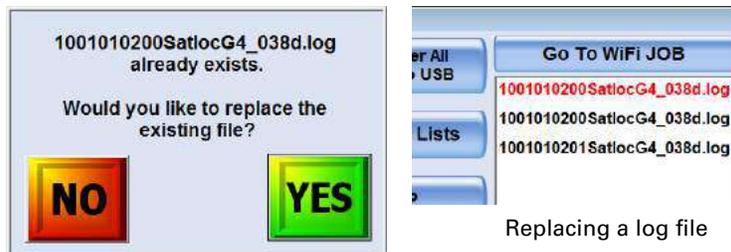
4. Press **Copy Selected Files**. The following message appears during the file transfer.

5. Press **EXIT** to close the window and return to the map.

Transferring Logs to Your Personal Computer (PC)

1. Transfer the logs to your USB drive (see "Transferring Data Files" on page 58).
2. Remove the USB drive from the G4.
3. Insert the USB drive into a USB port on your PC.
4. Use MapStar to view the log data (refer to your MapStar documentation for more information).

Deleting Files (All Types)

In addition to clearing marks (see "Clearing a Mark" on page 96) and clearing log files (see "Deleting Log Files - Quick Method" on page 61) you can delete all files of different file types from the G4 hard drive via one window.

The Delete/Clear Selected Data Files window enables you to delete all files of the following types:

- Job files
- Wi-Fi job files
- Waypoint files
- GIS files
- Prescription map files
- Data files

**Figure 4-5: Delete/Clear Selected Data Files**

To delete/clear all files of a specific type:

In the data panel press **Transfer Files**. The File Transfer window appears (**1**).

Press **Delete Files** (**2**). The Delete/Clear Selected Data Files window appears (**3** - Figure 4-5).

For the type of files you want to delete press the appropriate button. For example, to delete all GIS files press **Delete All GIS Files** (**4**). A confirmation window appears (GIS confirmation wording shown **5**). Other examples of the confirmation window wording are shown in (**5a**) and (**5b**).

Press **YES** (**6**). The window closes and all files are deleted.
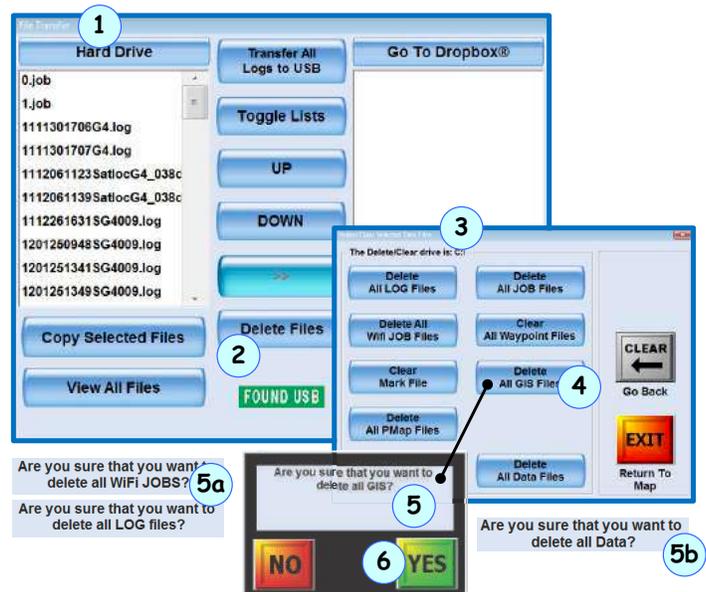
Deleting Log Files - Quick Method

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

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

You can clear (delete) selected logs or all logs (at once).

Note: Clearing logs as defined in this section means to delete the logs. This is different than removing a log from being displayed (to remove a log from the display without deleting the log press KEYPAD > CLEAR > JOB > ENTER).

Paths to the Log Clear window:

To delete specific logs:

In the Log Clear window, press **ABC** (up arrow - **1**), the Select Logs to Delete window appears (**2**). Note that the top log in the list (the oldest) is highlighted (**2a**) and the currently active log is in green (**2b**). With the log you want to delete highlighted, press **SELECT** (**2c**). The selected log appears in the lower list box in red (**2d**). Press **Accept** (**2e**) to complete the deletion and return to the map.

If you select the current log (the 'still logging' green one), you can still delete it if you press **YES** in the confirmation pop-up (**2f**).

To delete all logs:

Press **DEC** (down arrow - (**3**). Select **YES** in the confirmation pop-up (**4**).
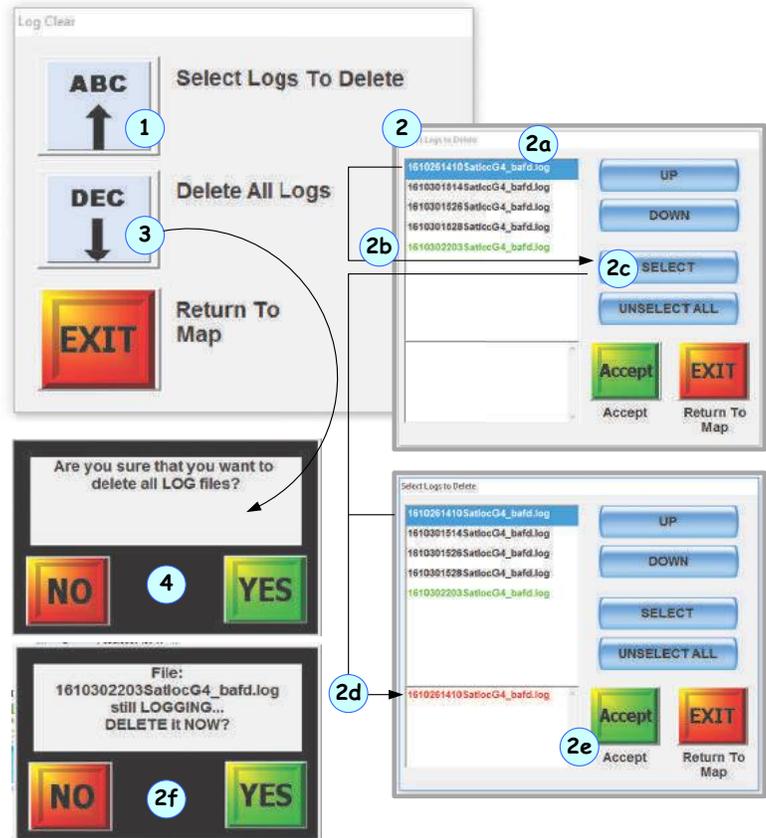
Chapter 5: Pattern Guidance

Patterns Overview
Available Patterns
Lightbar (Pattern-related) Basics
Flying a Pattern
Common Pattern Flying Tasks
Troubleshooting
Saving a Pattern
Recalling/Loading a Pattern
Flying Available Patterns

This chapter describes patterns—the pattern types and how you set them and fly them.
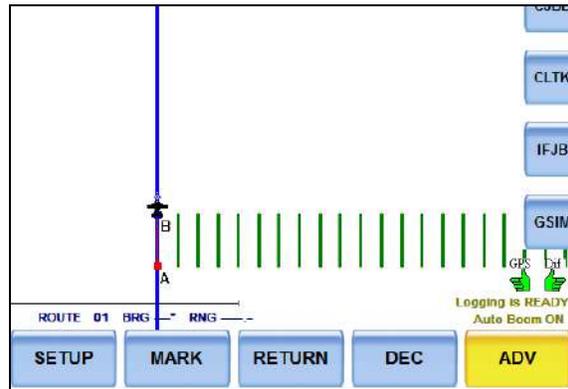
Patterns Overview

There are two forms of patterns in IntelliTrac:

- Open pattern—where you can fly an unlimited (open) number of swaths because the pattern is independent of the size of the field
- Closed pattern—where the number of swaths you can fly is limited (closed) because you define the width of the field

Both open and closed patterns require an initial guideline on which to base the pattern's GPS coordinates. In IntelliTrac, this initial guideline is called the A|B line (a straight line defined by two points A and B). Closed patterns need an additional defined point—point C.

After entering the number of points required for a pattern—two or three—IntelliTrac places, or 'presents', an array of swath guidelines on the screen with the A|B line in red (examples shown in Figure 5-1).

Table 5-1 describes how A|B lines are used in open and closed patterns.

Open pattern (Back-to-Back example)

Two points in pattern (A, B)

A|B line is red

Current swath is blue

Additional swath lines are green and are unlimited in number
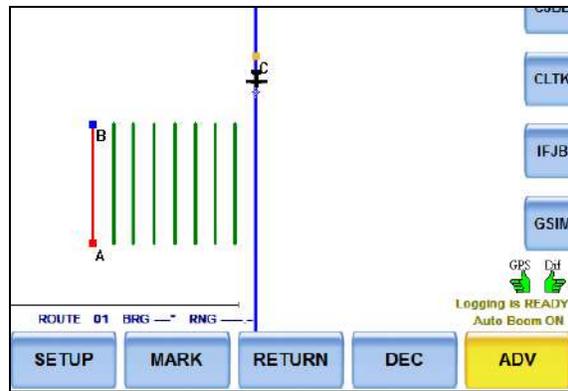
Closed pattern (Racetrack example)

Three points in pattern (A, B, C)

A|B line is red

Current swath is blue

Additional swath lines are green with the number of swath lines determined by the width of the pattern and the swath width

Figure 5-1: Pattern examples - open (back-to-back - A and B only),

Table 5-1: A|B lines in open and closed patterns

Pattern	A|B Line Use
Open	Point A 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
	IntelliTrac automatically prompts you to set your A and B points according to the pattern you select.
	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 creates a larger divergence the longer the distance.
Closed	Point A is the beginning of the line Point B is the end of the line You define the width of your field by setting a third point—C
	IntelliTrac automatically prompts you to set your A, B, and when applicable, C points according to the pattern you select.
	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, press KEYPAD > ENTER > POLY > PATTERN and IntelliTrac will place an A|B line on the optimal side of the active polygon. You can move the A|B line to other sides as preferred. For more details on this feature see "Rotating the A|B line around a polygon" on page 112.

After you set your job options (see Chapter 4, "Terminology and Basic Tasks") you are ready to begin flying with IntelliTrac.

Note: There are several tasks you can perform in more than one way. For example, to set point A (first point) in an A|B line, you can use any of the following methods:

- Remote switch provided in your G4 kit
- Set A button (Quick Key) in the Moving window area
- Flight control stick (swath advance wire set directly to the stick)

For the instructions in this manual where multiple methods are available the most common and practical method is described. For example, the following section ("Flying a Pattern") describes using the physical remote swath advance button (instead of the Set A button) when setting an A|B line—this is very similar to using the same functionality integrated into a cockpit stick.

Available Patterns

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. Although IntelliTrac includes ten pattern types, you can store as many as 99 flown patterns in a job.

Patterns Summary

This section describes each of the ten available pattern types.

Table 5-2:
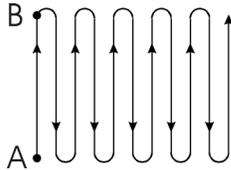
Back-to-Back (BK-BK)

Fly consecutive swaths parallel to the A|B line.
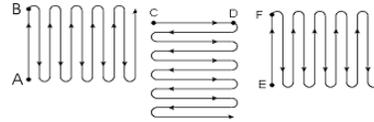
Multi Back-to-Back (MB2BK)

Fly multiple back-to-back patterns. Input 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.
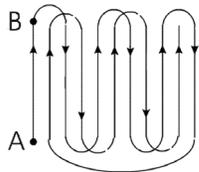
Back-to-Back Skip (BKBKS)

Fly the odd-numbered swaths first, then the even-numbered swaths.
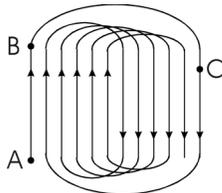
Racetrack (RCTRK)

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.

Table 5-2:

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.

Quicktrac X

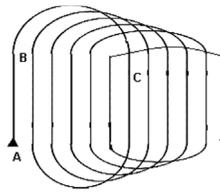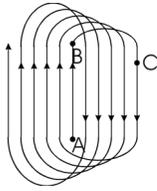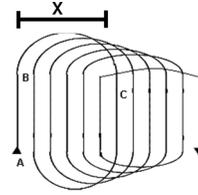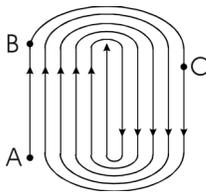Fly a pattern similar to the quick racetrack. You specify the 'C' point for quicktrac X patterns by the number of swaths or the distance from A|B to the furthermost swath in the pattern. After you have set the A and B points, fly the pattern like a quick racetrack: the second swath is in the middle of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

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.
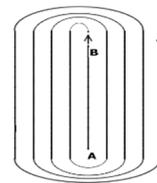
Expand (EXPND)

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.

Lightbar (Pattern-related) Basics

The top and bottom rows represent linear or angular distance (by number or position *) and direction (by color where red is left, green is right).

Top row LEDs: crosstrack distance (represented), direction (green = right) and actual distance (33 ft)

Bottom row LEDs: Heading (heading error - to the right [green] of target swath)

Direction of travel (DOT)

Target swath line
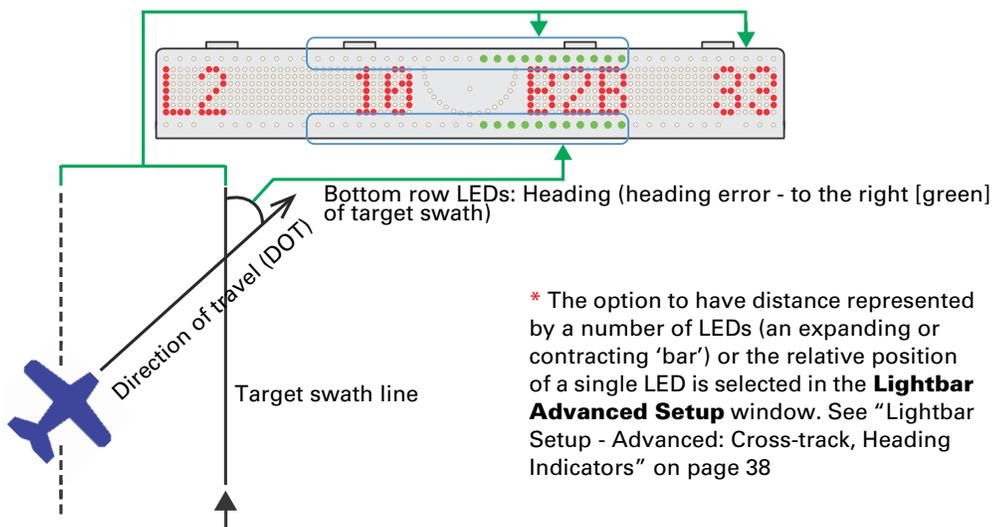
* The option to have distance represented by a number of LEDs (an expanding or contracting 'bar') or the relative position of a single LED is selected in the **Lightbar Advanced Setup** window. See "Lightbar Setup - Advanced: Cross-track, Heading Indicators" on page 38

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

Cross-track distance and direction LEDs

Cross-track distance

Swath number

Heading angle
(heading error)

Cross-track direction - R (right) or L (left)
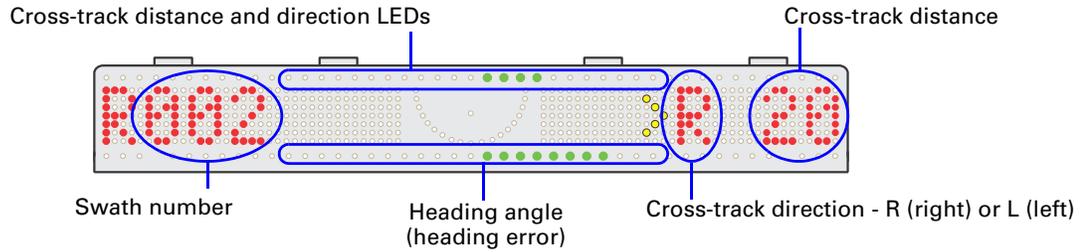
Each LED represents a linear or angular distance. For example:

- Crosstrack distance (top LED row)—the greater your perpendicular distance from the target swath, the more LEDs are lit; fewer LEDs are lit as you get closer. When you are at the target swath, no top LEDs are lit. The color of the LEDs indicates the direction of the target swath—the direction to steer to it.

- Heading angle (bottom LED row)—the greater the heading error (90° is maximum), the more LEDs are lit. When you are on or parallel to the target swath, no bottom LEDs are lit. The color of the bottom row LEDs indicates the direction of the heading error relative to the target swath in the direction of travel (DOT)—as shown below (read all LED displays horizontally—as on the lightbar). See Figure 5-2 below.

Figure 5-2: Graphical representation of amount/direction of heading error

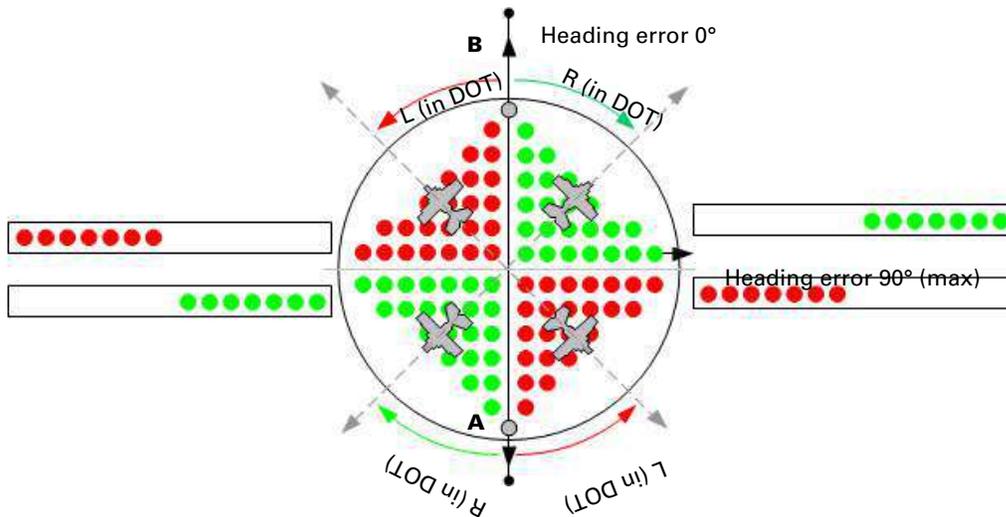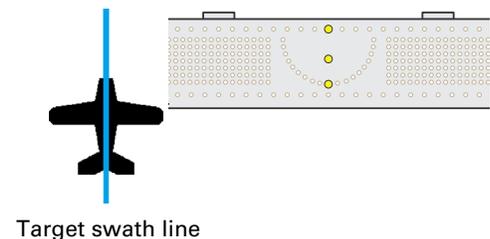When the center vertical row of lightbar LEDs is illuminated, you are on the target swath (zero crosstrack, zero heading error).

Continue to fly the rest of your swaths using lightbar guidance.

Target swath line

Flying a Pattern

This section steps you through setting up and continuing to fly a pattern. In the example:

- The pattern is open pattern left back-to-back (BACK-TO-BACK in the IntelliTrac Setup window, BK_BK in the data panel) although setting a C point for a closed pattern is mentioned.

- Where there are two ways to execute a particular command (for example 'Set A' or 'Advance one swath', that is, by using either the screen button or the remote swath advance button) the notes only mention the command—it's your choice how you execute the command.

- There are no instructions to turn spray on or off. Follow your own procedures on spraying/not spraying during setup and between swaths. Use swath advance accordingly.

- At step 4, the lightbar's left and right displays, after the setting of point B (or C), are **Current Swath Number** (L2 - 4a) and **Cross Track Distance** (63) respectively. That information displays in the example setup because they are the user-set options for those display fields. Once the pattern is set (B or C point entered), these two fields display whatever they have been user set to display—see

To fly a basic pattern:

1. Begin flying. "A" appears in the lightbar's left display (**1a**) prompting you to set point A. The top and middle center LEDs are illuminated (**1b**).

2. Fly to the beginning of your A|B line; set your A point. "B" (prompt) appears in the lightbar's left display field (**2a**) and the whole upper row of LEDs flash (**2b**). The middle center LEDs remain illuminated (steady, not flashing - **2c**).
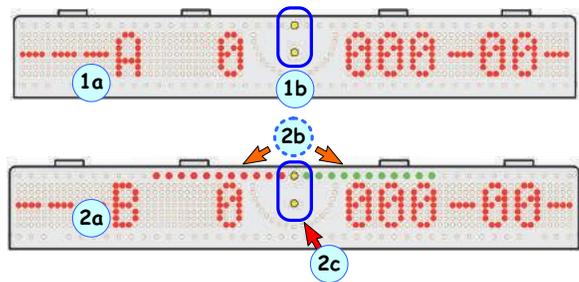
3. Fly to and set your B point. The swath number (L1 in this example) appears in the left display field (**3a** - your A|B line is always swath #001 and the direction set for the pattern—left in this example—determines if A|B is swath L1 or R1). If you turn spray on, the bottom corner blue LEDs illuminate (**3c**).
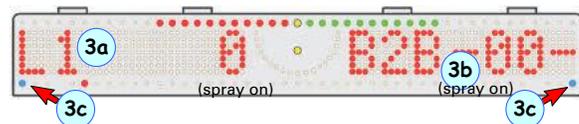
   If you are flying a closed pattern, after you set point B, "C" (prompt) appears in the lightbar's left display field (**3d**), with your current swath number, (**3e** —see note below). The whole bottom row of LEDs flash (**3f**).
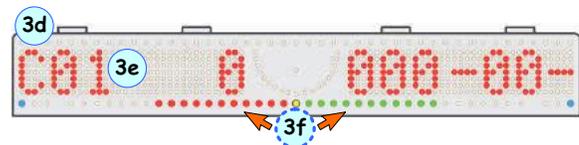
   Fly to and set your C point.

Note: As you fly toward your C point, the swath number increases indicating with each increase that the point you have reached is a multiple of your swath width. For example, when your left field first displays C12, you have flown eleven swath widths from your A|B line. Also, as you fly toward your C point, because you already have an A|B line, the crosstrack (right field, not shown) switches been L and R with a varying crosstrack value as you fly toward, over and beyond successive (but as yet unpresented) swath lines.

4. With your swath array presented (after A and B or A, B and C entered), when you are ready, advance to the next swath. In this example L2 appears in the left display field (**4a**). The (example) 10 (**4b**) and 65 (**4c**) indicate the heading error (angle to your swath) and crosstrack distance respectively.

5. Make the turn onto your next swath using the lightbar for guidance.

6. Turn the spray on as you enter the field.

   - For cross-track distance (top row of LEDs), the more you are off-track, the more LEDs are illuminated. When you are closer to your target, fewer LEDs are illuminated.

   - For heading angle, the farther you are off from the required heading angle needed to intercept the target swath, the more LEDs are illuminated. When you are closer to your required heading angle, fewer LEDs are illuminated

When the center vertical row of lightbar LEDs is illuminated, you are on the target swath.Continue to fly the rest of your swaths using lightbar guidance.

a. Press Swath Advance at beginning of turn

b. Use lightbar guidance to find swath #2

c. Turn on spray

d. Fly swath #2

e. Turn off spray
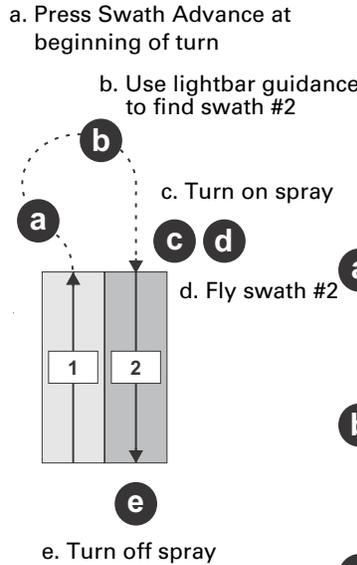
Lightbar guidance (a-c below):
(a) Top row of LEDs shows cross-track distance and direction to the target swath.

(b) Bottom row of LEDs shows the heading (angle of intercept) to the target swath.
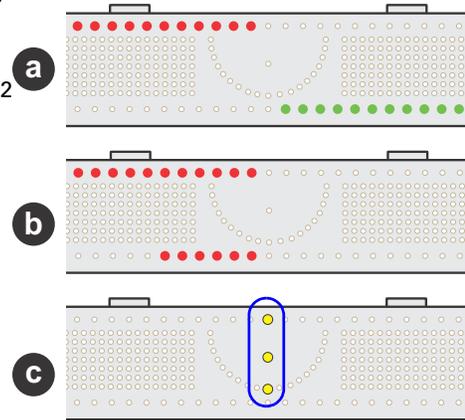
(c) Center LEDs illuminated indicate you are lined up on the swath.

Swath line
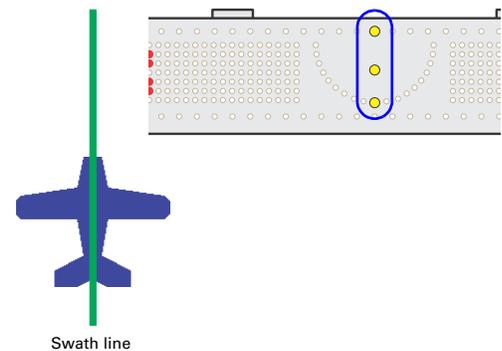
Common Pattern Flying Tasks

Table 5-3: Common pattern flying tasks

Task	Button presses (with notes)
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):	KEYPAD > LEFT RIGHT IntelliTrac transfers the swath guidance grid to the other side of the A|B line.
To change your remote swath advance button to a swath decrement button	KEYPAD > SET > DEC
To change it back to swath advance	KEYPAD > SET > ABC
Reset the current pattern	KEYPAD > CLEAR > PATTERN > ENTER "Waiting A" appears on the lightbar. Your current spray data remains visible in the map.
Recall a saved pattern	KEYPAD > SET > PATTERN> n > ENTER
Clear the aircraft swath mark display	KEYPAD > CLEAR > SWATH
Clear the active prescription map from the map	KEYPAD > INFO > INFO > Prescription Map > '**<** **Clear current PMap >'** > Accept > YES

Troubleshooting

When flying a pattern, the lightbar may display a 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 lightbar. In its place you see flashing LEDs and/or additional error information in the left and right display screen.

Table 5-4: Troubleshooting lightbar warnings

Lightbar 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 Top two 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.
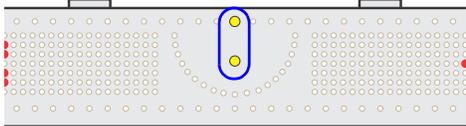
Saving a Pattern

A pattern in IntelliTrac is the sequence of swaths you intend to fly—and to receive guidance to—when spraying your field. You can save a pattern to the current job, where the pattern is either associated with (or 'applied to') a specific polygon within the job or just associated with the job itself (not to a specific polygon within the job but a pattern generated from the A and B* points you set [*and C point if applicable]). The pattern is then available (but not automatically loaded) each time you load the job. You can to store up to 99 patterns per job.

To save a pattern to the current job, press (where 'n' is the pattern number).

Example: To save a pattern as **#2** (for the current job), press

If you save and close a partially flown pattern, IntelliTrac remembers the last active swath. This is significant when recalling a pattern—see next section.

Recalling/Loading a Pattern

If you save a pattern or patterns to a job, the next time you load (set) that job, you can recall (load/set) any of the job's saved patterns (you can recall only patterns saved to the active job).
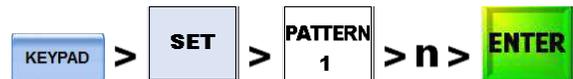
Because you can save multiple patterns to a job, you must recall the specific pattern you want to fly. You give a pattern its number when saving it, and the same pattern numbers can be used for multiple jobs. Thus, for example, both Job #1 and Job #2 could have patterns 1, 2, and 3. Because you can recall only patterns for the active job, you cannot accidentally recall the incorrect pattern #2.

As a further example, you have a job with the following polygons and patterns: Polygon #1 that you fly using two patterns (Pattern #1, Pattern #2) and Polygon #2 that you fly using one pattern (Pattern #3). To recall the second pattern for the first polygon, you recall Pattern #2; to recall the only pattern of the second polygon, you recall Pattern #3.

In (**1**), a job (which has a polygon and a pattern) is loaded. The polygon is loaded with the job.

When you recall (set) a pattern (**2**), IntelliTrac initially provides vector guidance from your current position to the A point (not displayed) of your pattern's A|B line, enabling you to fly directly back to the start of the pattern.

IntelliTrac also provides the option to display the actual swath array of the pattern you've laded by pressing the **ENTER** button that appears on screen (the on-screen instruction is "**Press ENTER for swath guidance**").

> *Note: In 2, the dotted circle indicates the currently set mark/pattern radius (500 ft in the example). If you don't press **ENTER** for swath guidance before you reach the radius, IntelliTrac automatically activates the pattern (see 3 following).*

If you exercise the swath guidance option by pressing **ENTER** before reaching the mark/pattern radius, the guidance line between you and the A point disappears and a screen message advises "**Pattern activated**" (**3**). In the resulting swath array, the last selected swath is the selected swath in the recalled pattern. (It is still the A|B line in 3, there has been no swath advance in this example pattern). Note that the **ENTER** button has been replace by the normal **DEC/ADV** swath selection buttons.

1 Job set (with polygon)

2 Pattern set

Press ENTER for swath guidance

WPT By Name - BRG 165°   RNG 786.4 Ft

SETUP | MARK MODE 2 | RETURN | ENTER

3 ENTER pressed

Pattern activated

A

WPT By Name   BRG —°   RNG —.—

SETUP | MARK MODE 2 | RETURN | DEC | ADV
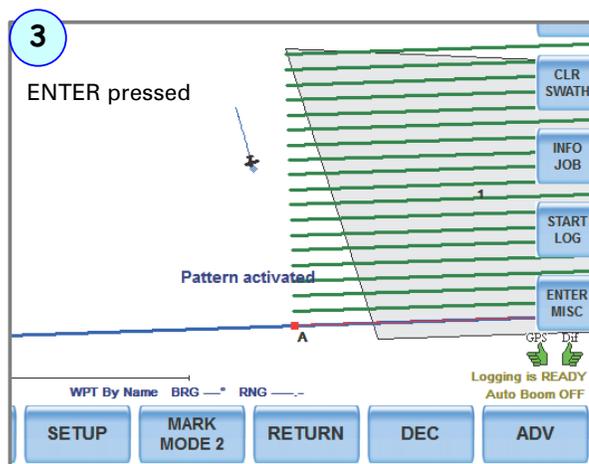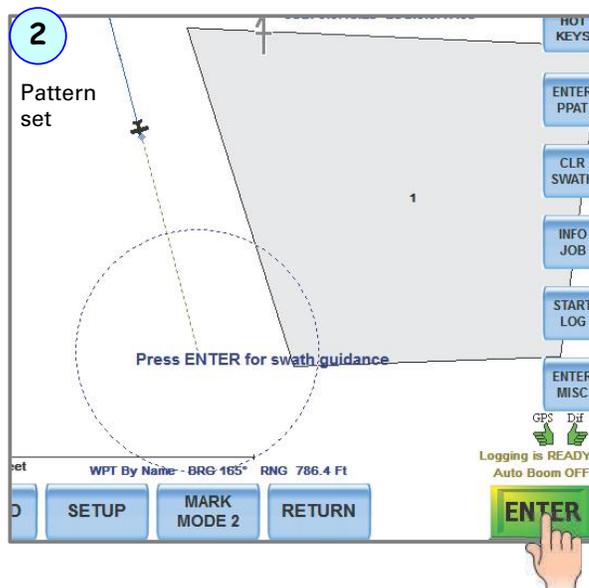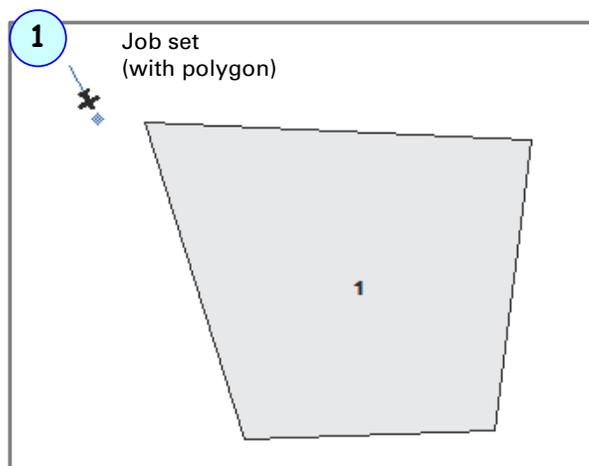
Flying Available Patterns

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

Back-to-Back Pattern (BK-BK)

In a back-to-back pattern you fly consecutive swaths parallel to the A|B line. You can fly this pattern either right-to-left (LFT BK-BK) or left-to-right (RGT BK-BK).

