Midwest Technologies

Legacy 6000
Stand Alone Version
User Guide

Fieldware-SA

For Legacy 6000

TeeJet®

MID-TECH®

98-05055

Fieldware-SA

For Legacy 6000

Stand Alone Version

USER GUIDE

Software Version 1.0

98-05055

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Chapter 1 - System Introduction

An introduction to the Legacy 6000 System.

Fieldware-SA Version 1.0

System Introduction

The Legacy 6000 installed with Fieldware Stand Alone (Fieldware SA) software allows machine guidance and multiple product control when interfaced with an external rate controller. “Stand Alone” means the Mid-Tech CAN Bus product control system is not required to operate this version of Fieldware for Legacy 6000. The Stand Alone version of Fieldware is designed for users who want to perform machine guidance with out a control system (Figure 1-1), or perform product control using an existing rate controller (Figure 1-2). The Legacy 6000 with Fieldware SA is an excellent replacement for laptop found in many cabs today. Due to the larger display, the Legacy 6000 with Fieldware SA is a nice system upgrade from the Mid-Tech line of guidance systems.

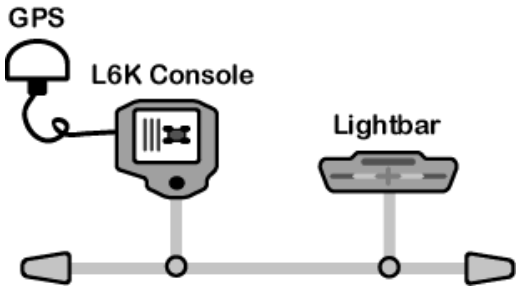

Figure 1-1: Guidance Only Configuration

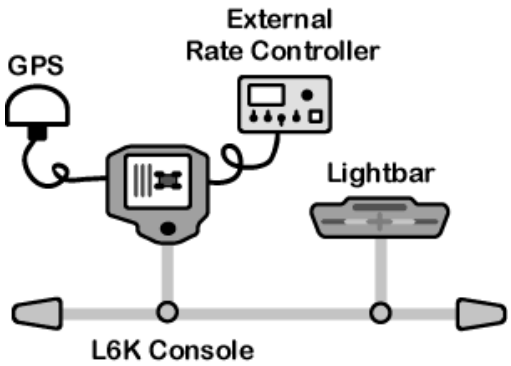

Figure 1-2: Guidance and External Rate Control Configuration

The Legacy 6000 console runs Fieldware SA software and operates in a Windows CE environment, an extremely dependable and stable operating system. Operation is intuitive with on-screen menu choices and prompts. An on-board help menu is built in. The heart of the Legacy console is an Intel processor operating at 206 Megahertz for maximum efficiency.

Legacy 6000 System Features

System features include:

- Machine guidance without the need of a rate control system.
- Where applied data collection without the need for guidance or lightbar.
- Single product control when interfaced to an external rate controller.
- Single product variable rate.
- Works with Mid-Tech's Swath XL lightbar.
- Comes pre-loaded with Mid-Tech's Fieldware SA software.
- Data is stored on PCMCIA card.
- Data is easily transferred to PC via the PCMCIA card.
- Data is compatible with Fieldware Map Manager for easy creation of application reports and record keeping.

Fieldware SA Features

Plug any standard submeter GPS receiver and Mid-Tech's Swath XL lightbar into the Legacy 6000 system, and do straight-line, curved, or center pivot guidance. Application maps can be viewed on the Legacy 6000 display during application. Cross track error, area applied, application rates, and other vital information displays on the Swath XL lightbar in real time.

Features of Mid-Tech's Fieldware software, developed specifically for Legacy 6000, include:

- Application Rate Management permits precise variable rate application with external rate controller attached, see Table 1-1.
- Integrated guidance using straight line, headland, or center pivot modes, plus text reporting to the lightbar in one easy to use format.
- Create application jobs keeping track of customer, weather, and product information.
- Large product database with over 4000 entries containing product name, formulation, and EPA number.
- Full application reports and maps can be generated in Fieldware Map Manager PC software at the end of the day. An application report contains a map of the application, customer information, product information, as well as weather, field and soil conditions.
- Map field boundaries, hazards, tile lines, and other features with great detail.

Compatible Rate Controllers

Table 1-1 lists the compatible external rate controllers that will work with Version 1 of Fieldware-SA.

Name	Description
Midtech98	Variable rate control and data logging, on the 'C' channel only, of any Mid-Tech TASC (6000, 6100, 6200, 6500, 6300, 6600) or AgLogix controller with software levels compatible with the version 5.0 Data Link.
MarkIV	Rawson Mark IV and Mark V controllers.
TeeJet854	Teejet 854 controller version 1.10 or higher.
RavenLiq100	Liquid application with Raven 440, 550, or 660 controller model.
RavenGran100	Granular application with Raven 440, 550, or 660 controller model.

Table 1-1: Compatible External Rate Controllers

Legacy 6000 Console

The Legacy 6000 console runs Fieldware SA software and operates in a Windows CE environment; an extremely dependable and stable operating system. Operation is intuitive, with on-screen menu choices and prompts. An on-board help menu is built in. The heart of the Legacy console is an Intel processor operating at 206 Megahertz for maximum efficiency. Other features of the Legacy 6000 console include:

Dimensions: 8.0" Wide x 7.7" High x 4.5" Deep (203 x 196 x 114 mm)

Weight: 2.3 lbs. (1.0 kg)

Enclosure: Sealed plastic; back lighted; tactile feed-back switches on front panel

Display: 5.7" diagonal (120 x 90 mm), transflective, QVGA with CCFL back lighting. Brightness control via back light control over contrast using discreet switches.

Input/Output: CAN, Bosch 2.0B

Serial: RS 232 (2)

USB: (1)

TTL digital I/O: (10)

Memory: 32 Mbytes DRAM, 16Mbytes Flash

Microprocessor: 32-bit Intel StrongArm, SA 1110 with SA 1111 companion chip. 206 MHz.

Drives: PCMCIA type II, single slot

Operating System: Microsoft Windows CE 3.0

Power Requirement: 9 to 16 volts DC

Connector: Sealed, 31 pin Deutsch

GPS Receiver Compatibility: Compatible with any differentially corrected, submeter GPS (DGPS) receiver that outputs NMEA 0183 at 2 to 5 Hz.

Alarm: Audible alarm

Other:

* Real-time clock with battery back-up

* Simple, yet versatile, RAM mounting bracket.

Swath XL Lightbar

A CAN based Swath XL Lightbar was developed specifically for Legacy 6000 system. The Lightbar is required for applications using guidance and recommended for non-guidance uses as well. In none guidance use (logging data only) the lightbar can provide area and rate feed back.

Figure 1-3: Swath XL Lightbar

Dimensions: 16.0" Wide x 3.0" High x 3.0” Deep (405 x 76 x 76 mm)

Weight: 8 oz. (0.22 kg)

Enclosure: Sealed ABS / Poly carbonate alloy construction. Can be mounted to the exterior of the vehicle.

Cable: Mid-Tech proprietary CAN Bus cable. Cable extension available.

Front Panel LEDs: High-lumen red, yellow and green, adjustable brightness.

Text Display: 8-character, high intensity LED alphanumeric text display, brightness adjustment.

Mounting Bracket: Big grippy knobs, can be mounted on dash, from ceiling on vertical plane, interior or exterior.

Chapter Notes

Chapter 2 - Getting Started

Setting up Fieldware-SA for Legacy 6000.

Software Version 1.0

Software Overview

This section assumes that the Legacy 6000 hardware has been properly installed and clean reliable power has been supplied.

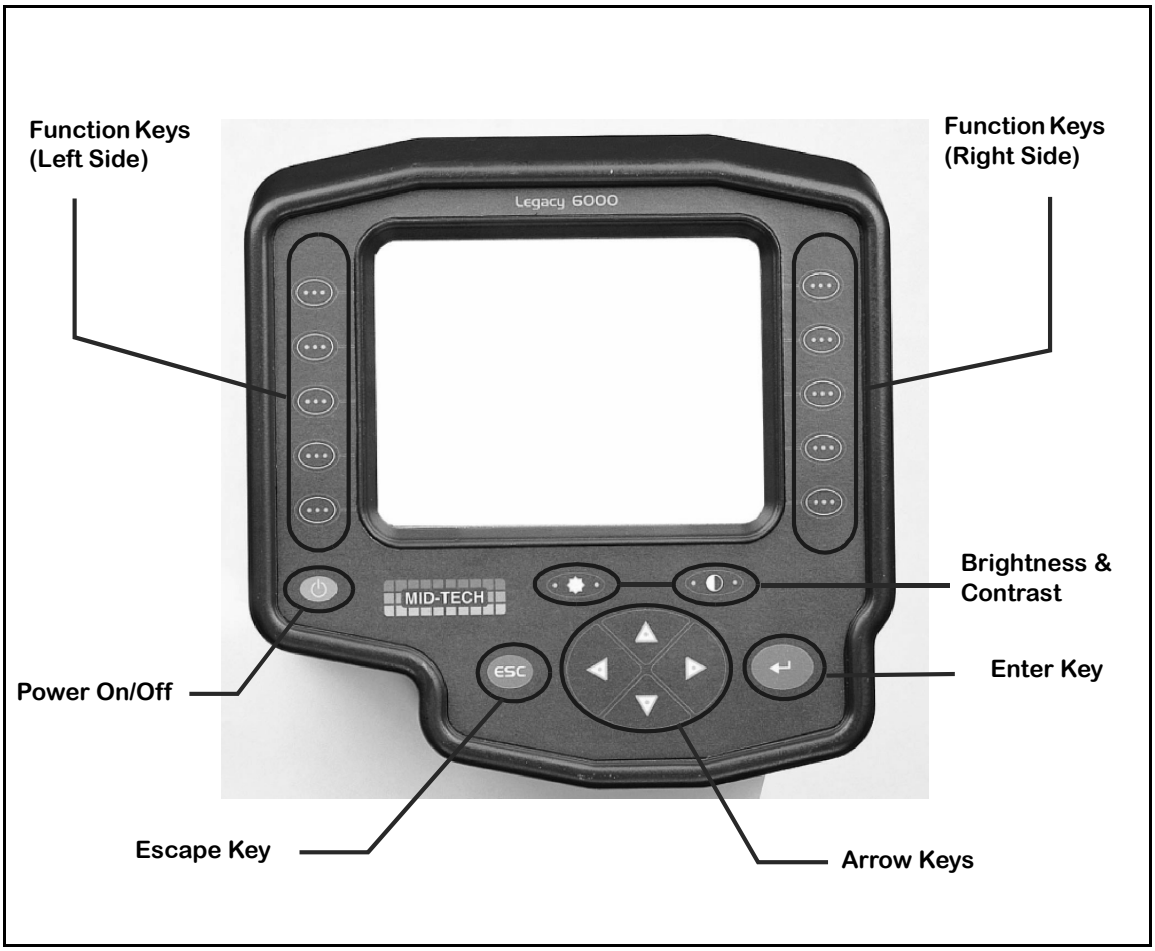

Figure 2-1: The Legacy 6000 Console

Powering Up

To power up the Legacy 6000 console, press the orange button to the left side of the console faceplate (Figure 2-1). Once the Legacy 6000 console is powered up, Fieldware-SA for Legacy 6000 automatically starts. The first software page is the Main Fieldware-SA Launcher (Figure 2-2). System Setup, System Tools, and Application Rate Manager (ARM) are accessed from the Main Launcher page. This Chapter focuses on how Fieldware-SA for Legacy 6000 operates and how to configure the system using the System Setup application.

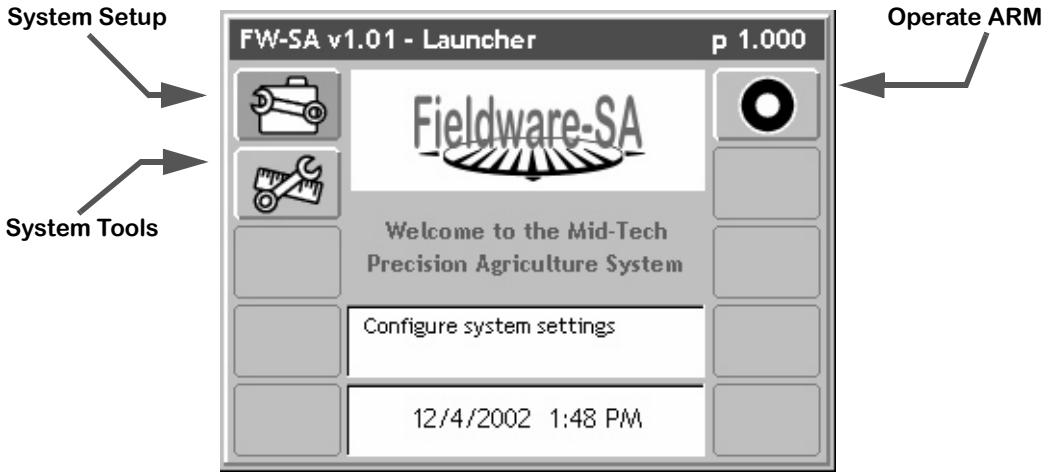

Figure 2-2: Main Launcher Page

Standard Pages

Three basic types of software pages are used in Fieldware-SA for Legacy 6000: a Launcher page (Figure 2-3), a Setup Menu page (Figure 2-4), and a Data Entry page (Figure 2-5). Each is described in more detail below. Each of these page types has its own help window which displays pertinent information about a button or area of the page that is highlighted. By learning how to use each of these page types, Fieldware-SA software can be operated with confidence.

Launcher Page

A Launcher page typically contains several smaller applications (programs) that can be started (launched). For example, any one of three other applications, System Setup, System Tools, or Application Rate Management (ARM), can be started from the Main Launcher page (Figure 2-2).

The arrow keys on the console (Figure 2-1) allow the navigation of the launcher page. Help information for a highlighted button or area is displayed in the white text window centered at the top of the launcher page (Figure 2-3). To launch an application from a launcher page either press the console function key adjacent to the software button (Figure 2-1) or highlight a software button using the arrow keys and pressing the enter key.

The launcher page below (Figure 2-3) is the System Setup launcher. Several setup applications, such as the Console and Controller setup can be accessed from here. In this launcher page figure, the highlighted software button is Console setup and the associated help text is displayed in the help window at the top of the page.

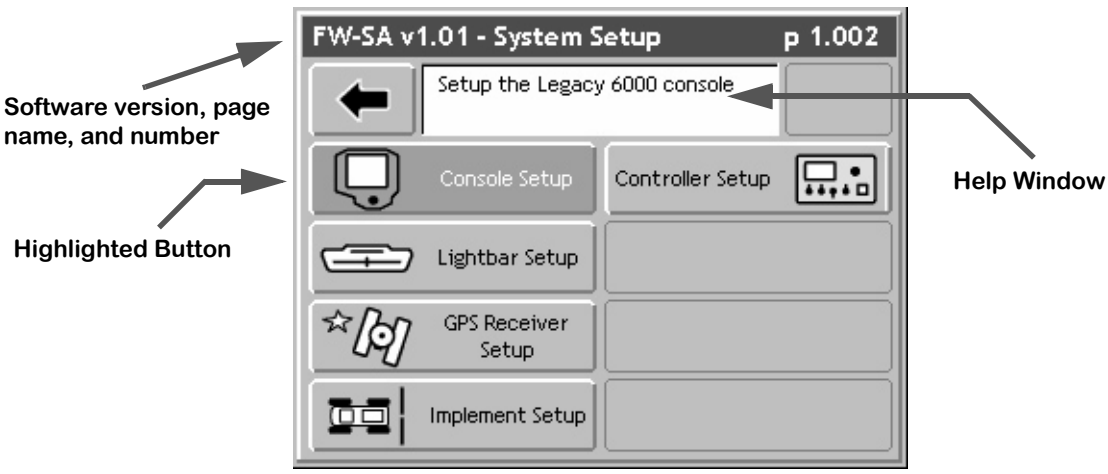

Figure 2-3: Example of a Launcher Page

Setup Menu Page

A Setup Menu page (Figure 2-4) is a page that contains all of the setup parameters associated with a particular setup theme, such as GPS Receiver. A Setup Menu page can be divided into three columns, Left, Center, and Right. The Left and Right columns are made up of software buttons adjacent to a physical key on the console. The center column is a scrollable list containing the name of every setup parameter and its current value. Navigate the center column using the Up and Down Arrow keys on the console (Figure 2-1). To edit any of these settings, highlight the desired setting in the center column and press the enter key on the console. This action typically brings up a Data Entry page (Figure 2-5).

Setup Wizard

Typically the top item in the center column list is a setup wizard. This setup wizard sequentially steps through each setup parameter Data Entry page, allowing the editing of that setting, and then continues on to the next setup parameter. This may be a convenient method for new users who are unfamiliar with all of the setup parameters.

Setup Sub-Groups

In some Setup Menu pages there are sub-group buttons in the right and left columns. Pressing one of these buttons displays only the setup parameters associated with that sub-group in the center column. As an example, in GPS Receiver setup (Figure 2-4) there are three sub-group buttons, the Globe button (right column) displays all setup parameters associated with GPS Receiver setup. The next button down is the sub-group for receiver accuracy. Pressing this button reduces the items in the center column to setup parameters associated with GPS accuracy, eliminating all of the items associated the other sub-groups. The next button accesses the communication parameters for console Com Port that the GPS Receiver is connected to.

Exiting a Setup Menu Page

There are two ways to exit a setup menu page: “Exit with out saving changes” and “Save and Exit”. To exit the setup without saving changes, press the Back Arrow button located at the top of the left column. To exit and save any changes made, press the Forward Arrow at the top of the right column. Either of these exit methods returns to the launcher page that the setup menu was accessed from.

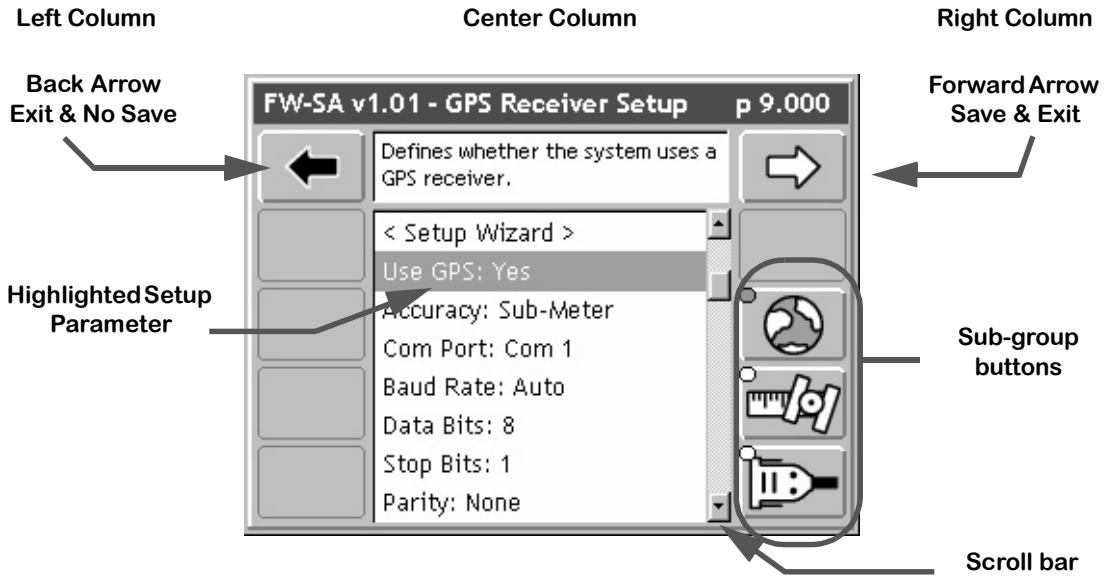

Figure 2-4: Example of a Setup Menu Page

Data Entry Page

The data entry page is used throughout Fieldware-SA software. Depending on the setup parameter being edited, a data entry page may be alpha-numeric entry or a pick list (Figure 2-5). The data entry page is also divided into three columns, Left, Center, and Right. The left and right columns contain software buttons, typically only the back and Forward Arrow buttons. The center column is the data entry dialog box. Use the arrow keys on the console to navigate around the data entry page. The bottom half of the data entry page is a text window with white background. This window can contain a description of the current setting as well as some help text.

Pick List Data Entry

In a data entry page that employs a pick list in the dialog box, select a setup parameter setting highlight the dialog box (center column) using the left or right arrow key. Using the Up and Down Arrow keys spin though the available setting selections. Once the desired setting is in view in the dialog box you can press enter to save the setting or press the Forward Arrow.

Alpha/Numeric Data Entry

To enter an alpha/numeric value in a data entry page that employs an alpha/numeric dialog box (Figure 2-6), highlight the dialog box using the left or right arrow key. The left most character space will be highlighted. Use the up or down arrow key to spin through the alpha/numeric character list. Once the desired character is in view in the dialog box press the right arrow key to move to the next character space in the dialog box. Use the left and right arrow keys to move across the character spaces and edit existing entries.

If entering a numeric value, use the decimal point in the character set to set the number of digits to the left and right of the decimal point, (E.G. 0.254, 1.00, 10.0, 100.463). This allows the required significant digits to be set.

Exiting a Data Entry Page

There are two ways to exit a data entry page, Exit with out saving changes and Save and exit. To exit the setup without saving changes press the Back Arrow button located at the top of the left column. To exit and save any changes made, press the Forward Arrow at the top of the right column or the enter key on the console. Either of these exit methods returns to the setup menu page the data entry page was accessed from.

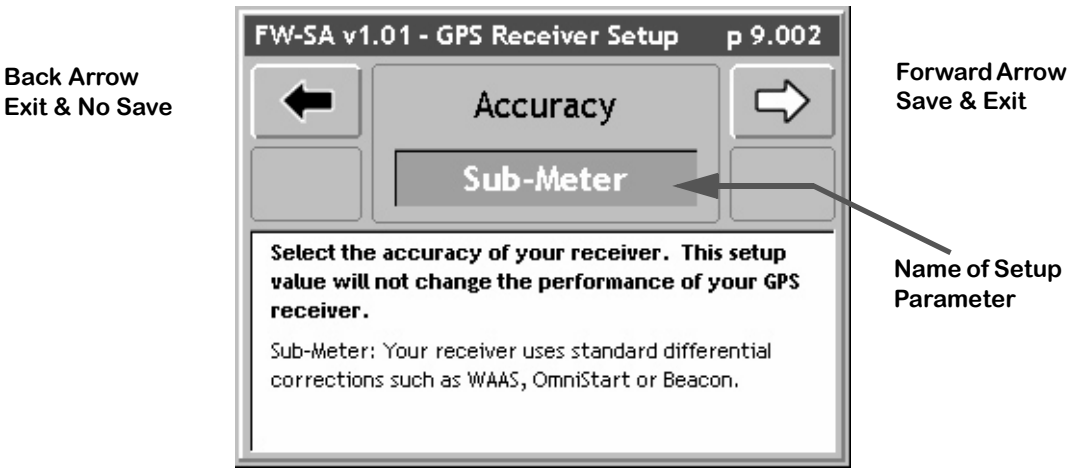

Figure 2-5: Example of Pick List Data Entry Page

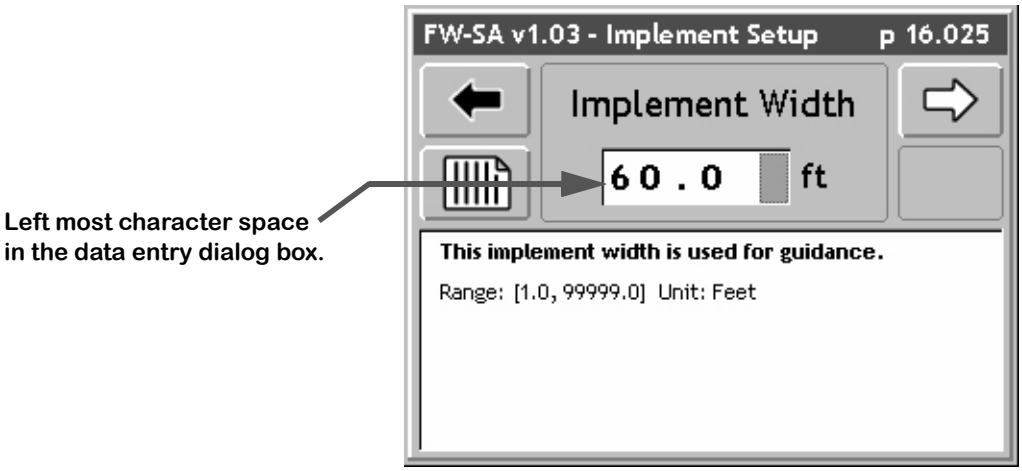

Figure 2-6: Example of Alpha/Numeric Data Entry

System Setup

System Setup allows the configuring of the Legacy 6000 to best suit job requirements. To access the System Setup launcher, press the top left button in the Main Launcher page (Figure 2-2) (The help text should say *Configure System Settings)*. This action brings up the System Setup Launcher page (Figure 2-7). The table below lists the current system components that can be configured. Each component is covered in more detail in the following sections.

