FERGUSON BEAUREGARD



*i*NodeConfig *i*C

User Manual

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User Manual

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<u>Overview</u>

The *i*NodeConfig *i*C User Manual describes in detail the software application *i*NodeConfig *i*C, used to manage the Ferguson Beauregard Auto-Cycle *i*ntelligent Controller (AC*i*C). For detailed information on AC*i*C mechanical and electrical installation, operation and front panel display and keypad use, refer to the Ferguson Beauregard "Auto-Cycle Operator's Manual" (AC*i*C Manual).

Ferguson Beauregard ACiC

The AC*i*C system is a compact Remote Terminal Unit (RTU) designed for complete stand-alone operation in the harsh environmental conditions of the oilfield.

The AC*i*C's versatile microcomputer-based controller continuously monitors and optimizes the well-production process. AC*i*C onboard software includes Ferguson Beauregard's patented Auto-CycleTM electronic well site controller and plunger-lift control algorithm. The controller records the analytical reservoir information so production problems can be diagnosed with greater accuracy and efficiency.

The AC*i*C provides physical connections for analog pressure sensors such as casing and tubing, as well as a variety of discrete (status) sensors. It can be equipped with virtually any point-to-point radio or cellular/wire modem to link with a host computer or back office. Pneumatic signals to control the well's tubing and auxiliary control valves are supplied from a remote single or dual latching valve assembly

The AC*i*C controller and the Auto-CycleTM control algorithm provide proven production optimization. With automatic self-adjustment of time and pressure settings for well production cycle control, optimum plunger velocity and well performance are achieved. This system offers a unique approach to well production management, measurement and optimization. With an AC*i*C on duty, the well operator has remote control of motor valves, and can even monitor tanks and pits for high level alarms. It's like having an operator on site 24 hours a day.

ACiC user interfaces

The AC*i*C provides several options for user control and management. When on-site and performing simple configuration or data viewing, the built-in Keyboard Display Terminal (KDT) can be used. Instructions for using the KDT are detailed in the AC*i*C Operator's Manual. *i*NodeConfig *i*C is intended for detailed configuration and trend data analysis. *i*NodeConfig *i*C can be used locally by connecting a USB cable from a personal computer to the AC*i*C, or remotely by connecting through the internet and/or a radio network. Finally, a cell-modem equipped AC*i*C supports text messages (SMS), allowing a user to receive alarms and status information, as well as making configuration changes remotely.

iNodeConfig iC basics.

Save and Refresh icons.

The **Save** and **Refresh** icons are located at the top left-hand side of every AC*i*C screen beneath the screen tabs, visible in Figure 1 below. Since **Save** and **Refresh** are used for nearly every operation described in this manual, these functions are explained first.

Like many RTUs, configuration changes made in *i*NodeConfig *i*C are not automatically sent to the AC*i*C. Similarly, AC*i*C data changes are not automatically updated in the *i*NodeConfig *i*C view. The user must either **Save** changes made to AC*i*C configuration, or **Refresh** *i*NodeConfig *i*C to see recent AC*i*C data changes.

<u>Save icon.</u>

Changes made to *i*NodeConfig *i*C configuration settings are sent to the AC*i*C when the **Save** icon \square is clicked.

<u>Refresh icon.</u>

*i*NodeConfig *i*C will not automatically retrieve and display data and configuration from the AC*i*C except during initial connection. Data and configuration will change as the AC*i*C adjusts settings and as new data is collected. To see the most recent AC*i*C data and configuration, click the **Refresh** icon

<u>Help.</u>

Most items on each screen have a brief description of their purpose. This help text is displayed at the bottom of the window when an item is highlighted. To highlight an item, point at it and click the left mouse button.

📰 Auto-Cycle Intelligent Controller: Level 1 🛛 (180	o 1151) 📃 🗖 🔀
File Edit View Tools Help	
Data Config Timers Overrides Input Config Schedule	Alarms Cell Modern Users System Events
🗆 General	×
Control mode	Plunger
Afterflow for slow arrival	True
Auto restart	True
Enable early arrival	False
Enable plunger arrival adjustment	False
Enable proportional adjustment	False
Plunger catch mode	False
Current recovery counter	0
soferio manaco leifed	n 🗡
Enable plunger arrival adjustment When enabled, this allows adjustments to be made based on the	e plunger arrival time. [62: PLNG ARRIVAL ADJ]

Figure 1. AC*i*C help example.

In Figure 1, "Enable plunger arrival adjustment" is highlighted. At the bottom of the screen, the help text for that item is now displayed. If a Hot Key code (in this case, 62) for the KDT interface is available, it is also shown.

iNodeConfig iC configuration

This section describes the initial installation of *i*NodeConfig *i*C and the process for connecting *i*NodeConfig *i*C for communication with an AC*i*C.

Installing *i*NodeConfig *i*C

Please see Appendix A.

Connecting to the ACiC and starting iNodeConfig iC

Connecting with the USB port

For local configuration and management *i*NodeConfig *i*C can be run on a personal computer (PC) when it is connected to the AC*i*C via a USB interface.

- 1. Open the ACiC outer door, then open the ACiC KDT module door. See Figure 2.
- 2. Locate the USB port on the KDT module door and the USB port on the PC and connect a USB cable between the two ports.



Figure 2. ACiC opened with USB cable attached

- 3. On the PC, start *i*NodeConfig *i*C.
- 4. *i*NodeConfig *i*C will automatically recognize the AC*i*C connected to the PC and display the Connection Screen, as shown in Figure 3.
- 5. Double click on the AC*i*C. *i*NodeConfig *i*C will connect and the AC*i*C opening screen will be displayed as shown in Figure 4.

4	iNodeC	onfig iC					
	<u>F</u> ile <u>V</u> i	ew <u>T</u>	ools <u>H</u> el	p			
1	USB	- 15	()			ESN:	Connect
	Devices	Tree	Find				
	ESN		Туре	Name	Accessed	IP Address	
	USB						
	🕴 28AI	D 4ACE	ACIC: L1	FBI #1	8/12/2008		
					0. 12. 2000		
-							
							:

Figure 3. *i*NodeConfig *i*C Connection Screen

868 Config Timers Ovenides Input Conf	lg Schedule Alarns Cell Modern Users System Exe	sits
🖃 🭳 🔚 Trendsi 🛄 🕍 Deta Loop	< 💷 🕼	
Analog inputs		
Tank level	96.21679	
Casing pressure	237.9468	
Differential pressure	Disabled	
Line pressure	Disabled	
Line temperature	Disabled	
Tubing pressure	1504.29	
Anival History	-	
Fast arrival count	0	
Good anval count	3	
No arrival count	0	
Slow antival count	0	
Digital inputs		
Alam input	Disabled	
High line pressure input	inactive	
Off input	Disabled	
On input	Disabled	
Plunger input	inactive	
Shut-in input	Disabled	
Plunger Run Times		
Average plunger run trite	00:01:17	
Plunger run time 1	00:03:15	
Plunger run tine 2	00:00:25	
Plunger run time 3	00:00:13	
Plunger run time 4	00:00:00	
Plunger run time b	00:00:00	
Plunger run time 6	00:00:00	
Plunger run time 7	00:00:00	
Plunger run time 8	00:00:00	
Plunger run time 9	00:00:00	
Plunger run time 10	00:00:00	
Plunger run time 11	00:00:00	
Plunger run time 12	00:00:00	
Plunger run time 13	00:00:00	
Plunger run time 14	00:00:00	
Plunger run time 15	00:00:00	
nulog inputa		

Figure 4. ACiC Opening Screen

ACiC configuration

This section describes the process for initial AC*i*C configuration prior to set up for a specific well or location, including

- Firmware update
- General configuration
- Communications setup

Updating firmware

AC*i*C firmware can be updated using *i*NodeConfig *i*C, either from a file saved on a personal computer (PC) or from a file saved on a Secure Digital (SD) card inserted into the AC*i*C.

Updating firmware with a PC

- 1. Save the new firmware file (named similar to "ACiC_L_1_PCB2 1.00.08.00.hex") into a directory on the PC.
- 2. From the *i*NodeConfig *i*C toolbar, select **Tools**, then **Update Firmware...**.
- 3. A File Explorer screen will be displayed. Browse to the directory where the AC*i*C firmware is saved, select the firmware file and click **Open**.
- 4. *i*NodeConfig *i*C will show the loading progess at the bottom of the screen. When the firmware load is completed, the AC*i*C will reset, *i*NodeConfig *i*C will close, restart and reopen the data screen.
- 5. Confirm the new firmware version by checking **Firmware Version** on the **System** screen.

Updating firmware from an SD card

- 1. Insert the SD card into the ACiC. See Figure 2 for the SD card location.
- 2. From the *i*NodeConfig *i*C toolbar, select **File**, then **Device SD card**, then **Load Firmware...**.
- 3. On the resulting screen, click on the firmware filename to highlight it (similar to FIRMWARE.HEX) and click **OK**.
- 4. *i*NodeConfig *i*C will show the loading progess at the bottom of its screen. When the firmware load is completed, the AC*i*C will reset, *i*NodeConfig *i*C will close, automatically restart and reopen the Data screen.
- 5. Confirm the new firmware version by checking **Firmware Version** on the **System** screen.

General configuration

Set the following parameters during initial ACiC installation.

- a. **Device Name -** Names the AC*i*C.
- b. **Battery** The AC*i*C is available with either a 6V or 12V battery. The **Battery** setting must be set to the correct voltage for Energy level and power management to display and operate correctly.

- c. **KDT password** When a password is used, no changes can be made to the AC*i*C using the KDT without entering the correct password. The password must be 4 digits (0-9); 0 disables the password requirement.
- d. Serial port usage Modem enables the cell modem communications, Modbus enables Modbus communications via the RS-232 port and Disable disables the port.
- e. **Tank/Tubing Low battery action** Sets the tank and tubing valves to open, close or do nothing on a low battery condition.
- f. **Sync Clock** The AC*i*C clock must be set. iNodeConfig will synchronize the AC*i*C to the PC clock.

Setting general parameters

- 1. Select the **System** screen and enter values or select options for the above parameters.
- 2. Save the selections by clicking the Save icon.
- 3. Select **Tools**, then **Sync Clock** to set the clock.

Setting up communications

<u>Cell modem</u>

When equipped with a cell modem, the AC*i*C provides remote access to data, status and configuration. To utilize the cell modem service, the user must have a cell phone with text messaging services known as Short Message Service (SMS). The AC*i*C cell modem must be provisioned and activated. To protect the AC*i*C from tampering, access is limited to either text messages preambled with the AC*i*C's unique security code, or the user's cell phone information must be entered on the Users screen. For comprehensive instructions on the use of SMS with an AC*i*C, see the "AC*i*C SMS User Manual".

Enable/disable cell phone

To use the cell modem, the AC*i*C serial port must be set to **Modem** for cell phone communications. If factory-equipped with a cell modem, **Modem** will already be selected.

- 1. Select the **System** screen.
- 2. Click on the **Serial port usage** setting and choose **Modem** or **Disable** as appropriate.
- 3. Save the selections.

Cell modem provisioning

Call Ferguson Beauregard support.

Cell modem activation

Call Ferguson Beauregard support.

Cell modem reset

Select Tools, then Cell Modem, and then Reset Cell Modem.

Text messaging security code

1. Select the Cell Modem screen.

- 2. For **Text messaging security code**, enter up to a 6 digit code (upper or lower case A-Z and 0-9). A blank code will allow any AC*i*C formatted phone text message access to this AC*i*C. The factory default code is '654321'.
- 3. Save the selections.

<u>Users</u>

The AC*i*C allows multiple users to remotely access the AC*i*C to receive data updates and alarms and to make configuration changes. Contact information and privileges for each user are configured on the **Users** screen.

Text message services

Each user can have text message services configured individually as follows:

- **Scheduled** The user will receive scheduled data updates from the AC*i*C. (The schedule is the same for all users.)
- Alarms The user will receive alarms.
- **Can query** The user can remotely query data from the AC*i*C using KDT hot key numbers.
- **Can modify** The user can remotely modify AC*i*C configuration using KDT hot key numbers.

Adding and Configuring users

- 1. Select the User screen.
- 2. Click the **Add** button.
- 3. Enter the user name in the **Full name** box.
- 4. For text messaging to a cell phone, enter the **Phone Number** and click to check the services to be enabled within the **Text Message Information** area.
- 5. Save the selections.

Enabling login information

(CURRENTLY UNSUPPORTED).

Removing users

- 1. Select the User screen.
- 2. Click on the user information to highlight.
- 3. Click the **Remove** button.
- 4. Save the selections.

Scheduled data reporting

The AC*i*C can be configured to regularly uplink data and status to the user. The data can be uplinked via supported WAN connections (satellite, cellular, etc.). Limited data and status can also be sent to a user via text messaging.