1. Set the pattern type as BACK-TO-BACK and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49).
2. Set your A|B line (see "Flying a Pattern" on page 69).
3. Fly swaths consecutively: 1, 2, 3, and so on.
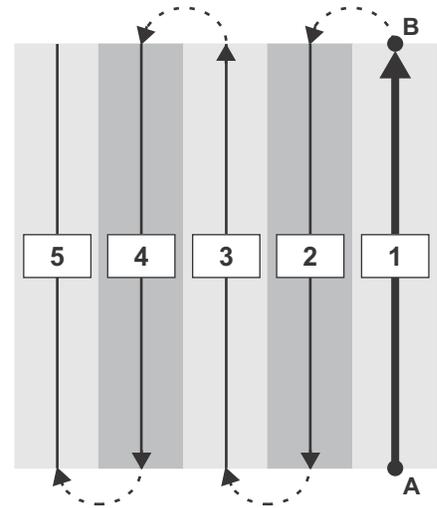
Multi Back-to-Back Pattern (MB2BK)

In this pattern you 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* ***bold/italic*** *(colored) texts show the field/ swath combinations that change their place in the sequence between full rotate and half rotate 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*
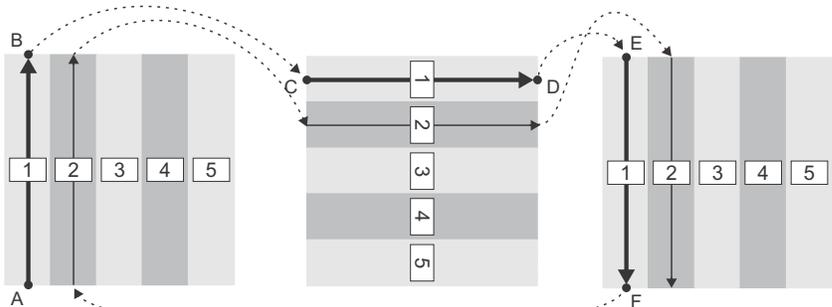
Back-to-Back half rotate pattern

Field 1-Swath 1, Field 2-Swath 1,

Field 3-Swath 1; *Field 3-Swath 2*,

Field 2-Swath 2, **Field 1-Swath 2**l

IntelliTrac automatically rotates your A|B line for each field and provides guidance accordingly.
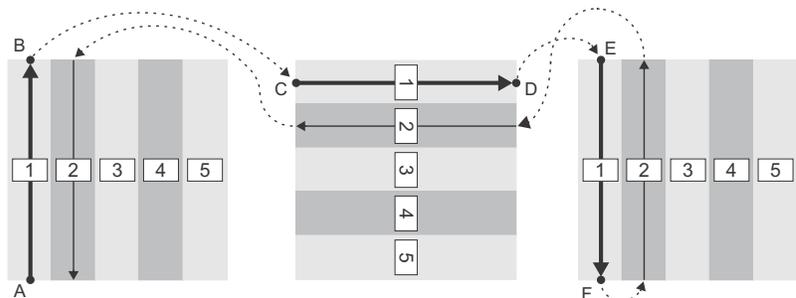
To fly a multi back-to-back pattern:

1. Set the pattern type as MULTI BACK-TO-BACK and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49). Make sure you set the rotation (full or half) and the number of fields you want to fly (total fields).

   • 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, then fly the second swath of each field in the opposite direction beginning with field 3 (such as 123, 321).

2. Set your A|B line for each consecutive field (see "Flying a Pattern" on page 69).

3. Follow the guidance prompts to complete flying your pattern.

Back-to-Back Skip Pattern (BKBKS)

In this pattern you fly the odd-numbered swaths first, then the even numbered swaths in a back-to-back pattern. You can fly this pattern either right-to-left (LFT BKBKS) or left-to-right (RGT BKBKS).

To fly a back-to-back skip pattern:

1. Set the pattern type as BACK-TO-BACK SKIP and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49).
2. Set your A|B line (see "Flying a Pattern" on page 69).
3. Fly your odd numbered swaths first.
4. To switch from odd to even numbered swaths, press **KEYPAD > ENTER**.
5. Fly your even numbered swaths.

Racetrack Pattern (RCTRK)

This pattern consists of a series of loops (or racetracks) resulting 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 the pattern type as RACETRACK and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49).
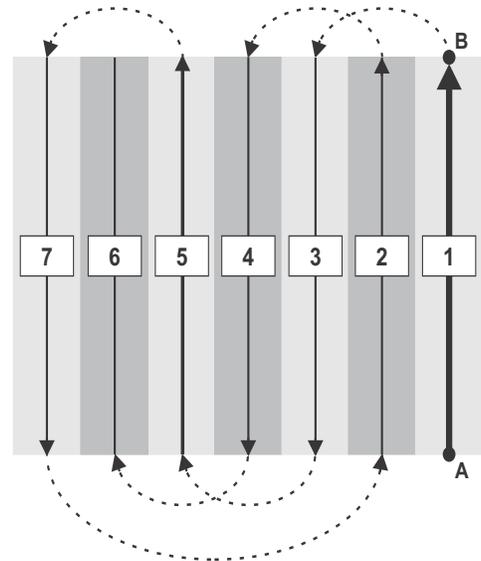2. Set your A|B line (see "Flying a Pattern" on page 69).
3. Fly swaths in the following order: 1, 8, 2, 5, 3, 6, 4, 7.
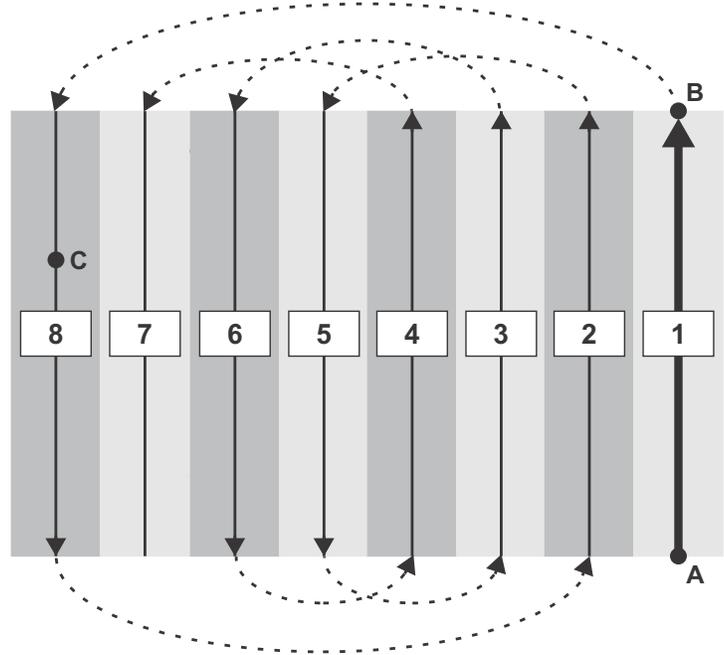
Quick Racetrack Pattern (QKRTK)

This pattern is 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 the pattern type as QUICK_RACETRACK and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49).
2. Set your A, B, and C points (see "Flying a Pattern" on page 69).
3. Fly swaths in the following sequence: 1, 5, 2, 6, 3, 7, 4, 8.
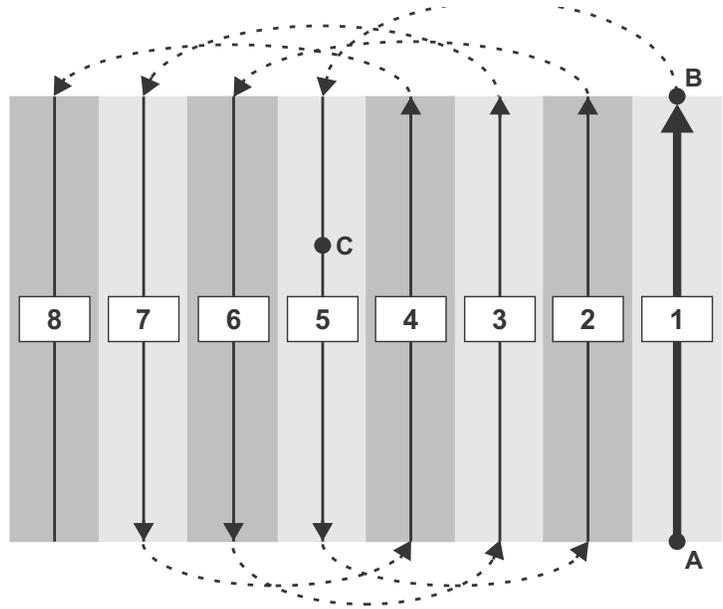
Reverse Racetrack Pattern (RVTRK)

This pattern is similar to the racetrack pattern. It is called a "reverse" racetrack because you are flying one direction, but swaths are incrementing in the opposite direction. In the example below you 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 the pattern type as REVERSE_RACETRACK and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49).
2. Set your A|B line (see "Flying a Pattern" on page 69).
3. For a 9-swath *right reverse racetrack* pattern, spray the swaths in the following sequence: 1, 6, 2, 7, 3, 8, 4, 9, 5.
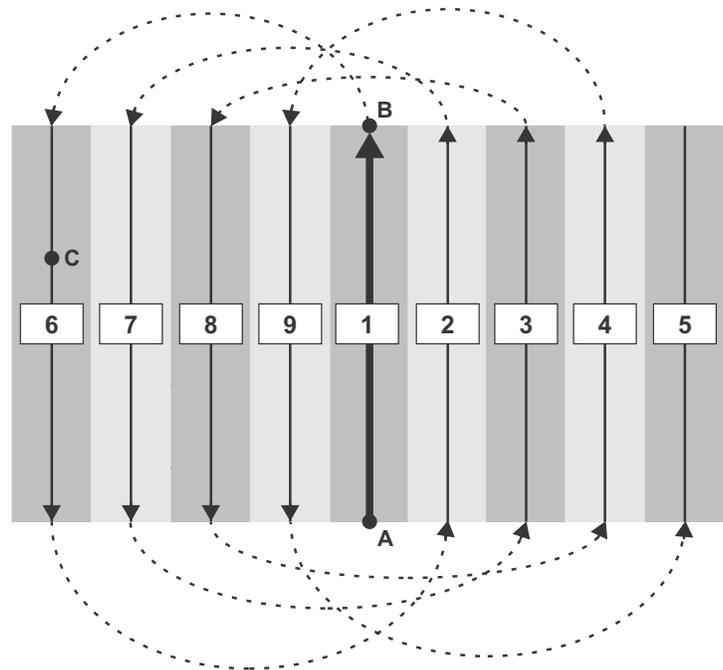
Quicktrac X Pattern (QKRTX)

This pattern is 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 you set the A|B points, you fly the pattern like a quick racetrack. You can fly this pattern either right-to-left (LFT QKRTX) or left-to-right (RGT QKRTX).

To fly a quicktrac X pattern:

1. Set the pattern type as QUICKTRACK_X and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49).

   Make sure you enter a value for Total Swaths or Distance from A-B.

2. Set your A, B, and C points (see "Flying a Pattern" on page 69).

3. Fly 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: The quicktrack X pattern is predefined as auto-repeating (you cannot set AUTO REPEAT - YES in the IntelliTrac [first] Setup window—there is no need to). In the example, after flying the initial defined number of swaths, the pattern repeats on swaths 6-10 (so 6, 9, 7, 10, 8), then 11-15 and so on. The first swath in each set (1, 6 and 11 in the example) is shown in red.

   • 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

By number of swaths
(x = 5 swaths)

By distance
(x = 500 ft)
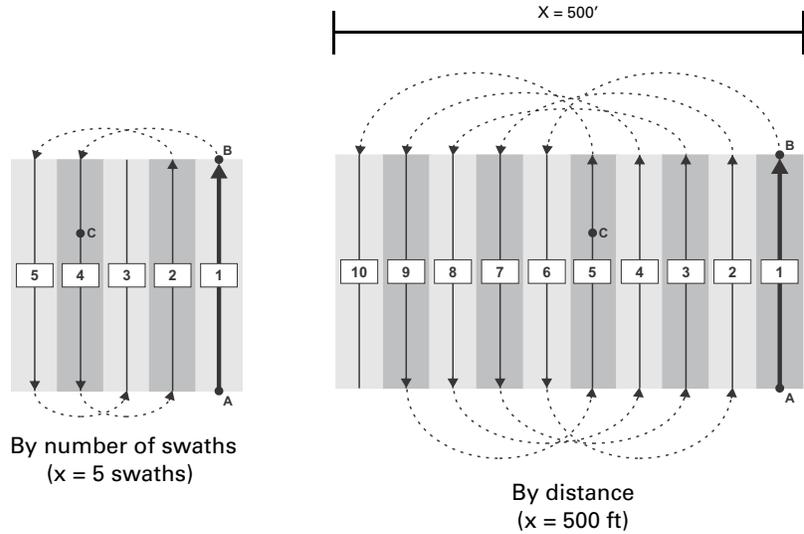
Figure 5-3: Quicktrac X patterns

LFT QKRTX
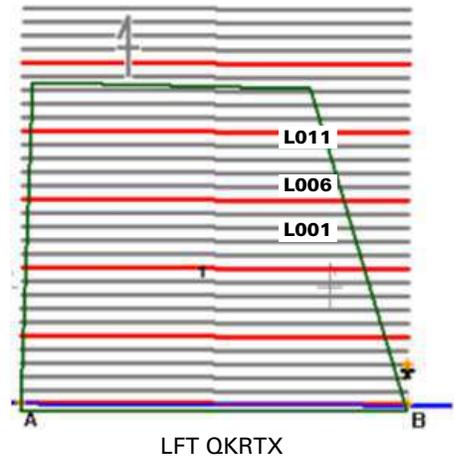
Squeeze Pattern (SQUEZ)

This pattern consists of loops of decreasing size, from the outside of the field to the middle of the field. You define the outside edges of your field (the largest loop) by your A|B|C points. You 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 the pattern type as SQUEEZE and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49).
2. Set your A|B line (see "Flying a Pattern" on page 69).
3. For an 8-swath field, spray the swaths in the following sequence:

    1, 8, 2, 7, 3, 6, 4, 5
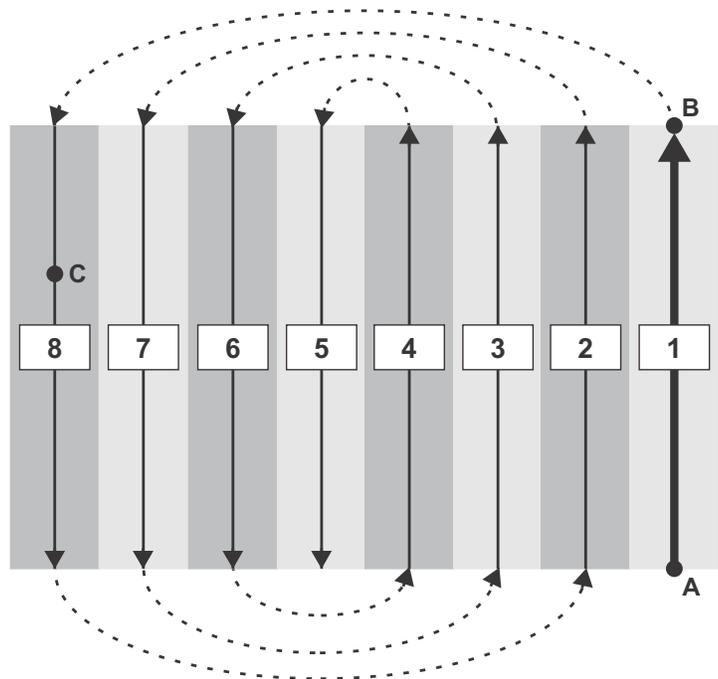
Expand Pattern (EXPND)

This pattern begins with the A|B line in the center of the field and successive swaths increase outward. Expand patterns are useful for fields with a visible center line or with a long, irregular shape. You can fly this pattern either right-to-left (LFT EXPND) or left-to-right (RGT EXPND).

To fly an expand pattern:

1. Set the pattern type as EXPAND and set other basic job details (see "Entering Basic Job Details (Quick Start)" on page 49).
2. Set your A|B line (see "Flying a Pattern" on page 69).
3. For a 9-swath *Expand Left* pattern, spray the swaths in the following sequence:

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

Chapter 6: Routes, Waypoints and Marks

Working with Routes and Waypoints
Working with Marks (Return Points)

This chapter explains the fundamentals of waypoints and their relationship to routes and all aspects of route and waypoint management. It also explains marks, the data that marks store and all aspects of mark management.

Working with Routes and Waypoints

A waypoint represents the GPS coordinates (lat/lon) of a significant location, such as a point along a route at which you will change course. A route comprises one or more waypoints although waypoints ca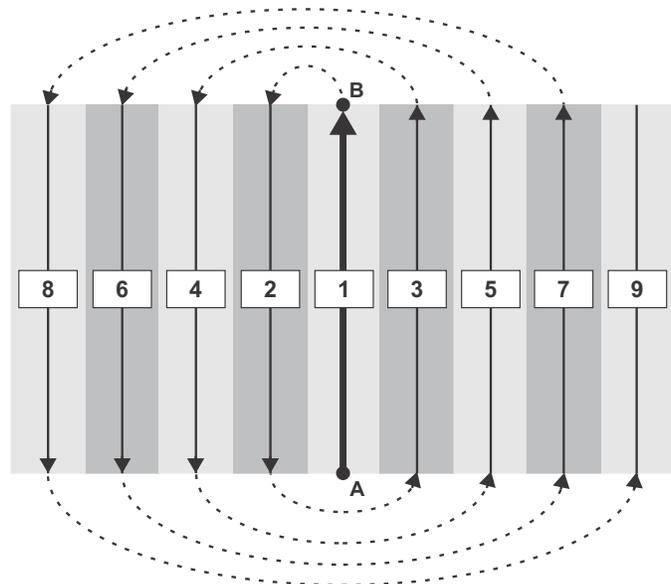n be 'freestanding' that is, not associated with a route. See "Aerial Guidance Terms and IntelliTrac" on page 44 for an overview of waypoints, routes, and other aerial terms.

You can create waypoints that are associated with (are part of) a route—'route-based' or 'by-route' waypoints, or waypoints that are freestanding—non-route-based or 'by-name' waypoints. You can create only route-based waypoints while flying; you create freestanding, 'by-name', waypoints through the menus. Route-based waypoints appear onscreen with their route-waypoint ID, for example, 1-2 identifying route 1/waypoint 2.

You can set up routes/waypoints wholly within IntelliTrac (there are three methods—all described later) or within an external program like MapStar and import them into IntelliTrac. But note the warning following.

⚠ WARNING: *If you import the waypoints data file (WAYPTS.DAT) created in MapStar, it will overwrite all the route/waypoint data you created wholly within IntelliTrac—your route/waypoint data will be only that which you have imported.*

Preview of Waypoint Guidance

This section provides a preview of how IntelliTrac provides guidance to preset, route-based waypoints, switching guidance to the next waypoint in a route as each waypoint is approached. All aspects of waypoint and route creation, maintenance and use are covered in detail in appropriate sections that follow.

In the figures:

In ①, 'SET* > ROUTE > 1' has loaded route 1. "Route 1 activated" appears on screen and all route 1 waypoints (4) are presented. '**1-1 NAME1**' is 'Route #-Waypoint # WAYPOINT NAME'. No waypoints are set (for guidance) yet.

In ②, 'SET > WPT > 1' has loaded waypoint 1 for guidance. "Guiding to Waypoint 1" appears on screen. The dotted circle around waypoint 1 is the (default or user-set) radius; guidance to waypoint 2 will start at this radius.

*Note *: 'Setting' a waypoint means recalling (or 'loading') it (to receive guidance to it). In this user guide, you establish and save waypoints—one way or another—by 'creating' them.*
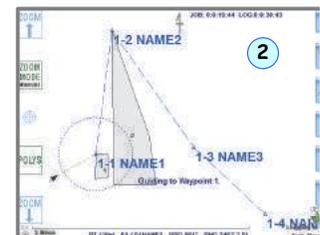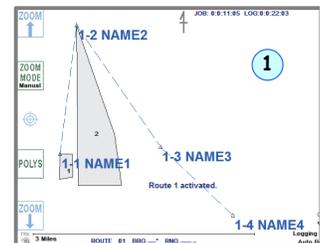
In ③, at waypoint 1's radius, "Advancing to next waypoint in route" has appeared on screen. Radius circle and guidance have switched to waypoint 2.

In ④, at waypoint 2's radius, "Advancing to next waypoint in route" has appeared on screen. Radius circle and guidance have switched to waypoint 3

In ⑤ the aircraft is en route to waypoint 3 and in ⑥, at waypoint 3's radius, the radius circle and guidance line switch to the last waypoint in route 1 (1-4). The radius circle and the guidance line disappear when the radius is reached.

Note: If you are inside the radius of a waypoint when you set it, guidance is not provided. Instead, guidance is provided to the first waypoint in the route that you are not already inside the radius of.

Key Points about Routes and Waypoints

- A route comprises one or more waypoints, being the 'parent' entity for waypoints. Routes have no independent function, they just keep a set of waypoints together.
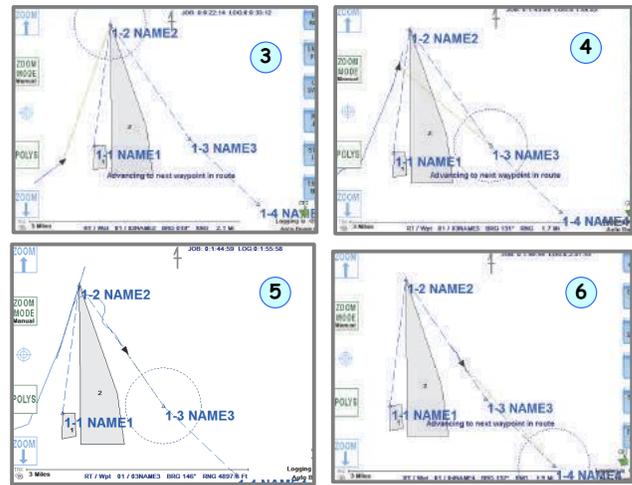
- You cannot load a route's waypoints without first loading the waypoint's route.

- If it does not already exist, Route 1 will 'self-create', that is, if, while flying, you use the keypad to create a waypoint with no route active, Route 1 is created and the waypoint is the first waypoint associated with it (usually waypoint #1, but it can be any number). That also means that if you create a waypoint while flying with no route active, the waypoint becomes a Route 1 waypoint even if Route 1 does already exist.

- If you have an active route, you do not have to clear that route to make a different route active. If you set another route it replaces the current route to become the new active one. The figure at right shows the key presses to make a route active (to 'set' a route) and how the route number shows at the bottom of the map (ROUTE 01, ROUTE 02 in the examples) or is blank (top left image). (Bearing and range relate to waypoints so are blank in the images.)

- If you save a waypoint with a number already used in the active route (or Route 1 if no route is active) the original waypoint data will be overwritten. For example, if you have Route 2 active and save a waypoint as waypoint 3, when Route 2 already has a waypoint 3, the original waypoint 3 data will be overwritten. Waypoints with the same number in non-active routes (except Route 1) are not affected.
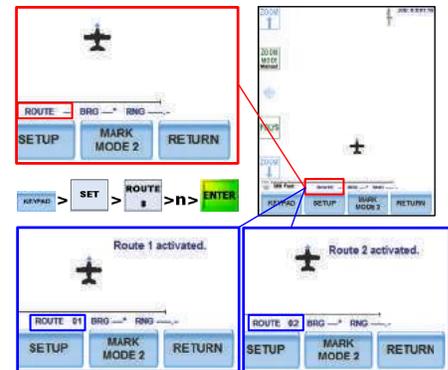
⚠ WARNING: *IntelliTrac does not warn you if you are about to overwrite a waypoint (by saving a new waypoint with an existing waypoint's number).*

- If you shut down IntelliTrac with a route active, that route will be active when you restart IntelliTrac.

- When you recall/load a route, all its waypoints are shown on screen but there is no guidance until you set a waypoint after loading its route (see Route 2, waypoints 1-4 at right).
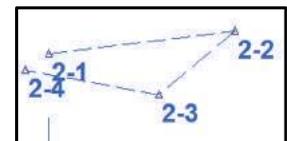
- You can cycle through your saved routes by pressing KEYPAD > ROUTE/8 (see routes 1-3 being cycled at right).
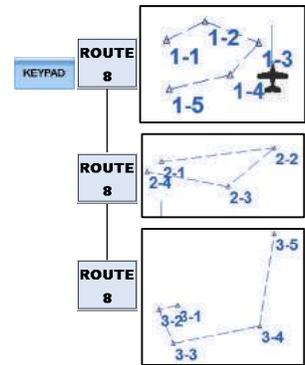
- If you add an optional name to the waypoint (only in the 'Way-points By Route' or 'Waypoints By Name' windows - 20 character limit), this name appears alongside the route/waypoint ID on the screen (see 1 at right - 'NE WTR TWR').

- When you recall/set a waypoint (route active), IntelliTrac provides a guidance line between the waypoint and your current position (see 2 at right). Fly on the guidance line toward the waypoint.

- When flying the waypoints of a route sequentially, you can set the distance (the 'radius') from the waypoint you are approaching at which guidance switches ('advances') to the next waypoint (see 3 at right: top image shows waypoint 2-1's radius; bottom image, 2-2's radius).
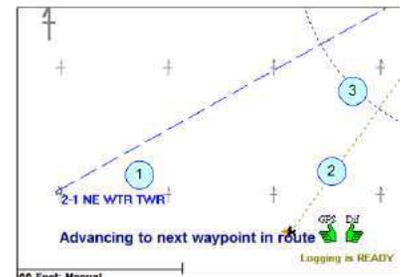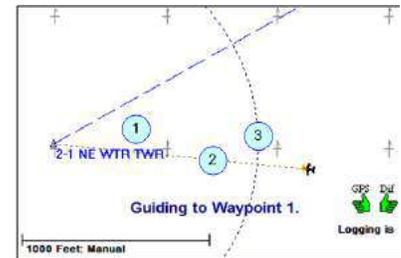
- If your current position is (already) inside the radius of the waypoint you recall, IntelliTrac provides guidance to the next waypoint. If (for illustrative purposes) your current position is already within the radius of two consecutive, overlapping waypoints, IntelliTrac ignores both waypoints and provides guidance to the next waypoint (the radius of which you are not already within). In (1) (at right) the aircraft is approaching waypoint 1's radius. In (2), waypoint 1 was recalled but the aircraft was already within its radius. In (3), waypoint 3 was recalled but the aircraft was within the radii of waypoints 3 and 4. Guidance is to waypoint 5.
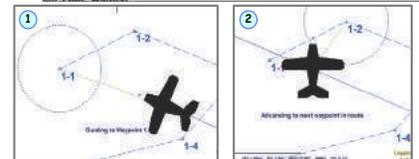
- You recall route-based waypoints (for guidance to) using the keypad, recalling its route, then the waypoint (see "Recalling a Route-Based Waypoint" on page 89). You recall freestanding, 'by name' waypoints through the menus. See "Recalling a By-Name Waypoint" on page 90.
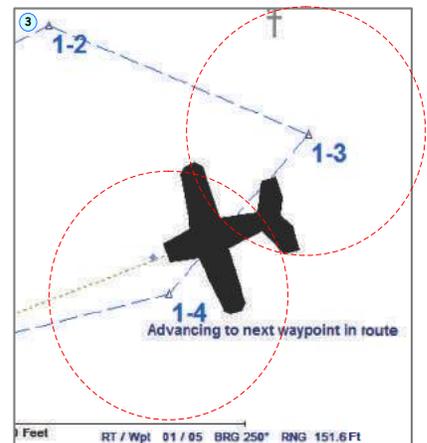
Besides importing or creating waypoints, you can recall (receive guidance to) a waypoint, edit a waypoint (change the coordinates of or rename the waypoint), and delete waypoints.

Creating a Waypoint While Flying - Route-Based Only

When you create a waypoint while flying the map displays a waypoint saved notification (in the format "Waypoint n saved.") and a route-waypoint indicator (in the format "Route # - Waypoint #"). For example, Figure 6-1 shows the map after creating Waypoint #3 in Route #1.
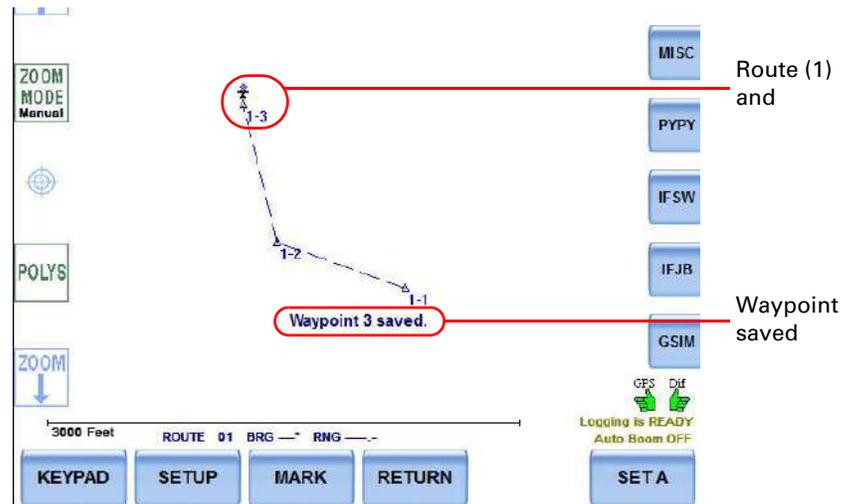
Figure 6-1: Saved waypoint and route-waypoint indicator

To create a waypoint while flying:

Press [KEYPAD] > [SAVE →] > [WPT 5] > n > [ENTER]   where 'n' is the route number

In addition to the waypoint saved notification and a route-waypoint indicator:

- A triangle appears (where you pressed ENTER).
- If this is any waypoint other than the first waypoint in a route a dotted line appears between that waypoint and the previous waypoint in the route.