Figure 2-7: System Setup Page

Setup	Description
Console	Defines system environment variables such as units, language, date, and time.
Lightbar	Defines Swath lightbar settings and messages.
GPS Receiver	Allows the configuring of the GPS receiver.
Implement	Defines the implement, including width, and number of swaths and sections.
Controller	Defines type of external rate controller and its communications parameters.

Table 2-1: Current System Setup Components

Modes of Operation

In Fieldware-SA for Legacy 6000 there are three modes of operation; Guidance Only, Log Data Only, and Application Rate control. The system to operate is configured to operate in one of these modes during the system setup process.

Guidance Only Mode

The Guidance Only mode is used when only machine guidance is required. There is no rate controller in use during the guidance only operation. A rate controller may be running on the vehicle, but it is not interfacing with the Legacy 6000 console. In Guidance Only mode, with a PC card inserted into the console, it is possible to collect where-applied data and use this data to create an Application Report in Fieldware Map Manager. To run in Guidance Only mode, the Rate Controller menu item must be set to *None*. See “Controller Setup” on page 2-28 for more information on how to do this. Table 2-2 lists the proper setting to perform guidance only operations.

Log Data Mode

Log Data mode allows the collection of where-applied or as-applied data, without running guidance. The Legacy 6000 can run in Log Data mode with or with-out a rate controller attached. If no rate controller is attached, the data collected is Where-Applied data. Where-Applied data contains the vehicle trajectory only. No rate information is saved in the file. If a rate controller is connected to the console, and product is being applied, Log Data mode collects As-Applied data. As-Applied data contains the vehicle trajectory and product application rate information.

To operate in Log Data mode, set the Lightbar setting to either Off or Text Only. If Text only is selected, the lightbar can be used to view messages such as Area Applied and Ground Speed. If Off is selected, a lightbar is not needed to collect data. Table 2-2 lists the proper settings to operate in Log Data mode.

Setup Name	Setting	Description
Controller	**None**	In Controller setup, a controller driver name must be set to None to run in Guidance Only mode.
Guidance Only		
Lightbar	**Text/Lights**	If the Lightbar is set to Text/Lights, machine guidance can be used and data can be logged to the PC card. See “Lightbar Setup” on page 2-14 for more information.
Log Data mode with Lightbar		
Lightbar	**Text-only**	If the Lightbar is set to Text-only, guidance can not be used, but Where-Applied data can be logged to the PC card.

Table 2-2: Log Data and Guidance Only Mode Settings

Setup Name	Setting	Description
Log Data Mode without Lightbar		
Lightbar	**Off**	If the Lightbar is set to Off, guidance can not be used, but Where-Applied data can be logged to the PC card. The lightbar is not required.

Table 2-2: Log Data and Guidance Only Mode Settings

Rate Control Mode

The Rate Controller mode implies that an external rate controller is connected to one of the com ports on the Legacy 6000 console. See “Compatible Rate Controllers” on page 2-29 for a list of compatible rate controllers. In Rate Control mode there are several options to choose from. Application Rate data can be collected, with or with out guidance. If rate data is being collected without guidance, the option of using a lightbar or not is available. All data collected in Rate Control mode is considered As-Applied data.

To setup in Rate Controller mode, the Controller setting in Controller setup must be set to the type of rate controller connected to the Legacy 6000 console. If this setting is set to None, it will not be possible to perform product application. Table 2-3 lists all of the different Rate Control mode options.

Setup Name	Setting	Description
Controller	**A Driver Name**	In Controller setup, a controller driver name must be selected to preform product application. See “Controller Setup” on page 2-28.
Rate Control with Guidance		
Lightbar	**Text/Lights**	If the Lightbar setting is set to Text/Lights it is possible to use machine guidance and log data to the PC card. See “Lightbar Setup” on page 2-14 for more information.
Log Data mode with a Lightbar and without Guidance		
Lightbar	**Text-only**	If the Lightbar setting is set to Text-Only, it is not possible to use guidance, but As-Applied data can be logged to the PC card.
Log Data mode without a Lightbar or Guidance		
Lightbar	**Off**	If the Lightbar setting is set to Off, it will not be possible to use guidance, but As-Applied data can be logged to the PC card. The lightbar is not required.

Table 2-3: Rate Control Mode Setting Options

Console Setup

Console Setup defines system environment settings (units, language, time) that are displayed on the console and used in the rate control and guidance applications.

To access Console Setup, select System Setup from the Main Launcher page (Figure 2-2), this brings up the System Setup page (Figure 2-7). From the System Setup page, select Console Setup. This brings up the Console Setup page (Figure 2-8). All console setup parameters are listed in Table 2-4.

To change any of the system environment settings, highlight the setting name listed in the center column of the Console Setup page and press enter. The Setup Wizard can be used to walk through and change any or all of the settings. When done making changes, press the Forward Arrow to save and exit Console Setup. Press the Back Arrow to exit and not save any changes

It is recommended that the correct date and time be set prior to any product application and data collection.

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Figure 2-8: The Console Setup Menu Page

Setting	Description
PC Card	Indicates to the Legacy 6000 system that a PCMCIA data card will be used.
Units	Defines the system units, Metric or US.

Table 2-4: Console Setup Settings

Setting	Description
Language	Defines the system language.
System Date	Sets the system date.
Date Format	Defines the date format to be displayed on the console. Settings are 12 hr. and 24 hr.
System Time	Sets the system time.
Time Format	Defines the time format to be displayed on the console.
Time Zone	Sets the time zone the Legacy 6000 system will operate in.
Speaker	Sets the system speaker option; internal or external.
Volume	Sets the speaker volume.

Table 2-4: Console Setup Settings

Lightbar Setup

Lightbar setup defines how the Swath XL lightbar is to be configured with the Legacy 6000 console. Lightbar setup parameters are listed in Table 2-5.

To access Lightbar Setup, select System Setup from the Main Launcher page (Figure 2-2), this brings up the System Setup page (Figure 2-7). From the System Setup page select Lightbar Setup. This brings up the Lightbar Setup page (Figure 2-9).

To change any of the Lightbar settings, highlight the setting name listed in the center column of the Lightbar Setup page and press enter. The Setup Wizard can be used to walk through and change any or all of the settings. When done making changes, press the Forward Arrow to save and exit Lightbar Setup. Press the Back Arrow to exit and not save any changes.

Figure 2-9: The Lightbar Setup Menu Page

Setting	Description
Lightbar	Defines the lightbar features to be used. Settings are Text/Lights, Text Only, or Off. If set to Text-only or Off it will not be possible to use machine guidance.
LED Brightness	Sets the brightness level of the lightbar LEDs and text window.
Display Mode	Defines how the user interprets the row of LEDs on the lightbar. The center stack of Green LEDs can represent the current guideline (Swath Mode) or the vehicle (Vehicle Mode).
Drive sensitivity	Sets the distance a single LED in the row of LEDs represents; typically 1.5 feet.
Look Ahead	The number of seconds ahead of the vehicle that the cross track error should be calculated; typically 2.0 seconds. Settings are Off, Alarm, Hazards, and All.

Table 2-5: The Lightbar Setup Settings

Setting	Description
Alarm	Defines the situation which causes the alarm to sound.
Hazard Range	Sets the distance prior to an impending feature (Hazard or Applied Area).
Parallel MSG 1	Defines which of several lightbar messages is displayed in the #1 MSG location. Choices are X-Track, Swath #, Heading Error, Ground Speed, Area Applied, and Off.
Parallel MSG 2	Defines which of several lightbar messages is displayed in the #2 MSG location. Choices are X-Track, Swath #, Heading Error, Ground Speed, Area Applied, and Off.
Parallel MSG 3	Defines which of several lightbar messages is displayed in the #2 MSG location. Choices are X-Track, Swath #, Heading Error, Ground Speed, Area Applied, and Off.
Curved MSG	Defines which of several lightbar messages is displayed in the #1 Curved MSG location. Only the Curved MSG is used when in Headlands guidance mode. Choices are Area Applied, Ground Speed, X-Track, and Off.

Table 2-5: The Lightbar Setup Settings

GPS Receiver Setup

GPS Receiver setup defines the DGPS accuracy and how the GPS receiver communicates with the Legacy 6000 console. GPS Receiver setup parameters are listed in Table 2-6.

To access GPS Setup, select System Setup from the Main Launcher page (Figure 2-2). This brings up the System Setup page (Figure 2-7). From the System Setup page, select GPS Receiver Setup. This brings up the GPS Receiver Setup page (Figure 2-10).

To change any of the GPS Receiver settings, highlight the setting name listed in the center column of the GPS Receiver Setup page and press enter. The Setup Wizard can be used to walk through and change any or all of the settings. When done making changes, press the Forward Arrow to save and exit GPS Receiver Setup. Press the Back Arrow to exit and not save any changes.

Figure 2-10: The GPS Receiver Setup Menu Page

Setting	Description
Use GPS	Defines whether the Legacy 6000 system is using GPS. If using GPS, this setting must be set to Yes.
Accuracy	Defines the accuracy of your DGPS receiver. Choices are RTK and Sub-meter.
Com Port	Defines the com port your GPS receiver is connected to.
Baud Rate	Defines the selected com port baud rate.
Data Bits	Defines the selected com port data bit setting.
Stop Bits	Defines the selected com port stop bit setting.
Parity	Defines the select com port parity.

Table 2-6: The GPS Receiver Setup Settings

Implement Setup

Implement Setup defines the spatial relationship (distance and direction) of your swath with the GPS antenna. Implement Setup is a step by step (wizard fashion) process.

To access Implement Setup, select System Setup from the Main Launcher page (Figure 2-2). This brings up the System Setup page (Figure 2-11). From the System Setup page, select Implement Setup. This brings up the first page in the Implement Setup process (Figure 2-14).

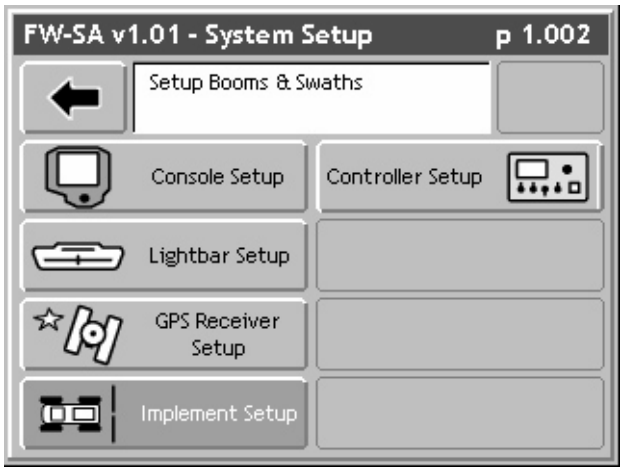


Figure 2-11: The System Setup Launcher Page

The Vehicle Coordinate System

In order to properly define the relationship between your swath and the GPS antenna on your vehicle, Fieldware-SA has set up a coordinate system based around the center line of the vehicle (Figure 2-12). Review this Vehicle Coordinate System prior to running Implement Setup. It is also a good idea to make all of measurements, such as distance from GPS Antenna to Swath, prior to running Implement Setup.

The X and Y Axes

In Fieldware-SA for Legacy 6000, a vehicle will have two axes, X and Y. The X axis runs perpendicular to the center line of the vehicle and the Y axis is the center line of the vehicle (Figure 2-12). Directions along the X axis are referred to as left and right, while directions along the Y axis are referred to as forward and back. In Fieldware-SA, only the Y Axis information is of concern.

Location of GPS Antenna

The GPS Antenna must be mounted along the center line, the Y-Axis, of the vehicle (Figure 2-12).

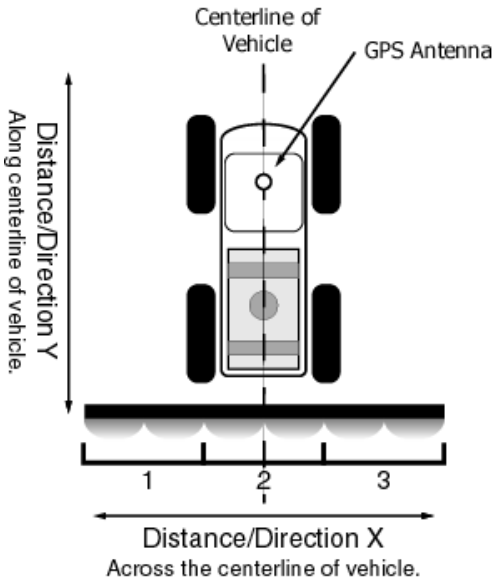


Figure 2-12: The Vehicle-Swath-GPS Antenna Relationship

Boom Sense Options

Fieldware-SA allows a single swath made up of one to five sections. Figure 2-12 shows a single swath made up of three sections.

The Legacy 6000 has two boom sense options, a Mid-Tech three section Switch Box and the five section Boom Sense cable. If using either of these boom sense options it will be necessary to run Implement setup and establish the switch to swath section relationship.

Figure 2-13: Boom Sense Cable

Entering the Implement Width

The first page in the Implement Setup process is the implement width (Figure 2-14). This width is used for guidance purposes and could be considered the distance between guidelines. This width is typically determined by the vehicle swath width or spread area. Setting the Implement width slightly smaller than the actual width reduces skips. Setting the Implement width slightly larger than the actual swath width reduces overlap.

The Implement Width page also contains a Review Configuration button. Pressing this button brings up a page that details the current Implement configuration (Figure 2-15).

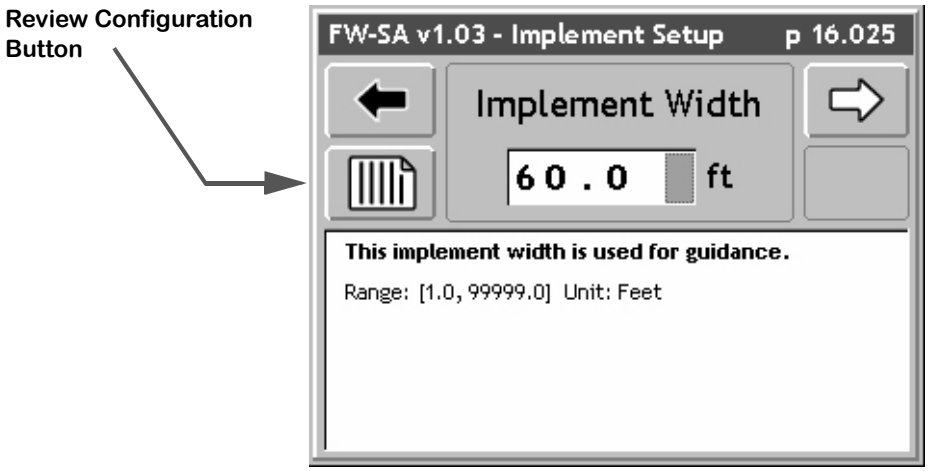


Figure 2-14: The Implement Width Page

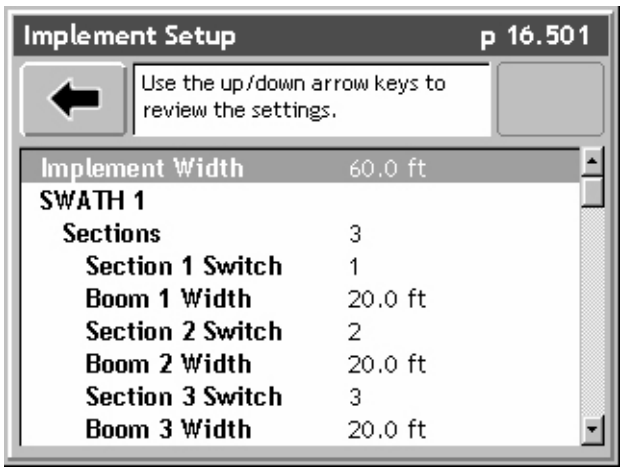


Figure 2-15: Review of Implement Configuration

Entering the Number of Sections in a Swath

The Sections page is where the number of sections in the swath is entered. The maximum number of total sections is five. When the correct number of sections is entered, press the Forward Arrow button to move to the next setup page.

Swath sections are ordered left to right with respect to a forward facing vehicle. The left most section will be assigned number 1 and section numbers increase moving to the right across the swath (Figure 2-12).

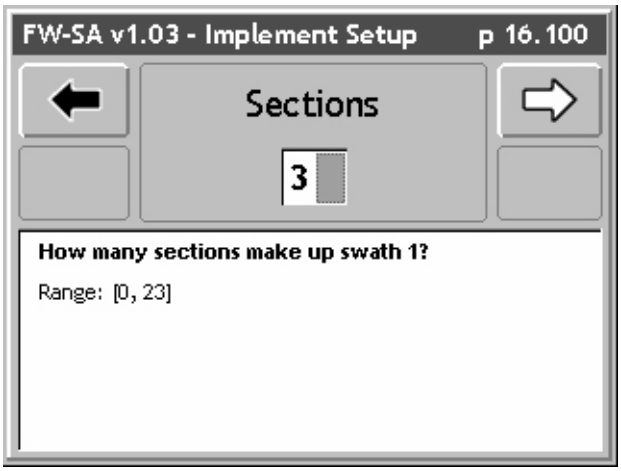


Figure 2-16: The Number of Sections

Setting the Section to Switch Assignment

The Section to Switch page, allows a physical switch to be assigned to the current Swath Section. This allows individual sections to be turned on and off. This boom section activity is properly displayed in the real-time map view as well as properly recorded in the application file (.RCD).

When the correct section to switch assignment is entered, press the Forward Arrow button to move to the next setup page.

Swath sections are ordered left to right with respect to a forward facing vehicle. The left most section is assigned number 1 and section numbers increase moving to the right across the swath (Figure 2-12).

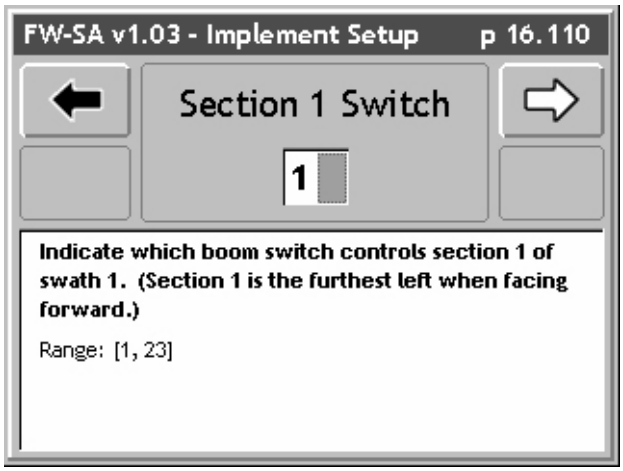


Figure 2-17: The Section to Switch Assignment Page

Entering the Section Width

The Section Width page is where the width of a section is entered. When the correct section width is entered, press the Forward Arrow button to move to the next setup page.

If there is more than one section for swath, Implement setup loops through the Section to Switch Assignment and Boom Width pages for each section. This User's Guide assumes that the previous two setup pages have been looped through for each section entered.

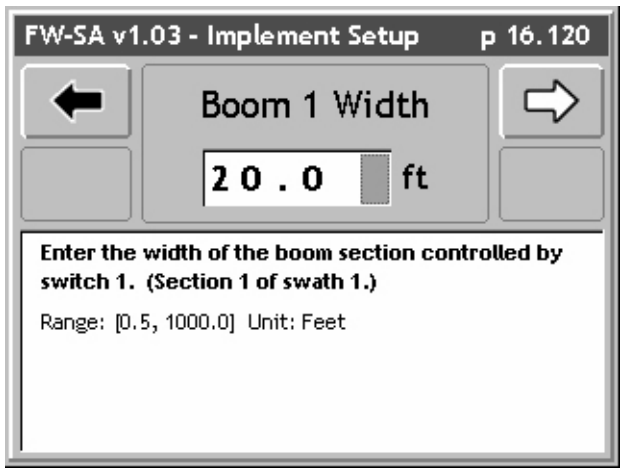


Figure 2-18: The Section Width Page

Entering the Offset Direction Y

The Y direction offset is the direction, (along the center line of the vehicle) from the GPS antenna to the center of a swath (Figure 2-12). Refer to “The Vehicle Coordinate System” on page 2-18 for a description of the offset directions and distances.

When the correct direction is entered, press the Forward Arrow button to move to the next setup page

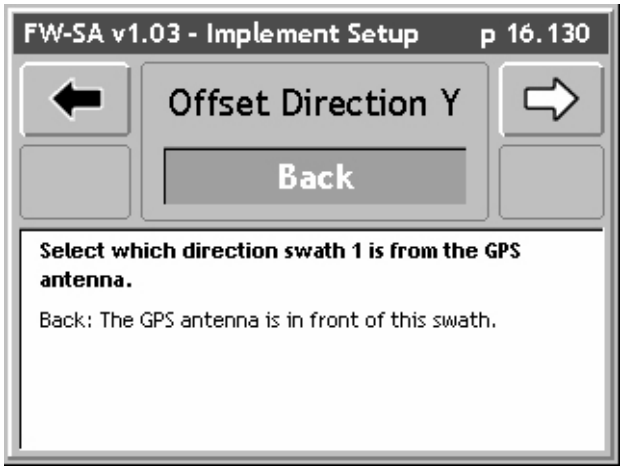


Figure 2-19: The Offset Direction Y Page

The Offset Distance Y

When entering the Y Offset Direction, it is necessary to enter the Y Offset Distance. This is the distance from the GPS antenna, along the vehicle center line, to the swath. Refer to “The Vehicle Coordinate System” on page 2-18 for a description of the offset directions and distances. To obtain the most accurate application files and maps, we recommend that this distance be measured and not estimated or guessed.

When the correct direction is entered, press the Forward Arrow button to move to the next setup page.