Adding Scheduled data uplinks

- 1. Select the **Schedule** screen.
- 2. Click the **Add** button.
- 3. Enter the time of day in the **When** box, select the frequency from the **Repeats** box drop down menu, and optionally select days of the week from the **Repeat on** selections.

- 4. Choose the data type by checking **Text Message** for status data or **Uplink** (*CURRENTLY UNSUPPORTED*) for user selected data.
- 5. Save the selections.

Setting up a well

This section describes the process for setting up an AC*i*C for a specific well or location. The process includes setting up:

- Analog inputs
- Digital inputs
- Mode and general settings
- Timers, automatic adjustments and counters
- Tank mode
- Sync mode
- Overrides
- Alarms

and

- Saving and importing configurations
- Resetting the AC*i*C
- Viewing data
- Viewing Event logs
- Saving Trend data and Event logs

Analog inputs

The AC*i*C has four inputs: three configurable signals and the plunger arrival switch (also known as a Magnetic Shut Off or MSO). The three configurable signals can be used as analog or digital inputs. This section describes how to configure these as analog signals.

<u>General</u>

The ACiC provides the following options for sampling and storing trend data.

- Analog channel scan rate The rate the AC*i*C samples the analog input: Disabled (for digital or no inputs), 3 second, or 1 minute. Faster sample rates consume more energy and will deplete the battery more quickly. Choose the slowest sample rate that meets the need. Use Disabled if there are no analog inputs configured.
- **Trend storage rate** The time span over which the analog inputs are averaged for each stored trend sample: Disabled or 3 minutes.
- **Reference voltage** The reference voltage used for factory calibration of the analog inputs. Do not change the factory setting.

Assigning inputs

- 1. Select the Input Config screen. Input signals can be assigned in Analog Setup.
- 2. For the desired signal, for example **Casing pressure**, select the desired input Analog 1 to Analog 3 from the drop down menu to the right of **Casing pressure**. (The drop down menu is accessed by clicking on the existing selection.)
- 3. Assign all of the desired inputs, leaving unused signals as **unused**.
- 4. Save the selections.

Calibrating inputs

Each assigned input must be calibrated to accurately represent the monitored signal. A two point calibration procedure is provided. For each point, low or high, the current value of the signal is entered as the engineering unit. The input is then sampled, low or high, and is thereby assigned to the current engineering unit. Alternately if the minimum and maximum input voltage range and the associated engineering units are known, they can be entered for a rough calibration.

- 1. Select the Input Config screen.
- 2. Set the engineering units low to the desired value. For example, if the casing pressure is 0 PSI, set the engineering units low to 0.
- 3. Highlight the **CP sample low** and click on **Sample Voltage**. The voltage on the CP input will be read and associated with engineering unit low of 0 PSI.
- 4. Save the selection.
- 5. Repeat 1-4 for the high sample.

Digital inputs

The three AC*i*C inputs can be configured as either analog or digital. This section describes how to configure these as digital signals. When used as a digital input, the signal is compared to an internal 2.5 VDC reference voltage. The signal is **on** if it is above 2.5 VDC or **off** if below.

Assigning inputs

- 1. Select the Input Config screen. Input signals can be assigned in Digital Setup.
- 2. For the desired signal, for example **High LP**, select the desired input, Analog 1 to Analog 3, from the drop down menu to the right of **High LP**. (The drop down menu is accessed by clicking on the existing selection.)
- 3. Assign all of the desired inputs, leaving unused signals as **unused**.
- 4. Save the selections.

Configuring mode and general settings

<u>Modes</u>

The AC*i*C can be operated in one of 5 modes. Each mode has unique capabilities and associated parameter settings that control these capabilities.

- **Manual**: The controlled valves are manually set for open or closed.
- **Plunger**: The tubing valve cycles are controlled by the AC*i*C using the settable timers and automated adjustments to optimize the plunger cycle.
- **Tank**: The tubing and tank valves cycles are controlled by the AC*i*C using the settable timers and automated adjustments to optimize the plunger cycle.
- Intermitter: The tubing cycle is preset to fixed values that do not change.
- Liquilift Tank: The same as Plunger mode, but adding a tank recovery mode to modify the off time for no arrival conditions.

Selecting Mode

1. Select the **Config** screen.

- 2. Under General, select the desired mode from the Control Mode drop down menu.
- 3. Save the selection.

<u>General settings</u>

The AC*i*C provides various operational options which will be defined later within the detailed screen descriptions. They include:

- Afterflow for slow arrival: Allows afterflow during slow arrivals.
- Auto restart: Allows restart in previous mode, verses manual mode.
- **Enable early arrival**: Enables early arrival window. If this is disabled, all arrivals prior to fast time are considered fast arrivals.
- Enable plunger arrival adjustment: Allows cycle adjustments based on plunger arrival time.
- **Enable proportional adjustment**: Allows proportional cycle time adjustments depending on variance from Good Window.
- **Plunger catch mode**: Allows plunger to be caught on next arrival and well is shut-in.

Selecting General Settings

- 1. Select the **Config** screen.
- 2. Under **General**, select the desired condition (True or False) for each option enable.
- 3. Save the selection.

Configuring timers, automatic adjustments and counters

Timers and automatic adjustments

The AC*i*C optimizes plunger lift system control by developing a performance history of plunger arrival times and adjusting operating parameters to improve efficiency. The adjustment process compares the plunger arrival times to defined time windows of the tubing cycle. The operating windows are created by setting the Tubing On Time, Fast Time and Slow Time. The example below indicates a typical set of windows for an 8,000' tubing depth.

START TIME	0 Min	
		Fast Window
FAST TIME	10 Min	
		Good Window
SLOW TIME	15 Min	
		Slow Window
ON TIME	30 Min	
		No Arrival

A plunger arriving at the surface in less than 10 minutes would fall in the Fast Window, arrival between 10 and 15 minutes would fall in the Good Window, arrival between 15

minutes and 30 minutes would fall in the Slow Window and any not arriving within 30 minutes are No Arrivals.

The AC*i*C provides the ability to control the plunger cycle by adjusting the Afterflow Time (flow allowed after arrival) and Off Time (flow disabled) by user defined times. Adjustments are made for arrivals within the windows as follows:

FAST WINDOW	Increase Afterflow Time and decrease Off Time
GOOD WINDOW	No changes
SLOW WINDOW	Decrease Afterflow Time and increase Off Time
NO ARRIVAL	Decrease Afterflow Time and increase Off Time

Setting Timers and Automatic Adjustments

- 1. Select the **Config** screen.
- 2. Enter the desired times for each parameter within the **Tubing Off Cycle**, **Tubing On Cycle**, **Tubing Afterflow**, **Tubing Fast Arrival Adjustments**, **Tubing No Arrival Adjustments** and **Tubing Slow Arrival Adjustments**.
- 3. Save the selections.

<u>Timers screen</u>

The timer values can be viewed and adjusted using a graphical interface provided on the **Timers** screen. The control mode can be changed and On or Off cycles can be started.

- **Cycle windows** The graphical interface allows the user to drag the window bars to increase or decrease the times, or enter numerical values into the window boxes.
- **Control mode** The mode may be changed by selecting the desired mode from the **Control Mode** drop down window.
- Start On/Off cycle Either On or Off cycles can be started by clicking the Start On Cycle or Start Off cycle.

<u>Counters</u>

The AC*i*C provides plunger arrival history counters which act as triggers to force shut-in or allow afterflow when plunger arrival is consistently within a timer window. For example, the well will shut in when the plunger has not arrived during the number of cycles set in the **Initial no arrival counter**.

Setting Counters

- 1. Select the **Config** screen.
- 2. Enter the desired initial counts for each initial counter within the **Plunger Arrival Counters**. The current counts will reset to the initial counts when an On or Off cycle is forced to start; otherwise the current counters will continue to decrement. You may set the current counters if desired.
- 3. Save the selections.

Configuring Tank Mode

When Tank Mode is selected the following parameters may be set.

- **Current recovery counter**: Number of consecutive no arrivals until recovery mode. Resets to initial recovery counter on plunger arrival or 0. (Liquilift tank mode only.)
- **Initial recover counter**: Initial number of consecutive no arrivals before recovery mode. (Liquilift tank mode only.)
- Reset afterflow to minimum on recovery
- Tank delay mode: Time delay to tank valve opening from start of On cycle.
- Tank on time: Tank valve on time provided plunger has not arrived.
- **Tank recovery time**: Used instead of Off time when **Current recovery counter** reaches 0. (Liquilift tank mode only.)

Setting Tank Mode Parameters

- 1. Select the **Config** screen.
- 2. Under Tank Mode, set the desired values.
- 3. Save the values.

Configuring Sync Mode

TBD

Configuring Overrides

The AC*i*C allows for setting safety valve overrides. These overrides are based on the limits within which the production pressures are allowed to operate. If pressures exceed the limits, valves are opened or closed as defined. The user sets these initial limits. The AC*i*C also provides the ability to automatically adjust these limits based on the plunger arrival history and the application of settable increments to the initial limits.

Example: The following parameters are set as shown. The initial range is 400 to 500 PSI (in the examples below, this range is written as "400-500")

Casing Pressure Overrides	
Open if CP is greater than	500
Close if CP is less than	400
Fast arrival, high CP decrease	5
Slow arrival, high CP increase	10
No arrival, high CP increase	15
Fast arrival, low CP decrease	5
Slow arrival, low CP increase	10
No arrival, low CP increase	15
Max CP shut in	700

- If the initial pressure is greater than 500, the valve opens; if less than 400, the valve closes. Regardless of the range, the well will shut in if the pressure exceeds 700 PSI.
- If a fast arrival follows, the range is decreased by 5: from 400-500 to 395-495.

- If a slow arrival follows, the range is increased by 10: from 400-500 to 410-510.
- If a no arrival follows, the range is increased by 15: from 400-500 to 415-515.

Override categories

- Casing Pressure
- Differential Pressure
- Line Pressure
- Tubing Pressure
- Misc
 - **Open if TP-LP is greater than** Allows user to enter a differential set point of tubing pressure minus line pressure. Provided minimum off-time has been satisfied, the algorithm will override the remaining offtime period and open the plunger valve, if the differential condition occurs.
 - **Open if fluid slug is less than** Attempts to calculate fluid slug size. Opens the plunger valve and overrides the remaining off-time period (provided the minimum off-time period has been completed). The slug is calculated continuously with the following: (Casing pressure minus tubing pressure divided by casing pressure minus line pressure), i.e. (CP-TP)/(CP-LP)=FSLUG.

Setting Overrides

- 1. Select the **Overrides** screen.
- 2. Under the desired category set the desired values.
- 3. Some values can either be "Disabled" or set to a specific value. To set a specific value, the alarm must first be enabled to change the value. Click the value and open the drop down menu that appears. Check or uncheck the **Enable** as desired. If enabled, change the value as desired.
- 4. Save the values.

Configuring alarms

The AC*i*C can be configured to send alarms to one or more users by various methods (for example to a cell phone). The alarm values or conditions are disabled, or set to specific trigger values. When the alarm trigger value is met, an alarm is generated. Alarms can be delayed such that the alarm condition must persist for a set time before an alarm will be generated. An "all clear" message (the alarm condition no longer exits) can be selected to be sent or not sent. For a user to receive alarms, contact information and an enable must be set up on the **Users** page.

Alarm categories

- Battery
- Casing Pressure
- Differential Pressure
- General
- Level
- Line Pressure

- Line Temperature
- Tubing Pressure

Setting Alarms

- 1. Select the Alarms screen.
- 2. Each alarm value can be either "Disabled" or set to a specific trigger value. The alarm must first be enabled to change the value. Click the value and open the drop down menu that appears. Check or uncheck the **Enable** as desired.
- 3. If enabled, change the value as desired.
- 4. Save the values.

Saving and importing configurations

*i*NodeConfig *i*C provides the ability to export (save) or import (load) a configuration. An exported configuration is a file that contains the complete configuration of the AC*i*C at the time the configuration is saved. The exported configuration may be imported into any AC*i*C. The configuration file may be exported to or imported from a PC, or an SD card inserted into the AC*i*C.

Exporting and importing with a PC

- 1. Export the configuration
 - a. Select **File**, then **Export Configuration**, from the *i*NodeConfig *i*C toolbar. The PC's File Explorer will open.
 - b. Using File Explorer, find or create a directory into which to save the configuration.
 - c. Name the file in File Name and click Save. The file is saved.
- 2. Import a configuration
 - a. Select **File**, then **Import Configuration**, from the *i*NodeConfig *i*C toolbar. The PC's File Explorer will open.
 - b. Using File Explorer, find the directory where the configuration file is saved.
 - c. Click on the desired file. The file name will be entered into the **File name** box. Click Open. The configuration will be loaded into the AC*i*C.

