Manual No: **576013-623** • Revision: **AE**

Software Version X32

# TLS-3XX Series Consoles

## System Setup Manual

VEEDER-ROOT

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### DAMAGE CLAIMS / LOST EQUIPMENT

Thoroughly examine all components and units as soon as they are received. If any cartons are damaged or missing, write a complete and detailed description of the damage or shortage on the face of the freight bill. The carrier's agent must verify the inspection and sign the description. Refuse only the damaged product, not the entire shipment.

Veeder-Root must be notified of any damages and/or shortages within 30 days of receipt of the shipment, as stated in our Terms and Conditions.

### VEEDER-ROOT'S PREFERRED CARRIER

1. Contact Veeder-Root Customer Service at 800-873-3313 with the specific part numbers and quantities that were missing or received damaged.
2. Fax signed Bill of Lading (BOL) to Veeder-Root Customer Service at 800-234-5350.
3. Veeder-Root will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

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1. It is the customer's responsibility to file a claim with their carrier.
2. Customer may submit a replacement purchase order. Customer is responsible for all charges and freight associated with replacement order. Customer Service will work with production facility to have the replacement product shipped as soon as possible.
3. If "lost" equipment is delivered at a later date and is not needed, Veeder-Root will allow a Return to Stock without a restocking fee.
4. Veeder-Root will NOT be responsible for any compensation when a customer chooses their own carrier.

### RETURN SHIPPING

For the parts return procedure, please follow the appropriate instructions in the "General Returned Goods Policy" pages in the "Policies and Literature" section of the Veeder-Root **North American Environmental Products** price list. Veeder-Root will not accept any return product without a Return Goods Authorization (RGA) number clearly printed on the outside of the package.

## 7 In-Tank Setup

# Figures



# Tables

# 1 Introduction

This manual lists programming instructions for every available TLS-3XX Console Setup Function. The manual is divided into sections for each Setup Function beginning with Section 5, System Setup. Depending on your console type and its installed features, you may only see (and be able to program) some of the Functions and/or Steps. Skip over the material in this manual that does not apply to your particular installation. You cannot perform these setup procedures until the console, probes, and sensors have been installed and connected.

## Contractor Certification Requirements

Veeder-Root requires the following minimum training certifications for contractors who will install and setup the equipment discussed in this manual:

**Installer (Level 1) Certification:** Contractors holding valid Installer Certification are approved to perform wiring and conduit routing; equipment mounting; probe, sensor and carbon canister vapor polisher installation; wireless equipment installation; tank and line preparation; and line leak detector installation.

**ATG Technician (Level 2/3 or 4) Certification:** Contractors holding valid ATG Technician Certifications are approved to perform installation checkout, startup, programming and operations training, system tests, troubleshooting and servicing for all Veeder-Root Series Tank Monitoring Systems, including Line Leak Detection. In addition, Contractors with the following sub-certification designations are approved to perform installation checkout, startup, programming, system tests, troubleshooting, service techniques and operations training on the designated system.

- Wireless 2
- Tall Tank

**VR Vapor Products Certification:** Contractors holding a certification with the following designations are approved to perform installation checkout, startup, programming, system tests, troubleshooting, service techniques and operations training on the designated system.

- ISD – In Station Diagnostics
- PMC – Pressure Management Control
- CCVP - Veeder-Root Vapor Polisher
- Wireless – ISD/PMC Wireless
- A current Veeder-Root Technician Certification is a prerequisite for the VR Vapor Products course.

**Warranty Registrations** may only be submitted by selected Distributors.

## Related Manuals

| | |
|---|---|
| 576013-610 | TLS-3XX Series Consoles Operator's Manual |
| 576013-879 | TLS-3XX Series Consoles Site Prep Manual |
| 577013-874 | Maintenance Service Code Quick Help |

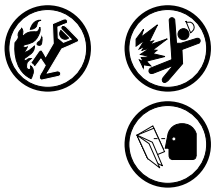
## Safety Precautions

The following safety symbols may be used in this manual to alert you to important safety hazards and precautions.

| | | | |
|---|---|---|---|
|  | **EXPLOSIVE**<br>Fuels and their vapors are extremely explosive if ignited. |  | **FLAMMABLE**<br>Fuels and their vapors are extremely flammable. |
|  | **TURN POWER OFF**<br>Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit. |  | **READ ALL RELATED MANUALS**<br>Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does. |
|  | **ELECTRICITY**<br>High voltage exists in, and is supplied to, the device. A potential shock hazard exists. |  | **WARNING**<br>Heed the adjacent instructions to avoid damage to equipment, property, environment or personal injury. |

## Safety Warnings

**⚠ WARNING**



**This system operates near highly combustible fuel storage tanks.**

**FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.**

**Leaking tanks can create serious environmental and health hazards. Improper programming and operation may also result in equipment self-test failures and submersible pump shutdowns. It is the owner's responsibility to:**

1. **Ensure that this equipment is properly programmed.**
2. **Promptly investigate any alarm conditions.**
3. **Operate this equipment in accordance with the instructions in this manual.**

# 2 Front Panel Keypads

You use the front panel keypads to enter information into the system.

## Arrangement of Keys

The keypads (see Figure 2-1) consist of two groups of 12 keys. The functions for each key have been established to make movement within the setup mode, entry of setup data, and selection of setup choices as simple as possible

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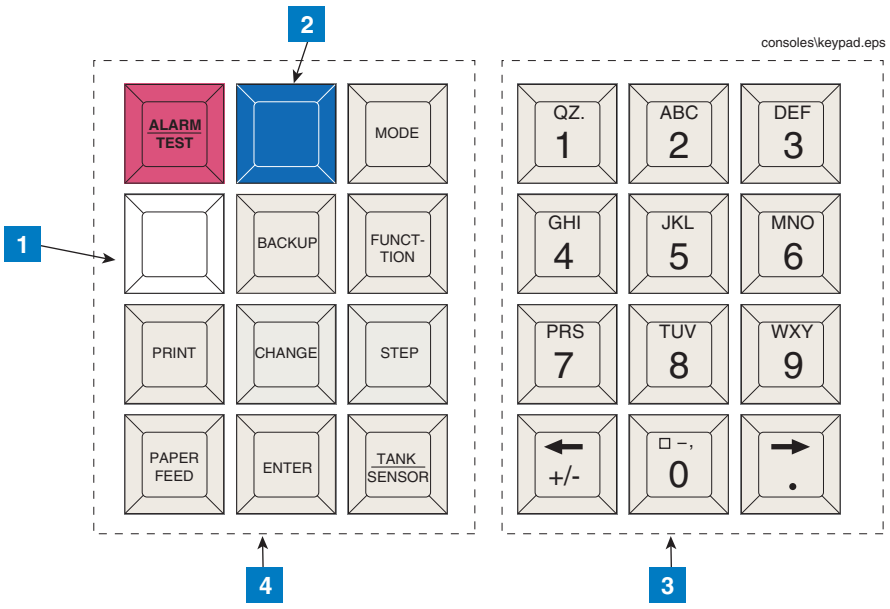



**Legend for numbered boxes:**

1. Maintenance Report (white) key
2. Maintenance Tracker (blue) key
3. Alphanumeric keypad
4. Operating keypad

**Figure 2-1. Console Keypads**

### OPERATING KEYS

The 12 left-hand keys are operating keys. They allow you to access and print data, start and stop in-tank leak test procedures, program the system, test system operation and review diagnostic information. (See “Using the Operating Keys” on page 2-2.)

### ALPHANUMERIC KEYS

The 12 right-hand keys have alphanumeric and cursor movement functions for entering setup information.

If a numeric value is required for entry of a particular setup parameter, the keys provide only numeric functions. If either alphabetic or numeric characters may be entered, the keys provide both alphabetic and numeric functions. (See “Using the Alphanumeric Keys” on page 2-3).

### BLUE KEY (MAINTENANCE TRACKER - TLS-350 ONLY)

Contractor plugs a valid ID Key into the TLS and presses the blue key to log in for a work session. Note: This key is available in consoles with Version 27 and higher software. In addition to certain hardware requirements, the Maintenance Tracker feature must be enabled for this key to function.

### WHITE KEY (MAINTENANCE REPORT - TLS-350 ONLY)

Press the white key to printout up to the last 75 maintenance history records. Additional records going back up to 3 years are also selectable. Note: This key is available in consoles with Version 27 and higher software and is functional only if the Maintenance History or Maintenance Tracker feature enabled.

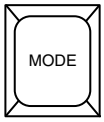
## Using the Operating Keys

Operating key functions are summarized below.


**ALARM/TEST**

Shuts off audible alarm and clears alarms that have returned to normal condition. Will not shut off display indicators or disable alarm function. If your system has a printer, it will print an alarm or warning report when this button is pressed.

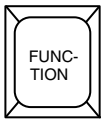
Used to activate and de-activate output relays when OUTPUT RELAY TEST function is used.




**MODE**

Select operating modes: Normal Mode, Setup Mode, Diagnostic Mode.

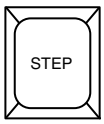
If MODE is pressed while in a Function or Step, the system will advance to the next MODE.




**FUNCTION**

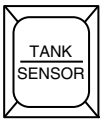
The FUNCTION key is used to scroll through and access functions within a MODE.

If FUNCTION is pressed while in a STEP, the system will advance to the next FUNCTION.



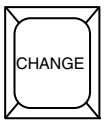

**STEP**

Use the STEP key to move from one procedure to the next within a FUNCTION.



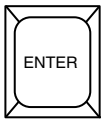

**TANK/SENSOR**

The TANK/SENSOR key is used to advance by tank or sensor through setup procedures or displayed data.




**CHANGE**

CHANGE is used in Normal and Setup modes to enter data, revise existing data or change an entry.



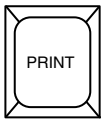

**ENTER**

ENTER completes a selection or enters data into a function. It is also used to start certain functions such as leak tests.


**BACKUP**

BACKUP lets you move back through STEPS, FUNCTIONS and MODES to access data or entries you have already passed in the normal progression. It eliminates the need to move completely through a function or mode to access a step recently passed.

BACKUP will move through the hierarchy of commands as follows: through STEPS within a FUNCTION to that FUNCTION; then back through FUNCTIONS to MODE; then back through MODES.




**PRINT**

Press PRINT to generate inventory, delivery, leak test, status, setup, diagnostic and alarm history reports.

## Using the Alphanumeric Keys

You use alphanumeric keys to enter data during the setup process. When a numeric value is required (i.e.gallons, time, etc.), the keys provide only a numeric function. When you can enter either alphabetic or numeric characters (i.e. station headers, sensor locations, etc.), the keys provide both functions.

## ENTERING ALPHANUMERIC DATA

Keys 0 through 9 provide both alphabetic and numeric capability by activating each character shown on the key with successive pushes of the key. Table 2-1 shows characters assigned to each of the numeric keys for all languages except Japanese, Russian, Turkish, and Greek.

**Table 2-1.- Character Assignments for Numeric Keys**

| Key | 1st Key Press | 2nd Key Press | 3rd Key Press | 4th Key Press | 5th Key Press |
|---|---|---|---|---|---|
| Key 0 | 'space' | '-' | ',' | '0' | '*' |
| Key 1 | 'Q' | 'Z' | '.' | '1' | '&'[1] |
| Key 2 | 'A' | 'B' | 'C' | '2' | '='[1] |
| Key 3 | 'D' | 'E' | 'F' | '3' | '%'[1] |
| Key 4 | 'G' | 'H' | 'I' | '4' | |
| Key 5 | 'J' | 'K' | 'L' | '5' | |
| Key 6 | 'M' | 'N' | 'O' | '6' | |
| Key 7 | 'P' | 'R' | 'S' | '7' | |
| Key 8 | 'T' | 'U' | 'V' | '8' | |
| Key 9 | 'W' | 'X' | 'Y' | '9' | |

[1]Character only available when entering the Modem Setup String.

For example, to enter an "A" in a station header, which accepts either alphabetic or numeric characters, you press the 2 key once. Push the key again to change the character to a "B", again to enter a "C", and again to enter a "2".

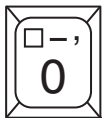
The period (.) is on key "1".

When the correct selection is displayed, press the → key to move the cursor to the next position and enter the required character as described. When all the characters have been entered, press ENTER.

If you enter an incorrect character, you may use the arrow keys to move the cursor to the character, press CHANGE, and enter the correct character.

## SPECIAL CHARACTERS AND CURSOR MOVEMENT

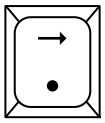
Several keys let you enter special characters and move the cursor as follows:



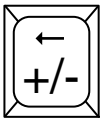

The Zero key has a comma (,) plus two special characters that can be used in making alphanumeric entries. They are:

□ = Space (no character)

– = Dash (a "*" character is generated by pressing this key 5 times).




The Right-Arrow key lets you advance the cursor to the right when making alphanumeric entries such as station headers and when selecting certain parameters such as module configurations. The step-by-step setup instructions will identify when this function should be used. The **.** (decimal) is used in numeric entries as required. It is not used as a period for text entries.




The Left-Arrow key lets you move the cursor to the left.

The +/- is used to identify a positive or negative value.

# 3 Setup Mode Organization

The Setup Mode is used to enter information and operating parameters that govern the way your system monitors your installation. Setup data is entered via the front panel keypads. The previous section describes in detail the functions of each key.

## Functions

Functions are the major groups in the Setup Mode of the console.

IMPORTANT! The list below contains all of the available Setup Mode functions. However, only the functions relevant to your console and its installed options and connected detection systems will be accessible in setup.

- System Setup
- Communications Setup
- In-Tank Setup
- Fuel Management Setup
- In-Tank Leak Test Setup
- Pressure Line Leak Setup
- WPLLD Line Leak Setup
- Line Leak Detector Setup [VLLD]
- Line Leak Test Setup
- Line Leak Lockout Setup
- Pump Sensor Setup
- Pump Relay Monitor Setup
- Reconciliation Setup
- Liquid Sensor Setup
- Vapor Sensor Setup
- Groundwater Sensor Setup
- 2-Wire C.L. Sensor Setup
- 3-Wire C.L. Sensor Setup
- External Input Setup
- Output Relay Setup
- PLLD Line Disable Setup
- WPLLD Line Disable Setup
- Line Disable Setup [VLLD]
- Smart Sensor Setup
- VMC Setup
- Archive Utility

## Steps

Within each FUNCTION are STEPS at which you enter setup data.

## Setup Mode Programming Table

The table below takes you through the complete setup mode as it appears in the console display with all features installed (all choices may not appear on your TLS). Always press the ENTER key after entering data. If you press the STEP, FUNCTION, or MODE key without pressing ENTER, the data will not be saved. It is a good idea to print

a setup report for record keeping purposes after completing your system's setup. In the System Setup Table below, ↓FUNCTION or ↓STEP refers to pressing that key on the front panel.

### Setup Mode Table

↓FUNCTION **SYSTEM SETUP**

- ↓STEP System Language - English/ and second language as ordered
- ↓STEP System Units (U.S./Metric/Imperial Gallons)
- ↓STEP Date/Time Format
- ↓STEP Set Month Day Year
- ↓STEP Set Time
- ↓STEP Station Header Line 1 (Line 2/Line 3/Line 4)
- ↓STEP Shift #1 Start Time (Shift 2/Shift 3/Shift 4)
- ↓STEP Shift BIR Printouts (Enable/Disable)
- ↓STEP Daily BIR Printouts (Enable/Disable)
- ↓STEP Ticketed Delivery (Enable/Disable)
- ↓STEP TC Ticketed Delivery (Enable/Disable)
- ↓STEP Close Day Of Week
- ↓STEP Daily Dlvy Var Rpts (Disable/Enable)
- ↓STEP Weekly Dlvy Var Rpts (Disable/Enable)
- ↓STEP Periodic Dlvy Var Rpts (Disable/Enable)
- ↓STEP Daily Book Dlvy Var Rpts (Disable/Enable)
- ↓STEP Weekly Book Dlvy Var Rpts (Disable/Enable)
- ↓STEP Periodic Book Dlvy Var Rpts (Disable/Enable)
- ↓STEP Daily Var Analy Rpts (Disable/Enable)
- ↓STEP Weekly Var Analy Rpts (Disable/Enable)
- ↓STEP Periodic Var Analy Rpts (Disable/Enable)
- ↓STEP Tank Per Tst Needed Wrn (Disable/Enable)
- ↓STEP Tank Per Tst Needed Wrn Days
- ↓STEP Tank Per Tst Needed Alm Days
- ↓STEP Tank Ann Tst Needed Wrn Days
- ↓STEP Tank Ann Tst Needed Alm Days
- ↓STEP Line Reenable Method (Pass Line Test/Alarm Acknowledge)
- ↓STEP Line Per Tst Needed Wrn (Disable/Enable)
- ↓STEP Line Per Tst Needed Wrn Days
- ↓STEP Line Per Tst Needed Alm Days
- ↓STEP Line Ann Tst Needed Wrn (Disable/Enable)
- ↓STEP Line Ann Tst Needed Wrn Days
- ↓STEP Line Ann TsT Needed ALM Days
- ↓STEP Remote Printer Page Eject
- ↓STEP Print Tc Volume
- ↓STEP Temp Compensation
- ↓STEP Tanker Load Report
- ↓STEP Stick Height Offset (Disable/Enable)
- ↓STEP Ullage (90%/95%)
- ↓STEP H-Protocol Data Format
- ↓STEP Precision Test Duration (12 - 744 hrs [w/o CSLD]/12 - 744 hrs [w/CSLD])

↓STEP 0.2 gph (0.76 lph) Line Test Auto-Confirm (Enable/Disable)
↓STEP 0.1 gph (0.38 lph) Line Test Auto-Confirm (Enable/Disable)
↓STEP Daylight Savings Time (Disable/Enable)
↓STEP HRM-QPLD Printouts (Enable/Disable)
↓STEP Re-direct Local PrintouT (Enable/Disable)
↓STEP Euro Protocol Prefix
↓STEP Bdim Trans Alarm Delay
↓STEP System Security Code
↓STEP Maintenance History (Enable/Disable)
↓STEP Tank Chart Security
↓STEP Custom Alarms
↓STEP Service Notice
↓STEP System Beeper
↓STEP Mass/Density
↓STEP Fiscal Height Security

↓FUNCTION **COMMUNICATION SETUP**
↓STEP Comm Board Port Settings - Repeat for each board (Baud Rate/Parity/Stop Bit/Data Length/ Dial Type/Answer On/Code/Modem Setup String/Dial Tone Interval/DTR Normal State
↓STEP Auto Transmit Setup (Transmit Message Setup/Auto-Transmit Delay Time/Auto-Transmit Repeat Time)
↓STEP Phone Directory Setup
↓STEP Auto Dial Setup
↓STEP Auto Dial Alarm
↓STEP RS-232 End Of Message

↓FUNCTION **IN-TANK SETUP**
↓STEP Tank Config Module 1 (Up To 3)
↓STEP Product Label
↓STEP Product Code
↓STEP Thermal Coeff.
↓STEP Tank Density
↓STEP Tank Diameter
↓STEP Tank Profile (1 Pt/4 Pts/20 Pts/linear/50 Pts)
↓STEP Full Volume
↓STEP Meter Data Present
↓STEP Vapor Loss Factor
↓STEP End Factor (None/Flat/Hemispherical/Other)
↓STEP End Value
↓STEP Calibration Update
↓STEP Float Size
↓STEP Water Warning Limit (Not Active For Tanks With High Alcohol Probes)
↓STEP High Water Limit (Not Active For Tanks With High Alcohol Probes)
↓STEP Water Alarm Filter (Not Active For Tanks With High Alcohol Probes)
↓STEP Max Or Label Volume
↓STEP Overfill Limit
↓STEP High Product
↓STEP Delivery Limit

↓STEP Low Product
↓STEP Leak Alarm Unit
↓STEP Sudden Loss Limit
↓STEP Tank Tilt
↓STEP Probe Offset
↓STEP Siphon Manifolded
↓STEP Line Manifolded
↓STEP Leak Minimum Periodic
↓STEP Leak Minimum Annual
↓STEP Periodic Test Type
↓STEP Annual Test Fail Alarm
↓STEP Periodic Test Fail Alarm
↓STEP Gross Test Fail Alarm
↓STEP Annual Test Averaging
↓STEP Periodic Test Averaging
↓STEP Tank Test Notify
↓STEP Tank Test Siphon Break
↓STEP Stick Offset
↓STEP Delivery Delay
↓STEP Pump Threshold

↓FUNCTION **FUEL MANAGEMENT SETUP**

↓STEP Delivery Warn Days XX.X
↓STEP Fuel Management Auto Print
↓STEP Average Daily Sales

↓FUNCTION **IN-TANK LEAK TEST SETUP**

↓STEP Test Method (Single Tank/All Tanks)
↓STEP Test Frequency (On Date/Annually [Month/Week, Day]/Monthly [Week, Day]/Weekly [Day]/ Daily/ Auto [If line leak or pump sense]/CSLD - if enabled [Prob. Detect.(9%/99%)]/Climate Factor [Moderate/Extreme])
↓STEP Gross Test Auto-Confirm (If CSLD select with Pump Sense)
↓STEP Test Start Time
↓STEP Leak Test Rate (0.2gph [0.76 lph]/0.1 gph [0.38 lph])
↓STEP Test Duration
↓STEP Leak Test Early Stop
↓STEP Report Only - if CSLD selected (Disabled/End of Month/Day 15 and End of Month/Day 25 and End of Month)
↓STEP Leak Test Report Format (Normal/Enhanced)

↓FUNCTION **PRESSURE LINE LEAK SETUP**

↓STEP Line Config. - Module 1 ( up to 3)
↓STEP Pressure Line Label
↓STEP Piping Type
↓STEP Line Length
↓STEP User Defined Pipe Type - If selected in Piping Type (1st Line Length/2nd Line Length - if necessary/1st Bulk Modulus/2nd Bulk Modulus- if necessary/Thermal Coeff.)
↓STEP Thermal Coefficient - If certain piping types selected
↓STEP 0.2 gph (0.76 lph) Line Leak Test Scheduling (Disabled/Repetitive/Monthly/Manual)

↓STEP 0.1 gph (0.38 lph) Line Leak Test SchedulingTest (Disabled/Repetitive/Auto/Manual)
↓STEP Passive 0.1 gph (0.38 lph) Line Leak Testing (if certain pipe type selections made and 0.1 gph line leak test shedule selection is auto)
↓STEP Shutdown Rate (3.0 gph [11.3 lph]/0.2 gph [0.76lph]/0.1 gph [0.38 lph]/None)
↓STEP Low Pressure Alarm Shutoff (No/Select Value)
↓STEP Select Tank - in which PLLD controlled pump is installed (None/Select Number)
↓STEP Dispense Mode (Standard/Manifold:Alternate/Manifold:Sequential/Manifold:All Pumps)
↓STEP Pressure Transducer (Non-Vented/Vented/High Pressure)
↓STEP Pressure Offset Value
↓STEP Mechanical Blender
↓STEP Blend Partners

↓FUNCTION **WPLLD LINE LEAK SETUP**
↓STEP Line Config. Module 1 ( up to 3)
↓STEP WPLLD Line Label
↓STEP Piping Type
↓STEP Line Length
↓STEP 0.2 gph (0.76 lph) Test (Disabled/Repetitive/Monthly/Manual)
↓STEP 0.1 gph (0.38 lph) Test (Disabled/Auto/Manual)
↓STEP Shutdown Rate (3.0 gph [11.3 lph]/0.2 gph [0.76lph]/0.1 gph [0.38 lph]/None)
↓STEP Dispense Mode (Standard/Manifold:Alternate/Manifold:Sequential/Manifold:All Pumps)
↓STEP Pressure Offset Value

↓FUNCTION **LINE LEAK DETECTOR SETUP (Volumetric)**
↓STEP Line Config. Module 1 ( up to 8)
↓STEP Enter Pipe Label
↓STEP Tank #
↓STEP Dispense Mode (Standard/Manifold:Alternate/Manifold:Sequential/Manifold:All Pumps)
↓STEP Fuel Type (Gasoline/Diesel)
↓STEP 2-inch (50mm) Piping Length
↓STEP 3-inch (76mm) Piping Length
↓STEP Pipe Type (Steel/Fiberglass/2-wall Fiberglass/Flexible)
↓STEP Pump Pressure
↓STEP Shutdown Rate (3.0 gph [11.3 lph]/0.2 gph [0.76lph]/0.1 gph [0.38 lph])
↓STEP Pumpside Test
↓STEP Wait Mode (Temp. Meas./Vol. Chg. Meas.)
↓STEP NPB Partner

↓FUNCTION **LINE LEAK TEST SETUP**
↓STEP Leak Test Method (All Lines/Single Line)
↓STEP Test Frequency (On Date/Annually [Month/ Week, Day]/Monthly [Week, Day]/ Weekly [Day]/ Daily)
↓STEP Leak Test Start Time
↓STEP Test Rate (0.2 gph [0.76 lph]/0.1 gph [0.38 lph])

↓FUNCTION **LINE LEAK LOCKOUT SETUP**
↓STEP Lockout Schedule (Daily [Start Time/Stop Time]/ Individual [Start Day/Time/Stop Day/Time])

| | | |
|---|---|---|
| ↓FUNCTION | **PUMP SENSOR SETUP** | |
| | ↓STEP | Pump Sense Config. Module 1 ( up to 8) |
| | ↓STEP | Select Tank |
| | ↓STEP | Dispense Mode (Standard/Manifold:Alternate/Manifold:Sequential/Manifold:All Pumps) |
| ↓FUNCTION | **PUMP RELAY MONITOR SETUP** | |
| | ↓STEP | Pump Relay Config. Module 1 ( up to 8) |
| | ↓STEP | Enter Pump Monitor Label |
| | ↓STEP | Select Pump Relay (None/PumpSense/PLLD/WPLLD/VLLD/Relay [Pump Control Output only]) |
| | ↓STEP | Stuck Delay - 5 - 600 sec (Visible only if Relay assigned) |
| | ↓STEP | Select Max Run Time - 1 - 24 hr (Visible If None was selected for Pump Relay) |
| ↓FUNCTION | **RECONCILIATION SETUP** | |
| | ↓STEP | Dispenser Module Data String |
| | ↓STEP | Automatic Daily Closing Time |
| | ↓STEP | Auto Shift #1 Closing Time |
| | ↓STEP | Auto Shift #2 Closing Time |
| | ↓STEP | Auto Shift #3 Closing Time |
| | ↓STEP | Auto Shift #4 Closing Time |
| | ↓STEP | Periodic Reconciliation Mode (Monthly/Rolling [Length]) |
| | ↓STEP | Periodic Reconciliation Alarm (Disabled/Enabled) |
| | ↓STEP | Periodic Reconciliation Alarm Threshold |
| | ↓STEP | Periodic Reconciliation Offset |
| | ↓STEP | Remote Report Format (Line/Column) |
| | ↓STEP | Temp Compensation (Standard/TC Vol) |
| | ↓STEP | Meter Calibration Offset |
| | ↓STEP | Modify Tank/Meter Map |
| ↓FUNCTION | **LIQUID SENSOR SETUP** | |
| | ↓STEP | Sensor Config. - Module 1 (up to 8) |
| | ↓STEP | Sensor Location |
| | ↓STEP | Sensor Types (Tri-State/NC/Dual Float Hydrostatic/Dual Float Discriminating/Dual Float High Vapor/Interceptor) |
| | ↓STEP | Category (Annular Space/Dispenser Pan/Monitor Well/STP Sump/Piping Sump/Other) |
| ↓FUNCTION | **VAPOR SENSOR SETUP** | |
| | ↓STEP | Sensor Config. - Module 1 (up to 8) |
| | ↓STEP | Sensor Location |
| | ↓STEP | Sensor Threshold |
| | ↓STEP | Category (Annular Space/Dispenser Pan/Monitor Well/STP Sump/Piping Sump/Other) |
| ↓FUNCTION | **GROUNDWATER SENSOR SETUP** | |
| | ↓STEP | Sensor Config. - Module 1 (up to 8) |
| | ↓STEP | Sensor Location |
| | ↓STEP | Category (Annular Space/Dispenser Pan/Monitor Well/STP Sump/Piping Sump/Other) |

↓FUNCTION **2-WIRE CL SENSOR SETUP**

- ↓STEP Sensor Config. - Module 1 (up to 8)
- ↓STEP Sensor Location
- ↓STEP Sensor Types (Discrim. Interstitial/Ultra 2)
- ↓STEP Category (Annular Space/Dispenser Pan/Monitor Well/STP Sump/Piping Sump/Other)

↓FUNCTION **3-WIRE CL SENSOR SETUP**

- ↓STEP Sensor Config. - Module 1 (up to 8)
- ↓STEP Sensor Location
- ↓STEP Sensor Mode (Standard/High Vapor)
- ↓STEP Category (Annular Space/Dispenser Pan/Monitor Well/STP Sump/Piping Sump/Other)

↓FUNCTION **EXTERNAL INPUT SETUP**

- ↓STEP Input Config. - Module 1 (up to 8)
- ↓STEP Input Name
- ↓STEP External Input Type (Standard [NO/NC]/Generator [Select Orientation (NO/NC)/Generator Tank [All Tanks/By Tank]/Pump Sense [Select Orientation (NO/NC)/Select Tank (Tank #/None)/Dispense Mode [Standard/Manifold:Alternate/Manifold:Sequential/Manifold:All Pumps])
- ↓STEP Standard ACK (NO/NC)

↓FUNCTION **OUTPUT RELAY SETUP**

- ↓STEP Relay Config. - Module 1 (up to 8)
- ↓STEP Enter Relay Designation
- ↓STEP Select Relay Type (Standard [NO/NC]/Pump Control Output [Select Tank (None/Tank #)]/ Momentary [NO/NC]/Pump Comm Control [Select Tank (None/Tank #)])
- ↓STEP Relay Assignments - for each relay except Pump Comm Control types (In-Tank Alarms [None/All /Single]/ Liquid Sensor Alarms [None/All /Single]/ Vapor Sensor Alarms [None/All /Single]]/ External Inputs [None/All /Single]]/ Line Leak Alarms - VLLD [None/All /Single]/ Groundwater Alarms [None/All /Single]/ 2-Wire CL (Type A) Alarms [None/All /Single]/ 3-Wire CL (Type B) Alarms [None/All /Single]/ Power Side DIM Alarms [None/All /Single]/ Reconciliation Alarms [None/All /Single]/ PLLD Alarms [None/All /Single]/ WPLLD Alarms [None/All /Single]/ Comm Side DIM Alarms [None/All /Single]/ Pump Relay Monitor Alarms [None/All /Single]

↓FUNCTION **PLLD LINE DISABLE SETUP**

- ↓STEP Relay Assignments - for each relay except Pump Comm Control types (In-Tank Alarms [None/All /Single]/ Liquid Sensor Alarms [None/All /Single]/ Vapor Sensor Alarms [None/All /Single]]/ External Inputs [None/All /Single]]/ Line Leak Alarms - VLLD [None/All /Single]/ Groundwater Alarms [None/All /Single]/ 2-Wire CL (Type A) Alarms [None/All /Single]/ 3-Wire CL (Type B) Alarms [None/All /Single]/ Power Side DIM Alarms [None/All /Single]/ Reconciliation Alarms [None/All /Single]/ PLLD Alarms [None/All /Single]/ WPLLD Alarms [None/All /Single]/ Comm Side DIM Alarms [None/All /Single]/ Pump Relay Monitor Alarms [None/All /Single]

↓FUNCTION **WPLLD LINE DISABLE SETUP**

- ↓STEP Relay Assignments - for each relay except Pump Comm Control types (In-Tank Alarms [None/All /Single]/ Liquid Sensor Alarms [None/All /Single]/ Vapor Sensor Alarms [None/All /Single]]/ External Inputs [None/All /Single]]/ Line Leak Alarms - VLLD [None/All /Single]/ Groundwater Alarms [None/All /Single]/ 2-Wire CL (Type A) Alarms [None/All /Single]/ 3-Wire CL (Type B) Alarms [None/All /Single]/ Power Side DIM Alarms [None/All /Single]/ Reconciliation Alarms [None/All /Single]/ PLLD Alarms [None/All /Single]/ WPLLD Alarms [None/All /Single]/ Comm Side DIM Alarms [None/All /Single]/ Pump Relay Monitor Alarms [None/All /Single]

| | | |
|---|---|---|
| ↓FUNCTION | **LINE DISABLE SETUP (VLLD)** | |
| | ↓STEP | Relay Assignments - for each relay except Pump Comm Control types (In-Tank Alarms [None/ All /Single]/ Liquid Sensor Alarms [None/All /Single]/ Vapor Sensor Alarms [None/All /Single]]/ External Inputs [None/All /Single]]/ Groundwater Alarms [None/All /Single]/ 2-Wire CL (Type A) Alarms [None/All /Single]/ 3-Wire CL (Type B) Alarms [None/All /Single]/ Power Side DIM Alarms [None/All /Single]/ Reconciliation Alarms [None/All /Single]/ PLLD Alarms [None/All / Single]/ WPLLD Alarms [None/All /Single]/ Comm Side DIM Alarms [None/All /Single]/ Pump Relay Monitor Alarms [None/All /Single] |
| ↓FUNCTION | **SMART SENSOR SETUP** | |
| | ↓STEP | SS Config. - Module 1 (up to 8) |
| | ↓STEP | Enter SmartSensor Label |
| | ↓STEP | Select SS Category (Air Flow Meter[ISD System Device - ref. manual 577013-800]/ Vapor Pressure [ISD System Device - ref. manual 577013-800]/ Mag Sensor/ Vac Sensor/ ATMP Sensor/ Uknown) |
| ↓FUNCTION | **VMC SETUP** | |
| | ↓STEP | Add/Edit/Remove VMC Serial Number |
| ↓FUNCTION | **ARCHIVE UTILITY** | |
| | ↓STEP | Save Setup Data |
| | ↓STEP | Restore Setup Data |
| | ↓STEP | Clear Setup Data |

# 4 Prior to Applying AC Power to the Console

Please read this section before applying AC power to the console.

## Security Code Enable/Disable

Access to all setup functions through either the front panel and/or the RS-232 interface can be restricted by the use of security codes. Once this feature has been activated, only persons knowing the user-designated codes may enter or change any setup values.

This feature will prevent unauthorized persons from intentionally or accidentally entering or changing setup values.

Two separate Security Codes may be entered—one to restrict access to the Setup Mode from the front-panel keyboard and another to restrict remote access through the RS-232 interface.

Open the left front panel door and locate the slide switch for the battery and the DIP switch. See appropriate figure for your console (Figure 4-1 - Figure 4-3).

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IMPORTANT! DIP switch #2 controls the power to the front-panel display and must be in the OPEN position!

If you want to *enable* the security code feature and require entering of the security code(s) for front-panel and/or RS-232 system setup access, make sure that switches #3 and/or #4 on DIP switch S2 are in the Closed position.

If you want to *disable* the security code feature and allow front panel and RS-232 system setup access, make sure that switches #3 and #4 on DIP switch S2 are both in the OPEN position.

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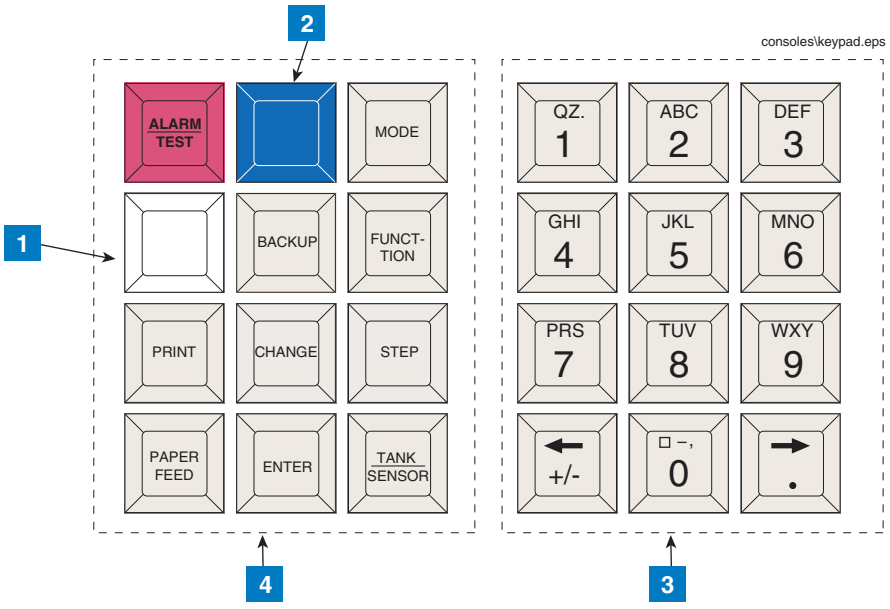
If you want to disable the security code feature and allow front panel and RS-232 system setup access, make sure that switches #1 and #2 on DIP switch SW2 are both in the OPEN position.

If you want to enable the security code feature and require entering of the security code(s) for front-panel and/or RS-232 system setup access, make sure that switches #1 and/or #2 on DIP switch SW2 are in the Closed position.

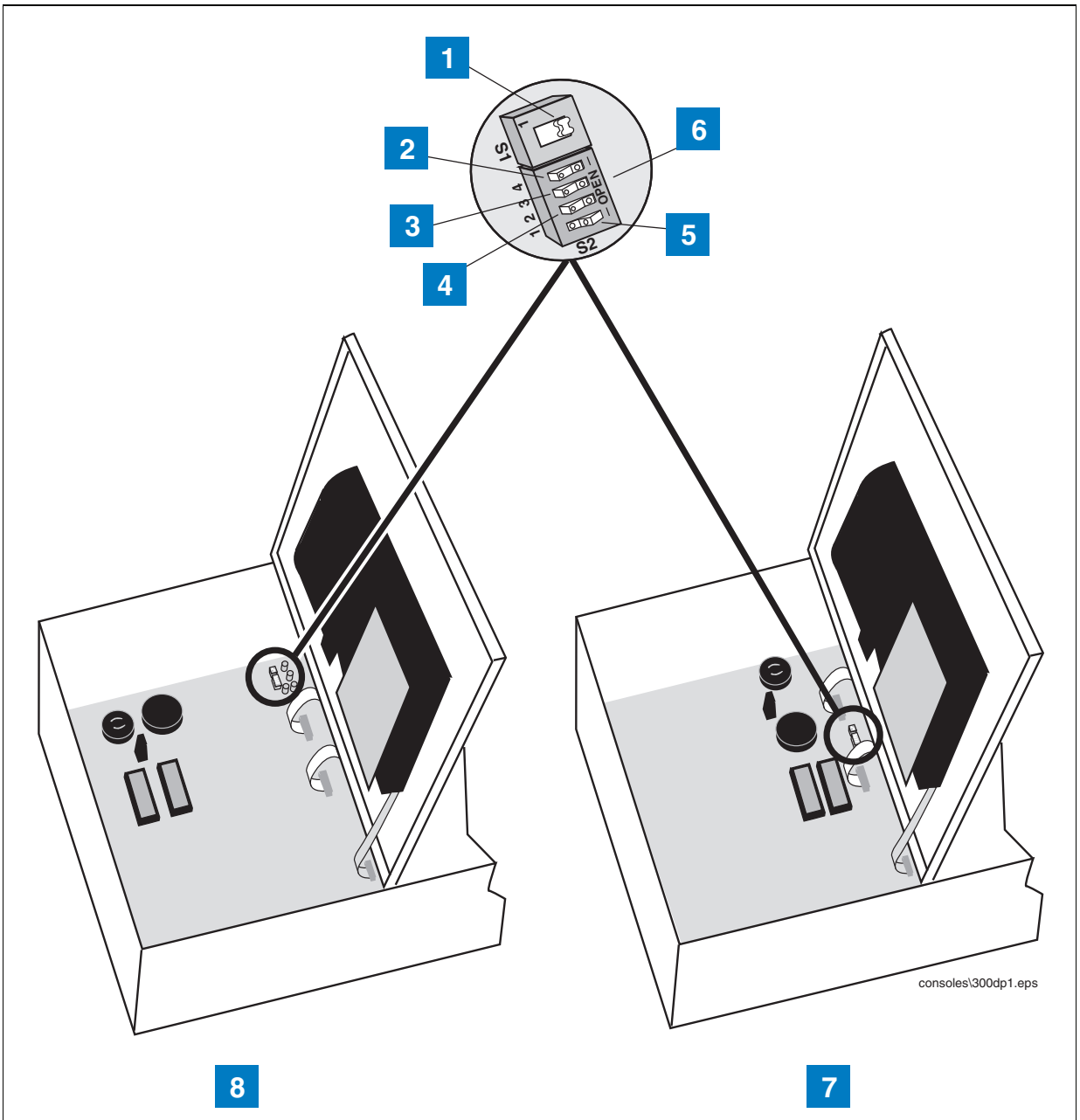
IMPORTANT! DIP switch #3 controls the power to the front-panel display and must be in the OPEN position! When switch #3 is closed, the console display remains blank. For international operation only! - set DIP switch 3 to the Closed position to enable HRM.