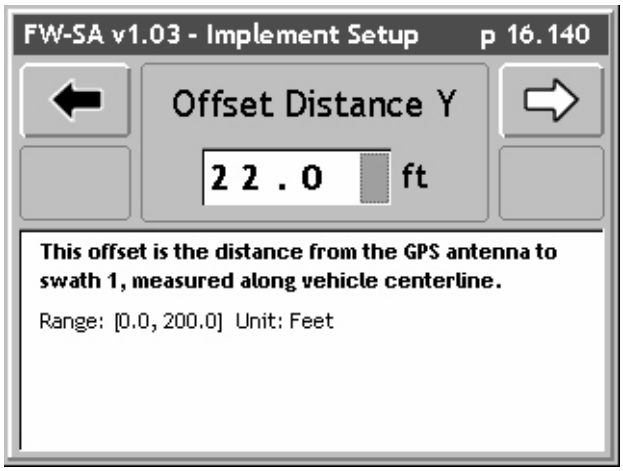


Figure 2-20: The Offset Distance Y Page

Entering the Offset Direction X

The Offset Direction X (Figure 2-21) is the direction left or right of the vehicle center line, that the center of a swath is offset. Typically this is set to None, since most swaths are centered on the vehicle's center line. Refer to "The Vehicle Coordinate System" on page 2-18 for a description of the offset directions and distances.

If an Offset Direction X of either Right or Left is selected, the next setup page (Figure 2-22) asks for distance of this offset. If None is selected, there is no distance and therefore a distance is not asked for.

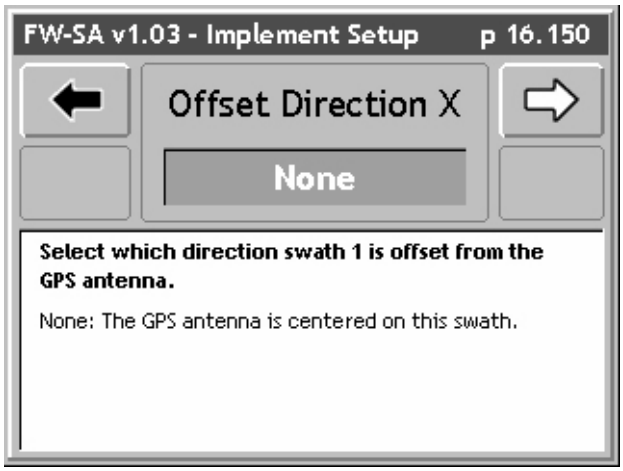


Figure 2-21: The Offset Direction X Page

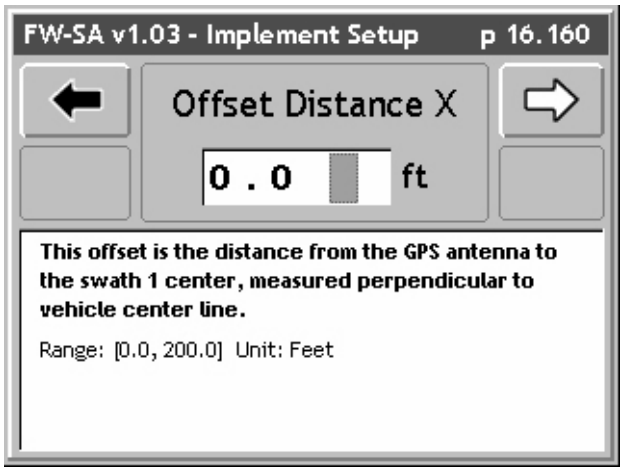


Figure 2-22: The Offset Distance X Page

Completing Implement Setup

The last Implement Setup page is the Finish page. There are two buttons on the Finish page; a Review Configuration button and a Save button.

Pressing the Review configuration button displays all of the implement setup settings just entered (Figure 2-15).

The Save button saves the current Implement configuration parameters to a setup file.

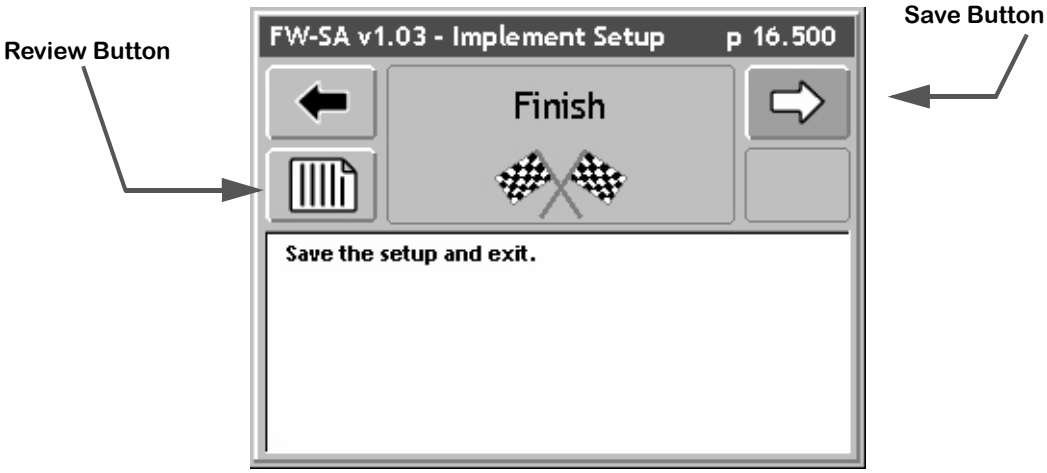


Figure 2-23: The Implement Setup Finish Page

This concludes the section on Implement Setup.

Controller Setup

The type of external rate controller to be connected to the Legacy 6000 console is selected in Controller Setup. A complete list of compatible external rate controllers can be found in Table 2-8.

To access Controller Setup, select Controller Setup from the Main Launcher page (Figure 2-2). This brings up the System Setup launcher page (Figure 2-11). From the System Setup page select Controller Setup. This brings up the Controller Setup page (Figure 2-24)

Figure 2-24: The Controller Setup Page

All Controller Setup parameters are listed in Table 2-7. To change any of the Controller settings, highlight the setting name listed in the center column of the Controller Setup page and press enter. The Setup Wizard can also be used to walk through and change any or all of the settings. When done making changes, press the Forward Arrow to save and exit Controller Setup. Press the Back Arrow to exit and not save any changes

Setting	Description
Controller	Defines the type of compatible rate controller to be connected to the Legacy 6000.
Com Port	Defines the Legacy 6000 com port the rate controller is connected to.
Base Rate	Defines the base rate required for a Rawson Controller. Not active unless the Rawson controller is selected above.
Status Detect	Defines the Status Detect state of the Rawson rate controller. Active only when the Rawson controller is selected above.

Table 2-7: Controller Setup Settings

Compatible Rate Controllers

Table 2-8 lists the compatible external rate controllers that work with this version of Fieldware-SA.

Name	Description
Midtech98	Variable rate control and data logging, on the 'C' channel only, of any Mid-Tech TASC (6000, 6100, 6200, 6500, 6300, 6600) or AgLogix controller with software level compatible with version 5.0 Data Link.
MarkIV	Rawson MarkIV and MarkV controllers.
TeeJet854	Teejet 854 controller version 1.10 or higher.
RavenLiq100	Liquid application with Raven 440, 550 or 660 controller model.
RavenGran100	Granular application with Raven 440, 550 or 660 controller model.

Table 2-8: Compatible External Rate Controllers

This completes the System Setup process for Fieldware-SA for Legacy 6000 console.

System Tools

System Tools allows some basic system diagnostics to be performed. System Tools is accessed from the Main Launcher page (Figure 2-25). To access the System Tools launcher, press the Tools button in the Main Launcher page (the help text should say *View System Tools*). This action brings up the System Tools launcher page (Figure 2-26). Table 2-9 below lists the current System Tools. Each tool is covered in more detail in sections below

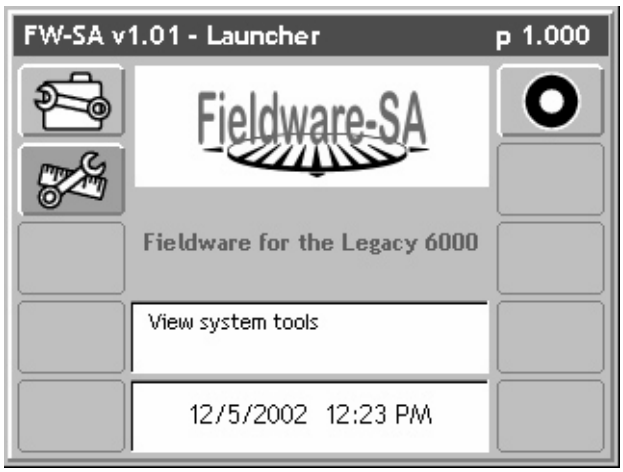


Figure 2-25: The Main Launcher

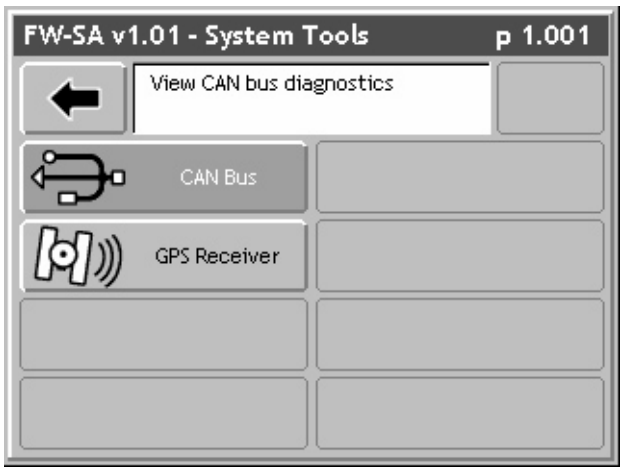


Figure 2-26: The System Tools Launcher

Tool	Description
CAN Bus	This tool allows the viewing of all components on the Mid-Tech CAN Bus. Because this is Fieldware-SA, the only components available on the CAN Bus are the Console and Lightbar.
GPS Receiver	Allows the viewing of incoming GPS data. This helps determine if the GPS Receiver is set up properly.

Table 2-9: System Tools

The CAN Bus Tool

This tool allows the viewing of any components connected to the Mid-Tech CAN Bus. In Fieldware-SA, the Mid-Tech CAN Bus is the simple connection between the Console and the Lightbar. This means that only the Console and Lightbar are available for diagnostics.

To access the CAN Bus diagnostic page, select System Tools from the Main Launcher page (Figure 2-25). This brings up the System Tools page (Figure 2-26). From the System Tools page select CAN Bus. This brings up the CAN Bus diagnostics page (Figure 2-27).

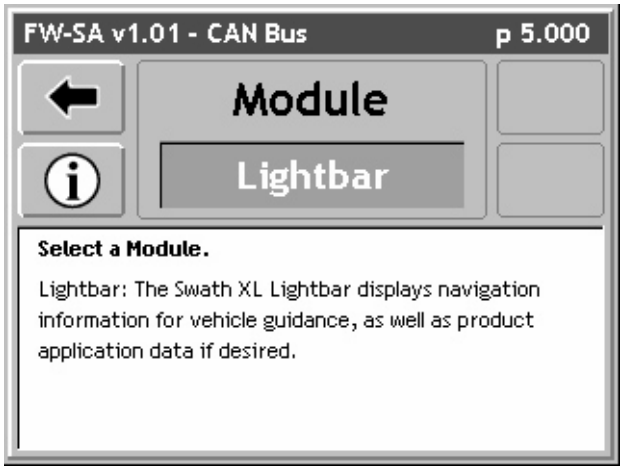


Figure 2-27: CAN Bus Diagnostics Page

Lightbar Test

From the CAN Bus diagnostic page, choose the CAN module, that the diagnostics are to be viewed for, by scrolling through the list with the Up and Down Arrow keys on the Legacy 6000 console. Figure 2-27 shows that the Lightbar has the highlighted module. Pressing enter here brings up the Lightbar diagnostic page, (Figure 2-28). Pressing the Lightbar button in this page starts a Lightbar test sequence. This test sequence can be used to determine whether the lightbar is working properly and that all lights are working.

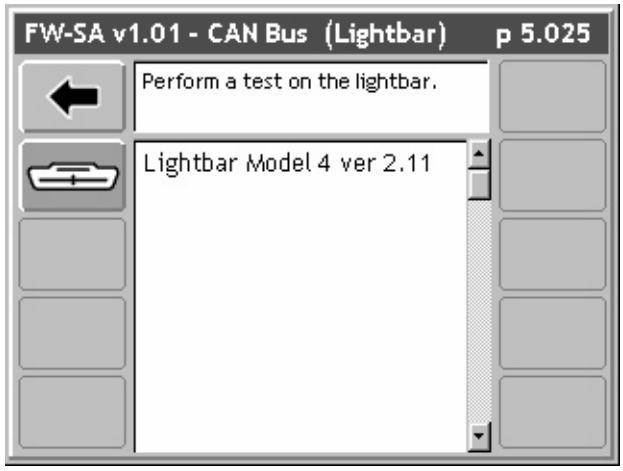


Figure 2-28: The Lightbar Diagnostics Page

Console

When selecting Console as the CAN module for diagnostics, a Console Information page is displayed, listing the console serial number and version number (Figure 2-29).

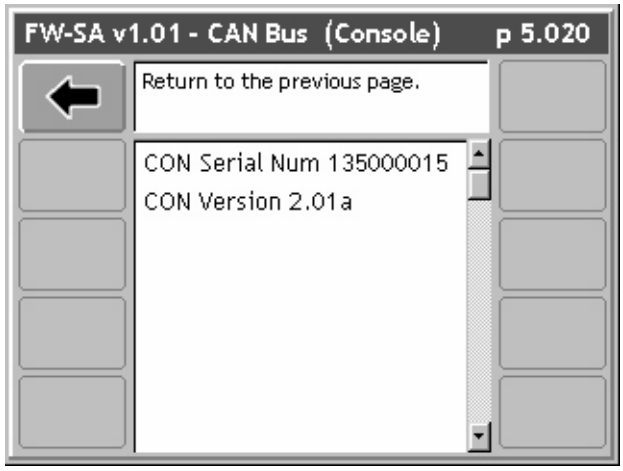


Figure 2-29: The Console Information Page

GPS Tool

This tool allows the viewing of any GPS data coming into the com port on the Legacy 6000. It is recommended this diagnostic be run the first time the GPS receiver is connected to the Legacy 6000 console.

To access the GPS Receiver diagnostic page, select System Tools from the Main Launcher page (Figure 2-25). This brings up the System Tools page (Figure 2-26). From the System Tools page, select GPS Receiver. This brings up the GPS Receiver diagnostics page (Figure 2-30).

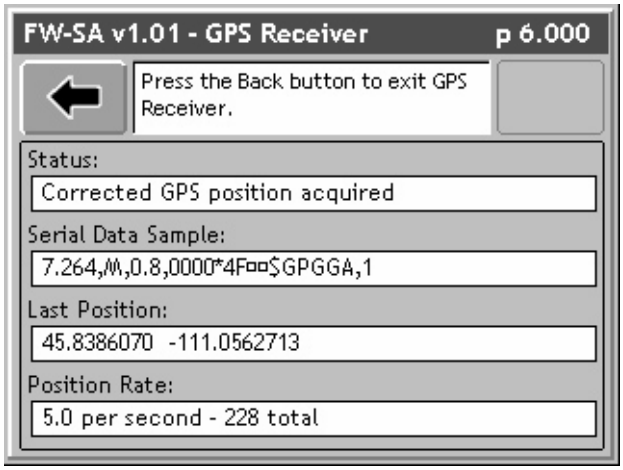


Figure 2-30: The GPS Receiver Diagnostic Page

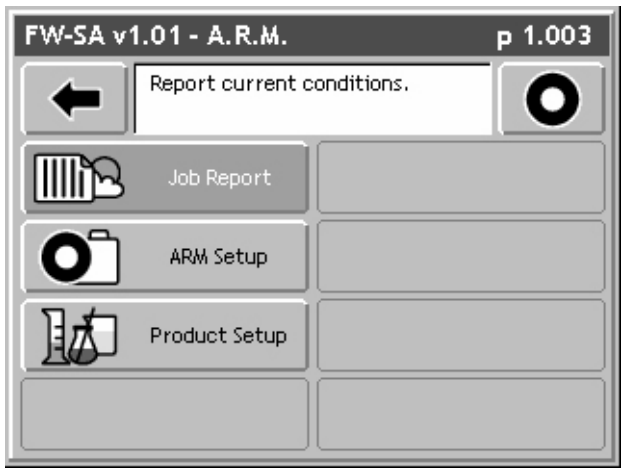
This concludes the section on Fieldware-SA System Tools and Diagnostics for Legacy 6000 console.

Chapter Notes

Chapter 3 - Real-time Setup

Setting up Fieldware-SA for Legacy 6000.

Fieldware-SA Version 1.0



Fieldware-SA

Fieldware-SA Real-Time Setup

This Chapter covers setting up Fieldware-SA for real-time operation. Prior to starting real-time operation we recommend that Chapter 4 - Real-time Operation on page 4-1 be reviewed.

Once the System Setup process is complete, (see Chapter 2 - Getting Started on page 2-1), real-time setup can begin. This is accomplished by pressing the Bull's-eye located in the Fieldware-SA Main Launcher page (Figure 3-1). The steps in the real-time setup process vary based on how the Legacy 6000 system is configured.

Real-time Setup Steps

It is recommended that these setup procedures be reviewed carefully. Familiarity with creating a job, file naming, and product setup allow these setup steps to be accomplished in just a minute or two. Table 3-1 outlines the real-time setup steps. Each step listed in the table is described in more detail in specific sections of this chapter.

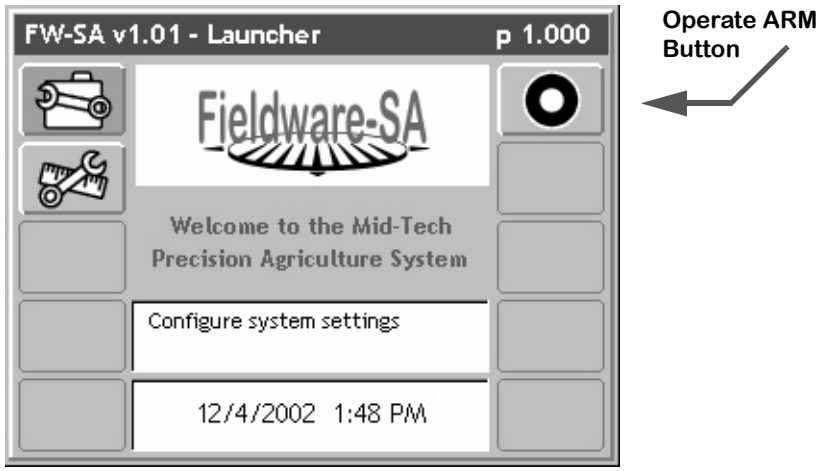


Figure 3-1: Fieldware Main Launcher

Prior to starting product application make sure that Implement Setup and Controller Setup are run and that all of the required files are on the PC card.

Real-time Setup Steps

Step	Description
	Job: When the ARM Bull's-eye button is pressed, the Job page appears. Select or create the desired job. A PC Card must be inserted in the console to store a job. Press the forward key to continue to the ARM Launcher page.
	Report Setup: If an application report is to be created, Report Setup must be run to enter Weather, Crop, Field, and Soils information.
	ARM Setup: This is where all files generated for current job are named. These files are automatically named. There are two ARM settings; Auto Hold and System Delay. These settings usually must only be made once. If the auto-named files are acceptable, the ARM setup can be skipped.
	Product Setup: Allows a products name, density, and starting quantity to be assigned. If using a prescription map, the product name can be automatically extracted from the prescription file. If performing guidance only, i.e. no rate controller attached, this page is not present.
	When the above steps have been accomplished and the console has been properly setup, product application can begin by pressing the ARM Bull's-eye. Review Chapter 4 Real-time Product Application.

Table 3-1: Start Product Application Process

Setting up a Job

Pressing the Bull's-eye button in the Fieldware-SA Main Launcher brings up the Job page (Figure 3-2). If no PC card is used and the Console Setup PC Card is set to NO, (see Console Setup on page 2-12), there is no prompt for Job number (see No PCMCIA Card on page 3-5). A PC card must be installed to create a job and store application and trajectory data.

Each Job created with a unique job id has an associated file folder named after the job id and placed at the root of the inserted PC card. All data files associated with a job are stored in this folder on the PC card.

There are three methods for entering/selecting a job; selecting an existing Job, creating a job based on an existing job, and creating a new job.

Selecting an Existing Job

From the Job page (Figure 3-2), an existing Job can be selected by using the Up and Down arrow keys. An existing Job has an associated file folder located on the PC card. The name of the job folder is the same as the job number.

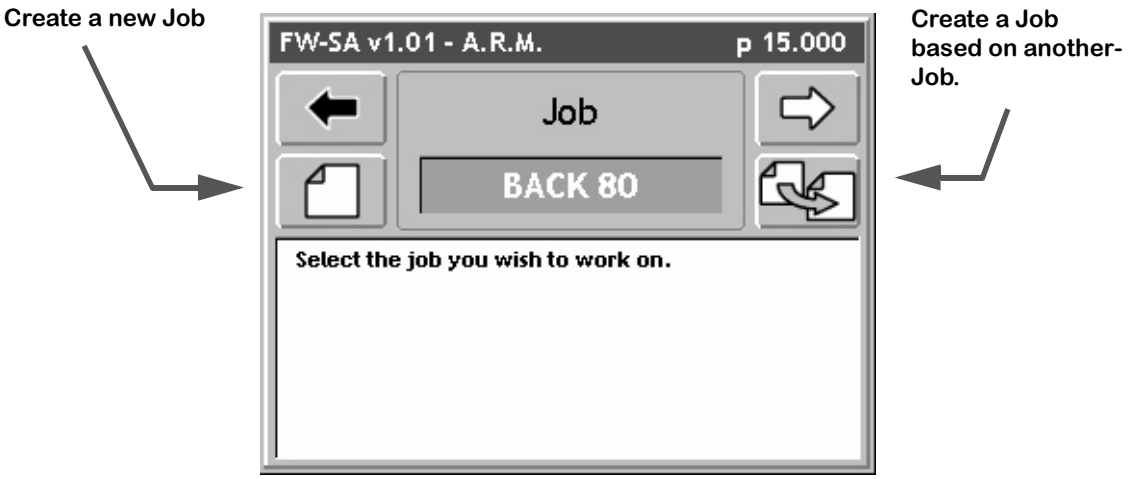


Figure 3-2: The Job Page

Creating a Job Based on Another Job

A new job can be created based on the settings of an existing job. Select the job to be copied, in the main job page window, and press the Create a Job button in the Job page. A prompt is received to manually enter a new job name or accept the auto-named job.

Creating a New Job

To create a new job, press the Create Job button in the Job page. This brings up the Create a Job page. There are two methods of creating a new job; manually and automatically.

Manually Naming a Job

To manually name a job, highlight the text entry window (Figure 3-3) and use the arrow keys enter a name for job. A job name can contain alpha-numbers characters. When the desired job name is entered, press the forward button to save the name and return to the Job page.