Exporting and importing with the SD card.

- 1. Export the configuration
 - a. Select **File**, then **Device SD card**, then **Save Configuration As...**, from the *i*NodeConfig *i*C toolbar. The **Save As** window will open.
 - b. Using **Save As**, name the file in **File Name** and click **OK**. The file is saved. Note the file name is limited to 8 characters using A-Z and 0-9 only.
- 2. Import a configuration
 - a. Select **File**, then **Import Configuration**, from the *i*NodeConfig *i*C toolbar. The **Load File From SD Card** window will open.
 - b. Click on the desired file and click **OK**. The configuration will be loaded into the AC*i*C

Resetting the ACiC to its default configuration

The AC*i*C may be returned to its default factory configuration.

1. Select Tools, then Reset ACiC to defaults.

Viewing Data

Well status, history and trend data can be easily viewed using *i*NodeConfig *i*C.

Viewing well status and history

Status and history items are displayed on either the Data or the Config screen depending on the parameter.

- 1. Select the **Data** screen and click the data list button. \blacksquare
- 2. The following data categories are displayed. To see the most recent instantaneous data, click the **Refresh** icon.
 - a. Analog inputs Analog input level for the enabled inputs
 - b. Arrival history Plunger arrival history (fast, good, slow, no)
 - c. Digital inputs Digital input level for selected inputs
 - d. Plunger run times Last 15 run arrival times, and average arrival time.
 - e. Plunger totals Total cycles, on and off time, and arrival counts.
 - f. Tank totals Total tank cycles and on time.
- 3. Select the **Config** screen.
- 4. The following data categories are displayed.
 - a. **General** Current mode, settings and enables.
 - b. **Plunger Arrival Counters** Initial and current arrival counts for each window.
 - c. Sync mode Displays the sync modem enable and the allowed flow time.
 - d. Tank Mode Tank settings and times.
 - e. **Tubing** Current On/Off/Afterflow times and arrival adjustments.

Clearing well status and history

Various status and history items can be cleared (set to '0') with *i*NodeConfig *i*C. Click on **Tools**, then click:

- a. **Clear Totals** Clears the following counts:
 - Arrival History
 - Plunger Run Times
 - Plunger arrival counts
 - Total tubing cycles
 - Tubing off/on time
 - Tank cycles
 - Tank on time
- b. **Reset Plunger** clears the **Lifetime plunger arrival** count.

Trend data

Time stamped trend data for the enabled analog inputs and AC*i*C battery are saved to volatile memory. Trend data can be viewed in either a tabular or graphical representation.

<u>Tabular</u>

- 1. Select the **Data** screen and click the tabular trend button.
- 2. Data will be shown in a tabular form for the enabled analog inputs and battery voltage level. Data is presented oldest first scroll down to the end of table for the most recent data.

<u>Graphical</u>

- 1. Select the **Data** screen and click the graphical trend button.
- 2. Data will be shown in a graphical format for the enabled analog inputs and the battery voltage level. The data is presented with the values on the Y axis and the associated time stamp on the X axis.
- 3. To zoom in on data, hold the left mouse button down and draw a square around the data of interest. The data will expand to fill the screen.
- 4. While the cursor is inside the graph, click the right mouse button to display Options for the graphical screen. The following options are displayed.
 - **Copy** Copies the graphical image for pasting.
 - Save Image As... Opens a window to save the image in a desired format, jpeg for instance.
 - Page Setup Opens a window to adjust the page settings for printing.
 - **Print** Opens a window to print the graph.
 - Show Point Values Enables the viewer to see the values for individual points on the graph by passing the cursor over the point.
 - Un-Zoom -
 - Undo All Zoom/Pan
 - Set Scale to Default
 - Individual Y Axes

<u>Logs</u>

Event log

The AC*i*C records an Event log to volatile memory (the log will be erased if power is removed from the AC*i*C). The log contains the time, source, type, reason and description of the event in tabular form. The log can be cleared to start a fresh log.

Viewing and clearing the Event log

- 1. Select the **Events** screen. The Event log will be loaded and displayed with the lastest event at the top of the screen.
- 2. To refresh the Event log, click **Refresh**.
- 3. To clear the Event log, click on Clear Events.

Trend Data log

If trend storage is enabled and an SD card is installed, trend data will be automatically saved once an hour by the ACiC in a Trend Data log on the SD card.

Saving Trend Data and Event Logs

Trend Data and Event logs provide a permanent history which is automatically updated to the SD card once an hour by the AC*i*C.Trend Data and Event logs can be saved in two ways on the SD card:

Method 1 manually updates the automatically updated log on the SD card, saving the history immediately without waiting for the next automatic update.

Method 2 allows the user to save the history for later viewing.

Update log

1. Select File, then Device SD Card, and Save Trend to Restorable Memory, the trend log is updated. Save Configuration To Restorable Memory and Save Event Log To Restorable Memory are also available, but are redundant as they are automatically updated following changes.

<u>Snapshot log</u>

- 1. Select File, then Device SD Card, and Save Trend Snapshot As... or Save Event Log Snapshot As.... The Save As window will open.
- 2. Using **Save As**, name the file in **File Name** and click **OK**. The file is saved. Note the file name is limited to 8 characters using A-Z and 0-9 only.

iNodeConfig iC Screen Reference

The *i*NodeConfig *i*C graphical user interface has two windows. The Connect window, which opens when *i*NodeConfig *i*C is started, provides general setup for iNodeConfig and the means to select and connect to AC*i*C s. Once an AC*i*C is selected and the connection is made, a second window is opened. The AC*i*C window provides access to the AC*i*C for management and data viewing. This section describes each window and screen and the items and parameters on each screen.

Connect window

The Connect window utilizes a menu bar, toolbar and screen selection tabs for management and viewing.

		зiр			
NRM -	200			ESN:	Conne
Devices Tree	e Find				
ESN	Type	Name	Accessed	IP Address	
USB	(C)	(C)		CO	
-		EDI #1	0 /20 /2000	۱	
🖞 (2BAD 4A)	CE AGIC: L1	FBI #1	8/20/2008	}	
Ŷ 2BAD 4A0	CE ACIC: L1	FBI #1	8/20/2008]	
∛ (2BAD 4A0	CE AGIC: L1	FBI #1	8/20/2008	1	
☆ (2BAD 4A)	CE ACIC: L1	FBI #1	8/20/2008	1	
☆ [2BAD 4A0	CE ACIC: L1	FBI #1	8/20/2008	<u>.</u>	
文 (2BAD 4A)	CE AGIC: L1	FBI #1	8/20/2008		
1 2BAD 44	CE AGC: L1	FBI #1	8/20/2008		
1 2BAD 4A	CE AGC: L1	FBI #1	8/20/2008		
1 2BAD 44	CE AGIC: L1	FBI #1	8/20/2008		

Figure 5 Connect Window

<u>Menu bar</u>

The menu bar, located at the top of the window, has the following dropdown menu selections:

- File User levels (Pumper, Installer and Administrator) and Exit
- **View** An alternate way to select the screen to be viewed.
- **Tools** Various tools such as Connect to Device, Cancel Connection, Clear Found Devices, Connection Properties and Options.
- **Help** Help screens and version information.

Note: Some items in the menu bar selections are non-operational at this time.

<u>Tool bar</u>

The tool bar is located underneath the menu bar. It will allow the user to choose the connection path (iNRM, TCP/IP or USB), the properties for each path, and a means to

enter the AC*i*C's ESN to connect. From the user standpoint, it is presently non-operational.

<u>Screens</u>

<u>Devices</u>

The Devices screen displays the device to which *i*NodeConfig *i*C is currently connected.

<u>Tree</u>

Non-operational.

<u>Find</u>

Non-operational.

ACiC window

The AC*i*C window utilizes a menu bar, toolbar and screen selection tabs for management and viewing of the AC*i*C.

<u>Menu bar</u>

The menu bar, located at the top of the screen, consists of:

- File File related tasks; importing/exporting configuration, SD memory card access.
- Edit Non-operational
- **View** Opens a separate window to view internal AC*i*C status messages.
- Tools Various tools such as clock sync, counter resets, firmware updates.
- Help Help screens and version information.

Screen tabs

The screen selection tabs, located under the toolbar near the top of the window, allow the user to switch between the various screens. Each screen provides an interface to the AC*i*C for viewing data and status, and configuring AC*i*C parameters and settings. There are eleven screen tabs:

- **Data** Current values for inputs, plunger and cycle history, and trend data.
- **Config** Setup configuration and status for various modes, cycle times and automatic adjustments.
- **Timers** Graphical representation of the cycle windows and manual mode and timing adjustments.
- **Overrides** Configuration and status of control overrides and automatic adjustments.
- Input Config Configuration and calibration of analog and digital inputs.
- Schedule Configuration of data and text message uplink schedules.
- Alarms Configuration of alarm settings.
- Cell Modem Configuration and status of cell modem and security.
- Users Configuration of users allowed to access ACiC.
- **System** View AC*i*C system status.
- **Events** View log of AC*i*C events.

<u>Screens</u>

Data

The **Data** screen shows current values for inputs, plunger and cycle history, and trend data. The **Data** screen provides three different data viewing options:

- 1. Tabular data and totals.
- 2. Tabular trend data.
- 3. Graphical trend data.

Tabular data and totals

The following describes the items on the **Data** screen by section when the **Data** screen list button \equiv is selected.

	Security Security for the	
Config Timers Ovenides Input Con	fig Schedule Aams Cel Moden Users System I	Events
🔜 🧕 🔚 Trendsi 🛄 🚂 Deta Loop	x 📖 🏭	
Analog inputs		
Tank level	96.21679	
Casing pressure	237.9458	
Differential pressure	Disabled	
Line pressure	Disabled	
Line temperature	Disabled	
Tubing pressure	1504.29	
Anival History		
Fast arrival count	0	
Good arrival count	3	
No arrival count	0	
Slow antval count	0	
Digital inputs		
Alam input	Disabled	
High line pressure input	native	
Of input	Disabled	
On input	Usabled	
Punger riput	Flactive	
Burger Burg Times	Cedules	
interior of concerns fore	00-01-17	
Photoer sub fice 1	00:03:15	
Pluncer sun fice 2	00:00:25	
Plunger an time 3	00:00:13	
Plunger and fine 4	00.00.00	
Plunger sur time 5	00.00.00	
Plunger un time 6	00.00.00	
Plunger run time 7	00.00:00	
Plunger run time 8	00:00:00	
Plunger run time 9	00:00:00	
Plunger run time 10	00:00:00	
Plunger run time 11	00:00:00	
Plunger run time 12	00:00:00	
Plunger run time 13	00:00:00	
Plunger run time 14	00:00:00	
Plunger run time 15	00:00:00	
finalog inputa		

Figure 6 Tabular Data Screen

Analog inputs – Analog channel input level for enabled inputs, otherwise shows "Disabled". Channel assignments are made on **Input Config** screen.

Table 1. Analog Inputs			
Input	Description		
Tank level	Tank level in inches.		
Casing pressure	Casing pressure in PSI.		
Line pressure	Line pressure in PSI.		
Line temperature	Line temperature in degrees F.		
Tubing pressure	Tubing pressure in PSI.		

Arrival history – Plunger arrival count history (fast, good, slow, no). Reset to 0 on **Clear Totals** command.

Table 2. Arrival Histor	у
-------------------------	---

Count	Description
Fast arrival count	Count of plunger arrivals within the Fast window.
Good arrival count	Count of plunger arrivals within the Good window.
No arrival count	Count of no plunger arrivals within Tubing on time.
Slow arrival count	Count of plunger arrivals within the Slow window.

Digital inputs – Digital input status of "Active" (on) or "Inactive" (off) for enabled inputs, otherwise shows "Disabled". Channel assignments are made on **Input Config** screen.

Table 3. Digital Inputs		
Input	Description	
Alarm input	Status of digital input assigned to Alarm input	
High line pressure input Status of digital input assigned to HL pressure		
	input	
Off input	Status of digital input assigned to Off input	
On input	Status of digital input assigned to On input	
Plunger input	Status of digital input assigned to Plunger input	
Shut-in input	Status of digital input assigned to Shut-in input	

Plunger run times – last 15 run arrival times, and average arrival time.

Table 4. Plunger Run Times		
Run Time Description		
Average plunger run time	Average or last 15 plunger run times.	
Plunger run time 1 - 15Plunger run time from On cycle to arrival.		

Plunger totals – Total cycles, on and off time, and arrival counts. All are set to 0 on **Clear Totals** command, except for Lifetime plunger arrival count.

Table 5. Plunger Totals		
Totals	Description	
Lifetime plunger arrival	Reset only on Replace plunger command .	
count		
Plunger arrival count	Arrival count since Clear Totals.	
Total tubing cycles	Tubing cycles since Clear Totals.	
Total tubing off time	Tubing valve off time since Clear Totals.	
Total tubing on time	Tubing valve on time, including afterflow, since	
	Clear Totals.	