DIP switch #4 is not used at this time and may be in either position. DIP switch #1 is not used at this time and may be in either position.




**Legend for numbered boxes:**

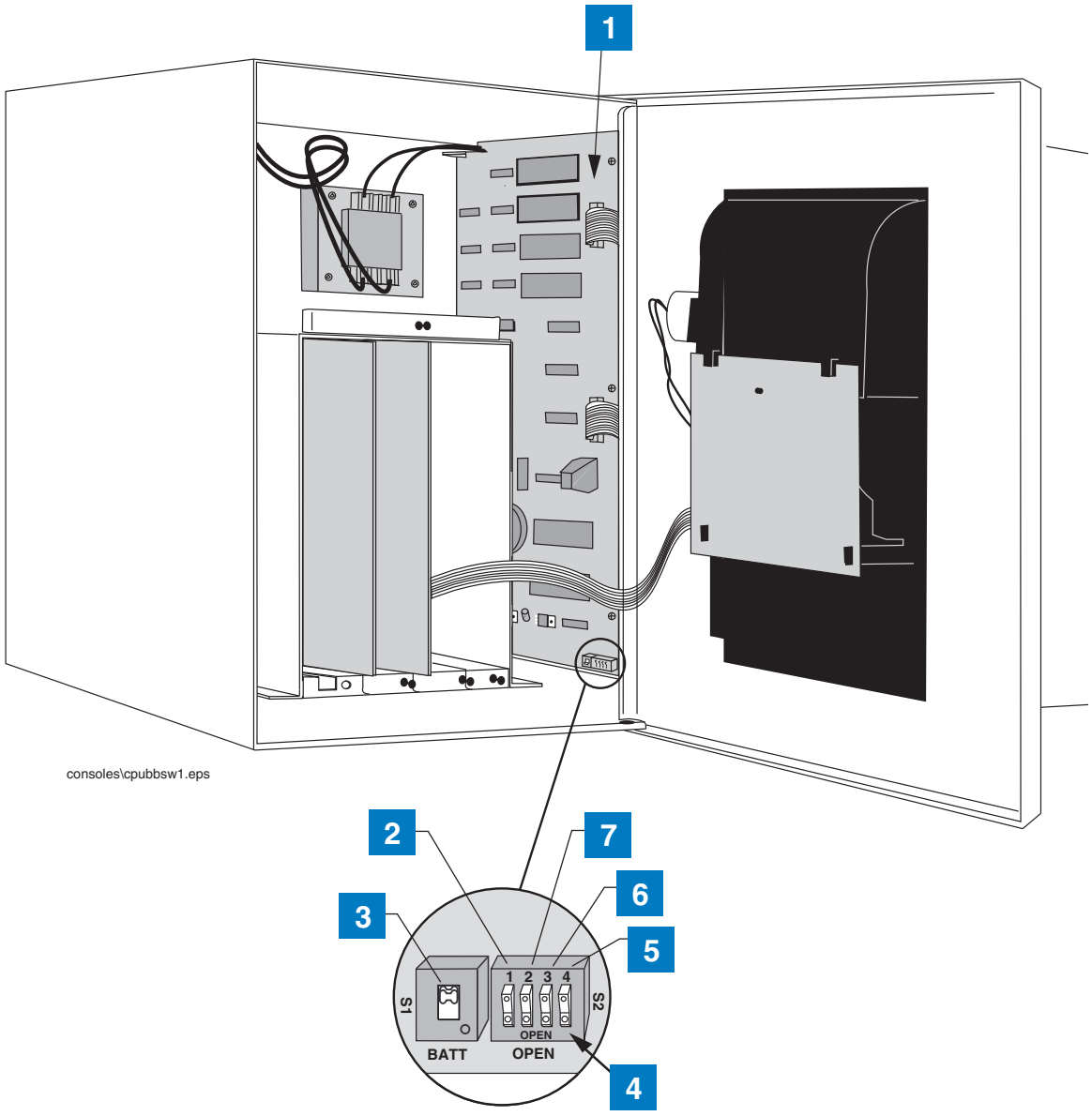
1. Maintenance Report (white) key
2. Maintenance Tracker (blue) key
3. Alphanumeric keypad
4. Operating keypad




**Legend for numbered boxes:**

1. Battery Backup Switch (S1) shown in OFF position
2. Front Panel Security Code (DIP Switch 4)
3. RS-232 Security Code (DIP Switch 3)
4. Front Panel Display (DIP Switch 2)
5. DIP switch 1 can be in either position - It is shown in closed position (open side up, number side down)
6. Switch (S2)
7. S1 and S2 Locations in Consoles with Through-Hole Mount CPU Board
8. S1 and S2 Locations in Consoles with Surface Mount CPU Board

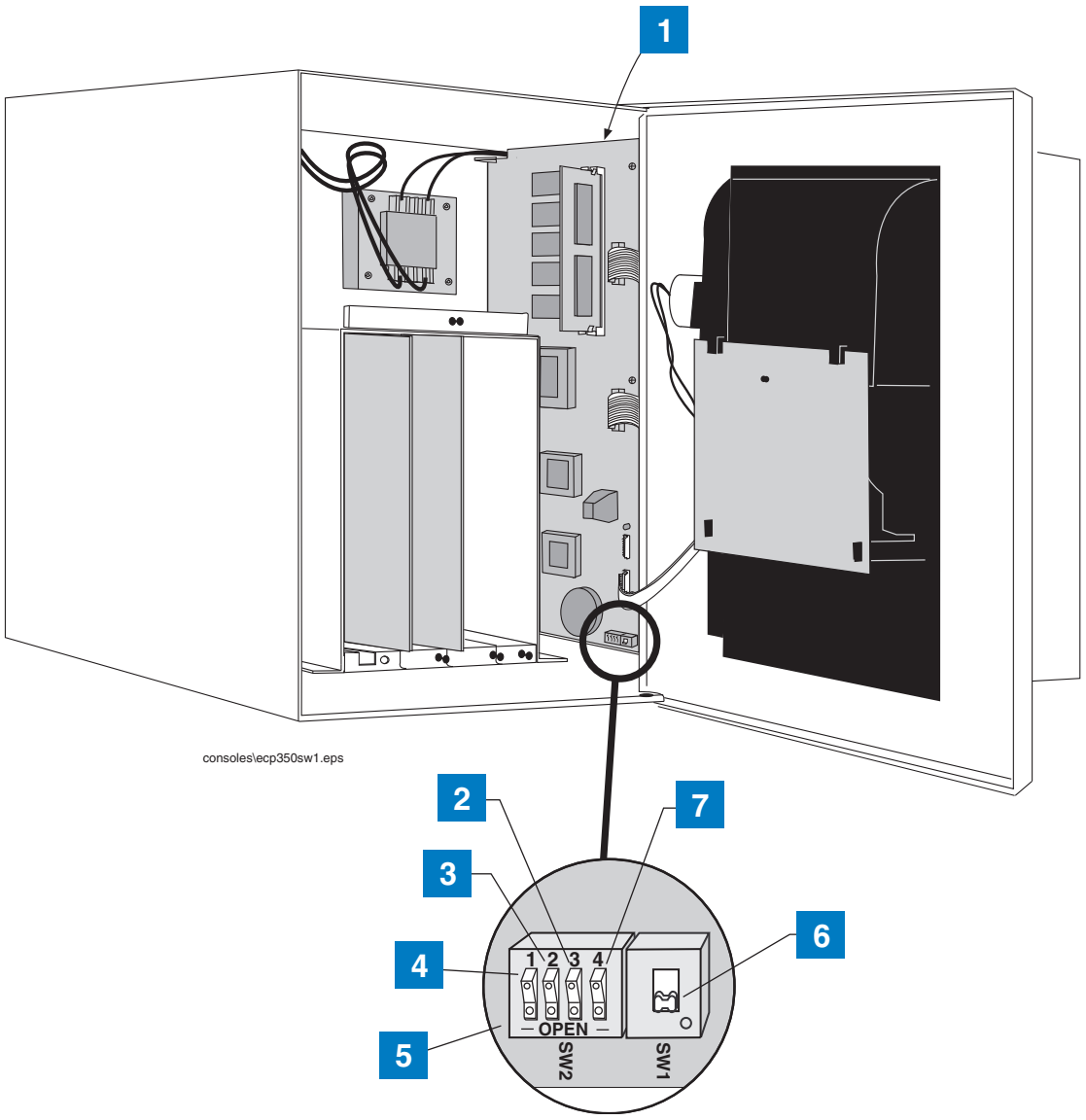
**Figure 4-1. Battery Backup Switch and DIP Switch Location - TLS-300 Console**




**Legend for numbered boxes:**

1. CPU Board
2. Front Panel Security Code (DIP Switch 1)
3. Battery Backup Switch (S1) - Shown in ON position (up)
4. DIP switches: 1 - 4 shown in the OPEN position (open end down, number end up)
5. DIP Switch 4 (not used)
6. Front Panel Display (DIP Switch 3)
7. RS-232 Security Code (DIP Switch 2)

**Figure 4-2. Battery Backup Switch and DIP Switch Location TLS-350 Consoles with CPU Board**




**Legend for numbered boxes:**

1. ECPU board
2. View Front Panel Display (DIP Switch 3)
3. RS-232 Security Code (DIP Switch 2)
4. Front Panel Security Code (DIP Switch 1)
5. DIP switches: 1 - 4 shown in the OPEN position (open end down)
6. Battery Backup Switch (SW1)- Shown in OFF position (down)
7. DIP Switch 4 (not used)

**Figure 4-3. Battery Backup Switch and DIP Switch Location TLS-350 Consoles with ECPU Board**

## Battery Backup

The system is equipped with an internal backup battery to protect all setup and operating data in the event of an AC-power interruption.

The system is shipped from the factory with the Battery Backup slide switch in the OFF position. Make sure this switch is in the OFF position before applying AC power to the console.

## Applying AC Power to the Console

1. Open the left front door of the console. With the Battery Backup switch in the OFF position, turn On AC power to the console.
2. The console front panel display will cycle through the following screens: (NOTE: if you enabled the HRM feature, the system date/time format will default to DD-MM-YY HH:MM:SS).




The display below appears only if you have one of the modem modules or WPLLD installed:



The message below appears in consoles with Archive Utility feature only. For more information about saving and restoring system setup data, refer to “Archive Utility” on page 28-1.


At this point the ALARM audible beeper and front panel light will begin turning on and off, and the printer will printout:

```
**** SYSTEM RESET ****
MMM DD, YYYY HH:MM XM
```

and the front panel display will read:

```
MMM DD, YYYY  HH:MM:SS  XM
BATTERY IS OFF
```

3. Press the ALARM/TEST key to silence the audible alarm. Slide the Battery Backup switch (S1 or SW1) to the ON position. After a few seconds, the alarm light will go out and the front panel display will read:

```
MMM DD, YYYY  HH:MM:SS  XM
ALL FUNCTIONS NORMAL
```

4. You can now begin the System Setup procedure.

# 5 System Setup

## Programming Guidelines

This manual details setup procedures for every available console Function within the Setup Mode. The manual is divided into sections for each Function as they appear on the display, beginning with Section 5, System Setup through Section 26, Archive Utility. Depending on your console type and its installed features, you may only see (and be able to program) some of the Functions and/or Steps. Just skip over the material in this manual that doesn't apply to your installation. The screen examples shown in this manual, are in U.S. units. However, Metric or Imperial units would appear if either of those choices were selected in the System Units step.

- **Programming Instructions.** All the programming instructions in this manual assume that this is a **first-time (cold-start) setup**.
- **Sample Screens.** The screens that are shown in these setup procedures display factory-set values or choices. If you change these settings as you set up the system for your application, your setup values or choices will appear in the display when the Setup Mode is re-entered.
- **Key Functions.** The keys used to revise any setting are the same as used during initial programming, although the key sequences may change.
- **Multiple Choice Entries.** The setup procedure mentioned in this manual instructs you to press the STEP key to accept a default value and move to the next setup parameter. When you are offered multiple choices, press the CHANGE key to display these alternate choices, and the ENTER key to confirm the choice you decide upon.

## Automatic Return to Operating Mode

The system will automatically return to the Operating Mode status display in 15 minutes if no activity takes place while the system is in the Setup Mode. Mark where you are in the setup sequence if you are going to be away for longer than this.

## Setup Data Warning

When you exit the Setup Mode, a Setup Data Warning will appear in the Status Display and the yellow warning light will flash if insufficient or invalid setup data has been entered. In systems equipped with a printer, a Setup Data Warning report will also be printed.

The display and report will identify the source of the warning (i.e. Tank 1, Sensor 4, etc.), and the warning indicators will remain active until the cause has been corrected.

## Printing a Setup Data Report

You should print and save a setup data report once all setup procedures are complete. This report will be a record of all setup values entered into this system and save valuable time if system memory is lost due to a simultaneous interruption of AC and battery power, or due to a problem within the system.

To print a Setup Data Report, press the MODE key to display the Setup Mode main screen (see below), then press the PRINT key.

```
SETUP MODE
PRESS <FUNCTION> TO CONT
```

## Selecting the System Setup Function

Press MODE to select the Setup Mode, then press FUNCTION until you see the message:

```
SYSTEM SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## System Language

If necessary, press STEP until you see the message:

```
SYSTEM LANGUAGE
ENGLISH
```

Once you choose a language, the system displays and prints all information in that language. Available language choices depend on the language set specified when the system was ordered. The available language sets are:

- English/Dutch
- English/French
- English/Finnish
- English/German
- English/Greek
- English/Italian
- English/Japanese
- English/Polish
- English/Portuguese
- English/Russian
- English/Spanish
- English/Swedish
- English/Turkish

To choose English, press STEP. (The system displays the SYSTEM UNITS message.) NOTE: When using the English/Japanese language set with a remote printer, you must set the printer's data bit-per-character switch to 8 bits.

To choose an alternate language, press CHANGE, in response to the SYSTEM LANGUAGE message, and press ENTER. The system displays the message:

```
[Selected Language]
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## System Units

If necessary, press STEP until you see the message:

```
SYSTEM UNITS
U.S.
```

You can set the system units to U.S. units (gallons, gal/hour, inches, °F), metric units (litres, litres/hour, millimeters, °C), or imperial gallons (imperial gallons, imp. gal/hour, inches, °F). If the HRM feature was enabled, the default units will be metric.

NOTE: If you change the System Units after entering other quantitative setup values, the system converts values to the new units. The Date format also changes according to your selection of System Units.

To choose U.S. units, press STEP. (The system displays the SET DATE message.)

To choose metric, press CHANGE in response to the SYSTEM UNITS message and press ENTER. To choose imperial gallons, press CHANGE twice in response to the SYSTEM UNITS message and press ENTER. The system confirms your choice with the message:

**[Selected Units]**
**PRESS <STEP> TO CONTINUE**

Press STEP to continue.

## Setting the Date and Time Format

If necessary, press STEP until you see the message:

**SYSTEM DATE/TIME FORMAT**
**MON DD, YYYY HH:MM:SS xM**

To accept the format shown, press STEP. (The system displays the SET TIME message).

Available date/time formats are:

- MON DD YYYY HH:MM:SS (APR 01 2002 10:02:30)
- MM-DD-YY HH:MM:SS xM (04-01-02 10:02:30 AM); xM is AM or PM
- MM-DD-YY HH:MM:SS (04-01-02 10:02:30)
- DD-MM-YY HH:MM:SS (01-04-027 10:02:30)
- YY-MM-DD HH:MM:SS (02-04-01 10:02:30)

Press CHANGE until the desired format is shown, then press ENTER. Press STEP to continue.

## Current Date

If necessary, press STEP until you see the message:

**SET: MONTH DAY YEAR**
**DATE: XX/XX/XXXX**

To accept the date shown, press STEP. (The system displays the SET TIME message).

To change the date shown, press CHANGE, enter the correct date by first entering the month then the day then the year following the format shown on the display, then press ENTER. The system confirms your entry with the message:

**DATE: XX/XX/XXXX**
**PRESS <STEP> TO CONTINUE**

Press STEP to continue.

## Current Time

If necessary, press STEP until you see the message:

```
SET TIME
TIME: XX:XX AM PM
```

To accept the time shown, press STEP. (The system displays the ENTER STATION HEADER message.)

To set a different time, press CHANGE and enter the correct time from 12:00 to 11:59 then am or pm. (Press the Left or Right Arrow to select AM or PM). Press ENTER. The system confirms your entry with the message:

```
TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Report Headers

If necessary, press STEP until you see the message:

```
ENTER STATION HEADER
#1:
```

NOTE: The header can be up to four lines with 20 characters per line. Use the header to identify site location, telephone number, etc. (See “Using the Alphanumeric Keys” on page 2-3 for instructions on how to enter alphanumeric data.)

If you do not want a header for reports, press STEP. The system displays the SHIFT START TIME message.)

To create a header, press CHANGE in response to the ENTER STATION HEADER message. Enter up to 20 characters for the first line. Press ENTER. The system confirms your entry with the message:

```
#1: [1st Line Of Header]
PRESS <STEP> TO CONTINUE
```

To enter additional header lines, press STEP and repeat the above procedure up to three more times for lines 2, 3, and 4. When you finish entering the header, press STEP to continue.

## Shift Start Times

If necessary, press STEP until you see the message:

```
SHIFT #1 START TIME
TIME: DISABLED
```

Setting shift start times can ease shift changes and improve fuel inventory management. At each programmed time, the system automatically prints a complete inventory report and stores it in memory.

NOTE: At least one Shift Start Time must be entered to activate the “Last Shift Inventory” feature. If you have fewer than three shifts and wish to receive a day-end inventory report at the end of the final shift, use the next shift start time as the day-end time. The system automatically prints a final inventory.

To leave a shift start time disabled, press STEP. (The system displays the SHIFT START TIME message for the next shift.)

To set a start time for shift 1, press CHANGE, and enter the shift 1 start time. Press the Left or Right Arrow to select AM or PM. Then press ENTER. The system confirms your entry with the message:

```
TIME: XX:XX:XM
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the SHIFT START TIME message for the next shift:

```
SHIFT #2 START TIME
TIME: DISABLED
```

Repeat the above procedures to enter or disable start times for shifts 2, 3, and 4.

## Shift BIR Printouts

If necessary, press STEP until you see the message:

```
SHIFT BIR PRINTOUTS
ENABLED
```

Shift BIR Printouts enabled causes a BIR report to print at the end of every shift. If you want a BIR printout at the conclusion of each shift, press STEP to continue. To disable Shift BIR Printouts, press CHANGE, ENTER, then STEP.

## Daily BIR Printouts

If necessary, press STEP until you see the message:

```
DAILY BIR PRINTOUTS
ENABLED
```

Daily BIR Printouts enabled causes a BIR report to print at the end of the day's last shift. If you want a BIR printout at the conclusion of the last shift, press STEP to continue. To disable Daily BIR Printouts, press CHANGE, ENTER, then STEP.

## Ticketed Delivery

If necessary, press STEP until you see the message:

```
TICKETED DELIVERY
DISABLED
```

When you enable ticketed delivery, you can manually enter ticketed volumes using the receipts from tank delivery trucks. To enter this data, use the Delivery Maintenance function in the Operating Mode. This feature generates reports showing delivery variances between ticketed volume and gauged volume, book variance, and variance analysis. To enable Ticketed Delivery, press CHANGE, ENTER, then STEP.

## TC Ticketed Delivery

If necessary, press STEP until you see the message:

```
TC TICKETED DELIVERY
DISABLED
```

If you enabled ticketed delivery, you can choose whether the values you enter are standard (gross) volumes or temperature-compensated (TC) volumes (see page 5-13 for a description of “Temperature Compensation Value”). For standard volumes, press STEP to leave TC Ticketed Delivery disabled. For TC volumes, press CHANGE, ENTER, then STEP.

## Close Day of Week

If necessary, press STEP until you see the message:

```
CLOSE DAY OF WEEK
SUN
```

If you enabled ticketed delivery, you can choose the last day of the weekly cycle for Variance Reports. (Close Day of Week is similar to “Automatic Daily Closing” on page 17-1.) Press CHANGE until the appropriate day appears, then press ENTER and STEP.

## Variance Reports

If you enabled ticketed delivery, you can print several different types of variance reports on demand from the Reconciliation Mode (Operating Mode). Variance reports are similar to the reconciliation reports generated for BIR, except they also show ticketed (book) delivery volume. Delivery Variance Reports show the difference between ticketed delivery and gauged delivery volumes. Book Variance Reports show the difference between book inventory and closing gauged volume. Variance Analysis Reports have the most detail because they summarize the Delivery and Book Variance Reports and show tank test results, line leak test results, and corrective actions.

You must enable variance reports before you can view or print them. They are available as daily, weekly, or periodic. The default for the period length is monthly; you can change it in “Periodic Reconciliation Mode” on page 17-2.

### DAILY DELIVERY VARIANCE REPORTS

If necessary, press STEP until you see the message:

```
DAILY DLVY VAR RPTS
DISABLED
```

To enable Daily Delivery Variance Reports, press CHANGE, ENTER, then STEP.

### WEEKLY DELIVERY VARIANCE REPORTS

If necessary, press STEP until you see the message:

```
WEEKLY DLVY VAR RPTS
DISABLED
```

To enable Weekly Delivery Variance Reports, press CHANGE, ENTER, then STEP.

## PERIODIC DELIVERY VARIANCE REPORTS

If necessary, press STEP until you see the message:

```
PERIODIC DLVY VAR RPTS
DISABLED
```

To enable Periodic Delivery Variance Reports, press CHANGE, ENTER, then STEP.

## DAILY BOOK VARIANCE REPORTS

If necessary, press STEP until you see the message:

```
DAILY BOOK VAR RPTS
DISABLED
```

To enable Daily Book Variance Reports, press CHANGE, ENTER, then STEP.

## WEEKLY BOOK VARIANCE REPORTS

If necessary, press STEP until you see the message:

```
WEEKLY BOOK VAR RPTS
DISABLED
```

To enable Weekly Book Variance Reports, press CHANGE, ENTER, then STEP.

## PERIODIC BOOK VARIANCE REPORTS

If necessary, press STEP until you see the message:

```
PERIODIC BOOK VAR RPTS
DISABLED
```

To enable Periodic Book Variance Reports, press CHANGE, ENTER, then STEP.

## DAILY VARIANCE ANALYSIS REPORTS

If necessary, press STEP until you see the message:

```
DAILY VAR ANALY RPTS
DISABLED
```

To enable Daily Variance Analysis Reports, press CHANGE, ENTER, then STEP.

## WEEKLY VARIANCE ANALYSIS REPORTS

If necessary, press STEP until you see the message:

```
WEEKLY VAR ANALY RPTS
DISABLED
```

To enable Weekly Variance Analysis Reports, press CHANGE, ENTER, then STEP.

### PERIODIC VARIANCE ANALYSIS REPORTS

If necessary, press STEP until you see the message:

```
PERIODIC VAR ANALY RPTS
DISABLED
```

To enable Periodic Variance Analysis Reports, press CHANGE, ENTER, then STEP.

## Tank Periodic Test Needed Warnings

If necessary, press STEP until you see the message:

```
TANK PER TST NEEDED WRN
DISABLED
```

The system monitors the amount of time since the last passed 0.2 gph (0.76 lph) tank test. By enabling the Tank Periodic Test Needed Warnings, you can have the system provide a warning when a tank test has not been passed, or conducted in a specified number of days (0 to 30), and activate an alarm if a test has not been passed after a warning, or a specified number of days.

### ENABLE TANK PERIODIC TEST NEEDED WARNINGS AND ALARMS

To enable Tank Test Needed Periodic Warnings, press STEP. The system displays the message:

```
TANK PER TST NEEDED WRN
DAYS = XX
```

Press CHANGE, and enter the number of days (0 to 30 days) after which you want the system to warn that a tank test has not been passed. Press ENTER. The system displays the message:

```
DAYS = XX
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the message:

```
TANK PER TST NEEDED ALM
DAYS = XX
```

Press CHANGE, and enter the number of days (0 to 30) after which you want an alarm if a test has not been passed. This number should be higher than the number you set for the periodic warning. Press ENTER. The system displays the message:

```
DAYS = XX
PRESS <STEP> TO CONTINUE
```

Press STEP. (The system displays the Tank Annual Test Needed Warnings message.)

### DISABLE TANK PERIODIC TEST NEEDED WARNINGS

To disable Tank Periodic Test Needed Warnings, press CHANGE in response to the Tank Annual Test Needed Warnings Enabled message. The system now displays:

```
TANK PER TST NEEDED WRN
DISABLED
```

Press ENTER. The system confirms your choice with the message:

```
DISABLED
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. (The system displays the Tank Annual Test Needed Warnings message.)

## Tank Annual Test Needed Warnings

If necessary, press STEP until you see the message:

```
TANK ANN TST NEEDED WRN
DISABLED
```

The system monitors the amount of time since the last passed 0.1 gph (0.38 lph) tank test. By enabling Tank Annual Test Needed Warnings, you can have the system provide a warning when a 0.1 gph (0.38 lph) tank test has not been passed or conducted in a specified number of days (0 to 365) and activate an alarm if a test has not been passed after a warning, or a specified number of days.

To keep Tank Annual Test Needed Warnings disabled, press STEP. (The system displays the Line Re-Enable Method message.)

### ENABLE TANK ANNUAL TEST NEEDED WARNINGS AND ALARMS

To enable Tank Annual Test Needed Warnings, press CHANGE. The system now displays:

```
TANK ANN TST NEEDED WRN
ENABLED
```

Press ENTER. The system confirms your choice with the message:

```
ENABLED
PRESS <STEP> TO CONTINUE
```

Press STEP. The system now displays:

```
TANK ANN TST NEEDED WRN
DAYS = XXX
```

Press CHANGE and enter the number of days after which you want the system to warn that a 0.1 gph (0.38 lph) tank test has not been passed (0 to 365). Press ENTER. The system displays the message:

```
DAYS = XXX
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the message:

```
TANK ANN TST NEEDED ALM
DAYS = XXX
```

The default value is 355 days. If you do not want to accept the default, press CHANGE. Enter the number of days after which you want the system to alarm if a test has not been passed (0 to 365). This number should be higher than the number you set for periodic warning. Press ENTER. The system displays the message:

```
DAYS = XXX
PRESS <STEP> TO CONTINUE
```

Press STEP. (The system displays the Line Re-Enable Method message.)

### DISABLE TANK ANNUAL TEST NEEDED WARNINGS AND ALARMS

To disable Tank Annual Test Needed Warnings that are already enabled, press CHANGE in response to the Tank Annual Test Needed Warnings Enabled message and press ENTER. The system confirms your choice with the message:

```
DISABLED
PRESS <STEP> TO CONTINUE
```

Press STEP continue. (The system displays the Line Re-Enable Method message.)

## Line Re-Enable Method

If necessary, press STEP until you see the message:

```
LINE RE-ENABLE METHOD
PASS LINE TEST
```

This feature lets you choose how to re-enable a line shut down by a failing line leak test. To re-enable a shutdown line only by a passed line test, press STEP. (The system displays the Line Periodic Test Needed Warning.)

To re-enable a shutdown line by acknowledging the alarm that caused the shutdown, press CHANGE and the system displays the message:

```
LINE RE-ENABLE METHOD
ACKNOWLEDGE ALARM
```

Press ENTER to confirm the choice and STEP to continue.

## Line Periodic Test Needed Warnings

If necessary, press STEP until you see the message:

```
LINE PER TST NEEDED WRN
DISABLED
```

The system monitors the amount of time since the last passed 0.2 gph (0.76 lph) line test. By enabling Line Periodic Test Needed Warnings, you can have the system provide a warning when a line test has not been passed,

or conducted in a specified number of days (0 to 30), and activate an alarm if a test has not been passed after a warning, or a specified number of days.

### ENABLE LINE PERIODIC TEST NEEDED WARNINGS AND ALARMS

To enable Line Periodic Test Needed Warnings, press CHANGE, ENTER, then STEP. The system displays the message:

```
LINE PER TST NEEDED WRN
DAYS = XXX
```

Press CHANGE, and enter the number of days (0 to 30 days) after which you want the system to warn that a periodic line test has not been passed. Press ENTER. The system displays the message:

```
DAYS = XXX
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the message:

```
LINE PER TST NEEDED ALM
DAYS = XXX
```

Press CHANGE, and enter the number of days (0 to 30) after which you want the system to alarm if a test has not been passed. This number should be higher than the number you set for the warning. Press ENTER. The system displays the message:

```
DAYS = XX
PRESS <STEP> TO CONTINUE
```

Press STEP. (The system displays the Line Annual Warnings message.)

### DISABLE LINE PERIODIC TEST NEEDED WARNINGS

To disable the line periodic warnings, press CHANGE in response to the Line Periodic Test Needed Warnings Enabled message. The system now displays:

```
LINE PER TST NEEDED WRN
DISABLED
```

Press ENTER. The system confirms your choice with the message:

```
DISABLED
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. (The system displays the Line Annual Test Needed Warnings message.)

## Line Annual Test Needed Warnings

If necessary, press STEP until you see the message:

```
LINE ANN TST NEEDED WRN
DISABLED
```

The system monitors the amount of time since the last passed 0.1 gph (0.38 lph) line test. By enabling Line Annual Test Needed Warnings, you can have the system provide a warning when a 0.1 gph line test has not been passed, or conducted in a specified number of days (0 to 365), and activate an alarm if a test has not been passed after a warning, or a specified number of days.

To keep Line Annual Test Needed Warnings disabled, press STEP. (The system displays the Remote Printer Page Eject or Print TC Volumes message.)

## ENABLE LINE ANNUAL TEST NEEDED WARNINGS AND ALARMS

To enable line annual warnings, press CHANGE. The system now displays:

```
LINE ANN TST NEEDED WRN
ENABLED
```

Press ENTER. The system confirms your choice with the message:

```
ENABLED
PRESS <STEP> TO CONTINUE
```

Press STEP. The system now displays:

```
LINE ANN TST NEEDED WRN
DAYS = XXX
```

Press CHANGE and enter the number of days after which you want the system to warn that a 0.1 gph (0.38 lph) line test has not been passed (0 to 365). Press ENTER. The system displays the message:

```
DAYS = XXX
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the message:

```
LINE ANN TST NEEDED ALM
DAYS = XXX
```

The default value is 355 days. If you do not want to accept the default, press CHANGE. Enter the number of days after which you want the system to alarm if a test has not been passed (0 to 365). This number should be higher than the number you set for periodic warning. Press ENTER. The system displays the message:

```
DAYS = XXX
PRESS <STEP> TO CONTINUE
```

Press STEP. (The system displays the Remote Printer Page Eject or Print TC Volumes message.)

## DISABLE LINE ANNUAL TEST NEEDED WARNINGS AND ALARMS

To disable Line Annual Test Needed Warnings that are already enabled, press CHANGE in response to the Line Annual Test Needed Warnings Enabled message and press ENTER. The system confirms your choice with the message:

```
DISABLED
PRESS <STEP> TO CONTINUE
```

Press STEP continue. (The system displays the Remote Printer Page Eject or Print TC Volumes message.)

## Remote Printer Page Eject

If necessary, press STEP until you see the message:

```
REMOTE PRINTER
PAGE EJECT
```

NOTE: This system feature is for systems equipped with a Remote Printer Interface Module and Remote Printer only.

Enabling this feature forces the printer to start each new report on a new page. If you disable this feature, new reports will print continuously on the same page as the previous report.

To have each new report begin on a new page, press CHANGE in response to the REMOTE PRINTER PAGE EJECT message. Then press ENTER. The system confirms your choice with the message:

```
PAGE EJECT ENABLED
PRESS <STEP> TO CONTINUE
```

## Print TC Volumes

If necessary, press STEP until you see the message:

```
PRINT TC VOLUMES
ENABLED
```

Use this display to enable or disable the display and printout of TC volumes. Press STEP to accept or CHANGE and ENTER to disable this feature. The system confirms your choice with the message:

```
DISABLED
PRESS <STEP> TO CONTINUE
```

## Temperature Compensation Value

The system allows you to enter the temperature compensation (TC) reference temperature for all volume calculations. This temperature is determined by your location. In the U.S., the reference temperature used to calculate TC volume is normally 60°F. In other countries, this value may differ. Canada, for example, uses 15°C.

Press STEP to display the message:

```
TEMP COMPENSATION
VALUE (DEG F): +060.0
```

**TLS-350R only–**If BIR is being used and the meters reporting the sales are temperature compensated, the value you enter must match the meters' reference temperature value. Also, in BIR setup, Temp Compensation must be set to TC VOLUME (see "Temp Compensation" on page 17-4).

LEAK CALCULATIONS NOTE: All leak calculations are based on the reference temperature you enter.

DENSITY CALCULATIONS NOTE: If you are using the Density/Mass feature, the reference temperature entered here is used in Density reporting.

To accept the default value of 60°F (15.6°C), press STEP.

To enter a different TC reference temperature, press CHANGE. Enter a value between 0 and 120°F (-17 to +49°C). Press ENTER to confirm your entry. The system displays:

```
VALUE (DEG F): +(TC Value)
PRESS <STEP> TO CONTINUE
```

## Tanker Load Report - International Option

The Tanker Load Report is an optional feature. In the ENABLE position, a report is printed after every tanker load is dispensed.

Press STEP to display the message:

```
TANKER LOAD REPORT
ENABLE
```

Press CHANGE to select DISABLE, then ENTER to not automatically print this report. See the Operating Mode charts in the Operator's Manual to print out a report when you want it.

## Stick Height Offset - International Option

The Stick Height Offset is a "reference only" height reading that allows a user- programmable offset to be entered that makes the probe height reading "appear" to be the same as the stick height reading. Stick height offset will not be used for volume calculation. If this feature is enabled, you must enter the stick height offset for each tank in the In-Tank Setup section of this manual ("Stick Offset (International Option)" on page 7-24).

Press STEP to display the message:

```
STICK HEIGHT OFFSET
DISABLED
```

Press CHANGE, ENTER, then STEP to enable this feature, or Press STEP to leave it disabled and continue.

## Ullage

Tank Ullage can be changed from the default value of 90 percent to 95 percent as required.

Press STEP to display the message:

```
ULLAGE
90 PERCENT
```

Press CHANGE, ENTER, then STEP to select 95%, or Press STEP to leave it at 90% and continue.

## H-Protocol Data Format - International Option

This feature is available only if there is an RS-232 or modem module installed in the console and H-protocol is used.

Press STEP to display the message:

```
H-PROTOCOL DATA FORMAT
HEIGHT
```

This option allows either Tank Height or Tank Volume data for H-protocol. On power up, this feature will default to HEIGHT for backward compatibility. Press CHANGE, then ENTER to change the default. Accept the default if you are not using H-protocol.

## Precision Test Duration (PLLD/WPLLD Only)

When optional 0.2 gph (0.76 lph) [PLLD and WPLLD] and 0.1 gph (0.38 lph) [PLLD only] line leak tests are enabled, this feature lets you extend the time between a passed test and running the next test from 12 hours (60 hours with CSLD option), up to a maximum of 744 hours (31 days).

Press STEP to display the message:

```
PRECISION TEST DURATION
HOURS: XXX
```

Press CHANGE, then enter the desired duration (from 12 up to 744 hours without the CSLD option, or from 60 up to 744 hours with the CSLD option), then press ENTER.

## Precision Line Test Auto-Confirm

These Auto-Confirm selections reduce the risks of false 0.2 and 0.1 gph (0.76 and 0.38 lph) line test results. However, enabling these options extends the time it takes to post line test results.

Press STEP to display the message:

```
0.2 GPH LINE TEST
AUTO-CONFIRM: ENABLED
```

This feature evaluates several individual 0.2 gph line tests before a result is posted. To leave Auto-Confirm enabled, press STEP: To disable Auto-Confirm, press CHANGE, ENTER.

Press STEP to display the message:

```
0.1 GPH LINE TEST
AUTO-CONFIRM: ENABLED
```

This feature evaluates several individual 0.1 gph line tests before a result is posted. To leave Auto-Confirm enabled, press STEP: To disable Auto-Confirm, press CHANGE, ENTER.

Press STEP to display the message:

```
PRINT PRECISION LINE
TEST RESULTS: DISABLED
```

To leave the printing of 0.2 and 0.1 gph test results disabled, press STEP: To enable these printouts, press CHANGE, ENTER.

## Daylight Savings Time

This feature allows you to enter Daylight Savings Start and End Dates/Times. Once enabled, the console will automatically adjust for daylight savings time on the dates and times you enter here.

Press STEP to display the message:

```
DAYLIGHT SAVINGS TIME
DISABLED
```

To leave Daylight Savings Time disabled, press STEP. To enable Daylight Savings Time, press CHANGE, ENTER, then STEP to display the Start Date message:

```
START DATE
APR   WEEK 1  SUN
```

Press CHANGE then ENTER to select another start date. Press ENTER to accept your selected Start Date. The Start Time message appears:

```
START TIME
TIME: 02:00 AM
```

Press CHANGE then ENTER to select another Start Time. Press ENTER to accept your selected Start Time. The End Date message appears:

```
END DATE
OCT   WEEK 6   SUN
```

Press CHANGE then ENTER to select another End Date. Press ENTER to accept your selected End Date. The End Time message appears:

```
END TIME
TIME:  02:00 AM
```

Press CHANGE then ENTER to select another End Time. Press ENTER to accept your selected End Time.

## Re-direct Local Printout

This feature is available only if there is an RS-232 or DIM card installed in the console and Gilbarco protocol is used.

Press STEP to display the message:

```
RE-DIRECT LOCAL PRINTOUT
DISABLED
```

This option allows you to send a printout to Gilbarco's printer instead of to the console's printer. The default for this feature is DISABLED. Press CHANGE, then ENTER to change the default to ENABLED. Accept the default if you are not using Gilbarco protocol.

## QPLD Monthly Printout - International Option

When the HRM feature is enabled, QPLD is automatically enabled and it will print out a report once a month. If this report is not required it may be disabled as follows.

Press STEP to display the message:

| QPLD MONTHLY PRINTOUT<br>ENABLED |
|---|

Press CHANGE to disable the report, then press ENTER.

## Euro Protocol Prefix

This feature is for European applications only. If necessary, press STEP until you see the message:

| EURO PROTOCOL PREFIX<br>S |
|---|

Accept the default **S** for the standard Euro Protocol command response prefix. Press CHANGE, then ENTER, to select **d** which is a special Euro Protocol command prefix.

## BDIM Trans Alarm Delay

If necessary, press STEP until you see the message:

| BDIM TRANS ALARM DELAY<br>HOURS: 024 |
|---|

BDIM Transaction Alarm Delay is available only if there is a Block DIM card installed in the console. This feature lets you enter a delay (of from 5 to 999 hours) before posting a Block DIM Transaction Alarm. Press CHANGE, enter the desired delay, then press ENTER to confirm your choice. Enter 000 to disable this feature.

## System Security Code

If necessary, press STEP until you see the message:

| SYSTEM SECURITY<br>CODE: 000000 |
|---|

The System Security Code is a 6-digit numeric code which should be known only to personnel responsible for the setup, management, and service of the system. If you enable the System Security Code, you will be required to enter this code before you can access any setup or diagnostic function.

If you do not want to enable the Security Code, the system setup is complete. Press FUNCTION to exit the System Setup function or press STEP to return to the SYSTEM LANGUAGE message.

To enable the System Security Code:

1. Follow the Security Code Enable/Disable procedure in the previous section to make the required DIP switch enable settings,

2. Press CHANGE in response to the first SYSTEM SECURITY CODE message. Enter any six digits for your code and press ENTER. The system confirms your entry with the message:

```
CODE: XXXXXX
PRESS <STEP> TO CONT
```

## Maintenance History

The Maintenance Report feature is available in the TLS-350 with version 27 software and a NVMEM 203 card installed.

Press STEP to display the message:

```
MAINTENANCE HISTORY
DISABLED
```

This feature maintains a rolling 3 year history of the following maintenance records:

- Active Alarm (alarm post) – alarm type and number, device number, active date/time. This includes protected maintenance alarms.
- Inactive Alarm (alarm clear) – alarm type and number, device number, inactive date/time. This includes protected maintenance alarms.
- Maintenance History enable - date/time of enable
- Maintenance History disable –date/time of disable
- Service codes – service code, date/time entered (Note: Service codes can be found in the Maintenance Service Code Quick Help (P/N 577013-874)
- Last Monthly Fullest Periodic Tank Test Passed – tank number, start date/time
- Last Monthly PLLD 0.2 GPH Test Passed – tank number, date/time entered (record added at 1st of month)
- Last Monthly WLLD 0.2 GPH Test Passed – tank number, date/time entered (record added at 1st of month)
- Last Monthly VLLD 0.2 GPH Test Passed – tank number, date/time entered (record added at 1st of month)

The default for this feature is DISABLED. Press CHANGE, then ENTER to change the default to ENABLED.