When saving waypoints to a route the route number appears above the SETUP button ("ROUTE 01" in Figure 6-1).

Note: When you are receiving guidance to a waypoint both the route number and the waypoint number appear above the Quick Keys. See "Automatic Guidance (Route-based Waypoint)" on page 90 for more information.

Creating a Waypoint Manually - Route-Based and By-Name

As an alternative to entering (route-based) waypoints while flying (where IntelliTrac automatically assigns the waypoint number and associates it with a route), you can enter waypoint coordinates manually using the Select Waypoints Mode window (Figure 6-2).

Figure 6-2: Select Waypoints Mode window: the default mode is BY ROUTE

You create waypoints in one of two 'modes'—BY ROUTE and BY NAME.

- When you create a waypoint by route you enter an existing or new route number, give the new waypoint a number and (optionally) a name, then enter the waypoint's coordinates. You recall saved route-based waypoints through the keypad.
- When you create a waypoint by name you give it a name (obviously not optional) and enter its coordinates. Once saved, you can select (recall) the waypoint from a drop-down list in the Select Waypoint By Name window in which you created it. Thus, you recall 'by name' waypoints through the menus.

In general, for multiple waypoints, set the waypoint by route (such as route 1, waypoints 1, 2, 3). If you need to set only one waypoint, set that waypoint by name (such as 'WD1').

The current waypoints mode is displayed to the right of the Waypoints MODE button. Press the button to switch mode if necessary, then press Waypoints.

- In BY ROUTE mode, you get the Waypoints By Routes window, where you create waypoints by route.
- In BY NAME mode, you get the Waypoints By Name window, where you select, delete, or create waypoints by name.

In the Select Waypoints Mode window, for both route-based and 'by name' waypoints, you can set the waypoint radius circle. The radius appears as a dotted circle around the waypoint to which you are currently receiving guidance. When you reach this radius distance, IntelliTrac switches the radius circle and the guidance line to the next waypoint in your route (if one exists). See "Automatic Guidance (Route-based Waypoint)" on page 90 for more detailed information on how automatic guidance works and what IntelliTrac displays in the map during automatic guidance.

Creating a Route-based Waypoint Manually

Press **SETUP** > **SETUP** > **SETUP** > **Waypoints**, the Select Waypoints Mode window appears (see Figure 6-2 on page 86).

1. If necessary, press Waypoints MODE to set the mode to BY ROUTE.
2. Enter the waypoint radius:
   a. Under *Enter Waypoint Radius Circle* press **Radius**. The Enter Radius number pad appears.

b.   Enter the radius (a distance) then press **Accept**. See "Preview of Waypoint Guidance" on page 82 and "Automatic Guidance (Route-based Waypoint)" on page 90 for details about the waypoint radius circle.

3.   Press **Waypoints**. The Waypoints By Route window appears.

4.   For each of the following fields press the corresponding button, enter a value in the data entry window, then press **Accept**.

Route
Waypoint
Name
Latitude*
Longitude*

Note: See step 3c on page 88 for information on entering the direction for latitude and longitude.*

Creating a 'By-name' Waypoint

Press [SETUP] **>** [SETUP] **>** [SETUP] **>** [Waypoints] , the Select Waypoints Mode window appears (see Figure 6-2 on the previous page).

1. If necessary, press **Waypoints MODE** to set the mode to BY NAME.
2. Enter the waypoint radius:
    a. Under *Enter Waypoint Radius Circle* press **Radius**. The Enter Radius number pad appears.
    b. Enter the radius (a distance) then press **Accept**. See "Preview of Waypoint Guidance" on page 82 and "Automatic Guidance (Route-based Waypoint)" on page 90 for details about the waypoint radius circle.
3. Enter the waypoint name and coordinates:
    a. Press **Waypoints**. The Waypoints By Name window appears.

    b. Press **Name** (or the 'Enter Name Here' field), enter a waypoint name in the data entry window, press **Accept**. The name is displayed below the Name button.

> *Note: When entering the latitude and longitude in the next steps, ensure your coordinates are in the proper format. See "Adjusting Systemwide Settings (Units)" on page 26 for more information.*

    c. Using the **Latitude** and **Longitude** buttons, enter the waypoint coordinates. When entering the latitude and longitude you can change (if necessary) the direction (N or S for latitude; E or W for longitude). To change the setting move the cursor to just before the current setting (by entering values or pressing the right arrow) then press the down arrow once to switch the value (press again to switch it back).
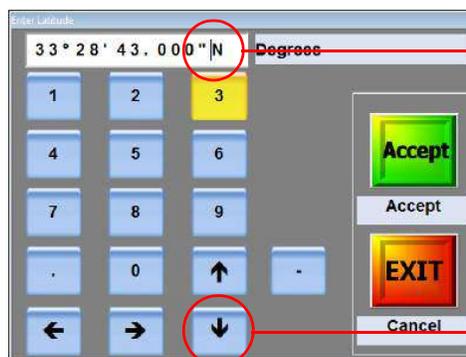
Place the cursor to just before

Press to switch the direction

4. Press **Save Waypoint**. The waypoint name appears as the currently selected item in the drop-down list, and 'Waypoint Saved' appears in the name field.
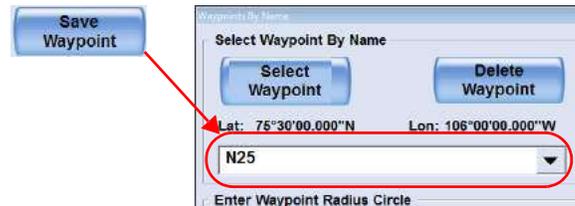
Recalling a Route-Based Waypoint

To recall a waypoint that is part of a route, you must recall the route first. When you recall a waypoint (having recalled its route) the map shows the following (refer to Figure 6-3 for an example):

*   Waypoint guidance notification (in the format "Guiding to Waypoint n.")—this message appears briefly (then disappears) if you are outside the waypoint radius value (see "Automatic Guidance (Route-based Waypoint)" on the next page)
*   Guidance line connecting your current location to the recalled waypoint
*   Route/waypoint to which you are receiving guidance as well as the bearing and range to this waypoint (which also appears in the lightbar) at the bottom of Moving window area
*   Other waypoints in the route are noted (1-2 and 1-3 in Figure 6-3)
*   Background color of the Data area is blue (see "Data Area" on page 10 for information on Data area background colors)

Figure 6-3: Recalled waypoint and guidance indicators

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

Recalling a By-Name Waypoint

You recall a by-name waypoint from the window in which you created it. All the available by-name waypoints are in the drop-down list.

Press **SETUP** **>** **SETUP** **>** **SETUP** **>** **Waypoints** , the Select Waypoints Mode window appears.
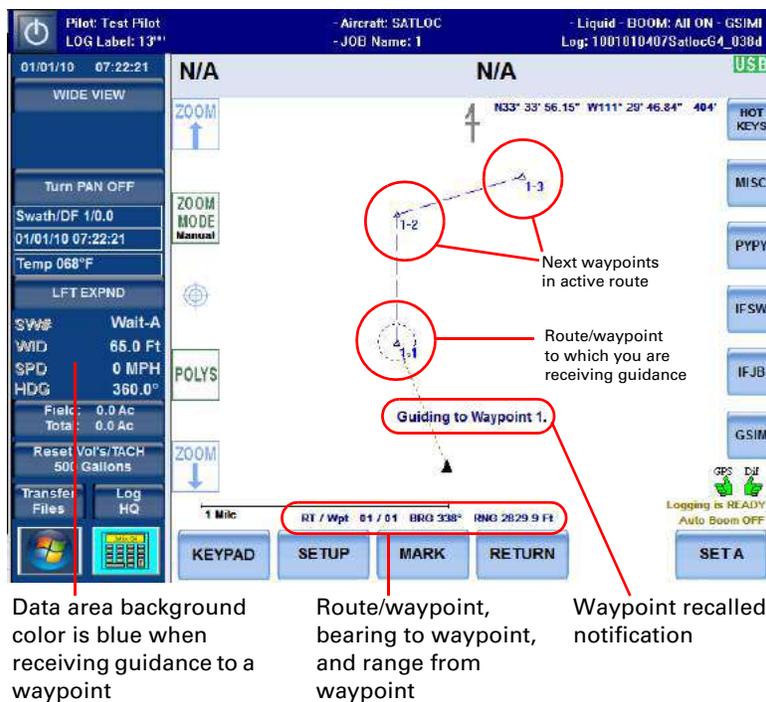
If necessary, press **Waypoints MODE** ① to set the mode to BY NAME then press **Waypoints** ② - the Waypoints By Name window appears ③.

Press **Select Waypoint** or the drop-down list arrow ④ (but see note following). Select the waypoint you want to recall ⑤ and press **EXIT** ⑥. "Guiding to: [waypoint name]' appears in the map and a guidance line connects your current position to the waypoint ⑦.

Note: If you want to recall a by-name waypoint that was the last one recalled (that is 're-recall' it), even though it is selected, you need to press Select Waypoint again (not the drop-down list arrow) and reselect the waypoint in the drop-down list before pressing EXIT.
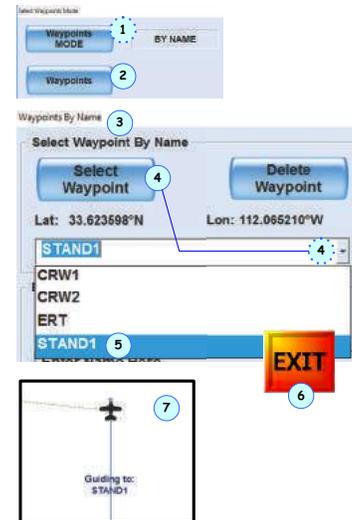
Automatic Guidance (Route-based Waypoint)

In Figure 6-3 (previous page) the dotted circle around waypoint 1 is the radius value.

- If you recall a waypoint the dotted line appears if you are outside the radius value of that point
- Once you are within the radius value of that point "Advancing to next waypoint in route" appears for several seconds then disappears (similar to the "Guiding to Waypoint n." message that appears in Figure 6-3), the dotted radius circle appears around the next waypoint (1-2 at right), and you receive guidance (gray dotted line) to that point
- RT/Wpt (just above the SETUP button) indicates the waypoint to which you are receiving guidance

After you receive guidance to the last waypoint in the route and then are within the radius circle around this last waypoint the dotted circle disappears—there are no more waypoints in the route to which to receive guidance.
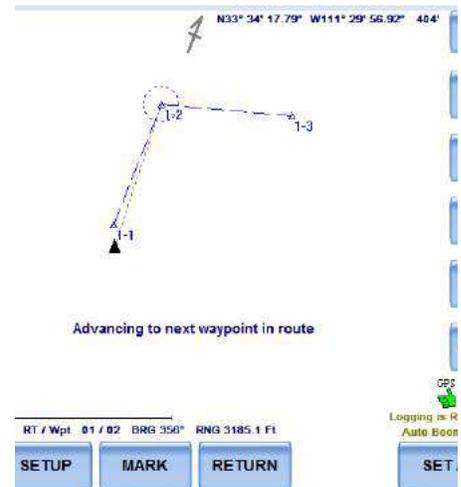
When you reach the last waypoint in a route:

- "Arrived at end of route" appears for several seconds then disappears (but see note following).
- RT/Wpt changes to ROUTE, and BRG and RNG have no values—since there are no more waypoints to which to receive guidance.

Note: When you reach the radius circle under guidance to a by-name waypoint, the radius circle and the guideline disappear and a screen message advises that the current job and/or pattern have been cleared. If no job or pattern is loaded, this message has no significance - it simply indicates that you have reached the radius circle of the selected waypoint and you are 'pattern-ready' at (near) the waypoint, with the SET A button available. If, however, you do have a job and pattern loaded (the pattern-related swath DEC and ADV buttons are available), when you reach the waypoint's radius circle the message means that the pattern (only) has been cleared— the job remains loaded with its polygons on screen (if they were in view during guidance to the waypoint) and the SET A button reappears. You are 'pattern-ready' at (near) the waypoint.
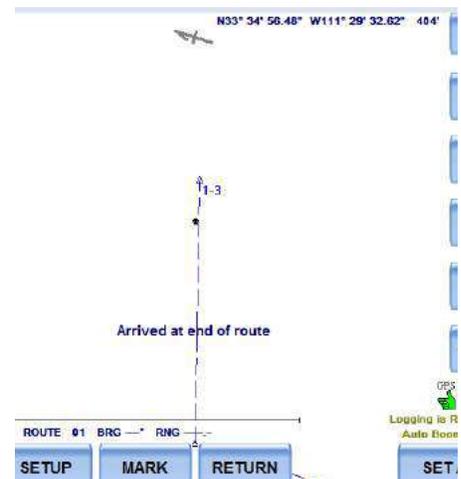
Editing a Waypoint

You can edit any waypoint—those you created while flying and those you created manually (by name or by route).

Press ⬛SETUP **>** ⬛SETUP **>** ⬛SETUP **>** ⬛Waypoints , the Select Waypoints Mode window appears (see Figure 6-2 on page 86).

1. If necessary, press **Waypoints MODE** to switch between BY NAME and BY ROUTE.

   Note: When creating a route-based waypoint you can give the waypoint a name (it's optional). However, even though the waypoint has a name you must use BY ROUTE mode (not BY NAME mode) to edit the waypoint.

2. Press **Waypoints**. Either the Waypoints By Name window (below left) or the Waypoints By ROUTE window (below right) appears.

Waypoints By Name window   Waypoints By Route window
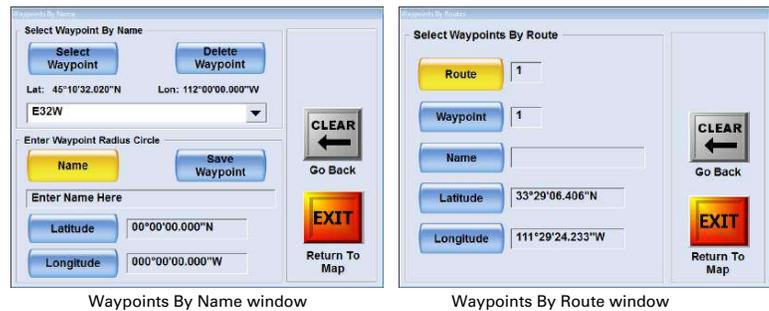
3-i. To edit a by-name waypoint, in the Waypoints By Name window:

    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 then press **Accept**.

    c. Press **Longitude** and in the Enter Longitude window enter the desired value then press **Accept**.

    or

3-ii. To edit a route-based waypoint, in the Waypoints By Route window:

    a. Press the appropriate button (for example, the **Route**).

    b. Enter the new value in the data entry window that appears then press **Accept**.

Deleting a Waypoint

⚠️ **WARNING:** *Deleting a waypoint removes the waypoint from IntelliTrac's memory—it is gone. You cannot undo this action.*

You can delete a waypoint in two ways:

- Delete by waypoint number using the keypad—the route to which the waypoint is assigned must be active to delete the waypoint
- Delete by waypoint name using the menus.

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 menus:
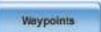
Press **SETUP** > **SETUP** > **SETUP** > **Waypoints** , the Select Waypoints Mode window appears ①. Then:

If necessary, press **Waypoints MODE** to switch to BY NAME ②.

Press **Waypoints** ③. The Waypoints By Name window appears ④.

If the waypoint you want to delete is already showing in the name field (below **Lat** and **Lon** - CRW2 in the example), go to ⑦, else press **Select Waypoint** ⑤, select the waypoint you want to delete from the drop-down list ⑥, then press **Delete Waypoint** ⑦.
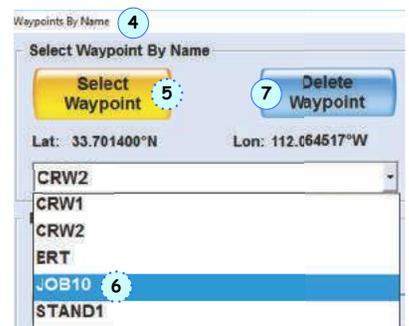
Working with Marks (Return Points)

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 marks 1 to 9 and 10 to 99 differently.

To create marks 1-9

1. Press the **MARK** (MODE #) Quick Key ①. The Quick Marks window appears.

    Mark numbers already in use are shown as depressed numbers (1, 2, 3, 4, and 8 in the inset example ②). You can reuse them to reposition a mark (overwriting its position with the new position).

2. Press the button corresponding to the numbered mark you want to create (2 in the example at ③). A message appears ④ indicating IntelliTrac is saving that numbered mark (M2), the Quick Marks window closes, and the new mark appears in the map ⑤ .
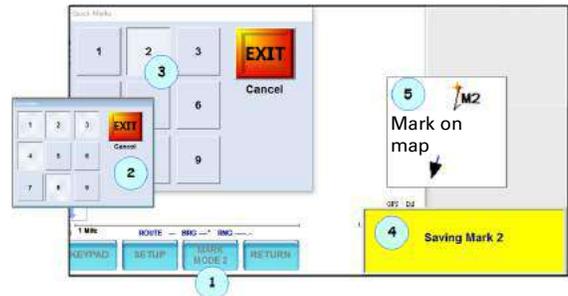
To create marks 10-99

*   Press KEYPAD > SAVE ➡ > MARK 4 > **n n** > ENTER , where 'nn' is the mark number.

    A message appears indicating IntelliTrac is saving that numbered mark and the new mark appears in the map (for example, mark #12 appears as **M12**).

    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 lightbar provides guidance back to the mark).

Returning to a Mark

You return to a marks 1-9 and 10-99 differently.

To return to marks 1-9, press **KEYPAD** > **RETURN 7** > **n** where 'n' is the mark to which you want to return

To return to marks 10-99, press **KEYPAD** > **SET** > **MARK 4** > **nn** > **ENTER** where 'nn' is the mark to which you want to return

Returning to a mark - what you see (Figure 6-4).
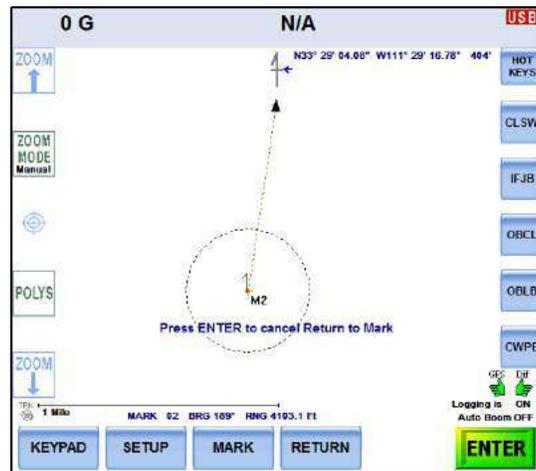
Figure 6-4: Returning to a mark

- IntelliTrac provides guidance to the mark: the mark indicator appears (M2 in Figure 6-4), a dotted line connects your current location to the mark, and a dotted automatic guidance circle appears around the mark (based on the radius value setting—see "Automatic Guidance (Route-based Waypoint)" on page 90 for more information on radius and automatic guidance in general)
- A green ENTER button appears in the lower right of the map
- "Press ENTER to cancel Return to Mark" appears below the mark
- Bearing (heading) and range (distance) to the mark appear in the map (above the Quick Keys) and on the lightbar

When you reach the automatic guidance circle (radius):

- • The automatic guidance circle, the dotted line connecting your position to the mark, and the green ENTER button disappear
- • "Current JOB and/or Pattern are cleared." appears briefly
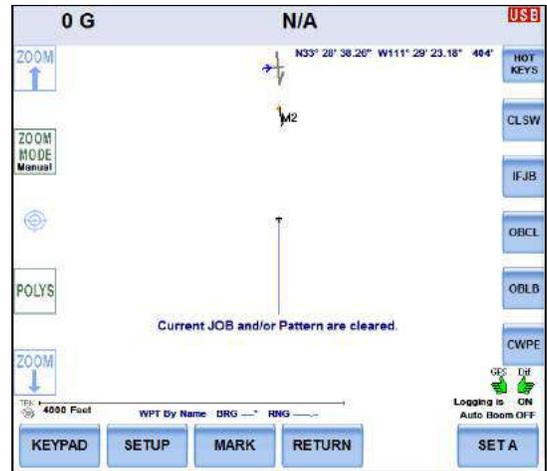
Canceling a Return to Mark

Press **ENTER** (lower right of map). The map appears similar to the example at right — "Return to Mark cancelled." appears briefly.

If you select the wrong mark to return to, you do not have to cancel guidance to that mark—just use either return method (depending on the mark number) for guidance to a different mark.
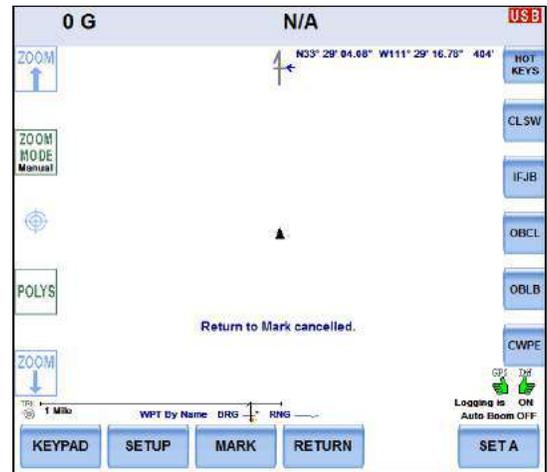
Clearing a Mark

To clear a mark permanently from IntelliTrac's memory (delete it permanently), press

[KEYPAD] > [CLEAR ←] > [MARK 4] >n/nn> [ENTER] where 'n'/'nn' is the mark you want to clear.

Chapter 7: Jobs and Polygons

Overview

A job enables you to save pattern information and multiple polygons.

A polygon is a shape you create by setting the points of the polygon. You can create a polygon of any field or spray area and save the polygon. Like a waypoint, you can add a polygon during flight or beforehand by either manually entering coordinate values or using a mapping program.

A mission, created in MapStar and imported into IntelliTrac, is 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 Jobs

A job can include up to 99 patterns (type/direction; swath width; A, B, and C points; offset; and field width) and 99 polygons. You can save a job, recall a job, clear a job, or delete a single job or all jobs.

Saving 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

To save a job, press

KEYPAD > SAVE > JOB 9 > n > ENTER

(where 'n' is the job number). "Job n saved" appears briefly in the map and the job number appears in the header next to "JOB Name:".

Recalling a Job

You can recall any job you have previously saved. Recalling a job automatically clears (closes) the current job (if one is active).

To recall a job by job number, press

KEYPAD > SET > JOB 9 > n > ENTER,

where 'n' is the job number.

To recall a job from a list of jobs, press

KEYPAD > SET > JOB 9 > ENTER . The Jobs By Name List window appears. Press (select) the job you want to recall then press **Accept**.
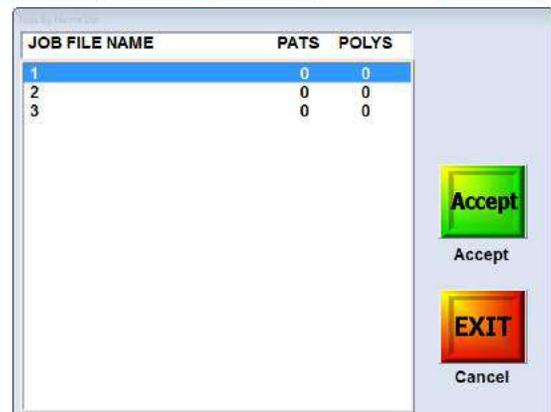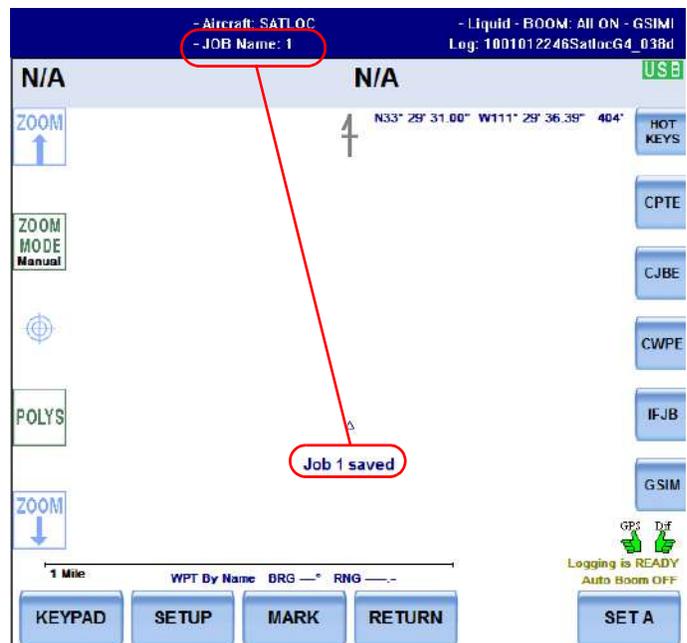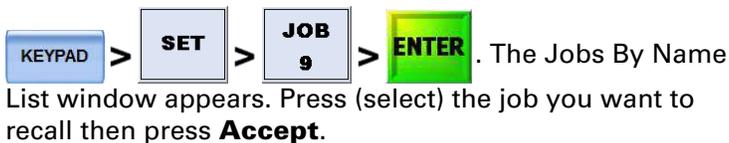
In both procedures above, the following occur after you press **ENTER** or **Accept**:

- A "LOG was Just CLOSED" message appears briefly after IntelliTrac closes the current log

- A "Just Opened NEW LOG" message appears briefly

- "Job n loaded" appears briefly in the Moving window area and the job number appears in the Header area next to "JOB Name:"

For information on job loading on IntelliTrac startup (after a shutdown), see "Exiting IntelliTrac and Jobs" on page 23.

Clearing a Job

Clearing a job closes the job and removes it from the map—it does not delete the job.

To clear a job, press

KEYPAD > **CLEAR ←** > **JOB 9** > **ENTER** . "Current JOB and/or Pattern are cleared." appears briefly in the map and <No JOB Name> appears in the header.
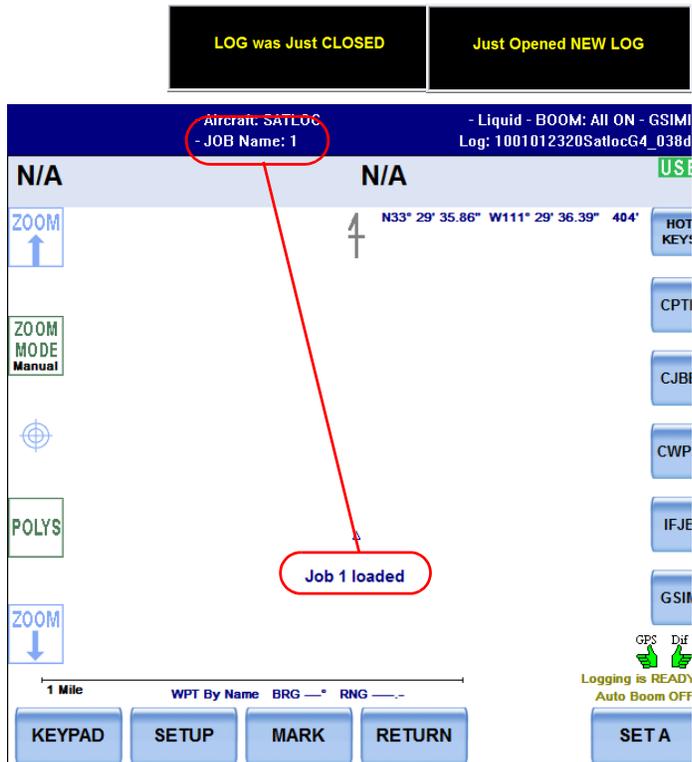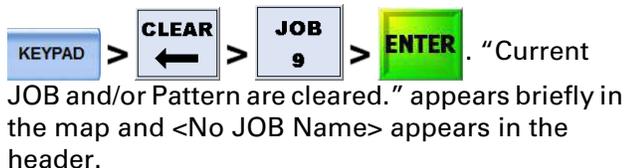
Deleting Jobs

Caution: Deleting a job removes it permanently—you cannot recall a deleted job.

You can delete a single job (using the keypad or a hot key) or delete all jobs. See "Using Hot Keys" on page 21 and Appendix B, "Hot Keys" for more information on hot keys.

Deleting a single job - keypad method

Press **KEYPAD** > **CLEAR ←** > **JOB 9** > n > **ENTER** , where 'n' is the job number. When the NO/YES confirmation pop-up appears (see inset in following examples), press YES.

Deleting a single job - hot key method

With one of your hot keys set to Clear\Job\Clear (**CLR JOBCL)**, press that hot key (**1**). The Job By Name List window appears (**2**).

Press the job you want to delete (**3**) then press **Accept** (**4**).

When the NO/YES confirmation pop-up appears, press YES (**5**).
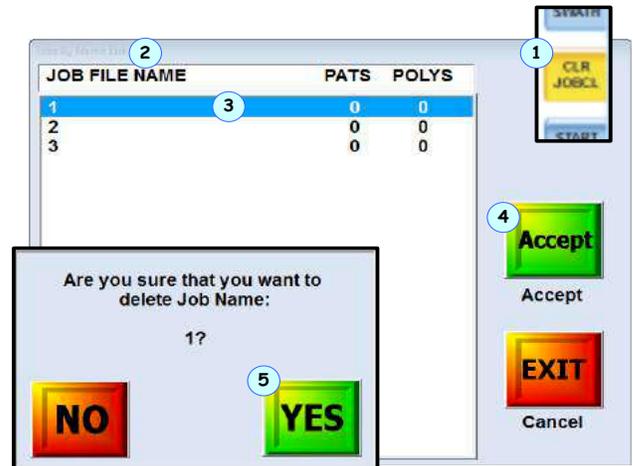
Deleting all jobs (by keypad)

Press **SETUP** > **SETUP** > **SETUP** > **Delete Files** .

In the Delete/Clear Selected Data Files window (**1**), press **Delete All JOB Files** (**2**).