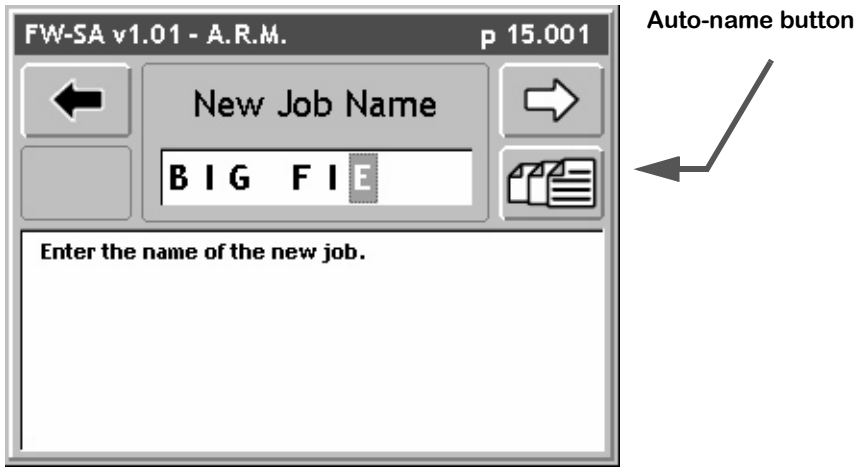


Figure 3-3: Manually Enter a Job Name

Automatically Naming a Job

To automatically name a new job based on the current days date, press the Auto-name button in the Create a Job page (Figure 3-3). This names the job based on the current date followed by the number that job is for day. Therefore the first job on November 21st 2002 would automatically be named 11212002-1. The second job for same day would be named 11212002-2.

No PCMCIA Card

If the PC Card setting in Console Setup is set to NO, or no PC card is inserted into the PC card slot in the console, it is not possible to collect data, therefore there is no prompt for a Job when starting ARM.

ARM Launcher

When the appropriate Job name is selected, press the Forward Arrow in the Job page to move to the ARM Launcher page (Figure 3-4). Several applications, required prior to starting up real-time product application, can be launched from this page. The setup applications that appear in the ARM Launcher page vary based on how the Legacy 6000 is setup.

Mode	Setup Applications
Guidance Only	Report Setup, ARM Setup, and Product Setup
Log Data	Report Setup, ARM Setup, and Product Setup
Rate Control	Report Setup, ARM Setup, and Product Setup
Rate Control & Log Data	Report Setup, ARM Setup, and Product Setup
Guidance & No PC Card	No ARM Launcher page. Software goes directly into real-time operation.
Rate Control & No PC Card	ARM Setup

Table 3-2: Setup Application List

Each real-time setup application is discussed in detail below.

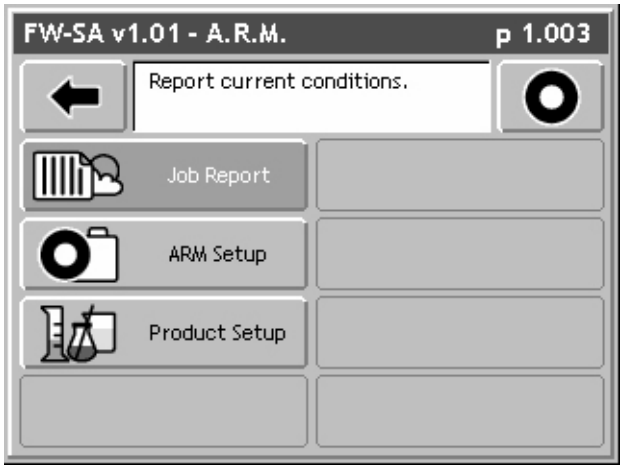


Figure 3-4: The ARM Launcher Page

No PCMCIA Card Setup

If the PC Card setting, in Console setup, is set to NO, the ARM Launcher looks slightly different. Because no data is stored to the PC card, there is no need to name any files, or setup any report information that would be stored in the (.RCD) file. Therefore the Report Setup application is not included, and any file selections in ARM Setup are not included.

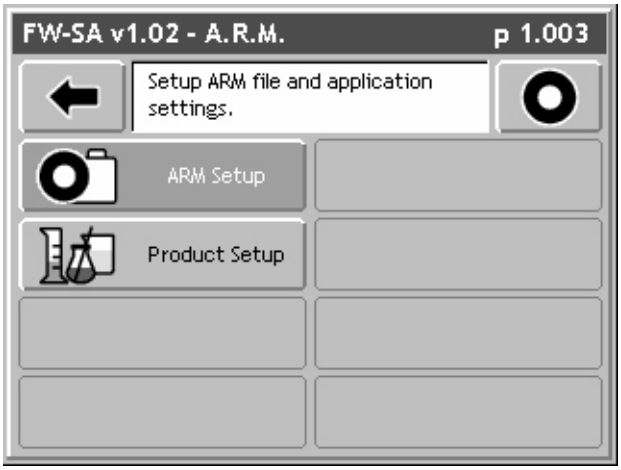


Figure 3-5: ARM Launcher (No PC Card)

Setting up a Report

Weather, soil, and field related data, used to build an application report, can be entered in Report Setup. Application reports are generated in the Fieldware Map Manager desktop program.

Report Setup is accessed from the ARM Launcher page (Figure 3-6). Select the Report Setup tab and move to the main Report Setup page (Figure 3-7). Table 3-3 describes each Report Setup menu item.

It is not necessary to fill out any Report Setup information in order to start applying products. The Report Setup Information should be filled out if this data is to be written to the header of the record file (.RCD).

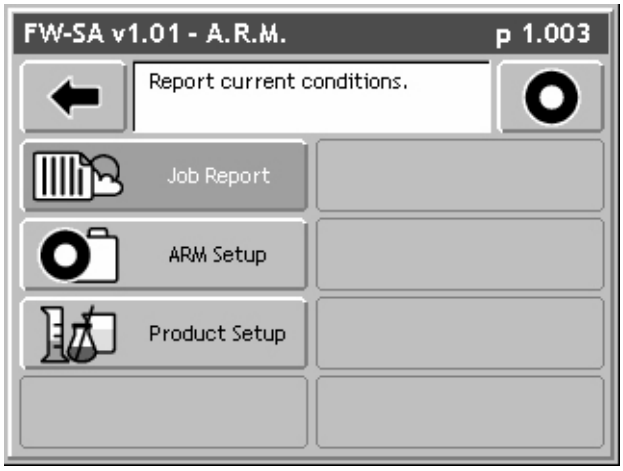


Figure 3-6: ARM Launcher

Report Setup Menu Items

Item	Description
Wind Speed	Enter the observed Wind Speed. Units are based on Units set in Console Setup. If no wind speed is desired, set this to NO.
Wind Direction	Enter the observed Wind Direction from the following directions: NE, E, SE, S, SW, W, NW, N, and Not Observed.
Temperature	Enter the observed Temperature. Units are based on Units set in Console Setup. If no temperature is desired, set this to NO.
Current Weather	Select the appropriate weather condition from the following conditions: Sunny, Cloudy, Partly Cloudy, and Not Observed.
Soil Moisture	Select the appropriate Soil Moisture from the following conditions: Dry, Moist, Wet, and Not Observed.
Soil Texture	Select the appropriate Soil Texture from the following textures: Fine, Medium Course, and Not Observed.
Soil Tillage	Select the appropriate Soil Tillage from the following conditions: No Till, Min Till, Conv Till, and Not Observed.
Soil Condition	Select the appropriate Soil condition from the following conditions: Good, Trashy, Smooth, Rough, and Not Observed.
Crop Name	Enter the name of the Crop.
Growth Stage	Select the appropriate Growth Stage from the following stages: Pre-Plant, Pre-Emergence, Post Emergence, and Not Observed.

Table 3-3: Report Setup Menu Item Descriptions

Running the Report Setup Wizard

The Main Report Setup page contains every Report Setup item in a list. The top item in the list is the Report Setup Wizard. The Report Setup Wizard steps through the entire Report Setup item list. Set any undesired Report Setup Items Not Observed.

Figure 3-8 through Figure 3-17 steps through the entire Report Setup wizard.

Figure 3-7: The Main Report Setup Page

Enter the Wind Speed

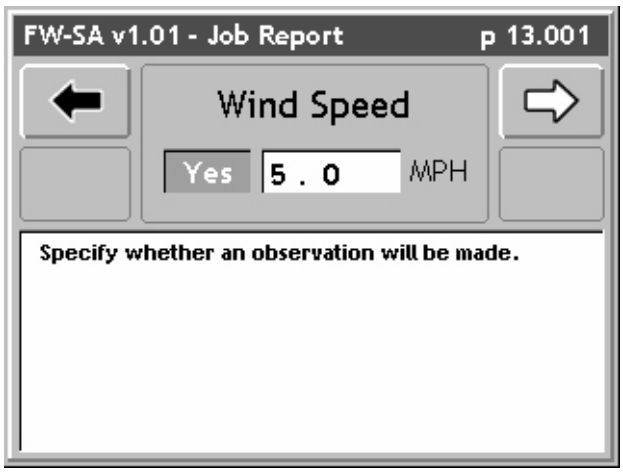


Figure 3-8: Report Setup Wind Speed Page

Enter the Wind Direction

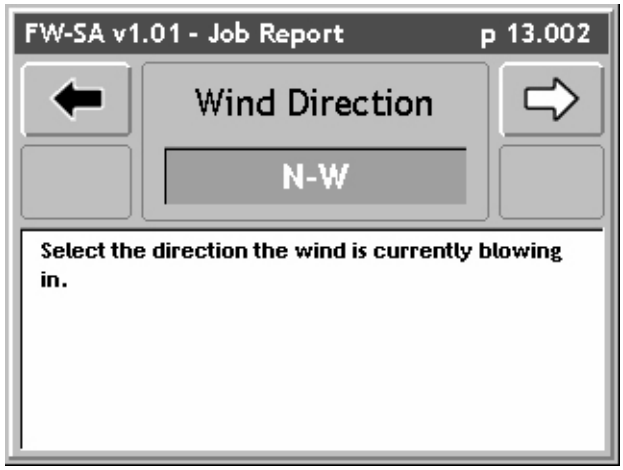


Figure 3-9: Report Setup Wind Direction

Enter the Temperature

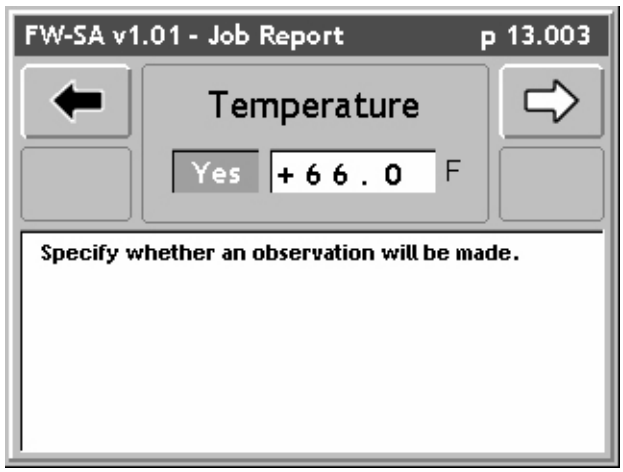


Figure 3-10: Report Setup Temperature

Enter the Relative Humidity

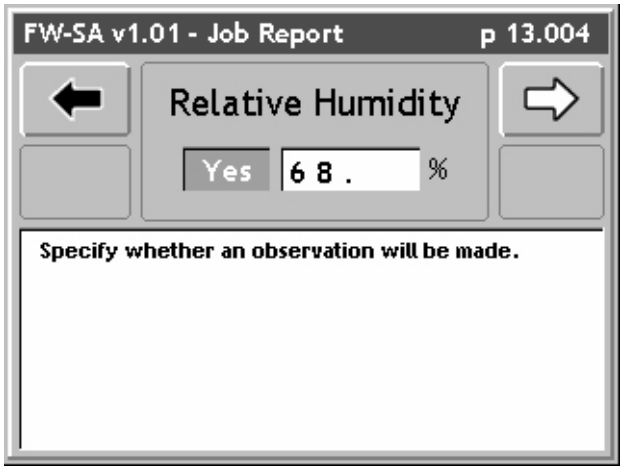


Figure 3-11: Report Setup Humidity

Select the Current Weather Condition

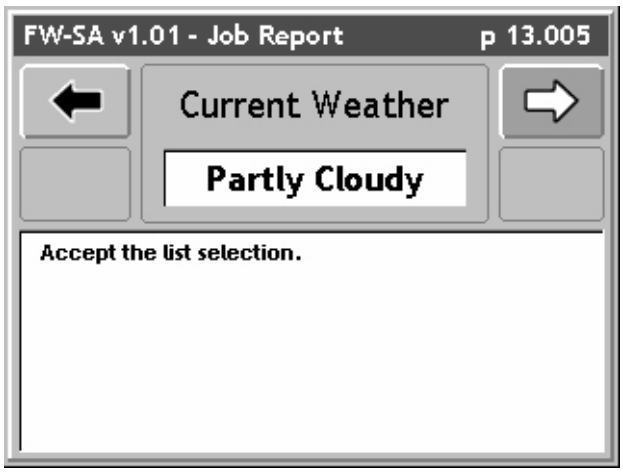


Figure 3-12: Report Setup Current Weather

Select the Soil Moisture

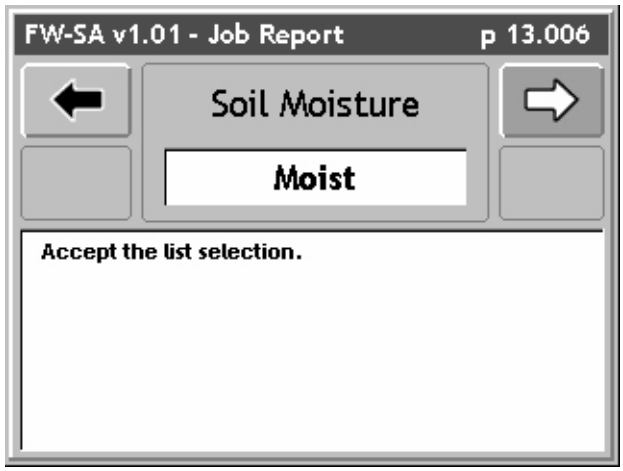


Figure 3-13: Report Setup Soil Moisture

Select the Soil Condition

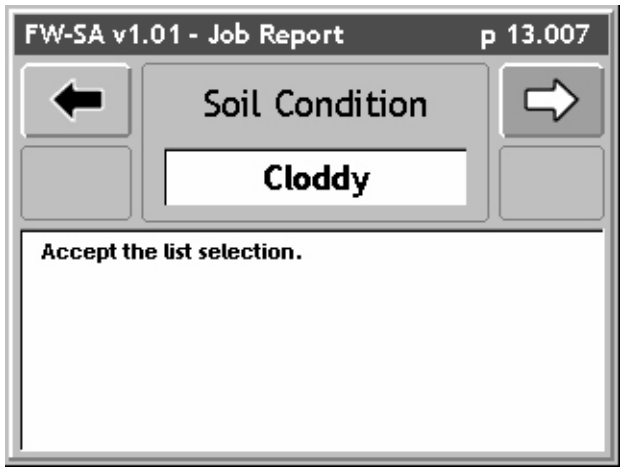


Figure 3-14: Report Setup Soil Condition

Select the Soil Texture

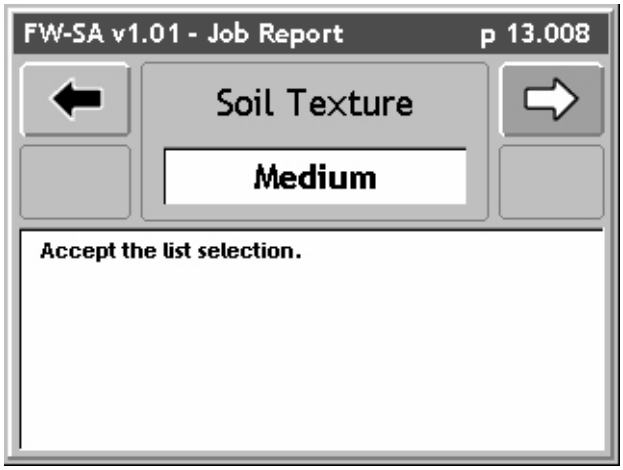


Figure 3-15: Report Setup Soil Texture

Select the Soil Tillage

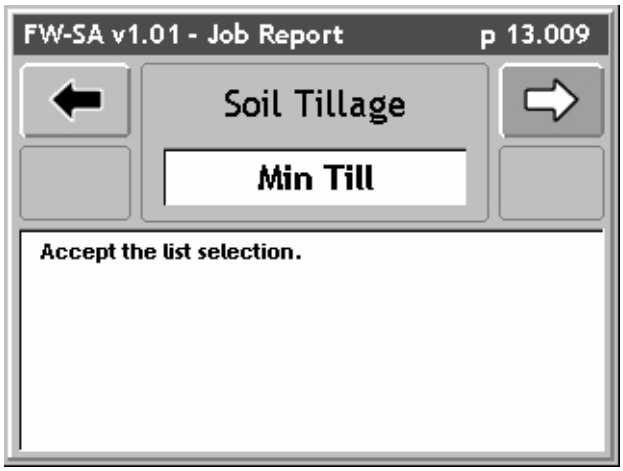


Figure 3-16: Report Setup Soil Tillage

Select the Growth Stage

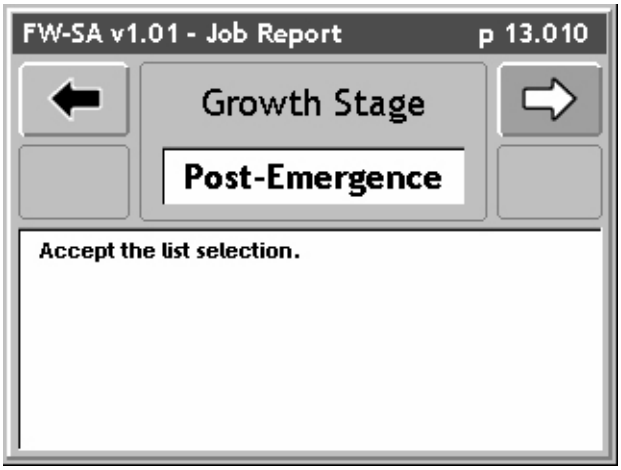


Figure 3-17: Report Setup Growth Stage

This completes the Report Setup Wizard, pressing the Forward Arrow from the Growth Stage page will return you to the Main Report Setup page (Figure 3-7). To save your Report Setup information, press the Forward Arrow. This will return you to the ARM launcher page.

Running ARM Setup

ARM Setup handles all data file names as well as a few product application parameters. To run ARM Setup, select the ARM Setup tab in the ARM Launcher page (Figure 3-18). This brings up the Main ARM Setup page (Figure 3-19).

When ARM was first entered, a request was made to enter/select a job name (see Setting up a Job on page 3-4). This job name is used to automatically name all of the job related files.

Table 3-4 lists all of the ARM Setup items and their descriptions.

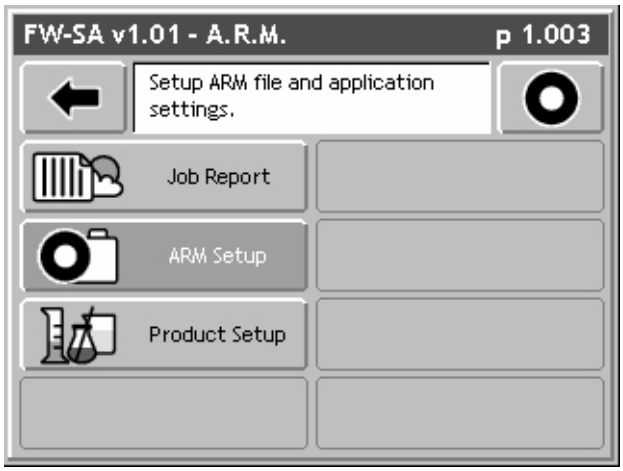


Figure 3-18: The ARM Launcher Page

Arm Setup Menu Items

Setup Item	Description
Record File (.RCD)	The Record file contains the spray trajectory data for a particular product application. The Record file contains rate, spray on and spray off data, report data entered in Report Setup, as well as total boom width information. This file can be imported into the *Fieldware Map Manager* program, where an application report can be generated. Maps of a (.RCD) file are known as As-Applied maps.
Guideline File (.GLN)	The Guideline file contains all information required to reconstruct the guidelines created and used during product application. This file can contain multiple guidelines in any orientation. The Guideline file can be re-used for any spraying campaign. A Single guideline file can be used for all application tasks.
Map File (.GMF)	A Map file is used to store additional field features that it might be necessary to locate during product application.
Boundary File (.BND)	The Boundary file allows an existing field boundary to be displayed or a new field boundary to be created. Mapping the filed boundary gives valuable area information.
Auto Hold	Auto Hold has two options; Center of Full Swath and Ends of Full Swath, each allows the controller spray activity to be automatically turned off when the vehicle drives over a previously applied area. Center of Full Boom requires that the center of the boom be in an already applied area. Ends of Full Boom requires that the left end, right end and center of the boom be in an already applied area. Both options use the System Delay to compute the position of the boom.
System Delay	The System Delay is the number of seconds that the *ARM* program is to look out in front of the vehicle. Based on the vehicles trajectory and this system delay value, the *Application Rate Management* program can determine where the vehicle will be with respect to the prescription map. By looking out in front of the vehicle, the *ARM* program can identify the required rate for an upcoming prescription map region and notify the rate controller of any changes. This can help minimize lag times in the product delivery system when changing product rates. A value of two seconds is recommended.

Table 3-4: ARM Setup Items

Running the ARM Setup Wizard

The main ARM Setup page is the page that appears when you first enter ARM Setup. The ARM Setup page contains every setup item in a list. From this list, each ARM Setup item can be edited individually or the ARM Setup Wizard can be run. The top item in the list is the Setup Wizard. To run the Setup Wizard highlight <Set Up Wizard> in the main list and press the enter key. The Setup Wizard steps through the entire ARM Setup item list.

Figure 3-21 through Figure 3-27 step through the entire ARM Setup wizard.

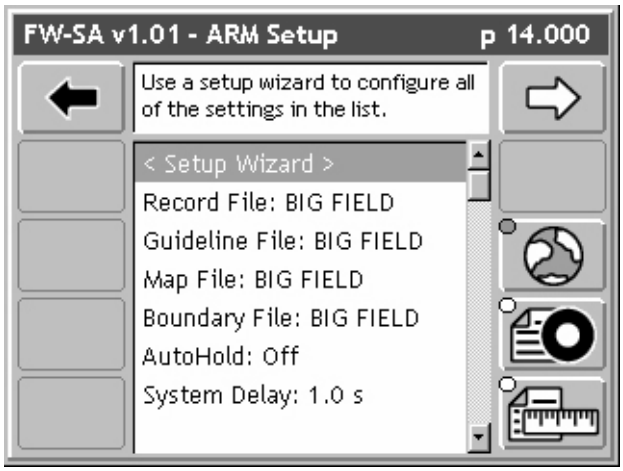


Figure 3-19: The Main ARM Setup Page

No PCMCIA Card Selected

If the PC Card setting in Console setup is set to NO, the ARM Setup main page looks slightly different (Figure 3-20). All ARM setup items related to files and naming files are omitted from the main page.