## Tank Chart Security

If necessary, press STEP until you see the message:

```
TANK CHART SECURITY
PRESS <ENTER>
```

Press ENTER to continue:

| | |
|---|---|
| **TANK CHART SECURITY**<br>**CODE : 000000** | This display appears if a passcode has not been entered (default). All zeros disables Tank Chart Security. |
| **TANK CHART SECURITY**<br>**ENTER PASSCODE->_____<** | This display appears if Tank Chart Security is enabled - a passcode other than all zeros has been entered. Enter the 6-digit numeric passcode and press ENTER. |

If you have not entered a passcode, press CHANGE and enter a 6-digit numeric passcode, then press ENTER to accept your entry:

**CODE: ******
**PRESS <STEP> TO CONTINUE**

Press STEP to continue.

**CONSOLE SERIAL NUMBER:**
**S/N : (serial number)**

If necessary, press CHANGE and enter the TLS Console serial number from the label on the bottom of the console. Press ENTER to accept your entry. Press STEP to continue:

**WEIGHTS AND MEASURES:**
**W&M: (weights and measures)**

If necessary, press CHANGE and enter the Weights and Measures office number. Press ENTER to accept your entry. Press STEP to continue.

## Custom Alarm Labels

If necessary, press STEP until you see the message:

**CUSTOM ALARM LABELS**
**PRESS <ENTER>**

This step allows you to enter up to 16 custom labels and indications per alarm (one per device with a maximum of 16 devices), for up to 10 alarms, for a maximum of 160 labels, each up to 19 characters in length, and each with its own indication set. Only alarms that applicable to your site's equipment configuration and features can be customized.

Your custom labels replace the system generated display/print alarm labels that are used in display messages, printouts, and RS-232 reports only. Alarm labels used in Autodial, Output Relay, WPLLD, PLLD, and VLLD line disable setups, shown in the Autodial Alarm Label column of Table 5-1, will not change.

After you have made a custom label change, you also select a custom indicator set for that alarm which determines what console indicator(s) are activated when the alarm is posted:

- LCD: Display in the front panel screen - yes / no
- Print: yes / no
- Beep: Turn on the console beeper - yes / no

- LED: Turn on the front panel Warning or write in your new label in the Custom Alarm Label column of Table 5-1.

When you have completed your custom alarm label entries, press the PRINT key while in System Setup, to print out a copy of your changes.

To continue, press ENTER:

```
CUSTOM ALARM LABELS
DISABLED
```

Press CHANGE:

```
CUSTOM ALARM LABELS
ENABLED
```

Press ENTER:

```
ENABLED
PRESS <STEP> TO CONTINUE
```

Press STEP to continue:

```
CUSTOM ALARM LABELS
SYSTEM ALARMS : NO
```

Press CHANGE and ENTER to access available System Alarms, or STEP to move through the alarm sets: In-Tank alarms, Liquid Sensor alarms, etc. When making changes, standard setup entry procedures apply - you can designate a single device or all devices for the label change. After each custom label entry, you then select enable or disable for each of the four console alarm indicators assigned to that custom alarm: LCD, Print, Beep, and LED.

Note: The ID Code column of Table 5-1 contains codes that enable service technicians to recognize your custom labels.

**Table 5-1.- Alarm Labels**

| Alarm Category | Display/print Alarm Label | Custom Alarm Label | ID Code Type/Num | Autodial Alarm Label |
|---|---|---|---|---|
| System Alarm | PAPER OUT | | 01/01 | N/A |
| | PRINTER ERROR | | 01/02 | |
| | WRONG SOFTWARE WARNING | | 01/03 | |
| | BATTERY IS OFF | | 01/04 | |
| | TOO MANY TANKS | | 01/05 | |
| | SYS SECURITY WARNING | | 01/06 | |
| | ROM REVISION WARNING | | 01/07 | |
| | REMOTE DISPLAY ERROR | | 01/08 | |
| | SOFTWARE MODULE WARN | | 01/10 | |
| | TANK TEST SHUTDOWN | | 01/11 | |
| | CLOSE SHIFT PENDING | | 01/13 | |
| | CLOSE DAILY PENDING | | 01/14 | |
| | PC (H8) REVISION WARN | | 01/15 | |
| | SYSTEM SELF TEST ALM | | 01/16 | |
| | CLOCK IS INCORRECT | | 01/17 | |

**Table 5-1.- Alarm Labels**

| Alarm Category | Display/print Alarm Label | Custom Alarm Label | ID Code Type/Num | Autodial Alarm Label |
|---|---|---|---|---|
| Tank Alarm | SETUP DATA WARNING | | 02/01 | N/A |
| | LEAK ALARM | | 02/02 | LEAK |
| | HIGH WATER ALARM | | 02/03 | HIGH WATER |
| | OVERFILL ALARM | | 02/04 | OVERFILL |
| | LOW PRODUCT ALARM | | 02/05 | LOW PRODUCT |
| | SUDDEN LOSS ALARM | | 02/06 | SUDDEN LOSS |
| | HIGH PRODUCT ALARM | | 02/07 | HI PRODUCT |
| | INVALID FUEL LEVEL | | 02/08 | INVALID HGT |
| | PROBE OUT | | 02/09 | PROBE OUT |
| | HIGH WATER WARNING | | 02/10 | WATER WARN |
| | DELIVERY NEEDED | | 02/11 | DLVY NEEDED |
| | MAX PRODUCT ALARM | | 02/12 | MAX PRODUCT |
| | GROSS TEST FAIL | | 02/13 | GROSS FAIL |
| | PERIODIC TEST FAIL | | 02/14 | PERIOD FAIL |
| | ANNUAL TEST FAIL | | 02/15 | ANNUAL FAIL |
| | PER TST NEEDED WRN | | 02/16 | PER NEED WRN |
| | ANN TST NEEDED WRN | | 02/17 | ANN NEED WRN |
| | PER TST NEEDED ALM | | 02/18 | PER NEED AL |
| | ANN TST NEEDED ALM | | 02/19 | ANN NEED AL |
| | TANK TEST ACTIVE | | 02/20 | TEST NOTIFY |
| | NO CSLD IDLE TIME | | 02/21 | No IDLE TIME |
| | TANK SIPHON BREAK | | 02/22 | SIPHON BRK |
| | CSLD INCR RATE WARN | | 02/23 | CSLD INCR |
| | ACCUCHART CAL WARN | | 02/24 | ACCU WARN |
| | RECON WARN | | 02/25 | RECON WARN |
| | RECON ALARM | | 02/26 | RECON ALARM |
| | LOW TEMP WARNING | | 02/27 | LOW TEMP |
| | MISSING TICKET WARN | | 02/28 | TICKET WARN |
| | GROSS FAIL LINE TNK | | 02/29 | GROSS LN TK |
| | DELIVY DENSITY WARN | | 02/30 | DLVY DEN WRN |
| | FUEL QUALITY ALARM | | 02/32 | FUEL QUAL |

**Table 5-1.- Alarm Labels**

| Alarm Category | Display/print Alarm Label | Custom Alarm Label | ID Code Type/Num | Autodial Alarm Label |
|---|---|---|---|---|
| Liquid Sensor (03), Vapor Sensor (04), Groundwater Sensor (07), Type A Sensor (08), Type B Sensor (12), or Universal Sensor (13) Alarm | SETUP DATA WARNING | | (for type, see alarm category)/ 02 | N/A |
| | FUEL ALARM | | ditto/03 | FUEL |
| | SENSOR OUT ALARM | | ditto/04 | OPEN |
| | SHORT ALARM | | ditto/05 | SHORT |
| | WATER ALARM | | ditto/06 | WATER |
| | WATER OUT ALARM | | ditto/07 | WATER OUT |
| | HIGH LIQUID ALARM | | ditto/08 | HIGH LIQUID |
| | LOW LIQUID ALARM | | ditto/09 | LOW LIQUID |
| | LIQUID WARNING | | ditto/10 | LIQ WARNING |
| | SENSOR NORMAL | | | N/A |
| Input Alarm | SETUP DATA WARNING | | 05/01 | N/A |
| | EXTERN INPUT NORMAL | | 05/02 | N/A |
| | EXTERN INPUT ALARM | | 05/03 | CLOSED |
| VLLD Alarm | SETUP DATA WARNING | | 06/01 | N/A |
| | LLD SELF TEST FAIL | | 06/02 | N/A |
| | LINE LEAK SHUTDOWN | | 06/03 | SHUTDOWN |
| | LINE LEAK TEST FAIL | | 06/04 | N/A |
| | SELF TEST INVALID | | 06/05 | SELF WARN |
| | CONT HANDLE WARN | | 06/06 | HANDLE WARN |
| | GRS-LINE TEST FAIL | | 06/07 | GROSS LINE |
| | GRS-LINE SELF FAIL | | 06/08 | GROSS LSELF |
| | GRS-PUMP TEST FAIL | | 06/09 | GROSS PUMP |
| | GRS-PUMP SELF FAIL | | 06/10 | GROSS PSELF |
| | PER TST NEEDED WRN | | 06/11 | PER NEED WN |
| | ANN TST NEEDED WRN | | 06/12 | ANN NEED WN |
| | PER TST NEEDED ALM | | 06/13 | PER NEED AL |
| | ANN TST NEEDED ALM | | 06/14 | ANN NEED AL |
| | PER-LINE TEST FAIL | | 06/15 | PER LINE |
| | PER-LINE SELF FAIL | | 06/16 | PER LSELF |

**Table 5-1.- Alarm Labels**

| Alarm Category | Display/print Alarm Label | Custom Alarm Label | ID Code Type/Num | Autodial Alarm Label |
|---|---|---|---|---|
| VLLD Alarm | PER-PUMP TEST FAIL | | 06/17 | PER PUMP |
| | PER-PUMP SELF FAIL | | 06/18 | PER PSELF |
| | ANN-LINE TEST FAIL | | 06/19 | ANN LINE |
| | ANN-LINE SELF FAIL | | 06/20 | ANN LSELF |
| | ANN-PUMP TEST FAIL | | 06/21 | ANN PUMP |
| | ANN-PUMP SELF FAIL | | 06/22 | ANNLSELF |
| | LLD PRESSURE WARN | | 06/23 | PRESS WARN |
| | LLD PRESSURE ALARM | | 06/24 | PRESS ALM |
| | LLD TEST FAULT-GRS | | 06/25 | TST FLT GRS |
| | LLD TEST FAULT-PER | | 06/26 | TST FLT PER |
| | LLD TEST FAULT-ANN | | 06/27 | TST FLT ANN |
| | FUEL OUT | | 06/28 | FUEL OUT |
| Receiver Alarm | SETUP DATA WARNING | | 14/01 | N/A |
| | AUTODIAL FAILURE | | 14/02 | N/A |
| | SERVICE REPORT WARN | | 14/03 | SERVICE REPORT WARN |
| | ALARM CLEAR WARNING | | 14/04 | ALARM CLEAR WARNING |
| | DELIVERY REPORT WRN | | 14/05 | DELIVERY REPORT WRN |
| Power Side DIM (MDIM) (18) or Communication Side DIM (EDIM/ BDIM) (19) | DISABLED DIM ALARM | | (for type, see alarm category)/ 02 | DISABLED |
| | COMMUNICATION ALARM | | ditto/03 | COMM ERROR |
| BDIM only | TRANSACTION ALARM | | 19/04 | TRANS ALARM |
| Product (BIR) Alarm | RECON SETUP WARNING | | 20/01 | N/A |
| | PROD THRESHOLD ALM | | 20/02 | REC THRHOLD |
| | CLOSE SHIFT WARNING | | 20/03 | CLOSE SHIFT |
| | CLOSE DAILY WARNING | | 20/04 | CLOSE DAILY |
| PLLD Alarm | SETUP DATA WARNING | | 21/01 | N/A |
| | GROSS LINE FAIL | | 21/02 | GROSS FAIL |
| | ANNUAL LINE FAIL | | 21/03 | ANN LN FAIL |
| | PER TST NEEDED WRN | | 21/04 | PER NEED WRN |
| | PER TST NEEDED ALM | | 21/05 | PER NEED AL |

**Table 5-1.- Alarm Labels**

| Alarm Category | Display/print Alarm Label | Custom Alarm Label | ID Code Type/Num | Autodial Alarm Label |
|---|---|---|---|---|
| PLLD Alarm | PLLD OPEN ALARM | | 21/06 | OPEN ALARM |
| | PLLD SHUTDOWN ALARM | | 21/08 | SHUTDOWN |
| | PERIOD LINE FAIL | | 21/11 | PERIOD FAIL |
| | ANN TST NEEDED WRN | | 21/12 | ANN NEED WN |
| | ANN TST NEEDED ALM | | 21/13 | ANN NEED AL |
| | LOW PRESSURE ALARM | | 21/14 | LO PRES ALM |
| | CONT HANDLE ALRM | | 21/16 | HANDLE ALRM |
| | FUEL OUT | | 21/17 | FUEL OUT |
| | LN EQUIP FAULT ALM | | 21/18 | LN EQ FAULT |
| WPLLD Alarm | SETUP DATA WARNING | | 26/01 | N/A |
| | GROSS LINE FAIL | | 26/02 | GROSS FAIL |
| | PERIOD LINE FAIL | | 26/03 | PERIOD FAIL |
| | PER TST NEEDED WRN | | 26/04 | PER NEED WN |
| | PER TST NEEDED ALM | | 26/05 | PER NEED AL |
| | WPLLD OPEN WARN | | 26/06 | OPEN ALARM |
| | WPLLD COMM ALARM | | 26/07 | COMM ALARM |
| | WPLLD SHUTDOWN ALARM | | 26/08 | SHUTDOWN |
| | ANNUAL LINE FAIL | | 26/10 | ANN LN FAIL |
| | ANN TST NEEDED WRN | | 26/11 | ANN NEED WN |
| | ANN TST NEEDED ALM | | 26/12 | ANN NEED AL |
| | CONT HANDLE ALRM | | 26/16 | HANDLE ALRM |
| | FUEL OUT | | 26/17 | FUEL OUT |
| | LN EQUIP FAULT ALM | | 26/18 | LN EQ FAULT |

**Table 5-1.- Alarm Labels**

| Alarm Category | Display/print Alarm Label | Custom Alarm Label | ID Code Type/Num | Autodial Alarm Label |
|---|---|---|---|---|
| Smart Sensor Alarm | SETUP DATA WARNING | | 28/01 | SETUP WARN |
| | COMMUNICATION ALARM | | 28/01 | COMM ALARM |
| | SENSOR FAULT ALARM | | 28/03 | SENSR FAULT |
| | FUEL WARNING | | 28/04 | FUEL WARN |
| | FUEL ALARM | | 28/05 | FUEL ALARM |
| | WATER WARNING | | 28/06 | WATER WARN |
| | WATER ALARM | | 28/07 | WATER ALARM |
| | HIGH LIQUID WARNING | | 28/08 | HI LIQ WRN |
| | HIGH LIQUID ALARM | | 28/09 | HI LIQ ALM |
| | LOW LIQUID WARNING | | 28/10 | LOW LIQ WRN |
| | LOW LIQUID ALARM | | 28/11 | LOW LIQ ALM |
| | TEMPERATURE WARNING | | 28/12 | TEMP WARN |
| | RELAY ACTIVE | | 28/13 | RELAY ACTIV |
| | INSTALL ALARM | | 28/14 | INSTALL ALM |
| | SENSOR FAULT WARN | | 28/15 | SNSR FLT WN |
| | VACUUM WARNING | | 28/16 | VACUUM WARN |
| | NO VACUUM ALARM | | 28/17 | NO VAC ALM |
| Pump Relay Monitor Alarm | SETUP DATA WARNING | | 34/01 | SETUP WARN |
| | PUMP RELAY MON ALM | | 34/02 | PUMP ALARM |
| VMCI Interface Dispenser Alarms | SETUP DATA WARNING | | 35/01 | SETUP WARN |
| | COMMUNICATION ALARM | | 35/02 | COMM ALARM |
| VMC Alarms | VMC COM TIMEOUT ALARM | | 36/01 | COM TIMEOUT |
| | METER NOT CONNECTED | | 36/02 | METR NC ALM |
| | FP SHUTDOWN WARNING | | 36/03 | SHUTDWN WRN |
| | FP SHUTDOWN ALARM | | 36/04 | SHUTDWN ALM |

## Service Notice (TLS-350 Consoles Only)

When service is preformed at a site, “false” alarms and “false” deliveries can be generated. “False” alarms can trigger unneeded service dispatches to the site and “false” deliveries can cause reconciliation problems.

**When a ‘Service Notice’ session is enabled the following will happen:**

1. A Service Notice warning is posted:
   a. Front panel display will show the warning
   b. Front panel yellow LED will blink
   c. Console beeper is silent
   d. The warning will printout
   e. The warning will appear in the active alarm report
   f. The warning will post in both the priority and non-priority alarm histories
2. A ‘Service Notice’ duration timer starts (1 to 8 hours as selected in Diagnostic Mode, default 2 hours).
3. A ‘Service Notice’session start record is entered in the Service Notice history (contains the last 10 records).
4. If ‘Delivery Override’ is enabled then any deliveries that occur when the TLS is in a ‘Service Notice’ session will not go into the standard delivery history or BIR delivery history.
5. If ‘Delivery Override’ is disabled then any deliveries that occur when the TLS is in a ‘Service Notice’ session will go into the standard delivery history or BIR delivery history.
6. All tank alarms will work as normal
7. All alarms will work as normal

**When a ‘Service Notice’ feature is disabled in Diagnostic Mode, OR the ‘Service Notice’ session is ended, OR the ‘Service Notice’ session times out, the following will happen:**

1. The ‘Service Notice’ warning clears
2. Front panel yellow LED turns off
3. The ‘Service Notice’ warning will clear in both the priority and non-priority alarm histories
4. The ‘Service Notice’ wiring is removed from the active alarm report
5. The ‘Service Notice’ end record is entered in the Service Notice history
6. The ‘Service Notice’ duration timer clears
7. Any deliveries that occur will be recorded in the standard delivery and BIR delivery histories as normal.

If necessary, press STEP until you see the message:

```
SERVICE NOTICE
PRESS <ENTER>
```

Press ENTER:

```
SERVICE NOTICE
DISABLE
```

Press CHANGE:

| |
|---|
| **SERVICE NOTICE**<br>**ENABLED** |

Press ENTER:

| |
|---|
| **ENABLED**<br>**PRESS <STEP> TO CONTINUE** |

Press STEP:

| | |
|---|---|
| **DELIVERY OVERRIDE**<br>**DISABLED** | Menu will only appear if Service Notice is enabled and there is a probe module |

If Delivery Override is desired, press CHANGE, otherwise, press STEP.

| |
|---|
| **DELIVERY OVERRIDE**<br>**ENABLED** |

Press ENTER:

| |
|---|
| **ENABLED**<br>**PRESS <STEP> TO CONTINUE** |

Press STEP:

| |
|---|
| **SERVICE NOTICE**<br>**ENABLE** |

If necessary, press STEP until you see the message:

| | |
|---|---|
| **ISO 3166 COUNTRY**<br>**PRESS <ENTER>** | This feature is an international option. |

Press ENTER, CHANGE and then enter the three alpha-character country code. Default is blank.

## System Beeper

If necessary, press STEP until you see the message:

| |
|---|
| **BEEPER**<br>**ENABLED** |

If you want to disable the console beeper, press CHANGE:

| |
|---|
| **BEEPER**<br>**DISABLED** |

Press ENTER:

```
DISABLED
PRESS <STEP> TO CONTINUE
```

Press STEP:

```
DISABLED
ARE YOU SURE? : NO
```

Press CHANGE:

```
DISABLED
ARE YOU SURE? : YES
```

Press ENTER:

```
ARE YOU SURE? : YES
PRESS <STEP> TO CONTINUE
```

## Mass/Density

If necessary, press STEP until you see the message:

```
MASS/DENSITY
PRESS <ENTER>
```

When mass is required in addition to volume as an alternative measure of fuel, this feature must be enabled. Press ENTER:

```
MASS/DENSITY
DISABLED
```

Press CHANGE to enable this feature:

```
MASS/DENSITY
ENABLED
```

Press ENTER to accept:

```
ENABLED
PRESS <STEP> TO CONTINUE
```

NOTE: A Setup Data Warning is posted from the time the Mass/Density feature is enabled until a product density value is entered for that tank, clearing the alarm (ref.“Tank Density” on page 7-4).

Press STEP:

| |
|---|
| **MASS/DENSITY**<br>**PRESS <ENTER** |

The system setup is complete. Press STEP to continue or FUNCTION to exit Setup Mode.

## Fiscal Height Security

If necessary, press STEP until you see the message:

| |
|---|
| **FISCAL HEIGHT SECURITY**<br>**PRESS <ENTER>** |

NOTE: When Fiscal Height Security is enabled and DIP switch position 4 is in the ON position, then the Fiscal Height Security parameter AND the following tank height modifying parameters Probe Offset, Tank Tilt and Float Size cannot be modified!

Press ENTER:

| |
|---|
| **FISCAL HEIGHT SECURITY**<br>**DISABLED** |

Press CHANGE to enable this feature:

| |
|---|
| **FISCAL HEIGHT SECURITY**<br>**ENABLED** |

Press ENTER to accept:

| |
|---|
| **ENABLED**<br>**PRESS <STEP> TO CONTINUE** |

NOTE: If the TLS-350 is physically sealed then the Fiscal Height Security menu is displayed but cannot be changed.

# 6 Communications Setup

The Communications Setup function allows you to: enter communication port settings for each Comm Module; enter dates/times for each of the Comm Modules to automatically dial out and connect to a selected remote device; and select the alarm notifications and status reports (modem modules only) for transmission to the remote device once the connection has been made.

## Selecting the Communications Setup Function

To select Communications Setup, press FUNCTION until you see the message:

```
COMMUNICATIONS SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Port Settings

In response to the COMMUNICATIONS SETUP message, press STEP until you see the message:

```
PORT SETTINGS
PRESS <ENTER>
```

This display allows you to access the communications settings–Baud Rate, Parity, Stop Bit, etc.–for any board installed in the console's Comm Bay.

### NOTE: PORT SETTINGS - INTERNATIONAL INSTALLATIONS WITH SITELINK MODEMS

SiteLink modems are auto detected by system software. This auto-detect feature will set, automatically, the Baud Rate, Parity, Data Length, and Stop bit values required for the detected modem type (see Table 6-1). If necessary you can manually enter another value for any of these default port settings.

**Table 6-1.- SiteLink Modem Default Port Settings**

| Modem | Baud Rate | Parity | Data Length | Stop Bit |
|---|---|---|---|---|
| Netcomm Smart M7F (Australia) | 2400 | Odd | 7 | 1 |
| US Robotics (UK) | 9600 | None | 8 | 1 |
| VR TLS Analog Mod (UK) | | | | |
| VR TLS GSM Modem (UK) | | | | |

### BAUD RATE

Press ENTER in response to the PORT SETTINGS message. The system displays the message:

```
COMM BOARD: 1 (Type)
BAUD RATE: 1200
```

The system labels the communications module in the leftmost slot as “COMM BOARD: 1”. To access port settings for the remaining communications modules, press TANK/SENSOR.

Choose the baud rate that matches the external device connected to the module. For the RS-232 and Dual-Port RS-232/RS-485 Modules, the choices are; 300, 1200, 2400, 4800, and 9600. For modem modules, scroll through the choices and select the one that matches the external device.

To accept the rate shown on the display, press STEP. (The PARITY message appears.) To choose another Baud Rate, press CHANGE until you see the correct baud rate. Then press ENTER to confirm your choice. The system displays the message:

```
BAUD RATE: XXXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## PARITY

Choose the parity that matches the external device connected to the module. The choices are NONE, ODD, and EVEN.

```
COMM BOARD: 1 (Type)
PARITY: ODD
```

To accept the parity shown on the message, press STEP. To choose another parity setting, press CHANGE until you see the correct parity. Press ENTER to confirm your choice. The system displays the message:

```
PARITY: XXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## STOP BIT

Choose the stop bit (1 or 2) that matches the external device connected to the module.

```
COMM BOARD: 1 (Type)
STOP BIT: 1 STOP
```

To accept 1, press STEP. To choose 2, press CHANGE and press ENTER. The system confirms your choice with the message:

```
STOP BIT: X STOP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## DATA LENGTH

Choose the data length that matches the external device connected to the module.

```
COMM BOARD: 1 (Type)
DATA LENGTH: 7 DATA
```

The choices are 7 or 8. To accept 7, press STEP. To choose 8, press CHANGE and press ENTER. The system confirms your choice with the message:

```
DATA LENGTH: X DATA
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## DIAL TYPE

Choose the Dial Type (Tone or Pulse) that matches the receiving device.

```
COMM BOARD: 1 (Type)
DIAL TYPE: TONE
```

NOTE: The above message appears only for systems equipped with a modem module.

To accept Tone, press STEP. To choose Pulse, press CHANGE and press ENTER. The system displays the message:

```
DIAL TYPE: PULSE
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## ANSWER ON

Use this display to set the number of rings on which the system answers an incoming communication. You may enter 0 through 9 rings.

```
COMM BOARD: 1 (Type)
ANSWER ON: 1
```

NOTE: The above message appears only for systems equipped with a modem module.

To accept the system default of 1 ring, press STEP. To choose another value you can toggle the CHANGE key (for 2 through 8 rings) or enter the desired value using the numeric keys. Press ENTER to confirm your entry. The system displays:

```
ANSWER ON: (Number)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## SECURITY CODE

If desired, you can enter a 6-digit security code for this board. To accept no code press STEP to continue. To enter a code press CHANGE.

```
COMM BOARD: 1 (Type)
CODE: DISABLED
```

Enter the 6-digit code (e.g., 000016) and press ENTER. The system confirms your choice with the message:

```
COMM BOARD: 1 (Type)
CODE: 000016
```

Press STEP to continue.

## SETTING THE MODEM TYPE (INTERNATIONAL INSTALLATIONS)

This feature lets you select the modem used with a SiteLink Module.

```
COMM BOARD: 1 (S-Link)
MODEM: NETCOMM SMART M7F
```

Press ENTER to accept the modem option or press CHANGE and then ENTER to choose US ROBOTICS (UK), VR TLS ANALOG MOD, or VR TLS GSM MODEM. Press STEP to continue.

## MODEM SETUP STRING

If you have a modem installed, the system displays the message:

```
MODEM SETUP STRING
c 1:
```

This string will contain modem commands. The default for the string will be a blank string (no additional commands). Press CHANGE and enter up to 20 characters, e.g., AT&B1.

Note: the'&', '=', and '%' characters are available only when entering the Modem Setup String in all languages except Japanese, Russian, Turkish, and Greek. See Table 2-1 on page 2-4 for instructions on entering these characters.

Press ENTER to select string and confirm selection, e.g.:

```
MODEM SETUP STRING
c 1: AT&B1
```

Press STEP to continue.

## DIAL TONE INTERVAL

If you have a modem installed, the system displays the message:

```
COMM BOARD: 1 (Type)
DIAL TONE INTERVAL: 32
```

This feature allows the user to program the console to check the phone lines every selected number of hours. If after three sequential checks in which the line is not operative, a NO DIAL TONE is posted. The default interval is 32 hours and can be set from 1 to 9999. Press CHANGE and enter the desired interval, e.g., 48. Press ENTER to select your entry and the system displays the message:

```
COMM BOARD: 1 (FXMOD)
DIAL TONE INTERVAL: 48
```

Press STEP to continue.

## DTR NORMAL STATE

If you have a S-Sat Module installed, the system displays the message:

```
COMM BOARD: 1 (S-SAT)
DTR NORMAL STATE: HIGH
```

This feature allows the user to program the S-Sat Module's Data Transmit Ready (DTR) normal state to either High or Low. The default state is High. Press CHANGE and ENTER to select the Low state, or press STEP to accept the default state and continue.

### SPECIFYING PORT SETTINGS FOR ADDITIONAL COMMUNICATION MODULES

After you set the last port setting, the system returns to the PORT SETTINGS message. If you have additional communication modules to set up, press ENTER to display the BAUD RATE message, press TANK/SENSOR to choose another communication module and then repeat the procedure described above to enter port settings for the selected module.

### CONTINUE COMMUNICATIONS SETUP

When you have specified port settings for all the communication modules, press STEP in response to the PORT SETTINGS message to advance to the next communications setup function.

## Auto-Transmit Setup (RS-232 or RS-232/RS-485 Modules Only)

If necessary, press STEP until you see the message:

```
AUTO TRANSMIT SETUP
PRESS <ENTER>
```

The Auto-Transmit Setup feature allows you to set an Automatic Transmit or Transmit/Repeat of any of the following signals – in-tank alarm, sensor alarm, delivery start/stop, and input on/off – to an external device via the RS-232 or RS-485 port.

If you enable this feature, the system provides three choices for each type of alarm, delivery, or input feature configured in the system. These choices are: Disable, Transmit, Transmit/Repeat. If you choose Transmit or Transmit/Repeat for any alarm, delivery, or input message, you must enter an Auto-Transmit Delay Time. In addition, if you choose Transmit/Repeat for any item, you must enter an Auto-Transmit Repeat Time.

NOTE: The entered Delay and Repeat times apply to all transmit and repeat choices.

### AUTO-TRANSMIT METHOD

Press ENTER in response to the AUTO TRANSMIT SETUP message. The system displays the message:

```
TRANSMIT MESSAGE SETUP
PRESS <ENTER>
```

Press ENTER to continue. The system displays:

```
AUTO LEAK ALARM LIMIT
DISABLED
```

Use this display to choose Auto Transmit for the Auto Leak Alarm Limit. To choose DISABLED, press STEP. To choose Transmit, press CHANGE once in response to the AUTO LEAK ALARM LIMIT message. To choose TRANSMIT/REPEAT, press CHANGE twice. Press ENTER to confirm your choice. The system displays:

```
(Selected Setting)
PRESS <STEP> TO CONTINUE
```

Repeat the above steps to continue selecting Auto Transmit for the remaining alarm, delivery, or input signals:

- AUTO HIGH WATER LIMIT
- AUTO LOW PRODUCT
- AUTO DELIVERY START
- AUTO EXTERNAL INPUT ON
- AUTO SENSOR FUEL ALARM
- AUTO SENSOR OUT ALARM
- AUTO OVERFILL LIMIT
- AUTO THEFT LIMIT
- AUTO DELIVERY END
- AUTO EXTERNAL INPUT OFF
- AUTO SENSOR WATER ALARM

When you have finished selecting Auto Transmit for the above items, press STEP until you see TRANSMIT MESSAGE SETUP message.

## AUTO DELAY TIME

Press STEP in response to the TRANSMIT MESSAGE SETUP message. The system displays the message:

```
AUTO TRANSMIT MESSAGE
AUTO DELAY TIME: 005
```

NOTE: The above message appears only if you chose Transmit for at least one of the items in the step described above.

Use this display to specify the time interval between any alarm, delivery, or input indication in the system and the time the system sends an Auto-Transmit message. To set the Auto Delay Time, press CHANGE and enter the delay time, in seconds, up to a maximum of 254 seconds. Press ENTER to confirm your entry. The system displays:

```
AUTO DELAY TIME: XXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## AUTO REPEAT TIME

After you set the Auto Delay Time, the system displays the message:

```
AUTO TRANSMIT MESSAGE
AUTO REPEAT TIME: 060
```

NOTE: The above message appears only if you chose Transmit/Repeat for at least one of the items in the steps described above.

Use this display to specify the length of time the system waits before retransmitting a message. To set the Auto Repeat Time, press CHANGE and enter the repeat time, in seconds, up to a maximum of 240 seconds**.** Press ENTER to confirm your entry. The system displays:

```
AUTO REPEAT TIME: XXX
PRESS <STEP> TO CONTINUE
```

## CONTINUE COMMUNICATIONS SETUP

Press STEP to return to the AUTO TRANSMIT SETUP message. Press STEP again to continue to the next communications setup function.

## Phone Directory Setup

If necessary, press STEP until you see the message:

```
PHONE DIRECTORY SETUP
PRESS <ENTER>
```

NOTE: This message appears only for systems equipped with a modem module.

Through the Phone Directory feature, you can program up to 8 telephone numbers for automatic dialing to teletype, facsimile, or computer modems. The system sends specific reports to the programmed telephone numbers.

### RECEIVER CONFIGURATION

Press ENTER in response to the PHONE DIRECTORY SETUP message. The system displays the message:

```
RCVR CONFIG
          X X X X X X X X
```

Use this display to tell the system how many phone numbers are to be entered. Press CHANGE twice to configure one receiver. To configure additional receivers, press the Right-Arrow key, then press CHANGE for up to seven more receivers.Press ENTER to confirm your entry. The system displays:

```
          X X X X X X X X
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

### RECEIVER LOCATION

After you set the receiver configuration, the system displays the message:

```
ENTER RCVR LOCATION
D1:
```

Enter the location (e.g., MAIN OFFICE FAX) of the selected receiver. To enter the location, press CHANGE. Enter up to 20 alphanumeric characters for the location and press ENTER. The system confirms your entry:

```
D1: (Destination)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

### RECEIVER TELEPHONE NUMBER

After you enter the receiver location, the system displays the message:

```
ENTER RCVR PHONE NO.
D1:
```

You can enter up to 20 numbers for each telephone number. Be sure to include the direct-dial long distance code and any numbers required to access outside lines. Use a comma (,) if the telephone system requires a pause during dialing. When entering receiver telephone numbers, the keypad defaults to numeric mode (e.g., you only press the keys once to enter a digit instead of the 3 or 4 times required in alphanumeric mode). To enter the phone

number for the selected receiver, press CHANGE. Enter the number and press ENTER to confirm your entry. The system displays:

```
D1: (Phone #)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## SELECT MODEM

After you set the receiver phone number, the system displays the message:

```
D1:
SELECT MODEM: 3
```

Your system may have up to three a modem modules in slots 1, 2, and/or 3 of the Comm Bay. Enter the slot number in which the a modem module that you are using as the modem for the specified telephone number is installed. To accept the slot number shown, press STEP, or press CHANGE until the correct slot number appears, then ENTER to confirm your choice. The system displays:

```
SELECT MODEM: [Selection]
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## RECEIVER TYPE

After you select the modem module's Comm Bay slot number, the system displays the message:

```
D1:
RCVR TYPE: TELETYPE
```

The system provides three choices for the type of receiver: Teletype, Facsimile, or Computer. A description of each follows:
**Teletype:** the system calls the receiver telephone number and then transmits the programmed RS-232 reports.
**Facsimile:** the system calls the receiver telephone number then transmits the report in facsimile format.
**Computer:** the system calls the receiver telephone number and then waits 1-minute for a command from the computer (receiver).

To choose Teletype, press STEP. (The system displays the Retry Number message.) To choose Facsimile, press CHANGE once. To choose Computer, press CHANGE twice. Press ENTER to confirm your choice:

```
RCVR TYPE: (Selected Setting)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## RETRY NUMBER

After you select the receiver type, the system displays the message:

```
D1:
RETRY NUMBER: XX
```

You can specify the number of times the system attempts to redial a telephone number if there is a busy signal, no answer, or incomplete connection. To enter the number, press CHANGE and enter a number between 3 and 99. Press ENTER to confirm your entry. The system displays:

```
DIAL RETRY NUMBER: XX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## RETRY DELAY TIME

After you set the retry dial number, the system displays the message:

```
D1:
DIAL RETRY DELAY: 00
```

You can specify the time interval the system waits to redial a telephone number if there is a busy signal, no answer, or incomplete connection. To enter the interval, press CHANGE and enter the number of minutes between 1 and 60. Press ENTER to confirm your entry. The system displays:

```
DIAL RETRY DELAY: XX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## CONFIRMATION REPORT

After you set the dial retry delay, the system displays the message:

```
D1:
CONFIRMATION REPORT: OFF
```

This message selects whether or not the system confirms when specified reports have been transmitted successfully. The default condition is Off. If you do not wish to receive confirmations, press STEP. (The system returns to the PHONE DIRECTORY SETUP message.) To enable the feature, press CHANGE and press ENTER. The system confirms your choice with the message:

```
CONFIRMATION REPORT: ON
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## SETTING UP ADDITIONAL PHONE NUMBERS

After you specify the confirmation report option and press STEP, the system returns to the PHONE DIRECTORY SETUP message. If you have additional receivers to set up, press ENTER until the system displays the RCVR CONFIG message. Press STEP, then press TANK/SENSOR to choose another receiver. Enter the setup data for this receiver by repeating the procedures described above, beginning with the section entitled “Receiver Location” on page 6-7.

## CONTINUE COMMUNICATIONS SETUP

When you have set up all the phone numbers/receivers, press STEP in response to the PHONE DIRECTORY SETUP message. (The system displays the AUTO DIAL SETUP message.)

## Auto-Dial Setup

If necessary, press STEP until you see the message:

```
AUTO DIAL SETUP
PRESS <ENTER>
```

NOTE: This message appears only if you have a modem module installed and after you complete the Phone Directory Setup.

Using Auto-Dial Setup, you can tell the system what reports to transmit, to whom to transmit, and when to transmit. You can also specify the intervals at which the system transmits this information.

### RECEIVER REPORT LIST

Press ENTER in response to the AUTO DIAL SETUP message. The system displays the message:

```
D1: RCVR REPORT LIST
PRESS <ENTER>
```

Use this display to choose the types of status reports that you want to transmit to all programmed telephone numbers or to single telephone numbers. Press ENTER to display the message:

```
D1: RECEIVER NAME
SYSTEM STATUS: NO
```

To exclude System Status reports from transmission to the receiver specified in the first line of the message (D1, D2, etc.), press STEP. (The system displays the next type of report.) To include System Status reports for transmission to the selected receiver, press CHANGE and press ENTER. The system confirms you choice with the message:

```
SYSTEM STATUS: YES
PRESS <STEP> TO CONTINUE
```

Repeat the steps described in the previous paragraph for each type of report. The list of reports may include:

- SYSTEM STATUS
- NONPRIORITY HISTORY
- INVENTORY
- LEAK DETECT
- PRESSURE LLD RESULT
- PERIODIC DLVY VAR
- FUEL MANAGEMENT
- LAST DELIVERY
- PRIORITY HISTORY*
- PERIODIC BOOK VAR
- IN-TANK STATUS
- DELIVERY
- SHIFT INVENTORY
- DAILY VAR ANALY
- PERIODIC ROW REPORT
- CSLD REPORT
- LINE LEAK STATUS*
- WPLLD LLD RESULT

* Volumetric Line Leak Detection

When you have specified the reports you want to transmit, press STEP to return to the RCVR REPORT LIST message. If you want to transmit reports to additional receivers, press ENTER to redisplay the message:

```
D1: RECEIVER NAME
SYSTEM STATUS: NO
```

Press TANK/SENSOR to select a second receiver and repeat the steps described above to select the types of reports to be transmitted to that receiver. Press TANK/SENSOR to select a third receiver, and so forth. When you have selected reports to transmit to all the receivers that you want, press STEP in response to the RCVR REPORT LIST message.

## AUTO DIAL METHOD: ALL PHONES/SINGLE PHONE

When you press STEP in response to the RCVR REPORT LIST message, the system displays the message:

```
AUTO DIAL METHOD
ALL PHONES
```

You can send the selected reports at the same time (frequency) for all phone numbers (receivers) or different times for each phone number. To choose All Phones, press STEP. The system displays the ON DATE message for All Receivers:

```
ALL RCVRS
ON DATE
```

To transmit reports using different frequencies, press CHANGE in response to the AUTO DIAL METHOD message and press ENTER. The system confirms your choice with the message:

```
SINGLE PHONE
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the message:

```
SINGLE RCVR: D1
ON DATE
```

NOTES: If you choose Single Phone, you must enter report transmission frequency information for each receiver individually. The screen examples shown in this procedure assume that you have selected All Phones. If you choose Single Phone, the phrase “ALL RCVR” is replaced on each screen by the selected receiver number (RCVR 1, RCVR 2, etc.).

## AUTO-DIAL FREQUENCY: SPECIFIC DATE

When you press STEP in response to the AUTO DIAL METHOD message, the system displays the message:

```
ALL RCVRS
ON DATE
```

Use this display to select the Auto-Dial Frequency. You may choose among the following frequency options:

- ON DATE: Lets you enter a specific date and time to transmit the reports.
- ANNUALLY: Lets you select the month, week (1, 2, 3, or 4), and day you wish to transmit reports.
- MONTHLY: Lets you select the week (1, 2, 3, or 4) and day you wish to transmit reports.
- WEEKLY: Lets you select the day you wish to transmit weekly reports.
- DAILY: Lets you select the time of day you wish to transmit daily reports.
- BIR END: Lets you select having reports transmit at the actual closing time of the period. For rolling, this would be the end of the rolling period; for monthly this would be the first of the month.

To set the Auto-Dial Frequency to On Date, press STEP. (To set the frequency to Annually, Monthly, Weekly, Daily, or BIR End follow the procedures described in the corresponding section below.) The system displays the message:

```
DIAL ON DATE: ALL RCVRS
DATE: XX/XX/XXXX
```

Press CHANGE, and enter the date on which you want the reports to be transmitted. Enter the date in the format MM/DD/YYYY. Press ENTER to confirm the date:

```
DATE: XX/XX/XXXX
PRESS <STEP> TO CONTINUE
```

Press STEP to enter the time you want the reports to transmit. The system displays the message:

```
DIAL TIME: ALL RCVRS
TIME: XX:XX AM PM
```

Press CHANGE, and enter the time. Press the Right Arrow key to choose AM or PM. Press ENTER to confirm your entry:

```
TIME: XX:XX AM PM
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. If you are using the All Phones method or have set up all the receivers for Single Phone, refer to the section entitled “Continue Communications Setup” on page 6-15. If you are using the Single Phone method and have additional receivers to set up, refer to the section entitled “Setting Up the Frequency for Additional Receivers (Single Phone Only)” on page 6-15.