When the NO/YES confirmation pop-up appears, press YES (**3**).
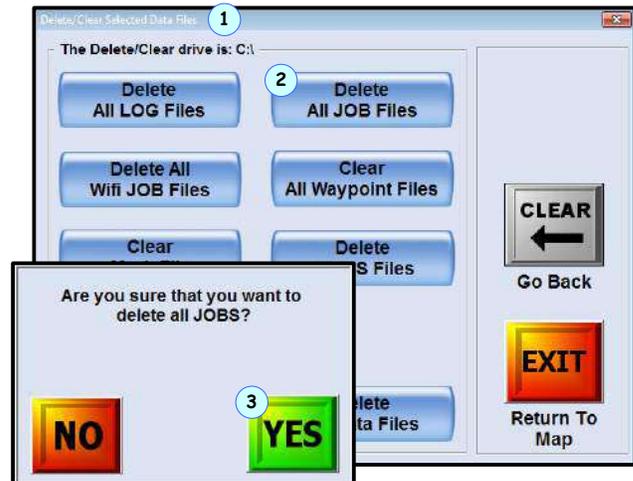
Working with Polygons

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)—identified by its black line color. Can have hatch or solid fill - see "Poly Fill MODE" on page 148.
- Exclusion polygon (enclosed area you do not spray)—identified by its line color purple. Never has fill.)
- Open polygon (not actually a closed area, but a multi-point line created in MapStar and imported into IntelliTrac)
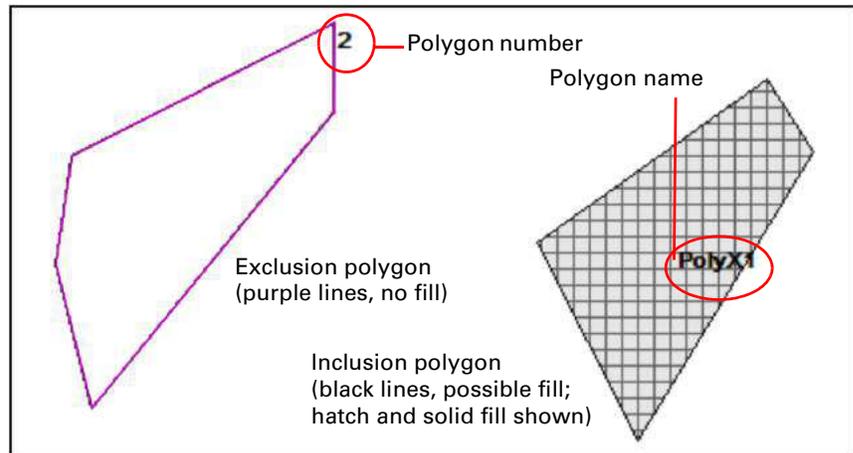
Figure 7-1: Inclusion and exclusion poly-

Inclusion and exclusion polygons visually show you the borders of your spray/no-spray areas in the map (Figure 7-1). Table 7-1 provides more detailed polygon information.

Table 7-1: 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 an interior grid pattern in the Moving window area. IntelliTrac sums the areas of multiple inclusion polygons in a job. You can select Total Polygon Area as an onscreen or lightbar display option (see "Screen Displays Window" on page 30 and "Lightbar Setup - Basic: Display Fields, Crosstrack Values" on page 36).
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 have no interior pattern. Exclusion polygon areas wholly or partially within an inclusion polygon subtract from the total polygon area (see "Calculating Total Polygon Area" on page 107).
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.

Note: See option "Use JOB Color/Hatch/Spray OFF Features", page 150. If you set hatch or fill attributes for a job's inclusion polygon in MapStar, you have the option to use those attributes (option = Yes) or any attributes you set using Poly Fill MODE (option = No).

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 a polygon. See "Applying a Swath Array (Pattern) to a Polygon" on page 111.

While flying a pattern you can use the Edge Distance and Time to Edge lightbar 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.

If you are using automatic spray on/off (or off/on) functionality, IntelliTrac turns spraying 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 turns spraying off as you enter the exclusion polygon and back on as you leave it.

Edge Distance   Time to Edge

Approaching polygon
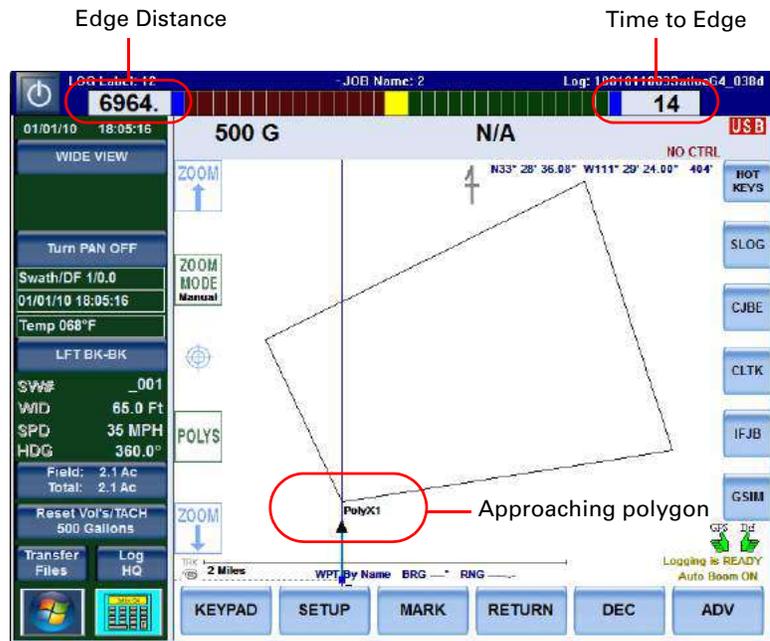
Setting Polygon Points

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

- As you fly
- By entering the polygon's GPS coordinates manually
- By importing a shapefile (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 creating, progressively, a quadrilateral, a pentagon, a hexagon, and so on depending on the number of points you set. The enclosed area is updated with each added point.

Path to setting polygons as you fly: **KEYPAD** > **POLY 6** > **POLY 6** .
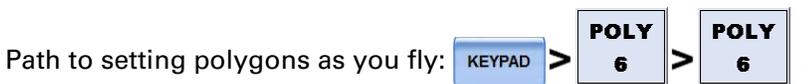
The map displays the message "Swath Advance button will work as POLY button until you press EXIT".

The - (minus) and + (plus) buttons appear at the top of the map, the SAVE and EXIT Quick Keys appear at the lower right. You can enter polygon points by (your choice):

- Using the remote swath advance switch
- Pressing the + button (the – button removes the last polygon point you entered)
- Pressing KEYPAD > ABC (it acts as the swath advance button during this operation)

Buttons for adding a polygon point (+) and canceling a polygon point (-)

Press SAVE to save a polygon; EXIT to cancel
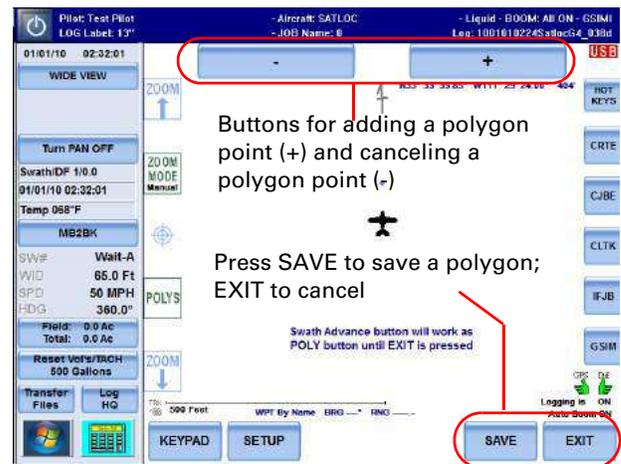
When you enter your first polygon point the '1 points' message appears in the map (**1**). (*Note: the red crosses [X] have been added to the examples, they do not appear on the map.*)

Each time you add a point, IntelliTrac displays a message stating the number of points (now) in the polygon and the polygon begins to take shape (two points create a straight line (**2**), three points create a triangle (**3**), and so forth).

After you enter the last polygon point, press **SAVE**. The Enter Polygon Number window appears (**4**).

Enter a polygon number and press **Accept**. (*Note: If no job is active, the polygon number will not show, nor will it be saved; the polygon number appears (and will be saved) only after you have saved the current activity as a job. See* "Saving a flown polygon to a job (optional)" *on the next page.)*

The polygon is completed and appears in the map as an inclusion polygon (the default) (**5**).

> Note: If **Job Flow PMaps** is set to YES on the "Flow Control Advanced Setup" screen (page 124) you will be prompted to (optionally) add a flow rate for the polygon.

Saving a flown polygon to a job (optional)
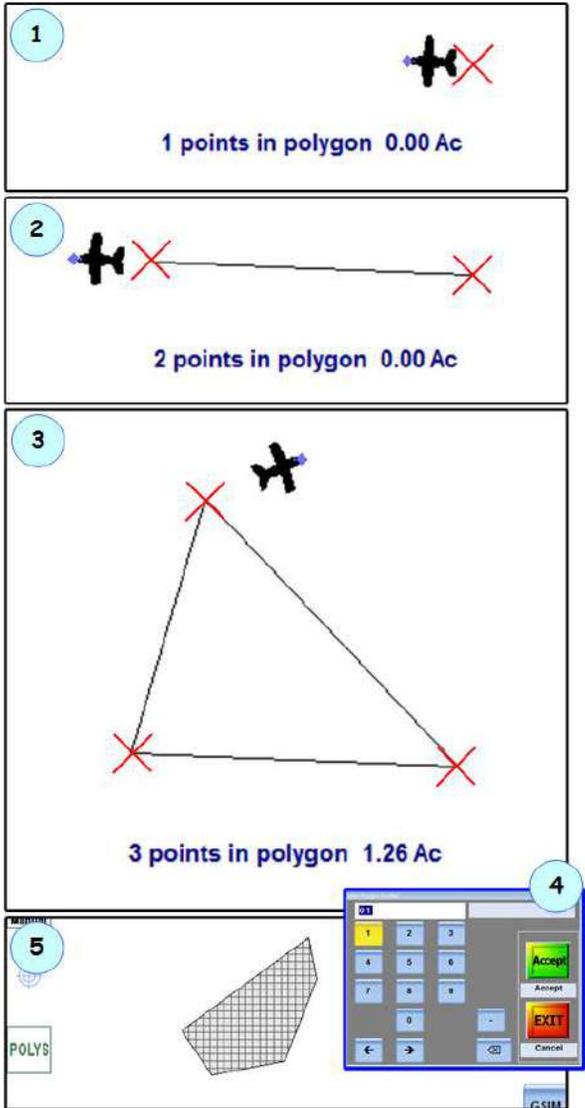
Press (where 'n' is the job to which you want to save the polygon). See the note near the bottom of the previous page, and "Working with Jobs" on page 98 for more information on saving jobs

Naming and editing a flown saved polygon (optional)

When you save a flown polygon, you can give it only a number (and even that isn't saved unless the polygon is associated with a job—already or after creation). You can, however, subsequently give a newly flown, saved polygon a name, change the polygon to an exclusion or open polygon, or change the latitude and longitude of each polygon point. The following section briefly describes these options. (For detailed information on these steps, see "Creating a polygon by manual entry of point coordinates" on page 105.)

Press **SETUP** > **SETUP** > **SETUP** > **Polygons** , the Create & Modify Polygons window appears (**1**).

(*Note: In the schematic below, pop-ups are shown as small representative sections only.*)

Select the polygon you want to edit—by job (**2**) and number (**3**).

Press **Name** then enter a polygon name (4); press **Accept** (the default name is the polygon number—not shown.

Press **Type** and select the appropriate type from the drop-down list (**5**).

For latitude and longitude, press the appropriate button and in the data window, enter a new value (**6**); press **Accept**. Repeat for each polygon point (press the **+** or **–** buttons to cycle through the points - **7**).
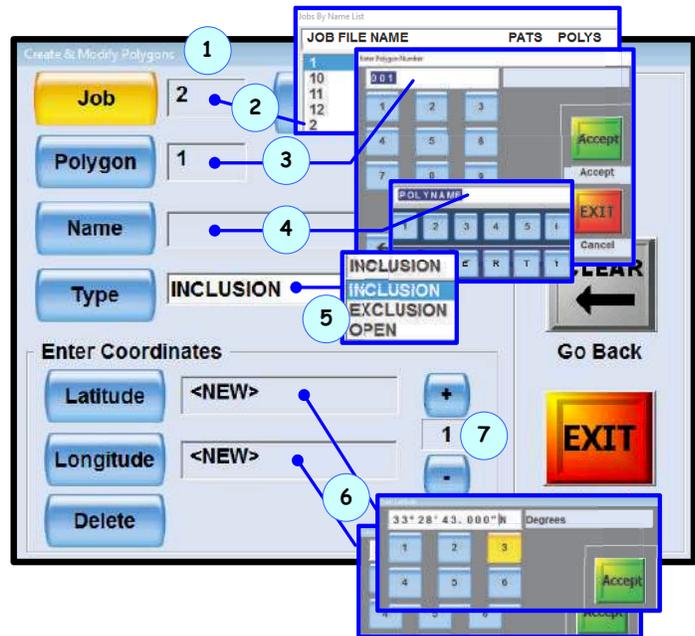
Note: If an exclusion polygon is wholly or partially inside an inclusion polygon, the area of the exclusion polygon inside the inclusion polygon is subtracted from the total polygon area. See "Calculating Total Polygon Area" on page 107.

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 107).*

Creating a polygon by manual entry of point coordinates

Press [SETUP] > [SETUP] > [SETUP] > [Polygons] , the Create & Modify Polygons window appears.

1. Select an active job and select (to modify) or add (to create) a polygon number as required. The default job is the currently active job (the job loaded on the map). The default polygon number is 1.

2. Press **Name**, enter a value in the data entry window that appears, then press **Accept**. The name appears in the Name field (PolyX1 in example at right).

3. Select the polygon type: Press **Type** and select INCLUSION, EXCLUSION, or OPEN from the drop-down list.

4. See "Working with Polygons" on page 101 for information on polygon types.

5. Set the latitude and longitude for each polygon point:

   a. Press **Latitude**. In the Enter Latitude window enter a value and press **Accept**.

      If you need to change the direction for latitude (N or S) press the right arrow button to move the cursor to just before the direction then press the down arrow to change the setting. To change the direction back repeat this step—do not press up arrow to reverse the direction as the up arrow selects previous characters in the latitude.

Figure 7-2: Create & Modify Polygons win-

To change direction move cursor to here (to before the current direction, N in the example), then...

Press to move the cursor left or right

... press (down arrow) to toggle (switch) the direction S - N - S

   b. Press **Longitude**. In the Enter Longitude window enter a value and press **Accept**. See the example above to change the direction.

   c. For each additional point in the polygon, press the "plus sign" to move to the next sequential polygon point and repeat steps a and b.

6. When finished entering all polygon information press **EXIT** to close the Create & Modify Polygons window and return to the map.

   See next page for an example of a four-point polygon (PolyX1) created with this procedure.

Point 1: 33°28'43.000"N, 111°29'24.000"W
Point 2: 33°30'30.000"N, 111°30'30.000"W
Point 3: 33°32'00.000"N, 111°28'00.000"W
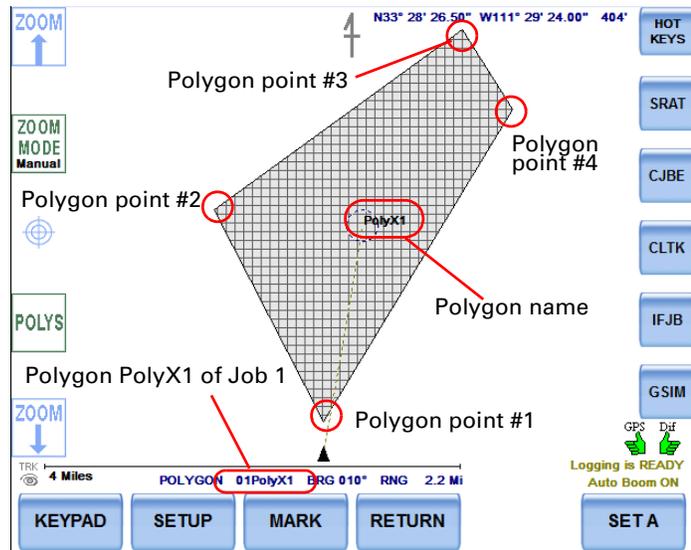Point 4: 33°31'20.000"N, 111°27'30.000"W

Figure 7-3: Polygon created by manual point entry

Importing coordinates from a GIS file

You can import GIS files, such as a shapefile, from MapStar or another third-party application. Figure 7-4 shows a GIS file in MapStar (left) and the same GIS file imported into IntelliTrac (right).

GIS file in MapStar   Same GIS file imported into IntelliTrac
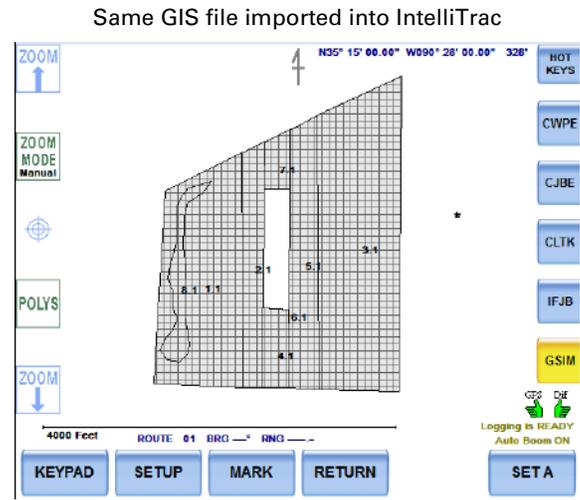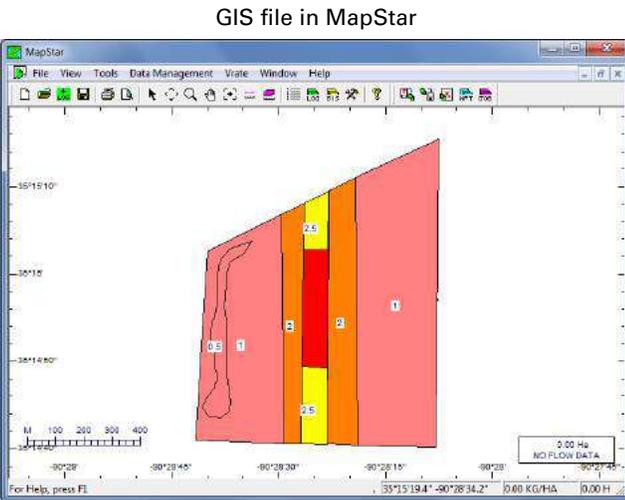
Figure 7-4: GIS file in MapStar and imported into IntelliTrac

To import a GIS file:

1. Insert a USB drive into the PC on which the GIS file resides.

2. Using your preferred application save your GIS file to the USB drive with a "**n.job**" extension (where n = Job number).

3. Remove the USB drive from the PC and insert it into your G4.

4. Transfer the GIS file from the USB drive to the G4 hard drive (see "Transferring All Log Files Hard Drive to USB Drive" on page 59).

5. Press **SETUP** > **SETUP** > **SETUP** > **Polygons** , where 'n' is the job number you saved in step 2. IntelliTrac opens the plot containing the GIS file.

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

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 exclusion polygons within the inclusion polygons.

Tip! *Total Polygon Area is one of your many lightbar display options. See "Lightbar Setup - Basic: Display Fields, Crosstrack Values" on page 36 for more information.*

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

- Area of any exclusion polygons wholly within inclusion polygons
- Area of any parts of exclusion polygons within inclusion polygons

Figure 7-5 shows how IntelliTrac calculates the total polygon area. Polygons 1, 3, and 4 are inclusion polygons; polygon 2 is an exclusion polygon.
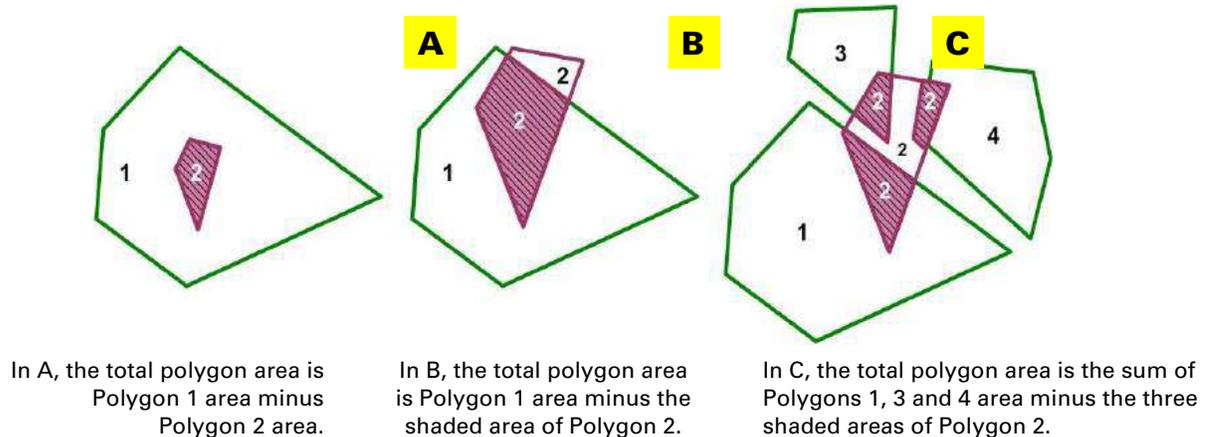

In A, the total polygon area is Polygon 1 area minus Polygon 2 area.

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

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

Figure 7-5: Total polygon area calculations in IntelliTrac

Saving Polygons

When you set polygon points while flying, you can quickly save the polygon using the SAVE Quick Key after setting your final polygon point. Polygons are normally components of a job (as are flown patterns) so if you are creating a polygon to save with a job save the job *and* the polygon. Alternatively, you can create, save, and use polygons without making them components of a job (see the two sections after the following procedure).

Saving a polygon to/with a job

With <No JOB Name>* showing in the header (because there's no active job), after flying and setting all your polygon points (**1**), press the **SAVE** Quick Key (**2)** to save the polygon.

Give the polygon a number (**3**). Note that that's all you can enter for the polygon, just its number. Press **EXIT**.

The polygon becomes shaded in the map (**4** - shaded because it is an inclusion polygon by default). Note that the polygon is not showing its number; that's because the activity—the creation of the polygon—has not yet been saved as a job.

Press **KEYPAD** then **SAVE**, **JOB, 6** to save the job—as Job **6**).

(**5**). Press **ENTER.**

Because the polygon now has a (parent) job, its number (1) is showing (**6** - inside the polygon because it's an inclusion polygon). The header will be showing JOB: 6.
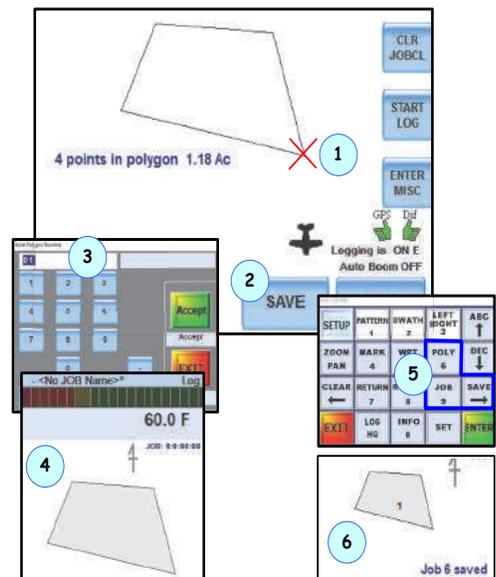
Saving/using a polygon without a job - single session

Use this procedure if you want to create and use a polygon but do not want to keep the polygon after you exit IntelliTrac.

1. Press KEYPAD > CLEAR > JOB 9 > ENTER to clear all jobs. <No JOB Name>* is displayed in the header area.

2. Press KEYPAD > POLY 6 > POLY 6 then use the swath advance buttons to define your polygon points (see step 1 of "Setting polygon points as you fly" on page 102).

3. When you have finished defining your polygon, **do not** use the SAVE Quick Key.

   Instead, press KEYPAD > SAVE > POLY 6 > EXIT (so do not enter a poly number). This allows you to keep the polygon on screen but without a number (a temporary save). IntelliTrac returns you to the map with the polygon still displayed and with the SET A button available. The polygon swath setup buttons are no longer visible.

4. Set your pattern points (A, B, and C if necessary) and fly your swath guidance lines in order.

   You **cannot** use the Enter Poly Pat feature with these temporarily saved polygons.

   When you exit IntelliTrac, your temporarily saved/used polygon is cleared from IntelliTrac's memory.

Saving/using a polygon without a Job - multiple sessions

Use this procedure if you want to create and use a polygon and want to keep the polygon after you exit IntelliTrac, without saving the polygon to a job. The polygon is saved to a job as a component of JOB 00 (000) and remains a component of JOB 00 until you overwrite JOB 00.

1. Press **KEYPAD** > **CLEAR ←** > **JOB 9** > **ENTER** to clear all jobs. <No JOB Name>* shows in the header area.

2. Press **KEYPAD** > **POLY 6** > **POLY 6** then use the swath advance buttons to define your polygon points (see Step 1 of "Setting polygon points as you fly" on page 102).

3. When you finish defining your polygon, press **KEYPAD** > **SAVE →** > **POLY 6** > **n** > **ENTER** , where 'n' is the polygon number.

   IntelliTrac returns you to the map with the polygon still displayed with the SET A button available and the polygon setup swath buttons no longer visible. *Do not* save the job.

4. Set your pattern points (A, B, and C if necessary) and fly your swath guidance lines in order.

   You can use the Enter Poly Pat feature with polygons saved in this manner—see "Applying a Swath Array (Pattern) to a Polygon" on page 111.

   When you exit IntelliTrac your polygon is automatically saved to JOB 000 and when you restart IntelliTrac JOB 000 is on screen with your polygon (ZOOM > CENTER if necessary). The polygon remains a component of JOB 000 until you save JOB 000 with new components.

Editing a Polygon

You can edit all aspects of a polygon—you can edit, remove or add polygon points, just as when you are creating a polygon by manual entry of point coordinates.

To edit a polygon:

1. Press **SETUP** > **SETUP** > **SETUP** > **Polygons** , the Create & Modify Polygons window appears (see Figure 7-2 on page 105).

   The Job and Polygon fields default to the current job and polygon 1 in that job.

2. See "Creating a polygon by manual entry of point coordinates" on page 105 for instructions on entering/editing polygon information.

Deleting a Polygon

⚠ **WARNING:** *You can use the same polygon numbers in multiple jobs; therefore, make sure that when deleting a polygon you delete it 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 6** **n** **ENTER** (where 'n' is the number of the polygon you want to delete). A NO/YES confirmation pop-up appears.

2. Press **YES** to confirm the deletion.

Receiving Guidance to a Polygon

When you receive guidance to a polygon:

- The lightbar provides guidance to the center of the polygon and a dotted line appears between the aircraft and the polygon's center.
- The bottom of the Moving window area displays "POLYGON" and bearing and range values for the polygon.
- If you set Time to Edge and Edge Distance as display options for your lightbar their values appear when a polygon side is in your flight path. If 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.
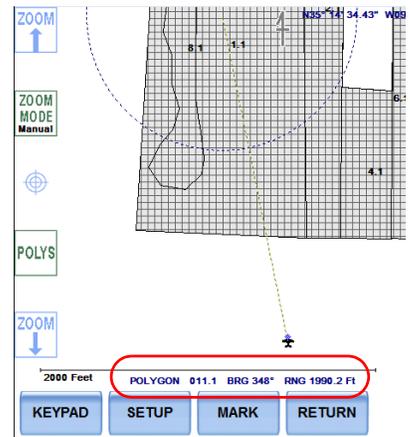
To receive guidance to a polygon:

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** **ENTER** , where 'n' is the polygon to which you want to receive guidance.

To cancel guidance to a polygon:

Press **KEYPAD** **ENTER** , the screen briefly displays the message "Return to Mark canceled."

Applying a Swath Array (Pattern) to a Polygon

You can apply (recall) a swath array to a polygon 'manually' if the polygon has patterns saved with it (see "Applying a Saved Pattern to a Polygon" following) or by using IntelliTrac's automatic swath array/pattern application feature (see "Auto-applying a Swath Array to a Polygon").

Applying a Saved Pattern to a Polygon

Some polygons may have associated patterns. For example, you may have two patterns (such as back-to-back and racetrack) saved to a specific polygon because those are the two patterns you fly most frequently for that polygon. Use SET > PATTERN 'n' > ENTER to apply a saved pattern to a polygon.

Auto-applying a Swath Array to a Polygon

This feature is known as "Enter Poly Pat". When you use this feature, IntelliTrac automatically 'patterns' a polygon by applying an A|B line to it and generating a swath array. By default, IntelliTrac applies the A|B line to the job's lowest numbered polygon (if the job has multiple polygons). And it applies the A|B line to the side of that polygon that results in the fewest number of swaths required to cover the polygon area. When you have multiple polygons, you can change the polygon to be patterned and the side of the selected polygon that the swath array is based upon (see "Rotating the A|B line around a polygon" on page 112).

To auto-apply a pattern to a polygon:

1. Set the job containing the polygon (KEYPAD > SET > JOB > 'n' > ENTER).

2. Select the pattern you want to fly—see "Entering Basic Job Details (Quick Start)" on page 49 for more information.

3. Press **KEYPAD** > **ENTER** > **POLY 6** > **PATTERN 1** .

   IntelliTrac applies an A|B line to the side of the lowest numbered polygon that results in the fewest (minimum) number of swaths, generates a swath array from the A|B line, and displays the poly pattern panel in front of the data panel. In Figure 7-6, IntelliTrac has applied A|B to the first polygon (1) and generated an array to the left of A|B (the right of B|A —as viewed).
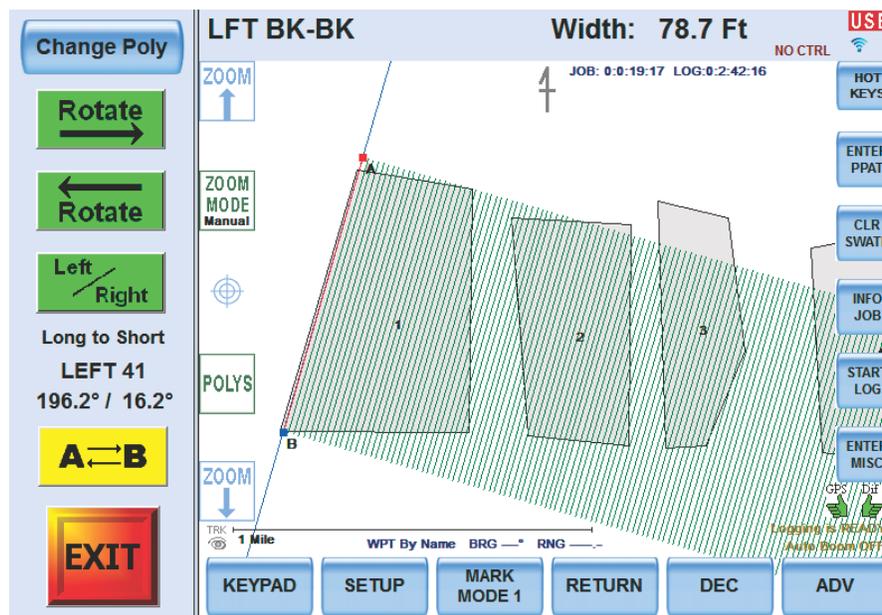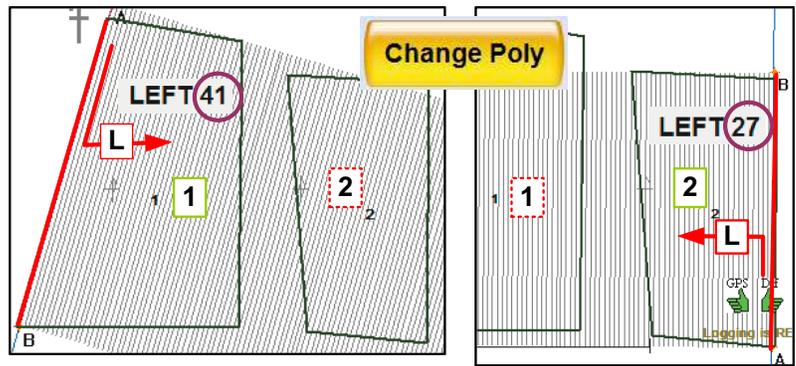

**Figure 7-6: A|B line and swath array auto-applied to the first polygon**

*Note: On pressing **EXIT**, IntelliTrac provides guidance to A|B's point A. See "Guidance to A|B line's A point - as a 'mark'" on page 113.*

Using the 'Poly Pat' Panel Features:

Change Poly: Cycles through the polygons. IntelliTrac initially applies A|B (and array) to the 'minimum swaths' side.