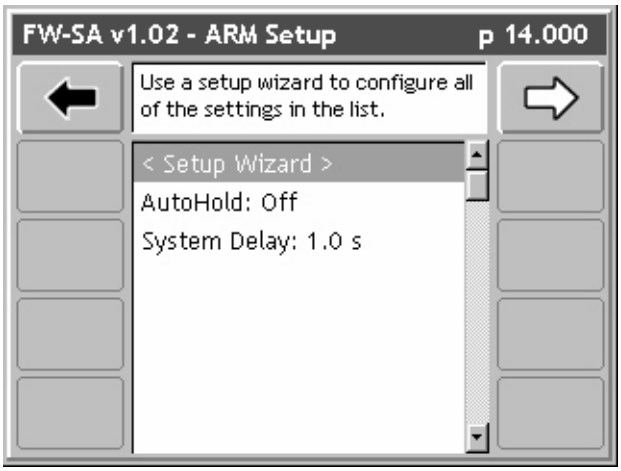


Figure 3-20: The Main ARM Setup Page with NO PC Card

Select / Enter a Record File

The Record file name defaults to the Job name (Figure 3-21) with file extension (.RCD). If desired, a new Record file name can be entered using the arrow keys on the Legacy 6000 console. If an existing Record file is desired, press the Folder button. The Folder button brings up a filename dialog from which an existing Record file can be selected (Figure 3-22). When the desired file has been selected, press the Forward Arrow to return to the Record File wizard page. Press the Forward Arrow again to advance to the next wizard page.

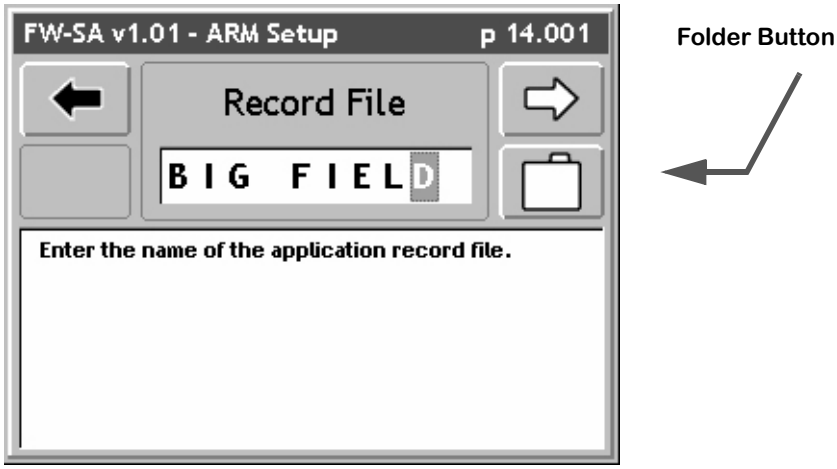


Figure 3-21: The ARM Setup Record File Page

Figure 3-22: The Select Existing Record File Page

Select Enter a Guideline File

The Guideline file name defaults to the Job name with file extension (.GLN) (Figure 3-23). If desired, a new Guideline file name can be entered, using the arrow keys on the Legacy 6000 console. If an existing Guideline file is desired, press the Folder button. The Folder button brings up a filename dialog, from which an existing Guideline file can be selected. When the desired file has been selected, press the Forward Arrow to return to the Guideline File wizard page. Press the Forward Arrow again to advance to the next wizard page.

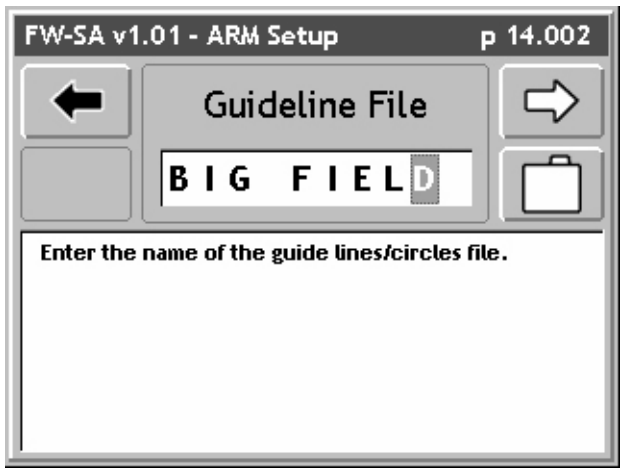


Figure 3-23: The ARM Setup Guideline File Page

Selecting / Entering the Map File

The Map file name defaults to the Job name (Figure 3-24) with file extension (.GMF). If desired, a new Map file name can be entered, using the arrow keys on the Legacy 6000 console. If an existing Map file is desired, press the Folder button. The Folder button brings up a filename dialog from which an existing Map file can be selected. When the desired file has been selected, press the Forward Arrow to return to the Map file wizard page. Press the Forward Arrow again to advance to the next wizard page.

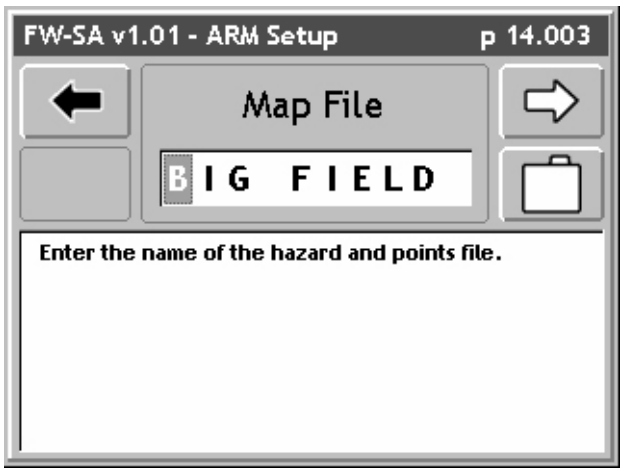


Figure 3-24: The ARM Setup Map File Page

Selecting / Entering the Boundary File

The Boundary file name defaults to the Job name (Figure 3-25) with file extension (.BND). If desired, a new Boundary file name can be entered, using the arrow keys on the Legacy 6000 console. If an existing Boundary file is desired, press the Folder button. The Folder button brings up a filename dialog from which an existing Boundary file can be selected. Once the desired file has been selected press the Forward Arrow to return to the Boundary file wizard page. Press the Forward Arrow again to advance to the next wizard page.

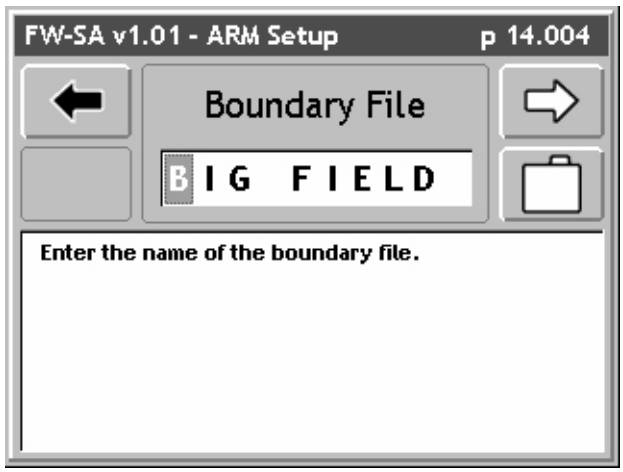


Figure 3-25: The ARM Setup Boundary File Page

Select the Desired Auto Hold Setting

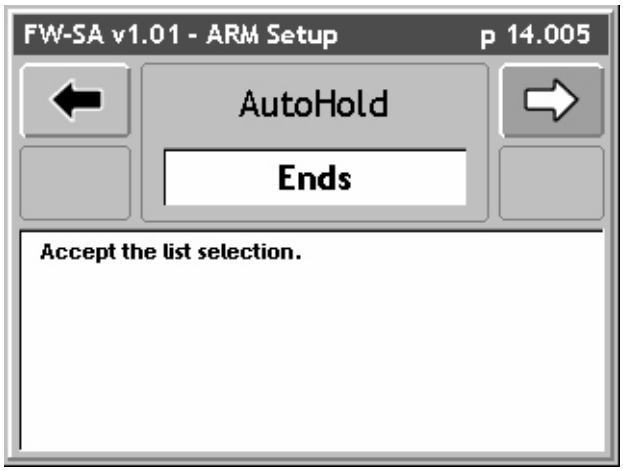


Figure 3-26: The ARM Setup Auto Hold Page

Enter the System Delay Value

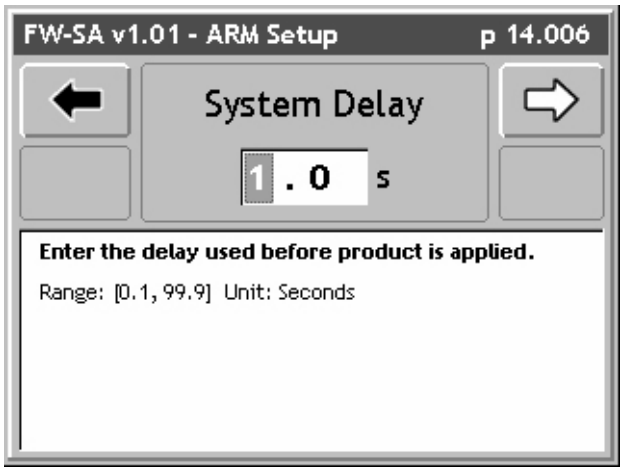


Figure 3-27: The ARM Setup System Delay Page

This completes the ARM Setup Wizard. Pressing the Forward Arrow in the System Delay page returns to the Main ARM Setup page (Figure 3-19). To save the ARM Setup information, press the Forward Arrow. This returns to the ARM launcher page (Figure 3-18).

Running Product Setup

Product setup is where product information is entered, such as Product Name and Prescription map file name. To run Product Setup, select the Product Setup tab in the ARM Launcher page (Figure 3-28). This brings up the main Product Setup page (Figure 3-29).

Table 3-5 lists all of the Product Setup items and their descriptions.

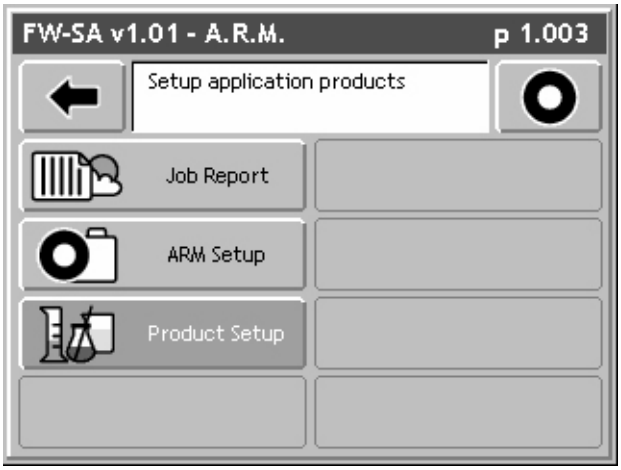


Figure 3-28: The ARM Launcher Page

Product Setup Menu Items

Setup Item	Description
Prescription	If Variable Rate product application is to be done, select the prescription file (.ARM) that contains the prescription information for a specific product. The (.ARM) file can be on the root of the PC card, or in the Job folder. The PC card must be inserted into the Legacy 6000 console. If variable rate application is not going to be performed, then leave this setting at <None>.
Layer	Some prescription files (.ARM) can contain several products in a single file. A single product is associated to a single layer. In a multiple product prescription file, it is necessary to set which layer is associated with which product. If there is only one product layer in the (.ARM) file, this setup item is automatically set to layer 1 and this page is skipped in the Product Setup wizard process.
Product	Product Setup contains a product data base contain approximately 4000 product names and their associated EPA number. A product name can be selected from this setup page. If a prescription map (.ARM) is being used, product setup automatically extracts the product name from the (.ARM) product layer. Select the <From Map> setting In the product page.

Table 3-5: Product Setup Item Descriptions

Running the Product Setup Wizard

The main Product Setup page contains every setup item in a list. From this list, each Product Setup item can be edited individually or the Product Setup Wizard can be run. The top item in the list is the Setup Wizard. To run the Setup Wizard highlight <Set Up Wizard> in the main list and press the enter key. The Setup Wizard steps through the entire Product Setup item list.

Figure 3-31 through Figure 3-33 step through the entire Product Setup wizard. Refer to Table 3-5 for a description of each Product Setup item.

Figure 3-29: The Main Product Setup Page

Select Prescription Map

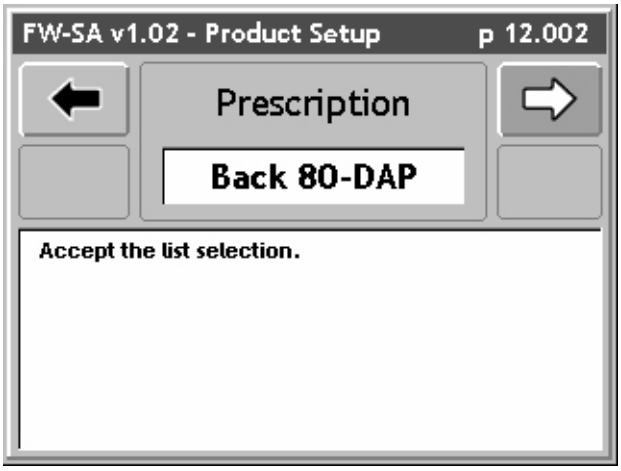


Figure 3-30: The Product Setup Prescription Map Page

Select the Prescription Map Layer

If Variable Rate product application is not being performed, it will not be necessary to set anything in this page.

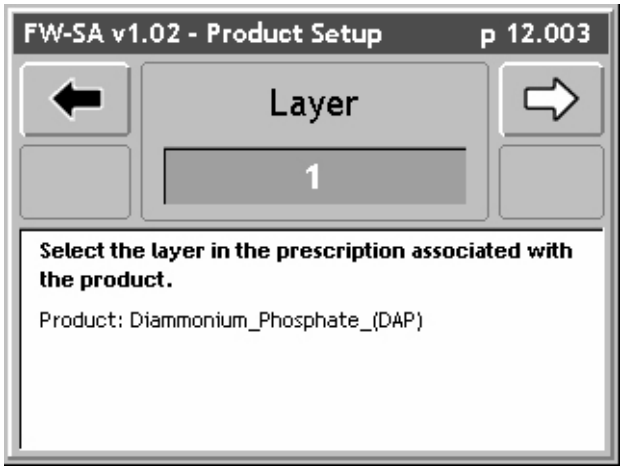


Figure 3-31: The Product Setup Layer Page

Select the Product Name

If variable rate product application is being performed, the product name can be extracted from the (.ARM) file (Figure 3-32). If no variable rate product application is being performed, the name of the product can be selected from the Fieldware Products Data base. The product name is written to the header portion of the (.RCD) file.

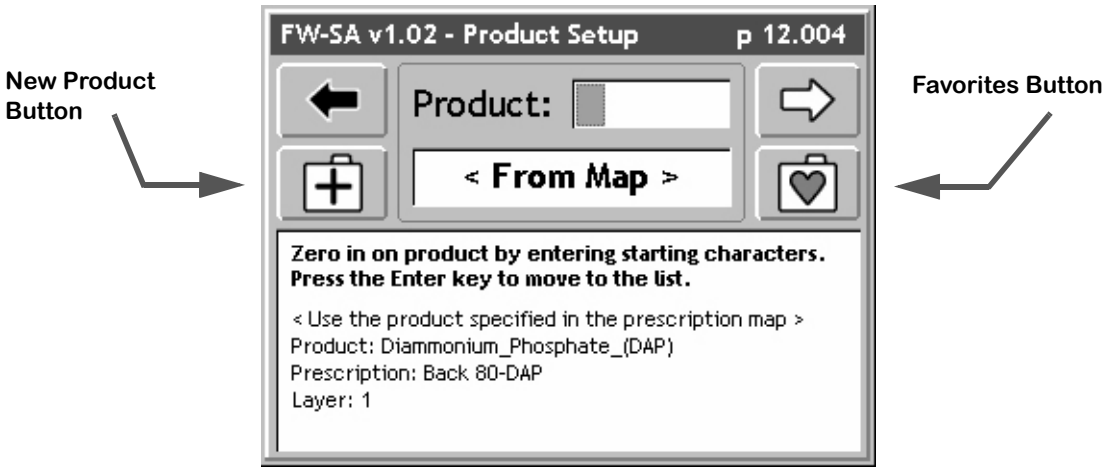


Figure 3-32: The Product Setup Select Product Page

Selecting a Product from the Products Database

To select a product from the products data base, start spelling the product name in the window next to Product. This is a fast method for selecting a product. As each character is typed in, the data base displays the closest entry to the character typed in. E.G. in Figure 3-33 the first character entered was R which jumped the database search to the area in the database where products start with the letter R. The next character entered was O. The database now jumps to where products starting with RO are located. The next character entered was U which jumped the database to the location where all products start with ROU. If applying Round-up, just arrow to the Product name dialog and, using the Up and Down arrow keys on the Legacy 6000 console, scroll through all of the different Roundup entries in the products data base. When the desired product name is highlighted, press the Forward Arrow to save and move to the next page.

Favorites

Product Setup keeps track of the product names commonly selected. The ten most common product names are saved in a Favorites list. A product name can be selected from this Favorites list by pressing the Favorites button. This displays the favorites list and, if the product name is in this list, it can be selected here and the Product Setup wizard continues on.

New Product

If the product being applied is not in the Products data base, it can be added to the database by pressing the New Product button and following the short wizard to enter the new product information.

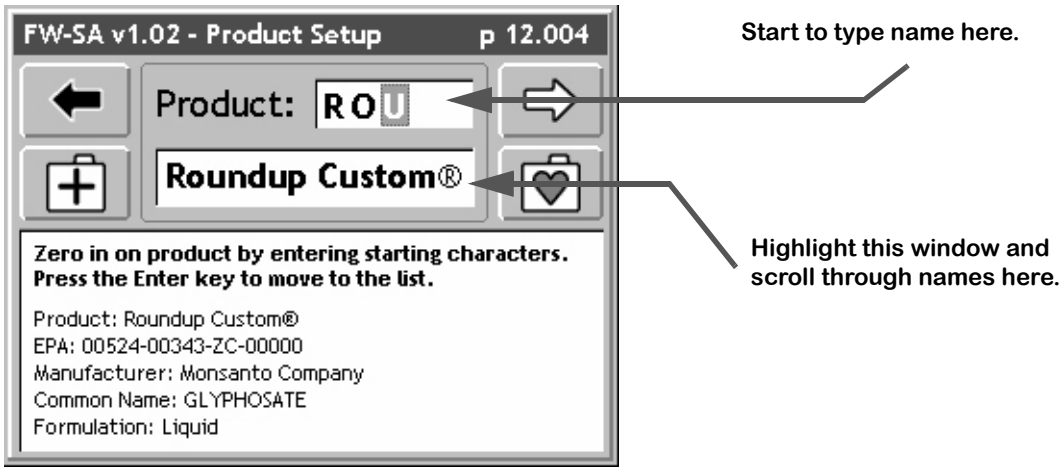


Figure 3-33: Typing in the Product Name

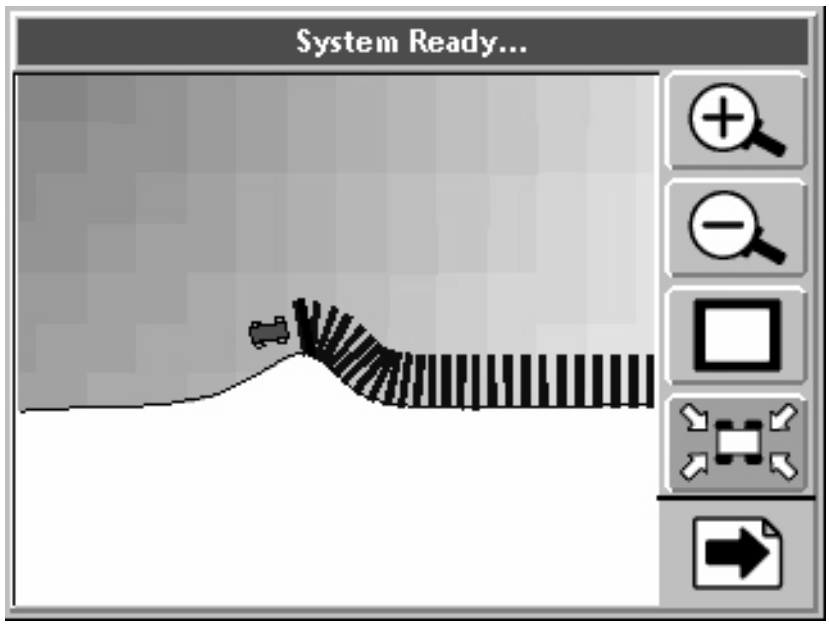
This completes the Product Setup Wizard. Pressing the Forward Arrow in the Product page returns to the Main Product Setup page (Figure 3-29). To save the Product Setup information, press the Forward Arrow. This returns to the ARM launcher page (Figure 3-28).

Chapter Notes

Chapter 4 - Real-time Operation

Operating Fieldware-SA for Legacy 6000.

Software Version 1.0



Fieldware-SA

Product Application

When the Real-time Setup process is complete (see Chapter 3 - Real-time Setup on page 3-1), product application can begin. This is accomplished by pressing the ARM Bull's-eye located in the ARM Main Launcher page (Figure 4-1).

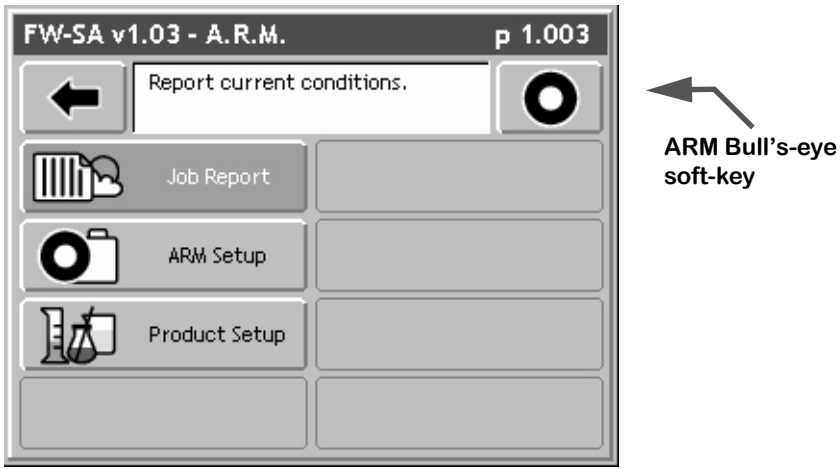


Figure 4-1: The ARM Launcher Page

When the ARM Bull's-eye soft-key is pressed, the Fieldware-SA software loads all setup information, including Implement and Controller setup. This loading process may take a few seconds to complete. When the loading process is complete, the Rates page (Figure 4-2) is the first real-time page seen.

Real-time Pages

There are two real-time page types; the Rates page (Figure 4-2) and the Map page (Figure 4-5). Each page has the same layout; a left column of soft-keys, a center column that displays rate or map information, and a right column of soft-keys.

The left column is reserved for product control soft-keys. There is a soft-key for each product used in the current product application. If there is only one product, there is no soft-key in the left column. E.G. if a Legacy 6000 is connected to an external rate controller configured as a two product system there are two product control soft-keys. If there are more than four products being applied, the left column becomes scroll-able to access the additional product control soft-keys. The left column is the same for Rates page and the Map page. This allows the control of a product while viewing the application map. A product control soft-key contains the product name and the current rate being applied.

The right column soft-keys vary depending on which page is currently being viewed. When viewing the map page, the right column contains all of the mapping, guidance, and general viewing soft-keys. See Table 4-1 for a description of each soft-key. When viewing the Rates page, the right column contains various utility soft-keys such as an Alternative Rates page soft-key and the Alarm Off soft-key.