Tank totals – Total tank cycles and on time. All are set to 0 on Clear Totals command.

Totals	Description
Total tank cycles	Tank valve cycles since Clear Totals.
Total tank on time	Tank valve on time since Clear Totals.

Table 6. Tank Totals

<u>Tabular Trend Data</u>

Time stamped trend data for the enabled analog inputs and AC*i*C battery can be viewed in a tabular format when the Data screen tabular trend button \square is selected. Data is presented oldest first; scroll down to the end of table for the most recent data. Trend data can be cleared using the toolbar **Tools – Clear Devices Trend Data** button.

🛃 Auto-	Cycle Intelligen	t Contro	lier: Level 1	(2BAD 4ACE)			그미 저
Cie III	Edit Very In	ola He	lp .				
Contra 1	1 I I			Innerly	1		
Lieta	Config Timers	Ovendes	I input Config	I schedule Al	ams Cell Mo	den Users System Events	1
1.0.0	Q ↓Ξ Trendsi	💷 🚂	Data Loopi	III (4)			
Index	Trend record time	onete	Casing pressu	e Tark level	Energy Level	Tubing pressure	-
18107	8/6/2008 1:39:24	4 PM	-1.7481		15,21508		
18108	8/6/2008 1:42:24	4 P M	-1.721979		15.21353		
18109	8/6/2008 1:45:24	4 PM	-1.758389		15.20997		
10111	8/6/2008 198:24 9/8/2009 1.51/3/	4 P M	1.755618		15,20605		
18112	8/8/2008 151:24	PM	1 729103	.0 9839992	15 20241	.55 43382	
18113	8/8/2008 1:57:24	4 PM	-1.727123	-0.9743738	15.20582	-55.4537	
18114	8/6/2008 2:00:24	4 PM	179.3602	72.36523	15.20247	-55.44995	
18115	8/6/2008 2:03:24	4 PM	237.9646	96.12842	15.20745	-55.44159	
18116	8/6/2008 2:06:24	4 PM	237.2389	95.87464	15.20857	-55.43031	
18117	8/6/2008 2:09:24	4 PM	237.0849	95.79953	15.20195	-55.43616	
18118	8/6/2008 2:12:24	4 PM	237.0585	95.80338	15.20366	-55.44368	
18115	8/6/2008 2:15:24 9/8/2009 3:49.34	4 P M	237.0715	35,80257	15.20298	-00.40036	
19120	8/8/2008 2:10:24	PM	237.0707	95,000,00	15,20311	-00.40700	
18122	8/6/2008 2:24:24	4 PM	237.0688	95,79536	15.20367	-55.46289	
18123	8/6/2008 2:27:24	4 PM	237.0735	95.81413	15,20683	-55.43449	
18124	8/6/2008 2:30:24	4 PM	237.096	95.82248	15.20898	-55.4278	
18125	8/6/2008 2:33:24	4 P M	237.1004	95.82278	15.21154	-55.44493	
18126	8/6/2008 2:36:24	4 P M	237.1294	95.81925	15.21219	-55.43449	
18127	8/6/2008 2:39:24	4 PM	237.1198	95.82473	15.2102	-55.43365	
18128	8/6/2008 2:42:24	4 PM	237.0834	95.80806	15.20711	-55.4558	
18129	8/6/2008 2:45:24	4 P M	237.0529	35,8037	15.20304	-55,44744	
10130	0/6/2000 2/40/24	• F 91	237.071	100.00	15/20/201	-00.43741 55 77369	
19192	8/8/2008 2:51:24	PM	237.8541	200000	15,19994	55 44117	
18133	8/8/2008 2:57:24	4 PM	237.0513	95,80082	15,19818	-55.43407	
18134	8/6/2008 3:00:24	4 PM	237.0525	95.8177	15.19952	-55.43658	
18135	8/6/2008 3:03:24	4 PM	237.0414	95.80692	15.20498	-55.43407	
18136	8/6/2008 3:06:24	4 PM	237.544	95.98147	15.20538	-55.43992	
18137	8/6/2008 3:09:24	4 P M	237.9975	96.13404	15.2111	-55.43115	
18138	8/6/2008 3:12:24	4 PM	237.9927	96.15214	15.21208	-55.44117	
18139	8/6/2008 3:15:24	4 PM	238.0086	96.14043	15.20944	-55.43031	
18140	8/6/2008 3:18:24	4 P M	237.3634	96.12308	15.20401	-55.4324	
18141	8/8/2008 3/21/24 8/8/2008 3/24/24	PM	237.35/3	96,1220	15 20351	-00.43407	
18143	8/8/2008 3/27-24	4 PM	237,9231	96.11607	15,19448	1502 342	
18144	8/6/2008 3:30-24	4 PM	237,9278	96.12392	15.19654	1502.172	
18145	8/6/2008 3:33:24	4 PM	237.9714	96.12569	15.20361	1502.451	
18146	8/6/2008 3:36:24	4 PM	237.9211	96.12423	15.19603	1502.375	
18147	8/6/2008 3:39:24	4 PM	237.9769	96.13162	15.19815	1502.616	
18148	8/6/2008 3:42:24	4 P M	237.9384	96.13898	15.20068	1502.518	
18149	8/6/2008 3:45:24	4 PM	237.9515	96.12788	15.1984	1502.352	
18150	8/6/2008 3:48:24	4 PM	237.9627	96.11716	15.20074	1502.402	T

Figure 7. Tabular Trend Screen

<u>Graphical Trend Data</u>

Time stamped trend data for all enabled analog inputs and ACiC battery voltage can be

viewed in a graphical format when the Data screen graphical trend button is selected. The data is presented with the values on the Y axis and the associated time stamp on the X axis. To zoom in on an area, hold the left mouse button down, draw a square around the data of interest and release the mouse button. The data will expand.



Figure 8. Graphical Trend Screen

To display graphical screen options, click the right mouse button on the graph. The options menu contains the following options.

- Copy Copies the graphical image for pasting.
- Save Image As... Opens a window to save the image in a desired format, jpeg for instance.
- Page Setup Opens a window to adjust the page settings for printing.
- **Print** Opens a window to print the graph.
- Show Point Values Enables the viewer to show the values for individual points on the graph by passing the cursor over the point.
- Un-Zoom Displays all data.
- Undo All Zoom/Pan -
- Set Scale to Default -
- Individual Y Axes -

<u>Config</u>

The **Config** screen provides setup configuration and status for various modes, cycle times and automatic adjustments. Remember to save any modifications that are made.

The following describes the items on the **Config** screen by section.

Auto-Cycle Intelligent Controller: Level 1 (2	IBAD 4ACE)	
Die Sat Verv Innie Deb		
Cete Config Timera Ovenides Nouz Config	Schedule Alama Cell Modern Users System	Evena
14 O		
3 General		0 a
Control mode	Funger	
Aterliow for slow arrival	False	
Auto restart	True	
Enable early arrival	True	
Enable plunger antval edustment	True	
Enable proportional adjustment	False	-
Flunger östch mode	False	
3 Plunger Antival Counters		
initial early counter	3	
Current early counter	3	
initial fast courter	100	
Current fast counter	100	
initial good counter	2	
Current good counter	2	
indial slow counter	100	
Current slow counter	100	
initial no annual courter	100	
Current no antival counter	88	
3 Seno Mode		
Enable constant cycles	False	
Roy time	01-00-00	
Tank Mode		
Current leoguesy pounter	2	
Initial lengtures and unter	5	
Revel afterflow to recovery on recovery	Exha	
Tank delay tine	00.00.00	
Tank on time	02.02.20	
Taok recovery tipe	00.08.20	
3 Tahoo Off Carle		
Tuboo off top	in et an	
Non-maken of the	00.00.01	
Value of Short of Line	01-03-03	
Tutino Co Cycle	1000000	
Falvine	02.05.05	
East tria	00-05-10	
	< 99.048-04. ()	

Figure 9. Config Screen

General – General configuration settings.

Item	Description
Control Mode	Sets the operation mode of the controller: Manual, Plunger,
	Tank, Intermitter, Liquilift
Afterflow for	When True, the ACiC will allow the well to afterflow even
slow arrival	when the plunger arrives in the SLOW WINDOW. When
	False, on a slow plunger arrival the well will be shut in and
	will not afterflow.
Auto restart	Controls how the ACiC will respond when restarting after a
	power loss or reset. When False, the ACiC will resume in
	Manual mode with the well shut in. When True, the ACiC
	will resume the control mode it was in before it restarted.
Enable early	When True, the early arrival window is enabled. When
arrival	False, the early arrival window is ignored, and all arrivals
	before the fast time are considered to be within the fast
	arrival window.
Enable plunger	When True, this allows adjustments to be made based on
arrival	the plunger arrival time. When False, no adjustments will
adjustment	be made.
Enable	When True, this allows larger time adjustments to be made
proportional	when the plunger arrives farther outside the GOOD
adjustment	WINDOW. When False, fixed adjustments are made
-	according to the settings in the Adjustments sections,
	explained in the Adjustments tables below.
Plunger catch	When enabled, the plunger will be caught and held the next
mode	time it arrives. This will stop any cycles that are being run.

Table 7. Config General

Plunger Arrival Counters – Plunger arrival initial count setting and current counts.

T	
Item	Description
Initial early	Number of early arrivals that must occur before the well is
counter	shut-in and an error is raised.
Current early	Number of early arrivals remaining before the well is shut-in
counter	and an error is raised. This is decreased by one each time a
	plunger arrives in the EARLY WINDOW. Any arrival that is
	not in the EARLY WINDOW will reset this count to the
	initial early counter value.
Initial fast	Number of fast arrivals that must occur before allowing
counter	afterflow to commence.
Current fast	Number of fast arrivals remaining before allowing afterflow
counter	to commence. This is decreased by one each time a plunger
	arrives in the FAST WINDOW. Any SLOW or NO
	ARRIVALS will reset this count to the initial fast counter
	value.
Initial good	Number of good arrivals that must occur before allowing
counter	afterflow to commence.
Current good	Number of good arrivals remaining before allowing
counter	afterflow to commence. This is decreased by one each time a
	plunger arrives in the GOOD WINDOW. Any SLOW or NO
	ARRIVALS will reset this count to the initial good counter
	value.
Initial slow	Number of slow arrivals that must occur before the well is
counter	shut-in.
Current slow	Number of slow arrivals remaining before the well is shut-in.
counter	This is decreased by one each time a plunger arrives in the
	SLOW WINDOW. Any FAST or GOOD ARRIVALS will
	reset this count to the initial slow counter value.
Initial no	Number of no arrivals that must occur before the well is
arrival counter	shut-in.
Current no	Number of no arrivals remaining before the well is shut-in.
arrival counter	This is decreased by one each time a plunger does not arrive.
	Any FAST or GOOD ARRIVALS will reset this count to the
	initial no arrival counter value.

Table 8. Plunger Arrival Counters

Sync Mode – Allows wells to have syncronized flow times for use on a common gather system.

Tuble 50 Syne Hloue		
Item	Description	
Enable	When True, allows the user to enter a flow time so that each	
constant cycles	on/off cycle takes a constant amount of time. This makes it	
	possible to syncronize wells in the same gathering system.	
Flow time	The total time that the sales valve can be on. This setting is	
	only applicable if Enable constant cycles is True.	

Table 9. Sync Mode

Tank Mode – General Tank mode settings.

Table 10. Tank Mode		
Item	Description	
Current	The current number of no arrivals remaining before the	
recovery	recovery off time will be used in place of the off time.	
counter		
Initial recovery	Initial counter setting for the Liquilift tank mode recovery	
counter	counter. It sets how many consecutive no arrivals are	
	allowed before the AC <i>i</i> C uses the tank recovery time instead	
	of the off time.	
Restart	When True, the afterflow time will be reset to the minimum	
afterflow to	afterflow time when the AC <i>i</i> C starts the recovery time.	
minimum on		
recovery		
Tank delay	Time from the start of the tubing cycle before the AC <i>i</i> C has	
time	to open the tank valve to reduce the pressure and surface the	
	plunger. This is bypassed if the plunger arrives before the	
	Tank delay time has elapsed.	
Tank on time	Time that the tank valve will be open, provided the plunger	
	has not arrived.	
Tank recovery	Special off time used in Liquilift tank mode. When the	
time	recovery counter runs out due to consecutive no arrivals, this	
	time will be substituted for the off time.	

Tubing: Off Cycle – Tubing Off Cycle configuration.

	Table 11: Tubing On Cycle
Item	Description
Tubing off	Amount of time that the well will stay off or shut in. The
time	AC <i>i</i> C can adjust this value based on cycle performance.
Minimum	Minimum value to which the tubing off time can be adjusted.
tubing off time	
Maximum	Maximum value to which the tubing off time can be
tubing off time	adjusted.