Rotate: Cycles A|B through the polygon sides. The sequence is dictated by the Left/Right selection, which toggles between long(est) to short(est) and short(est) to long)est). See also "Rotating the A|B line around a polygon" on page 112.
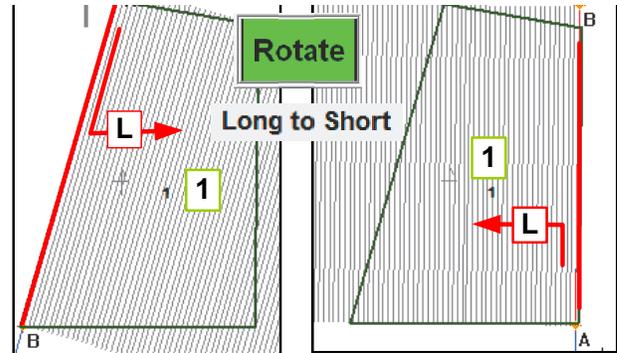
Left/Right (i): Because the swath array must occupy the selected polygon (and beyond), the left/right direction relates to where the swath array is relative to A|B. So when you press the Left/Right button, the A|B line switches end-to-end. This changes the left/right direction of the (unmoved) swath array relative to A|B.
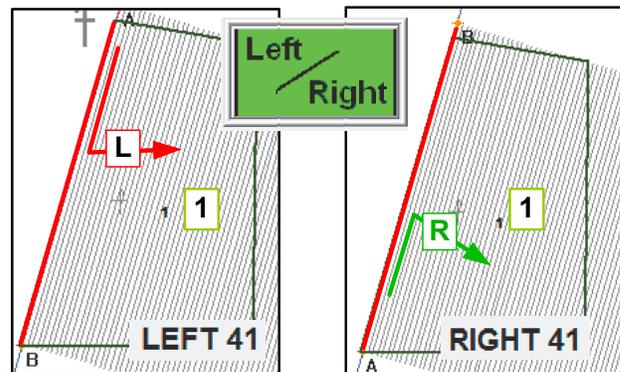
Left/Right (ii): In addition to switching A|B end-to-end, pressing this button also changes the sequence of the 'rotation' of A|B around the polygon: from '**Long**(est) **to Short**(est)' (the default) to '**Short**(est) **to Long**(est)'. If you switch, the new sequence becomes effective at the next press of **Rotate**.

'**LEFT 41**' (example)**:** Indicates that 41 swaths to the left of A|B will cover the area (of polygon 1).

'n'° / 'n'°: The first figure is the true north bearing of the vector A|B; the second the true north bearing of the vector B/A. Thus the values are always +/- 180° of each other. The values switch position if you switch A|B end-to-end: A|B is always first.

A -> <- B: Switches A|B end-to-end (so L/R stays the same) *and* switches A|B to the last swath of the polygon's array. The new start of the array is what was the last swath for the polygon.
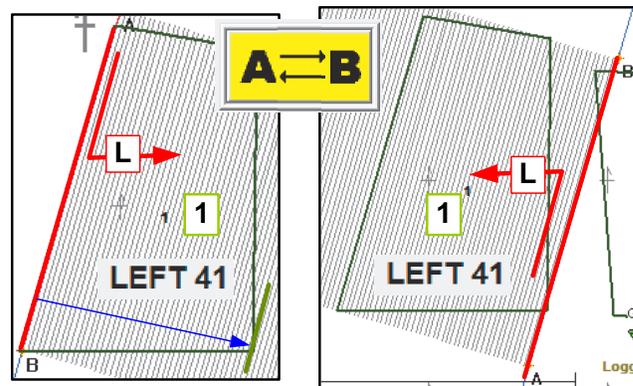
Rotating the A|B line around a polygon

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

A|B 196.2° / 16.2° B|A   A|B 6.2° / 196.2° B|A

Note: The 'Rotate' button does not actually rotate the A|B line around the polygon sides in the sense of in a clockwise or counter-clockwise direction. It moves the A|B line in the sequence long(est) to short(est) or short(est) to long(est). Pressing the Left/Right button switches the sequence (as well as the swath array direction from A|B).
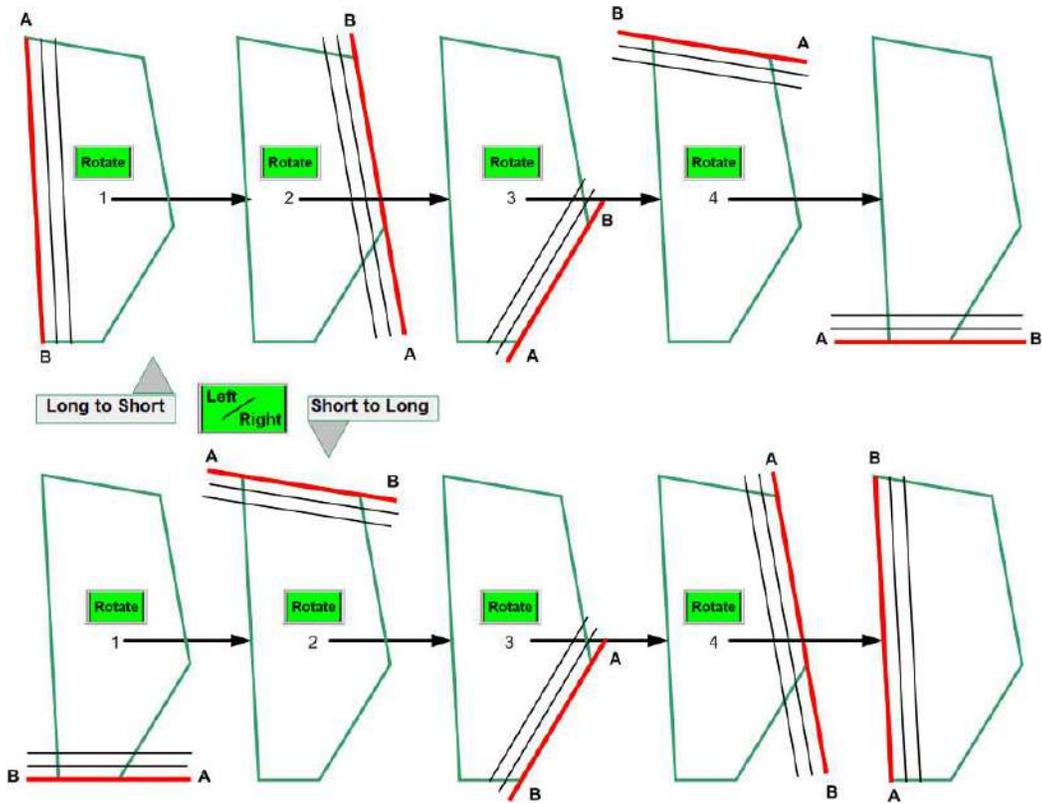
Figure 7-7: 'Rotating' the A|B Line around a polygon

Note: In the Long to Short sequence (top row) the swath arrays are all left of A|B. In the Short to Long sequence, the swath arrays are all right of A|B. The Left/Right button doubles as a swath direction button and a rotation sequence button.

Guidance to A|B line's A point - as a 'mark'

If, after setting up your swath array for the appropriate polygon, you press **EXIT** to remove the Poly Pat panel (**1**), IntelliTrac treats A|B's A point as a mark and provides guidance to it (**2**). If you press **ENTER** (cancels guidance to 'mark' - (**3**), you get the "Return to Mark canceled" message (**4**).
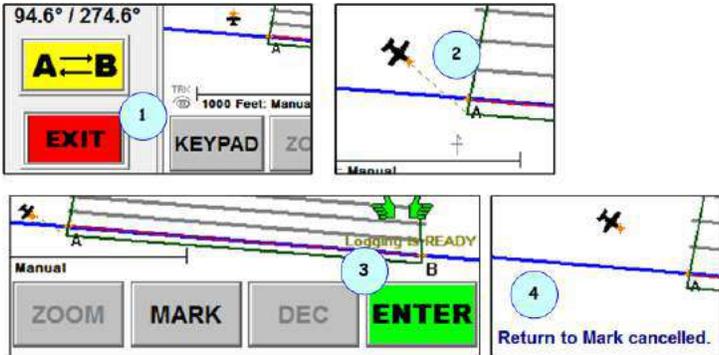
Chapter 8: Flow Control and Managing Prescription Maps

<div align="right">

Liquid - IntelliFlow2 ('IF2') - Screens Summary

Liquid Menu Map - IntelliFlow2 ('IF2')

Legacy Liquid - IntelliFlow ('IF') - Screens Summary

Liquid Menu Map ('Legacy' IntelliFlow 'IF')

IntelliFlow (Liquid) and IntelliFlow 2 (Liquid) Screen Details

Using Prescription Maps

</div>

This chapter provides information on two controller modes:

- IntelliFlow 2 (IF2) liquid
- IntelliFlow (IF - 'legacy') liquid and dry

The chapter structure is:

a. A table of screens with brief, summary descriptions of screen features for IntelliFlow2 liquid, and IntelliFlow (legacy).
b. The menu map for each mode (each mode's menu map follows its screen summary section - a).
c. A table for each screen (across all modes) with details of each field or option on the screen.

The summaries and menu maps (b and c) are in the order:

- "Liquid - IntelliFlow2 ('IF2') - Screens Summary" on page 116
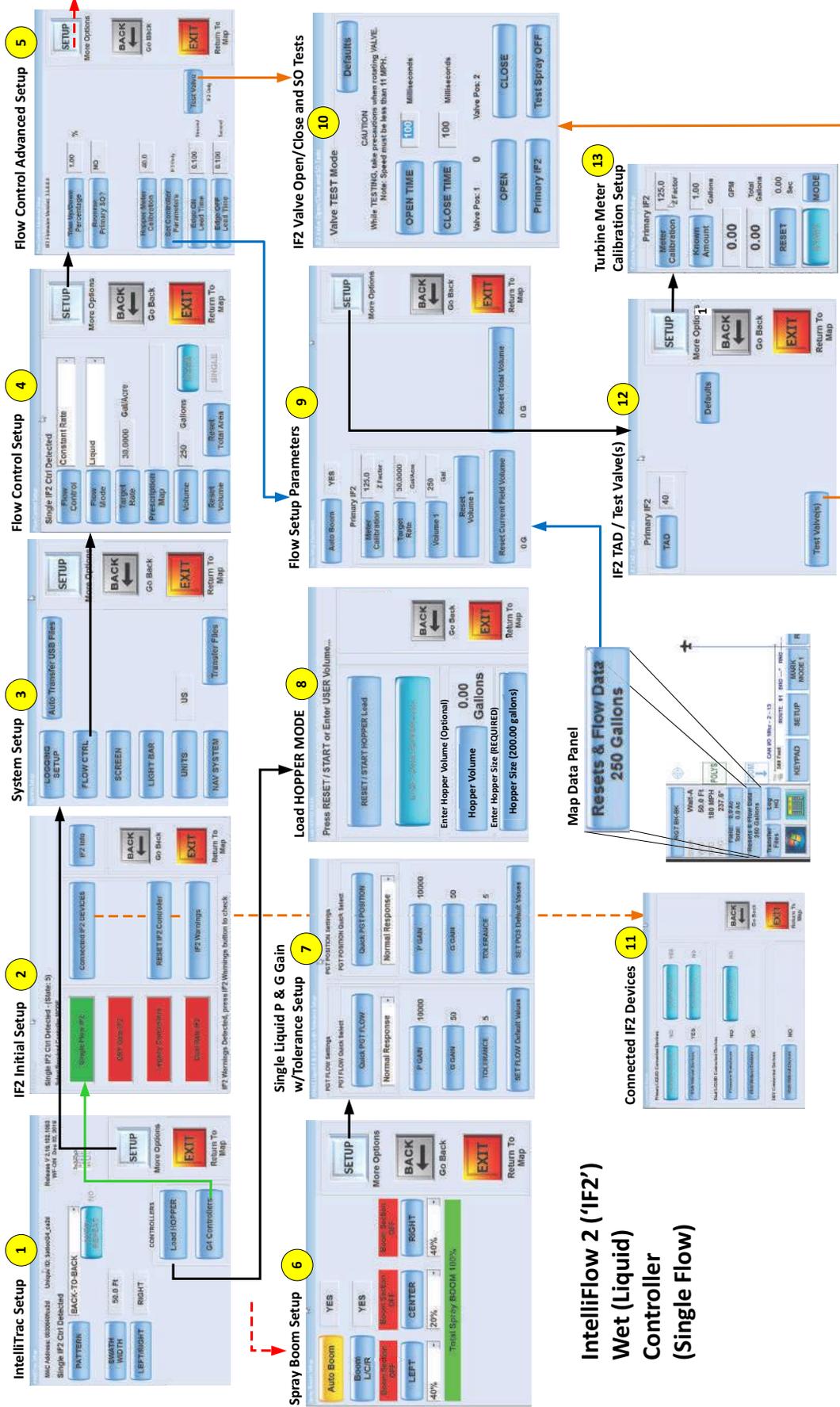- "Legacy Liquid - IntelliFlow ('IF') - Screens Summary" on page 118

Liquid - IntelliFlow2 ('IF2') - Screens Summary

See menu map next page. Use the screens/windows as follows (details are provided after the menu map).

Table 8-1: Liquid - IntelliFlow 2 ('IF2')

	Screen/Window:	Activities and Options
1	IntelliTrac Setup	Go to 'G4 Controllers' (in 2) and the system setup screen (3)
2	IF2 Initial Setup	Despite its name, this screen is for all controllers. Select from single flow IntelliFlow 2 ('IF2'; legacy controllers and dual rate IF2.
3	System Setup	Access the flow control setup screen (4)
4	Flow Control Setup	Set flow control rate type, flow mode, target rate (same as set in 9), prescription map, tank volume (content, not capacity [size], same as set in 9). Reset product used volume and sprayed area.
5	Flow Control Advanced Setup	Reverse primary SO (spray off), job flow prescription maps, go to set control parameters (9), set lead times for edge on and off (auto boom control. Access the valve test screen (10) - same as from 9
6	Spray Boom Setup	Set autoboom on (YES) or off (NO) for left, center and right boom control, view boom on/off status, set percentage of boom width that the left and right booms constitute (they will be the same, one sets the other). You can turn autoboom on or off here or in the Flow Setup Parameters screen (9).
7	Single Liquid P & G Gain w/Tolerance setup	Set 'quick' PGT values for flow and positions, set P and G gain and tolerance. Reset default values.
8	Load Hopper Mode	Initiate recording of hopper (intake) or set hopper volume
9	Flow Setup Parameters	This screen allows for dual rate settings, the primary rate being the single rate. For single rate, only one set of fields is presented. Set autoboom on (YES) or off (NO - same as on/off in Spray Boom Setup screen (6). Set (primary) meter's Z factor (same as in 13), target rate (same as set in 4), and tank volume (content, not capacity [size], same as set in 4). Reset volume 1 (primary flow), current field volume and total volume.
10	IF2 Valve Open/Close and SO Tests	Test valve opening and closing times and spray off functionality.
11	Connected IF2 Devices	Set pressure transducer, hopper turbine, 'RUN Without Devices' and boom control to Yes/No.
12	IF2 TAD / Test Valve(s)	Set the turn around delay, reset defaults, and access the valve test screen (10- same as from 5).
13	Turbine Meter Calibration Setup	Set meter's Z factor (same as in 9) and calibrate the turbine meter using a known amount or by rate and volume.

Liquid Menu Map - IntelliFlow2 ('IF2')

**IntelliFlow 2 ('IF2')
Wet (Liquid)
Controller
(Single Flow)**

Legacy Liquid - IntelliFlow ('IF') - Screens Summary

See menu map next page. Use the screens/windows as follows (details are provided after the menu map):

Table 8-2: Legacy - Liquid - IntelliFlow ('IF')

|	Screen/Window:	Activities and Options
1	IntelliTrac Setup	Go to 'G4 Controllers' (in 2) and the system setup screen (3)
2	IF2 Initial Setup	Despite its name, this screen is for all controllers. Select from single flow IntelliFlow 2 ('IF2'); legacy controllers and dual rate IF2.
3	System Setup	Access the flow control setup screen (4)
4	Flow Control Setup	Set flow control rate type, flow mode, target rate (same as set in 7), prescription map, tank volume (content, not capacity [size], same as set in 7). Reset product used volume and sprayed area.
5	Flow Control Advanced Setup	Reverse primary SO (spray off), job flow prescription maps, go to set control parameters (7), set lead times for edge on and off (auto boom control. Access the valve test screen (10) - same as from 8
6	Spray Boom Setup	Set autoboom on (YES) or off (NO - same as in 7), set for left, center and right boom control, read boom on/off status, set percentage of boom width that the left and right booms constitute (they will be the same, one sets the other).
7	Flow Setup Parameters	This screen allows for dual rate settings, the primary rate being the single rate. For single rate, only one set of fields is presented. Set autoboom on (YES) or off, (NO - same as in 6) set (primary) meter's Z factor (same as in 9), target rate (same as set in 4), and tank volume (content, not capacity [size], same as set in 4). Reset volume 1 (primary flow), current field volume and total volume.
8	TAD / Diagnostic & Trouble Shooting	Set the turn around delay and view system data, reset defaults, and access the valve test screen (10 - same as from 5).
9	Turbine Meter Calibration Setup	Set meter's Z factor (same as in 7) and calibrate the turbine meter using a known amount or by rate and volume.
10	IntelliFlow Valve/SO Tests	Test valve opening and closing times and spray off functionality.

Liquid Menu Map ('Legacy' IntelliFlow 'IF')
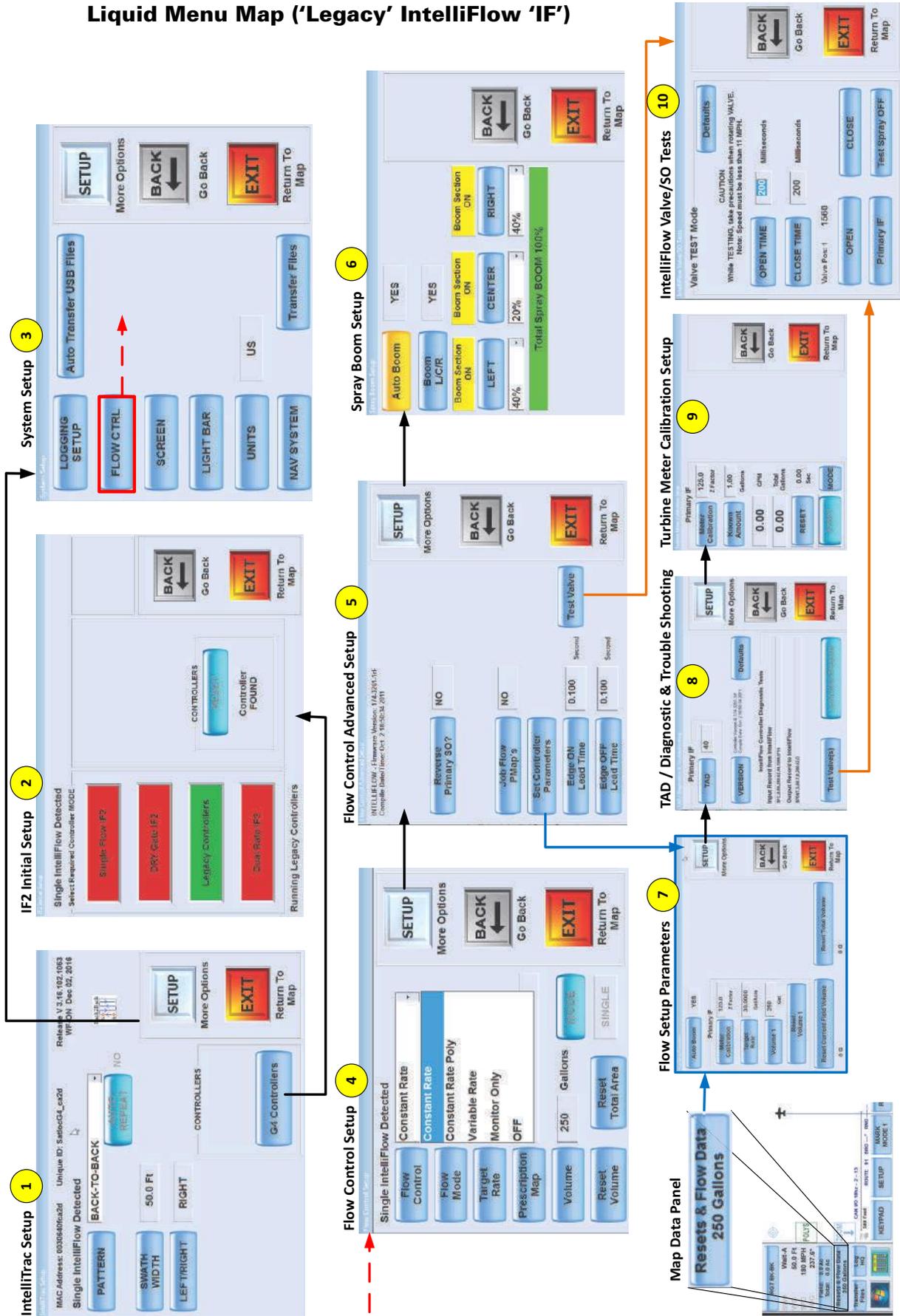
IntelliFlow (Liquid) and IntelliFlow 2 (Liquid) Screen Details

Each of the screens/widows listed and mapped in the previous pages are repeated here followed by a table with details about the fields and options on each screen/window ('Screen/Window Item' - column 1).
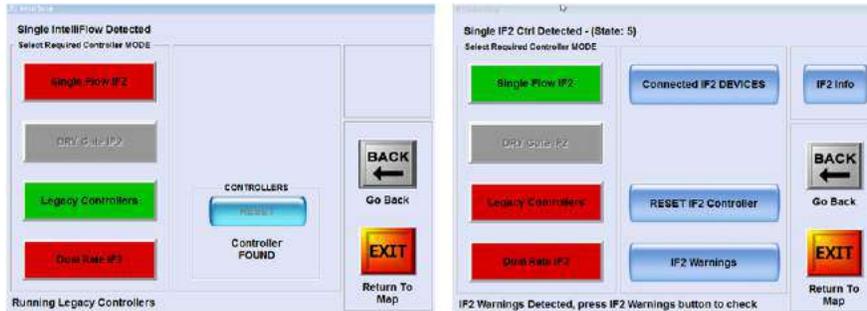
IntelliTrac Setup
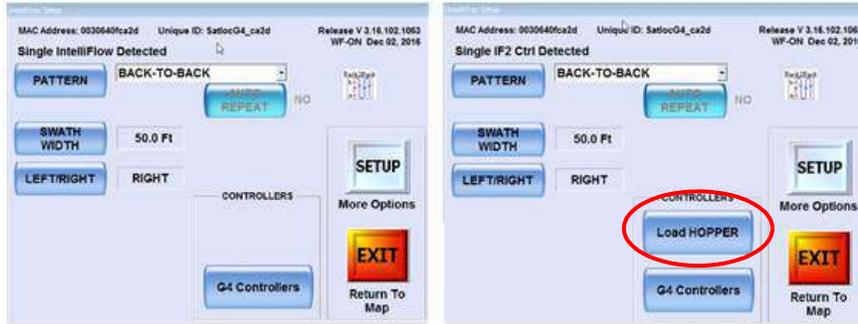
IF - Legacy   IF2 Liquid (Note 'Load HOPPER')

| IntelliTrac Setup (SETUP quick key below map)	
Screen/Window Item	**Description/Comment**
Load HOPPER	Liquid only – goes to "Load Hopper Mode" (page 128)
G4 Controllers	Goes to "IF2 Initial Setup" (next screen)

IF2 Initial Setup

i. Legacy ('IF')   ii. Liquid (IF2)`

| IF2 Initial Setup (SETUP > G4 Controllers)	
Screen/Window Item	**Description/Comment**
Single Flow IF2 (controller mode - selected in ii above)	Depending on LOGGING SETUP settings (System Setup – page 121), any change to Controller MODE closes current log, opens a new log.
Connected IF2 DEVICES	Goes to "Connected IF2 Devices" (page 132)
IF2 Info	Goes to "IF2 Info List" (page 133)
Legacy Controllers (controller mode - selected in i above)	
RESET IF2 Controller	
Dual Rate IF2 (controller mode - not shown selected)	
IF2 Warnings	Goes to "IF2 Operational Warnings List" (page 132)
RESET (Controllers IF only)	May say "Controller NOT FOUND"

System Setup

FLOW CTRL - Legacy and IF2 Liquid   DRY CTRL - Legacy Dry
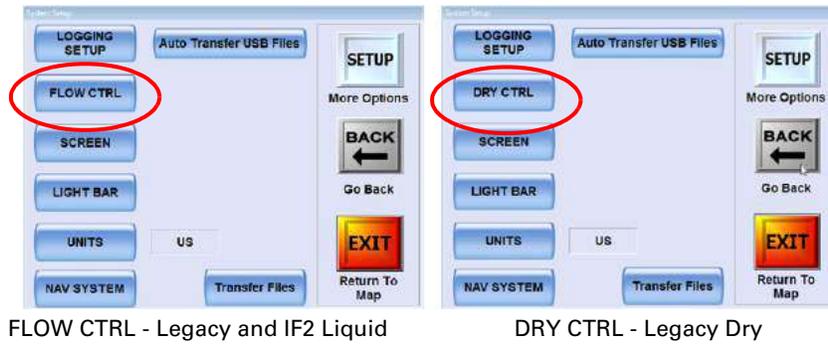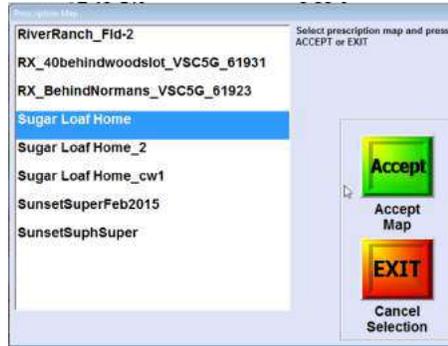
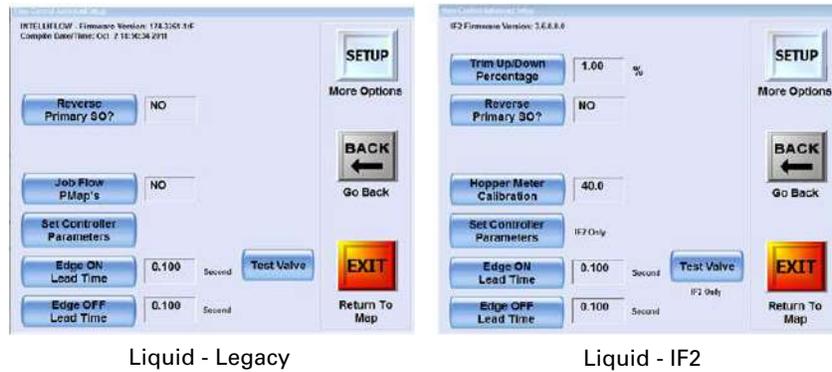| System Setup (SETUP > SETUP)	
Screen/Window Item	**Description/Comment**
'DRY CTRL' or 'FLOW CTRL' (and other non-IF2 related settings, e.g. LOGGING SETUP)	From Flow Mode in "Flow Control Setup" (following) where flow mode 'Dry' (legacy dry) shows DRY CTRL here and flow mode 'Liquid' shows FLOW CTRL here.

Flow Control Setup

| Legacy (IF) | Liquid (IF2) | Dry - Legacy (IF) |
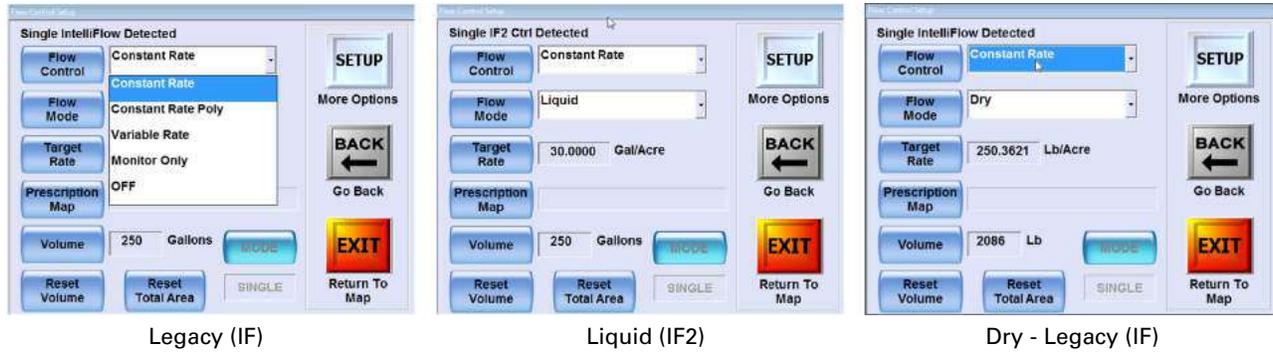
Flow Control Setup (SETUP > SETUP > FLOW CTRL or DRY CTRL)	
Screen/Window Item	**Description/Comment**
Flow Control	Constant Rate - Constant rate flow control
	Constant Rate Poly - Constant rate flow control that automatically turns on/off at polygon borders.
	Monitor Only - You monitor the flow system, 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 load—this option is available only if you have a prescription map loaded. For variable rate spray applications you can select a prescription map from the Prescription Map window. See "Using Prescription Maps" on page 135 for more information.
	OFF
Flow Mode	Liquid or Dry – changes **Target Rate** units. Determines button label in System Setup (preceding screen) where Liquid shows as 'FLOW CTRL' and Dry shows as 'DRY CRTL').
Target Rate	Press (for number pad) and enter target rate. Units change according to **Flow Mode** e.g. Lb/Acre for Dry, Gal/Acre for Liquid (for 'Global Units' = US from UNITS from System Setup - page 121).
Prescription Map	Opens the Prescription Map window.
	Displays the loaded prescription map. You can also select a different prescription map from the drop-down list.
	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.
MODE	
Reset Volume	Resets the volume to the last amount entered by the user. The volume resets to the default 500 gallons if no previous amount was entered (that is, the default was accepted)
Reset Total Area	Reset the total sprayed area (as shown in the data panel) back to 0. The Total Area counter resets to 0.

Prescription Map   (See also "Using Prescription Maps" on page 135

Prescription Map (SETUP > SETUP > FLOW CTRL or DRY CTRL > Prescription Map)	
Screen/Window Item	**Description/Comment**
Listed prescription maps in G4 data folder.	Lists all PMaps currently on the hard drive (loaded through the Transfer Files feature (System Setup screen). Select accordingly. (Can also use Auto Transfer USB on the System Setup screen.)