The Rates Page

The Rates page displays various information related to the product and associated rate controller. The Rates page displays the product name at the top of the page, as well as the current rate, current speed, material applied, acres applied, and remaining amount of material and acres. A completed field boundary must exist to calculate the remaining acres. There are also two alternate pages, Figure 4-3 and Figure 4-4. To move to an alternate page press the alternate page soft-key. The first alternate page is a rates page showing actual and target rates. The second alternate page is a navigation page showing the vehicle position, speed and heading, and bounded area.

To switch from the Rates page to the Map page, press the Change Page soft-key.

Figure 4-2: The Rates Page

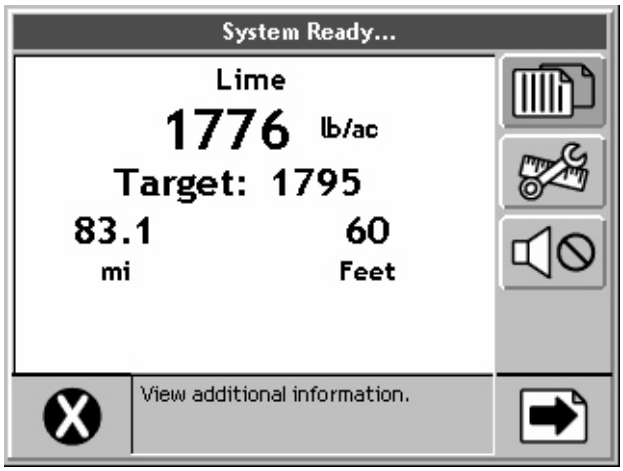


Figure 4-3: The Alternate Rates Page

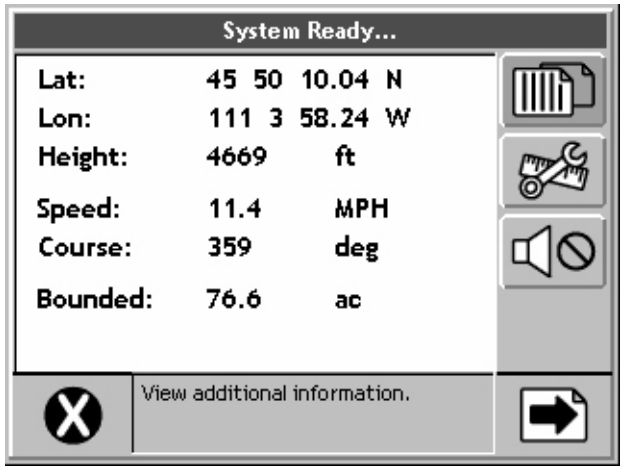


Figure 4-4: The Navigation Page

The Map Page

The Map pages allows the operation progress to be viewed. This page displays the vehicle at its current location, as well as current implement status and application trajectory. If variable rate application is being performed using a prescription map, the prescription map can be seen in the background.

All mapping and guidance related soft-keys are displayed in the right side column of the map page. See Table 4-1 for a description of each soft-key that can be displayed in the Map page.

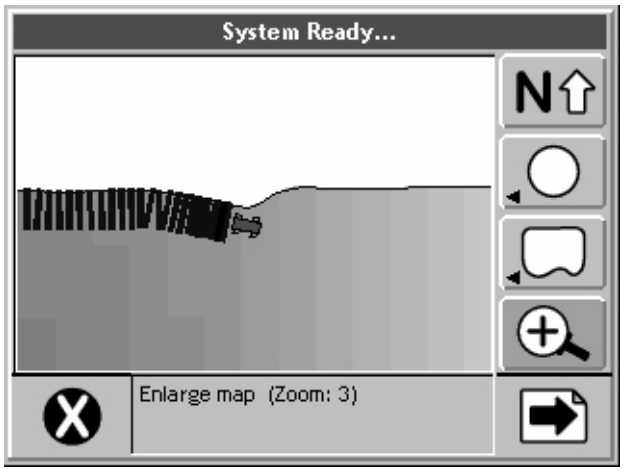


Figure 4-5: The Map Page

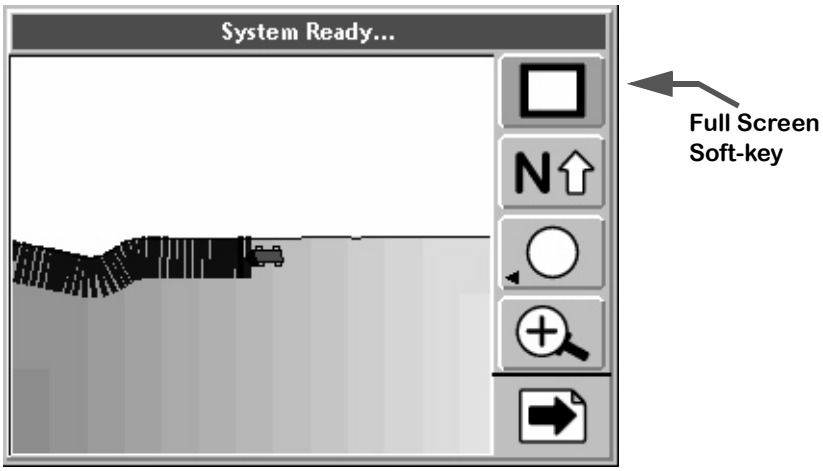


Figure 4-6: The Map Page in Full Screen Mode

Real-time Soft-key Descriptions

Soft-key	Description
	The Exit soft-key. When pressed, ARM exits out of the real-time process and returns to the Main ARM Launcher page.
	The Next Page soft-key. Pressing this soft-key alternates between the map page and the rates page.
	The Alternate Rates Page soft-key. Press this soft-key to view additional product information, such as sensor and monitor status and current implement width.
	The Stop Alarm soft-key. Press this to mute an alarm.
	The CAN Process soft-key. When pressed, this soft-key launches the CAN Process diagnostic. This is used to trouble shoot the console or lightbar when running in real-time.
	The Zoom In soft-key. When pressed, decreases the area displayed in the view page. There is a total of 5 zoom levels.
	The Zoom Out soft-key. When pressed, increases the area displayed in view page. There is a total of 5 zoom levels.
	The Full Screen soft-key. When pressed, the entire map page space is replaced by the map view. This is useful when it is desired to see more of the vehicle trajectory. Press any key to return back to the normal view page.
	The Partial Screen soft-key. When the Full Screen Soft-key is pressed, the soft-key graphics change to the Partial Screen. When pressed, the console display area contains the map view and the right-hand mapping button column.
	The North Up View soft-key. This map page display option keeps North pointing to the top of the view page. When pressed, this soft-key changes to the COG View soft-key.
	The Course on Ground (COG) View soft-key. This view page option keeps the vehicle stationary in the view page with the heading (course) of the vehicle pointing to the top of the view page. When pressed this soft-key changes to the North Up View soft-key.
	The Center Vehicle soft-key. Press this to center the vehicle in the map page.

Table 4-1: Real time Soft-key Description

Soft-key	Description
	Apply Off soft-key. Indicates the current application status is OFF. When this soft-key is pressed, the vehicle trajectory is drawn behind the vehicle in the map page. This soft-key changes to the Apply On soft-key.
	Apply On soft-key. Indicates the current application status is ON. When this soft-key is pressed, drawing of the vehicle trajectory behind the vehicle in the map page is stopped. This soft-key changes to the Apply Off soft-key.
	The Mark A soft-key used with the Parallel pattern. This soft-key is pressed to mark the first end point of the initial guideline. When pressed this soft-key changes to the Mark B soft-key.
	The Mark B soft-key used with the Parallel and Headland patterns. This soft-key is pressed to mark the end point of the initial guideline. When pressed this soft-key changes to the New Guideline soft-key.
	The New GuideLine soft-key. This soft-key appears after the initial guideline has been created. When pressed, this soft-key changes to the Mark A soft-key and guidance is disabled until a new guideline is created by pressing Mark A and then Mark B.
	The Switch Guideline soft-key. This soft-key appears when more than one guideline has been created.
	Straight-line Parallel Guidance soft-key. This soft-key indicates the current guidance pattern is straight-line parallel guidance. The initial guideline is defined by marking end points A and B. Pressing this soft-key pops-up a side menu and allows the selection of a different guidance mode such as Headland or Circle Pivot.
	Curved-line Parallel Guidance soft-key. This soft-key indicates the current guidance pattern is Curved guidance. Used in the Headland pattern only. Pressing this soft-key pops-up a side menu and allows the selection of a different guidance mode such as Straight-line or Circle Pivot.
	Circle Pivot Parallel Guidance soft-key. This soft-key indicates the current guidance pattern is Circle Pivot parallel guidance. The initial guideline is defined by marking points A and B along a circle. Pressing this soft-key pops-up a side menu and allows the selection of a different guidance mode such as Headland or Straight-line.
	The Circle Mark A soft-key used with the Circle Pivot pattern. This soft-key is pressed to mark the first end point of the initial circle guideline. When pressed this soft-key changes to the Circle Mark B soft-key.
	The Circle Mark B soft-key used with the Circle Pivot pattern. This soft-key is pressed to mark the end point of the initial circle guideline. When pressed this soft-key changes to the New Circle Guideline soft-key.

Table 4-1: Real time Soft-key Description

Soft-key	Description
	The Circle Mark B Wait soft-key. This soft-key appears when the Circle Mark A has been pressed and the software is collecting enough points (approximately 12 seconds) to describe a circle. After approximately 12 seconds has passed, this soft-key is replaced by the Circle Mark B soft-key.
	The Switch Circle Guideline soft-key. This button appears when the guidance mode is circle pivot and there is more than one circle guideline created. Pressing this allows you to switch to a different existing circle guideline.
	The Map Field Boundary Off soft-key. When this soft-key is displayed, the field boundary is not being mapped. When pressed this soft-key changes to the Map Field Boundary On soft-key.
	The Map Field Boundary On soft-key. When this soft-key is displayed, the field boundary is being mapped and stored to file. When pressed this soft-key changes to the Map Field Boundary Off soft-key.
	The Point soft-key. This is the point map object. When pressed, a point is placed at the vehicle location.
	The Hazard soft-key. This is the hazard map object. When pressed a hazard is placed at the vehicle location.

Table 4-1: Real time Soft-key Description

System and Warning Messages

Fieldware-SA for Legacy 6000 provides system operation feedback in the form of System messages and Warning messages. This system information is displayed in the top portion (banner bar) of the rates page and map page. Some messages are displayed on the lightbar, see Lightbar Index on page 4-32 for more information about these messages.

System Message

A system message does not obstruct real-time operation. The most common system message is the System Ready, (Figure 4-6), message that occurs when the Legacy 6000 system is operating properly.

Warning Message

A warning message does not obstruct real-time operation. When a warning message first appears in the banner bar, the alarm sounds. The alarm can be muted by pressing the Alarm Mute soft-key. The warning message remains in the banner bar until the situation causing the warning is resolved. The alarm does not sound again until a new warning appears.Typical warning messages relate to product application rates and speeds.

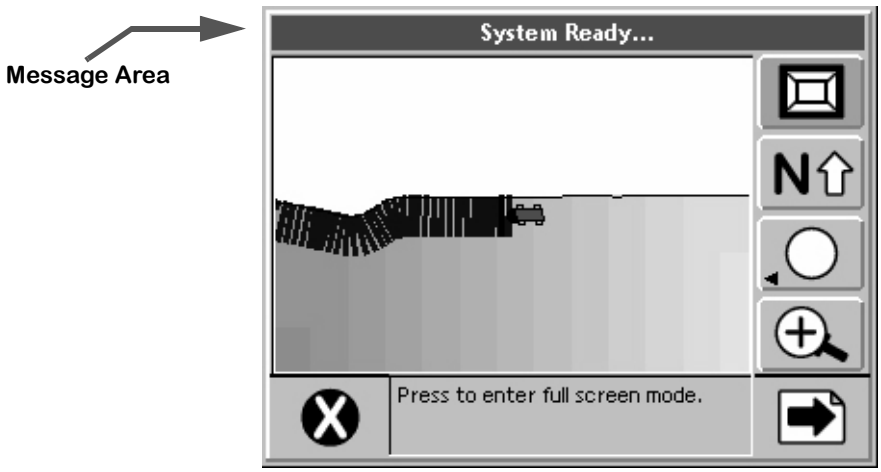


Figure 4-7: System Ready Message

Real-time Guidance Operation

Fieldware-SA for legacy 6000 allows you to perform product application and vehicle guidance simultaneously. To run guidance while applying a product, the Lightbar setting must be set to Text/Lights (see Lightbar Setup on page 2-14).

At this point a DGPS receiver should be connected to the Legacy 6000 console and running properly. It is always a good idea to verify that the DGPS receiver is running properly and communicating with the console prior to driving out to the field. To verify that the receiver is working properly, run the system diagnostic tool Receiver Process, (see System Tools on page 2-30).

If an external rate controller is being used, that controller should be connected to the appropriate COM port on the console and running properly.

Starting Guidance

When product application is started by pressing the ARM Bull's-eye, guidance automatically starts. The initial guidance pattern is set to the Straight-Line mode. It is possible to switch between any of the three guidance modes while in real-time operation (Figure 4-8).The three guidance patterns to choose from are Straight-Line, Headland, and Circle-Pivot. Each is described in more detail below.

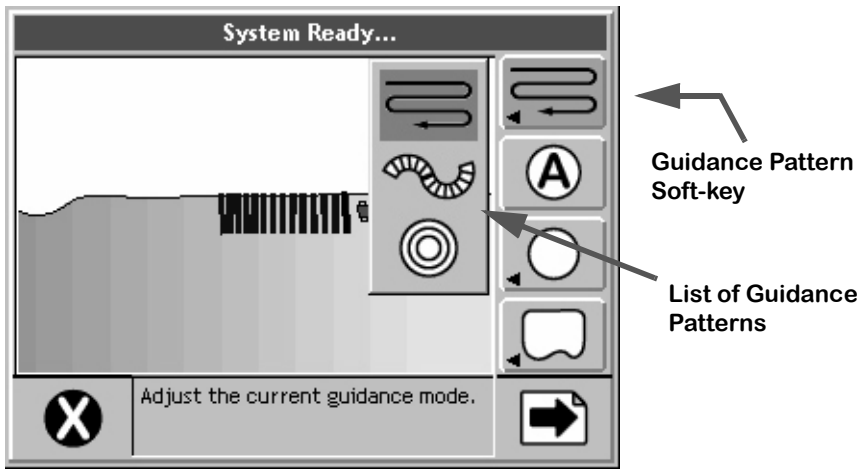


Figure 4-8: Selecting a Guidance Pattern in Real-time

Changing Guidance Pattern

To change from one guidance pattern to another, press the Guidance Pattern soft-key (Figure 4-8). This soft-key displays the current pattern selection on the key itself. Pressing this soft-key pops-up a sub-menu. This side menu displays the available guidance patterns. To select a pattern high-light, the desired pattern using the Up and Down Arrow keys. When high-lighted, press the Enter key.This switches to the new guidance pattern.

The Straight-Line Option

This section describes how to run the Straight-Line option. This option provides guidance along straight lines based off of an initial A-B reference line. This is the default guidance pattern when real-time operation is first started. The first step is to establish the initial A-B guideline. This initial baseline is used to calculate all other parallel guidelines.

Mark Point A

To mark the initial point A, begin driving along the first swath path. Typically this would be along a straight edge of a field boundary. While the vehicle is driving along the initial swath, the lightbar in displays the MARK A message. This message appears until the guideline point A is established. To establish the guideline point A, press the Mark A soft-key. When pressed, the Mark A soft-key in the button column automatically changes to the Mark B button soft-key and the lightbar displays the MARK B message.

Mark Point B

The next step is to establish guideline point B. To establish guideline point B, press the Mark B soft-key in the button column. The B point is displayed in the map page. This establishes the initial swath baseline. When the baseline is established (Figure 4-9), the lightbar begins displaying the user defined messages that were selected in the setup process.

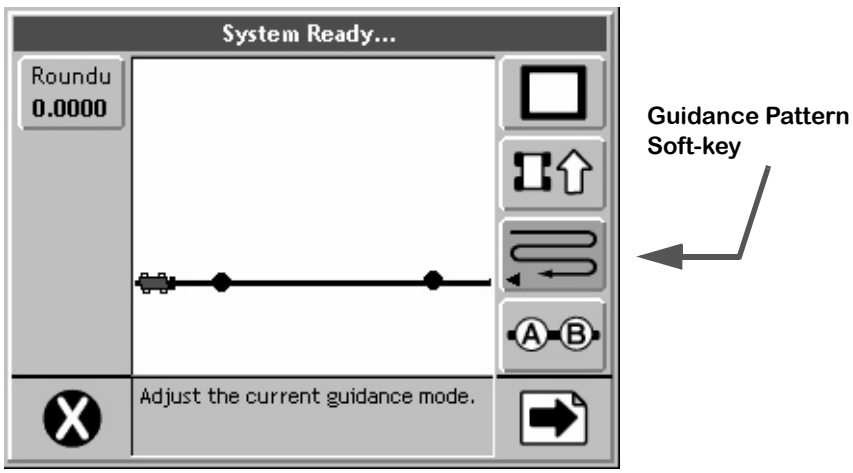


Figure 4-9: Establishing the Initial A-B Line

A new A-B line can be created by pressing the New A-B soft-key and repeating the Mark A Mark B process described above.

The Headland Pattern Option

This section describes how to operate the Headland guidance pattern. The Headland pattern is selected when the operator wants to drive several circuits around the field boundary and be guided around all circuits that occur after the first circuit. When several headland circuits have been completed, the operator then has the choice of switching back to the Straight-Line pattern. The Headland pattern is also selected when a user wants to do product application on terraced fields. In the Headland curved guidance pattern, the operator can pull along side any previous applied swath and be guided parallel to that swath.

Applying Multiple Headland Circuits

Figure 4-10 shows the Map page when the Headland pattern is selected. While operating in the Headland pattern, the user has the option to mark the A and B points for Straight-Line pattern. This feature makes it easier for operator to Mark the A and B points while in curved mode applying the headlands. It is always best to mark the A and B points for Straight-Line pattern while driving along a straight edge of a field.

The operator will remain in the Headland pattern mode until the pattern is changed using the Guidance Pattern soft-key, see Changing Guidance Pattern on page 4-11. The A and B points are only required for Straight-Line pattern. The Headland pattern does not require an A-B line.

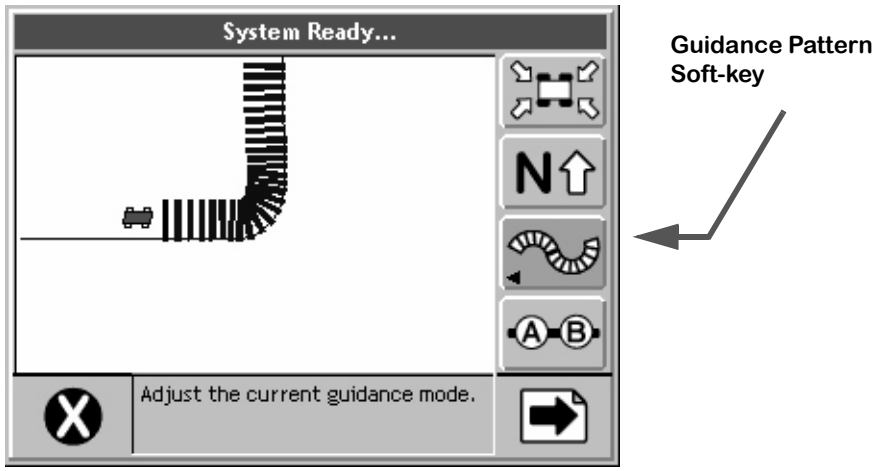


Figure 4-10: Operating in Headland Pattern

Headland Pattern Example

In this example the operator wants to apply two headland passes to the field and then switch to Straight-Line mode and apply the remainder of the field with straight-line parallel swath guidance. After the first headland circuit the operator pulls parallel to the first circuit swath and begins applying the second circuit while being guided parallel to the first circuit.

Figure 4-11 shows the operator just finishing the first headland circuit. When the operator pulls along side the first headland circuit, curved guidance automatically starts. The operator is now able to drive the second headland circuit parallel to the first circuit by following the guidance information displayed on the lightbar.

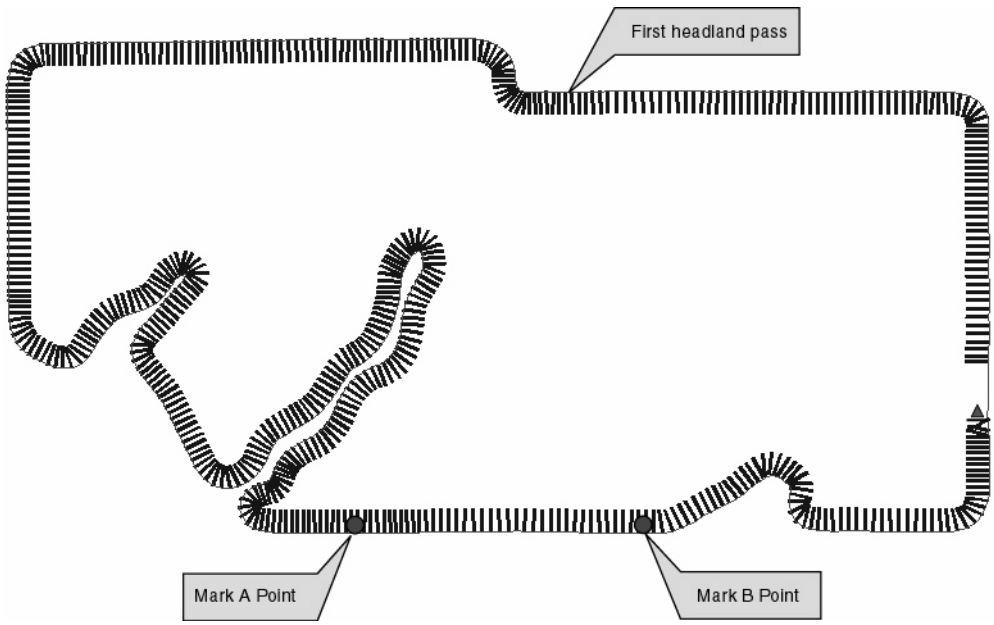


Figure 4-11: Completing the First Headland Circuit

Figure 4-12 shows the operator being guided along side the initial headland circuit. The lightbar automatically supplies guidance information. For more details on how to interpret curved guidance information on the lightbar see Lightbar Curved Guidance Graphics on page 4-23.