## AUTO-DIAL FREQUENCY: ANNUALLY

If necessary, press STEP until you see the message:

```
ALL RCVRS
ON DATE
```

To transmit the reports annually, press CHANGE and press ENTER. The system displays the message:

```
ANNUALLY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue setting the annual transmission. The system displays the message:

```
ANNUALLY: ALL RCVRS
JAN WEEK1 MON
```

To set the date of the annual transmission, press CHANGE until the month during which you want to transmit the reports appears. Press the Right Arrow key. Press CHANGE until the week during which you want to transmit the reports appears, and press the Right Arrow key. Press CHANGE until the day on which you want to transmit the reports appears. Press ENTER to confirm the date:

```
MONTH WEEK DAY
PRESS <STEP> TO CONTINUE
```

For example, if you chose to transmit the reports on the Friday of the first week of June, the system would display the message:

```
JUNE WEEK 1 FRI
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. If you are using the All Phones method or have set up all the receivers for Single Phone, refer to the section entitled “Continue Communications Setup” on page 6-15. If you are using the Single Phone method and have additional receivers to set up, refer to the section entitled“Setting Up the Frequency for Additional Receivers (Single Phone Only)” on page 6-15.

## AUTO-DIAL FREQUENCY: MONTHLY

If necessary, press STEP until you see the message:

```
ALL RCVRS
ON DATE
```

Press CHANGE twice and press ENTER. The system displays the following message:

```
MONTHLY
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
MONTHLY: ALL RCVRS
WEEK1 MON
```

To set the date of the monthly transmission, press CHANGE until the week during which you want to transmit the reports appears and press the Right Arrow key. Press CHANGE until the day on which you want to transmit the reports appears. Press ENTER to confirm the date:

```
WEEK DAY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. If you are using the All Phones method or have set up all the receivers for Single Phone, refer to the section entitled “Continue Communications Setup” on page 6-15. If you are using the Single Phone method and have additional receivers to set up, refer to the section entitled “Setting Up the Frequency for Additional Receivers (Single Phone Only)” on page 6-15.

## AUTO-DIAL FREQUENCY: WEEKLY

If necessary, press STEP until you see the message:

```
ALL RCVRS
ON DATE
```

Press CHANGE three times and press ENTER. The system displays the message:

```
WEEKLY
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
WEEKLY: ALL RCVRS
MON
```

To set the date of the weekly transmission, press CHANGE until the day on which you want to transmit the reports appears. Press ENTER to confirm the date:

```
DAY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. If you are using the All Phones method or have set up all the receivers for Single Phone, refer to the section entitled “Continue Communications Setup” on page 6-15. If you are using the Single Phone method and have additional receivers to set up, refer to the section entitled “Setting Up the Frequency for Additional Receivers (Single Phone Only)” on page 6-15.

## AUTO-DIAL FREQUENCY: DAILY

If necessary, press STEP until you see the message:

```
ALL RCVRS
ON DATE
```

Press CHANGE four times and press ENTER. The system displays the message:

```
DAILY
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
DAILY: ALL RCVRS
TIME: DISABLED
```

Press CHANGE and enter the time at which you want to transmit the reports. Press the Right Arrow key to choose AM or PM. Press ENTER to confirm your entry:

```
TIME: (Time)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. If you are using the All Phones method or have set up all the receivers for Single Phone, refer to the section entitled “Continue Communications Setup” on page 6-15. If you are using the Single Phone method and have additional receivers to set up, refer to the section entitled “Setting Up the Frequency for Additional Receivers (Single Phone Only)” below.

## AUTO-DIAL FREQUENCY: BIR END

If necessary, press STEP until you see the message:

```
ALL RCVRS
ON DATE
```

Press CHANGE five times and press ENTER. The system displays the message:

```
BIR END
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the message:

```
DIAL BIR END: ALL RCVRS
TIME DISABLED
```

To enable this feature, press CHANGE:

```
DIAL BIR END: ALL RCVRS
TIME: AUTO DAILY CLOSING
```

Press ENTER and the system confirms your choice with the message:

```
TIME: AUTO DAILY CLOSING
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

If you are using the All Phones method or have set up all the receivers for Single Phone, refer to the section entitled “Continue Communications Setup” on page 6-15. If you are using the Single Phone method and have additional receivers to set up, refer to the section entitled “Setting Up the Frequency for Additional Receivers (Single Phone Only)” on page 6-15.

### SETTING UP THE FREQUENCY FOR ADDITIONAL RECEIVERS (SINGLE PHONE ONLY)

If necessary, press STEP until you see the message:

```
D1: RCVR REPORT LIST
PRESS <ENTER>
```

Press STEP until you see the message:

```
SINGLE RCVR: D1
ON DATE
```

Press TANK/SENSOR to choose the destination (D1, D2, etc.) you want to set up. Choose the frequency you want for this destination by following the appropriate Auto-Dial Frequency instructions, beginning on page 6-11.

NOTE: Do not press ENTER after changing the destination. You must choose the Auto-Dial Frequency, as described in the previous sections, before pressing ENTER.

### CONTINUE COMMUNICATIONS SETUP

If you are finished setting up the Auto-Dial Frequency, press STEP, if necessary, until you see the message:

```
AUTO DIAL SETUP
PRESS <ENTER>
```

This screen displays for modem modules only. Press STEP to continue.

## Auto-Dial Alarm Setup

IMPORTANT! Before you set up this feature, you must enter information for the In-Tank Setup function and set up all the sensors in your system. If an alarm occurs while you are setting up this feature and you have not set up in-tank and sensor information yet, the system will try to send a report. This action may cause a system lockout.

If necessary, press STEP until you see the message:

```
AUTO DIAL ALARM SETUP
PRESS <ENTER>
```

Through the Auto Dial Alarm Setup, you can tell the system to send reports of alarm conditions to the programmed destinations. Choose No, if you do not wish to send a report for a particular alarm condition, or Yes if you do want the alarm reported.

## IN-TANK ALARMS

Press ENTER in response to the AUTO DIAL ALARM SETUP message.The system displays the message:

```
D1: (Destination)
IN-TANK ALARMS: NO
```

To accept no transmission of In-Tank Alarm reports to the selected destination (D1, D2, etc.), press STEP.

For transmission of In-Tank Alarm reports to the selected destination, press CHANGE and press ENTER. The system confirms your choice with the message:

```
IN-TANK ALARMS: YES
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
D1: IN-TANK ALARMS
LEAK: NO TANKS
```

This message shows the first kind of alarm condition for In-Tank Alarms: Leak. You must tell the system whether to send reports about the displayed alarm condition for No Tanks, All Tanks, or Single Tanks. To choose No Tanks, press STEP.

To choose All Tanks, press CHANGE once. To choose Single Tanks, press CHANGE twice. Press ENTER to confirm your choice. If ALL TANKS is selected, the system displays:

```
LEAK: ALL TANKS
PRESS <STEP> TO CONTINUE
```

Press STEP to specify the tanks for the next In-Tank Alarm condition (HIGH WATER). Repeat the steps described above for each of the In-Tank Alarms (ref. Alarm List in Table 6-2).

To choose Single Tanks, press CHANGE twice in response to the LEAK: NO TANKS message. Then press ENTER. The system displays the message:

```
LEAK: SINGLE TANKS
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays:

```
D1: (Destination)
T1: LEAK: NO
```

Press TANK/SENSOR to select the desired tank, then press CHANGE and press ENTER. The system displays the message:

```
R1: T1 LEAK: YES
PRESS <TANK> TO CONTINUE
```

Press TANK/SENSOR to select additional tanks for the In-Tank Leak alarm. When you have specified all tanks for the first In-Tank alarm, press STEP to advance to the next alarm. Repeat the steps described above to assign tanks for each In-Tank alarm. After you have specified tanks for each In-Tank alarm condition, press STEP to advance to the next alarm group.

## REMAINING ALARM GROUPS

Continue to step through all of the available alarm groups, selecting the various alarms from the groups that you want to send to the selected destination (D1, D2, etc.). The procedure for bypassing or selecting alarms from each group and then assigning them to a device in that group is the same as discussed for In-Tank alarms above.

Only installed components will display, so some of the alarm groups shown below may not appear.

## LIQUID SENSOR ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
LIQUID SENSOR ALMS: NO
```

Select the Liquid Sensor Alarms to send (ref. Alarm List in Table 6-2).

## VAPOR SENSOR ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
VAPOR SENSOR ALMS: NO
```

Select the Vapor Sensor Alarms to send (ref. Alarm List in Table 6-2).

## EXTERNAL INPUTS ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
EXTERNAL INPUTS: NO
```

Select the External Inputs Alarm to send (ref. Alarm List in Table 6-2).

## LINE LEAK ALARMS (VLLD)

If necessary, press STEP until you see the message:

```
D1: (Destination)
LINE LEAK ALARMS: NO
```

Select the Line Leak (Volumetric) Alarms to send (ref. Alarm List in Table 6-2).

## GROUNDWATER SENSOR ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
GROUNDWATER ALMS: NO
```

Select the Groundwater Sensor Alarms to send (ref. Alarm List in Table 6-2).

### 2 WIRE C.L. SENSOR ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
2 WIRE CL ALARMS: NO
```

Select the 2 Wire C.L. Sensor Alarms to send (ref. Alarm List in Table 6-2).

### 3 WIRE C.L. SENSOR ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
3 WIRE CL ALARMS: NO
```

Select the 3 Wire C.L. Sensor Alarms to send (ref. Alarm List in Table 6-2).

### RECEIVER ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
RECEIVER ALARMS: NO
```

Select the Receiver Alarms to send (ref. Alarm List in Table 6-2).

### POWER SIDE DIM ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
POWER SIDE DIM ALM: NO
```

Select the Power Side DIM Alarms to send (ref. Alarm List in Table 6-2).

### RECONCILIATION ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
RECONCILIATION ALM: NO
```

Select the Reconciliation Alarms to send (ref. Alarm List in Table 6-2).

### PRESSURE LINE LEAK DETECTOR (PLLD) ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
PRESSURE LINE LEAK: NO
```

Select the Pressure Line Leak Detector Alarms to send (ref. Alarm List in Table 6-2).

## WIRELESS PRESSURE LINE LEAK DETECTOR (WPLLD) ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
WPLLD LINE LEAK: NO
```

Select the WPLLD Line Leak Alarms to send (ref. Alarm List in Table 6-2).

## COMMUNICATION SIDE DIM ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
COMM SIDE DIM ALM: NO
```

Select the Communication Side DIM Alarms to send (ref. Alarm List in Table 6-2).

## SMART SENSOR ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
SMART SENSOR ALM: NO
```

Select the Smart Sensor Alarms to send (ref. Alarm List in Table 6-2).

## PUMP RELAY MONITOR ALARM

If necessary, press STEP until you see the message:

```
D1: (Name)
PUMP ALARM: NO
```

Select Pump Relay Monitor Alarm (ref. Alarm List in Section 6, Table 6-2).

## VMCI DISPENSER INTERFACE ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
VMCI ALARM: NO
```

Select the VMCI Alarms to send (ref. Alarm List in Table 6-2).

## VMC ALARMS

If necessary, press STEP until you see the message:

```
D1: (Destination)
VMC ALARM: NO
```

Select the VMC Alarms to send (ref. Alarm List in Table 6-2).

### SETTING UP AUTO-DIAL ALARMS FOR ADDITIONAL DESTINATIONS

If necessary, press STEP until you see the message:

```
AUTO DIAL ALARM SETUP
PRESS <ENTER>
```

If you have additional destinations to which to send alarms, press ENTER. The system displays the message:

```
D1: (Destination)
IN-TANK ALARMS: NO
```

Press TANK/SENSOR to select another destination (D1, D2, etc.). Repeat the procedures described above beginning with the section entitled “In-Tank Alarms” on page 6-16.

## RS-232 End of Message

If necessary, press STEP until you see the message:

```
RS-232 END OF MESSAGE
DISABLED
```

This feature notifies the receiver that the message is complete. The default value is disabled. To enable the feature so that an end of message character is sent by the RS-232 command, press CHANGE and press ENTER. The system confirms your choice with the message:

```
ENABLED
PRESS <FUNCTION> TO CONTINUE
```

Press FUNCTION to exit.

.

**Table 6-2. Alarm List**

| | |
|---|---|
| **In-Tank Alarms** | LEAK |
| | HIGH WATER |
| | OVERFILL |
| | LOW PRODUCT |
| | SUDDEN LOSS |
| | HI PRODUCT |
| | INVALID HGT |
| | PROBE OUT |
| | WATER WARN |
| | DLVY NEEDED |
| | MAX PRODUCT |
| | GROSS FAIL |
| | PERIOD FAIL |
| | ANNUAL FAIL |
| | PER NEED WN |
| | ANN NEED WN |
| | PER NEED AL |
| | ANN NEED AL |
| | TEST NOTIFY |
| | NoIDLE TIME |
| | SIPHON BRK |
| | CSLD INCR |
| | ACCU WARN |
| | RECON WARN |
| | RECON ALARM |
| | LOW TEMP |
| | TICKET WARN |
| | GROSS LN TK |
| | DLVY DEN WRN |
| | FUEL QUAL |

NOTE: A strikethrough an alarm condition means that you will see the condition in the sequence.

**Table 6-2. Alarm List**

| | |
|---|---|
| **Liquid Sensor Alarms** | FUEL |
| | OPEN[1] |
| | SHORT |
| | WATER |
| | WATER OUT |
| | HIGH LIQUID |
| | LOW LIQUID |
| | LIQ WARNING |
| **Vapor Sensor Alarms** | FUEL |
| | OPEN[1] |
| | SHORT |
| | ~~WATER~~ |
| | WATER OUT |
| | ~~HIGH LIQUID~~ |
| | ~~LOW LIQUID~~ |
| | ~~LIQ WARNING~~ |
| **External Inputs Alarm** | CLOSED |

[1] *Sensor Out alarm*

**Table 6-2. Alarm List**

| | |
|---|---|
| **VLLD Alarms** | SHUTDOWN |
| | SELF WARN |
| | HANDLE WARN |
| | GROSS LINE |
| | GROSS LSELF |
| | GROSS PUMP |
| | GROSS PSELF |
| | PER NEED WN |
| | ANN NEED WN |
| | PER NEED AL |
| | ANN NEED AL |
| | PER LINE |
| | PER LSELF |
| | PER PUMP |
| | PER PSELF |
| | ANN LINE |
| | ANN LSELF |
| | ANN PUMP |
| | ANN PSELF |
| | PRESS WARN |
| | PRESS ALM |
| | TST FLT GRS |
| | TST FLT PER |
| | TST FLT ANN |
| | FUEL OUT |
| **Groundwater Sensor Alarms** | FUEL |
| | OPEN[1] |
| | SHORT |
| | ~~WATER~~ |
| | WATER OUT |
| | ~~HIGH LIQUID~~ |
| | ~~LOW LIQUID~~ |
| | LIQ WARNING |

[1] *Sensor Out alarm*

**Table 6-2. Alarm List**

| | |
|---|---|
| **2-Wire C.L. Sensor Alarms** | FUEL |
| | OPEN[1] |
| | SHORT |
| | WATER |
| | ~~WATER OUT~~ |
| | ~~HIGH LIQUID~~ |
| | ~~LOW LIQUID~~ |
| | LIQ WARNING |
| **3-Wire C.L. Sensor Alarms** | FUEL |
| | OPEN[1] |
| | SHORT |
| | ~~WATER~~ |
| | ~~WATER OUT~~ |
| | HIGH LIQUID |
| | ~~LOW LIQUID~~ |
| | LIQ WARNING |
| **Receiver Alarms** | SERVICE REPORT WARN |
| | ALARM CLEAR WARNING |
| | DELIVERY REPORT WRN |
| | NO DIAL TONE ALARM |
| | DEL NOTIFICATION |
| **Power Side DIM Alarms** | DISABLED |
| | COMM ERROR |
| **Reconciliation Alarms** | REC THRHOLD |
| | CLOSE SHIFT |
| | CLOSE DAILY |

[1] *Sensor Out alarm*

**Table 6-2. Alarm List**

| | |
|---|---|
| **PLLD Alarms** | GROSS FAIL |
| | ANN LN FAIL |
| | PER NEED WN |
| | PER NEED AL |
| | OPEN ALARM |
| | SHUTDOWN |
| | PERIOD FAIL |
| | ANN NEED WN |
| | ANN NEED AL |
| | LO PRES ALM |
| | HANDLE ALRM |
| | FUEL OUT |
| | LN EQ FAULT |
| **WPLLD Alarms** | GROSS FAIL |
| | PERIOD FAIL |
| | PER NEED WN |
| | PER NEED AL |
| | OPEN ALARM |
| | COMM ALARM |
| | SHUTDOWN |
| | ANN LN FAIL |
| | ANN NEED WN |
| | ANN NEED AL |
| | HANDLE ALRM |
| | FUEL OUT |
| | LN EQ FAULT |
| **Comm Side DIM Alarms** | DISABLED |
| | COMM ERROR |
| | TRANS ALARM |
| **Smart Sensor Alarms** | SETUP WARN |
| | COMM ALARM |
| | SENSR FAULT |
| | FUEL WARN |
| | FUEL ALARM |
| | WATER WARN |

**Table 6-2. Alarm List**

| | |
|---|---|
| **Smart Sensor Alarms** | WATER ALARM |
| | HI LIQ WRN |
| | HI LIQ ALM |
| | LOW LIQ WRN |
| | LOW LIQ ALM |
| | TEMP WARN |
| | RELAY ACTIVE |
| | INSTALL ALM |
| | SNSR FLT WRN |
| | VACUUM WARN |
| | NO VAC ALM |
| **Pump Relay Monitor Alarm** | PUMP ALARM |
| **VMCI Dispenser Interface Alarms** | DISABLED |
| **VMC Alarms** | COM TIMEOUT |
| | METR NC ALM |
| | SHUTDWN WRN |
| | SHUTDWN ALM |

# 7 In-Tank Setup

The In-Tank Setup function allows you to enter information about your tanks and the products they contain. Also, through this function you set up the monitoring, reporting, and alarm features for each tank.

You must enter data individually for each connected tank.

## Selecting the In-Tank Setup Function

To select In-Tank Setup, press FUNCTION until you see the message:

```
IN-TANK SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Tank Configuration

If necessary, press STEP until you see the message:

```
TANK CONFIG - MODULE 1
SLOT #: X X X X
```

Use the message shown above to tell the system which of the four probe positions on a module are connected to probes.

### HOW THE SYSTEM CONFIGURES IN-TANK PROBES

If in-tank probes are installed, the system recognizes the presence and module slot location(s) of Probe Interface Module(s). It also establishes a module number based on slot location. For example, if modules are installed in slots #3 and #4, the module in slot #3 automatically becomes module #1 and the module in slot #4 becomes module #2.

As you specify which positions on a module are connected to probes, the system establishes a number for each probe that corresponds to the probe's position on the module. For example, if there is a probe connected to positions 2 and 3 of module 1, the probe for position 2 becomes T2 and the probe for position 3 becomes T3.

To indicate that a probe position on the module is connected to a probe, choose the number corresponding to that position. For example, if the position is 3, choose 3 for the position. To indicate that a position is not connected to a probe, choose X for that position.

### SPECIFYING IN-TANK PROBE POSITIONS

To specify whether position 1 is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears. Repeat these steps until you have correctly specified all four probe positions. When you have entered a choice for all positions, press ENTER to confirm your entry. The system displays the following message:

```
SLOT # - 1 2 3 4
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the TANK CONFIG message for the next module. Up to 2 modules may be installed. Repeat the steps described above for each module until you have entered the configuration information (probe positions) for all modules and the system displays the ENTER PRODUCT LABEL message.

## Product Labels

If necessary, press STEP until you see the message:

```
ENTER PRODUCT LABEL
T1:
```

Enter the type of fuel (e.g., Diesel, Unleaded, etc.) in the selected tank, identified in the second line of the message. In international installations, the first two characters of the product label will be sent to third party equipment as a GRADE label, i.e., UL UNLEADED will send “UL.”

To enter the type of fuel in the tank, press CHANGE. Enter an alphanumeric label for any system-compatible fluid fuel. Press ENTER to confirm your entry. The system displays:

```
T1: (Product Label)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Product Code

If necessary, press STEP until you see the message:

```
T1: (Product Label)
PRODUCT CODE: 1
```

Enter the alphanumeric code used by a point-of-sale terminal or other external device to identify product for inventory control purposes.

NOTE: Many point of sale and pump control devices within the United Kingdom use 4* to indicate “Four Star” premium grade petrol. The asterisk * is entered by pressing the zero key 5 times.

To enter the product code for the selected tank, press CHANGE. Enter the alphanumeric code. Press ENTER to confirm your entry. The system displays:

```
PRODUCT CODE: X
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Coefficient of Thermal Expansion

If necessary, press STEP until you see the message:

**T1: (Product Label)**
**THERMAL COEFF: 0.00000**

If this is a siphon manifolded secondary tank, this window will not appear.

To ensure proper leak test performance, you must enter the Coefficient of Thermal Expansion for the fuel in each tank. The system requires these values to establish proper temperature compensation factors during a leak test and for use in calculating temperature compensated volume and density.

If you know your product's thermal coefficient enter that value. Otherwise refer to Table 7-1 for list of typical thermal coefficients for various fuels and liquids:

**Table 7-1.- Typical Thermal Coefficients**

| Product | Thermal Coefficient (U.S. Units) | Thermal Coefficient (Metric Units) |
|---|---|---|
| AdBlue or DEF | 0.00040 | 0.00022 |
| Alcohol | 0.00063 | 0.00114 |
| Aviation Gas | 0.00075 | 0.00135 |
| Diesel (fuel oil #2) [DERV] | 0.00045 | 0.00081 |
| <Derv> Biodiesel (B20) | 0.00045 | 0.00081 |
| <Derv> Biodiesel (B100) | 0.00044 | 0.00079 |
| Ethylene Glycol | 0.00037 | 0.00067 |
| Fuel Oil #4 | 0.00047 | 0.00085 |
| Gasohol | 0.00069 | 0.00125 |
| Gear Oil, 90W | 0.00047 | 0.00085 |
| Hydraulic Oil | 0.00047 | 0.00085 |
| Jet Fuel | 0.00047 | 0.00085 |
| Kerosene (fuel oil #1) [Paraffin] | 0.00050 | 0.00090 |
| Liquefied Petroleum Gas (LPG) | 0.00160 | 0.00288 |
| Leaded | 0.00070 | 0.00126 |
| Motor Oil | 0.00047 | 0.00085 |
| Premium [4 Star] | 0.00070 | 0.00126 |
| Regular Unleaded | 0.00070 | 0.00126 |
| Super Unleaded | 0.00070 | 0.00126 |
| Low benzene unleaded petrol | 0.00070 | 0.00126 |
| Transmission Fluid | 0.00047 | 0.00085 |
| Turbine Oil | 0.00047 | 0.00085 |

**Table 7-1.- Typical Thermal Coefficients**

| Product | Thermal Coefficient (U.S. Units) | Thermal Coefficient (Metric Units) |
|---|---|---|
| Water | 0.00012 | 0.00022 |
| Washer Fluid | 0.00047 | 0.00085 |
| Used Oil | 0.00044 | 0.00079 |

To enter the Thermal Coefficient, press CHANGE and enter the coefficient in U.S. or Metric units, depending on the units specified in System Setup **(Be careful to add the correct number of zeros to the right of the decimal point. An incorrect entry can cause test failures and other problems)**.

Contact your authorized Veeder-Root Service Representative for thermal coefficients for British Imperial units. Press ENTER to confirm your entry. The system displays:

```
THERMAL COEFF: 0.000XX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Tank Density

If necessary, press STEP until you see the message:

```
T1: (Product Label)
DENSITY              :0.0000
```

If Mass/Density is disabled this window will not appear!

A value of 0 indicates that the density for the product in this tank has not been entered, or a delivery has ocurred, or the thermal coefficient changed. For Tank Density enter any one of the product's values below (units are not entered):

- Mass per unit volume at reference temperature (density),
- Specific Gravity,
- API number
- A fourth way to enter Density is by entering the known Thermal Coefficient of the product in the tank (in the setup step above) and letting the console automatically calculate Tank Density using the Thermal Coefficient value (density value is not displayed).

If necessary, press CHANGE and enter the density of the product in this tank as shown in the example below:

```
T1: (Product Label)
DENSITY              :5.9987
```

Press ENTER:

```
DENSITY              :5.9987
PRESS <STEP> TO CONTINUE
```

If this value is accepted, it will be converted to actual density (but the user entered value is displayed).

NOTE: A Setup Data Warning is posted from the time the Mass/Density feature is enabled until a density or thermal coefficient value is entered for that tank, clearing the alarm.

Press STEP to continue.

## Tank Diameter

If necessary, press STEP until you see the message:

```
T1: (Product Label)
TANK DIAMETER: 000.00
```

Enter the inside diameter of the selected tank (for a linear tank, enter the inside tank height in place of the tank's inside diameter). You can find this dimension on the Tank Chart. To enter the diameter, press CHANGE, enter the diameter, then press ENTER to confirm your entry. The system displays:

```
TANK DIAMETER: XXX.XX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Tank Profile

If necessary, press STEP until you see the message:

```
T1: (Product Label)
TANK PROFILE 1PT
```

Use this display to select the number of height/volume values you wish to enter for the tank. The system will use these values, along with the Tank's inside diameter (or height), to interpolate volume readings along the entire length of the probe.

### TANK PROFILE SELECTIONS

#### 1 point

This method requires only the 100% (full) volume to profile the tank. This selection is used for horizontally installed, flat-ended cylindrical tanks, and should be selected when AccuChart is available for this type tank.

#### 4 Points

This method requires 4 volumes to profile the tank. The requested volumes are at percentages of height (e.g., the 75% volume of a 96" diameter tank = the volume at a height which is 75% of 96" or 72"). This selection can be used for all rounded- and dished-end tanks, and should be selected when AccuChart is available for these type tanks.

#### 20 points

This method requires 20 volumes to profile the tank. The requested volumes are at percentages of height (e.g., the 5% volume of a 96" diameter tank = the volume at a height which is 5% of 96" or 4.8"). This selection can be used for all rounded- and dished-end tanks.

#### 50 Points

This method requires entry of height/volumes pairs for up to 50 points to profile the tank (tank diameter/full volume is counted as one of the 50 points). It is recommended that these pairs be derived by strapping the tank. This selection can be used for all tanks.

### Linear

This method requires only the 100% (full) volume to profile the tank. When using the linear tank profile you must enter the inside height of the tank in place of the inside diameter of the tank in Tank Diameter setup (see above). This profile can be used for flat-ended cylindrical tanks standing on end and for rectangular tanks.

### PROCEDURE

To accept the Tank Profile shown on the TANK PROFILE message, press STEP. (The system displays the FULL VOL message.)

To change the Tank Profile, press CHANGE until the desired profile appears. Press ENTER to confirm your choice. The system displays:

```
T1: (Product Label)
TANK PROFILE 1PT
```

To accept the displayed tank profile, press STEP to continue. To select another tank profile, 4 pt, 20 pt, Linear, or 50 pt, press CHANGE until the desired profile is displayed:

```
T1: (Product Label)
TANK PROFILE: XXXXXX
```

Press ENTER:

```
CLEAR EXISTING PROFILE
ARE YOU SURE? : NO
```

If sure, press CHANGE:

```
CLEAR EXISTING PROFILE
ARE YOU SURE? : YES
```

Press ENTER to confirm:

```
ARE YOU SURE? : YES
PRESS <STEP> TO CONTINUE
```

These messages appear when 50 pt profile is selected. Changing profile selection will erase the previously entered 50 point profile!

## Full Volume

If necessary, press STEP until you see the message:

```
T1: (Product Label)
FULL VOL: 000000
```

To enter the full volume of the tank (100% height) press CHANGE. Enter the volume in gallons or litres, depending on the units established in System Setup. Press ENTER to confirm your entry. The system displays:

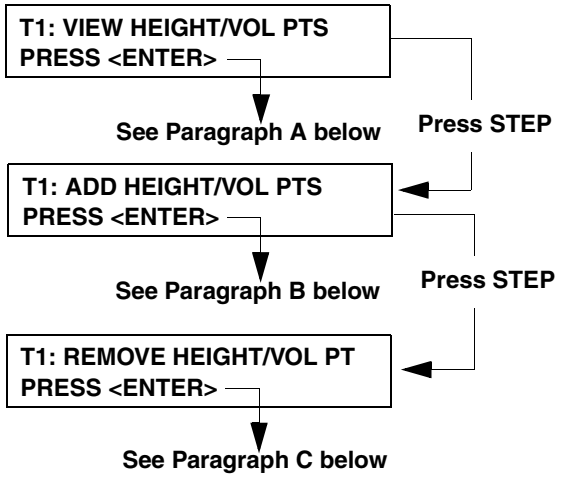
```
FULL VOL: XXXXXX
PRESS <STEP> TO CONTINUE
```

## 4 OR 20 POINT TANK PROFILES HEIGHT/VOLUME ENTRIES

If you selected 4 or 20 points for Tank Profile press STEP and the system prompts you for additional volumes at specified heights in the tank. Calculate these values from the Tank Chart. Note: for both profiles (4 or 20 pt), these volumes are requested as a percentage (e.g., 75% volume means the volume at a point 75% of the height. For a 96" diameter tank with a full volume of 10000 gallons, 75% volume would be the volume at 72", not 75% of 10,000 gallons). Repeat the procedure described above to enter each prompted volume. When all volumes are entered, press STEP.

## 50 POINT TANK PROFILE HEIGHT/VOLUME ENTRIES (TANK CHART SECURITY DISABLED)

If you selected 50 points for Tank Profile and Tank Chart Security is disabled, press STEP and the system displays:




### A - Viewing Height/Volume Points

At the display below:

```
T1: VIEW HEIGHT/VOL PTS
PRESS <ENTER>
```

Press ENTER to view the 50 points (top down) and the display appears:

```
T1: (Product Label)
92.16 INCH VOL: 009800
```

This example shows the first height/volume point in a 96" diameter, 10,000 gallon tank

Continue to press STEP to view remaining height/volume points in descending order by height.

### B - Adding Height/Volume Points

At the display below:

```
T1: ADD HEIGHT/VOL PTS
PRESS <ENTER>
```

Press ENTER to add a height/volume point and the display appears:

```
T1: (Product Label)
          HEIGHT : 000000
```

Press CHANGE, enter the height:

```
T1: (Product Label)
              HEIGHT : 88.32
```

Press ENTER:

```
              HEIGHT : 88.32
PRESS <STEP> TO CONTINUE
```

Press STEP:

```
T1: (Product Label)
88.32 INCH VOL : 000000
```

Press CHANGE, enter the volume at this height:

```
T1: (Product Label)
88.32 INCH VOL : 9200
```

Press ENTER to accept the entry:

```
88.32 INCH VOL : 9200
PRESS <STEP> TO CONTINUE
```

Press STEP and follow the above procedure to continue adding height/volume points until you are finished.

### C - Removing Height/Volume Points

At the display below:

```
T1: REMOVE HEIGHT/VOL PT
PRESS <ENTER>
```

Press ENTER and if necessary, press STEP until you display the height/volume point you want to remove:

```
88.32 INCH VOL : 9200
T1 : REMOVE: NO
```

Press CHANGE:

```
88.32 INCH VOL : 9200
T1 : REMOVE: YES
```

Press ENTER to confirm:

```
T1 : REMOVE: YES
PRESS <STEP> TO CONTINUE
```

Press STEP and follow the above procedure to continue removing height/volume points until you are finished.

## 50 POINT TANK PROFILE ENTRIES WITH TANK CHART SECURITY ENABLED

If you selected 50 points for Tank Profile AND Tank Chart Security has been enabled, press STEP and the system displays:

```
TANK PROFILE      : 50 PTS
ENTER PASSCODE->_______<
```

Enter the 6-digit numeric passcode and press ENTER:

```
T1: (Product Label)
FULL VOL: 000000
```

To enter the full volume of the tank (100% height) press CHANGE. Enter the volume in gallons or litres, depending on the units established in System Setup (NOTE: Full Volume cannot be a volume less than the largest tank chart volume). Press ENTER to confirm your entry. The system displays:

```
FULL VOL: XXXXXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue:

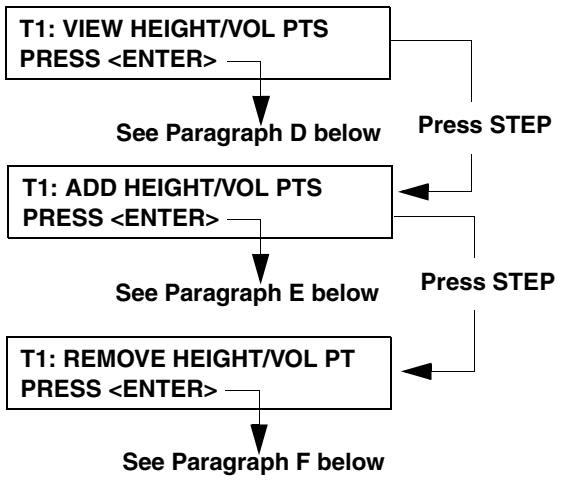
```
T1: (Product Label)
TANK CAPACITY     : 000000
```

The Weights and Measures Officer presses CHANGE and enters the tank capacity. Press ENTER to accept the value and press STEP to continue:

```
T1: (Product Label)
PROBE S/N         : XXXXXX
```

This display is view-only display and shows the serial number of the probe installed in the tank.

Press STEP to continue:



### D - Viewing Height/Volume Points

At the display below:

```
T1: VIEW HEIGHT/VOL PTS
PRESS <ENTER>
```

Press ENTER to view the 50 points (top down) and the display appears:

```
T1: (Product Label)
92.16 INCH VOL: 009800
```

This example shows the first height/volume point in a 96" diameter, 10,000 gallon tank

Continue to press STEP to view remaining height/volume points in descending order by height.

### E - Adding Height/Volume Points

At the display below:

```
T1: ADD HEIGHT/VOL PTS
PRESS <ENTER>
```

Press ENTER to add a height/volume point and the display appears:

```
T1: (Product Label)
          HEIGHT : 000000
```

Press CHANGE, enter the height:

```
T1: (Product Label)
          HEIGHT : 88.32
```

Press ENTER:

```
          HEIGHT : 88.32
PRESS <STEP> TO CONTINUE
```

Press STEP:

```
T1: (Product Label)
88.32 INCH VOL : 000000
```

Press CHANGE, enter the volume at this height:

```
T1: (Product Label)
88.32 INCH VOL : 9200
```

Press ENTER to accept the entry:

```
88.32 INCH VOL : 9200
PRESS <STEP> TO CONTINUE
```

Press STEP and follow the above procedure to continue adding height/volume points until you are finished.

### F - Removing Height/Volume Points

At the display below:

```
T1: REMOVE HEIGHT/VOL PT
PRESS <ENTER>
```

Press ENTER and if necessary, press STEP until you display the height/volume point you want to remove:

```
88.32 INCH VOL : 9200
T1 : REMOVE: NO
```

Press CHANGE:

```
88.32 INCH VOL : 9200
T1 : REMOVE: YES
```

Press ENTER to confirm:

```
T1 : REMOVE: YES
PRESS <STEP> TO CONTINUE
```

Press STEP and follow the above procedure to continue removing height/volume points until you are finished.

## Meter Data Present

If necessary, press STEP until you see the message:

```
T1: (Product Label)
METER DATA PRESENT: NO
```

When this feature is enabled, all meter data collected from the dispensers will be reported to the system. If dispenser data for this tank is being reported to the DIM (i.e., meter data present), then this parameter MUST be set to YES.

To enable the feature, press CHANGE then ENTER to confirm your choice. The system displays:

```
METER DATA PRESENT: YES
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Vapor Loss Factor - International Option

If necessary, press STEP until you see the message:

```
T1: (Product Label)
VAPOR LOSS FACTOR: 0.00%
```

Ticketed Delivery must be enabled for this menu to appear.

Press CHANGE and enter the vapor loss factor. Allowable range 0.00 (default) to 0.20%. Press ENTER to confirm your choice.

Press STEP to continue.

## End Factor

If necessary, press STEP until you see the message:

```
T1: (Product Label)
END FACTOR: NONE
```

NOTE: This message appears only if you select METER DATA PRESENT: YES.

The End Factor allows you to select an end shape type (if known) to improve the AccuChart height-to-volume calculations. Press CHANGE to view your choices. The default setting of NONE automatically bypasses the End Factor entry and determines tank profile based upon your selection in the "Tank Profile" entry on page 7-5. Selecting FLAT = an End Factor of 0. Selecting HEMISPHER = an End Factor of 1. Selecting OTHER displays the message:

```
T1: (Product Label)
END VALUE: X.X
```

If you select NONE, FLAT, or HEMISPHER(E), press ENTER when that choice is visible, then STEP.

If you select OTHER, press ENTER and the End Value message appears. Press CHANGE, enter an End Value of from 0 to 1.0 in 0.1 increments (0.3 is the recommended end value for dished-end tanks), press ENTER, then STEP.

## Calibration Update

If necessary, press STEP until you see the message:

```
T1: (Product Label)
CAL UPDATE: IMMEDIATE
```

Note: This message appears only if you select METER DATA PRESENT: YES. Note for international installations, CAL UPDATE will be PERIODIC if HRM is enabled.

IMPORTANT! For proper setup and operation of this feature, you should:

1. Pressure-test all lines for tightness prior to startup.
2. Calibrate all dispensing meters "on strike" or within one cubic inch per five gallons (8.65 centilitres per 10 litres [0.865%]).
3. Run all tanks over as wide a range of fuel levels as possible for the first 56 days of operation to improve calibration accuracy.

When this feature is enabled, you can control when AccuChart updates the calibration chart. The product volume of your tank may be recalculated when AccuChart updates the calibration chart. If you are performing manual reconciliation, you will probably want to control when AccuChart changes the product volume of your tank.

### AccuChart Features

AccuChart is permitted in line, siphon, or a combination of line and siphon manifolded tanks with the following restrictions:

- A siphon manifolded set can have no more than 2 tanks.
- There can be no more than 4 sets of siphon manifolded tanks per system.
- AccuChart does not work on manifolded tanks with a BDIM.

- Entering a Tank Tilt value is not recommended if the system is performing automatic Business Inventory Reconciliation and AccuChart.

### Calibration Update Selections

To change the method for calibration updates, press CHANGE until the desired method appears. Descriptions of the available update methods are listed below.

- **Immediate**--This method provides the most accurate reconciliation results. It is designed for customers using BIR reports for reconciliation. All calibrations and any resulting changes in product volume go into effect immediately, as they occur. Changes to the product volume will not generate BIR variance errors.
- **Periodic**--This method is designed for customers performing manual reconciliation. It allows a maximum of two changes to product volume, as a result of AccuChart's calibration. The first calibration update occurs 28 days from the startup of AccuChart and the second calibration update occurs 56 days from the startup of AccuChart.
- **Complete**--This method is also designed for customers performing manual reconciliation. It is similar to the Periodic method, except that it allows only one change to product volume, as a result of AccuChart's calibration. The only calibration update occurs 56 days from the startup of AccuChart.
- **Never**--This setting is used by customers who want to disable AccuChart (two reasons are discussed below). Height to volume calculations are performed by using the values entered by the customer for diameter, tilt, and capacity. If the customer changes the method from **Never** to one of the other methods, the other method goes into effect immediately.

  1. For PLLD installations with line manifolded tanks, the master tank's check valve's relief pressure must be below the pump's operating pressure. AccuChart will run when there is line manifolding with PLLD line leak detection; however, you should disable AccuChart if the results are poor.

  2. AccuChart also cannot support ISTs if they are communicating to each other. The same is true of Red Jacket's CPT and any other configuration where all pumps are On (e.g., Dispensing mode = All [see page 10-7, page 11-6, or page 15-2 as appropriate]). Disconnecting the ISTs/CPTs links and/or selecting Sequential or Alternate dispense modes during the calibration period would overcome this limitation.

Press ENTER to confirm your choice. Press STEP to continue.

## Float Size

This display requires that you enter the installed Mag probe float size.

```
T1: (Product Label)
FLOAT SIZE: 3.0 IN.
```

Enter the float size installed on the tank's probe: 4-, 3-, 2-, or 1-inch (101 mm, 76 mm, 50 mm, or 25 mm), 4.0 IN. PS or Custom. The system automatically recognizes which Mag probe type you have installed and will display only the applicable float size options. Only select "Custom" if the literature that was shipped with the float specifically states that you must choose this float size selection, i.e., Chem-ISO and LPG-ISO probes. The installation literature accompanying Chem-ISO and LPG-ISO probes will list the required values to enter.