Flow Control Advanced Setup - Liquid - Legacy (IF) and IF2

Liquid - Legacy   Liquid - IF2

| Flow Control Advanced Setup (Liquid - IF and IF2), (SETUP > SETUP > FLOW CTRL> SETUP	
Screen/Window Item	**Description/Comment**
Trim Up/Down Percentage (e.g. 1.00) %	**IF2 liquid only:** Percentage of target rate to increase/decrease per trim ('bump'): e.g. Target = 30 gals/acre; Trim% = 5; one trim 'nudge' = 1.5 gals/acre increase (so 31.5 gals per acre). Percentage is not cumulative; it is always of the target rate, not the 'trimmed' rate.
Reverse Primary SO (Y/N)	SO = Spray Off. Relates to auto-boom off/on spray switching by braking/releasing the aircraft's pump where: "normal" = braked = spray off; released = spray on. If the G4's auto-boom off/on switching does not work this way (i.e. you get braked = spray, released = spray off), set this to YES – reverse (to 'normal').
Job Flow PMaps	**Legacy (IF) only:** Set to YES to have the option to include a flow rate for a polygon created while flying (see "Setting polygon points as you fly" on page 102).
Hopper Meter Calibration (e.g. 40)	**IF2 only:** This is the Z factor for the hopper load (intake meter) if fitted. Its intake reading should agree with the loader's delivered meter reading. If it doesn't, investigation is required.
Set Controller Parameters (e.g. 'IF2 Only')	Goes to "Flow Setup Parameters" (page 125)
Edge ON Lead Time (e.g. 0.100) Second	Works with auto boom – how much (in seconds) to open valve or gate before the edge of an inclusion polygon on approach.
Test Valve ('IF2 only' below button)	Goes to "IF2 Valve/Close and SO Test" (page 130).
Edge OFF Lead Time (e.g. 0.100) Second	Works with auto boom – when within an inclusion polygon, how much (in seconds) to close valve or gate before the edge of an inclusion polygon when exiting.

Flow Control Advanced Setup - (Legacy) Dry

Flow Control Advanced Setup (Dry - IF), (SETUP > SETUP > DRY CTRL> SETUP)	
Screen/Window Item	**Description/Comment**
Auto Boom (Y/N)	Set to Y to have the booms come on and off at application boundaries (polygons, prescription maps).
Edge ON Lead Time (e.g. 0.100) Second	Works with auto boom – how much (in seconds) to open valve or gate before the edge of an inclusion polygon on approach.
Edge OFF Lead Time (e.g. 0.100) Second	Works with auto boom – when within an inclusion polygon, how much (in seconds) to close valve or gate before the edge of an inclusion polygon when exiting.

Flow Setup Parameters - Liquid - Legacy (IF) and IF2)
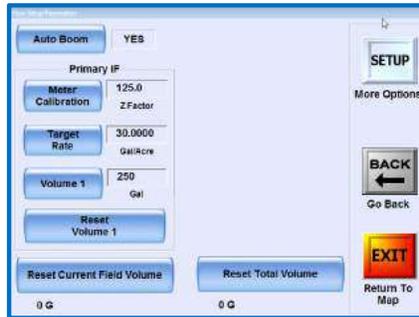
| Flow Setup Parameters (Liquid - IF and IF2), (SETUP > SETUP > FLOW CTRL> SETUP > Set CONTROLLER Parameters)	
Screen/Window Item	**Description/Comment**
Auto Boom Y/N	Set to Y to have valve/gate open/close at product application boundaries (polygons and PMaps). This is the same Y/N setting as on the "Spray Boom Setup" screen (page 126).
Meter Calibration	Set the Z Factor value – start with the Z factor shown on the flow meter. This is the same as setting the meter calibration the "Turbine Meter Calibration Setup - Liquid - IF and IF2" on page 131
Target Rate	User set 'coverage'
Volume 1/Volume 2	User set – volume in hopper
Reset Volume 1 / Volume 2	Resets volume to last value in the Volume field
Reset Current Field Volume	Resets (to zero) the volume recorded for the current field to zero
Reset Total Volume	Resets (to zero) the cumulative volume recorded for all fields in the current job.

Spray Boom Setup

Liquid - IF and IF2

Spray Boom Setup (Liquid - IF and IF2), (SETUP > SETUP > FLOW CTRL> SETUP > SETUP)	
Screen/Window Item	Description/Comment
Auto Boom - Y/N	Set to Y to have the booms come on and off at spray boundaries (polygons, prescription maps). This is the same Y/N setting as on the "Flow Setup Parameters" screen (page 125).
Boom L/C/R - Y/N	Displays/hides the Boom Section (ON/OFF) indicators
Boom Section x3 – ON or OFF	These are indicators, not controls. Electrical connections detect when booms are on or off and indicate their status here: Yellow = ON; Red = OFF.
LEFTCENTERRIGHT	Set these so the system knows by what percentage to reduce the flow rate as booms are switched off
40% 20% 40%	Percentage of whole boom (based on number of nozzles). Set to nearest percentages rounded to the nearest 5 for then nozzle configuration. For example, wing booms with 17 nozzles each, center boom with 7 nozzles (total 41), the percentages are 41.46/17.07/41.46 so, rounded, set to 40/20/40
Total Spray BOOM 100%	Has to be 100 – accumulated boom percentages, Left and right mutually adjust to be equal, adjust center to make 100.

Single Liquid P and G gain with Tolerance Setup - Liquid - IF2 Only
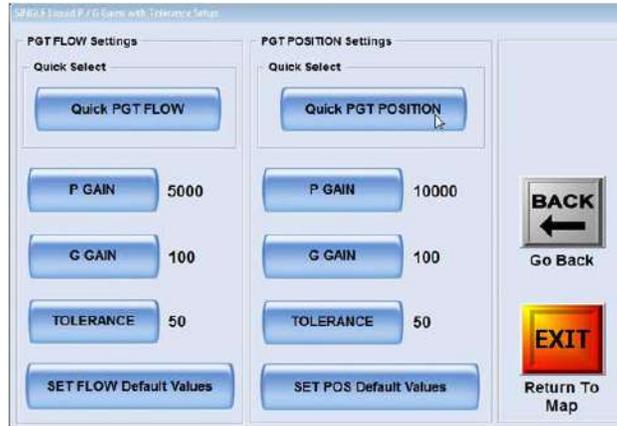
Liquid - IF2 only

| SINGLE Liquid P & G Gain with Tolerance Setup (SETUP > SETUP > FLOW CTRL> SETUP > SETUP > SETUP)	
Screen/Window Item	**Description/Comment**
Quick PGT FLOW	This button opens the drop-own list below it. The preset options are Slow, Normal and Fast; they reflect the 'aggressiveness' with which the system attempts to attain the PGT target flow rate settings.
Quick PGT POSITION	This button opens the drop-own list below it. The preset options are Slow, Normal and Fast; they reflect the 'aggressiveness' with which the system attempts to attain the PGT position settings.
P GAIN (e.g. 5000 - the default value)	This is the major movement of the valve—how quickly and slowly the valve initially responds.
G GAIN (e.g. 100 - the default value)	This is the fine tune adjustment of the valve, effecting overshoot and the speed of fine tune corrections to the valve.
TOLERANCE (e.g. 50 - the default value)	This is the 'plus or minus' value for the encoder's position. For example, if the encoder position is 3000 and the tolerance is set to 5, the motor will stop moving the valve within the encoder range of 2995-3005.
SET FLOW Default Values	Resets PGT flow values to defaults (5000, 100, 50).
SET POS Default Values	Resets PGT position values to defaults (5000, 100, 50).

Load Hopper Mode - Liquid - IF2 Only

Liquid - IF2 only

Load HOPPER MODE (SETUP - Load HOPPER)	
Screen/Window Item	**Description/Comment**
RESET / START HOPPER Load	Resets the current hopper volume (and meter) to zero and readies the meter for recording the liquid intake.
STOP / SAVE HOPPER Load	Saves the recorded load volume – populates 'Volume' in the "Flow Control Setup" screen (page 122).
Hopper Volume	Manual entry of added volume – populates 'Volume' in the "Flow Control Setup" screen (page 122). Can be used to add any known residual volume to the recorded loaded volume.
HOPPER Size	Calibrates the fill level indicator, enabling it to know where full and half full etc. are represented on the indicator.

TAD / Diagnostics & Troubleshooting, Version Data - Liquid - IF and IF2
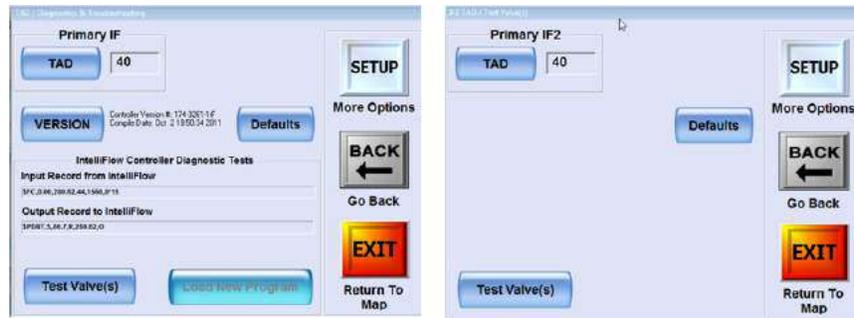
Liquid - IF and IF2 only

TAD / Diagnostic & Trouble Shooting (IF); IF2 TAD / Test Valves (IF2) (SETUP > SETUP > FLOW CTRL> SETUP > Set CONTROLLER Parameters > SETUP)	
Screen/Window Item	**Description/Comment**
TAD (IF & IF2)	'Turn Around Delay'. Change the input/output of the flow controller within a range of 20 (minimum) and 80 (maximum): 40 is the default. Typically, you do not need to change this value.
Version (IF only - see **IF2 Info** from **IF2 Initial Setup**)	Information only – controller version
Defaults	Restore factory default(s) (TAD to 40)
IntelliFlow Controller Diagnostic Tests (IF only)	Fields display information depending on the task you are performing, such as diagnostic information when troubleshooting or status information when updating IntelliFlow software
Test Valve(s) (IF & IF2)	Goes to "IntelliFlow Valve/SO Tests" (IF) or "IF2 Open/Close and SO Tests" (IF2) - both page 130. The button is also on "Flow Control Advanced Setup - Liquid - Legacy (IF) and IF2" on page 124.
Load New Program (IF)	IF only - for loading new firmware for legacy IntelliFlow.

IntelliFlow Valve/SO Tests (IF); IF2 Valve Open/Close and SO Tests (IF2)

Screen title (IF - shown here) "IntelliFlow Valve/SO Tests"

Screen title (IF2) "IF2 Valve Open/Close and /SO Tests"

IntelliFlow Valve/SO Tests (IF); IF2 Valve Open/Close and SO Tests (IF2), (SETUP > SETUP > FLOW CTRL> SETUP > Set CONTROLLER Parameters > SETUP > Test Valve(s))	
Screen/Window Item	**Description/Comment**
Defaults	Resets open and close times to defaults (100 ms)
OPEN TIME (e.g. 200) Milliseconds	Use times for a simple check of relative pump runtimes for gate opening – e.g. 200 milliseconds for a 0.2 second runtime, 2000 milliseconds for a 2 second runtime
CLOSE TIME (e.g. 200) Milliseconds	Use times for a simple 'audio check' of relative pump runtimes for gate closing – e.g. 200 milliseconds for a 0.2 second runtime, 2000 milliseconds for a 2 second runtime
Valve Pos: 1 0 Valve Pos: 2	Encoder position for valves (single and dual flow) at open or closed position.
OPEN	Open the valve.
CLOSE	Close the valve.
Primary IF2	If a secondary (slave) controller is installed, this toggles between the primary (main) and secondary (slave) controller.
Test Spray OFF	Press to determine if the pump brake engages (to turn spray off).

Turbine Meter Calibration Setup - Liquid - IF and IF2

Liquid - IF and IF2 only

Turbine Meter Calibration Setup (SETUP > SETUP > FLOW CTRL> SETUP > Set CONTROLLER Parameters > SETUP > SETUP)	
Screen/Window Item	**Description/Comment**
Meter Calibration	Adjust the 'Z Factor' value, as required, so that the reported GPM/LPM matches the actual values used for your stop/start flow rate measurement/calibration procedure (your 'stop/start test parameters'). Start with the Z factor value shown on the meter.
	This is the same as setting the meter calibration in the "Flow Setup Parameters - Liquid - Legacy (IF) and IF2)" on page 125.
Known Amount	Enter the amount of liquid you will use in a visual, fixed-volume rate measurement/calibration procedure.
GPM (or LPM)	The system's calculation of the flow rate based on your stop/start flow rate measurement/calibration procedure using the current meter calibration (Z factor). Adjust the Z factor until this matches your stop/start test parameters.
Total Gallons (or Liters)	The system's calculation of the volume moved during your stop/start test.
Sec	Timer - runs between start and stop of your flow rate measurement/ calibration procedure.
RESET	Reset the calibration time to zero.
START/STOP	Start and stop your rate measurement/calibration procedure.
MODE	Disable/enable Known Amount field to suit your flow rate measurement method.

IF2 Operational Warnings List
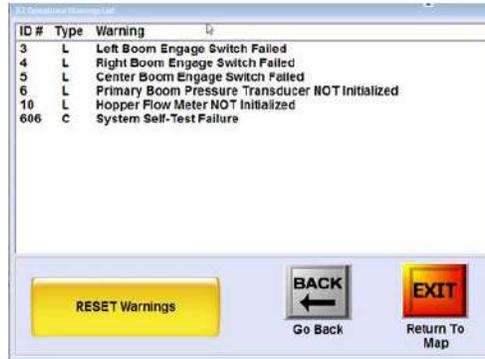
Liquid - IF and IF2 only

| IF2 Operational Warnings List (SETUP > G4 Controllers > IF2 Warnings)	
Screen/Window Item	**Description/Comment**
ID# - Type - Warning	Types are L, Liquid and C, Common (not specific).See "IF2 Operational Warnings" on page 134 for a list of warnings.
RESET Warnings	Effectively refreshes the display. At the next system check, all warnings relating to current statuses are redisplayed.

Connected IF2 Devices
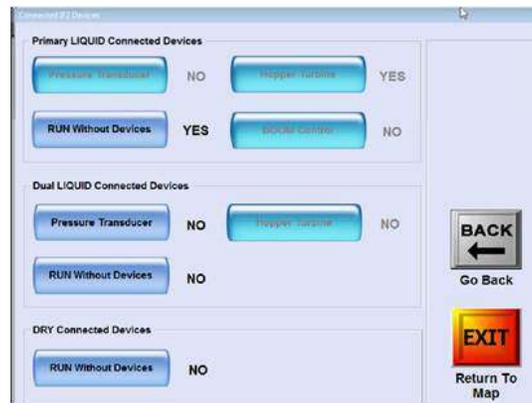
Connected IF2 Devices (SETUP > G4 Controllers > Connected IF2 Devices)	
Screen/Window Item	**Description/Comment**
Pressure Transducer (Y/N)	Yes/No = fitted/not fitted. If fitted, provides a digital readout of boom pressure. The information-only readout is a display option for the screen fields and the lightbar (it is option '**Primary BOOM PSI**'). On startup, the system checks for the transducer. If set to YES here, and the transducer is not detected, an error is generated; if set to NO, and the transducer is not detected, no error is generated.
Hopper Turbine (Y/N)	The liquid intake meter (liquid only)
BOOM Control (Y/N)	Functionality not currently available
RUN Without Devices (Y/N)	Disable all the above devices (without changing their Y/N setting)

IF2 Info List
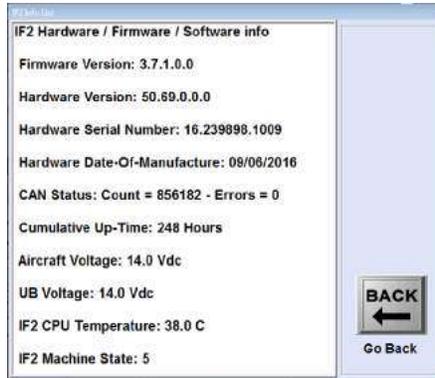
IF2 Info List (SETUP > G4 Controllers > IF2 Info)	
Screen/Window Item	**Description/Comment**
IF2 Hardware / Firmware / Software info	
Firmware Version: (e.g. 3.6.2.0.0)	
Hardware Version (e.g. 50.69.0.0.0)	
Hardware Serial Number: (e.g. 16.232165.1003)	
Hard Date-Of-Manufacture: (MM/DD/YYYY)	
CAN Status: Count = n – Errors = n	As displayed above
Cumulative Up-Time: (e.g. 7 Hours)	
Aircraft Voltage: (e.g. 25.4 Vdc)	
UB Voltage: (e.g. 25.4 Vdc)	
IF2 CPU Temperature: (e.g. 32.0 C)	
IF2 Machine State: (e.g. 14)	

IF2 Operational Warnings

Liquid		Common (not specific to liquid)	
0	No IF2 System Errors	601	Toggle Open Switch NOT Initialized
1	Primary Flow Boom Pressure Switch Failed	602	Toggle Closed Switch NOT Initialized
2	Dual Rate Boom Pressure Switch Failed	603	GPS Guidance System Heartbeat Timeout
3	Left Boom Engage Switch Failed	604	CANopen Slave Node Timeout
4	Right Boom Engage Switch Failed	605	KEFEX Manual Override of Outputs Enabled by User
5	Center Boom Engage Switch Failed	606	System Self-Test Failure
6	Primary Boom Pressure Transducer NOT Initialized	607	CANopen Slave Node Configuration Failed
7	Dual Boom Pressure Transducer NOT Initialized	608	Mainboard Over Temperature (> 85 C)"
8	Primary Flow Meter NOT Initialized	609	CANopen Slave Node Over Temperature (> 85 C)
9	Dual Flow Meter NOT Initialized	610	Mainboard Under Voltage (< 10 VDC)
10	Hopper Flow Meter NOT Initialized	611	Mainboard Under Voltage (< 10 VDC)
11	Primary Valve Position NOT Initialized	612	Mainboard Under Temperature (< -40 C)"
12	Dual Valve Position NOT Initialized	613	CANopen Slave Node Under Temperature (< -40 C)"
13	Primary Bypass Switch Failed	614	CANopen Slave Node Under Temperature (< -40 C)"
14	Primary Bypass Switch Engaged		
15	Primary Boom Pressure Override of Valve Position Calibration		
16	Dual Boom Pressure Override of Valve Position Calibration		
17	Primary Motor Bridge Overcurrent		
18	Dual Motor Bridge Overcurrent		
19	Primary Turbine reports no flow while Boom Pressure Switch is closed		
20	Dual Turbine reports no flow while Boom Pressure Switch is closed		

Using Prescription Maps

A prescription map (also Rx map or PMap) is a map of a particular land area divided into sections of different application rates. You use prescription maps in conjunction with flow control functionality to automatically spray different areas at different flow rates.

Figure 8-1 shows a prescription map as it appears in the map.
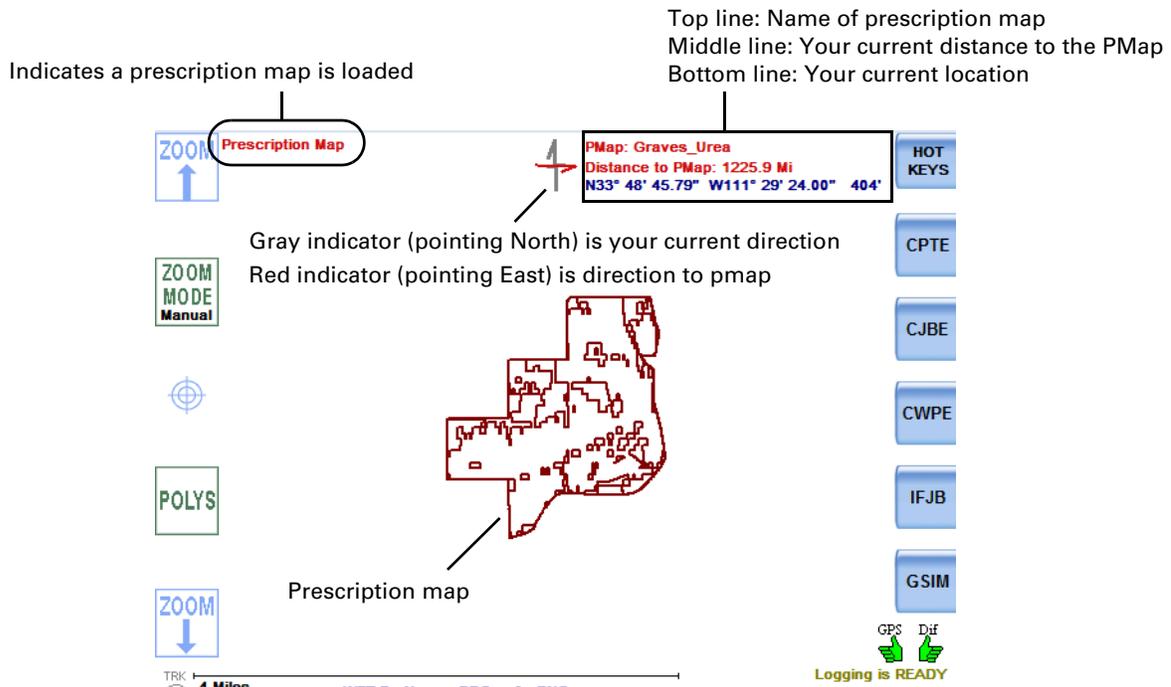
Figure 8-1: Prescription map

Before you can use a prescription map you must:

- Have a valid prescription maps subscription and have entered the subscription information into IntelliTrac (see "Authorize Feature Unlock" on page 157)
- Import (transfer) the prescription map files to the IntelliTrac hard drive
- Load the prescription

Importing a Prescription Map

If this is the first time you are loading a specific prescription map you must load the map from a USB drive or your Dropbox® account. When you load a prescription map it is stored on the G4 hard drive—you can then load that map for use. If you load the prescription map while you have a job active you can save that job with the prescription map so the next time you open that job the prescription map is available.

When you first transfer (actually *copy*) a prescription map (from a USB drive or your Dropbox account) you actually import two files—a .PMD file and a .PMH file.

When you are ready to use the prescription map you select a single file (see "Loading a Prescription Map" on the next page).

To Import a Prescription Map:

Note: If your prescription map files are stored...

- *On a USB drive, insert the USB drive into the G4.*
- *In your Dropbox account, access your Drobox your usual way.*

Access the File Transfer window (1 below right):

From the data panel **Transfer Files** **Log HQ** **or** **SETUP** > **SETUP** > **Transfer Files**
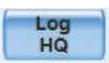
If your files are on the flash USB they will appear in the right list box **1a** . If your files are in your Dropbox account, press **Go To Dropbox** and follow your usual Dropbox procedure to select your files.

With the prescription map files showing in the right list box:

Select the first file you want to transfer **1b** . Press the arrows button 2 (it changes to left pointing arrows [**<<**] and is no longer dimmed). The selected file appears red in the Hard Drive list 3 , indicating it is ready to be copied to the hard drive.

Repeat **1b** and **2** for each additional file you want to transfer (4 and 5).

Press **Copy Selected Files** 6 . A message similar to the one shown 7 appears and the files are transferred.

Press **EXIT** to return to the map 8 .

Loading a Prescription Map

After you transfer prescription map files to the G4 hard drive you can load the file into IntelliTrac for use. If you no longer need the prescription map, you can clear it from the screen.

Path to loading a prescription map:

SETUP **>** SETUP **>** FLOW CTRL **>** Prescription Map

(Note the Prescription Map button ① is active indicating that at least one prescription map is on the G4 hard drive).

Press **Prescription window** ① . The Prescription Map window appears ② showing a list of all available prescription maps.

Select the prescription map you want to load ③ then press **Accept** ④ . A message similar to the one shown ⑤ appears indicating the prescription map is loading.

When the message closes press **EXIT** ⑥ to close the Flow Control Setup window. The prescription appears in the map and additional map information appears in the upper left and right of the area (see Figure 8-1 on page 135).

If a prescription map is currently loaded on the map, when you open the Prescription Map window ② , you will have the option to clear the current prescription map (**< Clear current PMAP>** already highlighted ⑥). With the option highlighted, press **Accept** ④ and YES at the NO/YES confirmation pop-up ⑦ .
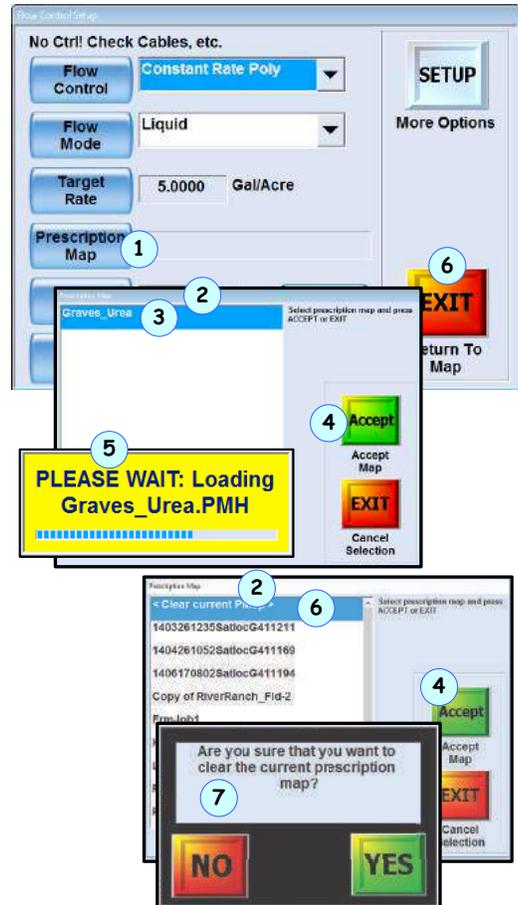
Chapter 9: Advanced Setup and Customization

Advanced Device Setup
Advanced Options Setup
Advanced Miscellaneous Setup
Configuring Your Zoom and Pan
Understanding Guidance Delay
Customized Settings

IntelliTrac features accessed through the Advance Setup window (such as HotKeys, Polygons, Waypoints, Edge Warning) are documented elsewhere in this document. The features described in this chapter cover advanced device setup (for example GPS, COM port configuration); advance option setup (twenty-three 'yes/no' or 'on/off' options); advanced miscellaneous setup.

Advanced Device Setup

Path to the Advanced Device Setup window: SETUP **>** SETUP **x 3**
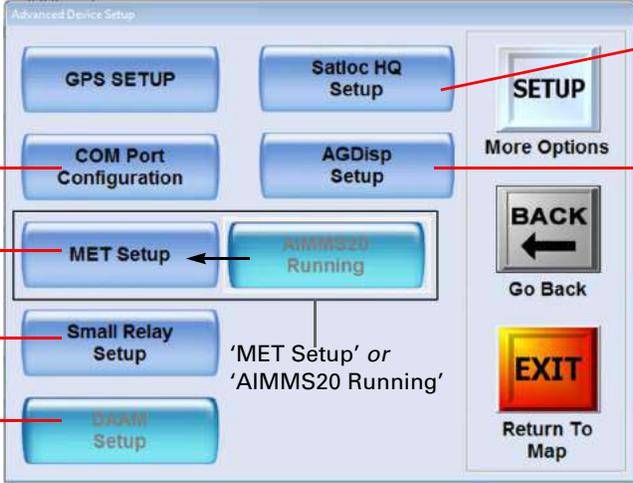
Set up connections to 3rd-party devices that your G4 can communicate with. See page 144.

Set static MET data (if no AIMMS). See page 144.

Use relays to switch devices ON/OFF. See page 144.

Monitor engine data. See page 145.

Set up comms for SATLOC HQ. See page 145.

Use with AIMMS (AIMMS Running button label, not MET Setup) - offset the wayline based on current wind conditions. See page 145.

'MET Setup' *or* 'AIMMS20 Running'

GPS SETUP - Introduction

Path to the GPS Setup window: SETUP **>** SETUP **x 3 >** GPS SETUP ,
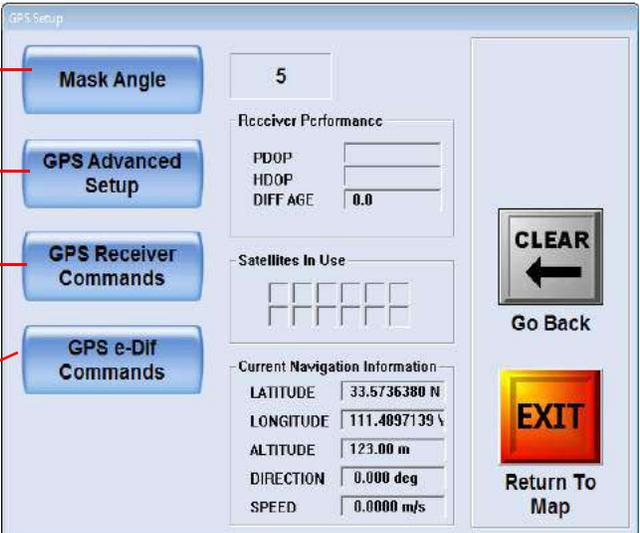
Set the mask angle (default is 5°)—any satellites below this angle are ignored even if available (see "GPS SETUP - Mask Angle" on page 141),

Set the differential source and GPS Rx rate (see "GPS SETUP - GPS Advanced Setup" on page 142),

Send GPS commands to your receiver (see "GPS SETUP - GPS Receiver Commands" on page 143),

Set your absolute and relative e-Dif positions

Figure 9-1: GPS Setup window

GPS SETUP - Read-Only Information

Table 9-1: GPS Setup window read-only information

Field	Description
Receiver Performance	
PDOP HDOP	**P**ositional/**H**orizon **D**ilution **O**f **P**recision
	Dilution of precision is a measure of receiver/satellite geometry (position of satellites to each other from the receiver). DOP reduces positioning accuracy (the lower the value the better the accuracy).
DIFF AGE	Age (in seconds) of the differential corrections signal.
Satellites In Use	
	Number of satellites currently used in GPS calculations - each square is one satellite.
Current Navigation Information	
LATITUDE	Your current latitude.
LONGITUDE	Your current longitude.
ALTITUDE	Your current altitude.
DIRECTION	Your current direction.
SPEED	Your current speed.

GPS SETUP - Mask Angle

The mask angle (or elevation mask angle) is the angle below which any satellites are ignored even if they are available. Satellites that are higher above the horizon (higher in the sky) will have less noise (less signal degradation) than satellites closer to the horizon. By setting a mask angle you eliminate (mask) those satellites that are closer to the horizon and that reduce accuracy. The default mask angle is 5°.

To set the mask angle:

1. In the GPS Setup window (at right, main), press **Mask Angle**. The Enter Mask Angle window appears (at right, inset.)