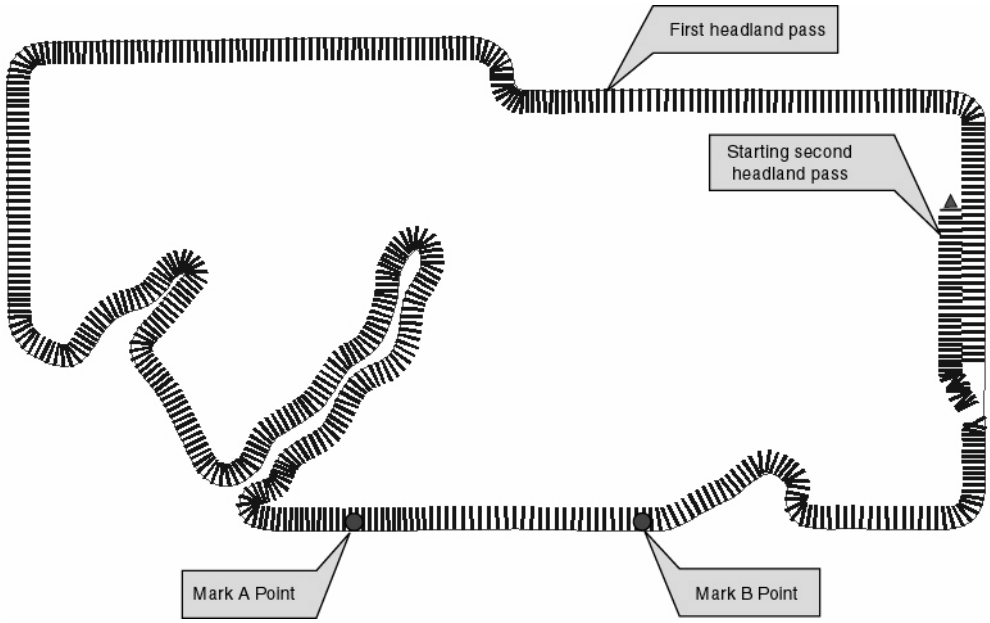


Figure 4-12: Starting the Second Headland Pass

Figure 4-13 shows the operator continuing to drive around the second headland circuit.

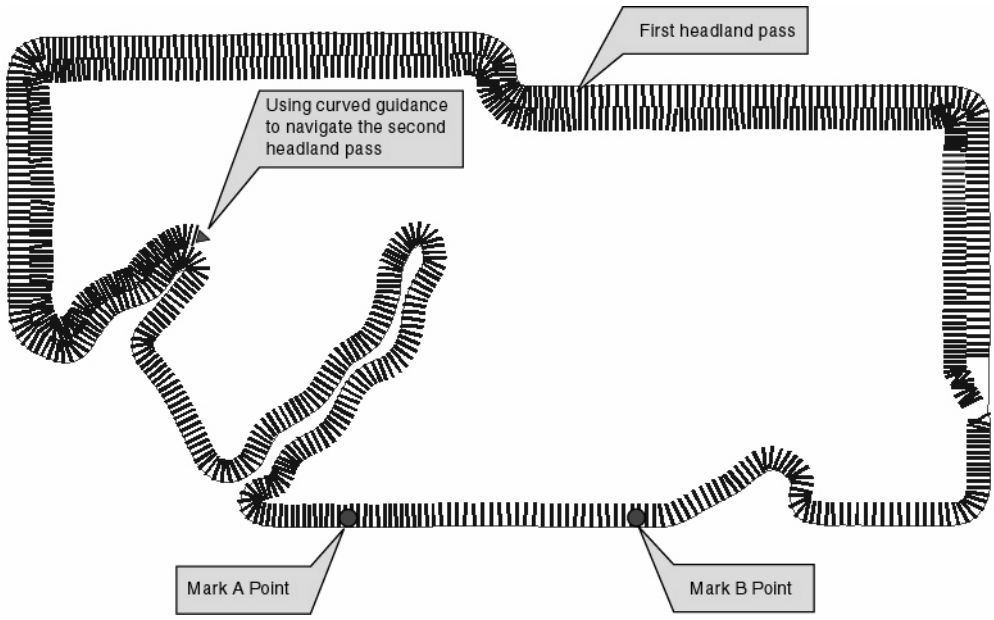


Figure 4-13: Continuing Around the Second Circuit.

Switching from Headland to Straight-line A-B Pattern

When the operator has completed the desired number of headland circuits, two circuits in our current example, guidance can be switched to the Straight-Line Pattern to apply the remainder of the field in that pattern.

To switch from the Headland pattern to another pattern see Changing Guidance Pattern on page 4-11. If the operator is being guided along a curved path when the pattern is switched, the lightbar will no longer guide them along the curved path.

If the A and B points were marked while in the Headland Pattern, the software automatically guides the vehicle along the closest parallel line, as soon as the operator switches to the Straight-Line Pattern. If no A B points were marked during the curved guidance process, the operator needs to mark the A B points. The lightbar displays the MARK A message, indicating that no initial A B line exists.

Figure 4-14 shows the operator applying product in the Parallel pattern. Because the initial A B line was established during the curved guidance process, the user can immediately start straight-line guidance by pressing the guidance mode button.

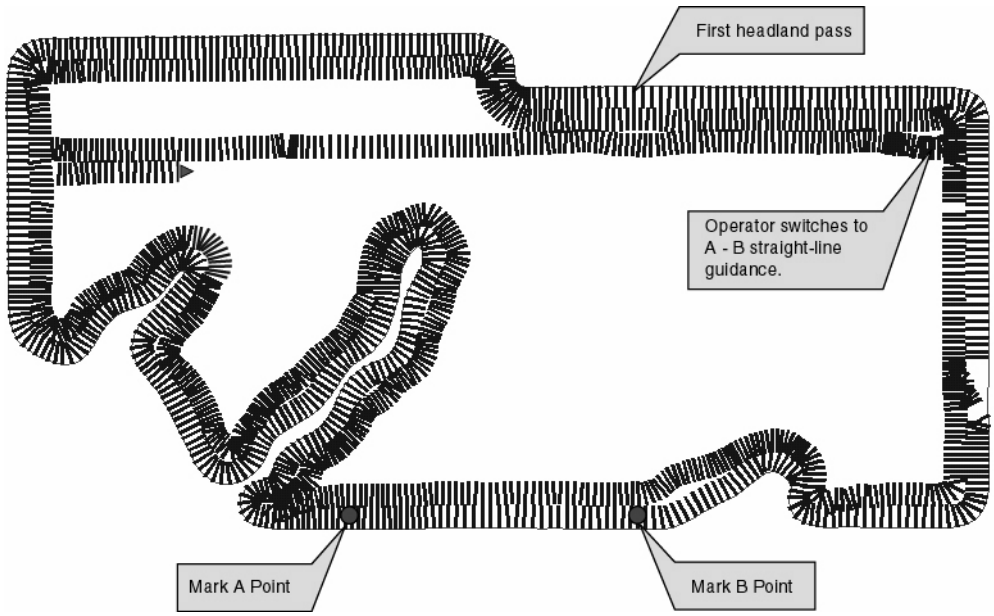


Figure 4-14: Switched from Headland Pattern to Straight-Line Pattern.

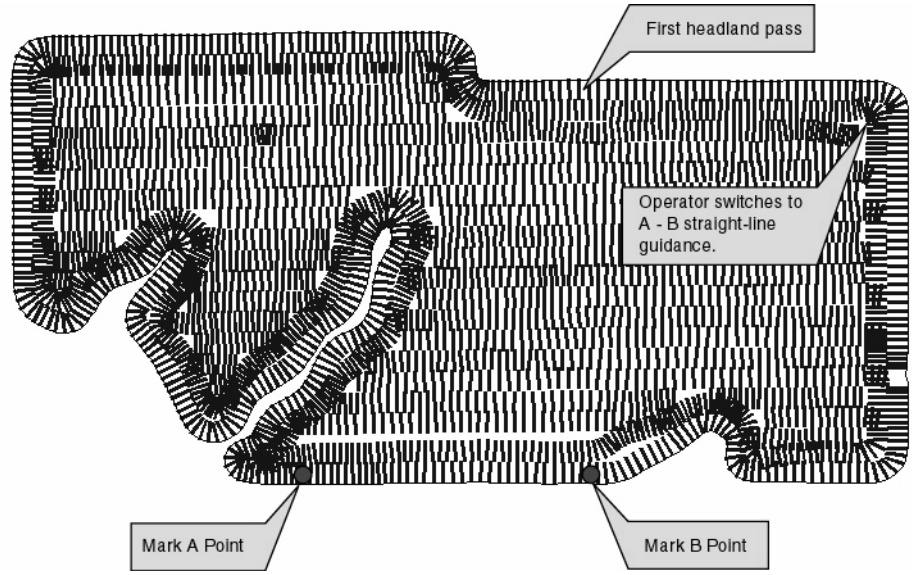


Figure 4-15: Completed Field Application

Figure 4-15 shows the completed field. Notice that there are several areas of the field where the operator turned the spray off to avoid double application on previously applied areas.

The Circle Pivot Pattern

This section describes how to operate the Circle Pivot pattern. The Circle Pivot pattern is used when the operator wants to apply product in a center pivot field while being guided along a circular guideline that matches the center pivot radius.

Circle Pivot mode operates very similar to the Straight-Line mode. The operator marks an A point, drives along the arc that the pivot would create, a wheel track is a good guide, then marks a B point. When the B point is marked, a circular guideline appears in the Map page and the operator is guided along this circular guideline. As the operator completes one circular pass and moves in either direction (left or right) to the next guideline, the software automatically creates the next circular guideline.

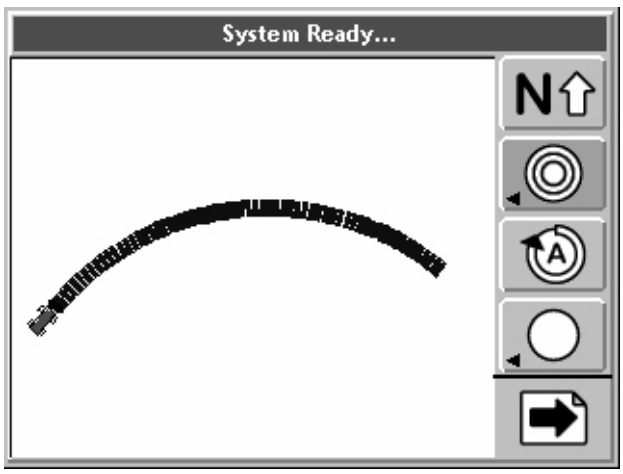


Figure 4-16: Operating in Circle Pivot Pattern

Circle Pivot Example

Marking Point A

In this example the operator wants to apply product to a portion of a field that has a center pivot on it. The operator drive around this portion creating a headland. While driving parallel to an existing wheel track the operator marks the initial A point. Figure 4-16 shows the operator beginning to drive the along the center pivot perimeter. The operator has not pressed the Mark A button yet and is notified on the lightbar to do so. Figure 4-17 shows the vehicle beginning to drive along the existing wheel track and marking point A. In this example the operator has elected to drive a single headland pass. This is not necessary. The operator could have driven along the wheel track, marked points A and B, and then started driving back and forth moving towards or away from the center of the pivot.

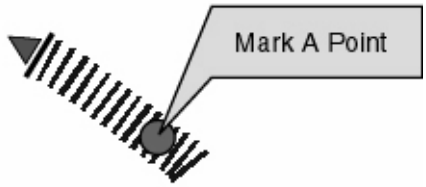


Figure 4-17: Marking Point A in Circle Pivot Pattern

Marking Point B

When point A is marked, the operator should drive along the pivot circle until they feel they have described the circle as much as possible. The Mark A button has changed to Mark B button, (Figure 4-18). Fieldware does not allow the user to mark point B within 12 seconds of marking point A. After 12 seconds, the Mark B button becomes active and the operator can mark point B anytime.

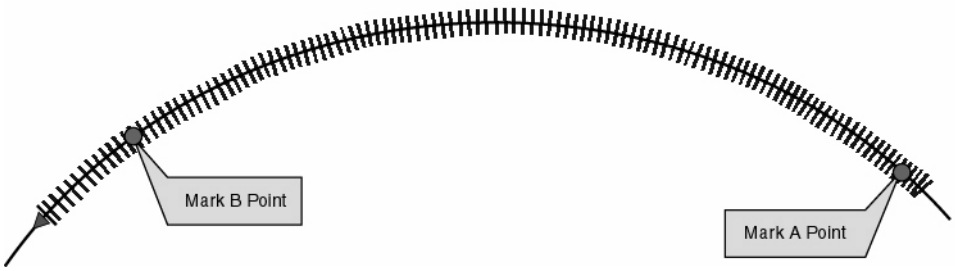


Figure 4-18: Operating in Circle Pivot Pattern

Driving in the Circle Pivot Pattern

When the operator has marked point B, the circle guideline appears in the Map page and the lightbar begins providing guidance instructions. It is not necessary to drive the entire circumference of the center pivot in order to initiate guidance. As shown in this example, the operator drove only a portion of the circumference marking points A and B, and then used the guideline to continue driving the remainder of the circle, see Figure 4-18.

In Figure 4-19 the operator has completed driving the headlands. Next the operator lines up to drive the first swath to the inside of the headlands. Circle Pivot mode works very similar to Straight-Line mode, the software automatically draws, and guides the vehicle along, the closest circle guideline, see Figure 4-20.

When applying in Circle Pivot pattern, the lightbar displays the curved vehicle path in the text display (top section of lightbar) and cross track error information is conveyed via the cross track LEDs. For more information on the curved vehicle path see Lightbar Curved Guidance Graphics on page 4-23.

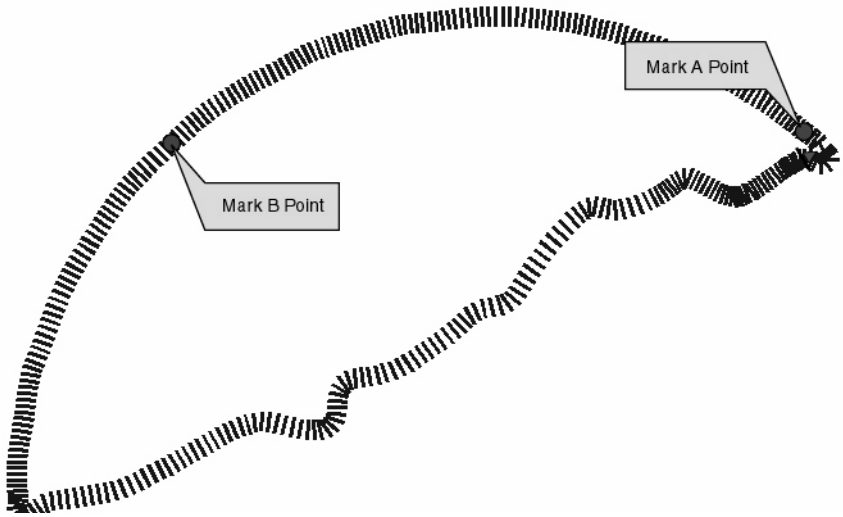


Figure 4-19: Completing Headland Circuit in Circle Pivot Pattern

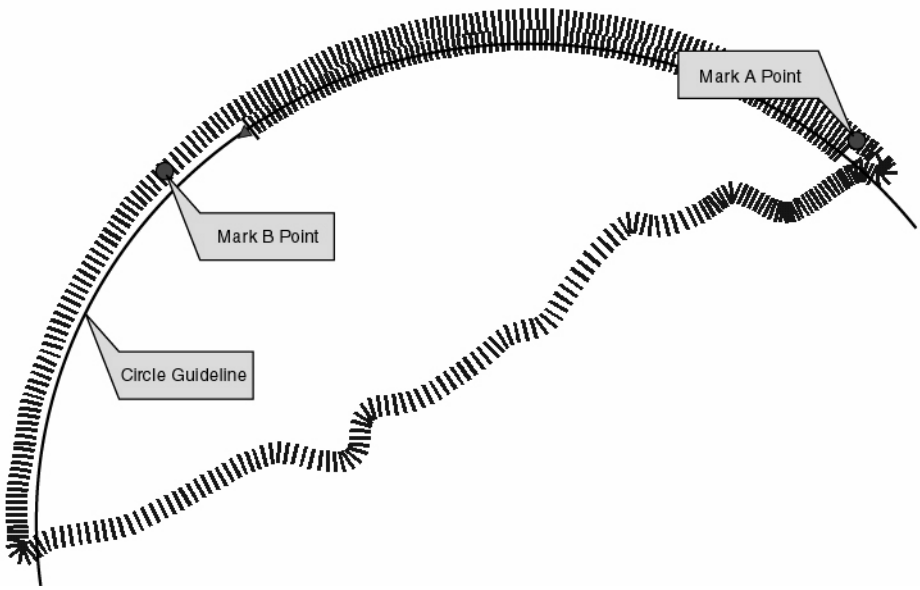


Figure 4-20: Guiding Along Field Headland

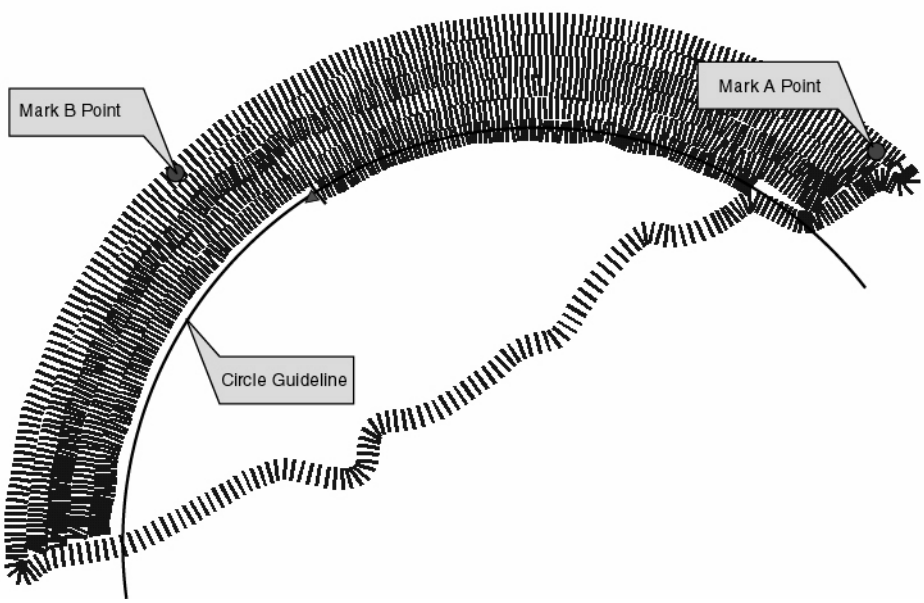


Figure 4-21: Operating in Circle Pivot Pattern

Figure 4-21 shows product application in progress and Figure 4-22 shows the completed portion of the center pivot.

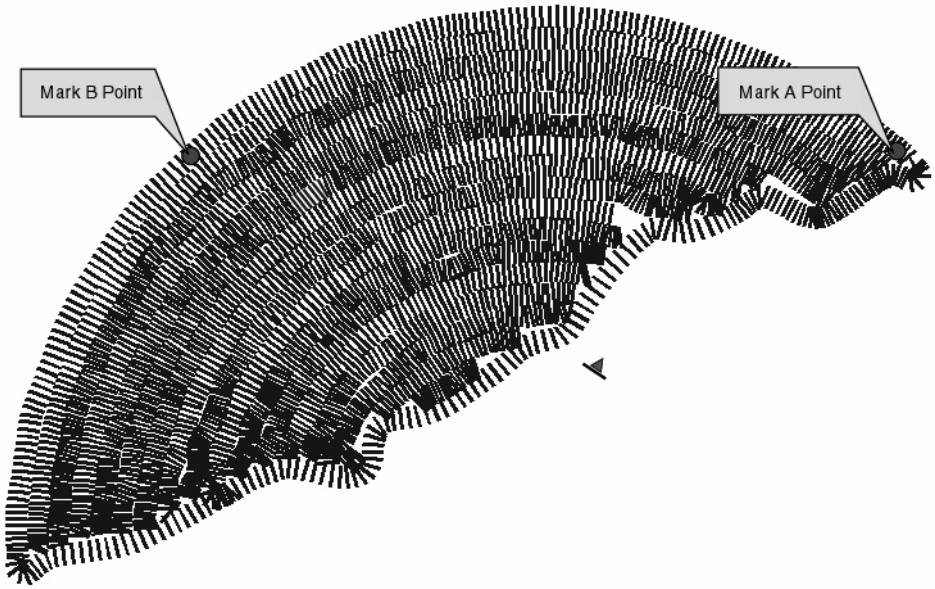


Figure 4-22: Completed Field in Circle Pivot Pattern

Lightbar Curved Guidance Graphics

Fieldware's two curved guidance techniques employ a lightbar text display graphic that aids the operator when navigating parallel to a curved swath. The X-Track LED functionality that is employed in Straight-Line mode is also employed when driving curved guidance.

A projected swath-path graphic is displayed in the text display area of the lightbar (see Figure 4-23). This projected path is made up of four horizontal bars. The bottom bar is closest to the vehicle and the top bar is the path furthest away. The width of the bars decrease as they move away from the vehicle to add a perspective view to the path ahead of the vehicle. The projected distance the first bar is away from the vehicle is based on the vehicle speed. The lightbar in Figure 4-23 informs the user to drive straight, and there are no turns approaching. In Figure 4-24 the lightbar indicates the vehicle is approaching a turn to the right. The X-Track LEDs indicate that the vehicle is slightly to the right of the guideline. Lightbar X-Track LEDs were set up in Swath mode, therefore the user will need to correct to the left to get back on line. The X-Track LEDs do not provide any information relating to the curved path ahead of the vehicle, they only indicate where the vehicle is with respect to the guideline at the current vehicle location.

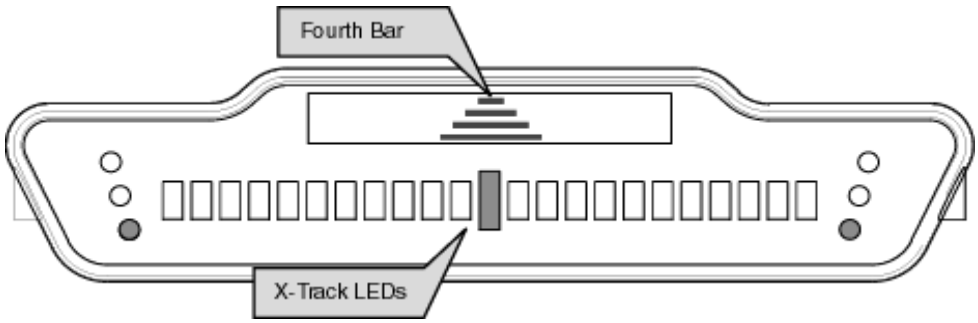


Figure 4-23: Curved Guidance Lightbar Graphics

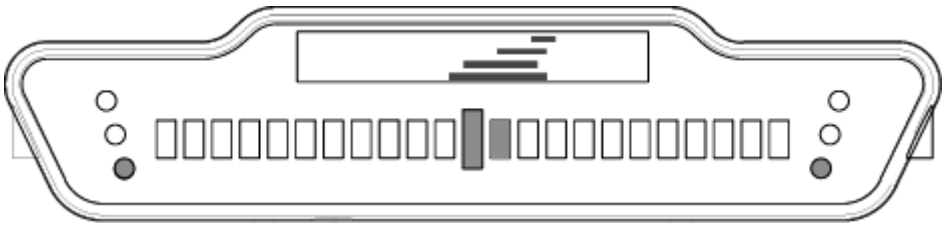


Figure 4-24: Right-Hand Turn Ahead

Applied Area Detection

Fieldware can detect when the vehicle has entered a previously applied area. It can also be setup Fieldware to notify the operator when the vehicle is approaching a previously marked hazard. To use applied area detection, the Lightbar Setup - Alarm menu field must be setup prior to starting guidance. See “Lightbar Setup” on page 2-14 of this User Guide for more details on how to set up this menu field.