Press CHANGE to display the float size you installed (for Custom, see literature accompanying float), then press ENTER to confirm your choice. Press STEP to continue.

## Water Warning

If necessary, press STEP until you see the message:

```
T1: (Product Label)
WATER WARNING: 00:0
```

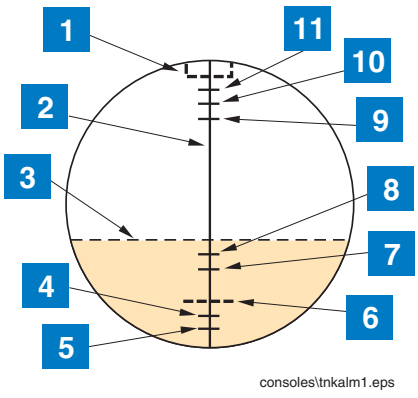
NOTE: This message does not appear for tanks in which high alcohol probes are installed.

Water Warning identifies a high water level in the bottom of the tank [see Figure 7-1]. It acts as a pre-warning to the High Water Limit. Set this value at a lower level than High Water Limit.

To enter the Water Warning value for the selected tank, press CHANGE. Enter the limit in inches (5.0 maximum) or millimeters (199 maximum), depending on the units established in System Setup. Press ENTER to confirm your entry. The system displays:

```
WATER WARNING: XX.X
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.




| Legend for numbered boxes: | |
|---|---|
| 1. Probe Canister (Reference) | 7. Low Product |
| 2. Probe | 8. Delivery Limit |
| 3. Product | 9. Overfill Limit |
| 4. High Water Limit | 10. High Product |
| 5. Water Warning | 11. Max or Label Vol |
| 6. Pump Pickup (Reference) | |

**Figure 7-1. Relative Positions of Tank Alarm Limits**

## High Water Limit

If necessary, press STEP until you see the message:

```
T1: (Product Label)
HIGH WATER LIMIT: 0:0
```

Note: This message does not appear for tanks in which high alcohol probes are installed.

When water in the tank rises to this High Water Limit value, the system triggers an alarm. Set this value at a level lower than the pickup for the submersible pump or suction line [see Figure 7-1].

To enter the High Water Limit value for the selected tank, press CHANGE. Enter the limit in inches (5.0 maximum) or millimeters (199 maximum), depending on the units established in System Setup. Press ENTER to confirm your entry. The system displays:

```
HIGH WATER LIMIT: X.X
PRESS STEP TO CONTINUE
```

Press STEP to continue.

## Water Alarm Filter

If necessary, press STEP until you see the message:

```
T1: (Product Label)
WATER ALARM FILTER: LOW
```

Note: This message does not appear for tanks in which high alcohol probes are installed.

The water alarm filter allows the user to determine the response time of the water alarm during a delivery. The default filter setting of Low will provide the quickest response time but may be susceptible to false alarms if the turbulence caused by a delivery disturbs the water float. In most applications the water filter setting of Low will not produce false water alarms. Adjustments to the delivery fill tube may eliminate false water alarms caused by delivery turbulence. If deliveries are causing an unacceptable number of false water alarms, raise the water filter level to Medium. If the false water alarms continue, raise the filter level to High.

Press CHANGE to select a different filter, press ENTER to confirm the change, then STEP; otherwise press STEP to continue.

## Max or Label Vol

If necessary, press STEP until you see the message:

```
T1: (Product Label)
MAX OR LABEL VOL: 000000
```

Maximum or Label Volume (in international installations this is considered safe working capacity) alarm warns when the level of fluid in the tank exceeds the volume you enter here. Set this value at a level higher than the High Level Limit [see Figure 7-1].

Press CHANGE and enter the value. Press ENTER to confirm your entry. The system displays:

```
MAX OR LABEL VOL: XXXXXX
PRESS <STEP> TO CONTINUE
```

## Overfill Limit

If necessary, press STEP until you see the message:

```
T1: (Product Label)
OVERFILL LIMIT: 000%
```

Overfill Limit warns of a potential overfill only during a bulk delivery. When the volume reaches this limit, the system can activate an on-site overfill alarm and trigger a printout showing the tank #, date, time, and product. Set this percentage no greater than 90% of the tank's capacity (in international installations set this percentage no greater than 99% of label volume) see Figure 7-1.

Press CHANGE. Enter the percent limit and press ENTER to confirm your entry:

```
OVERFILL LIMIT: XX%
PRESS <STEP> TO CONTINUE
```

## High Product

If necessary, press STEP until you see the message:

```
T1: (Product Label)
HIGH PRODUCT: 000%
```

High Product warns when the volume of fluid in the tank exceeds the value you enter here. The High Product alarm occurs whenever this value is exceeded, whether or not a delivery is in progress.

In U.S. installations this is especially useful in applications such as used oil holding tanks, where the rate of fill can be too gradual for the system to recognize the increase as a delivery and activate the Overfill Limit. It can trigger the same alarm indications as Overfill Limit. Set this limit at a percentage that is between the Overfill Limit percentage and 95% (of the tank's capacity) [see Figure 7-1].

In international installations, this is especially useful to warn of an impending overfill. It can trigger the same alarm indications as Overfill Limit. Set this limit to 98% if the label volume is greater than 25,000 litres and to 96% if the label volume is less than 25,000 litres.

Press CHANGE. Enter the percent limit. Press ENTER to confirm your entry. The system displays:

```
HIGH PRODUCT: XX%
PRESS <STEP> TO CONTINUE
```

## Delivery Limit

If necessary, press STEP until you see the message:

```
T1: (Product Label)
DELIVERY LIMIT: 000%
```

Delivery Limit warns when the level of fluid in the tank drops to a level at which the operator calls for a delivery. Set this percentage at a volume higher than that of the Low Product alarm [see Figure 7-1].

Press CHANGE. Enter the percent limit. Press ENTER to confirm your entry. The system displays:

```
DELIVERY LIMIT: XX%
PRESS <STEP> TO CONTINUE
```

## Low Product

If necessary, press STEP until you see the message:

```
T1: (Product Label)
LOW PRODUCT: 000000
```

Low Product warns when volume in a tank recedes to the level you enter here [see Figure 7-1].

In international installations, assuming no water in the tank, this limit should be set no lower than: the tank volume at 250 mm for Mag probe types 8473, or the tank volume at 125 mm for Mag probe types 8493 (these are the minimum volumes that can be measured by each probe type).

Press CHANGE. Enter the volume. Press ENTER to confirm your entry. The system displays:

```
LOW PRODUCT: XXXXXX
PRESS <STEP> TO CONTINUE
```

## Leak Alarm Limit

If necessary, press STEP until you see the message:

```
T1: (Product Label)
LEAK ALARM LIMIT: 00
```

During a leak test, Leak Alarm Limit warns when the cumulative temperature compensated product loss from a tank reaches the limit value. The system automatically interprets the limit you enter as a negative. It is not necessary to enter the minus (-) sign.

The Leak Alarm Limit is intended to identify and warn of large losses of product during a leak test. Small changes in fuel conditions can cause temporary variations in fuel level reading that balance out over the duration of a test in a tight tank.

To prevent false reports and alarms from being triggered, do not set the limit value to identify losses of 0.2 gph (0.76 lph) or less during the test period. The Leak Limit should be set to identify losses of 1 gph (4 lph) or greater.

Consider the leak rate you wish to identify and the length of the test when determining a limit value. A limit value of 8 gallons (32 litres) will warn of a 1 gph (4 lph) leak in 8 hours or a 2 gph (8 lph) leak in 4 hours.

To enter the Leak Alarm Limit, press CHANGE. Enter the limit in gallons (from 1 to 99) or litres (from 4 to 399), depending on the units set up in System Units. Press ENTER to confirm your entry. The system displays:

```
LEAK ALARM LIMIT: XX
PRESS <STEP> TO CONTINUE
```

## Sudden Loss Limit

If necessary, press STEP until you see the message:

```
T1: (Product Label)
SUDDEN LOSS LIMIT: 000000
```

Sudden Loss Limit immediately warns of a sudden loss of fuel during a leak test. It is not based on temperature-compensated volume and is intended to identify losses larger than the Leak Alarm Limit. Typically, you should set this limit at 25 gallons or 100 litres, or higher.

To enter the Sudden Loss Limit for the selected tank, press CHANGE. Enter the limit in gallons or litres, depending on the units specified in System Setup. Press ENTER to confirm your entry. The system displays:

```
SUDDEN LOSS LIMIT: XXXXXX
PRESS <STEP> TO CONTINUE
```

## Tank Tilt

The following Tank Tilt procedure is for U.S. installations. For international installations, see Appendix A.

Consoles w/ BIR only--Entering a Tank Tilt value is not recommended if the system is performing automatic Business Inventory Reconciliation and AccuChart.

If the probe is installed in the center of the tank, the value is 000.00 U.S.; 0000.0 Metric.

### CALCULATING TANK TILT (H2)

Use the worksheet below to record measurements and perform Tank Tilt calculations for each of the tanks.

1. Stick the tank at the fill riser opening at least three times. Record the average reading in column A of the chart.
2. Before beginning this step, make sure the Tank Tilt in the display above = 0. Record the probe's Fuel Height (In-Tank Inventory Function) reading in column B of the chart.
3. Subtract the value entered in column B from the value entered in column A. Record the result in column C.
4. Measure the distance in inches (or millimeters if you use Metric Units) between the probe and fill risers. Record the measurement in column D.
5. Divide the value in column C by column D to determine the pitch. Record the results in column E.
6. Measure the distance in inches or millimetres from the probe riser to the center of the tank. Record the distance in column F.
7. Multiply column E by column F to determine Tank Tilt (E X F = Tank Tilt Value). Record the value in column G.

## ENTERING THE TANK TILT VALUE

**Table 7-2.- Tank Tilt Calculation Worksheet**

| Tank No. | A Stick Gauge Avg. Height @ Fill Riser | B Probe's Fuel Height Reading (Probe Riser) | C (A - B = C) | D Distance Fill to Probe Risers | E Pitch (C / D = E) | F Distance from Probe Riser to Center of Tank | G Tank Tilt* (E x F = G) |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |

*Tank Tilt may be a positive (+) or negative (-) value. If it is a negative value, BE SURE to change the value symbol to minus (-) when entering a negative Tank Tilt value.

To enter the Tank Tilt value for the selected tank, press CHANGE. If the value is negative, press the +/- key so that a minus (-) sign appears on the display. Enter the value as calculated according to the above procedures. Press ENTER to confirm your entry. The system displays:

```
TANK TILT: ±XXX.XX
PRESS <STEP> TO CONTINUE
```

## Probe Offset

If necessary, press STEP until you see the message:

```
T1: (Product Label)
PROBE OFFSET: +0000.00
```

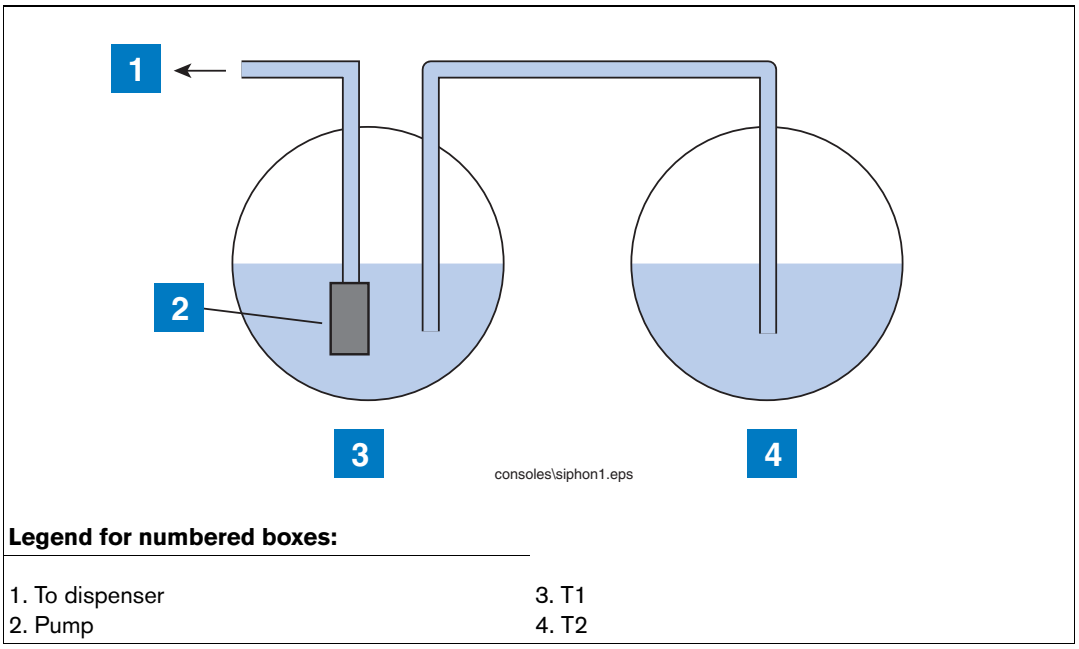
This offset is intended for installations in which the probe is not resting on the bottom of the tank. The value you enter (the distance off bottom) is continually added to the product height, but only to the water height when the water float exceeds a minimum level. The allowable range is -144.0 to +144.0 inches (-3657.6 to +3657.6 mm); the default value is 0 inches.

## Siphon Manifolded Tank Status

If necessary, press STEP until you see the message:

```
T1: SIPHON MANIFOLDED
T#: 00,00,00,00,00,00,00
```

This entry tells the system which tanks are siphon manifolded together (see Figure 7-2), allowing the system to provide cumulative volume information on product stored in a siphon manifolded tank set. You only need to enter this information for one of the tanks in the set. The system automatically enters the information for the other tank(s) in the set.




**Legend for numbered boxes:**

| | |
|---|---|
| 1. To dispenser | 3. T1 |
| 2. Pump | 4. T2 |

**Figure 7-2. Siphon Manifolded Tanks**

For example, if you are entering setup information for Tank #1 as in the figure, and it is manifolded with Tank #2, you would press CHANGE until 02 appears (you would press the Right-Arrow key to move to the next field if another tank were in the group, then press CHANGE until that tank's number appeared). Press ENTER when you are done making these changes. (Since you are connecting tanks 1 and 2 in this example, you would just STEP past this procedure when you are entering the setup for tank 2 (and any additional tank in the set).

Press STEP to continue.

## Line Manifolded Tank Status

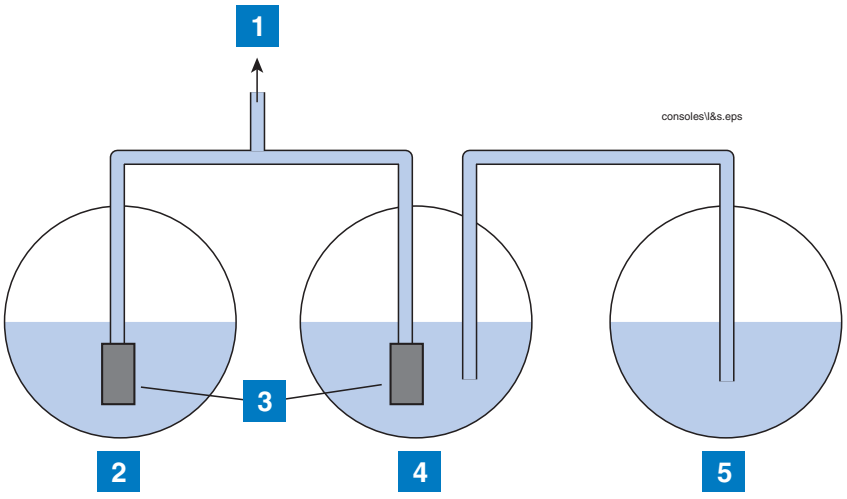
If necessary, press STEP until you see the message:

```
T3: LINE MANIFOLDED
T#: 00,00,00,00,00,00,00
```

This entry tells the system which tanks are line manifolded together (see Figure 7-3), allowing the system to provide cumulative volume information on product stored in a line manifolded tank set. You only need to enter this information for one of the tanks in the line manifolded set. The system automatically enters the information for the other tank (s) in the set. For example, if you are entering setup information for Tank #3 as shown in the figure, and it is line manifolded with Tank #1 (itself in a siphon manifolded set), you would press CHANGE until 01 appears (you would press the Right-Arrow key to move to the next field if another tank were in the line manifolded set, then press CHANGE until that tank's number appeared). Press ENTER when you are done making these changes.

Press STEP to continue.

in the set.




**Legend for numbered boxes:**

1. To dispenser
2. T1
3. Pumps
4. T2
5. T3

Figure 7-3. Line Manifolding A Siphon Manifolded Set To A Single Tank

## Leak Minimum Periodic

If necessary, press STEP until you see the message:

**T1: (Product Label)**
**LEAK MIN PERIODIC: 000%**

This value tells the system the minimum tank volume required to record a passed periodic test. The value reflects federal, state, and local requirements.

To enter a Leak Minimum Periodic value for the selected tank, press CHANGE. Enter the percent value and press ENTER to confirm your entry. The system displays:

```
LEAK MIN PERIODIC: XXX%
PRESS <STEP> TO CONTINUE
```

## Leak Minimum Annual

If necessary, press STEP until you see the message:

```
T1: (Product Label)
LEAK MIN ANNUAL: 000%
```

This value tells the system the minimum tank volume required to record a passed annual test. The value reflects federal, state, and local requirements.

To enter a Leak Minimum Annual value for the selected tank, press CHANGE. Enter the percent value and press ENTER to confirm your entry. The system displays:

```
LEAK MIN ANNUAL: XXX%
PRESS <STEP> TO CONTINUE
```

## Periodic Test Type

If necessary, press STEP until you see the message:

```
T1: PERIODIC TEST TYPE
STANDARD
```

You can choose between Standard and Quick. Choose Standard to run a 2-hour periodic leak test. Choose Quick to perform a 0.2 gph (0.76 lph) test in one hour.

To choose Standard, press STEP. (The system displays the ANNUAL TEST FAIL message.) To choose Quick, press CHANGE, then press ENTER. The system displays the message:

```
QUICK
PRESS <STEP> TO CONTINUE
```

## Annual Test Fail

If necessary, press STEP until you see the message:

```
T1: ANNUAL TEST FAIL
ALARM DISABLED
```

Annual Test Fail alarms when an annual leak test has not passed. You can enable or disable this alarm. To disable the alarm, press STEP. (The system displays the PERIODIC TEST FAIL message.) To enable the alarm for the selected tank, press CHANGE and press ENTER. The system displays the message:

```
ALARM ENABLED
PRESS <STEP> TO CONTINUE
```

## Periodic Test Fail

If necessary, press STEP until you see the message:

```
T1: PERIODIC TEST FAIL
ALARM DISABLED
```

The Periodic Test Fail feature allows you to disable or enable an alarm that triggers if a 0.2 gph (0.76 lph) leak test fails. To disable the alarm, press STEP. (The system displays the GROSS TEST FAIL message.) To enable the alarm for the selected tank, press CHANGE and press ENTER. The system displays the message:

```
ALARM ENABLED
PRESS <STEP> TO CONTINUE
```

## Gross Test Fail

If necessary, press STEP until you see the message:

```
T1: GROSS TEST FAIL
ALARM DISABLED
```

The Gross Test Fail feature allows you to disable or enable an alarm that triggers when a 3.0 gph (11.3 lph) leak test fails. To disable the alarm, press STEP. (The system displays the ANN TEST AVERAGING message.) To enable the alarm for the selected tank, press CHANGE and press ENTER. The system displays the message:

```
ALARM ENABLED
PRESS <STEP> TO CONTINUE
```

## Annual Test Averaging

If necessary, press STEP until you see the message:

```
T1: (product Label)
ANN TEST AVERAGING: OFF
```

When on, Annual Test Averaging averages the last ten 0.1 gph (0.38 lph) in-tank leak tests. To leave the feature off, press STEP. (The system displays the PER TEST AVERAGING message.) To turn on the feature, press CHANGE and press ENTER. The system displays the message:

```
ANN TEST AVERAGING: ON
PRESS <STEP> TO CONTINUE
```

## Periodic Test Averaging

If necessary, press STEP until you see the message:

```
T1: (Product label)
PER TEST AVERAGING: OFF
```

When on, Periodic Test Averaging activates averaging for the last five 0.2 gph (0.76 lph) in-tank leak tests. To leave the feature off, press STEP. (The system displays the TANK TEST NOTIFY message.) To turn on the feature, press CHANGE and press ENTER. The system displays the message:

```
PER TEST AVERAGING: ON
PRESS <STEP> TO CONTINUE
```

## Tank Test Notify

If necessary, press STEP until you see the message:

```
T1: (Product Label)
TANK TEST NOTIFY: OFF
```

When on, the Tank Test Notify feature triggers a warning, allowing the operator to set a relay to shut down the submersible. To leave the feature off, press STEP. (The system displays the TNK TST SIPHON BREAK message.) To turn on the feature, press CHANGE and press ENTER. The system displays the message:

```
TANK TEST NOTIFY: ON
PRESS <STEP> TO CONTINUE
```

## Tank Test Siphon Break

If necessary, press STEP until you see the message:

```
T1: (Product Label)
TNK TST SIPHON BREAK: OFF
```

NOTE: This option requires that the siphon break valve be installed.

When on, Tank Test Siphon Break allows the operator to perform in-tank leak tests on siphon manifolded tanks. To leave the feature off, press STEP. (The system displays the DELIVERY DELAY message.) To turn on the feature, press CHANGE and press ENTER. The system displays the message:

```
TNK TST SIPHON BREAK: ON
PRESS <STEP> TO CONTINUE
```

## Stick Offset (International Option)

The Stick Offset display appears only if Stick Height Offset was enabled in System Setup (“Stick Height Offset - International Option” on page 5-14). A Stick Offset can be entered for each tank so that the probe (product)

height “appears” to be equal to a stick gauge reading of the product height - *This entry is for operator convenience only, and as such it has no bearing on product volume calculations.*

Press STEP to display the message:

```
T1: (Product Label)
STICK OFFSET:  XXXX.XX
```

To determine the value to enter for Stick Offset, refer to the Tank's Tilt Worksheet (if completed), or record the probe height reading and record a stick height reading from the tank. If the probe's fuel height reading is lower than the stick reading, enter the positive difference between the two. If the probe's reading is higher than the stick reading, enter the negative difference between the two. For example, if stick height = 52 and probe height = 48, you enter +4; if stick height = 52 and probe height = 54, you enter -2.

Stick offsets can range from +144 to -144 inches. Press CHANGE, enter the desired offset, then press ENTER.

## HRM Reconciliation Warning Limit (International Option)

The warning threshold for the Hourly Reconciliation Monitoring (HRM) feature can be set [to verify that HRM is enabled, see Figure 4-2 on page 4-4]. This is the average reconciliation variance over a 24-hour period.

If necessary, press STEP until you see the message:

```
T1:(Product Label)
RECON WARN LIMIT:000003
```

Press STEP to accept the default warning limit of 3 litres. Min. value is 1 litre and max. value is 400 litres.

To change the warning threshold press CHANGE and enter the desired threshold. Press ENTER to confirm the entry.

The display will confirm your entry with the message:

```
T1: RECON WARN LIMIT:00000n
PRESS <STEP> TO CONTINUE
```

## HRM Reconciliation Alarm Limit (international Option)

The alarm threshold for the Hourly Reconciliation Monitoring feature can be set. This is the average reconciliation variance over a 24-hour period.

If necessary, press STEP until you see the message:

```
T1:(Product Label)
RECON ALM LIMIT:000004
```

Press STEP to accept the default alarm limit of 4 litres. Min. value is 1 litre and max. value is 400 litres.

To change the alarm threshold press CHANGE and enter the desired threshold. Press ENTER to confirm the entry.

The display will confirm your entry with the message:

```
T1:RECON ALM LIMIT:00000n
PRESS <STEP> TO CONTINUE
```

## Delivery Report Delay Time

If necessary, press STEP until you see the message:

```
T1: (Product Label)
DELIVERY DELAY: 01
```

Use this display to set a delay time between the completion of a bulk delivery and the Delivery Increase Report. This feature prevents generation of false reports during the intervals between multi-compartment drops to one tank. The feature also allows fuel to “settle out” after a delivery, which is especially important in manifolded tank groups.

To enter a delay time for the selected tank, press CHANGE. Enter the delay time in minutes (up to 99). Press ENTER to confirm your entry. The system displays:

```
DELIVERY DELAY: XX
PRESS <STEP> TO CONTINUE
```

## Pump Threshold

This feature is for line manifolded tanks and is only enabled when you have the Dispense Mode set to Manifolded: Sequential.

If necessary, press STEP until you see the message:

```
T1: (Product Label)
PUMP THRESHOLD : 10.00
```

When the tank’s volume drops below the entered Pump Threshold percentage, pumping will switch over immediately to the next available tank in the line manifolded set. Pumping will continue from the current tank for another 10 seconds to avoid a disruption in dispensing during the switch over. The allowable threshold can be from 0 to 50 percent of the tank’s full volume (see “Full Volume” on page 7-6). The default value is 10 percent.

## Setting Up Additional Tanks

If you have additional tanks to set up, press STEP to return to the ENTER PRODUCT LABEL message. Then Press TANK/SENSOR to select another tank. Repeat the setup procedures for the new tank beginning with the section above entitled “Product Labels” on page 7-2.

If you have entered setup information for all tanks, press FUNCTION to exit.

# 8 In-Tank Leak Tests

The In-Tank Leak Test Setup function allows you to establish and enter the method, timing, and duration of automatic leak tests.

If you are using the In-Tank Leak Test feature for underground storage tank regulatory compliance, be sure the leak test limits you establish and enter comply with the test type, accuracy, and frequency requirements as defined by the regulatory authorities governing your site. In addition, set the in-tank leak test time for a period when no fueling from or bulk delivery to the tank will occur. Such activity during an in-tank leak test will result in inaccurate test results.

NOTE: In-Tank Leak tests may also be conducted, as needed, from the Operating mode.

## Selecting the In-Tank Leak Test Setup Function

To select In-Tank Leak Test Setup, press FUNCTION until you see the message:

```
IN-TANK LEAK TEST SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Leak Test Method: All Tank/Single Tank

If necessary, press STEP until you see the message:

```
LEAK TEST METHOD
ALL TANK
```

You can choose to run In-Tank Leak Tests for all tanks simultaneously, using the same setup information, or you can choose to set up and run leak tests for single tanks. If you choose Single Tank, you may run overlapping tests simultaneously, even though you enter separate setup information for each tank.

NOTE: If you choose ALL TANK and plan to choose CSLD as the test frequency, then all tanks in the system must be equipped with 0.1 gph (0.38 lph) magnetostrictive probes, and you must have the **CSLD** software module key installed in this system. If you choose Single Tank, you must enter test setup information for each tank individually.

To run tests with the same setup information for all tanks, press STEP. The system displays the message:

```
TEST ALL TANK:
ON DATE
```

To run tests with different setup information for each tank, press CHANGE in response to the LEAK TEST METHOD message, so the system displays SINGLE TANK. Press ENTER and press STEP. The system now displays:

```
TEST SINGLE TANK: TANK 1
ON DATE
```

Whether you choose ALL TANK or SINGLE TANK, the procedure for specifying setup information is almost identical. The only difference is that the SINGLE TANK method requires you to specify multiple test setups, one for each tank.

NOTE: The screen examples shown in this procedure assume that you have selected the ALL TANK method. If you choose SINGLE TANK, the tank number (for example “TANK 1”) replaces the phrase “ALL TANK” on each screen.

## Leak Test Frequency

As mentioned, when you select a leak test method–ALL TANK in this example–the system displays the message:

```
TEST ALL TANK:
ON DATE
```

NOTE: If you are entering setup information using the SINGLE TANK method and have already set up the test for Tank 1, press TANK to choose the tank number you want to set up.

**Do not** press ENTER after changing the tank number. You must choose the Test Frequency, as described below, **before** pressing ENTER.

You may choose from among the following leak test frequency options:

- ON DATE
- ANNUALLY
- MONTHLY
- WEEKLY
- DAILY (QPLD will be selected if the Leak Test Frequency is set to daily, and the Leak Start Time is disabled. This feature is only available if HRM has been enabled [see Figure 4-2 on page 4-4]).
- AUTOMATIC (requires that the tank be assigned to a Line Leak Detector [see “Tank Selection” on page 10-7 for PLLD, “Tank Selection” on page 11-6 for WPLLD, or “Pipe Label and Tank Identification” on page 12-1 for VLLD], or a Pump Sense input - see Chapter 15)
- CSLD (runs leak tests automatically during idle tank times and stores data for leak test reports)

NOTE: The CSLD option appears only when the tank is equipped with a 0.1 gph (0.38 lph) Mag probe, and the system has the **CSLD** software module key installed.

### TEST ON DATE

To run the test on a specific date, press STEP in response to the ON DATE message. (To run the test using other frequency options, follow the procedures described in the appropriate section below.) The system displays the message:

```
TEST ON DATES: ALL TANKS
DATE: XX/XX/XXXX
```

Press CHANGE, and enter the date on which you want the tests to run. Enter the date in the format MM/DD/YYYY. Press ENTER to confirm the date:

```
DATE: XX/XX/XXXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under “Leak Test Start Time” on page 8-7.

## ANNUAL TEST

To run the tests annually, press CHANGE and press ENTER in response to the ON DATE message:

```
TEST ALL TANK:
ON DATE
```

The system displays the message:

```
ANNUALLY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue setting the annual test. The system displays the message:

```
TEST ANNUALLY: ALL TANKS
JAN WEEK 1 MON
```

To set the date of the annual test, press CHANGE until the month during which you want to perform the test appears, and press the Right Arrow key. Press CHANGE until the week during which you want to perform the test appears and press the Right Arrow key. Press CHANGE until the day on which you want to perform the test appears. Press ENTER to confirm the date:

```
MONTH WEEK DAY
PRESS <STEP> TO CONTINUE
```

For example, if you chose to run the tests on the Friday of the first week of June, the system would display the message:

```
JUNE WEEK 1 FRI
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under “Leak Test Start Time” on page 8-7.

## MONTHLY TEST

To run the tests monthly, press CHANGE twice, then press ENTER in response to the ON DATE message:

```
TEST ALL TANK:
ON DATE
```

The system displays the message:

```
MONTHLY
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
TEST MONTHLY: ALL TANKS
WEEK 1 MON
```

To set the date of the monthly test, press CHANGE until the week during which you want to perform the test appears and press the Right Arrow key. Press CHANGE until the day on which you want to perform the test appears. Press ENTER to confirm the date:

```
WEEK DAY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under “Leak Test Start Time” on page 8-7.

## WEEKLY TEST

To run the tests weekly, press CHANGE three times, then press ENTER in response to the ON DATE message:

```
TEST ALL TANK:
ON DATE
```

The system displays the message:

```
WEEKLY
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
TEST WEEKLY: ALL TANKS
MON
```

To set the date of the weekly test, press CHANGE until the day on which you want to perform the test appears. Press ENTER to confirm the date:

```
DAY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under “Leak Test Start Time” on page 8-7.

## DAILY TEST

To run the tests daily, press CHANGE four times, then press ENTER in response to the ON DATE message:

```
TEST ALL TANKS:
ON DATE
```

The system displays the message:

```
DAILY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under “Leak Test Start Time” on page 8-7.

## AUTOMATIC TEST

NOTE: This option is available only if Line Leak Detector or Pump Sense is installed, configured and assigned to the tank, or if External Input Type is configured as Pump Sense and assigned to the tank. (See section entitled “External Input Type” on page 23-2.)

To run the tests automatically when Line Leak Detector or Pump Sense is installed, press CHANGE five times in response to the ON DATE message:

```
TEST ALL TANK:
ON DATE
```

Press ENTER to confirm your choice:

```
AUTOMATIC
PRESS <STEP> TO CONTINUE
```

If you are setting up the test for All Tanks, the setup is complete. Press FUNCTION to exit.

If you are setting up the test for Single Tanks, the setup is complete for the tank you are setting up. Press STEP and press TANK to choose the next tank. Return to the beginning of the section "Leak Test Frequency" on page 8-2 and repeat the procedure for the next tank.

## CSLD - OPTION

NOTE: The CSLD option appears only when the tank is equipped with a 0.1 gph (0.38 lph) Mag probe, and the system has the **CSLD** software module key installed.

If necessary, press STEP until you see the message:

```
TEST ALL TANK:
ON DATE
```

To run the test using the CSLD frequency option, press CHANGE repeatedly until you see CSLD on the display.

Press ENTER to confirm your choice:

```
CSLD
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
CSLD Pd: ALL TANKS
Pd = 95%
```

You can set the Pd (Probability of Detection) to 95% or 99%. To accept the 95% value, press STEP. (The system displays the CLIMATE FACTOR message.) If "Custom" appears in this field, a special value has been entered remotely. Do not change the selection from Custom. This selection is used primarily for European operations.

To change the value to 99%, press CHANGE, then press ENTER to confirm your choice:

```
Pd = 99%
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
CLIMATE FACTOR: ALL TANKS
MODERATE
```

The default is Moderate and the other choice is Extreme.

### Climate Factor - set to Moderate

Press STEP to display the message:

```
TEST ALL TANKS
CSLD
```

If you are setting up the CSLD test frequency for All Tanks, the setup is complete. Press FUNCTION to exit.

If you are setting up the CSLD test frequency for a Single Tank, the setup is complete for the tank you are setting up. Press TANK to choose the next tank. Return to the beginning of the "CSLD - Option" on page 8-5 and repeat the procedure for the next tank.

**Climate Factor - set to Extreme**

To choose Extreme, press CHANGE, then press ENTER to confirm your choice:

```
EXTREME
PRESS <STEP> TO CONTINUE
```

The following message displays:

```
EVAP COMP: ALL TANK
EVAP COMP: NO
```

If you are setting up the CSLD test frequency for All Tanks, the setup is complete. Press FUNCTION to exit. If you are setting up the CSLD test frequency for a Single Tank, the setup is complete for the tank you are setting up. Press TANK to choose the next tank. Return to the beginning of the "CSLD - Option" on page 8-5 and repeat the procedure for the next tank.

Changing Evaporation Compensation to YES should only be used on individual tanks which have exhibited evidence of consistent, extreme vapor loss due to fuel evaporation, and which interferes with normal CSLD leak detection monitoring causing false leak alarms.

If you want to activate CSLD evaporation compensation for a single tank, press CHANGE. Press ENTER to confirm your choice. The following message displays:

```
STAGE II VAPOR: TANK X
STAGE II VAPOR: YES
```

The default for Stage II Vapor is YES. To select No, press CHANGE and ENTER.

Next you must enter CSLD Evaporation Constants for the months of the year. Press FUNCTION until you see the message:

```
SYSTEM SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
CSLD EVAP CONSTANTS
PRESS <ENTER>
```

Press ENTER and the Reid Vapor Pressure entry for January displays:

```
REID VAPOR PRESSURE
JAN:  00.0
```

You will need to enter a Reid Vapor Pressure (RVP) value for at least 1 month of the year. The RVP monthly values for your geographical area can be obtained from your local Petroleum Distributor. The range of valid RVP entries is 0 to 15. The default value is 00.0.

Press CHANGE, enter the Reid Vapor Pressure for January, then press ENTER. If you are entering RVPs for selected months, Press STEP to display the month(s) for which you want to enter RVP values. For each month, Press CHANGE, enter the value, then press ENTER to confirm your choice. When you have finished entering the RVP values, press FUNCTION until you return to In-Tank Leak Test Setup.

## Gross Test Auto-Confirm

If necessary, press STEP until you see the message:

```
GROSS TEST: ALL TANK
AUTO-CONFIRM: DISABLED
```

Note: this message only displays if you have selected CSLD as the test frequency and the tank is assigned to a pump sensing device (any LLD, pump sense, I/O).

If you are experiencing tank gross test alarms that are proven to be false, enabling this feature may reduce these false alarms. When enabled, two test fails in a row will be required before a Fail is posted. However, when enabled this feature will also increase the time needed to detect a gross leak by one 30-45 minute idle period.

To leave this feature disabled, press STEP to continue, or press CHANGE, then ENTER and the message displays:

```
GROSS TEST: ALL TANK
AUTO-CONFIRM: ENABLED
```

Press STEP to continue.

## Leak Test Start Time

If necessary, press STEP until you see the message:

```
START TIME: ALL TANK
TIME: DISABLED
```

You can enable the test by entering a start time or leave the test disabled.

To leave the test disabled, press STEP. (The system displays the TEST RATE message.)

To enter a start time, press CHANGE in response to the START TIME message. Enter the start time and press the Right Arrow key to select AM or PM. Press ENTER to confirm your entry:

```
TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Leak Test Rate

If necessary, press STEP until you see the message:

```
TEST RATE: ALL TANK
0.10 GAL/HR
```

You can set the leak test rate at 0.2 gph or 0.1 gph (0.76 lph or 0.38 lph). The default test rate is 0.2 gph. The system prints a leak report at the completion of the test.

NOTE: The 0.1 gph option appears only when a 0.1 gph Mag probe is installed.

To accept the default rate of 0.2 gph, press STEP. (The system displays the TEST DURATION message.)

To set the test rate to 0.1 gph (0.38 lph), press CHANGE, then press ENTER to confirm your choice. The system displays the following message:

```
TEST RATE: 0.10 GAL/HR
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Leak Test Duration

If necessary, press STEP until you see the following message:

```
TEST DURATION: ALL TANK
DURATION: 02
```

To accept the displayed duration, press STEP. To set another test duration, press CHANGE. The maximum duration is 6 hours. We recommend a minimum duration of two hours for 0.2 gph (0.76 lph) tests and three hours for 0.1 gph tests.

Note: If you have Leak Test Early Stop enabled and the console determines that an in-tank leak test has passed after the first two hours of the test, the test is completed, even though you had entered a Leak Test Duration of more than 2 hours.

Enter the test duration in hours and press ENTER to confirm your choice:

```
DURATION: XX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Leak Test Early Stop

If necessary, press STEP until you see the following message:

```
TST EARLY STOP: ALL TANKS
DISABLED
```

Disabled is the default setting. When enabled this feature will prevent an In-Tank Leak Test from starting under the following conditions:

1. Fuel level is less than Leak Min Periodic (0.2 gph test rate) or Leak Min Annual (0.1 gph test rate).
2. It is less than 8 hours from a delivery.
3. The product temperature is less than 0°F (-17.6°C) or more than +100°F (+37.4°C).
4. The fuel level is too low.

To accept the disabled condition, press STEP. To enable Leak Test Early Stop, press CHANGE and then ENTER and the system displays:

```
TST EARLY STOP: ALL TANKS
ENABLED
```

Press STEP to continue.

## CSLD Report Only

If necessary, press STEP until you see the message:

```
REPORT ONLY: ALL TANK
DISABLED
```

Note: this message only displays if you have selected CSLD as the test frequency.

When enabled this feature inhibits the 'No CSLD Idle Time' and 'CSLD Incr Rate' alarms, and only prints CSLD status reports at one of the times selected below:

- End of Month (at 8:00 a.m.),
- Day 15 and End of Month (both at 8:00 a.m.), or
- Day 25 and End of Month (both at 8:00 a.m.)

Press STEP to leave this feature disabled. Press CHANGE until the desired report print time(s) is displayed and then press ENTER. Press STEP to continue.

## Leak Test Report Format

The leak test report format can be set to Normal or Enhanced (select Enhanced to comply with the California Code of Regulations). The enhanced report will have height, water, temperature, percent volume, rate and threshold values in addition to the normal report format.

If necessary press STEP until you see the following message:

```
LEAK TEST REPORT FORMAT
NORMAL
```

To accept the displayed format, press STEP. To select the enhanced test format press CHANGE to toggle to enhanced, then press ENTER to confirm. Press STEP to continue.

## Setting Up Additional Tanks

If you are setting up the test for Single Tanks, the setup is complete for the selected tank. To set up additional tanks, press STEP to return to the TEST SINGLE TANK message:

```
TEST SINGLE TANK: TANK 1
ON DATE
```

Then press TANK to choose the next tank. Repeat the setup procedures described above, beginning with the section titled "Leak Test Frequency" on page 8-2. If you are setting up the test for All Tanks, or have completed setting up all individual tanks, the setup is complete. Press FUNCTION to exit.

# 9 Fuel Management

The Fuel Management Setup function lets you estimate the number of days remaining before the tank reaches the programmed low product level. The Low Product alarm activates when the amount of fuel falls below the Low Product Limit set during In-Tank Setup (see “Low Product” on page 7-16 for information on how to set this value.)

This function also keeps track of each product’s average daily sales, which you can display or print. The starting inventory minus ending inventory, plus deliveries determine the sales for each day of the week. Using this data, the system calculates the estimated number of days of product remaining.

NOTE: The system assumes tanks with the same product code contain the same product. All information displayed is for products, not tanks. The product name is the product label of the lowest tank number containing the product (see “Product Labels” on page 7-2 and “Product Code” on page 7-2).

## Selecting the Fuel Management Function

To select Fuel Management Setup, press FUNCTION until you see the message:

```
FUEL MANAGEMENT SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP until you see the setup screen that you want.