2. Enter a new mask angle value then press **Accept**.
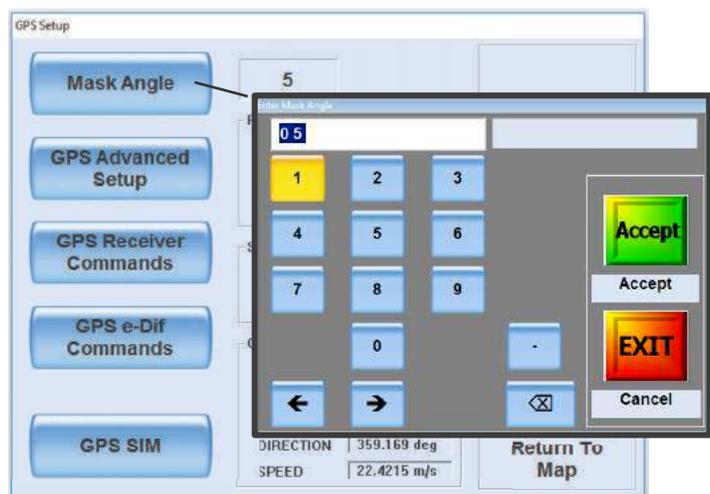
GPS SETUP - GPS Advanced Setup

Path to the GPS Advanced Setup window (below right, inset): **SETUP** > **SETUP** x 3 > **GPS SETUP** > **GPS Advanced Setup**

Set the LBAND Beam Frequency

If you are running a GPS receiver that has L-Band support, you can select an L-Band frequency for your geographic region from the dropdown (which will otherwise be inactive as shown at right).

Change the Diff Source

If required, press **Diff Source,** select e-Dif or WAAS. Press **NO** or **YES** accordingly at the pop-up window (not shown).

Differential GPS (or DGPS) corrections improve location accuracy by correcting satellite GPS positions using known fixed reference positions. Available options are WAAS (SBAS), L-band, and e-Dif. WAAS is a free service that mainly covers North America. L-band corrections are available by subscription only—contact your dealer for more information.

e-Dif is not a differential service (does not use satellites or reference stations with known fixed positions); however, it can provide differential-like accuracy by modeling errors and computing its own set of pseudo-corrections. See "GPS SETUP - e-Dif Commands" on page 143 for more information on e-Dif.

Change the WAAS PRN

The WAAS PRN button is enabled only if Diff Source is WAAS.

Select the WAAS (SBAS) satellite (or satellite PRN) used in IntelliTrac's position calculation. The default value is AUTO (IntelliTrac automatically selects from the available satellites). Any time you change this setting, IntelliTrac displays the NO/YES message inset at right.

Change the GPS Receiver (Rx) Update Rate

If required, press **GPS Rx Rate,** select from 5, 10 or 20 Hz.

The GPS receiver update rate is how often the receiver calculates its position. The receiver inside the G4 provides updates rates up to 20 Hz (20 times/second). A higher update rate improves accuracy and reduces screen display lag time, but it also requires more processing power. Contact your local dealer or Satloc Technical Support for information on changing this setting.
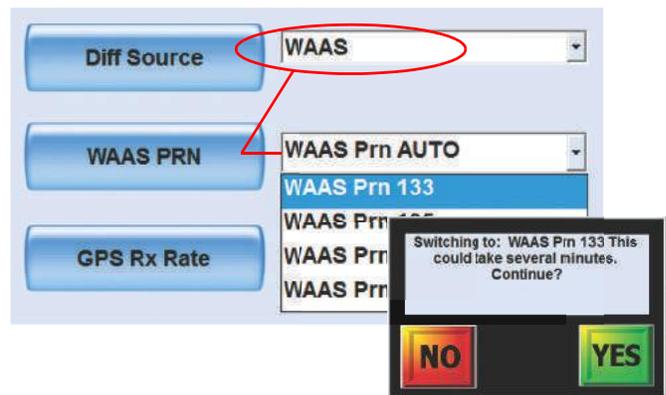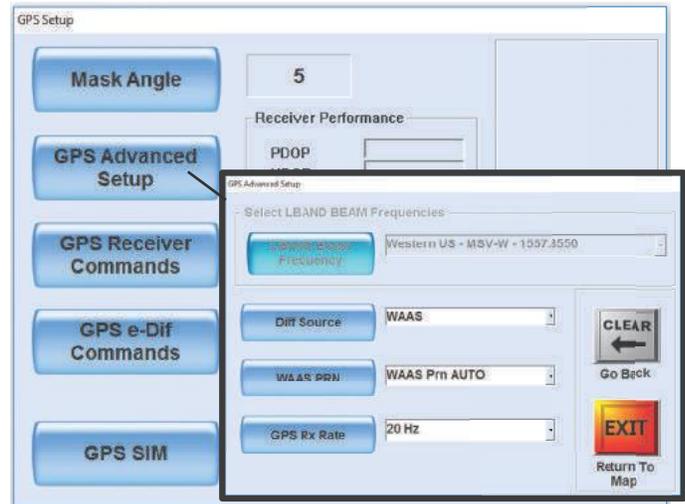
GPS SETUP - GPS Receiver Commands

You can send GPS commands to the receiver to request such information as receiver engine and firmware version, differential application being used, and SBAS (WAAS) frequency.

Path to GPS Receiver Commands (below right, inset): **SETUP** **>** **SETUP** **x 3 >** **GPS SETUP** **>** **GPS Receiver Commands**

In the GPS Receiver Commands window press **Select Command**. Select a command from the drop-down list. The receiver response appears in the box below the drop-down.

GPS SETUP - e-Dif Commands

e-Dif provides differential-like accuracy by modeling errors and computing its own set of pseudo-corrections. Use the e-Dif Commands window (Figure) to work with e-Dif and:

Select a command here ...

... and the receiver response appears here

- Set an absolute e-Dif position (such as for your home base) or reset an absolute e-Dif position (such as for working from a different base location)
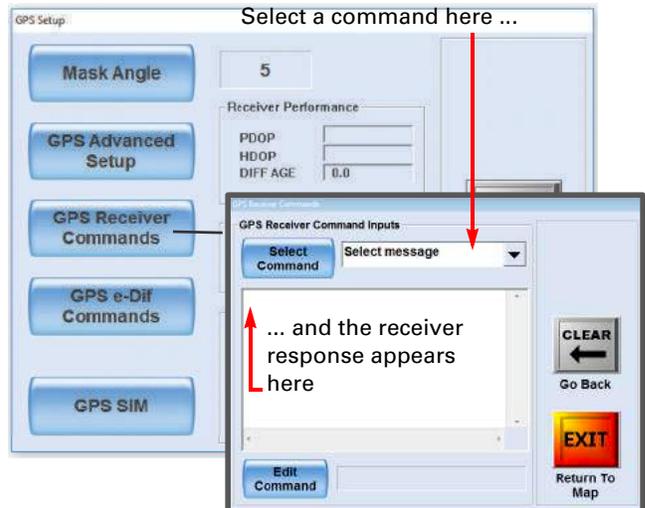
    Note: If your base is the same each day you only need to set your absolute e-Dif position once. You reset your e-Dif position if you use a different home base (including if you then return to your original home base).

- Set a relative e-Dif position
- Reset (recalibrate) e-Dif based on your current position

Path to GPS e-Dif Commands (below right, inset): **SETUP** **>** **SETUP** **x 3 >** **GPS SETUP** **>** **GPS e-Dif Commands**

In the e-Dif Commands window:

1. To set/reset your known absolute aircraft (e-Dif) position, press in turn the **Latitude**, **Longitude** and **Elevation** buttons and in the data entry window enter your known values then press **Accept.** To send the values to the GPS receiver, press **Reset Absolute e-Dif Position**
2. To set your relative e-Dif position, press **Set Relative Position**.
3. To reset e-Dif (recalibrate e-Dif based on your current position), press **Reset e-Dif**.
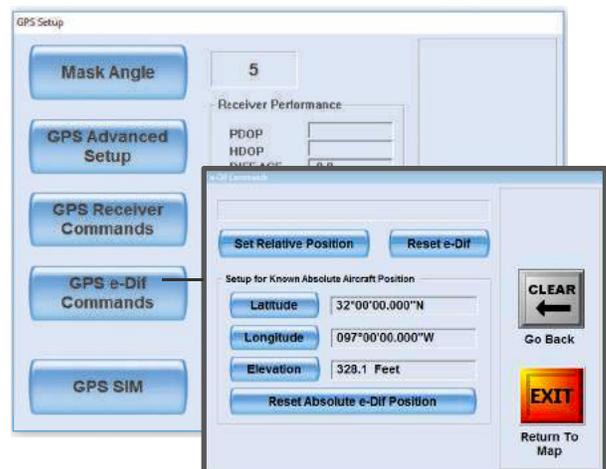
COM Port Configuration

Use the Port Configuration screen to set up connections to 3rd-party devices that your G4 can communicate with and display the information from and include in the logs.

Use the NMEA Baud Rate and Messaging Setup sub-screen to set up your G4 to send GPS data to 3rd-party devices that follow the NMEA 0183 protocol.

MET Setup/AIMMS20 Running

If the **MET Setup** button is active (showing that label), you can manually input meteorological data required for inclusion in log files created during operations. The data is static so appears in the log just as it is entered in the MET Setup screen (at right)*. You can view the stored MET data when viewing log data in MapStar. It will be the same at each log instance.

If the G4 detects an AIMMS (on-board, real time weather), the button will show "**AIMMS20 Running**" and be inactive. You can view the recorded MET data when viewing log data in MapStar. The data shown at each logged interval will be that prevailing at the log instance. See also "AGDisp Setup" on page 145.
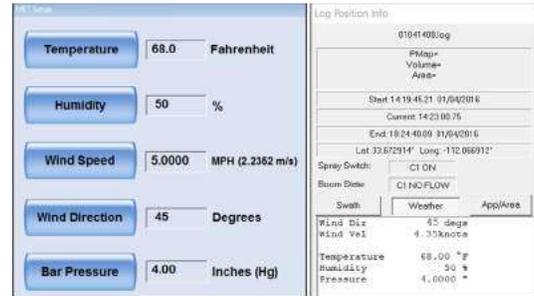
(*Note: Wind Speed is in knots in MapStar)

Small Relay Setup

Note: The small relay feature is not currently available.

There are two 'small relays' available on the G4:

(on Advanced Device Setup screen)

- Relay # 1, on comports cable 051-0299-000
- Relay #2, on flow cable 051-0300-000# (IF) or 051-0407-000# (Transland controller and IF2).

The relays provide a means to turn devices on the aircraft ON/OFF at either timed events or a specified distance. They can be used for any device that requires triggering in flight, for example cameras and spore dispersal devices.

You can set each relay to trigger (and re-trigger) the connected device by time or distance. Use the fields as follows (use the **Time/Distance Interval** button to switch activate each relay's time or distance fields):

Example A:
R1 - Distance
R2 - Time

This area blank when Active = NO

Example B:
R1 - Time
R2 - Distance

Relay # ON Time - this is how long the connected device is active - the duration of the ON time.

Relay # Interval Time - this is the time between the device turning off and turning on again (the ON time plus the interval represent the repeating on/off cycle). The cycle starts when you exit the screen after entering values and continues until the feature is set Active NO in the screen. Once values are set, you can just set Active to YES or NO to use the feature with the current settings.

Relay # Distance - You can set the 'off' time as a distance traveled instead of a time interval.
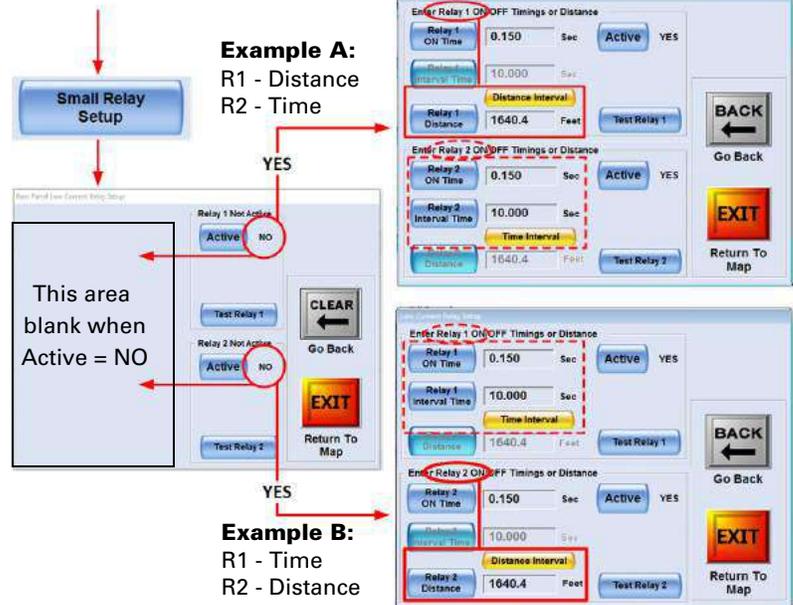
DAAM Setup

Complete the DAAM setup to monitor and record engine data as required.

Satloc HQ Setup

Use the Satloc HQ Advanced Setup and Tracking Advanced Setup screens for connections and settings for the Satloc HQ cloud. Contact your local dealer or Satloc Technical Support if required.

AGDisp Setup

If you have an AIMMS, you can choose to use it to offset the wayline based on current wind conditions. Select mode **AGDISP Model** or **Lookup Table** (**1a**).

- Select **AGDISP Model** to be able to select a substance/nozzle combination (**2**), set a non-volatile fraction and release height (**3** - any value release height), select an aircraft type (**5** - your selection shows above MODE), and use the substance picker (**6**).

- Select **Lookup Table** to be able to set a non-volatile fraction (**3**) and select from a list of pre-set release heights (**4**).
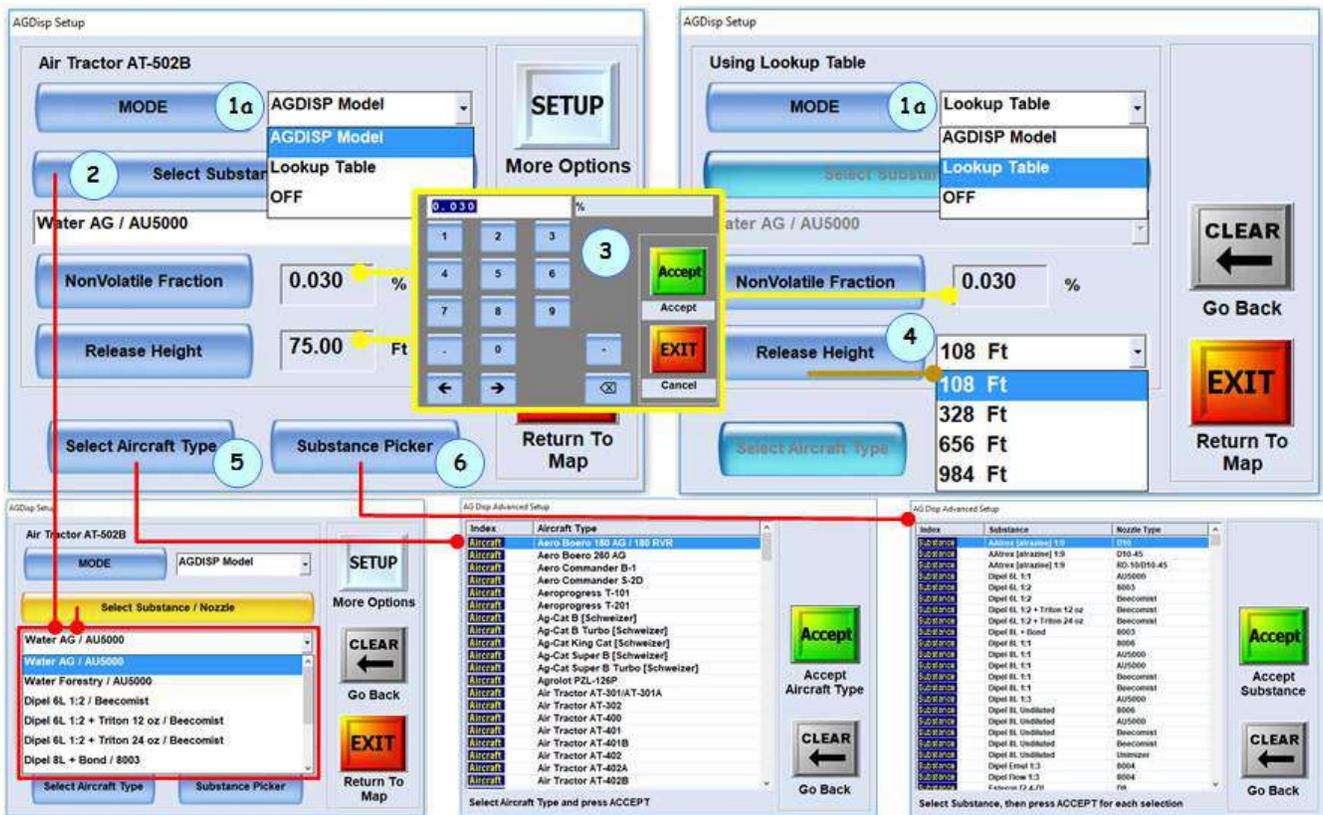
AG Disp Advanced Setup
(aircraft selection)

AG Disp Advanced Setup
(substance selection)

For MODE 'AGDisp Model' there is a SETUP button that accesses the **AG Disp Nozzle Setup** screen. For each nozzle in the tabulated list (to which you can add) you can, by selecting the row, access the **Enter Nozzle position Data** screen, where you can set the nozzle's horizontal, vertical and forward positions.

For further information on this feature, contact Satloc Technical Support.
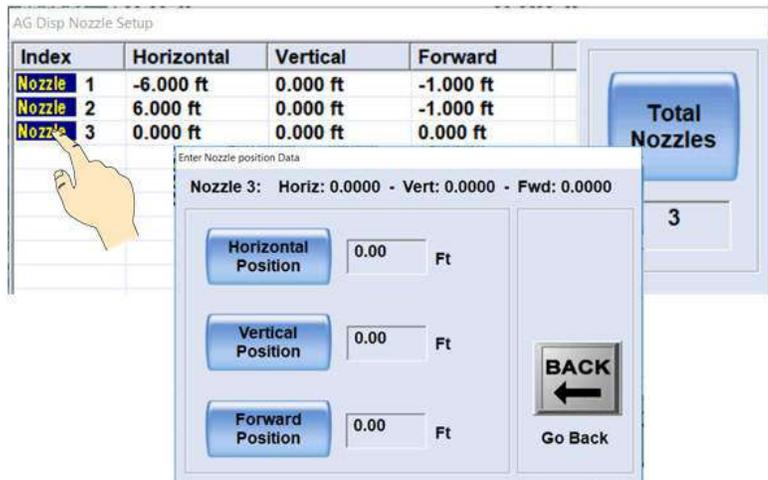
Advanced Options Setup

Set these options to Yes or No (or as otherwise indicted) according to your preferences or requirements.
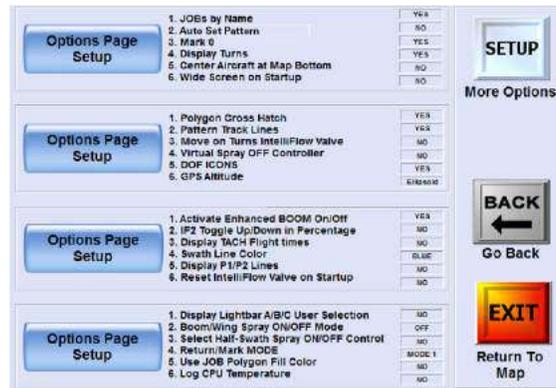
Options Pages Setup

One (not numbered)	TWO	THREE	FOUR

Table 9-2: Options by Setup

Option	What selections mean
Advanced Options Setup (One)	
JOBs by Name (Loading named and numbered jobs)	IntelliTrac-compatible jobs created in MapStar can be saved by name (e.g. 'named.job') or by number up to 9999 (e.g. '9999.job').
	When you list jobs (KEYPAD > INFO > JOB) you will see all IntelliTrac-compatible jobs (so the list would include 'named.job' and '9999.job'). But only if this option is set to YES, will you be able to *load* the named jobs or the 1000-9999 jobs. Hence, when this option is set to NO, you can see named jobs and jobs numbered 1000 - 9999 but you cannot load them.
	Note: Also, when this option is YES, you can load jobs between 1000 and 9999 using KEYPAD > SET > nnnn; when this option is NO, you can load only KEYPAD > SET > nnn.
Auto Set Pattern	If you shut down IntelliTrac with a job active (loaded), that job will be (re)loaded when you restart IntelliTrac (see "Exiting IntelliTrac and Jobs" on page 23). If the job has a pattern and that pattern was also loaded (SET > PATTERN > n) at shutdown, if this option is set YES, the pattern will be automatically (re)loaded (set) with the job.
Mark 0	If YES, each spray-off point becomes (a new) Mark 0 (M0). See "Mark 0" on page 151.
Display Turns	If YES, aircraft's flight path is displayed as a thin blue trace. See "Display Turns" on page 151.

Table 9-2: Options by Setup *(continued)*

Option	What selections mean
Center Aircraft at Map Bottom	If YES, aircraft makes short loops at bottom center of screen while maintaining its heading. See "Center Aircraft at window Bottom" on page 152.
Wide Screen on Startup	Wide View, Switch here, Split View (with data panel), Switch here
Advanced Options Setup (Two)	
Polygon Fill MODE: 'None filled Poly' (no hatch/solid fill - None) 'Hatched none Filled Poly' (Hatch) 'Filled Poly' (Solid) 'Hatched Filled Poly' (Hatch and Solid) *Note: A polygon will not display these attributes if:* • The polygon has attributes set in MapStar (saved with the job) and • The 'Use Job Color/Hatch/Spray On OFF Features' (see page 150) is set to YES.	None Hatch Solid Hatch & Solid
Pattern Track Lines (the swath array)	
Move on Turns IntelliFlow Valve	Liquid IF2 only - If YES, outside of polygons, during turns, valve adjusts (according to airspeed) but reverts to last open position on re-entering polygon (so same target rate).
Virtual Spray OFF Controller	Controls the liquid pump (via spray-off relay) when entering/exiting polygons without requiring a flow controller. This option is available only in legacy flow control mode, when no legacy controllers are connected/detected. The option gets reset to NO automatically when a flow controller is detected.
DOF ICONS	No icons Yes icons
GPS Altitude	Ellipsoid or Geoidal determines from which geographical approximation the altitude value is referenced.
Advanced Options Setup (Three)	
IF2 LIQUID Flow Filter Tolerance	Set the percentage (limit/tolerance) by which the measured flow rate can exceed the required flow rate before the on-screen flow rate value turns red (to alert the pilot).
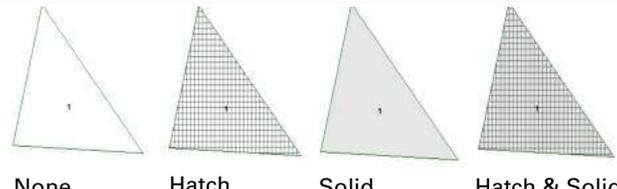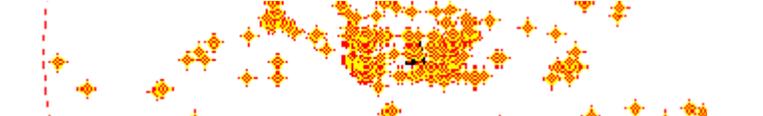
Table 9-2: Options by Setup *(continued)*

Option	What selections mean
IF2 Toggle Up/Down in Percentage	Can show trims as units of 1/32 in or % of target rate opening.
Display TACH Flight Times	Displays the 'Total' and 'User' tach times (hour meter) in the upper portion of the map.
	You can manage tach times in the **View/Reset Current TACH Time** screen (Setup x 3 > View/Reset TACH Times). For more information on this subscription feature, contact Satloc Technical Support.
Swath Line Color (active swatch for guidance)	Red or blue (AB is always red).
Display P1/P2 Lines	The P1 and P2 lines are on-screen lines drawn from the A and B points respectively, perpendicular to the AB line. They run along the swath ends as defined by the length of the AB line. The P1 line is red, the P2 line blue.
Optimize IntelliFlow Valve on Startup	By default, the IF/IF2 controller moves the valve to a 75% open position after initialization. With this setting enabled, IntelliTrac remembers the valve position from the previous swath pass, and will command the valve to this previous position when the controller initializes. *Note: This does not apply while in variable rate flow control mode.*
Advanced Options Setup (four)	
Display Lightbar A/B/C User Selection	When setting the ABC points for a pattern, the center L7 lightbar windows default to 'Speed and Heading'. When this setting is enabled, these left-center/right-center windows won't change from the user's selected lightbar fields.
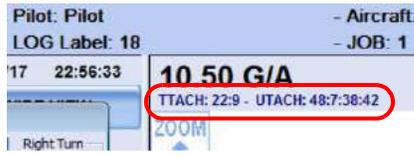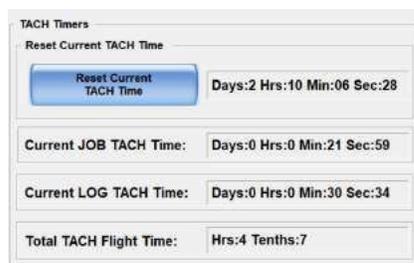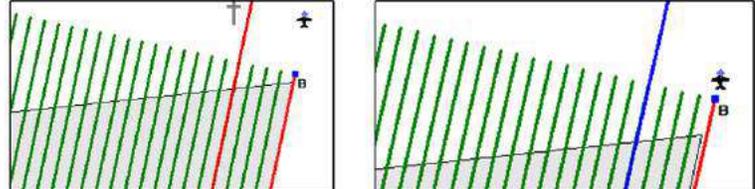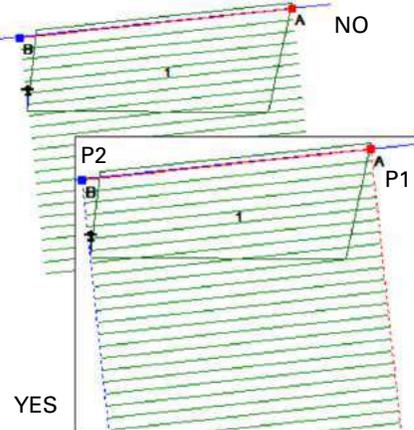
Table 9-2: Options by Setup *(continued)*

Option	What selections mean
BOOM Spray ON/OFF Mode	Used to determine which polygon the aircraft is in. The G4 checks whether its current position is inside a polygon. If not—and a percentage is selected for this setting—the G4 checks if some portion of the effective boom width is inside a polygon. For example, at 50%, it first checks if a point perpendicular to the right of the aircraft at a length of 25% of the swath width is inside a polygon boundary. If not, it also checks the left side. At 100%, the G4 check points 50% to the left/right, and so on.
Select Half-Swath Spray ON/OFF Control	When enabled, auto spray-on will not occur when entering a polygon unless crosstrack error is within one-half swath-width of the currently selected swath. To prevent auto spray-on from activating when a pilot makes a non-swathing pass over a field, a pattern must be active for this feature to function. When disabled, auto spray-on will occur when entering a polygon, without meeting additional criteria.
Enter Return/Mark MODE Menu	Select one of six modes determining what data is loaded on return to a mark. See "Select Return/Mark MODE" on page 153.
Use JOB Color/Hatch/Spray OFF Features	When creating a job in MapStar, the user can set attributes for individual inclusion polygons. Setting this 'Use JOB...' option to 'NO' (here in IntelliTrac) ignores those attributes. The attributes that can be set in MapStar are: • Hatched - a cross-hatch pattern fills the displayed polygon on the map screen. • No Spray - the boom will not activate when entering the boundary of a No Spray polygon. • Fill - the selected (solid) color fills the displayed polygon on the map screen (you *can* have hatch and fill). *Notes:* *(i) When this option is YES, polygons that have attributes saved with the job in MapStar will display those attributes irrespective of user-set poly 'fill modes' (see "Polygon Fill MODE:" on page 148); that is, MapStar-set attributes override IntelliTrac's hatch and fill settings. (So, for polygons that do not have MapStar-set attributes, IntelliTrac-set 'fill modes' will display.)* *(ii) If the (inclusion) polygon is set to No Spray in MapStar, it remains a no spray (inclusion) polygon in IntelliTrac irrespective of the setting for this option; that is, setting this option to NO (do not use MapStar settings) does not change the polygon into a spray polygon.*
Log CPU Temperature	Set to YES, the internal temperature readings of the G4 CPU is included in the log file at the currently set logging interval (see Logging Interval, Table 4-2 on page 52). These would be used, if necessary, for diagnostic purposes (log analysis) only.

Mark 0

When set to **YES**, your spray-off point becomes Mark 0 (**M0**). Each subsequent spray-off point becomes the new Mark 0, replacing the previous M0. Mark 0 is not added/updated when this option is set to **NO**. See at right.

Display Turns

When set to **YES**, IntelliTrac displays a thin blue trace of the aircraft's path. You can *hide* the trace by setting the option to **NO** or, *clear* the trace (with option still set to **YES**) by pressing KEYPAD > CLEAR > SWATH (after which the trace will restart). If you *re*set the option to YES, the trace's start point will be the restart point after the last KEYPAD > CLEAR > SWATH clearance.

In the schematic at right (at different zoom levels) at point (**1**) (i) the option is (already) set to YES; (ii) the trace up to that point has been cleared (KEYPAD > CLEAR > SWATH) and (iii) the trace has automatically restarted from that point.

At point (**2**), option is set to NO. The trace no longer shows but is still there and still being recorded. At (**3**), option is reset to YES and the trace, from the last 'CLEAR > SWATH restart' (**1**), is redisplayed.
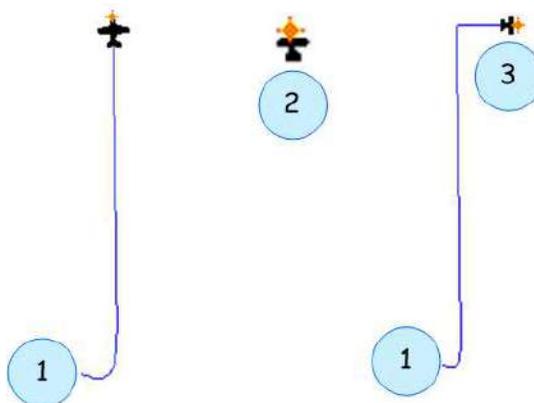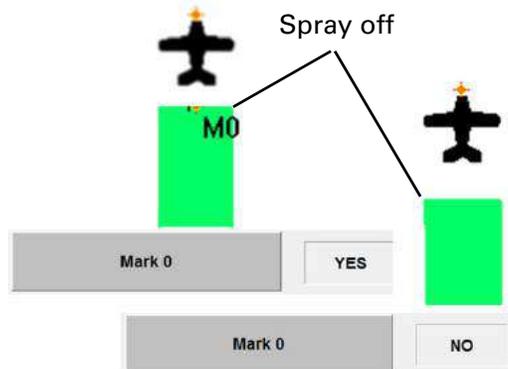
Center Aircraft at window Bottom

With this option set to **YES**, the aircraft is horizontally centered after it first exits the map a the bottom. It reappears just above the bottom of the map then repeats this short loop. That is, it does not return at the top of the map as it does when this option is set to **NO**.

In the schematic at right, top images, the option is **NO**: In (**1a**), the aircraft is exiting the bottom of the map off center. In (1b) the aircraft reappears, centered at the top of the map. The aircraft repeats this centered 'long' loop.

In the schematic at right, bottom images, the option is **YES**: In (**2a**), the aircraft is exiting the bottom of the map off center. In (**2b**) the aircraft, now centered, is exiting the bottom of the map. In (**2c**), the aircraft reappears a short distance above the bottom of the map and repeats this short loop 2b > 2c > 2b > 2c.