Detecting A Previously Applied Area

Figure 4-25 shows how Previously Applied Area Detection works. As the vehicle enters a previously applied area, the lightbar displays the message APPLIED and the Red stop lights illuminate. If the vehicle continues to apply product while driving in a previously applied area the console alarm sounds. If product application is turned off while in a previously applied area the alarm does not sound. When the vehicle exits the previously applied area the Red stop light turns off or changes to Green if product application is turned on. The Green illuminated stop light indicates that the vehicle is completely outside of a previously applied area and product application should be underway.

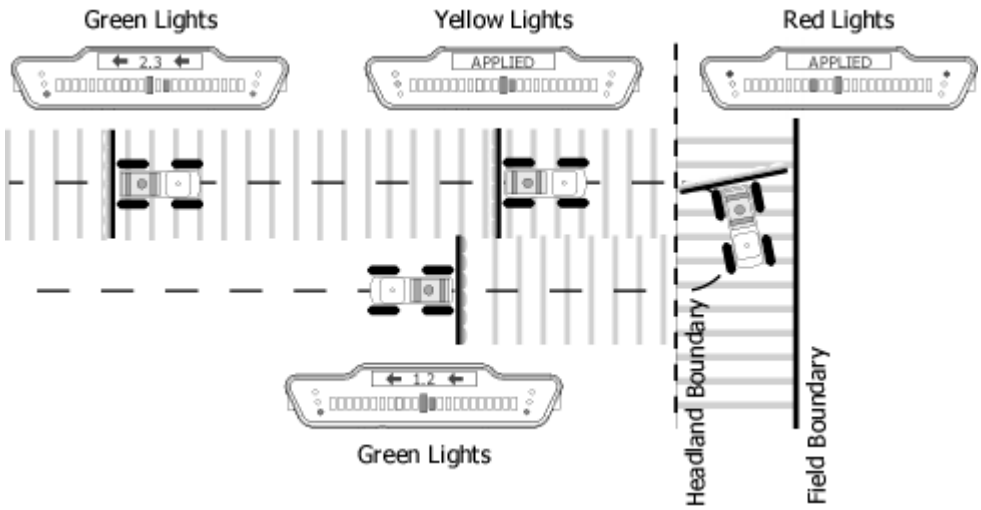


Figure 4-25: Applied Area Detection in Headlands

Detecting Neighboring Swath

Applied area detection notifies the user if the vehicle crosses into a previously applied neighboring swath. Figure 4-26 shows an Applied Area Overlap example. The vehicle can overlap up to 25% of the Swath Width without being notified. When the edge of the vehicle swath overlaps 25% or more into a neighboring swath the lightbar displays the APPLIED message and the Red stop light illuminates. The alarm sounds only if product application continues. No Yellow warning lights occur in this situation.

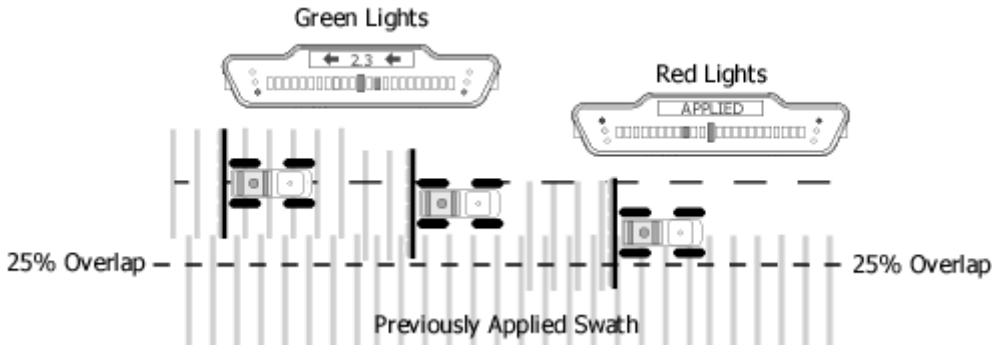


Figure 4-26: Applied Area Overlap in Neighboring Swath

Mapping a Field Boundary

Fieldware for Legacy 6000 allows the creation of a map of the field boundary while applying product around the perimeter of the field. A field boundary can be created in all three guidance options; Parallel, Headland, and Circle Pivot. The field boundary data is stored in the file that was named in the ARM Setup menu (See “Running ARM Setup” on page 3-16).

When product application is started, a Map Boundary soft-key is added to the right-hand button column in the Map page, (Figure 4-27). To start mapping the field boundary, align the edge of the vehicle swath with the edge of the field boundary, press the Map Boundary soft-key, and select which side of the swath is used to trace the field boundary. When the vehicle starts moving, a line representing the field boundary is drawn off the end of the swath (Figure 4-27). When the boundary mapping process has started, the lightbar displays MAP BND as well as an arrow indicating which side of the vehicle is being used to create the boundary.Typically product is applied and the initial guideline established while driving the field perimeter. Figure 4-28 shows the vehicle creating the field boundary while establishing the initial guideline and applying product.

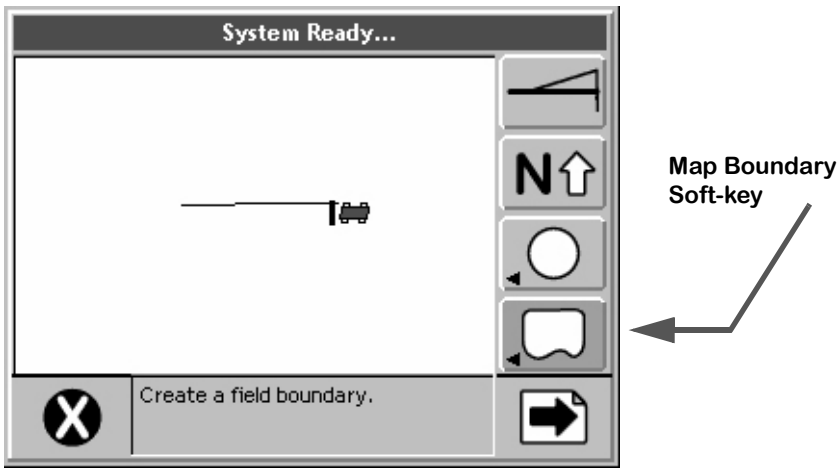


Figure 4-27: Mapping a Field Boundary

Closing or Pausing the Boundary Mapping Process

To close or pause the boundary mapping process, press the Map Boundary soft-key. A side menu appears, with the menu choices Close or Off. Selecting Close stops the boundary mapping process and draws a line between the starting point and the vehicle location where the boundary was closed. Pressing Off allows boundary mapping to be temporarily stopped. To start mapping the boundary again, press the Map Boundary soft-key and select Create on Right or Create on Left. This starts mapping the boundary again, and draws a line between where mapping stopped and where it is starting again.

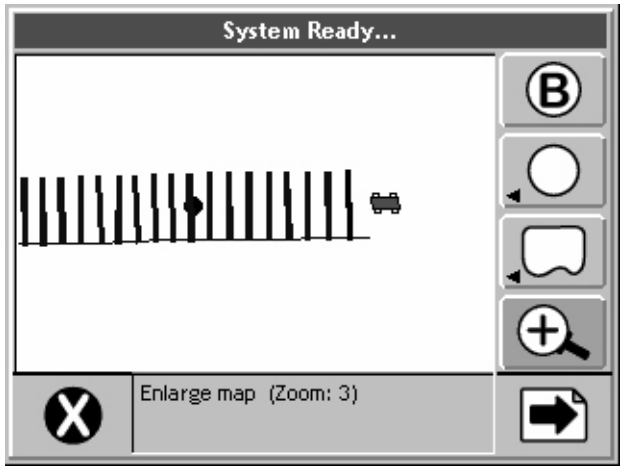


Figure 4-28: Marking Initial Guideline

Figure 4-29 shows the vehicle about to complete driving the field perimeter. The initial guideline has been established and a product application map is being created while mapping the field boundary. When the vehicle approaches the starting point, within approximately 30 ft. (10 m), the boundary automatically closes.

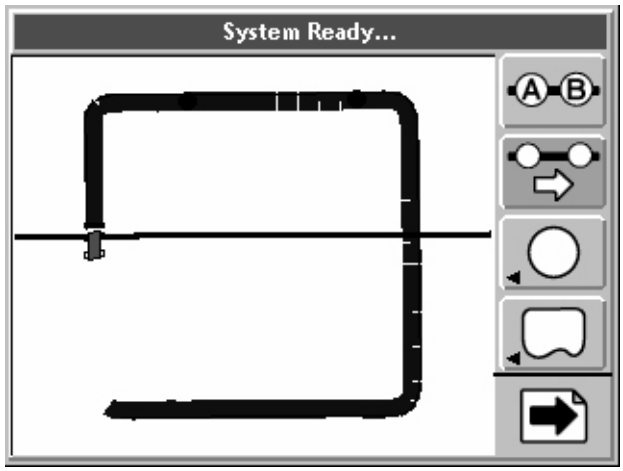


Figure 4-29: Mapping Boundary while Applying Product

Mapping Points and Hazards

Mapping points and hazards during the product application process is another feature of Fieldware for Legacy 6000. There are two types of mapping objects that can be selected; Point and Hazard. Each of these object types are described in more detail below.

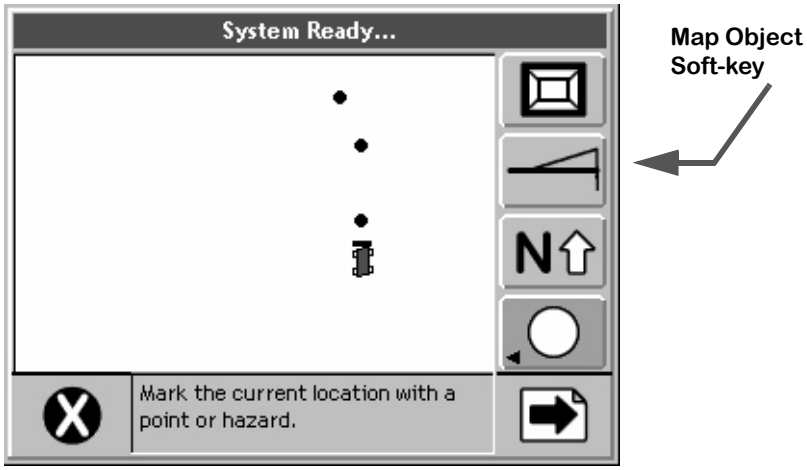


Figure 4-30: The Point Soft-key

Marking a Point

The map object Point allows a point to be marked at the vehicle location. To map a point drive to the location of the object or feature to be mapped, this location should coincide with the location of the GPS antenna. Press the Map Object soft-key. A side menu appears with the point and hazard symbols in the list (Figure 4-31). Select the Point symbol to map a point. When Enter is pressed, the Point Name dialog box appears, Figure 4-32. Enter the name of the point using the arrow keys and press Enter to accept the point name and return to the map page.

The Name Point dialog remembers your 10 most recent entries. To select a recent entry, scroll through the dialog window, using the arrow keys, and select the desired point name. If the point is not named, select the No Name setting in the dialog window and press Enter.

To add a new name, press the New Name soft-key. This brings up a name input dialog that allows a new name to be entered.

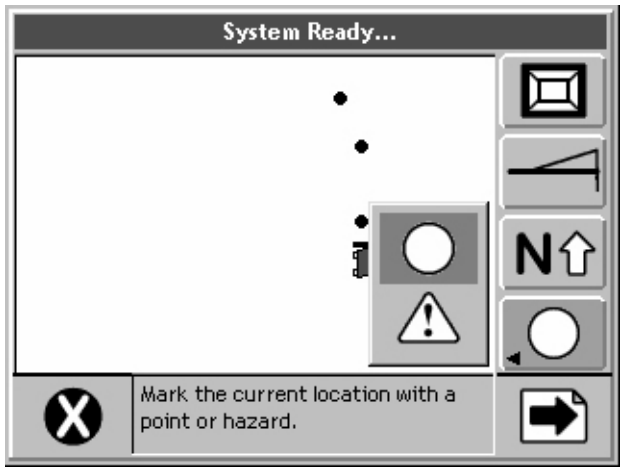


Figure 4-31: The Map Point Menu

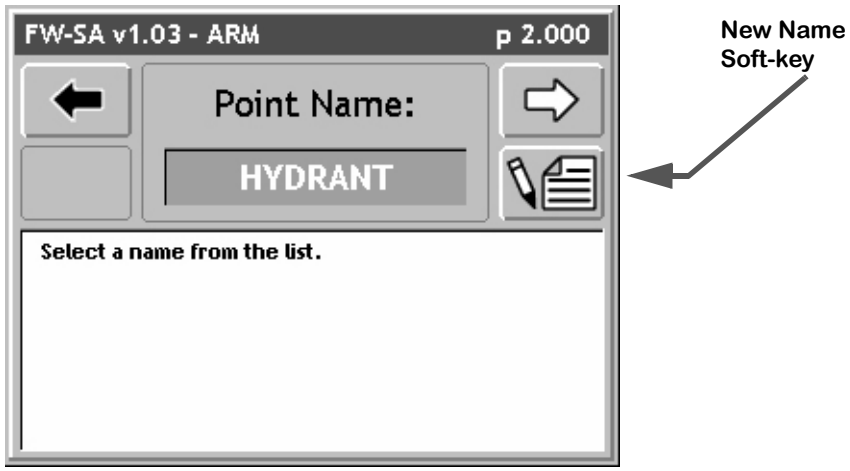


Figure 4-32: Naming the Point

Marking a Hazard

The map object Hazard allows a hazard to be marked at the vehicle location. The map object Hazard can be used later in Hazard Detection to notify the operator of potentially hazardous objects or features within the field. Hazard detection does not work with point objects.

To map a hazard, drive to the location of the object or feature to be mapped. This location should coincide with the location of the GPS antenna. Press the Map Object soft-key. A side menu appears with the point and hazard symbols in the list (Figure 4-31). Select the Hazard symbol to map a hazard. When Enter is pressed, the Hazard Name dialog box appears (Figure 33). Enter the name of the hazard using the arrow keys. Press Enter to accept the hazard name and return to the map page.

The Name Hazard dialog remembers the 10 most recent entries. To select a recent entry, scroll through the dialog window, using the arrow keys, and select the desired object name. If the object is not named, select the No Name setting in the dialog window and press Enter.

To add a new name, press the New Name soft-key. This brings up a name input dialog that allows a new object name to be entered.

Figure 4-33: Naming the Hazard

Exiting Real-Time Operation

To exit from real-time operation, press the Exit button located on the bottom left hand corner of the current page. If data is being stored to the PC card, the exiting process may take a minute or so to properly store this data.

Some Legacy 6000 system kits include Fieldware Tools for an office computer or laptop. Fieldware Map Manager Tools can be used to view application as applied maps. Figure 4-34 shows an as-applied map (RCD) and field boundary (BND) in the Map Manager view. To view as applied maps, copy the record files (RCD) from the PC card to a desktop or laptop computer. Consult the Map Manager user's guide for instructions on how to generate application reports from the data.

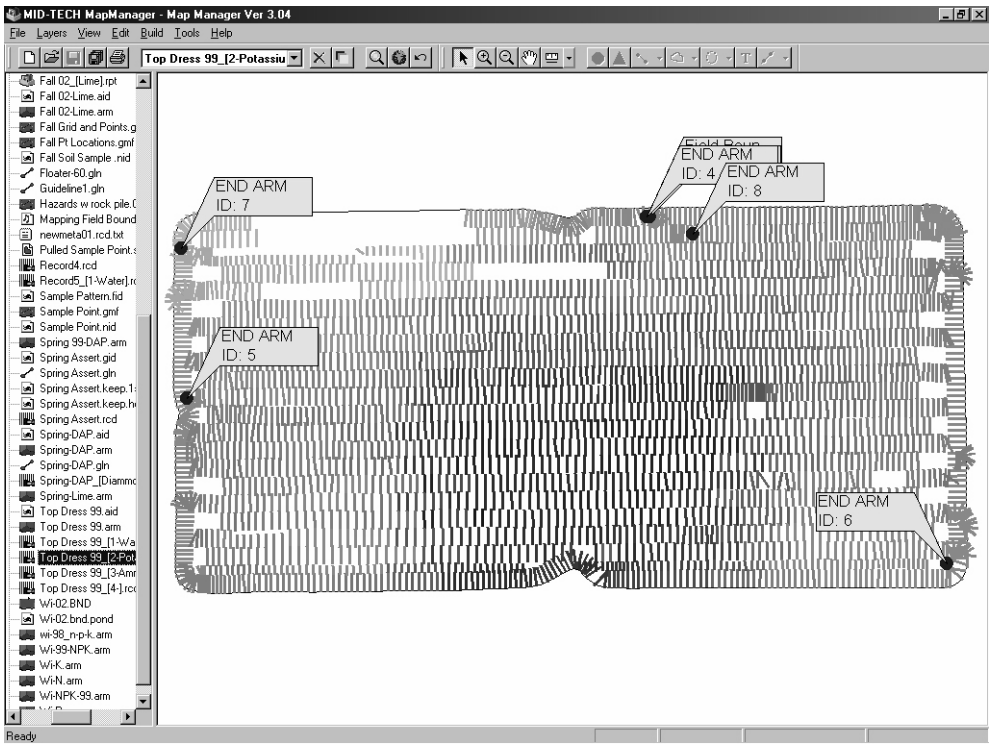


Figure 4-34: As- Applied Data Viewed in Map Manager

Lightbar Index

The Swath XL Lightbar is capable of displaying a considerable amount of information to the user. This information can be represented as text in the display window, illuminated lights on the stop light, cross track LEDs, or a combination of text and lights. Information displayed on the lightbar depends on both user defined settings and system warnings not controlled by the user. Table 4-2 describes each possible lightbar state and possible information that could be displayed.

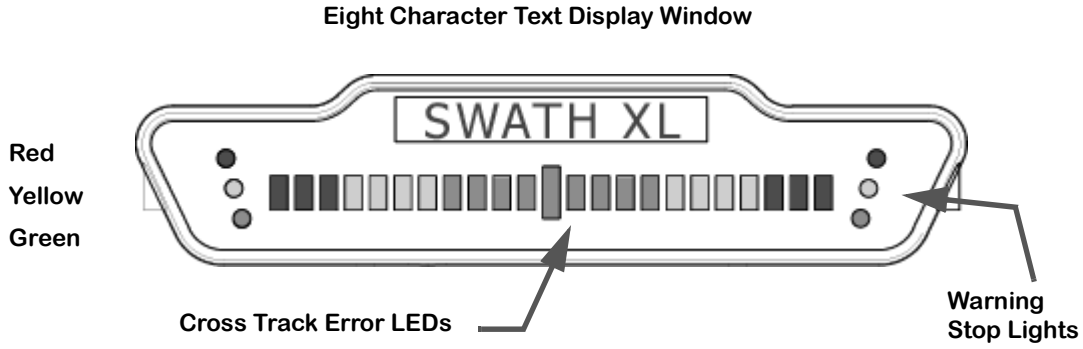


Figure 4-35: The Swath XL Lightbar

Lightbar State	Description
	Mark A: Displayed when establishing the guidance point A of the initial guideline.
	Mark B: Displayed when establishing the guidance point B of the initial guideline.
	Swath #: A user selected lightbar message. When not on the initial guideline the first character is either L or R for Left or Right of the initial guideline. The number identifies how many lines left or right of the initial guideline.

Table 4-2: Swath XL Lightbar Index

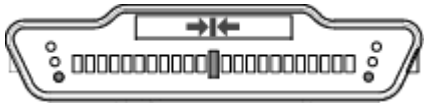
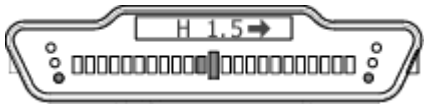
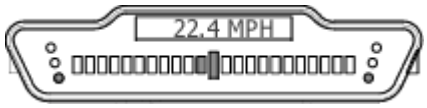
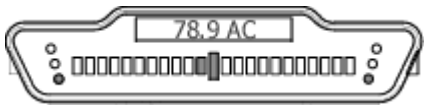
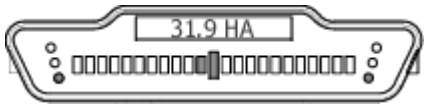
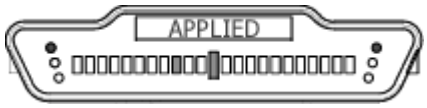
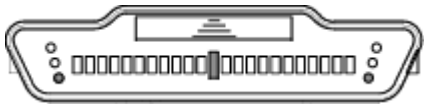
Lightbar State	Description
	X-Track Error: A user defined lightbar message. This cross track error message is displayed when the vehicle is on the guideline and there is no error.
	X-Track Error: A user defined lightbar message. In this example the operator should steer to the left 2.3 ft. (Assuming the system unit is set to US and Lightbar is set to Swath mode.)
	Vehicle Heading Error: A user defined lightbar message indicating the current heading error between vehicle heading and the bearing of the guideline in degrees and decimal degrees. The arrow indicates steering direction.
	Ground Speed: A user defined lightbar message indicating the vehicle speed in Miles per Hour (MPH). System unit is set to US.
	Ground Speed: A user defined lightbar message indicating the vehicle speed in Kilometers per Hour (KPH). System unit is set to Metric.
	Course on Ground (COG): A user defined lightbar message indicating the vehicles heading in degrees (0 to 359). The example to the left indicates the vehicle's course on the ground is due South (180 degrees).
	Area Applied: A user defined lightbar message indicating the current amount of area applied in Acres. System unit set to US.
	Area Applied: A user defined lightbar message indicating the current amount of area applied in Hectares. System unit set to Metric.
	Applied Area Detection: This message is displayed when the vehicle is within a previously applied area. Note the Red stop lights are illuminated. At this point an alarm should sound. See Applied Area Detection on page 4-24.
	Curved guidance information graphics. The four horizontal bars in the text display represent a perspective view of the swath ahead of the vehicle. The bars skew left or right to represent the curved path ahead.

Table 4-2: Swath XL Lightbar Index

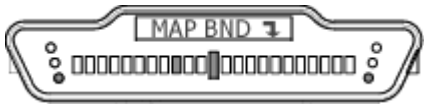
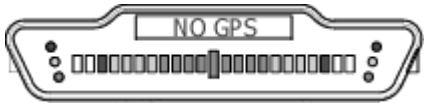
Lightbar State	Description
	Hazard Detection: The name of the hazard is displayed when the vehicle is approaching an existing hazard. Note the Yellow stop lights are illuminated indicating the initial warning.
	Hazard Detection: The name of the hazard is displayed when the vehicle is approaching an existing hazard. Note the Red stop lights are illuminated indicating the final warning.
	Mapping Boundary: This message is displayed when the user is mapping the field boundary. The arrow symbol on the left indicates the field boundary is on the left side of the vehicle. See “Mapping a Field Boundary” on page 4-26
	Mapping Boundary: This message is displayed when the user is mapping the field boundary. The arrow symbol on the right indicates the field boundary is on the right side of the vehicle. See “Mapping a Field Boundary” on page 4-26
	System Warning: This message is displayed when there is loss of GPS differential corrections. Guidance calculations are stopped until differential corrections resume.
	System Warning: This message is displayed when there is a complete loss of GPS signal to the GPS receiver or Smartpad. Guidance calculations are stopped until DGPS signal resumes.
	Lightbar Version Message: This message is displayed when the user runs the Lightbar Test. M 4 indicates the lightbar model number and the 2.0 indicates the lightbar protocol version number. This number varies and is based on lightbar version and model.

Table 4-2: Swath XL Lightbar Index

Chapter Notes

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