Table 11. Tubing Off Cycle

Tubing: On Cycle – Tubing On Cycle configuration.

Table 12. Tubing On Cycle			
Item	Description		
Early time	Time from the start of the tubing cycle to the boundary		
	between the early window and the fast window.		
Fast time	Time from the start of the tubing cycle to the boundary		
	between the fast arrival window and the good window.		
Slow time	Time from the start of the tubing cycle to the boundary		
	between the good window and the slow arrival window.		
Tubing on time	Maximum amount of time the ACiC will wait for the plunge		
	to arrive at the surface. When this time is reached, the		
	plunger is considered a no arrival.		

Table	12.	Tubing	On	Cvcle	
I abit	14.	1 uping	U	Cycic	

Tubing: Afterflow – Tubing Afterflow configuration.

T	able	13.	Afterflow	

Item	Description			
Afterflow time	The amount of time that the well will be allowed to flow			
	after the plunger has surfaced. The controller can adjust this			
	value based on cycle performance.			
Minimum	Minimum value to which the afterflow time can be adjusted.			
afterflow time				
Maximum	Maximum value to which the afterflow time can be adjusted.			
afterflow time				

Tubing: Fast Arrival Adjustments – Tubing Fast Arrival Adjustment configuration.

Table 14. Fast Arrival Adjustments

Item	Description		
Afterflow time	If the plunger arrives within the fast arrival window, the		
increase	afterflow time will be increased by this value. Typical range		
	is 1 to 5 minutes.		
Tubing off	If the plunger arrives within the fast arrival window, the		
time decrease	tubing off time will be decreased by this value. Typical range		
	is 1 to 5 minutes.		

Tubing: No Arrival Adjustments – Tubing No Arrival Adjustments configuration.

Item	Description
Off time	If the plunger does not arrive, the tubing off time will be
increase	increased by this value. Typical range is 30 to 60 minutes.

Table 15. No Arrival Adjustments

Tubing: Slow Arrival Adjustments – Tubing Slow Arrival Adjustments configuration.

Item	Description		
Afterflow time	If the plunger arrives within the slow arrival window, the		
decrease	afterflow time will be decreased by this value. Typical range		
	is 1 to 5 minutes.		
Tubing off	If the plunger arrives within the slow arrival window, the		
time increase	tubing off time will be increased by this value. Typical range		
	is 1 to 5 minutes.		

Table 16. Slow Arrival Adjustments

<u>Timers</u>

The **Timers** screen is a graphical representation of the plunger cycle windows. It allows the user to view and modify the Control Mode and associated cycle windows, and start the On and Off cycles. Remember to save any changes made on this screen.

Changing modes - The mode may be changed by selecting the Control Mode drop down menu and selecting the desired mode.

Starting cycles – The On and Off cycle may be forced to start by clicking the appropriate **Start On Cycle** or **Start Off Cycle** button.

Changing window settings – The window sizes may be changed either by entering a new value in the time setting, or by using the cursor to drag the boundary between the windows. To change the boundary, place the cursor on the boundary, left click and then drag the boundary to the desired location. The time displayed in the associated box will change accordingly.

🔡 Au	to-Cycle I	Intellige	nt Controll	er: Level 1(2BAD 4ACE	E)					_ 🗆 🗵
<u>F</u> ile	<u>E</u> dit	<u>V</u> iew <u>T</u>	ools <u>H</u> elp	•							
Data	Config	Timers	Overrides	Input Config	Schedule	Alarms	Cell Modem	Users	System	Events	
	<u> Q</u> Cont	rol Mode:	Plunger	-	Start On C	ycle St	art Off Cycle				
Or	cycle wi	ndows									
Ea	arly arriv: F	ast arriva			Good				Slow a	mival	No anival
Fa	dy time			Fast time		R	Slow time			Tubing o	n time
	0:01:00			00:02:00	_	i	00:08:00			00:10:3	D
	offor (off ovelo									
Ĩ	ubing on	Afterflo	w time				Tubing of	f			
	/	,									\geq
Pl	unger arriva	al			Afterflow	time	_			Tubing o	ff time
					00:01:00					00:05:0	
											.::

Figure 10 Timers Screen

<u>Overrides</u>

The **Overrides** screen displays the configuration and status of control overrides and automatic adjustments. Save any modifications.

The following describes the items on the **Overrides** screen by section.

Die Satt (per Donie Dein Cess Contg Triese Overlähe Houz Contg S G Overg Pressure Overlides	chedule Alama Celi Moden Ulieni System	Event
Cess Corrig Timers Overlides Inout Corrig S	chedule Alama Cell Modern Ukera System	Evena
I Casing Pressure Oversides		
E Casing Pressure Ovenides		
Barba & PTU a strategie to the		-
Voen hur is greater than :	500	
Oose # CP is less that	Cleabled	
Fast prival, high CP decisate	0	
Slow anival, high CP increase	0	
No prival, high CP increase	0	
Fast prival, low CP decrease	0	
Slow anival, low CP increase	0	
No arrival, low CP, increase	0	
Max CP shat in	600	*
Only honor CP overlides in afterflow	False	
3 Differential Pressure Oventides		
Oble # DP is less than	Clabled	
Low DP delay	00:03:33	
Fast prival, low DP decrease	0	
Slow anival, low DP increase	0	
No prival, low DP increase	0	
Only horior DP ovendes in afterflow	Fahe	
3 Line Pressure Overrides		
Cose # UP is greater than	Disabled	
High UP delay	00:01:02	
Only honor LP oversides in attention	False	
3 Miso		
Open if TP-LP is greater than	Disabled	
Open if fluid slug is less than	Disabled	
3 Tubing Pressure Overrides		
Qoan f TP is greater than	Clabled	
Octed TP is less that	Disabled	
Fast prival, high TP decisate	0	
Slow anival, high TP increase	0	
No prival, high TP (horease	0	
Fast prival, low TF decrease	0	
Slow anival, low TP increase	0	
No arrival, low TP increase	0	
Min TP shut H	Disabled	
Max TP shut in	Disabled	
Max CP shud in		NUMBER OF MANY OF CALLS AN

Figure 11. Overrides Screen

Casing Pressure Overrides – Casing Pressure Overrides configuration.

Item	Description
Open if CP is	Opens the tubing valve if the Casing Pressure is greater
greater than	than or equal to the PSIG setting. Will only override if
-	Minimum Off Time has expired.
Close if CP is less	Closes the tubing valve if the Casing Pressure is less than
than	or equal to the PSIG setting.
Fast arrival, high	Amount the "Open if CP is greater than" value will be
CP decrease	decreased by for each fast cycle.
Slow arrival,	Amount the "Open if CP is greater than" value will be
high CP increase	increased by for each slow cycle.
No arrival, high	Amount the "Open if CP is greater than" value will be
CP increase	increased by for each no arrival.
Fast arrival, low	Amount the "Close if CP is less than" value will be
CP decrease	decreased by for each fast cycle.
Slow arrival, low	Amount the "Close if CP is less than" value will be
CP increase	increased by for each slow cycle.
No arrival, low	Amount the "Close if CP is less than" value will be
CP increase	increased by for each no arrival.
Max CP shut in Maximum casing pressure at which the ACiC will b	
	into manual mode and the well will be shut in.
Only honor CP	When True, the ACiC will only honor casing pressure
overrides in	overrides for closing valves during the afterflow cycle.
afterflow	

Table	17.	СР	Overrides

Differential Pressure Overrides - Differential Pressure Overrides configuration.

Item	Description		
Close if DP is less	Closes the tubing value if the Differential Pressure is less		
than	than or equal to the PSIG setting		
	Than of equal to the 1 510 setting.		
Low DP delay	Time the Differential pressure must remain below the set		
	point before the tubing valve is closed.		
Fast arrival, low	Amount the "Close if DP is less than" value will be		
DP decrease	decreased by for each fast cycle.		
Slow arrival, low	Amount the "Close if DP is less than" value will be		
DP increase	increased by for each slow cycle.		
No arrival, low	Amount the "Close if DP is less than" value will be		
DP increase	increased by for each no arrival.		
Only honor DP	When True, the AC <i>i</i> C will only honor differential pressure		
overrides in	overrides for closing valves during the afterflow cycle.		
afterflow			

Table 18. DP Overrides

Line Pressure Overrides – Line Pressure Overrides configuration.

Item	Description			
Close if LP is less	Close the tubing valve if the Line Pressure is less than or			
than	equal to the PSIG setting.			
High LP delay	A delay feature for use with a line pressure switch gauge.			
	This delay time allows the normal cycle to make and			
	break contact with the switch during the early part of the			
	on cycle and continue to operate. If the line pressure is			
	high after the delay expires, the well will shut in. Once the			
	line pressure drops, the off cycle will be started.			
Only honor LP	Configures the AC <i>i</i> C to only honor the line pressure			
overrides in	overrides for closing valves during the afterflow cycle.			
afterflow				

Table 17. Line Tressure Overrides	Table 1	9. Line	Pressure	Overrides
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Misc - Miscellaneous Overrides configuration.

Table 20. Miscenaneous Overrides			
Item	Description		
Open if TP-LP	Open the tubing valve if the (Tubing Pressure - Line		
is greater than	Pressure) is equal to or greater than the PSIG setting. Will		
	only override time if Minimum Off Time has expired.		
Open if fluid	Open the tubing valve if the fluid slug calculation is greater		
slug is less than	than or equal to the PSIG setting.		

Table 20. Miscellaneous Overrides

Tubing Pressure Overrides – Tubing Pressure Overrides configuration.

Item	Description	
Open if TP is	Opens the tubing valve if the Tubing Pressure is greater	
greater than	than or equal to the PSIG setting. Will only override time if	
0	Minimum Off Time has expired.	
Close if TP is	Closes the tubing valve if the Tubing Pressure is less than	
less than	or equal to the PSIG setting.	
Fast arrival,	Amount the "Open if TP is greater than" value will be	
high TP	decreased by for each fast cycle.	
decrease		
Slow arrival,	Amount the "Open if TP is greater than" value will be	
high TP	increased by for each slow cycle.	
increase		
No arrival, high	Amount the "Open if TP is greater than" value will be	
TP increase	increased by for each no arrival.	
Fast arrival, low	Amount the "Close if TP is less than" value will be	
TP decrease	decreased by for each fast cycle.	
Slow arrival,	Amount to increase the "Close if TP is less than" value will	
low TP increase	be increased by for each slow cycle.	
No arrival, low	Amount to increase the "Close if TP is less than" value will	
TP increase	be increased by for each no arrival.	
Min TP shut in	Minimum tubing pressure at which the controller will be	
	put into manual mode and the tubing valve will be closed.	
Max TP shut in	Maximum tubing pressure at which the controller will be	
	put into manual mode and the tubing valve will be closed.	
Only honor TP	When True, the ACiC will only honor tubing pressure	
overrides in	overrides for closing valves during the afterflow cycle.	
afterflow		

Table 21. TP Overrides

Input Config

The **Input Config** screen allows configuration and calibration of analog and digital inputs. Save any modifications made on this screen.

The following describes the items on the **Input Config** screen by section.

And a feet and again component of the	(3BAD 4ACE)	
Die Gat Very Dasie Belo		
Case Config Timera Ovenides How Config	Schedule Alama Cel Modern Users System I	Siena
A O simple within		
E Analog setup		0 x
Casing pressure analog channel	Analog 1	*
Differential pressure analog channel	Unused	
Line pressure artialog channel	Unused	
Line temperature arising channel	Unused	
Tank level analog channel	Analog 2	
Tubing pressure ahalog channel	Analog 3	
Casing Pressure		
CP sample low	250	
CP sample high	5000	
CP engineering units low	0	
CP engineering units high	1000	
Differential Pressure		
DP sample low	250	
DP sample high	4750	
DP engreening units low	0	
DP engreening units high	384	
Digital setup		
Hids LP diotal input channel	Analog 2	
OFF digital input channel	Unused	
ON distal input channel	Uncent	
Shut-in diatal you'r channel	Uncent	
Set size detailoout charges	Uncent	
General		
Acato disease scan ate	Puer second	
Tanki shusha nea	Three minutes	
Beference united	3.3	
Line Pressure	38.4	
1 Diamola inte	200	
1 D sample instr	4780	
1 Diamana and a line	0	
1 Participation units high	20.5	
Line Tentembre	1004	
LT encole loss	2007	
1 Transmin in the	4790	
1 T antipaging cold has	0	
1.1 WASHINGTON LINES DW	30	1.12

Figure 12. Input Config Screen

Analog setup – Analog input channel configuration assigns analog input channels to a selected process data type.