## Delivery Warning Days

If necessary, press STEP until you see the message:

```
FUEL MANAGEMENT SETUP
DELIVERY WARN DAYS: ##.#
```

You can set a threshold number of days of fuel remaining. When any product falls below this threshold, the system posts a Delivery Needed warning for the product.

To set the threshold number of days of fuel remaining, press CHANGE in response to the DELIVERY WARN DAYS message. Enter the threshold number of days of fuel remaining. This number can be up to 99.9 days. Enter 0 if you want to disable the warning. Press ENTER to confirm your entry:

```
DELIVERY WARN DAYS: XX.X
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Daily Time to Print Fuel Management Report

If necessary, press STEP until you see the message:

```
FUEL MGT AUTO PRINT
TIME: 12:00 AM PM
```

This display lets you set a daily time when the system will automatically print a fuel management report. The report printed is a “Short Report” (see the system Operator’s Manual).

To set a daily time to print the report, press CHANGE in response to the FUEL MGT AUTO PRINT message. Enter the time that you want the report to print each day or press CHANGE to disable. Press the Right or Left Arrow keys to choose AM or PM. Press ENTER to confirm your entry:

```
TIME: XX:XX AM
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Average Daily Sales

If necessary, press STEP until you see the message:

```
REGULAR UNLEADED
AVG SALES SUN:      983
```

Use this display to enter the average daily sales for the selected product. If needed, press TANK to display and select another product for which to set the average daily sales.

To set the average sales for Sundays, press CHANGE. Enter the average Sunday sales for the product selected. Press ENTER to confirm your entry:

```
AVG SALES-SUN
PRESS <STEP> TO CONTINUE
```

Press STEP to display the AVG SALES message for Mondays:

```
REGULAR UNLEADED
AVG SALES MON:      983
```

Press CHANGE, enter the average daily sales for the selected day and product, and press ENTER. Press STEP.

Repeat the procedures just described until you have entered an average daily sales for each day of the week. When you are finished entering the average sales for that product, press TANK to choose another product and enter the average daily sales for it. Repeat the procedure until you have entered the average daily sales for each product.

NOTE: Whenever the AVG SALES message appears, you may press TANK to select a different product or press STEP to select a different day of the week.

When you have entered the average daily sales for each product, press FUNCTION to exit.

# 10 Pressurized Line Leak Detection

This function allows you to enter information about Pressurized Line Leak Detectors (PLLD) installed on product pipelines in the system. You must enter data individually for each PLLD.

## Line Manifolding Implications for AccuChart

For PLLD installations with line manifolded tanks, the master tank's check valve's relief pressure must be below the pump's operating pressure. AccuChart will run when there is line manifolding with PLLD line leak detection; however, you should disable AccuChart if the results are poor. Also leaky valves will degrade AccuChart performance. To disable AccuChart, select 'Never' at the Calibration Update step (In-Tank Setup, page 7-12).

## PLLD Setup

Press FUNCTION until you see the message:

```
PRESSURE LINE LEAK SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Activating PLLDs

This display allows you to activate up to six PLLDs. In the active state, PLLD attempts to conduct line leak tests whenever the dispensers are off.

```
LINE CONFIG - MODULE 1
SLOT # - X X X X X X
```

To activate a PLLD, you replace the X with a number by pressing the CHANGE key. To leave a PLLD inactive, leave an X in its position. You move between PLLDs 1 through 6 by pressing the right or left arrow key.

Press ENTER to confirm your choices (in this example you activate all six). The system displays:

```
SLOT #: 1 2 3 4 5 6
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Labeling PLLDs

This display allows you to label the line being monitored by a particular PLLD (location, fuel type, etc.).

```
PRESSURE LINE LABEL
Q1:
```

If necessary, press TANK/ SENSOR to select the desired PLLD in the system.

When the appropriate PLLD appears in the display, press CHANGE. (To erase a label press CHANGE again.) Enter up to 20 alphanumeric characters for the line label and press ENTER. The system confirms your entry with the message:

**Q1: (Pressure Line Label)**
**PRESS <STEP> TO CONTINUE**

Press STEP to continue.

## Piping Type

This display allows you to select the type of line being used:

- 2.0 IN. (50 mm) STEEL
- ENVIROFLEX PP1501
- OMNIFLEX CP1501
- ENVROFLX PP1502/2502
- OPW PISCES CP15
- OPW PISCES CP20
- OPW PISCES SP20
- 2.0/3.0 IN. (50/76 mm) FIBERGLASS
- ENVIROFLEX PP1500
- 1.5/2 IN. ENVIRON GFLXD
- OPW PISCES SP15
- APT P175SC
- USER DEFINED*
- 1.5 (38 mm) IN. ENVIRN GFLEXII
- WFG COFLX2000 RIBBED
- ENVROFLX PP1503/2503
- OMNIFLEX CP1503
- OPW PISCES CP15DW
- PETROTECHNIK UPP EXTRA 63 MM

** To select 'User Defined', you must know the Bulk Modulus of the pipe type.*

IMPORTANT! To ensure accurate line monitoring, you must enter the piping type that is installed for this line. The default is Enviroflex PP1501.

**Q1: (Pressure Line Label)**
**TYP: ENVIROFLEX PP1501**

Press CHANGE, enter the correct pipe type, press ENTER to confirm your choice and continue.

## Piping Length

This display allows you to enter the total length of piping run between the tank and the dispensers. For manifolded tanks, include the length of piping between the manifolded tank's check valve and where it connects into the product line.

NOTE: Refer to the Veeder-Root Line Leak Application Guide (Part No. 577013-465) for approved minimum and maximum piping lengths.

IMPORTANT! The default line length must be changed to reflect the actual line length or a Setup Data Warning will occur.

Press STEP until you see the message:

**Q1: (Pressure Line Label)**
**LINE LENGTH: XXX**

Press CHANGE, enter the actual line length (rounded up to the next foot or meter). Press ENTER to confirm your choice and press STEP to continue.

### ENTERING LINE LENGTH FOR DUAL SIZE FLEXIBLE PIPE TYPES

If you are using Enviroflex PP1502/2502, Enviroflex PP1502/2503, or 1.5/2 IN Envirn Gflxd, your line length setup will first display the 1.5 inch size:

**Q1: (Pressure Line Label)**
**1.5 IN DIAM. LEN: 501**

Press CHANGE and enter the actual line length (rounded up to the next foot). Press ENTER to confirm your choice and the line length setup for the 2.5 inch size appears:

**Q1: (Pressure Line Label)**
**LINE LENGTH: 301**

Press CHANGE and enter the actual line length (rounded up to the next foot). Press ENTER to confirm your choice and press STEP to continue.

### ENTERING LINE LENGTH FOR 2.0/3.0 IN. FIBERGLASS PIPE TYPE

If you are using fiberglass, your line length setup will first display the 2.0 inch (50 mm) size:

**Q1: (Pressure Line Label)**
**2.0 IN DIAM. LEN: 501**

Enter the actual line length (rounded up to the next foot) and press ENTER. If you are not using 2-inch fiberglass, enter 0 and press ENTER. The display shows the 3-inch (76 mm) size:

**Q1: (Pressure Line Label)**
**3.0 IN DIAM. LEN: 351**

If you are not using 3-inch line, enter 0 and press ENTER. If you are using 3-inch line, enter the length and press ENTER.

IMPORTANT! When using the Fiberglass pipe type, the unused size's length must be set to zero.

Press STEP to continue.

## User Defined Pipe Type - Setup Parameters

If you selected User Defined as the pipe type, your 1st line length setup will display (If the line consists of one pipe type, one diameter, ignore the second line length entry. If the line is constructed of two connected lengths of the same pipe type but with different diameters, or of two connected lengths of different pipe types with the same or different diameters, then enter the required second line's data.):

**Q1: (Pressure Line Label)**
**1ST LINE LENGTH: 501**

Press CHANGE, enter the first line length (rounded up to the next foot) then press ENTER to confirm your choice. Press STEP to continue.

**Q1: (Pressure Line Label)**
**2ND LINE LENGTH: 0**

Press CHANGE, enter the second line length, if necessary, (rounded up to the next foot) then press ENTER to confirm your choice. Press STEP to continue.

**Q1: (Pressure Line Label)**
**1ST LINE DIAMETER: 0.00**

Press CHANGE, enter the first line's diameter then press ENTER to confirm your choice. Press STEP to continue.

**Q1: (Pressure Line Label)**
**2ND LINE DIAMETER: 0.00**

Press CHANGE, enter the second line's diameter (displays only if second line's length >0) then press ENTER to confirm your choice. Press STEP to continue.

**Q1: (Pressure Line Label)**
**1ST BULK MODULUS: 0**

Press CHANGE, enter the bulk modulus of the first line then press ENTER to confirm your choice. Press STEP to continue.

**Q1: (Pressure Line Label)**
**2ND BULK MODULUS: 0**

Press CHANGE, enter the second line's bulk modulus (displays only if second line's length >0) then press ENTER to confirm your choice. Press STEP to continue.

**Q1: (Pressure Line Label)**
**THERMAL COEFF: 0.00070**

Press CHANGE, enter the thermal coefficient for the product in the line then press ENTER to confirm your choice (see "Coefficient of Thermal Expansion" on page 7-3). Press STEP to continue.

## Thermal Coefficient

If you selected APT P175SC, PETROTECHNIK UPP EXTRA 63 MM, or OPW PISCES SP20 as the pipe type, you must enter the product's thermal coefficient after entering the pipe's length.

Press STEP to continue.

**Q1: (Pressure Line Label)**
**THERMAL COEFF: 0.00070**

Press CHANGE, enter the thermal coefficient for the product in the line then press ENTER to confirm your choice (see "Coefficient of Thermal Expansion" on page 7-3). Press STEP to continue.

## 0.2 gph (0.76 lph) Line Leak Test Scheduling

NOTE: The 0.2 gph (0.76 lph) Line Leak Test is an optional feature. This message will not appear unless the **0.20 Repetitive PLLD** software module key is installed in your system:

**Q1: (Pressure Line Label)**
**0.20 GPH TEST: DISABLED**

This feature allows the user to choose the frequency of the 0.2 gph (0.76 lph) tests[1]:

- Disabled - No manual or automatic 0.2 gph testing is allowed.
- Repetitive - After a dispense, a 3.0 gph (11.3 lph) test is run, followed by a 0.2 gph test. The test blockout period (selected in Precision Test Duration setup) is then observed. Following the test blockout period, the test sequence repeats after the next dispense. This selection also enables manual 0.2 gph testing.
- Monthly - At the beginning of every month until a test has passed. This selection also enables manual 0.2 gph testing.
- Manual - 0.2 gph tests run only when manually started.

Disabled is the default setting. Press STEP for Disabled, or press CHANGE to select other choices, then press ENTER. Press STEP to continue.

## 0.1 gph (0.38 lph) Line Leak Test Scheduling

NOTE: The 0.1 gph Line Leak Test is an optional feature. This message will not appear unless the **0.10 Repetitive PLLD** or **0.10 On Demand PLLD** software module key is installed in your system.

**Q1: (Pressure Line Label)**
**0.10 GPH TEST: DISABLED**

This feature allows the user to choose the scheduling frequency of the 0.1 gph tests[1]:

- Disabled (default) - No manual or automatic 0.1 gph testing is allowed.
- Repetitive -After a dispense, a 3.0 gph test is run, a 0.2 gph test is run, followed by the 0.1 gph test. The test blockout period (selected in Precision Test Duration setup) is then observed. Following the test blockout period, the test sequence repeats after the next dispense. This selection also enables manual 0.1 gph testing. (Note: The Repetitive option is not available when the **0.1 On Demand PLLD** software module key is installed.)
- Auto - 6 months after the last passed 0.1 gph test. Also enables manual 0.1 gph testing.
- Manual - 0.1 gph tests run only when manually started.

Press STEP for Disabled, or press CHANGE to select other choices, then press ENTER. Press STEP to continue.

## Passive 0.1 gph Line Leak Testing

If pipe type selection was either User-Defined or APT P175SC, and the 0.1 gph line leak test scheduling selection was Auto, the following message will appear:

**Q1: (Pressure Line Label)**
**PASSIVE 0.10 GPH: NO**

Use this option if the user desires the most current passing results for 0.1 testing without increasing exposure to false alarms.

This option does not interfere with the 6-month automatically scheduled 0.1 gph test.

1. When CSLD is available, all 0.2 gph and 0.1 gph line leak testing is subject to test blockout periods. These blockouts are imposed to allow CSLD 'pump off' time to collect tank leak test data. Precision tests are run on an every other day basis. In addition, if the last precision test result is a pass, there will be a minimum of 60 hours before the next test will be attempted. If necessary, the 60-hour blockout period can be extended in the Precision Test Duration setup [page 5-15].

If the Passive 0.1 testing option is selected the system will continue monitoring the line pressure after it has completed a passing 0.2 test. The test is labeled passive because it will not turn on the pump. If the line pressure remains stable it will satisfy the requirements for a passing 0.1 test. The passed test will be recorded.This method cannot identify a leaking line because the line has to be repressurized several times to distinguish a leak from thermals.

No is the default setting. Press STEP for No, or press CHANGE to select Yes, then press ENTER.

Press STEP to continue.

## Shutdown Rate

This feature lets you shut down the line following a failed line leak test. The choices are 3.0 gph, 0.2 gph, 0.1 gph, or none.

**Q1: (Pressure Line Label)**
**SHUTDOWN RATE: 3.0 GPH**

Note: you must have the **Precision PLLD** software module key installed in your system to select shutdown rates of 0.2 gph or 0.1 gph.

Press STEP to accept the 3.0 gph (11.3 lph) shutdown rate, or press CHANGE until the desired shutdown rate appears, then ENTER to confirm your choice. NOTE: If you select a 0.1 gph (0.38 lph) shutdown rate, a failed 0.1 gph, 0.2 gph (0.76 lph), or 3.0 gph leak test will disable dispensing. If you select a shutdown rate of 3.0 gph, then only a failed 3.0 gph leak test will disable dispensing, while a failed 0.2 gph or 0.1 gph leak test will just trigger an alarm. If you select None, no failed test will shut down the line.

Press STEP to continue.

## Low Pressure Alarm Shutoff

The Low Pressure Alarm Shutoff detects low pressure during a dispense. The Default value is 0 psi (0 kPa), with programmable values from 0 - 25 psi (0 - 7 kPa). When the pressure drops below the entered shutoff value, the pump shuts off. The next handle up will restart the pump. A value of 0 will disable this alarm.

**Q1: (Pressure Line Label)**
**LOW PRESSURE SHUTOFF: NO**

For no low pressure shutoff, press STEP. To enter a different Low Pressure Shutoff value, press CHANGE, then ENTER. Press STEP and enter the desired pressure. Press ENTER, the system confirms your choice with the message:

**Q1: (Pressure Line Label)**
**LOW PRESSURE: 5**

## Tank Selection

This message appears *only* if tanks have been configured in the In-Tank Setup procedure.

```
Q1: (Pressure Line Label)
NONE
```

For no selection press STEP to continue. To enter the number of the tank in which the pump the plld is controlling is installed, press CHANGE, select the tank number, then press ENTER. The system confirms your choice with the message:

```
T#: (Pressure Line Label)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Selecting a Dispense Mode

NOTE: This option will only appear if a tank has been selected for the PLLD.

If necessary, press STEP until you see the message:

```
Q1: ENTER DISPENSE MODE
XXXXXXXXX
```

This entry asks you to select the dispense mode. You can select between:

- STANDARD - Only one pump feeds the line.
- MANIFOLDED: ALTERNATE[1] - The pump will run in the tank with the greatest inventory volume.
- MANIFOLDED: SEQUENTIAL[1] - The tanks are pumped low one at a time. When the tank's volume drops below the entered Pump Threshold percentage, pumping will switch over immediately to the next available tank in the line manifolded set. Pumping will continue from the current tank for another 10 seconds to avoid a disruption in dispensing during the switch over. (see "Pump Threshold" on page 7-26).
- MANIFOLDED: ALL PUMPS - All pumps on the line are run.

Press CHANGE until your choice appears, then press ENTER to continue.

## Pressure Transducer Type

There are 3 different PLLD transducer types. Each type can be identified as follows: Non-Vented (transducer has an aluminum top); Vented (transducer has an aluminum top with a slotted vent screw); and High Pressure (transducer has a plastic top with a metal nameplate [this type is currently being shipped]).

1. To prevent backfilling, the level of all tanks connected to the line will be monitored. If the level of any tank exceeds 95% of the Max or Label Volume limit (see "Max or Label Vol" on page 7-15), the pump for that tank will also be turned on during dispensing. The state of the pump that was already ON will not be changed.

If you have any one of the three PLLD transducer types, and the line does not have a high pressure pump, you may use the Non-vented (default) selection for this step. If you have a high pressure pump in the line, you **must** use a high pressure transducer and select High Pressure in this step.

**Q1:**
**SENSOR: NON-VENTED**

Press CHANGE until your choice appears, then press ENTER to continue.

## Pressure Offset

New transducers are now factory sealed and their internal chamber cannot be equalized to atmospheric pressure by opening a vent screw as in the past. The Pressure Offset test procedure described in this section **must** be performed when using new PLLD transducers with serial numbers of 100,000 or above, in sites located at altitudes above 2,000 feet (609 m). Note: this procedure can also be used with transducers having serial numbers below 100,000 instead of using the vent screw to equalize pressure.

Table 10-1 illustrates approximate absolute pressures that are for reference only. The transducer's actual reading may vary slightly due to its construction, A/D conversion, head pressure in the lines, etc.

Before this procedure is performed, the pressure in the line MUST be vented to zero. It is recommended that this procedure be performed immediately after installing the transducer, before energizing the STP.

**Table 10-1.- Reference of Absolute Pressure Offsets at Various Altitudes**

| Altitude ft (m) | Atmospheric Pressure Offset psi (kPa) |
|---|---|
| Sea level - 2000 (609) | No Change |
| 2000 - 3000 (609 - 914) | +1 (+6.9) |
| 3000 - 4000 (914 - 1219) | +1.5 (+10.3) |
| 4000 - 5000 (1219 - 1524) | +2.0 (+13.8) |
| 5000 - 6000 (1524 - 1829) | +2.5 (+17.2) |
| 6000 - 7000 (1829 - 2134) | +3.0 (+20.7) |
| 7000 - 8000 (2134 - 2438) | +3.4 (+23.4) |
| 8000 - 9000 (2438 - 2743) | +3.8 (+26.2) |
| 9000 - 10,000 (2743 - 3048) | +4.2 (+28.9) |
| 10,000 - 12,000 (3048 - 3658) | +4.6 (+31.7) |
| 12,000 - 14,000 (3658 - 4267) | +5.4 (+37.2) |
| 14,000 (4267) - above | +5.7 (+39.3) |

The first step is to vent the line(s). The second step is to go to the Diagnostic Mode and run a Pressure Offset Test for each transducer to determine its Pressure Offset value. The third step is to return to the Setup Mode and enter the Pressure Offset determined in the tests, for each transducer.


### VENTING THE LINE

1. Turn Off, lock out, tag power to the STP.

2. Vent the line to zero.
3. Reseal the line.
4. Turn On power to the STP. Follow the procedure below.

## DETERMINING A PRESSURE OFFSET VALUE FOR EACH TRANSDUCER

Press MODE to display DIAGNOSTIC MODE, then FUNCTION until you see the message:

```
PRESSURE LINE LEAK DIAG
PRESS <STEP> TO CONTINUE
```

From the PLLD Diag message, press STEP until you see the display below

```
Q 1: PLLD NUMBER 1
P OFFSET TEST <ENTER>
```

Press ENTER and the results of the last test displays ('No Test Data Available' message appears if this is the first test):

```
Q 1: PRESS OFFSET TST PSI
9-30-99 03:10AM +3.2
```

Press STEP:

```
Q 1: START P OFFSET TEST
PRESS <ENTER>
```

To start the test, press ENTER. During the test this message appears:

```
Q 1: PRESSURE OFFSET TEST
MEASURING
```

The Pressure Offset test results message appears when the test ends:

```
Q 1: PRESSURE OFFSET TEST
DONE - OFFSET: +XX.X PSI
```

You can print out the test result if you have an optional printer. If you do not have a printer, record the offset value for the transducer. Press Tank/Sensor and repeat the above procedure for all installed transducers.

The maximum offset pressure range is ±5 psi (±34.5 kPa). If a Pressure Offset is greater than ±5 psi (±34.5 kPa), repeat the test. If the Pressure Offset is again out of range, either the line pressure is not completely vented or there is a hardware problem. Refer to PLLD troubleshooting procedures for further instructions.

## ENTERING THE PRESSURE OFFSET VALUE FOR EACH TRANSDUCER

Press MODE to return to the SETUP MODE, then FUNCTION until you see the message:

```
PRESSURE LINE LEAK SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP until you see the message:

```
Q 1: PLLD NUMBER 1
PRESSURE OFFSET: +XX.X
```

Press CHANGE and enter the Pressure Offset value for transducer Q1. If necessary, press the left arrow key to change the sign (+ or -). Note: enter the Offset value **exactly** as displayed in the Offset test result message (including + or - sign). Press TANK/SENSOR, to display another transducer. Press CHANGE to enter its Pressure Offset value, then ENTER to confirm the change. Repeat this procedure until you have entered Offsets for all transducers.

## Mechanical Blenders

When a site has mechanical blenders, the lines can be assigned to a blend set. This change affects the scheduling of precision line testing, 0.2 and 0.1.

Press STEP until you see the message:

```
Q 1: PLLD NUMBER 1
MECHANICAL BLENDER: NO
```

Press CHANGE:

```
Q 1: PLLD NUMBER 1
MECHANICAL BLENDER: YES
```

Press ENTER.

Before proceeding to Blend Partners, enable Mechanical Blender for all lines:

```
Q 1: BLEND PARTNERS
Q#: 00, 00
```

Press CHANGE:

```
Q 1: BLEND PARTNERS
Q#: 02, 03
```

Press ENTER.

## Setting Up Additional PLLDs

If you have additional PLLDs to set up, press STEP to return to the PRESSURE LINE LABEL message:

```
PRESSURE LINE LABEL
Q1:
```

Press TANK to access another PLLD. Repeat the steps described above, beginning with “Labeling PLLDs” on page 10-1. After you have entered setup information for all PLLDs in the system, press FUNCTION to exit.

# 11 Wireless Pressurized Line Leak Detection

This function allows you to enter information about Wireless Pressurized Line Leak Detectors (WPLLD) installed on product pipelines in the system. You must enter data individually for each WPLLD.

## Line Manifolding Implications for AccuChart

For WPLLD installations with line manifolded tanks, the master tank's check valve's relief pressure must be below the pump's operating pressure. AccuChart will run when there is line manifolding with WPLLD line leak detection; however, you should disable AccuChart if the results are poor. Also leaky valves will degrade AccuChart performance. To disable AccuChart, select 'Never' at the Calibration Update step (In-Tank Setup, page 7-12).

## WPLLD Setup

Press FUNCTION until you see the message:

```
WPLLD LINE LEAK SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Activating WPLLDs

This display allows you to activate up to a maximum of 9 WPLLDs. In the active state, a WPLLD attempts to conduct line leak tests whenever the dispensers are off:

```
LINE CONFIG - MODULE 1
SLOT # - X X X
```

To activate a WPLLD, you replace the X with a number by pressing the CHANGE key. To leave a WPLLD inactive, leave an X in its position. You move between WPLLDs 1 through 3 by pressing the right or left arrow key.

Press ENTER to confirm your choices (in this example you activate the first three). The system displays:

```
SLOT #: 1 2 3
PRESS <STEP> TO CONTINUE
```

If more than three WPLLDs are installed, pressing STEP will display the second module. Make any required activations as described above, press ENTER then STEP (repeat if necessary).:

```
LINE CONFIG - MODULE 2
SLOT # - X X X
```

Press STEP to continue.

## Labeling WPLLDs

This display allows you to identify the line being monitored by a particular WPLLD (location, fuel type, etc.).

```
WPLLD LINE LABEL
W1:
```

If necessary, press TANK/ SENSOR to select the desired WPLLD in the system.

When the appropriate WPLLD appears in the display, press CHANGE. (To erase a label press CHANGE again.) Enter up to 20 alphanumeric characters for the line label and press ENTER. The system confirms your entry with the message:

```
W1: (WPLLD Line Label)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Piping Type

This display allows you to select the type of line being used:

- 2.0-IN. (50 mm) STEEL
- 2.0/3.0 IN. (50/76 mm) FIBERGLASS
- ENVIROFLEX PP1501[1]
- ENVIROFLEX PP1500[1]
- OMNIFLEX CP1501[1]
- 1.5 IN. (38 mm) ENVIRON GEOFLX D[1]

[1]3.0 gph (11.3 lph) leak tests only on these piping types.

NOTE: to ensure correct line monitoring, you must enter the piping type that is installed for this line. The default is Enviroflex PP1501.

```
W1: (WPLLD Line Label)
TYP: ENVIROFLEX PP1501
```

Press CHANGE, enter the correct pipe type, press ENTER to confirm your choice and continue.

## Piping Length

This display allows you to enter the total length of piping run between the tank and the dispensers. For manifolded tanks, include the length of piping between the manifolded tank's check valve and where it connects into the product line. The allowable length in feet for each of the line types are: steel 30 to 500 ft (10 to 151 m), all others 10 to 500 (3 to 151 m)- except 3 inch (76 mm) fiberglass which is 10 to 220 (3 to 67 m).

IMPORTANT! The default length must be changed to reflect the actual line length or a Setup Data Warning will occur.

NOTE: Refer to the Veeder-Root Line Leak Application Guide (Part No. 577013-465) for approved minimum and maximum piping lengths.

Press STEP until you see the message:

```
W1: (WPLLD Line Label)
LINE LENGTH: XXX
```

Press CHANGE and enter the actual line length (rounded up to the next foot). Press ENTER to confirm your choice, and continue.

If you are using fiberglass, your line length setup will first display the 2.0 inch (50 mm) size:

```
W1: (WPLLD Line Label)
2.0 iN DIAM. LEN: 501
```

Enter the actual line length (rounded up to the next foot) and press ENTER. If you are not using 2.0 inch fiberglass enter 0 and press ENTER. The display shows the 3.0 (76 mm) size:

```
W1: (WPLLD Line Label)
3.0 iN DIAM. LEN: 351
```

If you are not using 3.0 inch line, enter 0 and press ENTER. If you are using 3.0 inch line, enter the length and press ENTER.

NOTE: When using the Fiberglass pipe type, the unused size's length must be set to zero.

Press STEP to continue.

## 0.2 gph (0.76 lph) Line Leak Test Scheduling - Option

NOTE: The 0.2 gph Line Leak Test is an optional feature for steel and fiberglass piping types only. This message will not appear unless the **0.20 Repetitive WPLLD** software module key is installed in your system.

```
W1: (WPLLD Line Label)
0.20 GPH TEST: DISABLED
```

This feature allows the user to choose the scheduling frequency of the 0.2 gph tests[1]:

- Disabled - No manual or automatic 0.2 gph testing is allowed.
- Repetitive - After a dispense, a 3.0 gph (11.3 lph) test is run, followed by a 0.2 gph test. The test blockout period (selected in Precision Test Duration setup) is then observed. After the test blockout period, the test sequence repeats after the next dispense. This selection also enables manual 0.2 gph testing.
- Monthly - At the beginning of every month until a test has passed. This selection also enables manual 0.2 gph testing.
- Manual - 0.2 gph tests run only when manually started.

Disabled is the default setting. Press STEP for Disabled, or press CHANGE to select other choices, then press ENTER. Press STEP to continue.

1. When CSLD is available, all 0.2 gph and 0.1 gph line leak testing is subject to test blockout periods. These blockouts are imposed to allow CSLD 'pump off' time to collect tank leak test data. Precision tests are run on an every other day basis. In addition, if the last precision test result is a pass, there will be a minimum of 60 hours before the next test will be attempted. If necessary, the 60 hour blockout period can be extended in the Precision Test Duration setup [page 5-15].

## 0.1 gph (0.38 lph) Line Leak Test Scheduling - Option

NOTE: The 0.1 gph Line Leak Test is an optional feature for steel and fiberglass piping types only. This message will not appear unless the **0.10 On Demand WPLLD** software module key is installed in your system.

**W1: (WPLLD Line Label)**
**0.10 GPH TEST: DISABLED**

This feature allows the user to choose the scheduling frequency of the 0.1 gph tests (See footnote 1 preceding page):

- Disabled - No manual or automatic 0.1 gph testing is allowed.
- Auto - 6 months after the last passed 0.1 gph test. Also enables manual 0.1 gph testing.
- Manual - 0.1 gph tests run only when manually started.

Disabled is the default setting. Press STEP for Disabled, or press CHANGE to select other choices, then press ENTER. Press STEP to continue.

## Shutdown Rate

This feature lets you shut down the line following a failed line leak test. The choices are 3.0 gph (11.3 lph), 0.2 gph (0.76 lph), 0.1 gph (0.38 lph), or none.

**W1: (WPLLD Line Label)**
**SHUTDOWN RATE: 3.0 GPH**

Note: you must have steel or fiberglass line types, and the **Precision WPLLD** software module key installed in your system to select shutdown rates of 0.2 gph or 0.1 gph.

Press STEP to accept the 3.0 gph shutdown rate, or press CHANGE until the desired shutdown rate appears, then ENTER to confirm your choice. NOTE: if you select a 0.1 gph shutdown rate, a failed 0.1 gph, 0.2 gph, or 3.0 gph leak test will disable dispensing. If you select a shutdown rate of 3.0 gph, then only a failed 3.0 gph leak test will disable dispensing, while a failed 0.2 gph or 0.1 gph leak test will just trigger an alarm. If you select None, no failed test will shut down the line.

Press STEP to continue.

## Pressure Offset

New transducers are now factory sealed and their internal chamber cannot be equalized to atmospheric pressure by opening a vent screw as in the past. The Pressure Offset test procedure described in this addendum **must** be performed when using new WPLLD transducers with serial numbers of 100,000 or above, in sites located at altitudes above 2,000 feet (609 m). Note: this procedure can also be used with transducers having serial numbers below 100,000 instead of using the vent screw to equalize pressure.

See Table 10-1 on page 10-8 for approximate absolute pressures that are for reference only. The transducer's actual reading may vary slightly due to its construction, A/D conversion, head pressure in the lines, etc.

Before this procedure is performed, the pressure in the line MUST be vented to zero. It is recommended that this procedure be performed immediately after installing the transducer, before energizing the STP.

The first step is to vent the line(s). The second step is to go to the Diagnostic Mode and run a Pressure Offset Test for each transducer to determine its Pressure Offset value. The third step is to return to the Setup Mode and enter the Pressure Offset determined in the tests, for each transducer.

## VENTING THE LINE


1. Turn Off, lock out, tag power to the STP.
2. Vent the line to zero. IMPORTANT - The STP is actually turned On for the WPLLD test, so be sure to reseal the lines after venting.
3. Reseal the line.
4. Turn On power to the STP. Follow the procedure below.

## DETERMINING A PRESSURE OFFSET VALUE FOR EACH TRANSDUCER

Press MODE to display DIAGNOSTIC MODE, then FUNCTION until you see the message:

```
WPLLD LINE LEAK DIAG
PRESS <STEP> TO CONTINUE
```

From the WPLLD Diag message, press STEP until you see the display below

```
W 1: WPLLD NUMBER 1
P OFFSET TEST <ENTER>
```

Press ENTER and the results of the last test displays ('No Test Data Available' message appears if this is the first test):

```
W 1: PRESS OFFSET TST PSI
9-30-99 03:10AM +3.2
```

Press STEP:

```
W 1: START P OFFSET TEST
PRESS <ENTER>
```

To start the test, press ENTER. During the test this message appears:

```
W 1: PRESSURE OFFSET TEST
MEASURING
```

The Pressure Offset test results message appears when the test ends:

```
W 1: PRESSURE OFFSET TEST
DONE - OFFSET: +XX.X PSI
```

You can print out the test result if you have an optional printer. If you do not have a printer, record the offset value for the transducer. Press Tank/Sensor and repeat the above procedure for all installed transducers.

The maximum offset pressure range is ±5 psi (±34.5 kPa). If a Pressure Offset is greater than ±5 psi (±34.5 kPa), repeat the test. If the Pressure Offset is again out of range, either the line pressure is not completely vented or there is a hardware problem. Refer to WPLLD troubleshooting procedures for further instructions.

### ENTERING THE PRESSURE OFFSET VALUE FOR EACH TRANSDUCER

Press MODE to return to the SETUP MODE, then FUNCTION until you see the message:

```
WPLLD LINE LEAK SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP until you see the message:

```
W 1: WPLLD NUMBER 1
PRESSURE OFFSET: +XX.X
```

Press CHANGE and enter the Pressure Offset value for transducer W1. If necessary, press the left arrow key to change the sign (+ or -). Note: enter the Offset value **exactly** as displayed in the Offset test result message (including + or - sign). Press TANK/SENSOR, to display another transducer. Press CHANGE to enter its Pressure Offset value, then ENTER to confirm the change. Repeat this procedure until you have entered Offsets for all transducers.

## Tank Selection

This entry allows a tank's WPLLD to act as a pump sense input for automatic in-tank leak detection, CSLD, catastrophic leak testing and other features. This step can only be used for tanks that are not already connected to a line leak detector. This message appears *only* if tanks have been configured in the In-Tank Setup procedure.

```
W1: SELECT TANK
NONE
```

For no selection press STEP to continue. If yes, press CHANGE until the tank number to which the particular WPLLD is connected appears, then press ENTER. The system confirms your choice with the message:

```
T#: (Product Label)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Selecting a Dispense Mode

NOTE: This option will only appear if a tank has been selected for the WPLLD.

If necessary, press STEP until you see the message:

```
W1: ENTER DISPENSE MODE
XXXXXXXXX
```

This entry asks you to select the dispense mode. You can select between:

- STANDARD - Only one pump feeds the line.

- MANIFOLDED: ALTERNATE[1] - The pump will run in the tank with the greatest inventory volume.
- MANIFOLDED: SEQUENTIAL[1] - The tanks are pumped low one at a time. When the tank's volume drops below the entered Pump Threshold percentage, pumping will switch over immediately to the next available tank in the line manifolded set. Pumping will continue from the current tank for another 10 seconds to avoid a disruption in dispensing during the switch over. (see "Pump Threshold" on page 7-26).
- MANIFOLDED: ALL PUMPS - All pumps on the line are run.

Press CHANGE until your choice appears then press ENTER to continue.

## Setting Up Additional WPLLDs

If you have additional WPLLDs to set up, press STEP to return to the WPLLD LINE LABEL message:

| **WPLLD LINE LABEL**<br>**W1:** |
|---|

Press TANK to access another WPLLD. Repeat the steps described above, beginning with "Labeling WPLLDs" on page 11-2. After you have entered setup information for all WPLLDs in the system, press FUNCTION to exit.

1. To prevent backfilling, the level of all tanks connected to the line will be monitored. If the level of any tank exceeds 95% of the Max or Label Volume limit (see "Max or Label Vol" on page 7-15), the pump for that tank will also be turned on during dispensing. The state of the pump that was already ON will not be changed.

# 12 Volumetric Line Leak Detection

This function allows you to enter information about Volumetric Line Leak Detectors (VLLDs) installed on product pipelines in the system. You must enter data individually for each line leak detector.

## VLLD Setup

To select Volumetric Line Leak Detector Setup, press FUNCTION until you see the message:

```
LINE LEAK DETECTOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Activating VLLDs

If necessary, press STEP until you see the following message:

```
LINE CONFIG - MODULE 1
SLOT# - X
```

This display allows you to activate the Line Leak Detectors in a module. In the active state, the detector attempts to conduct line leak tests whenever the dispensers are off. To activate a detector, you must replace the X with a 1. To leave a detector inactive, choose an X for the position.

To set up the detector, press CHANGE in response to the LINE CONFIG message until the correct choice appears (1 to activate, X to deactivate). Press ENTER to confirm your choices. The system displays:

```
SLOT# - 1
PRESS <STEP> TO CONTINUE
```

NOTE: Slot 1 is the slot at the bottom (not the top) of the compartment as shown on the circuit directory inside the console door.

Press STEP to continue. The system automatically displays a LINE CONFIG message for each Line Leak Detector Module installed in the system. When you have configured all the modules, press STEP to display the ENTER PIPE LABEL message.

## Pipe Label and Tank Identification

If necessary, press STEP until you see the following message:

```
ENTER PIPE LABEL
P#:
```

This display allows you to enter a label that will identify the pipe being monitored (location, fuel type, etc.).

If needed, press TANK to access any other Line Leak Detector in the system.

When the appropriate detector appears on the screen, press CHANGE. Enter up to 20 alphanumeric characters for the pipe label and press ENTER. The system confirms your entry with the message:

```
P#: (Pipe Label)
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
P1: SELECT TANK
TANK#:
```

Enter the number of the tank on which the Line Leak Detector has been installed. This number must be the same number assigned to the tank by the system during the in-tank setup. (Refer to In-Tank Setup, Section 7.)

NOTE: If you are uncertain of the tank number, print an inventory report and review the tank number assignments.

The system automatically picks up important tank data and includes this information in alarm and status reports.

NOTE: Except for the LINE CONFIG message, you may use the TANK button at any time during the Setup procedure to access another Line Leak Detector.

To enter the number of the tank on which the Line Leak Detector has been installed, press CHANGE and enter a number between 1 and 8. Press ENTER. The system confirms your entry with the message:

```
TANK #: X
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Enter Dispense Mode

If necessary, press STEP until you see the message:

```
P#: ENTER DISPENSE MODE
STANDARD
```

This step lets you choose the dispense mode of the tank(s) on which the Line Leak Detector has been installed. The choices are:

- STANDARD - Only one pump feeds the line.
- MANIFOLDED: ALTERNATE[1] - The pump will run in the tank with the greatest inventory volume.
- MANIFOLDED: SEQUENTIAL[1] -The tanks are pumped low one at a time. When the tank's volume drops below the entered Pump Threshold percentage, pumping will switch over immediately to the next available tank in the line manifolded set. Pumping will continue from the current tank for another 10 seconds to avoid a disruption in dispensing during the switch over. (see "Pump Threshold" on page 7-26).
- MANIFOLDED: ALL PUMPS - All pumps on the line are run.

To select Standard (the system default), press STEP. To choose one of the Manifolded options, press CHANGE until the option you want appears. Then press ENTER. The system confirms your choice with the message:

1. To prevent backfilling, the level of all tanks connected to the line will be monitored. If the level of any tank exceeds 95% of the Max or Label Volume limit (see "Max or Label Vol" on page 7-15), the pump for that tank will also be turned on during dispensing. The state of the pump that was already ON will not be changed.

```
P#: (Dispense Mode)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Fuel Type

If necessary, press STEP until you see the message:

```
P#: (Pipe Label)
FUEL TYPE: GASOLINE
```

Use this display to specify the type of fuel running through the assigned product line. To accept Gasoline for the Fuel Type, press STEP. (The system proceeds to the 2" PIPING LENGTH message.) To choose Diesel, press CHANGE in response to the FUEL TYPE message and press ENTER. The system confirms your choice with the message:

```
FUEL TYPE: DIESEL
PRESS <STEP> TO CONTINUE
```

NOTE: If a fuel other than diesel or gasoline is used, select the type that is closest in viscosity to the fuel that is being dispensed.

Press STEP to continue.

## Piping Length and Type

If necessary, press STEP until you see the message:

```
P#: (Pipe Label)
2" PIPING LENGTH: 000
```

To enter the length of 2-inch (50 mm) piping in the line, press CHANGE. Enter the length. Press ENTER. The system confirms your entry:

```
2" PIPING LENGTH: XXX
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message that allows you to enter the total length of 3-inch (76 mm) piping in the system:

```
P#: (Pipe Label)
3" PIPING LENGTH: 000
```

To enter the 3-inch piping length, press CHANGE. Enter the length. Press ENTER. The system confirms your entry with the message:

```
3" PIPING LENGTH: XXX
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

**P#: (Pipe Label)**
**PIPE TYPE: STEEL**

Use this display to enter the type of piping material of fiberglass, steel, 2-wall fiber (fiberglass), or flexible.

If the piping is made of steel, press STEP to continue, or press CHANGE until the correct piping material appears, then press ENTER. The system confirms your choice with the message:

**PIPING TYPE: (Choice)**
**PRESS <STEP> TO CONTINUE**

Press STEP to continue.

## Pump Pressure

If necessary, press STEP until you see the message:

**P#: (Pipe Label)**
**PUMP PSI:**

Use this display to enter the pump pressure in the pipeline.

To enter the pump pressure, press CHANGE. Enter the pump pressure to the nearest whole number. Refer to Table 12-1 for nominal pressures:

**Table 12-1.- Submersible Pump Nominal Pressures**

| Pump Brand | Model | HP | PSI | KPA |
|---|---|---|---|---|
| Red Jacket | P33R1 | 1/3 | 25 | 172 |
| | P75S1 | 3/4 | 27 | 186 |
| | P150S1 | 1-1/2 | 29 | 200 |
| | P200U1 | 2 | 45 | 310 |
| | X315OU1 | 1-1/2 | 43 | 297 |
| Red Jacket Big-Flo | P200H3-2MB | 2 (2-stage) | 44 | 304 |
| | P300H3-2HB | 3 (2-stage) | 34 | 237 |
| | P500H3-2K | 5 (2-stage) | 40 | 279 |
| Tokheim | 585-13 | 1/3 | 23 | 159 |
| | 585-34 | 3/4 | 25 | 172 |
| | 585-150 | 1-1/2 | 27 | 186 |
| FE Petro | STP33 | 1/3 | 27 | 186 |
| | STP75 | 3/4 | 30 | 207 |
| | STP150 | 1-1/2 | 33 | 228 |
| FE Petro Hi Capacity | STP3HP | 3 | 33 | 229 |
| | STP5HP | 5 | 39 | 272 |

Press ENTER. The system confirms your entry with the message:

```
PUMP PSI: XXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Shutdown Rate

If necessary, press STEP until you see the message:

```
P#: (Pipe Label
SHUTDOWN: 3.0 GPH
```

Line leak detectors are required by law to shut down the submersible if the system detects a 3.0 gph (11.3 lph) leak. Using this feature, you may program the system to shut down the submersible when it detects leaks of 3.0 gph, 0.2 gph (0.76 lph), or 0.1 gph (0.38 lph).