Notes:

1. In all cases, the aircraft maintains its heading during these loops.

2. This 'long' or 'short' looping applies only when the aircraft is exiting the bottom of the map (as the option implies). When exiting the top of the map, the aircraft completes only centered, long loops.
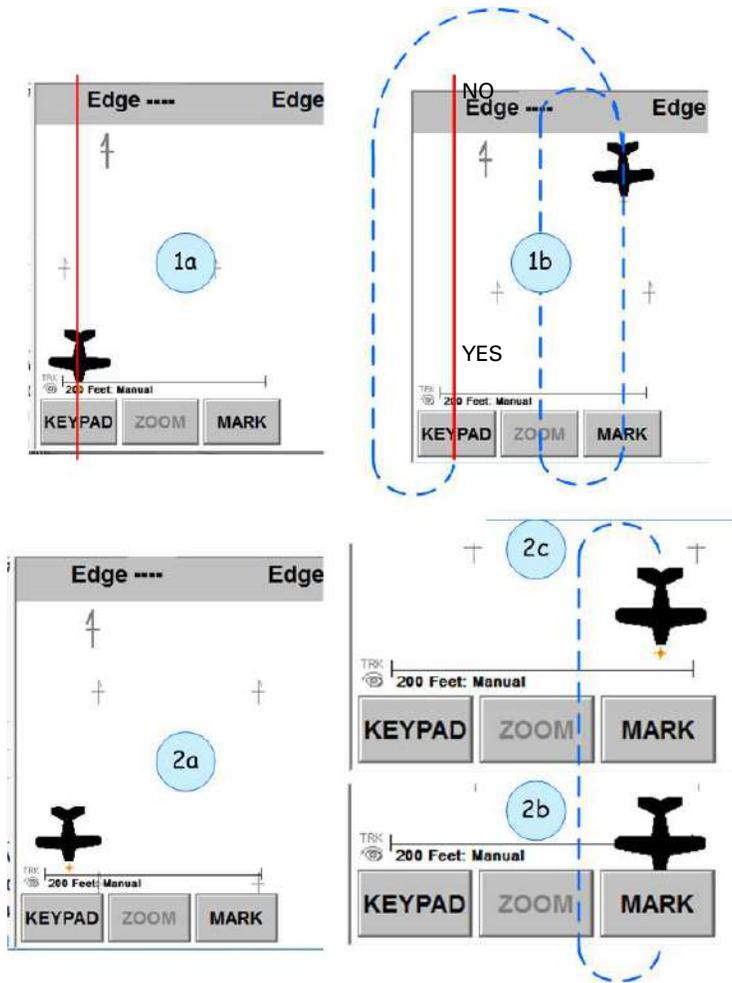
Select Return/Mark MODE

The return mark modes provide options about what associated data to load ('append') onto the map when you return to a specific mark. Data is saved with marks when they are set and you can specify what of that data is loaded with that mark when you return to it. Options include such associated data as job and pattern, logs, or just guidance.

Notes:

1. *Remember that mark numbers cannot be duplicated (in different jobs or patterns for example). If you give a mark the number of a mark that already exists (anywhere), that existing mark is overwritten by the new one.*

2. *When you reset an existing mark, the current/active log becomes the log associated with that mark in the updated MARKS.DAT file.*

3. *While there are six modes, they are really two sets of the same three load options. You can apply any one of the three options to new logs (modes 1-3) or to a saved log or the current log (modes 4-6).*

4. *Patterns do not have to be saved patterns to be 'appended' (with a job) by the return to mark mode selected. If the job had a pattern applied either by ENTER > POLY > PAT or by manual setting of an A|B line, that pattern will be appended on return to the mark even if it is not saved with the Job (it's saved with the mark).*

5. *To return to a mark, press KEYPAD > RETURN > n where n is the mark number.*

New Log Modes (1-3)

The schematic at right illustrates the first three modes:

Mode 1: "Open NEW LOG: Append all MARK data". IntelliTrac will open a new log, provide guidance to the specified mark and load the job, pattern, and log data (sprayed swaths and measured area) if such data exists for the mark.

In (1), new log 04131836 has been opened, Job 15 and its polygon and pattern have been loaded, and the sprayed area from the original log has been loaded. Guidance to the mark and the option to switch to swath guidance are provided.

Mode 2: "Open NEW LOG: Append only JOB/Area and pattern data".

In (2) IntelliTrac has loaded the same data as for mode 1 (new log 04131842) *except* for the spray data from the original log—so no green spray area. What has been loaded is, as the mode description says, the Job, the measured sprayed area (the value displays on the Area button in the data panel and in any display field set to Field Area), and the pattern. Guidance to the mark is provided with the option to switch to swath guidance.

Mode 3: "Provide only guidance to the last MARK Pt": 'The 'last' mark means the selected mark ('n' in Note 5 above). In (**3**), new log 04131816, IntelliTrac has provided only guidance to the mark—there is no option to switch to swath guidance because there is no pattern (swath array) loaded.
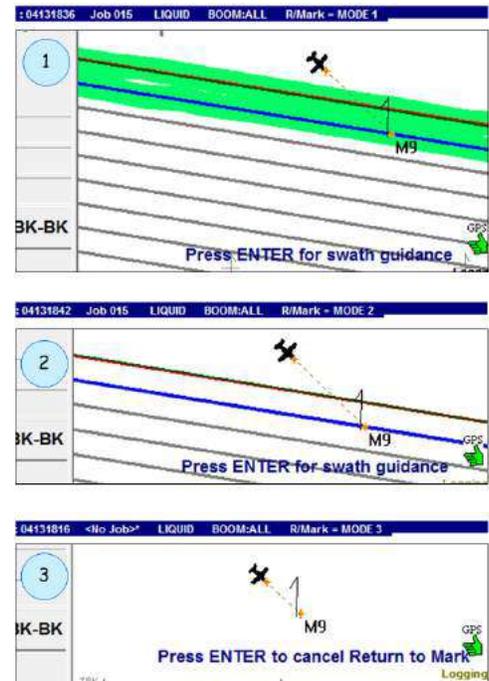
Original or Current Log Modes (4-6)

Mode 4: "Use MARK LOG if found, else current LOG. Append all MARK data". IntelliTrac checks to see if the log that was active when the mark was first set (the log in the MARKS.DAT file for the mark concerned) is still in the system. If it is (and it will be unless it's been user deleted), IntelliTrac reopens (reloads) the log and all its data. IntelliTrac also loads the job, area and pattern and provides guidance to the specified mark. In the example in the schematic, the original log was found. If it hadn't been, mode 4 would act as mode 1 but without opening a new log—it would append 'all MARK data' to the currently active log.

The schematic at right provides detail on the key points of mode 4:

At (**1**), two swaths have been completed for Job 18. Log 0417**1439** is active and M8 is set.

(**2**) (MapStar) shows the log data (so far). At (**3**), (MARKS.DAT extract) shows M8's coordinates, the active log when M8 was set (**1439**), and the field area (sprayed area) 1.22 Ha.

(**4a**) (MapStar) shows the system data value and the user's area measurement value for the sprayed area and (**4b**) is an enlarged view of that data.

At (**5a**), after a system restart, there is a new log (0417**1552**). The default job (either 0 or 18) has been cleared (KEYPAD > CLEAR > JOB) setting the map status to <No Job>. At (**5b**), RETURN > 8, with mode 4 active has closed log **1552** and reopened log **1439**.

(**6**) shows return guidance to M8; (**7**) shows swaths 3 and 4 completed. (**8a**) and (**8b**) (MapStar) show the new (added to/increased) 1439 log data.

Modes 5 and 6: "Continue with Current LOG: Append only JOB/Area and Pattern data" and "Continue with Current LOG: Provide only guidance to the last MARK Pt":

These modes are the same as modes 2 and 3 except a new log is not opened. Work continues with the currently active log.
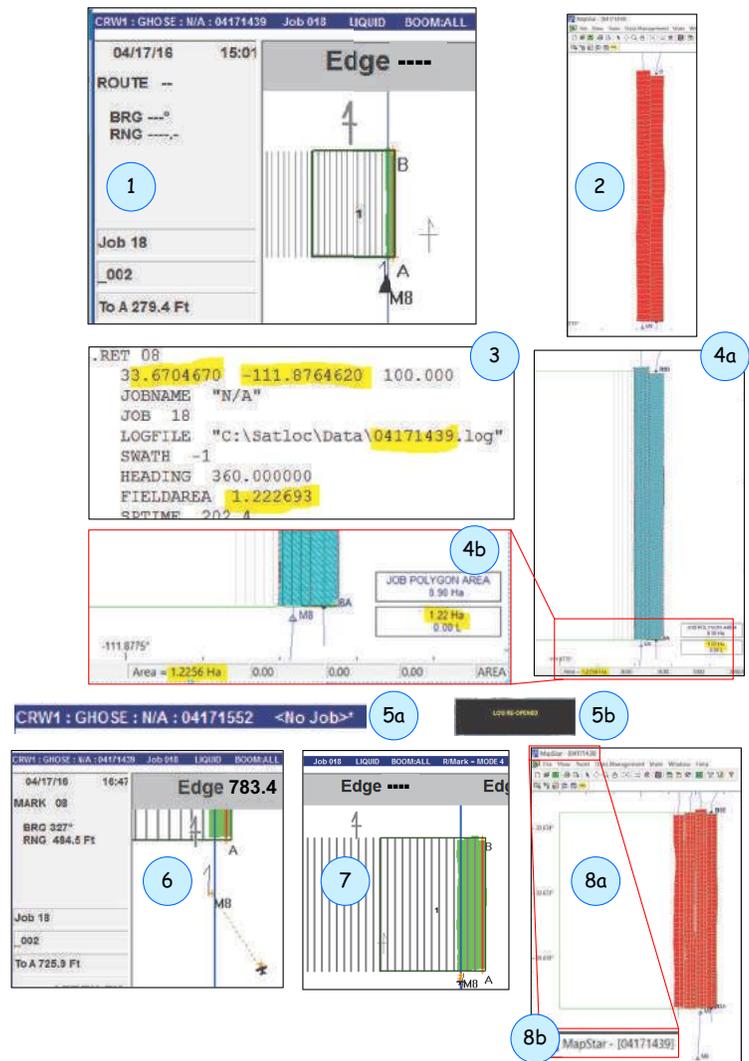
Comparing Modes and Appended Data

In Figure 9-2 the top left and right images show what is 'loaded' onto the map for a guided return to mark #4 (M4) with mode 1 and mode 2 active respectively. The difference is the sprayed area from the original data logged when the mark was set. The bottom two images show the top images after **ENTER** has been pressed to switch from guidance to the mark to swath activation (**ADV** [not shown] has been pressed, swath #3 is next).

Mode 1, M4: New log (1640); guidance to mark; pattern; spray (log data)

Mode 2, M4: New log (1732); guidance to mark; pattern; no spray (no log)

Switched to swath guidance (activated pattern). Next swath (3) selected.

Switched to swath guidance (activated pattern). Next swath (3) selected.
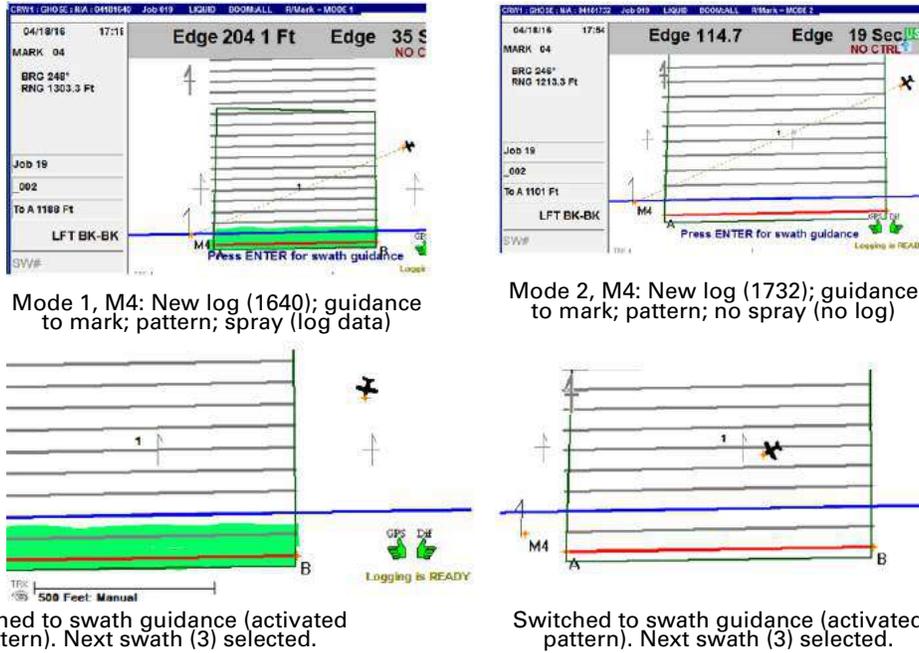
Figure 9-2: Same mark, different modes, full data

Advanced Miscellaneous Setup

Path to Advance Misc(ellaneous) Setup: [SETUP] **>** [SETUP] **x 5**
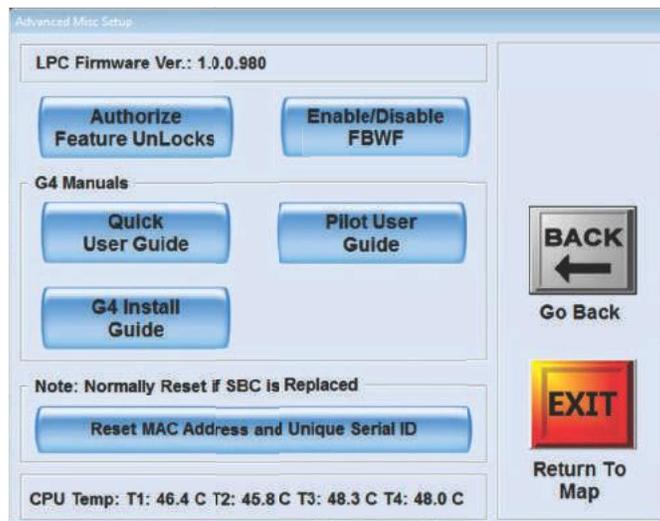
Note: The LPC Firmware Ver(sion), Reset MAC Address and CPU Temp(eratures) information and functionality are for diagnostic/troubleshooting purposes should they be required.

Authorize Feature Unlock

Path to Authorize Feature Unlocks: [SETUP] **>** [SETUP] **x 5** [Authorize Feature UnLocks]

Press to display the drop-down list from which you select a feature to unlock

Press to display a data entry window where you enter your authorization code

The code you enter appears here

Press to confirm the authorization code you entered (button is enabled only after you enter your authorization code)
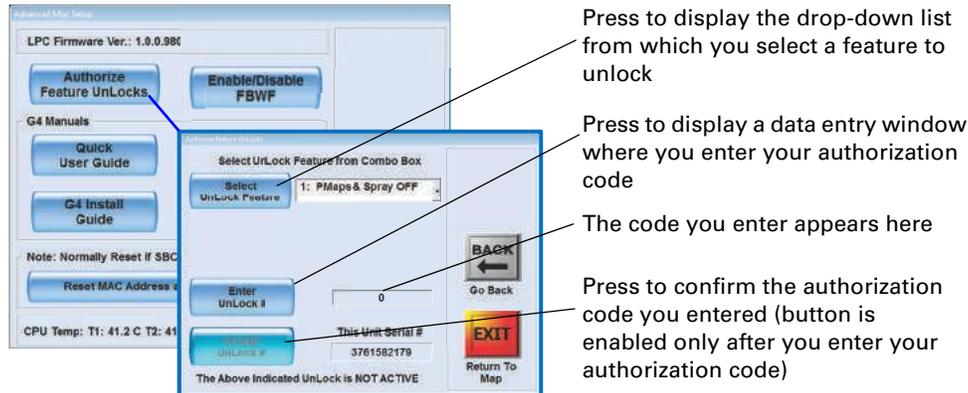
Figure 9-3: Authorize Feature Unlock window

Several advanced IntelliTrac features—such as prescription maps and HQ integration—are available only after being unlocked by an authorization code. Use the **Authorize feature UnLocks** window (Figure 9-3) to select the appropriate feature and to enter your authorization/unlock code.

Note: Contact your dealer to obtain authorization/unlock codes.

To enter authorization unlock codes:

1. In the **Authorize feature UnLocks** window (Figure 9-3, inset), press **Select Unlock Feature** then select a feature.

2. Press **Enter Unlock #**, the Enter Customer Service Authorization # window appears (at right, top - **1**).

3. Enter your authorization number (code); press **Accept.**

4. The window closes, the authorization code appears in the **Enter Unlock #** field, and the Accept UnLock # button is active (no longer dimmed - at right, center - **2**).

5. Press **Accept UnLock #.** If you entered a valid code, "Thanks, you have a valid Unlock". appears at the bottom left of the window (at right, center - **2**). For invalid codes, "Sorry no UnLock, please try again" appears (at right, bottom - **3**).

Enable/Disable FBWF

Use this screen to enable/disable the **File-Based Write Filter** as required. Do this only under guidance from Satloc support.

G4 Manuals

Press the appropriate button to launch the required documentation which will appear on screen as a PDF.

Configuring Your Zoom and Pan

You configure your zoom and pan behavior in the Screen Advanced Setup window.

Displays a data entry window where you enter the percentage each zoom in/out moves the display

Displays a data entry window where you enter a value for the scale ratio of the screen

Displays a data entry window where you enter the percentage the screen moves in the direction of the arrow you press

Toggles between Yes (show lat/lon) and No (do not show lat/lon)

Displays a data entry window where you enter the spray overlap percentage you want to view in the Moving window area

Restores the advanced setup settings to the factory defaults

Figure 9-4: Screen Advanced Setup window

Visual overlap (or spray overlap) visually represents the distance beyond the spray boom that spray is applied. If you enter this percentage as "0," the Moving window area only shows spray applied as the length of the boom. If, for example, you enter a value of 10, a 65 ft 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 only. It does not apply to guidance or logged data.

To change zoom/pan options:

1. Press SETUP **>** SETUP **>** SCREEN **>** SETUP , the Screen Advanced Setup window appears (Figure 9-4).

2. For the Zoom Level, Preset Scale Ratio, Pan Level, and Visual Overlap settings, press the appropriate button, enter a value in the data entry window that appears, then press **Accept**.

3. For the Show Lat/Lon setting, press **Show Lat/Lon** once to change the value and again if you want to change it back.

4. To reset the screen settings to their default values, press **Factory Defaults**.
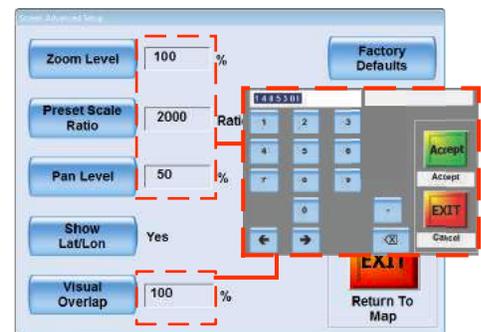
Understanding Guidance Delay

Guidance delay or 'forward prediction' in IntelliTrac is the delay (in msec) between when the lightbar displays a guidance prompt and when you need to react. For example, if you set this value to 600 the lightbar prompts you 600 msec before you need to react. The default value of 500 msec is geared toward the average airspeed.

To set a guidance delay:

1. Press **SETUP** > **SETUP** > **NAV SYSTEM** , the Nav System Setup window appears (main at right).

2. Press **Forward Prediction** and in the data entry window that appears (inset at right) enter the guidance delay value then press **Accept**.
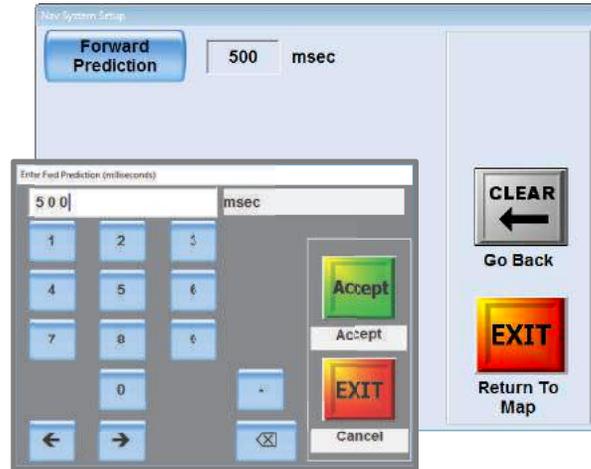
Customized Settings

When you customize settings the changes are saved to the G4 hard drive. The user settings are stored in the ITrac.ini (initialization) file and transferred (copied) through the data file transfer (copying) feature (see "Transferring Data Files" on page 58. Because you can transfer (copy) the changes to a USB drive:

- You can change settings on one system and transfer the new settings to 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 USB drives and swap the drives depending on the jobs and settings you want to access.

Path to copying the (customized) ITrac.ini file:

SETUP > **SETUP** > **Transfer Files** .

In the File Transfer window, press **View All Files** (**1a**), the button changes to **Hide Unwanted Files** (**1b**). Scroll to find and then select ITrac.ini (**2**), press the **>>** button (**3**) (the file appears, in red, in the selected list - **4**). Press **Copy Selected Files** (**5**).

For more information on transferring/copying files, see "Transferring Data Files" on page 58.
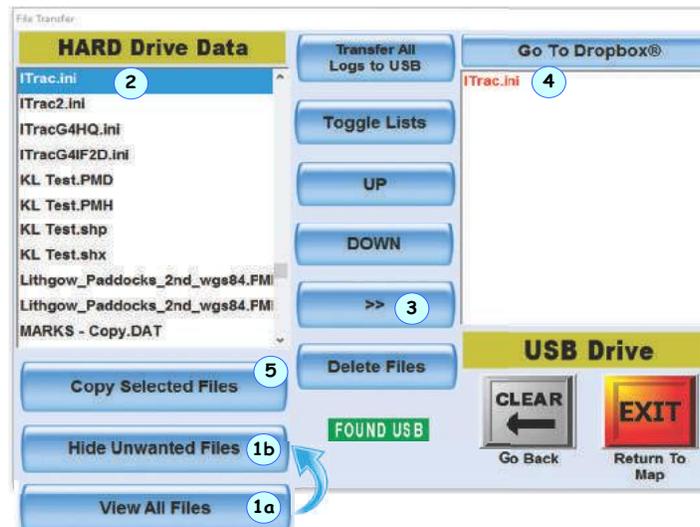
Appendix A: The Simulator Console

To load/activate the simulator, select **Simulate GPS** during the startup procedure—see page 6

a. Left and right turns. Radius decreases (so tightest turn) toward outer edge of turn box. Touch outside turn box (but within console) to stop turning and maintain the new heading.

Note: *To maintain a turn (to circle) instead of proceeding on the new heading, touch outside the console. Touch inside the console to stop circling - see 'a. Right circle 1-2-3'. (The heading indicator circle is the*

a

Left Turn

b. Spray On/Off

b

Touch to stop turn

a. Right circle 1-2-3

c

c. Reset heading 0.0

d

d. Heading +/- 180°

e

e. Set new aircraft position

f

f. Values set at e. Use g to 'go to' (reposition aircraft)

g. Reposition aircraft

g

h

h. Slow down

i. Check to enter k values

i

i

i. Speed up (Max: 181 mph/291 kph)

k

k. Set new instantly applied heading (override)

Internal GPS Simulator

Left Turn | Right Turn

B O O M

0.0 | 180

Latitude | 33.495361

Longitude | -111.495869

Go to Lat / Lon

Current Information

Latitude: 33.4724796 N
Longitude: 111.4900339 W
Altitude: 123.00 m
Direction: 358.597 deg
Speed: 50 MPH

Speed:

Override Hdg | 0

Speed Note 1: *Slide to vary speed or click slot before/after slider to decrease/increase speed 36 mph/58 kph per click.*

Speed Note 2: *If troubleshooting IntelliFlow with the simulator on, speed must be less than 10 mph / 16 kph.*

Appendix B: Hot Keys

Table B-1 provides a description and alternative button sequence for each Hot Key in IntelliTrac.

Table B-1: Hot Key descriptions

Hot Key Name	Hot Key Text	Function	KEYPAD / SETUP Button Sequence
Clear\Pattern\Enter	CPTE	Appendix B, "Hot Keys"s the current pattern from the screen.	KEYPAD > CLEAR > PATTERN\1 > ENTER
Clear\Pattern\Adv (UP)	CPTA	Displays IntelliTrac Setup window so you can change (move) pattern to current line and change swath as required.	
Clear\Swath	CLSW	Clears the spray information from the screen.	KEYPAD > CLEAR > SWATH\2 > ENTER
Clear\Job\Enter	CJBE	Clears the current job information from the screen.	KEYPAD > CLEAR > JOB\9 > ENTER
Clear\Job\Clear	CJCL	Displays the Jobs By Name List window where you can delete a job. See "Deleting Jobs" on page 99 for more information.	KEYPAD > INFO\0 > JOB\9
Clear\Waypoint\Enter	CWPE	Clears the current waypoints from the screen.	KEYPAD > CLEAR > WPT\5 > ENTER
Clear\Route\Enter	CRTE	Clears the current route information from the screen and displays the following message: "Waypoint guidance canceled"	KEYPAD > CLEAR > ROUTE\8 > ENTER
Clear\Clear	CLCL	Displays a window where you can exit IntelliTrac and shut down Windows or exit IntelliTrac and go to the Windows desktop. See "Exiting IntelliTrac" on page 23 for more information.	KEYPAD > CLEAR > CLEAR
Clear\Tracks	CLTK	Turn ON/OFF flight TRACKS (Turns) on window screen (leaving just sprayed swaths).	
Start\New\LOG	SLOG	Closes the open log (if a log was open) and starts a new log. You can also use the Log HQ button to start a new log—see "Logging Data" on page 51 for more information.	KEYPAD > LOG HQ > Start New Log -or- Log HQ > Start New Log
Poly\Poly	PYPY	Enters polygon creation mode—see "Setting polygon points as you fly" on page 102 for more information.	KEYPAD > POLY\6 > POLY\6
Enter\Poly\Pattern	EPYP	Enters 'automatic swath' mode and displays the Poly Pattern area in place of the Data area on the window screen. See "Applying a Swath Array (Pattern) to a Polygon" on page 111 for more information.	KEYPAD > ENTER > POLY\6 > PATTERN\1
Enter\Zoom	ZOOM	Displays the Zoom/Pan window. See "Zooming and Panning the Map" on page 19 for more information.	KEYPAD > ZOOM/PAN
Enter\EDif	EDIF	Displays the e-Dif Commands window, where you configure e-Dif. See "Customized Settings" on page 160 for more information.	SETUP > SETUP > SETUP > SETUP > GPS Setup > GPS e-Dif Commands

Table B-1: Hot Key descriptions *(continued)*

Hot Key Name	Hot Key Text	Function	KEYPAD / SETUP Button Sequence
Enter\AGDisp Model	DISP	Shortcut to AgDisp (Drift) modeling window.	
Enter\METData	METD	Displays the MET Setup window where you can edit the following: Temperature Humidity Wind Speed Wind Direction Bar (barometric) pressure	SETUP > SETUP > SETUP > SETUP > MET Setup
Enter\FLOW\CAL	FCAL	Shortcut to Flow CAL window	
Enter\HK\Internet	MISC	Displays a window (over the Data area) with the following tabs: HotKeys, Internet, Misc. Press the MISC Hot Key again to close the window.	
Enter\XM Radio\Weather	XMRW	Displays the XM Radio window, where you select an XM Radio channel. This functionality requires an XM Radio subscription and WX weather receiver.	
Return\Mark\0	RTM0	Return to the Zero mark.	
Info\Setup	IFSP	Displays the IntelliTrac Setup window (first Setup window).	
Info\Info	IFIF	Displays the Flow Control Setup window	KEYPAD > INFO\0 > INFO\0 -or- SETUP > SETUP > FLOW CTRL
Info\Job	IFJB	Displays the Jobs By Name List window to view list of all jobs and load a job.	KEYPAD > INFO\0 > JOB\9
Info\Swath	IFSW	Displays the Unsprayed Swaths window.	KEYPAD > INFO\0 > SWATH\2
Info\Pattern	IFPT	Displays the Pattern Options window.	KEYPAD > INFO > PATTERNS -or- SETUP > SETUP > SETUP > PATTERNS
Info\Mark	IFMK	Displays the Marks window.	KEYPAD > INFO\0 > MARK\4
Info\Waypoint	IFWY	Displays the Waypoints By Name window.	KEYPAD > INFO\0 > WPT\5
Set\Set	STST	Toggles the display between Normal (day) mode and Dark (night) mode.	KEYPAD > SET > SET
Set\Swath\Enter	SSWE	Sets current swath as 'swath 1'.	KEYPAD > SWATH\2 > ENTER
Set\Pattern\Adv (UP)	SPTA	(Must be using an 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	Recalls Pattern 1 from current job	

Table B-1: Hot Key descriptions *(continued)*

Hot Key Name	Hot Key Text	Function	KEYPAD / SETUP Button Sequence
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 press the Turn PAN ON/OFF button in the Data area to toggle the setting on/off.	
Set\Zoom\ MAN/AUTO	ZOMA	Cycles between the three zoom modes: Manual, Manual Locked, and Auto.	
		You can also press the ZOOM MODE button to cycle through the settings.	
Set\AIMMS20\ ON/OFF	AIMS	Shortcut to turn ON/OFF AIMMS20 device for AgDisp (Drift).	
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.	

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26. **APPLICABLE LAW**. This Agreement shall be governed by the laws of the State of Kansas, 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 AgJunction 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 AgJunction, Inc. (**"AgJunction"**) and purchased by the end purchaser (the **"Products"**), unless otherwise specifically and expressly agreed in writing by AgJunction.

LIMITED WARRANTY: AgJunction, Inc. 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 AgJunction's applicable specifications for the Product, for a period of 24 months (Satloc products) or 12 months (all other AgJunction products) 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 AgJunction'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 AgJunction'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 AgJunction shall be, at AgJunction's option, the repair or replacement of any defective Product or components thereof. The purchaser shall notify AgJunction or an AgJunction approved service center immediately of any defect. Repairs shall be made through an AgJunction approved service center only. Repair, modification or service of AgJunction products by any party other than an AgJunction 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 AgJunction'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 AgJunction has been advised of the possibility of such damages. Without limiting the foregoing, AgJunction shall not be liable for any damages of any kind resulting from installation, use, quality, performance or accuracy of any Product.

AGJUNCTION IS NOT RESPONSIBLE FOR PURCHASER'S NEGLIGENCE OR UNAUTHORIZED USES OF THE PRODUCT. IN NO EVENT SHALL AGJUNCTION 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 AGJUNCTION'S RELEVANT USER'S MANUAL AND SPECIFICATIONS. AgJunction 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 AgJunction; (3) the operation of the Product under any specification other than, or in addition to, the specifications set forth in AgJunction'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 AGJUNCTION'S RELEVANT USER'S MANUAL AND SPECIFICATIONS. AgJunction 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 AgJunction 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. AgJunction 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 Kansas.

OBTAINING WARRANTY SERVICE. In order to obtain warranty service, the end purchaser must bring the Product to an AgJunction approved service center along with the end purchaser's proof of purchase. AgJunction 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 an AgJunction approved service center, contact AgJunction at the following address:

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Hiawatha, KS, USA 66434
Phone: (800) 247-3808
Outback Guidance email: outbackCS@outbackguidance.com
Satloc email: satlocsupport@agjunction.com