Item	Description
Casing pressure	Analog channel to use as a source for casing pressure.
analog channel	
Differential	Analog channel to use as a source for differential
pressure analog	pressure.
channel	
Line pressure	Analog channel to use as a source for line pressure.
analog channel	
Line temperature	Analog channel to use as a source for temperature.
analog channel	
Tank level analog	Analog channel to use as a source for tank level.
channel	
Tubing pressure	Analog channel to use as a source for tubing pressure.
analog channel	

Table 22.	Analog	Setup
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Casing pressure - These settings are used to calibrate analog input channels assigned as casing pressure signals.

Item	Description
CP sample low	Low sample point of the casing pressure calibration in
	millivolts.
CP sample high	High sample point of the casing pressure calibration in
	millivolts.
CP engineering	Low sample point of the casing pressure calibration in
units low	psig.
CP engineering	High sample point of the casing pressure calibration in
units high	psig.

Table 23. Casing Pressure

Differential pressure – These settings are used to calibrate analog input channels assigned as differential pressure signals.

Table 24. Differential Pressure			
Item	Description		
DP sample low	Low sample point of the differential pressure calibration		
	in millivolts.		
DP sample high	High sample point of the differential pressure calibration		
	in millivolts.		
DP engineering	Low sample point of the differential pressure calibration		
units low	in psig.		
DP engineering	High sample point of the differential pressure calibration		
units high	in psig.		

Digital setup - Digital channels are used for signals that have only one of two states, high or low. The high or low states are recognized as high or low, or ON or OFF states that are used to trigger an alarm or action.

Item	Description
High LP digital	Digital channel to use as a source for high line pressure.
input channel	
OFF digital input	Digital channel to use as a source for OFF action.
channel	
On digital input	Digital channel to use as a source for ON action.
channel	
Shut-in digital	Digital channel to use as a source for shut-in action.
input channel	
Soft alarm digital	Digital channel to use as a source for a soft alarm. This is
input channel	used to send an SMS alarm to warn of an approaching
	alarm condition.

Table 25.	Digital	Setup
-----------	---------	-------

General – General analog input configuration.

Table 26. Input Configuration General

Item	Description	
Analog channel	Rate at which the analog channels are scanned: Once per	
scan rate	second, once per minute, or disabled.	
Trend storage rate	Rate at which analog channel scans are averaged and	
	stored to the trend log: Three minutes or disabled.	
Reference voltage	Reference voltage for the analog signals. FACTORY	
	SETTING - DO NOT CHANGE.	

Line pressure - These settings are used to calibrate analog input channel signals to be assigned as line pressure signals.

Item	Description
LP sample low	Low sample point of the line pressure calibration in millivolts.
LP sample high	High sample point of the line pressure calibration in millivolts.
LP engineering units low	Low sample point of the line pressure calibration in psig.
LP engineering units high	High sample point of the line pressure calibration in psig.

Table 27. Line Pressure

Line temperature - These settings are used to calibrate analog input channel signals to be assigned as line temperature signals.

Item	Description	
LT sample low	Low sample point of the line temperature calibration in	
-	millivolts.	
LT sample high	High sample point of the line temperature calibration in	
	millivolts.	
LT engineering	Low sample point of the line temperature calibration in	
units low	degrees Fahrenheit.	
LT engineering	High sample point of the line temperature calibration in	
units high	degrees Fahrenheit.	

Table 28	Line	Tem	perature
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Tank level - These settings are used to calibrate analog input channel signals to be assigned as tank level signals.

Table 29. Tank Level			
Item	Description		
Tank level sample	Low sample point of the tank level calibration in		
low	millivolts.		
Tank level sample	High sample point of the tank level calibration in		
high	millivolts.		
Tank level	Low sample point of the tank level calibration in inches.		
engineering units			
low			
Tank level	High sample point of the tank level calibration in inches.		
engineering units			
high			

Table 29. Tank Level

Tubing Pressure – These settings are used to calibrate analog input channel signals to be assigned as tubing pressure signals.

Table 30. Tubing Pressure			
Item	tem Description		
TP sample low	Low sample point of the tubing pressure calibration in millivolts.		
TP sample high	High sample point of the tubing pressure calibration in millivolts.		
TP engineering	Low sample point of the tubing pressure calibration in		
units low	psig.		
TP engineering	High sample point of the tubing pressure calibration in		
units high	psig.		

Schedule

The Schedule screen allows configuration of scheduled ACiC status messages sent to users designated on the Users screen. Schedule times can be added, defined and deleted. The screen is divided into two sections. The upper screen lists the existing schedules and provides the means to add or remove a scheduled item. The lower screen, Schedule **Details**, provides the specific configuration items for a new scheduled item. Save any modifications made on this screen.

The following describes the configuration items on the Schedule screen.

🔡 Auto-Cycle Intelligent Controller: Level 1 (2BAD 4ACE)	_ 🗆 🗵
Eile Edit View Tools Help	
Data Config Timers Overrides Input Config Schedule Alams Cell Modem Users System Events	
🛃 🧕 📔 Manage Data Lists	
When Frequency Action	[
12:10:00 AM Daily Text Message	
6:10:00 AM Daily Text Message	
12:10:00 PM Daily Text Message	
6:10:00 PM Daily Text Message	
	P
	Nemove
Schedule Details	
When: 9:26:50 AM	
Frequency	
Repeats:	
Repeat every: label	
Actions	
Uplink	
Text Message	
	.::

Figure 13 Schedule Screen

Upper screen - The upper screen shows an entry for each scheduled item. Each scheduled item has the following characteristics:

Table 31. Schedule Upper Screen			
Item	Description		
When	The time of day when the scheduled item will be sent.		
Frequency	The frequency the scheduled item will be sent. For		
	example: hourly, daily, weekly.		
Action	The type of data item that will be sent. For example:		
	Uplink or text message.		
Add	Adds a new item to the schedule list when clicked.		
Remove	Removes the highlighted schedule item when clicked.		

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Schedule Details - The schedule details screen provides the following configuration items for each scheduled item. The scheduled item is configured by first highlighting the item and then selecting the desired configuration items. The following describes the configuration items.

Table 32. Schedule Details			
Item	Description		
When	The time of day when the scheduled item will be sent.		
Frequency –	The frequency the scheduled item will be sent. For		
Repeats	example: hourly, daily, weekly.		
Frequency –	Currently unsupported.		
Repeat every			
Frequency –	Day of the week on which to uplink when weekly is		
Repeat on	selected. Multiple days can be selected.		
Actions – Uplink	Configures the AC <i>i</i> C to uplink the scheduled item via		
	TCP/IP (internet). Currently unsupported.		
Actions – Text	Configures the AC <i>i</i> C to uplink the scheduled item as a		
message	text message via cell phone SMS. Currently the		
	scheduled item will only a uplink a status message		
	containing the current tubing cycles and plunger counts,		
	average run times, battery voltage and solar charge		
	current.		

<u>Alarms</u>

The **Alarms** screen provides configuration for setting alarm conditions that will result in an alarm being sent to designated users. Save any modifications made on this screen.

The following describes the items on the Alarms screen by section.

Auto-Cycle Intelligent Controller: Level 1 (JIBAD 4ACE)		20072
Die Cat Dan Dans Dap		
Deta Corfig Timers Ovenides Mout Corfig	Schedule Ramit Cell Modern Use's System	Events
H 0		
3 Battery alarms		
Battery voltage high alarm	16	1
Batery voltage high shut in	16	
Battery voltage low elern	Disabled	
Battery voltage low shut in	Disabled	
E CP atarms		15
Casing pressure high elem	600	
Casing pressure high which in	750	
Casing pressure low alarm	Disabled	
Casing pressure low shut in	Disabled	
3 DP alarms		
Differential pressure high blann	Disabled	
Differential pressure high shut in	Disabled	
Differential pressure low alarm	Disabled	
Differential pressure low shut in	Disabled	
3 General		
Rom delay	00;02:00	
Alam on early arrival enor	False	
Alam on high fine error	False	
Alam on maintenence timeout	False	
Alam on mode change	False	
Alam on no arival	True	
Alam on plunger count	Disabled	
Alars on plunger error	True	
Send all-clear messages	True	
E Level alarma		10
Tank lavel high alarm	192	
Tank lavel high shut in	216	
Tank lavel low alarm	Disabled	
Tank level low shut in	Disabled	
3 LP alarms		
Line pressure high elem	Disabled	
Line, pressure high shut in	Disabled	
Line pressure law stars	Disabled	
Line pressure low shut in	Disabled	
3 LT alarma		*
Altern deltas		10.000
Carrier month		

Figure 14 Alarms Screen

Battery alarms – These are alarm settings for the AC*i*C battery voltage. High and low battery charge levels can be set to trigger a soft alarm (ACiC alarms only) or shut in (ACiC alarms and shuts in enabled valves).

Table 55. Battery Alarms			
Item	Description		
Battery voltage	High setpoint for the battery voltage at which the AC <i>i</i> C		
high alarm	will enter the alarm state.		
Battery voltage	High setpoint for the battery voltage at which the AC <i>i</i> C		
high shut in	will shut in and enter the alarm state.		
Battery voltage	Low setpoint for the battery voltage at which the ACiC		
low alarm	will enter the alarm state.		
Battery voltage	Low setpoint for the battery voltage at which the ACiC		
low shut in	will shut in and enter the alarm state.		

Table	33.	Battery	Alarms
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CP alarms – These are alarm settings for the casing pressure. High and low levels can be set to trigger a soft alarm (ACiC alarms only) or shut in (ACiC alarms and shuts in enabled valves).

Table 54. Cr Alarins			
Item	Description		
Casing pressure	High setpoint for the casing pressure at which the AC <i>i</i> C		
high alarm	will enter the alarm state.		
Casing pressure	High setpoint for the casing pressure at which the AC <i>i</i> C		
high shut in	will shut in and enter the alarm state.		
Casing pressure	Low setpoint for the casing pressure at which the AC <i>i</i> C		
low alarm	will enter the alarm state.		
Casing pressure	Low setpoint for the casing pressure at which the AC <i>i</i> C		
low shut in	will shut in and enter the alarm state.		

DP alarms – These are alarm settings for the differential pressure. High and low levels can be set to trigger a soft alarm (AC*i*C alarms only) or shut in (AC*i*C alarms and shuts in enabled valves).

I able 35. DP Alarms			
Item	Description		
Differential	High setpoint for the differential pressure at which the		
pressure high	AC <i>i</i> C will enter the alarm state.		
alarm			
Differential	High setpoint for the differential pressure at which the		
pressure high shut	ACiC will shut in and enter the alarm state.		
in			
Differential	Low setpoint for the differential pressure at which the		
pressure low	AC <i>i</i> C will enter the alarm state.		
alarm			
Differential	Low setpoint for the differential pressure at which the		
pressure low shut	AC <i>i</i> C will shut in and enter the alarm state.		
in			

Table 35. DP Alarms

General – These are general alarm settings typically not directly associated with a process parameter.

Item	Description		
Alarm delay	Amount of time that a setpoint must be exceeded before		
	the AC <i>i</i> C will enter the alarm state or shut in.		
Alarm on early	Indicates whether the ACiC will enter an alarm state		
arrival error	when an early arrival error occurs. True or false.		
Alarm on high-	Indicates whether the AC <i>i</i> C will enter an alarm state		
line error	when a high-line error occurs. True or false.		
Alarm on	Indicates whether the ACiC will enter an alarm state		
maintenance	when a maintenance timeout occurs. True or false.		
timeout			
Alarm on mode	Indicates whether the ACiC will enter an alarm state		
change	when a control mode change occurs. True or false.		
Alarm on no	Indicates whether the ACiC will enter an alarm state		
arrival	when the plunger does not arrive. True or false.		
Alarm on plunger	High setpoint for the plunger count at which the ACiC		
count	will enter the alarm state.		
Alarm on plunger	Indicates whether the AC <i>i</i> C will enter an alarm state		
error	when a plunger error occurs. True or false.		
Send all-clear	When enabled, the ACiC will send all-clear messages		
messages	when the ACiC leaves an alarm state and resumes normal		
	operation. True or false.		

Table 36. Alarms General

Level alarms – These are alarm settings for the tank levels. High and low levels can be set to trigger a soft alarm (AC*i*C alarms only) or shut in (AC*i*C alarms and shuts in enabled valves).

Item	Description		
Tank level high	High setpoint for the tank level at which the ACiC will		
alarm	enter the alarm state.		
Tank level high	High setpoint for the tank level at which the AC <i>i</i> C will		
shut in	shut in and enter the alarm state.		
Tank level low	Low setpoint for the tank level at which the AC <i>i</i> C will		
alarm	enter the alarm state.		
Tank level low	Low setpoint for the tank level at which the ACiC will		
shut in	shut in and enter the alarm state.		