To accept a shutdown leak rate of 3.0 gph, press STEP, or press CHANGE until the desired shutdown rate appears, then press ENTER. The system confirms your choice with the message:

```
SHUTDOWN: (X.X) GPH
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Pumpside Test

If necessary, press STEP until you see the message:

```
P#: (Pipe Label)
PUMPSIDE TEST: ENABLED
```

After the system conducts a line leak test, the line leak detector also runs a pump side test for a pressure loss in the piping and connections between the in-line check valve and the submersible pump.

Leak detection for components prior to the check valve must be provided. This can be done through use of VLLD programmed pump side testing, installation of containment sumps and sensors, or other suitable means. Failure to provide leak detection capability for components prior to the VLLD check valve could allow undetected product leakage with possible contamination of the environment.

To accept ENABLED press STEP. Press CHANGE, then ENTER to disable the test. The system confirms your choice with the message:

```
PUMPSIDE TEST DISABLED
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Wait Mode

If necessary, press STEP until you see the message:

```
P#: (Pipe Label)
WAIT MODE: TEMP. MEAS.
```

Wait Mode selects which method the system uses to determine thermal stability before performing a line leak test, TEMP. MEAS. (temperature measurement) or VOL. CHG. MEAS. (volume change measurement).

Select TEMP. MEAS. if your system has both an in-tank probe and a ground thermistor installed, and has lines less than 500 feet (151 m) in length.

Select VOL. CHG. MEAS. if your system does not have both in-tank probe and ground thermistor installed, or your system has lines over 500 feet in length.

NOTE: If you are using flexible piping, you cannot use the VOL. CHG. MEAS. option.

Press STEP to accept TEMP. MEAS., or CHANGE then ENTER to select VOL. CHG. MEAS. The system confirms your choice with the message:

```
WAIT MODE: VOL. CHG. MEAS.
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## New Blender Protocol (NBP) Partner

If necessary, press STEP until you see the message:

```
P#: SELECT NBP PARTNER
NONE
```

The NBP (New Blender Protocol) Partner feature allows LLDs attached to lines, where products are blended at the pump using a blend valve, to continue operating if the blend valve leaks. The recommended setting is NONE. However, if line leak failures repeatedly occur because of blend valve anomalies, choose the corresponding blended line number (determined by the number of volumetric LLDs).

NOTE: NBP is normally used for mechanical blenders only.

To accept None for the NBP Partner, press STEP. (The system displays the LAST ANNUAL TEST PASSED message).

To choose a pipeline for the NBP Partner, press CHANGE in response to the NBP PARTNER message. Select the desired line and press ENTER. The system displays the message:

```
(Blend Partner)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Last Annual Test Passed

If necessary, press STEP until you see the message:

```
LAST ANNUAL TEST PASSED
DATE: XX/XX/XXXX
```

Use this display to enter the date of the last annual test passed.

NOTE: This message only appears if “Annual Warning” was enabled in System Setup.

To enter the date of the last annual test passed, press CHANGE and enter the date. Press ENTER to confirm your entry:

```
DATE: XX/XX/XXXX
PRESS <STEP> TO CONTINUE
```

## Setting Up Additional Line Leak Detectors

If you have additional Line Leak Detectors to set up, press STEP to return to the ENTER PIPE LABEL message:

```
ENTER PIPE LABEL
P#:
```

Press TANK to access a new Line Leak Detector. Repeat the steps described above beginning with “Pipe Label and Tank Identification” on page 12-1.

If you have entered setup information for all Volumetric Line Leak Detectors in the system, press FUNCTION to exit.

# 13 Volumetric Line Leak Tests

The Volumetric Line Leak Detection (VLLD) system performs fully automatic test routines after each dispense cycle. In addition, Volumetric Line Leak Detectors may be programmed for testing at a specified time or date.

The Line Leak Test Setup function lets you set the test method, schedule, and test rate for programmed automatic line leak tests. Programmed tests continue to run according to the schedule you enter until you change the parameters or disable the test.

NOTE: Line leak tests also may be started at any time from Operating Mode.

## Selecting the Line Leak Test Setup Function

To select Line Leak Test Setup, press FUNCTION until you see the message:

```
LINE LEAK TEST SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Leak Test Setup Method: All Lines/Single Lines

If necessary, press STEP until you see the following message:

```
LEAK TEST METHOD
ALL LINES
```

You can run line leak tests using the same test conditions (frequency, start time, and test rate) for all lines, or you can establish different test conditions for each line.

To specify the same test conditions for all lines, press STEP. The system displays the following message:

```
ALL LINES:
ON DATE
```

To specify different test conditions for each line, press CHANGE in response to the LEAK TEST METHOD message, so the system displays SINGLE LINE. Press ENTER and press STEP. The system now displays the message:

```
SINGLE LINE: LINE 1
ON DATE
```

Whether you choose ALL LINES or SINGLE LINE, the procedure for specifying a set of test conditions is identical. The only difference is that the SINGLE LINE method requires you to specify multiple test conditions, one for each line.

NOTE: The screen examples shown in this procedure assume that you have selected the ALL LINES method. If you choose SINGLE LINE, the line number (e.g., LINE 1) appears in place of “ALL LINES” in each message.

## Leak Test Frequency

As mentioned, when you select a leak test method–ALL LINES in this example–the system displays the message:

```
ALL LINES:
ON DATE
```

You can now choose to run the line leak tests on a specific date, or you can run the tests on an annual, monthly, weekly, or daily basis.

### ON DATE

To run the test on a specific date, press STEP in response to the ON DATE message. (To run the test annually, monthly, weekly, or daily, follow the procedures described in the appropriate section below.) The system displays the message:

```
TEST ON DATE: ALL LINES
DATE: XX/XX/XXXX
```

Press CHANGE, and enter the date on which you want the tests to run. Enter the date in the format MM/DD/YYYY. Press ENTER to confirm the date:

```
DATE: XX/XX/XXXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under “Leak Test Start Time” on page 13-4.

### ANNUAL TEST

To run the tests annually, press CHANGE and press ENTER in response to the ON DATE message:

```
ALL LINES:
ON DATE
```

The system displays the message:

```
ANNUALLY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue setting the annual test. The system displays the message:

```
TEST ANNUALLY: ALL LINES
JAN WEEK 1 MON
```

To set the date of the annual test, press CHANGE until the month during which you want to perform the test appears, and press the Right Arrow key. Press CHANGE until the week during which you want to perform the test appears and press the Right Arrow key. Press CHANGE until the day on which you want to perform the test appears. Press ENTER to confirm the date:

```
MONTH WEEK DAY
PRESS <STEP> TO CONTINUE
```

For example, if you chose to run the tests on the Friday of the first week of June, the system would display the message:

```
JUNE WEEK 1 FRI
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under "Leak Test Start Time" on page 13-4.

## MONTHLY TEST

To run the tests monthly, **press CHANGE twice**, then press ENTER in response to the ON DATE message:

```
ALL LINES:
ON DATE
```

The system displays the message:

```
MONTHLY
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
TEST MONTHLY: ALL LINES
WEEK 1 MON
```

To set the date of the monthly test, press CHANGE until the week during which you want to perform the test appears, and press the Right Arrow key. Press CHANGE until the day on which you want to perform the test appears. Press ENTER to confirm the date:

```
WEEK DAY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under "Leak Test Start Time" on page 13-4.

## WEEKLY TEST

To run the tests weekly, **press CHANGE three times**, then press ENTER in response to the ON DATE message:

```
ALL LINES:
ON DATE
```

The system displays the message:

```
WEEKLY
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
TEST WEEKLY: ALL LINES
MON
```

To set the date of the weekly test, press CHANGE until the day on which you want to perform the test appears. Press ENTER to confirm the date:

```
DAY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under "Leak Test Start Time" on page 13-4.

### DAILY TEST

To run the tests daily, **press CHANGE four times**, then press ENTER in response to the ON DATE message:

```
ALL LINES:
ON DATE
```

The system displays the message:

```
TEST DAILY: ALL LINES
PRESS <STEP> TO CONTINUE
```

Press STEP to continue. The system displays the START TIME message. Follow the procedure under  below.

## Leak Test Start Time

If necessary, press STEP until you see the message:

```
START TIME: ALL LINES
TIME: DISABLED
```

You can enable the test by entering a start time or leave the test disabled.

To leave the test disabled, press STEP. (The system displays the TEST RATE message.)

To enter a test start time, press CHANGE in response to the START TIME message. Enter the start time and press the Right Arrow key to select AM or PM. Press ENTER to confirm your entry:

```
TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

NOTE: The system automatically establishes the correct test length.

Press STEP to continue.

## Leak Test Rate

If necessary, press STEP until you see the message:

```
TEST RATE: ALL LINES
0.20 GAL/HR
```

You can set the test leak rate to 0.2 or 0.1 gph (0.76 or 0.38 lph). The default test rate is 0.2 gph. To accept the default test rate, press STEP. To set the test rate to 0.1 gph, press CHANGE and press ENTER to confirm your choice. The system displays the following message:

```
X.X GAL/HR
PRESS <STEP> TO CONTINUE
```

## Setting Up Additional Lines

To set up line leak tests for additional lines, press STEP to return to the TEST SINGLE LINE message:

```
TEST SINGLE LINE: LINE 1
ON DATE
```

Press TANK to select the next line. Repeat the steps described above beginning with “Leak Test Frequency” on page 13-2.

If you are setting up the test for All Lines, or have completed setting up all individual lines, the setup is complete. Press FUNCTION to exit.

# 14 Line Leak Test Lockout

The line leak detection system cannot test a line when AC power to the submersible pump is shut off. Since the line leak system automatically attempts to conduct a test whenever it receives a signal that the dispenser is off, it is necessary to lock out line tests when the station or fueling site is shut down and submersible pump power is off. In some areas, regulations prohibit leaving power to submersibles switched On during hours when the site is unattended.

The Line Leak Test Lockout function provides a flexible means of locking out line leak tests in accordance with business hours. This feature sets lockout times for VLLD, WPLLD, and PLLD leak detection systems.

## Selecting the Line Leak Test Lockout Function

To select Line Leak Test Lockout Setup, press FUNCTION until you see the message:

```
LINE LEAK LOCKOUT SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Lockout Schedule

The Lockout schedule identifies the hours not to run line leak tests for the station. There are two types of schedules for test lockouts: Daily and Individual.

A Daily schedule allows you to enter a Lockout Start Time and Lockout Stop Time. The lockout period will begin and end at these times every day of the week. Note: By using a Daily schedule and entering the same Start and Stop Times, you can lock out the line leak test function 24 hours per day. This accommodates vacation shutdowns.

An Individual schedule allows you to enter seven separate lockout periods to provide varying lockout schedules. You may program each lockout period with a Start Day and Time, and a Stop Day and Time. For example, lockouts 1 through 5 could be programmed to lock out the line leak test each day from Monday through Friday to accommodate hours when the fueling site is not operating at night. Lockout 6 could be programmed to lock out the test from Friday night to Monday morning if the site is closed for the weekend.

IMPORTANT! If lockout schedules are programmed incorrectly, the line leak tests may not run. Make sure you have programmed the settings correctly.

## Daily Schedule

Once you have selected the Line Leak Test Lockout Setup function, press STEP to display the message:

```
LOCKOUT SCHEDULE
DAILY
```

To accept the daily schedule, press STEP. The system displays the message:

```
DAILY LOCKOUT
START TIME: DISABLED
```

Press CHANGE and enter the daily lockout start time. Press the Right Arrow key to select AM or PM. Press ENTER. The system confirms your entry with the message:

```
TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
DAILY LOCKOUT
STOP TIME: DISABLED
```

Press CHANGE and enter the daily lockout stop time. Press the Right Arrow key to select AM or PM. Press ENTER. The system confirms your entry with the message:

```
TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

Press FUNCTION to exit or press STEP to return to the LOCKOUT SCHEDULE message.

## Individual Schedules

Once you have selected the Line Leak Test Lockout Setup function, press STEP to display the message:

```
LOCKOUT SCHEDULE
DAILY
```

Press CHANGE and press ENTER. The system confirms your choice with the message:

```
INDIVIDUAL
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
LOCKOUT #: 1
START DAY: MON
```

If you want to change the lockout schedule number (you can have up to seven individual lockout schedules), press TANK.

NOTE: **Do not** press ENTER after changing the lockout schedule number. You must enter the Start Day (described below) **before** pressing ENTER.

To set the start day for the lockout schedule number displayed, press CHANGE until the day that you want appears. Press ENTER. The system confirms your choice with the message:

```
START DAY: (Day)
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
LOCKOUT #1: (Day) (START)
TIME: DISABLED
```

To set the lockout start time for the lockout number displayed, press CHANGE and enter the time. Press the Right Arrow key to select AM or PM. Press ENTER. The system confirms your entry with the message:

```
START TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
LOCKOUT #1:
STOP DAY: MON
```

To set the stop day for the lockout number displayed, press CHANGE until the day that you want appears. Press ENTER. The system confirms your choice with the message:

```
STOP DAY: (Day)
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
LOCKOUT #: (Day) (STOP)
TIME: DISABLED
```

Press CHANGE and enter the lockout stop time. Press the Right Arrow key to select AM or PM. Press ENTER. The system displays the message:

```
STOP TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

## Entering Additional Test Lockout Schedules

To enter additional line leak test lockout schedules, press STEP to return to the LOCKOUT #: START DAY message, or press FUNCTION to exit.

# 15 Pump Sense Setup

The Pump Sense function monitors pump on/off status to ensure that in-tank leak tests are not scheduled when the pumps are operating.

## Selecting the Pump Sense Function

To select Pump Sense Setup, press FUNCTION until you see the message:

```
PUMP SENSOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Pump Sense Configuration

If necessary, press STEP until you see the message:

```
PUMPSENS CONFIG: MODULE1
SLOT # - X X X X
```

Use this display to tell the system which Pump Sense module inputs are connected to pump controllers.

NOTE: If Pump Sense modules are not installed, this function is not available.

### HOW THE SYSTEM CONFIGURES PUMP SENSE MODULES

If Pump Sense modules are installed, the system recognizes their presence and slot locations. The system also establishes a module number based on the slot location. For example, if Pump Sense modules are installed in slots #10 and #13, the module in slot #10 automatically becomes module #1 and the module in slot #13 becomes module #2.

As you specify which positions on a module are connected to which pumps, the system assigns a number, for each pump, that corresponds to its position on the module. For example, if there is a pump connected to inputs 3 and 4 of module 1, the pump connected to position 3 becomes S3 and the pump connected to position 4 becomes S4.

### SPECIFYING PUMP SENSE POSITIONS

If position 1 is connected to a pump controller, press CHANGE and 1 appears (leave the X selection if no pump input is connected to position 1). Press the Right Arrow key to move to position 2. If a pump is connected to this input, press CHANGE and a 2 appears (leave X if there is no connection). Repeat these steps until you have all 4 positions for the module selected. Press ENTER to confirm your selections. The system displays the following message (in this example the first 3 positions are connected to pump controllers:

```
SLOT # - 1 2 3 X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the PUMPSENS CONFIG message for the next module. Up to 8 modules may be installed. Repeat the steps described above for each module until you have entered the configured all modules, and the system displays the SELECT TANK message.

## Pump Sense Tank Number

If necessary, press STEP until you see the message:

```
SX: SELECT TANK
NONE
```

In this step you assign each connected pump controller (selected above) to the tank in which it is installed (only configured Pump Sense module inputs will appear). The default value is for this display is NONE. Press CHANGE until the correct tank number for the first pump controller is visible. Press the TANK/SENSOR key to view the next pump controller. Press CHANGE to select its correct tank number. Press ENTER to confirm your choice. The system displays the following message:

```
T#: [Product Label)
PRESS <STEP> TO CONTINUE
```

Press STEP to display the Enter Dispense Mode screen.

## Pump Sense Dispense Mode

If necessary, press STEP until you see the message:

```
S1: ENTER DISPENSE MODE
STANDARD
```

In this step you select the dispense mode of the tank. The choices are:

- STANDARD - Only one pump feeds the line.
- MANIFOLDED: ALTERNATE [1]- The pump will run in the tank with the greatest inventory volume.
- MANIFOLDED: SEQUENTIAL[1] - The tanks are pumped low one at a time. When the tank's volume drops below the entered Pump Threshold percentage, pumping will switch over immediately to the next available tank in the line manifolded set. Pumping will continue from the current tank for another 10 seconds to avoid a disruption in dispensing during the switch over. (see "Pump Threshold" on page 7-26).
- MANIFOLDED: ALL PUMPS - All pumps on the line are run.

To select Standard (the system default) press STEP, or press CHANGE until the option you want appears. Then press ENTER. The system confirms your choice with the message:

```
S1: (Dispense Mode)
PRESS <STEP> TO CONTINUE
```

Press TANK/SENSOR to enter a dispense mode for the next pump controller's tank. When you have entered setup information for all pump controller's tanks, press FUNCTION to exit.

1. To prevent backfilling, the level of all tanks connected to the line will be monitored. If the level of any tank exceeds 95% of the Max or Label Volume limit (see "Max or Label Vol" on page 7-15), the pump for that tank will also be turned on during dispensing. The state of the pump that was already ON will not be changed.

# 16 Pump Relay Monitor Setup

The Pump Relay Monitor function allows you to monitor a pump's On/Off state to determine if the pump is not turning off when instructed to do so (TLS controlled pump), or if its relay is stuck (non-TLS controlled pump).

## Selecting the Pump Relay Monitor Function

To select Pump Relay Monitor Setup, press FUNCTION until you see the message:

```
PUMP RELAY MONITOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Pump Relay Monitor Configuration

If necessary, press STEP until you see the message:

```
PUMP MON CONFIG: MODULE1
SLOT # - X X X X
```

Use this display to tell the system which Pump Relay Monitor module inputs are connected to which pumps.

NOTE: If Pump Relay Monitor modules are not installed, this function is not available.

### HOW THE SYSTEM CONFIGURES PUMP RELAY MONITOR MODULES

If Pump Relay Monitor modules are installed, the system recognizes their presence and slot locations. The system also establishes a module number based on the slot location. For example, if Pump Relay Monitor modules are installed in slots #10 and #13, the module in slot #10 automatically becomes module #1 and the module in slot #13 becomes module #2.

As you specify which positions on a module are connected to which pumps, the system assigns a number, for each pump, that corresponds to its position on the module. For example, if there is a pump connected to inputs 3 and 4 of module 1, the pump connected to position 3 becomes r3 and the pump connected to position 4 becomes r4.

### SPECIFYING PUMP RELAY MONITOR POSITIONS

If position 1 is connected to a pump controller, press CHANGE and 1 appears (leave the X selection if no pump input is connected to position 1). Press the Right Arrow key to move to position 2. If a pump is connected to this input, press CHANGE and a 2 appears (leave X if there is no connection). Repeat these steps until you have all 4 positions for the module selected. Press ENTER to confirm your selections. The system displays the following message (in this example the first 3 positions are connected to pump controllers:

```
SLOT # - 1 2 3 X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the PUMP MON CONFIG message for the next module. Up to 8 modules may be installed. Repeat the steps described above for each module until you have entered the configured all modules, and the system displays the SELECT TANK message.

## Labeling Pump Relay Monitors

This display allows you to identify the pump being monitored by a particular Pump Relay Monitor relay (tank, fuel type, etc.).

```
ENTER PUMP MONITOR LABEL
rX: (pump monitor label)
```

If necessary, press TANK/SENSOR to select the desired Pump Relay Monitor relay in the system.

When the appropriate relay appears in the display, press CHANGE. (To erase a label press CHANGE again.) Enter up to 20 alphanumeric characters for the line label and press ENTER. The system confirms your entry with the message:

```
r1: (pump monitor label)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Pump Relay Monitor Relay Input

If necessary, press STEP until you see the message:

```
rX: SELECT PUMP RELAY
NONE
```

In this step you assign each connected pump to its relay control type:

- NONE - TLS does not control the pump (default selection)

  Choose this selection to monitor the pump each time it switches on, and if it is still running after a 1 - 24 hour delay (Max Run Time delay), to post an alarm.

- Enter the device code, number, and label of the controlling relay (e.g., Pump Sense, PLLD, WPLLD, VLLD, Pump Control Output - I/O Combo or 4-Relay). For any of these entries, if the pump continues to run after it is instructed to turn off, for longer than a 5 - 600 second selectable delay (Stuck Delay), an alarm is posted.

The default value for this display is NONE. Press CHANGE until the correct relay for the first pump is visible. Press the TANK/SENSOR key to view the next pump controller. Press CHANGE to select its correct relay control type. Press ENTER to confirm your choice.

## Pump Relay Monitor Delay Input

If necessary, press STEP until you see one of the messages below.

If NONE was selected for Pump Relay:

```
r#: [pump monitor label)
MAX RUN TIME (HR): 8
```

OR

If a controlling relay was selected for Pump Relay:

```
r#: [pump monitor label)
STUCK DELAY (SEC): 60
```

If Stuck Delay, select from 5 to 600 seconds (60 is default). If Max Run Time, select from 1 to 24 hours (8 is default). Press CHANGE to enter another selection and press ENTER to confirm your change.

# 17 Reconciliation Setup

To select Reconciliation Setup, press FUNCTION until you see the message:

```
RECONCILIATION SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

International installations - for consoles without BIR, the HRM Features DIP switch [see Figure 8 on page 5-3] must be enabled to enter Reconciliation Setup.

## Dispenser Module Data String

If necessary, press STEP until you see the message:

```
DISP. MODULE DATA STRING
EDIM #X: XXXXXXXX
```

Device codes for the two types of DIM modules are a “M” for Mechanical Dispenser Interface Modules (MDIM), and an “E” for Electronic Dispenser Interface Modules (EDIM). All EDIM modules install in the Comm Bay of the console and include; Current Loop, Block, RS-232, IFSF, and RS-485 dispenser interface modules. All MDIM modules install in the Power Bay of the console and include; Low Voltage Mechanical, and High Voltage Mechanical Dispenser Interface Modules.

When a BDIM, EDIM, or CDIM is installed, the system will recognize its presence and position in the Comm Bay of the console. When a MDIM is installed, the system will recognize its presence and position in the Power Bay.

To enter a dispenser module data string, press CHANGE, enter a valid DIM description selected from the appropriate DIM Installation Manual. The system accepts up to twelve alphanumeric characters; however, it reads only the first eight. If no data are entered, the DIM defaults are used.

After entering your description, press ENTER. The system confirms your entry with the following message:

```
XDIM#X: [Description]
PRESS <STEP> TO CONTINUE
```

If more than one DIM is installed, the system will automatically advance to the next module when setup for one is complete. You can also press TANK to select a specific module. When all DIM modules have been set up, press STEP to advance to the next feature. (The system displays the AUTOMATIC DAILY CLOSING message.)

## Automatic Daily Closing

If necessary, press STEP until you see the message:

```
AUTOMATIC DAILY CLOSING
TIME: 2:00 AM
```

Enter the time you wish to designate as the daily closing time. At the programmed time, the system stores the current day’s data, and prints a report if “Daily BIR Reports” was set to enabled in System Setup (page 5-5). The default time is set to 2:00 a.m. This feature cannot be disabled.

To accept the default time, press STEP. (The system displays the AUTO SHIFT #1 CLOSING message.) To enter a different closing time, press CHANGE and enter the desired time. Press the Left or Right Arrow to select AM or PM. Press ENTER. The system confirms your entry with the message:

```
TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Automatic Shift Closing

If necessary, press STEP until you see the message:

```
AUTO SHIFT #1 CLOSING
TIME: DISABLED
```

Refer to your Shift Start Times in the System Setup Function (see “Shift Start Times” on page 5-4) to determine the Automatic Shift Closing Times:

- Shift Closing Time #1 should match Shift Start Time #2
- Shift Closing Time #2 should match Shift Start Time #3
- Shift Closing Time #3 should match Shift Start Time #4
- Shift Closing Time #4 should match Shift Start Time #1

At each programmed time, a new shift close report will automatically be printed [if Shift BIR Reports was enabled in System Setup (page 5-5)], and stored in memory.

To leave a shift closing time disabled, press STEP. (The system displays the AUTO SHIFT CLOSING TIME message for the next shift.)

To set a closing time for shift #1, press CHANGE and enter the appropriate time. Press the Left or Right Arrow to select AM or PM. Then press ENTER. The system confirms your entry with the message:

```
TIME: XX:XX XM
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the next AUTO SHIFT CLOSING TIME message:

```
AUTO SHIFT #2 CLOSING
TIME: DISABLED
```

Repeat the above procedures to enter or disable closing times for shifts 2, 3, and 4.When you have entered or disabled a closing time for shift 4, the system displays the PERIODIC RECONCILIATION MODE message.

## Periodic Reconciliation Mode

If necessary, press STEP until you see the message:

```
PERIODIC RECONCILIATION
MODE: MONTHLY
```

Periodic Reconciliation Mode allows you to print a summary report of the activity during the last month or period, up to the last scheduled daily closing. If you choose MONTHLY, a report will automatically print on the first day of

each month. If you choose ROLLING, a report will automatically be printed at the end of the interval you choose (1 - 31 days).

To accept MONTHLY, press STEP. (The system displays the PERIODIC RECONCILIATION ALARM message.)

To switch to ROLLING, press CHANGE and press ENTER. They system displays:

```
MODE: ROLLING
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the following message:

```
PERIODIC RECONCILIATION
LENGTH: XX DAYS
```

Press CHANGE. Enter the number of days (1–31) between the printing of each periodic reconciliation report. Then press ENTER. The system confirms your entry with the message:

```
LENGTH: XX DAYS
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Periodic Reconciliation Alarm

If necessary, press STEP until you see the message:

```
PERIODIC RECONCILIATION
ALARM: DISABLED
```

If enabled, the Periodic Reconciliation Alarm will be activated when the programmed threshold for discrepancies between fuel delivery amount and dispensed fuel amount is exceeded. The system default is 1.00% of throughput plus 130 gallons (492 litres) offset. In the U.S. the EPA has set this default as a criteria not to be exceeded. The Periodic Reconciliation Alarm is triggered when the alarm threshold plus offset exceeds the allowed variance.

To leave the Periodic Reconciliation Alarm disabled, press STEP until you see the REMOTE REPORT FORMAT message. (The system displays the PERIODIC RECONCILIATION ALARM THRESHOLD message.)

To enable the Periodic Reconciliation Alarm, press CHANGE, then press ENTER. The system confirms your entry with the message:

```
ALARM: ENABLED
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the message:

```
PERIODIC RECONCILIATION
ALARM THRESHOLD: 1.00
```

Press CHANGE. Enter the percent of total meter sales (throughput). *Note - the Alarm Threshold must be between 0.00 and 5.00 percent.*

Press ENTER. The system confirms you entry with the message:

```
ALARM THRESHOLD: X.XX
PRESS <STEP> TO CONTINUE
```

Press STEP. The system displays the message:

```
PERIODIC RECONCILIATION
ALARM OFFSET: 000130
```

Press CHANGE. Enter the number of gallons (litres) of allowable variance. Press ENTER. The system confirms your entry with the message:

```
ALARM OFFSET: XXXXXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Remote Report Format

If necessary, press STEP until you see the message:

```
REMOTE REPORT FORMAT
SELECT: ROW
```

NOTE: This feature appears only when a remote printer is installed.

You can choose between ROW and COLUMN printer formats. To maintain the default or current setting, press STEP. (The system displays the MODIFY TANK/METER MAP message.)

To change the default or current setting, e.g., from ROW to COLUMN, press CHANGE, then press ENTER. The system confirms your entry with the message:

```
SELECT: COLUMN
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Temp Compensation

If necessary, press STEP until you see the message:

```
TEMP COMPENSATION
STANDARD
```

This feature allows you to choose whether or not to calculate Business Inventory Reconciliation (BIR) volumes using the Programmable Temperature Compensation (TC) value. For information on entering this value, (See “Temperature Compensation Value” on page 13.). Select STANDARD (the default) if the meters are not temperature compensated. Select TC VOLUME if the meters are temperature compensated (the calculation of all BIR volumes will be based on the TC value).

Press STEP to accept STANDARD. Press CHANGE, then ENTER to select TC VOLUME. The system confirms your choice with the message:

```
TC VOLUME
PRESS <STEP> TO CONTINUE
```

## Meter Calibration Offset

If necessary, press STEP until you see the message:

```
METER CALIBRATION
OFFSET: +0.000
```

This feature only appears if BIR is installed. The Meter Calibration offset is added to the dispensed amount received. The default value is 0.000%. You can enter an offset from -1.000 to +1.000%. Press CHANGE and enter the desired value (e.g., 0.250%). Press ENTER and the system confirms your choice with the message:

```
METER CALIBRATION
OFFSET: +0.250
```

Press STEP to continue.

## Modify Tank/Meter Map

If necessary, press STEP until you see the message:

```
MODIFY TANK/METER MAP
PRESS <ENTER>
```

Meter data sent from a POS terminal to a TLS 350R console may be collected from a tank that does not have a probe. Probes collect height data needed for Business Inventory Reconciliation (BIR). This feature allows you to assign a meter to a tank that does not have a probe so that BIR can still function.

Note: the system must be configured before you can modify the tank/meter map.

Press ENTER to change the tank/meter map and the system displays:

```
BUS SLOT FUEL METER TANK
X   XX   XX   XX    XX
```

Press  or  to move to the field you want to change. Then press CHANGE until the correct choice appears. Press ENTER to confirm your change. Press PRINT to output a report of the current meter map for reference before proceeding.

The values you may enter are:

**Bus--**Power or Communications Bay of the console in which the Dispenser Interface Module (DIM) card is placed.

- **2**: Power Bay (MDIMs)
- **3**: Communication Bay (BDIMs, EDIMs, or CDIMs)

**Slot**--Slot in which the DIM card is placed.

- **9 - 16** (where 9 is the bottom slot): Slots on Type 2 bus
- **1 - 3** (where 1 is the left-most slot): Slots on Type 3 bus

**Fuel**--Fueling position number reported by the POS terminal. This number can range from 0 - 99. There is a maximum of 36 unique fueling position numbers.

**Meter**--Meter number reported by POS terminal. This number can range from 0 - 99. There is a maximum of 6 unique meter numbers per fueling position.

**Tank**--One of the following:

- **99**: Tank with no probe
- **00**: Remove meter from tank/meter map
- **xx**: Any tank number set up for BIR. (Note: only the primary tank needs to be entered for a manifolded set of tanks. The primary tank is the tank with the lowest number in the set. If a tank number is entered that is part of a manifolded set, but it is not the primary tank, the selection will be rejected.)

Press STEP until you see the message:

| |
|---|
| **INDIVIDUAL METER OFFSET**<br>**PRESS <ENTER>** |

Ticketed Delivery must be enabled to view this menu.

Press STEP to return to the Disp. Module Data String menu if DIM is installed or to Automatic Daily Closing menu if DIM is not installed; or press ENTER to change the meter offset for the selected fuel position/meter. The system displays:

| FUEL | METER | TANK | OFFSET |
|---|---|---|---|
| XX | XX | XX | +X.XX |

Then press CHANGE. The Offset value flashes '0'. Enter the desired offset in increments of ±0.01% with a mximum range of ±9.99% and Press ENTER to confirm your change. Press STEP to continue to the next meter.

Press FUNCTION to exit the Reconciliation Setup function.

# 18 Liquid Sensor Setup

The Liquid Sensor Setup function allows you to enter information about liquid sensors installed in the interstitial space of double-wall tanks and the sumps of double-wall piping systems, or the oil/water separator sensor. You must enter data individually for each sensor. The information you enter tells the system the number, location, and types of sensors installed.

## Selecting the Liquid Sensor Setup Function

To select Liquid Sensor Setup, press FUNCTION until you see the message:

```
LIQUID SENSOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Liquid Sensor Configuration

If necessary, press STEP until you see the message:

```
SENSOR CONFIG - MODULE 1
SLOT # - X X X X X X X X
```

Use this display to tell the system which liquid sense wire positions on a module are connected to liquid sensors.

NOTE: If liquid sensors are not installed, this function is not available.

### HOW THE SYSTEM CONFIGURES LIQUID SENSORS

If liquid sensors are installed, the system will recognize the presence and module slot locations of Interstitial Sensor Interface Modules. The system also establishes a module number based on the slot location. For example, if modules are installed in slots #3 and #6, the module in slot #3 automatically becomes module #1 and the module in slot #6 becomes module #2.

As you specify which liquid sense wire positions on a module are connected to liquid sensors, the system establishes a number for each liquid sensor. For example, if there is a liquid sensor in positions 3 and 5 of module 1, the sensor in position 3 becomes L3 and the sensor in position 5 becomes L5.

To indicate that a liquid sensor position is connected, choose the number corresponding to that position. For example, if the position is 3, choose 3 for the position. To indicate that a position is not connected, choose X for that position.

### SPECIFYING LIQUID SENSOR POSITIONS

To specify whether the first position is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears. Repeat these steps until you have correctly specified all sensor positions. When you have entered a choice for all positions, press ENTER to confirm your entry. The system displays the following message:

```
SLOT # - X X X X X X X X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the SENSOR CONFIG message for the next module. Up to 8 modules may be installed. Repeat the steps described above for each module until you have entered the configuration information (sensor positions) for all modules and the system displays the ENTER SENSOR LOCATION message.

## Liquid Sensor Location

If necessary, press STEP until you see the message:

**ENTER SENSOR LOCATION**
**L1:**

To enter the location of a liquid sensor, press TANK repeatedly until the sensor you want appears on the second line of the message (L1, L2, L3, etc.). Press CHANGE and enter the location (up to 20 alphanumeric characters) of the selected sensor. Typical entries would be: INTERSTITIAL TANK 1; SUMP TANK 1, etc. (This information will appear on sensor status and sensor alarm reports to make it easier to identify the location of alarms.) Press ENTER to confirm your entry:

**L1: (Sensor Location)**
**PRESS <STEP> TO CONTINUE**

Press STEP to continue.

## Liquid Sensor Type

If necessary, press STEP until you see the message:

**L1: ENTER SENSOR TYPE**
**TRI-STATE (SINGLE FLOAT)**

If necessary press CHANGE to display additional liquid sensor types (see table below):

| Sensor Type Entry | Applicable V-R Sensor | V-R Part Number |
|---|---|---|
| Tri-State (Single Float) | Sump sensor | 794380-208 |
| | Steel Tank sensor | 794380-420, -460 |
| | Fiberglass Interstitial Float sensor | 794390-401, -404, -407, -409 |
| | Position-Sensitive sensor | 794380-323 |
| | Media-Isolated Float sensor | 794380-430 |
| Normally Closed | None | None |
| Dual Float Hydrostatic | Dual Point Hydrostatic sensor | 794380-302 (soon to superseded by 794380-303) |
| Dual Float Discriminating* | Discriminating Pan sensor | 794380-322 |
| | Discriminating Sump sensor | 794380-352 |
| Dual Float High Vapor | Discriminating Pan sensor | 794380-322 |
| | Discriminating Sump sensor | 794380-352 |
| Interceptor (European - limited to certain specific Interceptor types) | Interceptor sensor | 720-000-1000 |

**For Oil/Water Separator sensors (P/N 794690-XXX) use Dual Float Discriminating for sensor type.*

Press ENTER to confirm your choice:

```
(Sensor Type)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Liquid Sensor Category (RS-232 and Remote Display)

If necessary, press STEP until you see the message:

```
L1:(Sensor Location)
CATEGORY : OTHER SENSORS
```

If necessary, press CHANGE until you see the correct category. Additional category options are:

- ANNULAR SPACE[1]
- DISPENSER PAN
- MONITOR WELL
- STP SUMP
- PIPING SUMP

When you display the correct category, press ENTER.

[1]International installations - Interstitial sensors to be configured under ANNULAR SPACE in the liquid sensor category. Then upon alarm this sensor can only be cleared through the CONFIRM CLEAR function in the Diagnostic Mode. This is feature is only available if HRM is enabled (ref. Figure 4-2 on page 4-4).

## Setting Up Additional Liquid Sensors

If you have additional liquid sensors to configure, press STEP, if necessary, until you see the ENTER SENSOR LOCATION message. Press TANK to select another sensor and follow the procedures described above beginning with the section “Liquid Sensor Location” on page 18-2.

If you have entered setup information for all sensors, press FUNCTION to exit.

# 19 Vapor Sensor Setup

The Vapor Sensor Setup function allows you to enter information about vapor sensors installed in vapor monitoring wells at the site. You must enter data individually for each sensor. The information you enter tells the system the number, location, and vapor thresholds of installed sensors.

## Selecting the Vapor Sensor Setup Function

To select Vapor Sensor Setup, press FUNCTION until you see the message:

```
VAPOR SENSOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Vapor Sensor Configuration

If necessary, press STEP until you see the message:

```
SENSOR CONFIG - MODULE 1
SLOT # - X X X X X
```

Use this display to tell the system which sensor positions on a module are connected to vapor sensors.

NOTE: If vapor sensors are not installed, this function is not available.

### HOW THE SYSTEM CONFIGURES VAPOR SENSORS

If vapor sensors are installed, the system recognizes the presence and module slot locations of Vapor Sensor Interface Modules. The system also establishes a module number based on the slot location. For example, if modules are installed in slots #3 and #6, the module in slot #3 automatically becomes module #1 and the module in slot #6 becomes module #2.

As you specify which sensor positions on a module are connected to vapor sensors, the system establishes a number for each sensor. For example, if there is a vapor sensor in positions 3 and 5 of module 1, the sensor in position 3 becomes V3 and the sensor in position 5 becomes V5.

To indicate that a vapor sensor position is connected, choose the number corresponding to that position. For example, if the position is 3, choose 3 for the position. To indicate that a position is not connected, choose X for that position.

### SPECIFYING VAPOR SENSOR POSITIONS

To specify whether the first position is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears. Repeat these steps until you have correctly specified all sensor positions. When you have entered a choice for all positions, press ENTER to confirm your entry. The system displays the following message:

```
SLOT # - X X X X X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the SENSOR CONFIG message for the next module. Up to 8 modules may be installed. Repeat the steps described above for each module until you have entered the configuration information (sensor positions) for all modules and the system displays the ENTER SENSOR LOCATION message.