Table	37.	Level	Alarms
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LP alarms - These are alarm settings for the line pressure. High and low levels can be set to trigger a soft alarm (AC*i*C alarms only) or shut in (AC*i*C alarms and shuts in enabled valves).

Table 38. LP Alarms			
Item	Description		
Line pressure high	High setpoint for the line pressure at which the ACiC		
alarm	will enter the alarm state.		
Line pressure high	High setpoint for the line pressure at which the AC <i>i</i> C		
shut in	will shut in and enter the alarm state.		
Line pressure low	Low setpoint for the line pressure at which the AC <i>i</i> C will		
alarm	enter the alarm state.		
Line pressure low	Low setpoint for the line pressure at which the ACiC will		
shut in	shut in and enter the alarm state.		

LT alarms - These are alarm settings for the line temperature. High and low levels can be set to trigger a soft alarm (AC*i*C alarms only) or shut in (AC*i*C alarms and shuts in enabled valves).

Item	Description		
Line temperature	High setpoint for the line temperature at which the AC <i>i</i> C		
high alarm	will enter the alarm state.		
Line temperature	High setpoint for the line temperature at which the AC <i>i</i> C		
high shut in	will shut in and enter the alarm state.		
Line temperature	Low setpoint for the line temperature at which the AC <i>i</i> C		
low alarm	will enter the alarm state.		
Line temperature	Low setpoint for the line temperature at which the ACiC		
low shut in	will shut in and enter the alarm state.		

Table 39. LT Alarms

TP alarms - These are alarm settings for the tubing pressure. High and low levels can be set to trigger a soft alarm (AC*i*C alarms only) or shut in (AC*i*C alarms and shuts in enabled valves).

Item	Description		
Tubing pressure	High setpoint for the tubing pressure at which the AC <i>i</i> C		
high alarm	will enter the alarm state.		
Tubing pressure	High setpoint for the tubing pressure at which the AC <i>i</i> C		
high shut in	will shut in and enter the alarm state.		
Tubing pressure	Low setpoint for the tubing pressure at which the AC <i>i</i> C		
low alarm	will enter the alarm state.		
Tubing pressure	Low setpoint for the tubing pressure at which the AC <i>i</i> C		
low shut in	will shut in and enter the alarm state.		

Table	40.	ТР	Alarms

<u>Cell Modem</u>

The **Cell Modem** screen provides configuration for the AC*i*C internal cell modem. Save any modifications made on this screen.

The following describes the items on the **Cell Modem** screen by section.

🚆 Auto-Cycle Intelligent Controller: Level 1 (2BAD	4ACE) _ 🗌 🗶		
<u>Eile E</u> dit <u>V</u> iew <u>T</u> ools <u>H</u> elp			
Data Config Timers Overrides Input Config Scher	dule Alams Cell Modem Users System Events		
🛃 o			
🗆 General	i		
Last modem error string	Timeout reading signal strength		
Modem phone number	15403543730		
Modem power off cycle	00:00:00		
Modem power on cycle	00:05:00		
Modem signal strength	-77		
Modem type	GSM		
Text messaging			
Text message security code	123		
	I		
Last modem error string			
Error string used for debugging modern operation.			

Figure 15. Cell Modem Screen

General – These are general cell modem configuration items.

Table 41.	Cell	Modem	General
	~~~		00000

Item	Description			
Last modem error	Error string used for debugging modem operation.			
string	Represents the last error encountered, thus may show an			
	error even if the condition no longer exists.			
Modem phone	The phone number of the AC <i>i</i> C modem. This is number			
number	dialed to send a text message to the ACiC.			
Modem power off	Amount of time that the cell modem will be powered off			
cycle	in its on/off cycle. Set to zero to have the modem always			
	on. Used to create a cell modem on/off cycle to minimize			
	power consumption at the ACiC. The cell modem is			
	inaccessible during the off cycle.			
Modem power on	Amount of time that the cell modem will be powered on			
cycle	in its on/off cycle. Used to create a cell modem on/off			
	cycle to minimize power consumption at the AC <i>i</i> C.			
Modem signal	Signal strength that the modem is getting from the cell			
strength	network.			
Modem type	Type of the cell mode. (CDMA or GSM)			

**Text messaging** – These are text messaging specific parameters.

Tuble 127 Centrifudent Text 17103545115		
Item	Description	
Text message	Global password to allow access to the text message	
security code	system of the ACiC. Users that are not specifically	
	approved through the users list on the Users screen must	
	enter this code in the message to use access the ACiC	
	with text messaging.	

Table 42. Cell Modem Text Messaging

#### <u>Users</u>

The **Users** screen provides the management of users who have the ability to received data and manage the AC*i*C via remote access (for example, cell phones using SMS). The user settings can be configured to allow the user to receive data and alarms, view data, and modify the AC*i*C configuration. The screen is divided into two sections. The upper screen lists the existing users and their authorizations, and provides the means to add or remove a user. The lower screen, **User Details**, provides the specific configuration items for a new user. Save any modifications made on this screen.

The following describes the configuration items on the Users screen.

🔜 Auto-Cycle Intelligent Controller: Level 1 (2BAD 4ACE)	
Eile Edit View Iools Help	
Data Config Timers Overrides Input Config Schedule Alams Cell Modem Users System Events	
🔒 Q	
Full Name         Login Information         Text Messaging           me          5405551212 gets alarms and scheduled text messages and can view and modify	
Add	
Login Information User name: Can modify Can modify Alams Can modify Can modify	
	.:

Figure 16. Users Screen

**Upper screen -** The upper screen shows an entry for each user. Each user has the following characteristics:

Table 45. Oser Opper Serven		
Description		
User's name.		
Not supported		
Users phone number and authorizations.		
Adds a new user when clicked.		
Removes the highlighted user when clicked.		

#### Table 43. User Upper Screen

**User Details** - The **User** details screen provides the following configuration items for each user. The user is configured by first highlighting the user and then selecting the desired configuration items. The following describes the configuration items.

Item	Description	
Full name	Name to identify user.	
Login information	Name used for remote login. Not supported.	
– User name		
Login information	Allows remote user to modify ACiC settings. Not	
– Can modify	supported.	
Text Message	Users cell phone number which will receive alarms and	
Information –	scheduled data.	
Phone number		
Text Message	Enables this user to receive scheduled text data at the	
Information –	above cell phone number.	
Scheduled		
Text Message	Enables this user to receive text alarms at the above cell	
Information –	phone number.	
Alarms		
Text Message	Authorizes this user to request and view ACiC data with	
Information – Can	text messages.	
query		
Text Message	Authorizes this user to modify ACiC parameters and	
Information – Can	settings with text messages.	
modify		

Table 44. User Details

#### <u>System</u>

The **System** screen provides management and status of items specific to the AC*i*C. The following describes the items on the **System** screen by section. Some items are user settable (shown in normal black on the screen), and others are status that can only be viewed (shown in gray on the screen). Save any modifications made on this screen.

90	
3 General	
Device EST/	2BAD 4ACE
Device fileme	FBLA1
Deuton Type	146
Harthows Verwort :-	ACP2
Fireware Varature	01.00.0E.00
Every Land	33,5696380
Chatge Glenett	di manana ma
Device Clock	8-8/200E 5-33 AM
Eatwy	12 vot betwy
KDT passivert	4
3 Mac	
Setal pot usage	Veden
Tank valve low battery action	Cost
Tubing valve low battery action	Cose
3 Self-Text	
FLASH and team	FLADH test supported
Vesteri soli test	Cautient configure
NEM status	NFM rolt suppotent
Rest asses	Bayer/19/25Treaset
FTC well inst	RTC OK.
SC could and beat	SO world OK
ACTUAL TO AN ADDRESS AND ADDRESS ADDRES	

Figure 17. System Screen

General – General ACiC system configuration items.

Table 45 System General			
Item	Description		
Device ESN	Electronic serial number is used to identify the ACiC.		
Device Name	User-defineable name for the AC <i>i</i> C.		
Device Type	Numeric type of the AC <i>i</i> C.		
Hardware Version	Hardware version of the ACiC 's main board.		
<b>Firmware Version</b>	Firmware version of the ACiC 's main board.		
Energy Level	Energy level, in volts, of the AC <i>i</i> C's battery.		
Charge Current	Current, in milliamps, that the solar panel is putting out		
	to charge the battery.		
<b>Device Clock</b>	Current real time clock value.		
Battery	This must be set to match the type of battery that the		
	AC <i>i</i> C is using. The AC <i>i</i> C may be supplied with either a		
	6V or 12V battery. For the AC <i>i</i> C to correctly monitor the		
	battery voltage (energy level), this setting must agree		
	with installed battery.		
KDT password	A four digit password used to access the AC <i>i</i> C using the		
	KDT. If a password is set, the user must enter that		
	password to change any item with the KDT. The default		
	is "0000" which allows KDT use without a password.		

**Misc** – Miscellaneous AC*i*C configuration items.

Table 46.	System	Miscellaneous
-----------	--------	---------------

Item	Description	
Serial port usage	Selects which type of device connected to the internal	
	serial port of the ACiC. Options are <b>Disabled</b> , <b>Modem</b>	
	and <b>Modbus</b> , which must match the desired connection,	
	Modem for cell phone modem, or Modbus for Modbus.	
	Only one option can be chosen, i.e. a Modbus enabled	
	AC <i>i</i> C cannot utilize the cell phone.	
Tank valve low	Specifies action to take with the tank valve when a low	
battery action	battery condition is detected. Options are No Action,	
	Close and Open. The low battery condition occurs at	
	4.8V for a 6V battery and 9.6V for a 12V battery.	
Tubing valve low	Specifies action to take with the tubing valve when a low	
battery action	battery condition is detected. Options are No Action,	
-	Close and Open. The low battery condition occurs at	
	4.8V for a 6V battery and 9.6V for a 12V battery.	

 $\label{eq:self-test} \textbf{Self-test} - \textbf{Self-test} \text{ status and results from the automated self-test run after power-up or reset.}$ 

Table 47. System Self-Test		
Item	Description	
FLASH self-test	Self-test results on the FLASH memory. Status can be:	
	FLASH OK, FLASH not recognized, FLASH has too	
	many bad blocks, FLASH not initialized and FLASH	
	not supported.	
Modem self-test	Self-test results for the cell modem. Status can be:	
	Modem OK, Modem did not respond, Unsupported	
	modem type, Poor signal quality, Could not	
	configure, No network, No GPRS, Modem not	
	supported and Not checked.	
NRM status	Self-test results for the radio module (NRM). Status can	
	be: NRM OK, NRM not detected, NRM not	
	initialized,	
	NRM initialization error and NRM not supported.	
<b>Reset source</b>	Source of the last system reset. Status can be: <b>Power up</b>	
	reset, Watchdog reset, Software reset, User/NRST	
	reset and Brownout reset.	
<b>RTC self-test</b>	Self-test results for the real-time clock (RTC). Status can	
	be: RTC OK, RTC XSTP fault (a hardware failure),	
	RTC Reset invalid time.	
SD card self-test	Self-test results for the SD card (removable memory	
	card). Status can be: Not checked, SD card OK, Low-	
	level failure (SD send op cond failed), Low-level	
	failure (MMC send op cond failed), Read OCR failed,	
	Set block length failed, MMC not supported and SD	
	Card not supported.	
SRAM self-test	Self-test results on the SRAM (internal memory). Status	
	can be: SRAM OK and SRAM failed.	

#### <u>Events</u>

The Events screen provides a log of AC*i*C events. The events are initially displayed with the latest event first. The events may be sorted as desired, by clicking the header (time, source, type, reason or description). The event log may contain up to 962 events. Scroll down the list using the slider on the right side of the screen. The oldest events will be lost once the log is full and new events occur. The log may be cleared using **Clear Events** on the toolbar above the events listing. Each event has information, if applicable, for the following items.

📕 Auto-Cy	de Intelli	gent Controller: Level 1 (2	BAD 4ACE)		l l	
Die Die	t Verv	Ipola Help				
Data   D	offic   Time	a Deventes Line & Conta L	Schedule [ Alarna ] Cell Moder	Likes System Events		
	Care Day	of a construction of the second of	second transferences	and a start of the		- 1
1.00.44	Cear Eve	ns				
Time		Source	Type	Reason	Description	-
2008-08-0	08 15:55:42	Text message	Alars text message sent	n/a	5405551212	
2008-08-0	08 15:44:42	Text message	Alarm text message sent	rv/a	5405551212	_
2008-08-0	06 15:33:38	Plunger controller application	Digital input event	Plunger antval		
2008-08-0	08 15 29 54	Plunger controller application	Digital input event	Plunger antval		
2008-08-0	08 15:29:42	Text message	Alarm text message sent	rv/a	5405551212	
2008-08-0	08 15:29:28	Local operator interface	Digital input event	ON Button		
2008-08-0	08 15:28:50	Plunger controller application	Digital input event	Plunger antval		
2008-08-0	08 15:28:37	Local operator interface	Digital input event	ON Button		
2008-08-0	08 15:28:50	Text message	Alarm text message sent	n/a	5405551212	
2008-08-0	16 15:26:48	Plunger controller application	Safety shut-in	High casing pressure		
2008-08-0	15:26:46	Local operator interface	Digital input event	ON Button		
2008-08-0	06 15:28:25	Text message	Alam text message sent	n/a	5405551212	
2008-08-0	06 15:26:23	Plunger controller application	Safety shut-in	High casing pressure		
2008-08-0	6 15:28:21	Keyped	Digital input event	ON Button		
2008-08-0	08 15:25:53	Text message	Alarm text message sent	rs/a	5405551212	
2008-08-0	15:25:52	Plunger controller application	Analog alarm	Tubing pressure high		
2008-08-0	08 13 58:12	Text message	Alarm text message pert	rs/a	5405551212	
2008-08-0	06 13:58:10	Plunger controller application	Safety shut-in	High casing pressure		
2008-08-0	18 13 48 15	Text message	Alarm text message pert	rs/a	5405551212	
2008-08-0	6 13:39:37	Text message	Alarm text message perit	rs/a	5405208429	
2008-08-0	08 09:45:19	Text message	Text message received	rs/a	15405206429	
2008-08-0	16 09:45:19	Text message	Response text message sent	rs/a	15405208429	
2008-08-0	6 05 43 42	Keypad	Digital input event	ON Button		
2008-08-0	08 09:41:21	Text message	Text message received	rs/a	15405208429	
2008-08-0	08 09:41:21	Text message	Response text message sent	rs/a	15405206429	
2008-08-0	5 15:37:08	Text message	Scheduled text message pent	rs/a	5405208429	
2008-08-0	5 11:07:58	Text message	Alarm text message pert	rs/a	5405208429	
2008-08-0	5 11:07:55	Plunger controller application	Alarm shut-in	Battery voltage high		
2008-08-0	5 11:07:25	Local operator interface	Digital input event	ON Button		
2008-08-0	5 04:31:06	Plunger controller application	Operation mode change	Plunger error		
2008-08-0	4 15:48:00	Text message	Text message received	n/a	15405206429	
2008-08-0	4 15:48:00	Text message	Response text message sent	rv/a	15405206429	
2008-08-0	4 15:37:00	Text message	Scheduled text message pent.	rv/a	5405208429	
2008-08-0	4 10:11:35	Local operator interface	Digital input event	ON Button		
2008-08-0	4 05:28:14	Plunger controller application	Operation mode change	Plunger error		
2008-08-0	4 09:15:13	Internal	Restart	n/a		
2008-08-0	4 09:14:31	Internal	Restart	n/a		
2008-07-2	5 21 58 50	Internal	Low bettery fault	rv/a		
2008-07-2	5 15:37:03	Text message	Scheduled text message pert.	n/a	5405208429	
2008-07-2	5 09:17:49	Plunger controller application	Operation mode change	Plunger error		
2008-07-2	4 15:37:03	Text message	Scheduled text message pent	n/a	5405208429	
2008-07-2	4 14:57:53	Local operator interface	Operation mode change	New operation mode: pluncer		
2008-07-2	4 14:57:51	Local operator interface	Operation mode change	New operation mode: manual		
2008-07-2	4 14 57:49	Local operator interface	Operation mode change	New operation mode: tank		-1
						-

Figure 18, Events Screen

Item	Description
Time	Time stamp of the event
Source	The source that triggered the event. Sources include:
	Internal, Keypad, Local operator interface (iNodeConfig
	via USB), Modbus master, Plunger controller, Plunger
	controller application and Text message.
Туре	Each event gives a type description that includes: Alarm
	shut-in, Alarm text message sent, Analog alarm, Digital
	alarm, Digital input event, Error (SMS to email) sent,
	Error text message sent, Firmware upgrade, Low battery
	fault, Modem reset, Operation mode change, Response
	text message sent, Restart, RTU configured, Safety shut-
	in, Scheduled text message sent, Software reset, Text
	message log-in, Text message received, Time change and
	Valve change.
Reason	Each event gives a reason description that includes:
	Analog shut-in, Battery voltage high, Battery voltage
	low, Casing pressure high, Casing pressure low, Code
	from host, Code from SDCard, Configuration initialized,
	Differential pressure high, Differential pressure low,
	Digital overfide snut-in, Early arrival error, High casing
	tubing prossure. Injection prossure high Injection
	pressure low Invalid security code Keypad reset Line
	pressure high Line pressure low Line temperature high
	Line temperature low Logged in via email LOI reset
	Low tubing pressure Missing security code n/a New
	operation mode. LL tank New operation mode: manual
	New operation mode: other New operation mode:
	plunger. New operation mode: tank. New operation
	mode: timer. No error. OFF Button, ON Button, Plunger
	arrival, Plunger error, SMS security not enabled.
	Successful SMS log in, Tank level high, Tank level low,
	Tubing pressure high, Tubing pressure low, Valve closed
	and Valve opened.
Description	The description adds additional information for the event
-	if applicable.

## <u>Appendix A</u>

### Installing and starting iNodeConfig iC

The following is a description of the installation of *i*NodeConfig *i*C. The installation varies depending if the PC has a previous version of *i*NodeConfig *i*C installed. If there is a previous version installed it must first be removed. If there was no previous version, the USB hardware driver must be installed.

#### Removing a previous version of iNodeConfig iC

If there is a previous version of *i*NodeConfig *i*C on the PC, perform the following before proceeding, else proceed to "Install *i*NodeConfig *i*C":

- 1. Open Add or Remove Programs by clicking Start, Settings, Control Panel, Add or Remove Programs. Wait for the screen to populate with the installed software.
- 2. Scroll down to and click *i*NodeConfig *i*C.
- 3. Click the **Remove** button and then **Yes** to the question to remove or not. *i*NodeConfig *i*C will be removed.

#### Install iNodeConfig iC

1. Create a folder and load the new *i*NodeConfig *i*C software or insert the disk containing the software into your PC. The software files will typically be the following:

🗁 software		
<u> </u>	<u>T</u> ools <u>H</u> elp	
🛛 😋 Back 👻 🕤 👻 🥬 Sea	rch »	Address
Name 🔺	Size	Туре
📅 iNodeConfigIcSetup.msi	3,271 KB	Windows
E README.txt	3 KB	Text Doc
📸 setup.exe	336 KB	Applicati
•		►
3 objects 3.52 MB	🚽 My Computer	

- 2. Open the folder or disk and run "Setup.exe"
- 3. On the "Welcome to the *i*NodeConfig *i*C Setup Wizard" screen click Next.



4. On the "Select Installation Folder" screen click Next.

👹 iNodeConfig iC	_ 🗆 🗙
Select Installation Folder	
The installer will install iNodeConfig iC to the following folder.	
To install in this folder, click "Next". To install to a different folder, enter it be	elow or click "Browse".
<u>E</u> older:	
C:\Program Files\Ferguson Beauregard\iNodeConfig iC\	B <u>r</u> owse
	Disk Cost
Install iNodeConfig iC for yourself, or for anyone who uses this computer:	
◯ Just <u>m</u> e	
Cancel < <u>B</u> ack	Next >

5. On the "Confirm Installation" screen click Next.



6. An installation screen for iNodeConfig will follow. When complete the "Installation Complete" screen will be shown. Click Close and the installation of *i*NodeConfig *i*C will be complete. A new "*i*NodeConfig *i*C" icon will appear on your PC's desktop. NOTE: If the USB hardware driver has not been installed and this is a new installation, proceed to "Installing the USB hardware driver" before starting *i*NodeConfig *i*C.

🖓 iNodeConfig iC	_ 🗆 🗙
Installation Complete	
iNodeConfig iC has been successfully installed.	
Click "Close" to exit.	
Please use Windows Update to check for any critical updates to the .NET Framework	ırk.
Cancel < <u>B</u> ack.	<u>C</u> lose

#### Installing the USB hardware driver

If this is a new installation of *i*NodeConfig *i*C on the PC, the installation is not complete. Continue on to the following steps. If *i*NodeConfig *i*C had been previously installed and then removed for this update, the installation is complete and you can run *i*NodeConfig iC.

- 1. Connect the ACiC USB port to the PC USB connector with a USB cable.
- 2. In the lower right of the PC screen a series of "found new hardware" icons will display and disappear.
- 3. The "Found New Hardware Wizard" screen will be displayed. Click on the "No, not this time" selection and click **Next**.

Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard
	Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). <u>Read our privacy policy</u>
	Can Windows connect to Windows Update to search for software?
	○ Yes, this time only
	C Yes, now and every time I connect a device
	No, not this time
	Click Next to continue.
	< Back. Next > Cancel

4. On the next screen click "Install from a list or specific location (Advanced)" and then click **Next**.



5. On the next screen choose "Include this location in the search:" and choose one of the following options to define the location that contains the driver:

a. Enter "C:\Program Files\Ferguson Beauregard\ iNodeConfig iC" into the box to the left of the **Browse** button and click **Next**, or

Plea	se choose your search and installation options.
¢	<ul> <li>Search for the best driver in these locations.</li> </ul>
	Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
	🔲 Search removable <u>m</u> edia (floppy, CD-ROM)
	✓ Include this l <u>o</u> cation in the search:
	C:\Program Files\Ferguson Beauregard\iNodeConfig 🗾 Browse
¢	Don't search. I will choose the driver to install.
	Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
	< Back Next > Cancel

b. Click the **Browse** button. Using the "Browse for folders" screen find the directory my computer, local disk, program files, Ferguson Beauregard, *i*NodeConfig *i*C. Click on the "iNodeConfig iC" so that the folder icon is pictured as open. Click **OK**. Click **Next** on the resulting screen as above.

Br	owse For Folder	? ×
	Select the folder that contains drivers for your hardware	e.
		_
	🛨 🧰 FB iMonitoring	▲
	🖃 🚞 Ferguson Beauregard	
	iNodeConfig	
	🕀 🗁 iNodeConfig iC	
	🕀 🚞 FunWebProducts	
	🕀 🛅 Google	
	🕀 🚞 IHS Energy	<b>-</b>
	• • • • • • • • • • • • • • • • • • •	
	To view any subfolders, click a plus sign above.	
	OK Cancel	

6. If the PC has had a previous installation of iNodeConfig and the USB driver has been changed you may get a screen similar to the following. Choose "C:\Program Files\Ferguson Beauregard\iNodeConfig iC\fbimon_install.inf" and click Next.

ardware Update \	Vizard
Please select t	he best match for your hardware from the list below.
<b>)</b> FB i	Monitoring ACP/SDB
lanufacturer	Location
BiMonitoring	c:\windows\inf\oem21.inf
•	
	Const. Nexts. Const.
	S DACK NEXT > Lance

7. A warning screen will appear concerning "compatibility testing", click **Continue Anyway** and the installation process will continue.

Hardwa	re Installation
!	The software you are installing for this hardware: FB iMonitoring ACiC/level 1 has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway

8. After the file installation process is complete, click **Finish** on the resulting screen.



9. Open *i*NodeConfig *i*C by clicking the icon. *i*NodeConfig *i*C will open with the following screen.

🕴 iNodeConfig iC	:				
<u>F</u> ile <u>V</u> iew <u>T</u>	ools <u>H</u> elp				
inrm 🔹 🕸	40			ESN:	Connect
Devices Tree	Find				1
ESN	Туре	Name	Accessed	IP Address	
USB					
∲ [2BAD 4ACE	ACIC: L1				

10. Double click on the AC*i*C entry displayed on the screen. *i*NodeConfig *i*C will connect and the AC*i*C opening screen will be displayed as shown below.

30	tta Config Timers Overrides Input Config Schedu	le   Alarms   Cell Modem   Users   System   Events			
-	a 🔉 🔚 Trends: 🛄 🛄 Data Loop: 🛄 🛄				
Ξ	Analog inputs		2		
	Tank level	144.3803			
	Casing pressure	72,19279			
	Differential pressure	72.19279			
	Line pressure	144.3803			
	Line temperature	4/.16124			
	Lubing pressure	47.16124			
=	Arrival History				
	Fast arrival count	0			
	Good arrival count	0			
	No arrival count	347			
	Slow arrival count	0			
Ξ	Digital inputs				
	Alam input	Disabled			
	High line pressure input	Disabled			
	Off input	Disabled			
	On input	Disabled			
	Plunger input	Inactive			
	Shut-in input	Disabled			
Ξ	Plunger Run Times				
	Average plunger run time	00:00:00			
	Plunger run time 1	00:00:00			
	Plunger run time 2	00:00:00			
	Plunger run time 3	00:00:00			
	Plupaceup time /	0.0.00			

Figure 19. *i*NodeConfig *i*C Opening Screen