## Vapor Sensor Location

If necessary, press STEP until you see the message:

```
ENTER SENSOR LOCATION
V1:
```

To enter the sensor location, press TANK repeatedly until the sensor you want appears on the second line of the message (V1, V2, etc.). Press CHANGE and enter the location (up to 20 alphanumeric characters) of the selected sensor. Typical entries would be: WELL #1, NEW CORNER, etc. (This information appears on sensor status and sensor alarm reports to make it easier to identify the location of the alarm.) Press ENTER to confirm your entry:

```
V1: (Sensor Location)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Vapor Threshold

If necessary, press STEP until you see the message:

```
V1: (Sensor Location)
SENSOR THRESHOLD: 000000
```

The SENSOR THRESHOLD message lets you enter vapor levels to identify a leak or serious spillover and to trigger the vapor alarm. Thresholds are in ohms (Ω) and must be calculated for each vapor sensor according to the formula described below. Thresholds may be set to account for existing vapor levels as long as these vapors do not exceed the limits explained below.

### BEFORE YOU BEGIN

IMPORTANT! A vapor sensor must be operated only in wells where preliminary testing has determined that the soil is not already contaminated beyond acceptable limits (as defined by applicable regulations) or that contaminated soil has been remediated and is now clean. A vapor sensor should not be operated in wells where preliminary testing indicates that the initial vapor sensor resistance exceeds 25k ohms. Vapor sensors must have been installed in their wells at least 24 hours prior to calculating and entering vapor alarm thresholds.

**⚠ WARNING**


**This system contains electrical voltages that can be lethal.**

**Electrical shock resulting in serious injury or death could result if incorrect service procedures are used.**

**When you perform the following procedure:**

1. **Read all instructions carefully.**
2. **Turn Off power to the console.**

1. **Be sure** that the Battery-Backup switch is in the On position before proceeding. If the battery is Off when AC power to the system is turned Off, all previously entered setup data WILL BE LOST!

2. Turn Off all AC power to the system.
3. In the intrinsically safe area of the monitor, locate the Vapor Sensor Interface Module(s).
4. Measure the resistance across the “V” (vapor) and “G” (ground) terminals for each sensor using an ohmmeter.
5. For each sensor, multiply the measured resistance by 4 to determine the vapor threshold value that you should enter.

IMPORTANT! Vapor alarm threshold values cannot exceed l00k ohm or be less than 1k ohm. The system will not accept values outside these limits.

### SPECIFYING VAPOR THRESHOLD LEVELS

To enter the vapor threshold for the selected sensor, press CHANGE in response to the SENSOR THRESHOLD message. Enter the vapor threshold value that you calculated based on the formula described above (between 1k and 100k ohms). Press ENTER to confirm your entry:

```
VAPOR THRESHOLD: XXXXXX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Vapor Sensor Category

If necessary, press STEP until you see the message:

```
V1: (Sensor Location)
CATEGORY:OTHER SENSORS
```

If necessary, press CHANGE until you see the correct category then press ENTER. The category options are:

- ANNULAR SPACE
- DISPENSER PAN
- MONITOR WELL
- STP SUMP
- PIPING SUMP

When the correct category displays, press ENTER.

## Setting Up Additional Vapor Sensors

If you have additional vapor sensors to configure, press STEP, if necessary, to return to the ENTER SENSOR LOCATION message. Press TANK to select another sensor and follow the procedures described above, beginning with the section “Vapor Sensor Location” on page 19-2.

If you have entered setup information for all vapor sensors, press FUNCTION to exit.

# 20 Groundwater Sensor Setup

The Groundwater Sensor Setup function allows you to enter information about groundwater sensors installed in groundwater monitoring wells at the site. You must enter data individually for each sensor. The information you enter tells the system the number and location of installed sensors.

## Selecting the Groundwater Sensor Setup Function

To select Groundwater Sensor Setup, press FUNCTION until you see the message:

```
GROUNDWATER SENSOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Groundwater Sensor Configuration

If necessary, press STEP until you see the message:

```
SENSOR CONFIG - MODULE 1
SLOT # - X X X X X
```

Use this display to tell the system which sensor positions on a module are connected to groundwater sensors.

NOTE: If groundwater sensors are not installed, this function is not available.

### HOW THE SYSTEM CONFIGURES GROUNDWATER SENSORS

If groundwater sensors are installed, the system recognizes the presence and module slot locations of Groundwater Sensor Interface Modules. The system also establishes a module number based on the slot location. For example, if modules are installed in slots #3 and #6, the module in slot #3 automatically becomes module #1 and the module in slot #6 becomes module #2.

As you specify which sensor positions on a module are connected to groundwater sensors, the system establishes a number for each sensor. For example, if there is a groundwater sensor in positions 3 and 5 of module 1, the sensor in position 3 becomes G3 and the sensor in position 5 becomes G5.

To indicate that a groundwater sensor position is connected, choose the number corresponding to that position. For example, if the position is 3, choose 3 for the position. To indicate that a position is not connected, choose X for that position.

### SPECIFYING GROUNDWATER SENSOR POSITIONS

To specify whether the first position is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears. Repeat these steps until you have correctly specified all sensor positions. When you have entered a choice for all positions, press ENTER to confirm your entry. The system displays the following message:

```
SLOT # - X X X X X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the SENSOR CONFIG message for the next module. Up to 8 modules may be installed. Repeat the steps described above for each module until you have entered configuration information (sensor positions) for all modules and the system displays the ENTER SENSOR LOCATION message.

## Groundwater Sensor Location

If necessary, press STEP until you see the message:

```
ENTER SENSOR LOCATION
G1:
```

To enter the sensor location, press TANK repeatedly until the sensor you want appears on the second line of the message (G1, G2, G3, etc.). Press CHANGE and enter the location (up to 20 alphanumeric characters) of the selected sensor. Typical entries are: WELL #1, NEW CORNER, etc. (This information appears on sensor status and sensor alarm reports to make it easier to identify the location of the alarm.) Press ENTER to confirm your entry:

```
G1: (Sensor Location)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Groundwater Sensor Category

If necessary, press STEP until you see the message:

```
G1: (Sensor Location)
CATEGORY:OTHER SENSORS
```

If necessary, press CHANGE until you see the correct category. The category options are:

- ANNULAR SPACE
- DISPENSER PAN
- MONITOR WELL
- STP SUMP
- PIPING SUMP

When the correct category displays, press ENTER.

## Setting Up Additional Groundwater Sensors

If you have additional sensors to configure, press STEP, if necessary, until you see the ENTER SENSOR LOCATION message. Press TANK to select another sensor and follow the procedures described above, beginning with “Groundwater Sensor Location” on page 20-2.

If you have entered setup information for all sensors, press FUNCTION to exit.

# 21 2-Wire C.L. Sensor Setup

The 2-Wire C.L. (Current Loop) (Type A) Sensor Setup function allows you to enter information about 2-Wire C.L. (Type A) Sensors installed at your site. You must enter data individually for each sensor.

## Selecting the 2-Wire C.L. Sensor Setup Function

To select 2-Wire C.L. Sensor Setup, press FUNCTION until you see the message:

```
2 WIRE C.L. SENSOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## 2-Wire C.L. Sensor Configuration

If necessary, press STEP until you see the message:

```
SENSOR CONFIG - MODULE 1
SLOT # - X X X X X X X X
```

Use this display to tell the system which sensor positions on a module are connected to 2-Wire C.L. sensors.

NOTE: If 2-Wire C.L. sensors are not installed, this function is not available.

### HOW THE SYSTEM CONFIGURES 2-WIRE C.L. SENSORS

If 2-Wire C. L. sensors are installed, the system recognizes the presence and module slot locations of Type A Interface Modules. The system also establishes a module number based on the slot location. For example, if modules are installed in slots #3 and #6, the module in slot #3 automatically becomes module #1 and the module in slot #6 becomes module #2.

As you specify which sensor positions on a module are connected to 2-Wire C.L. sensors, the system establishes a number for each sensor. For example, if there is a 2-Wire C.L. sensor in positions 3 and 5 of module 1, the sensor in position 3 becomes C3 and the sensor in position 5 becomes C5.

To indicate that a 2-Wire C.L. sensor position is connected, choose the number corresponding to that position. For example, if the position is 3, choose 3 for the position. To indicate that a position is not connected, choose X for that position.

### SPECIFYING 2-WIRE C.L. SENSOR POSITIONS

To specify whether the first position is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears. Repeat these steps until you have correctly specified all sensor positions. When you have entered a choice for all positions, press ENTER to confirm your entry. The system displays the following message:

```
SLOT # - X X X X X X X X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the SENSOR CONFIG message for the next module. Up to 8 modules may be installed. Repeat the steps described above for each module until you have entered configuration information (sensor positions) for all modules and the system displays the ENTER SENSOR LOCATION message.

## 2-Wire C.L. Sensor Location

If necessary, press STEP until you see the message:

```
ENTER SENSOR LOCATION
C1:
```

To enter the sensor location, press TANK repeatedly until the sensor you want appears on the second line of the message (C1, C2, etc.). Press CHANGE and enter the location (up to 20 alphanumeric characters) of the selected sensor. Typical entries are: INTERSTITIAL-TANK 1; etc. (This information appears on sensor status and sensor alarm reports to make it easier to identify the location of the alarm.) Press ENTER to confirm your entry:

```
C1: (Sensor Location)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## 2-Wire C.L. Sensor Type

If necessary, press STEP until you see the message:

```
C1: ENTER SENSOR TYPE
DISCRIM INTERSTITIAL
```

Use this display to identify the selected sensor's type, so the system can properly interpret and report sensor information. You can choose DISCRIM INTERSTITIAL or ULTRA 2 for the Sensor Type. DISCRIM INTERSTITIAL sensors have three sensing states: normal condition, water detection, and fuel detection. ULTRA-2 sensors may have two sensing states: normal condition and liquid condition.

**NOTE: The interstitial sensor for high alcohol applications (Form No. 794380-345) must be set up as ULTRA 2.**

Press STEP to accept DISCRIM INTERSTITIAL. Press CHANGE, then ENTER to accept ULTRA 2, press CHANGE in response to the ENTER SENSOR TYPE message. Press ENTER to confirm your choice:

```
ULTRA 2
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## 2-Wire C.L. Sensor Category

If necessary, press STEP until you see the message:

```
C1: (Sensor Location)
CATEGORY: OTHER SENSORS
```

If necessary, press CHANGE until you see the correct category. The category options are:

- ANNULAR SPACE •DISPENSER PAN
- MONITOR WELL •STP SUMP
- PIPING SUMP

When you display the correct category, press ENTER.

## Setting Up Additional 2-Wire C.L. Sensors

If you have additional sensors to configure, press STEP until you see the ENTER SENSOR LOCATION message. Press TANK to select another sensor and follow the procedures described above, beginning with"2-Wire C.L. Sensor Location" on page 21-2.

If you have entered setup information for all sensors, press FUNCTION to exit.

# 22 3-Wire C.L. Sensor Setup

The 3-Wire C.L. (Current Loop) (Type B) Sensor Setup function allows you to enter information about dispenser pan and containment sump sensors installed at the site. You must enter data individually for each sensor. The information you enter tells the system the number and location of installed sensors.

## Selecting the 3-Wire C.L. Sensor Setup Function

To select 3-Wire C.L. Sensor Setup, press FUNCTION until you see the message:

```
3 WIRE C.L. SENSOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## 3-Wire C.L. Sensor Configuration

If necessary, press STEP until you see the message:

```
SENSOR CONFIG - MODULE 1
SLOT # - X X X X X
```

Use this display to tell the system which sensor positions on a module are connected to 3-Wire C.L. sensors.

NOTE: If dispenser pan and containment sump sensors are not installed, this function is not available.

### HOW THE SYSTEM CONFIGURES 3-WIRE C.L. SENSORS

If dispenser pan and containment sump sensors are installed, the system will recognize the presence and module slot locations of Type B Interface Modules. The system also establishes a module number based on the slot location. For example, if modules are installed in slots #3 and #6, the module in slot #3 automatically becomes module #1 and the module in slot #6 becomes module #2.

As you specify which positions on a module are connected to 3-Wire C.L. sensors, the system establishes a number for each sensor. For example, if there is a sensor in positions 3 and 5 of module 1, the sensor in position 3 becomes H3 and the sensor in position 5 becomes H5.

To indicate that a sensor position is connected, choose the number corresponding to that position. For example, if the position is 3, choose 3 for the position. To indicate that a position is not connected, choose X for that position.

### SPECIFYING 3-WIRE C.L. SENSOR POSITIONS

To indicate whether position 1 is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears. Repeat these steps until you have correctly specified all sensor positions. When you have entered a choice for all positions, press ENTER to confirm your entry. The system displays the following message:

```
SLOT # - X X X X X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the SENSOR CONFIG message for the next module. Up to 8 modules may be installed. Repeat the steps described above for each

module until you have entered the configuration information (sensor positions) for all modules and the system displays the ENTER SENSOR LOCATION message.

## 3-Wire C.L. Sensor Location

If necessary, press STEP until you see the message:

```
ENTER SENSOR LOCATION
H1:
```

To enter the sensor location, press TANK repeatedly until the sensor you want appears on the second line of the message (H1, H2, etc.). Press CHANGE and enter the sensor location (up to 20 alphanumeric characters) of the selected sensor. A typical entry is: DISPENSER PAN PUMP, etc. (This information appears on sensor status and sensor alarm reports to make it easier to identify the location of the alarm.) Press ENTER to confirm your entry:

```
H1: (Sensor Location)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## 3-Wire C.L. Sensor Mode

If necessary, press STEP until you see the message:

```
H1: ENTER SENSOR MODE
STANDARD
```

Use this display to identify the selected sensor's mode, so the system can properly interpret and report sensor information. You can choose Standard mode or High Vapor mode. In Standard mode, the sensor alarms when it senses any hydrocarbon, liquid, or vapor along the length of the sensor. In High Vapor mode the sensor alarms only if it detects **both** liquid hydrocarbon **and** an extremely high hydrocarbon vapor. This mode is recommended ONLY if the sensor has recently detected a leak and hydrocarbon residue may still be on the sensing element.

To choose Standard mode, press STEP. (The system displays the CATEGORY message.)

To choose High Vapor, press CHANGE in response to the ENTER SENSOR MODE message. Press ENTER to confirm your choice:

```
H1: (Sensor Mode)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## 3-Wire C.L. Sensor Category

If necessary, press STEP until you see the message:

```
H1: (Sensor Location)
CATEGORY:OTHER SENSORS
```

If necessary, press CHANGE until you see the correct category. The category options are:

- ANNULAR SPACE •DISPENSER PAN
- MONITOR WELL •STP SUMP
- PIPING SUMP

When the correct category displays, press ENTER.

## Setting Up Additional 3-Wire C.L. Sensors

If you have additional sensors to configure, press STEP, if necessary until you see the ENTER SENSOR LOCATION message. Press TANK to select another sensor and follow the procedures described in the preceding sections, beginning with “3-Wire C.L. Sensor Location” on page 22-2.

If you have entered setup information for all sensors, press FUNCTION to exit.

# 23 External Input Setup

Input devices can be connected to the system monitor via Input/Output (I/O) Combination Interface Modules. You must enter data individually for each input device. The information you enter tells the system the number, location, type, and name of installed input devices.

## Selecting the External Input Setup Function

To select External Input Setup, press FUNCTION until you see the message:

```
EXTERNAL INPUT SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## External Input Configuration

If necessary, press STEP until you see the message:

```
INPUT CONFIG - MODULE 1
SLOT # - X X
```

Use this display to tell the system which input positions on a module are connected to external devices.

NOTE: If external devices are not installed, this function is not available.

### HOW THE SYSTEM CONFIGURES INPUT DEVICES

If input devices are installed, the system recognizes the presence and module slot locations of I/O Combination Interface Modules. It also establishes a module number based on the slot location. For example, if modules are installed in slots #3 and #6, the module in slot #3 automatically becomes module #1 and the module in slot #6 becomes module #2.

As you specify which input positions on a module are connected to external devices, the system establishes a number for each input position. For example, if an external device is connected to positions 1 and 2 of module 1, input position 1 becomes I1 and input position 2 becomes I2.

To indicate that an input position on the module is connected, choose the number corresponding to that position. For example, if the position is 3, choose 3 for the position. To indicate that a position is not connected, choose X for that position.

### SPECIFYING INPUT POSITIONS

To indicate whether position 1 is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears. When you have entered a choice for both positions, press ENTER to confirm your entry:

```
SLOT # - X X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the INPUT CONFIG message for the next module.Up to 8 modules may be installed. Repeat the steps described above for each

module until you have entered configuration information (input positions) for all modules and the system displays the ENTER INPUT NAME message.

## External Input Name

If necessary, press STEP until you see the message:

```
ENTER INPUT NAME
I1:
```

To enter the name of an external device, press TANK repeatedly until the input position that is connected to the external device you want appears on the second line of the message (I1, I2, etc.). Press CHANGE and enter the name (up to 20 alphanumeric characters) of the selected device. Typical entries are: GENERATOR 1, BURGLAR ALM, DCD input, etc. (This information appears on reports to make it easier to identify the input. The name appears in the message when selecting Output Relay Assignments.) Press ENTER to confirm your entry:

```
I1: (Input Name)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## External Input Type

If necessary, press STEP until you see the message:

```
I1: EXTERNAL INPUT TYPE
STANDARD
```

Use this display to define the type of input–Standard, Generator, Pump Sense, or Standard ACK–that is connected to the selected input location:

- Choose Standard for any input device connected for the purpose of using the system's reporting, alarm, and data communications features
- Choose Generator for applications where you monitor fuel tank(s) supplying an emergency generator and you receive GENERATOR ON and OFF signals from the generator. The system runs a continuous leak test in the generator's tank(s) until the generator turns On. When the generator shuts Off, the system returns to its Leak Test mode. GENERATOR ON and GENERATOR OFF messages are printed whenever the generator turns on and off.
- Choose Pump Sense when the input is used to indicate the On/Off state of the pump.
- Choose Standard ACK when using an eternal input (e.g., remote pushbutton) as an ALARM/TEST key.

Press CHANGE until the correct choice appears then press ENTER to confirm your choice:

```
I1: (Input Type)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Switch Orientation

If necessary, press STEP until you see the message:

```
I1: SELECT ORIENTATION
NORMALLY OPEN
```

You must identify the input switch type as either normally open or normally closed so the system properly recognizes an ON or OFF condition. To choose Normally Open, press STEP. To choose Normally Closed, press CHANGE and press ENTER to confirm your choice:

```
NORMALLY CLOSED
PRESS <STEP> TO CONTINUE
```

If you chose Standard or Standard ACK for the External Input Type, you are finished entering setup data for the selected input position. To enter setup information for additional input positions, press STEP to return to the ENTER INPUT NAME message. Press TANK to choose another input. To exit the function, press FUNCTION.

If you chose Generator or Pump Sense for the External Input Type, press STEP to continue. Refer to the section below that corresponds to the input type you chose. (The system displays the SELECT TANK message for the Input Type you selected.)

## External Input Emergency Generator Data

If necessary, press STEP until you see the message:

```
I1: SELECT TANK
TANK #: ALL TANK
```

NOTE: This message appears only if you chose GENERATOR for the External Input Type.

You must identify which tanks supply fuel to the generator, so that the system will conduct a continuous leak test in these tanks while the generator is off. If all tanks connected to the system supply fuel to the generator wired to this input, select All Tanks. If only one or some of the tanks connected to the system supply fuel to this generator, enter the individual tank numbers.

If you want to choose All Tanks, do nothing. If you want to enter tank numbers, press CHANGE. Enter the tank numbers and press ENTER to confirm your entry:

```
TANK #: X, X
PRESS <STEP> TO CONTINUE
```

If you have additional input positions to configure, refer to the section below entitled “Setting Up Additional Inputs” on page 23-4.

If you have entered setup information for all input positions, press FUNCTION to exit.

## Pump Sense Setup Data

If necessary, press STEP until you see the message:

```
I1: SELECT TANK
NONE
```

NOTE: This message appears only if you chose Pump Sense for the External Input Type.

You must identify the tank to which this Pump Sense input is assigned.

To enter the tank number, press CHANGE until the desired Tank number is displayed. Press ENTER to confirm your entry:

```
TANK #: (Product Label)
PRESS <STEP> TO CONTINUE
```

### SELECTING A DISPENSE MODE

If necessary, press STEP until you see the message:

```
Q1: ENTER DISPENSE MODE
XXXXXXXXX
```

This entry asks you to select the dispense mode. You can select between:

- STANDARD - Only one pump feeds the line.
- MANIFOLDED: ALTERNATE[1] - The pump will run in the tank with the greatest inventory volume.
- MANIFOLDED: SEQUENTIAL[1] - The tanks are pumped low one at a time. When the tank's volume drops below the entered Pump Threshold percentage, pumping will switch over immediately to the next available tank in the line manifolded set. Pumping will continue from the current tank for another 10 seconds to avoid a disruption in dispensing during the switch over. (see "Pump Threshold" on page 7-26).
- MANIFOLDED: ALL PUMPS - All pumps on the line are run.

Press CHANGE until your choice appears then press ENTER to continue.

## Setting Up Additional Inputs

If you have additional input positions to configure, press STEP. The system returns to the ENTER INPUT NAME message. Press TANK to select another input position and follow the procedures described in the preceding sections, beginning with "External Input Name" on page 23-2.

If you have entered setup information for all input positions, press FUNCTION to exit.

1. To prevent backfilling, the level of all tanks connected to the line will be monitored. If the level of any tank exceeds 95% of the Max or Label Volume limit (see "Max or Label Vol" on page 7-15), the pump for that tank will also be turned on during dispensing. The state of the pump that was already ON will not be changed.

# 24 Output Relay Setup

Output Relays allow you to assign alarm limits, line leak alarms, sensor alarms, and inputs from external devices to specific relays. Signals from an alarm limit or device triggers the Output Relay assigned to it. You must enter data individually for each Output Relay. The data you enter tells the system the number, location, and name of Output Relays installed.

NOTE: If output relay modules are not installed, this function is not available.

## Selecting the Output Relay Setup Function

To select Output Relay Setup, press FUNCTION until you see the message:

```
OUTPUT RELAY SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Relay Configuration

If necessary, press STEP until you see the message:

```
RELAY CONFIG - MODULE 1
SLOT #: X X X X
```

Use this display to tell the system which relay positions on a module are connected to external devices.

### HOW THE SYSTEM CONFIGURES OUTPUT RELAYS

If output relay modules are installed, the system recognizes the presence and module slot locations of each one. The system also establishes a module number based on the slot location. For example, if modules are installed in slots #9 and #13, the module in slot #9 automatically becomes module #1 and the module in slot #13 becomes module #2.

As you tell the system which relay positions on a module are connected to external devices, the system establishes a number for each relay. For example, if there are relays in positions 2 and 4 of module 1, the relay in position 2 becomes R2 and the relay in position 4 become R4.

To indicate that one of the relay positions on the module is connected to an external device, choose the number corresponding to that position. There can be up to four relay positions for 4-Relay Modules and up to two positions for I/O Combo Modules. For example, if the position is two, choose “2” for the position. To indicate that a position is not connected to an external device, choose X for that position.

### SPECIFYING OUTPUT RELAY POSITIONS

To specify whether position 1 is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears. Repeat these steps until you have correctly specified all positions. When you have entered a choice for all positions, press ENTER to confirm your entry:

```
SLOT #: X X X X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the RELAY CONFIG message for the next module. Up to 8 modules may be installed. Repeat the steps described above for each module until you have entered the configuration information (relay positions) for all modules and the system displays the ENTER RELAY DESIGNATION message.

## Relay Designation

If necessary, press STEP until you see the message:

```
ENTER RELAY DESIGNATION
R1:
```

Enter the name of the device connected to the selected output relay. Typical names are: OVERFILL ALARM; AUTO DIALER; etc. (This name appears on reports to make it easier to identify the external device. The name also appears on the display when in-tank or sensor alarms and external inputs are assigned to the relay).

To enter a designation for the selected relay, press CHANGE and enter up to 20 alphanumeric characters. Press ENTER to confirm your entry. The system displays:

```
R1: (Name)
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Selecting Relay Type

If necessary, press STEP until you see the message:

```
R1: SELECT RELAY TYPE
STANDARD
```

From this display, press CHANGE to display one of four output relay types:

- STANDARD - The On/Off state is determined by assigned alarms/warnings.
- PUMP CONTROL OUTPUT - Responds to a pump request received from an assigned Pump Sense module or Line Leak module.
- MOMENTARY - The On/Off state is determined by assigned alarms/warnings. However, relay returns to the inactive state after the ALARM/TEST key is pressed to acknowledge the alarm.
- PUMP COMM CONTROL - Select this relay type only when a set of line manifolded tanks are using Red Jacket IQ Controllers, and you want to run PLLD/WPLLD precision line leak tests. After selecting this relay type, when one IQ controlled pump of a manifolded set is turned On for line leak testing, the relay will activate, blocking communication with the second IQ controlled pump (giving the console total control of the pumps) until the precision test is complete.

When the desired relay type appears on the display, press ENTER to confirm your choice.

If you select STANDARD or MOMENTARY, the display reads:

```
R X:SELECT ORIENTATION
NORMALLY OPEN
```

To accept normally open (relay de-energized when alarm is inactive), press STEP. Press CHANGE to display normally closed (relay energized when alarm is inactive), then ENTER to accept.

If you select PUMP CONTROL OUTPUT or PUMP COMM CONTROL relay types, you will prompted to specify a tank number.

Press ENTER to confirm your choice. The system displays:

| | | |
|---|---|---|
| **PUMP CONTROL OUTPUT**<br>**PRESS <STEP> TO CONTINUE** | or | **PUMP COMM CONTROL**<br>**PRESS <STEP> TO CONTINUE** |

Press STEP to display the message:

**R1: SELECT TANK**
**NONE**

For Pump Control Output relay selection, press CHANGE and enter the tank number of the assigned Pump Sense module or Line Leak module.

For Pump Comm Control relay selection, press CHANGE and enter the number of the tank in the manifolded set which is assigned to the PLLD or WPLLD module.

In either case, press ENTER to confirm your entry. The system displays:

**TANK #: X**
**PRESS <STEP> TO CONTINUE**

Press STEP to continue.

## Assignment Method

This function allows you to assign alarms and external inputs for each relay (except Pump Comm Control relay). For the selected relay, you will first specify whether you want to assign an available alarm type (e.g., In-Tank, Liquid Sensor, etc.) or external input to that relay by choosing Yes or No for that type of alarm or input. For all alarms except System, if you choose Yes, you must then specify the method of assignment (none, all, or single) for each alarm condition.

NOTE**:** You may assign more than one in-tank alarm, sensor alarm, and external input to a relay, and you may assign any in-tank alarm, sensor alarm, and external input to more than one relay.

As you step through possible relay assignments, the system automatically displays all in-tank alarms, sensor alarms, line leak alarms and external inputs that have been configured in the system. If no other sensors or inputs are configured, the system returns to the RELAY DESIGNATION message. Refer to the section entitled “Setting Up Additional Relays” on page 24-8.)

### IN-TANK ALARMS

If necessary, press STEP until you see the message:

**R1:(Name)**
**IN-TANK ALARMS: NO**

If you do not want to assign In-Tank Alarms to the relay displayed in the first line of the IN- TANK ALARMS message, press STEP. (The system displays the next available alarm or input assignment group.

To assign In-Tank Alarms to the selected relay, press CHANGE in response to the IN-TANK ALARMS: NO message. Press ENTER to confirm your choice. The system displays:

**IN-TANK ALARMS: YES**
**PRESS <STEP> TO CONTINUE**

Press STEP to display the message:

```
R1: IN-TANK ALARMS
LEAK: NO TANKS
```

This message shows the first kind of alarm condition for In-Tank Alarms: LEAK. You must tell the system whether to assign the displayed alarm condition (in this case In-Tank Leak Alarms) to the selected relay for No Tanks, All Tanks, or Single Tanks. To choose No Tanks, press STEP. (The system displays the next In-Tank Alarm condition: HIGH WATER.)

To choose All Tanks, press CHANGE once. Press ENTER to confirm your choice. The system displays:

```
LEAK: ALL TANKS
PRESS <STEP> TO CONTINUE
```

Press STEP to specify the assignment method for the next In-Tank Alarm condition (HIGH WATER).

To choose Single Tanks, press CHANGE twice in response to the LEAK: NO TANKS message. Press ENTER to confirm your choice. The system displays:

```
LEAK: SINGLE TANK
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message: The system displays:

```
R1: (Name)
T1 LEAK: NO
```

Use the above message to specify the tank number(s) that you want to assign to the relay. If you do not want to assign the tank number shown (T1, T2, etc.), press TANK until you see the tank number that you want to assign to the relay. When the correct tank number appears, press CHANGE and press ENTER. The system confirms your entry (for T1) with the message:

```
R1: T1 LEAK: YES
PRESS <TANK> TO CONTINUE
```

Continue to press TANK to select additional tanks. For example, pressing TANK once would display the following message:

```
R1: (Name)
T2 LEAK: NO
```

Repeat the steps described above to assign additional tanks to the relay. When you have assigned all the tanks you want to the relay, press STEP. The system displays the assignment method message for the next In-Tank Alarm condition:

```
R1: IN-TANK ALARMS
HIGH WATER: NO TANKS
```

Repeat the procedures described for the LEAK alarm condition until you have specified an assignment method for the all remaining In-Tank Alarm conditions (ref. Alarm List in Section 6, Table 6-2).

Press TANK/SENSOR to select additional tanks for the In-Tank Leak alarm. When you have specified all tanks for the first In-Tank alarm, press STEP to advance to the next alarm group. Repeat the steps described above to assign tanks for each In-Tank alarm. After you have specified tanks for each In-Tank alarm condition, press STEP to advance to the next alarm group.

## REMAINING ALARM GROUPS

Continue to step through all of the available alarm groups, selecting the various alarms from the groups that you want to assign to the selected relay (R1, R2, etc.). The procedure for bypassing or selecting alarms from each group and then assigning them to a device in that group is the same as discussed for In-Tank alarms above.

The remaining alarm groups/alarms are shown below. Only installed components will display, so some of the alarm groups may not appear.

## LIQUID SENSOR ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
LIQUID SENSOR ALMS: NO
```

Select the Liquid Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

## VAPOR SENSOR ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
VAPOR SENSOR ALMS: NO
```

Select the Vapor Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

## EXTERNAL INPUTS ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
EXTERNAL INPUTS: NO
```

Select the External Inputs Alarm (ref. Alarm List in Section 6, Table 6-2).

## LINE LEAK ALARMS (VLLD)

If necessary, press STEP until you see the message:

```
R1: (Name)
LINE LEAK ALARMS: NO
```

Select Volumetric Line Leak Alarms (ref. Alarm List in Section 6, Table 6-2).

## GROUNDWATER SENSOR ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
GROUNDWATER ALMS: NO
```

Select Groundwater Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

### 2 WIRE C.L. SENSOR ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
2 WIRE CL ALARMS: NO
```

Select 2 Wire C.L. Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

### 3 WIRE C.L. SENSOR ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
3 WIRE CL ALARMS: NO
```

Select 3 Wire C.L. Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

### POWER SIDE DIM ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
POWER SIDE DIM ALM: NO
```

Select Power Side DIM Alarms (ref. Alarm List in Section 6, Table 6-2).

### RECONCILIATION ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
RECONCILIATION ALM: NO
```

Select Reconciliation Alarms (ref. Alarm List in Section 6, Table 6-2).

### PRESSURE LINE LEAK DETECTOR (PLLD) ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
PRESSURE LINE LEAK: NO
```

Select Pressure Line Leak Detector Alarms (ref. Alarm List in Section 6, Table 6-2).

### WIRELESS PRESSURE LINE LEAK DETECTOR (WPLLD) ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
WPLLD LINE LEAK: NO
```

Select WPLLD Line Leak Alarms (ref. Alarm List in Section 6, Table 6-2).

## COMMUNICATION SIDE DIM ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
COMM SIDE DIM ALM: NO
```

Select Communication Bay DIM Alarms (ref. Alarm List in Section 6, Table 6-2).

## SMART SENSOR ALARMS

If necessary, press STEP until you see the message:

```
R1: (Name)
PUMP RLY MON ALMS: NO
```

Select Smart Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

## PUMP RELAY MONITOR ALARM

If necessary, press STEP until you see the message:

```
R1: (Name)
PUMP ALARM: NO
```

Select Pump Relay Monitor Alarm (ref. Alarm List in Section 6, Table 6-2).

When you have specified the assignment method for each Pump Relay Monitor Alarm condition, press STEP. If no other sensor or inputs are configured, the system returns to the IN-TANK ALARMS message.

## VMCI DISPENSER INTERFACE ALARMS

If necessary, press STEP until you see the message:

```
R1: (Destination)
VMCI ALARM: NO
```

Select the VMCI Alarms to send (ref. Alarm List in Section 6, Table 6-2).

## VMC ALARMS

If necessary, press STEP until you see the message:

```
R1: (Destination)
VMC ALARM: NO
```

Select the VMC Alarms to send (ref. Alarm List in Section 6, Table 6-2).

## Setting Up Additional Relays

After setting up the data for the selected relay (R1, R2, etc.), press STEP, if necessary, until the system returns to the message:

**ENTER RELAY DESIGNATION**
**R1:**

Press TANK/SENSOR to choose another relay. Set up the relay by repeating the procedures you followed for the previous relay. Refer to the previous sections beginning with “Relay Designation” on page 24-2. If you have entered setup data for all relays, press FUNCTION to exit.

# 25 Line Disable Setup

The Line Disable Setup Function allows you designate alarm limits, line leak alarms, sensor alarms, and inputs from external devices to shut down any line.

Line Disable works with any of the three line leak detection systems; Pressurized Line Leak (PLLD), Wireless Pressurized Line Leak (WPLLD), or Volumetric Line Leak (VLLD).

## Selecting the PLLD, WPLLD, or VLLD Line Disable Setup Function

Select the Line Disable Setup for the type(s) of leak detection system at your site (PLLD, WPLLD or VLLD).

Press FUNCTION until you see the message:

```
XXXXX LINE DISABLE SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

### ALARM ASSIGNMENT NOTES

As you step through the Line Disable Setup's steps, the system automatically displays the in-tank alarms, sensor alarms, and external inputs from which you can choose to shut down a line. If a type of alarm is listed in these instructions, but does not appear on your screen, that alarm is not available on your system. Refer to the sections listed below that correspond to the alarm types displayed on your screen.

You may assign more than one in-tank alarm, sensor alarm, and external input to a line, and you may assign any in-tank alarm, sensor alarm, and external input to more than one line.

Whenever the prefix "Q" appears in the display, it stands for the selected line in the PLLD system, "W" stands for the selected line in the WPLLD system and "P" stands for the selected line in the VLLD system.

## In-Tank Alarms

If necessary, press STEP until you see the message:

```
Q1: (Name)
IN-TANK ALARMS: NO
```

If you do not want to assign In-Tank Alarms to the line displayed in the IN- TANK ALARMS message, press STEP. (The system displays the next available alarm or input assignment group. Refer to the section below corresponding to the next available alarm or input group. If no other sensor or inputs are configured, the system returns to the IN-TANK ALARMS message. Refer to the section entitled "Setting Up Additional Disables" on page 25-6.)

To assign In-Tank Alarms to the selected line, press CHANGE, then ENTER to confirm your choice:

```
IN-TANK ALARMS: YES
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
Q1: IN-TANK ALARMS
LEAK: NO TANKS
```

This message shows the first kind of alarm condition for In-Tank Alarms: LEAK. You must tell the system whether to assign the displayed alarm condition (in this case In-Tank Leak Alarms) to the selected line for No Tanks, All Tanks, or Single Tanks. To choose No Tanks, press STEP. (The system displays the next In-Tank Alarm condition: HIGH WATER.)

To choose All Tanks, press CHANGE once. Press ENTER to confirm your choice. The system displays:

```
LEAK: ALL TANKS
PRESS <STEP> TO CONTINUE
```

Press STEP to specify the assignment method for the next In-Tank Alarm condition (HIGH WATER).

To choose Single Tanks, press CHANGE twice in response to the LEAK: NO TANKS message. Press ENTER to confirm your choice. The system displays:

```
LEAKS: SINGLE TANKS
PRESS <STEP> TO CONTINUE
```

Press STEP to display the message:

```
Q1: (Name)
T1 LEAK: NO
```

Use this display to specify the tank number(s) that you want to assign to the line. If you do not want to assign the tank number shown (T1, T2, etc.), press TANK until you see the tank number that you want to assign to the line. When the correct tank number appears, press CHANGE and press ENTER. The system confirms your entry (for T1) with the message:

```
Q1: T1 LEAK: YES
PRESS <TANK> TO CONTINUE
```

Continue to press TANK to select additional tanks. For example, pressing TANK once would display the following message:

```
Q1: (Name)
T2 LEAK: NO
```

Repeat the steps described above to assign additional tanks to the line. When you have assigned all the tanks you want to the line, press STEP. The system displays the assignment method message for the next In-Tank Alarm condition:

```
Q1: IN TANK ALARMS
HIGH WATER: NO TANKS
```

Repeat the procedures described for the LEAK alarm condition until you have specified an assignment method for all remaining In-Tank Alarm conditions (ref. Alarm List in Section 6, Table 6-2).

When you have specified the assignment method for each In-Tank Alarm condition, press STEP. The system displays the next available alarm or input assignment group.

## REMAINING ALARM GROUPS

Continue to step through all of the available alarm groups, selecting the various alarms from the groups that you want to have disable the selected line (Q1, Q2, etc.). The procedure for bypassing or selecting alarms from each group and then assigning them to a device in that group is the same as discussed for In-Tank alarms above.

The remaining alarm groups/alarms are shown below. Only installed components will display, so some of the alarm groups may not appear.

## LIQUID SENSOR ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
LIQUID SENSOR ALMS: NO
```

Select the Liquid Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

## VAPOR SENSOR ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
VAPOR SENSOR ALMS: NO
```

Select the Vapor Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

## EXTERNAL INPUT ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
EXTERNAL INPUTS: NO
```

Select the External Inputs Alarm (ref. Alarm List in Section 6, Table 6-2).

## LINE LEAK ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
LINE LEAK ALARMS: NO
```

Select Line Leak (Volumetric) Alarms (ref. Alarm List in Section 6, Table 6-2).

## GROUNDWATER SENSOR ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
GROUNDWATER ALMS: NO
```

Select Groundwater Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

## 2 WIRE C.L. SENSOR ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
2 WIRE CL ALARMS: NO
```

Select 2 Wire C.L. Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

### 3 WIRE C.L. SENSOR ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
3 WIRE CL ALARMS: NO
```

Select 3 Wire C.L. Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

### POWER SIDE DIM ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
POWER SIDE DIM ALM: NO
```

Select Power Side DIM Alarms (ref. Alarm List in Section 6, Table 6-2).

### RECONCILIATION ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
RECONCILIATION ALM: NO
```

Select Reconciliation Alarms (ref. Alarm List in Section 6, Table 6-2).

### PRESSURE LINE LEAK DETECTOR (PLLD) ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
PRESSURE LINE LEAK: NO
```

Select Pressure Line Leak Detector Alarms (ref. Alarm List in Section 6, Table 6-2).

- OPEN ALARM*
- HANDLE ALRM*
- LN EQ FAULT*

*These are the only PLLD alarms that can disable a PLLD line.

### WIRELESS PRESSURE LINE LEAK DETECTOR (WPLLD) ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
WPLLD LINE LEAK: NO
```

Select WPLLD Line Leak Alarms (ref. Alarm List in Section 6, Table 6-2).

- COMM ALARM*
- HANDLE ALRM*
- LN EQ FAULT*

*These are the only WPLLD alarms that can disable a WPLLD line.

## COMMUNICATION SIDE DIM ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
COMM SIDE DIM ALM: NO
```

Select Communication Bay DIM Alarms (ref. Alarm List in Section 6, Table 6-2).

## SMART SENSOR ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Name)
SMART SENSOR ALM: NO
```

Select Smart Sensor Alarms (ref. Alarm List in Section 6, Table 6-2).

## PUMP RELAY MONITOR ALARM

If necessary, press STEP until you see the message:

```
Q1: (Name)
PUMP RLY MON ALMS: NO
```

Select Pump Relay Monitor Alarm (ref. Alarm List in Section 6, Table 6-2).

When you have specified the assignment method for each Pump Relay Monitor Alarm condition, press STEP. If no other sensor or inputs are configured, the system returns to the IN-TANK ALARMS message.

## VMCI DISPENSER INTERFACE ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Destination)
VMCI ALARM: NO
```

Select the VMCI Alarms to send (ref. Alarm List in Section 6, Table 6-2).

## VMC ALARMS

If necessary, press STEP until you see the message:

```
Q1: (Destination)
VMC ALARM: NO
```

Select the VMC Alarms to send (ref. Alarm List in Section 6, Table 6-2).

## Setting Up Additional Disables

After setting up the data for the selected line (e.g., Q1), press STEP, if necessary, until the system returns to the message:

```
Q1: (Name)
IN-TANK ALARMS: NO
```

Press TANK to choose another line. Set up the line by repeating the procedures you followed for the previous line. Refer to the previous sections beginning with “Alarm Assignment Notes” on page 25-1 for instructions.

If you have entered setup data for all lines, press FUNCTION to exit.

# 26 Smart Sensor Setup

Your console may have Smart Sensors installed. Once a Smart Sensor is configured, the system reads the sensor's feature set and programming options. After configuring each Smart Sensor, you should printout the Smart Sensor Setup before attempting to program the sensor.

NOTE: If Smart Sensor modules are not installed, this function is not available.

## Selecting the Smart Sensor Setup Function

To select Smart Sensor Setup, press FUNCTION until you see the message:

```
SMART SENSOR SETUP
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

## Sensor Configuration

If necessary, press STEP until you see the message:

```
SS CONFIG - MODULE n
SLOT #: X X X X X X X X
```

When Smart Sensor Interface Modules (8 inputs) or Smart Sensor / Press Modules (7 inputs) are installed, the system recognizes the presence and module slot locations of each one. The system also designates the module number (n) based on the slot location. In this display you tell the system which positions on the module have been connected to sensors.

As you tell the system which sensor positions on a module are connected, the system establishes a number for each sensor. For example, if there are sensors connected to positions 2 and 4 of module 1, the sensor in position 2 becomes s2 and the sensor in position 4 becomes s4.

To specify whether position 1 is connected, press CHANGE until the correct choice appears (1 if the position is connected, X if it is not). Press the Right Arrow key to move to position 2 and press CHANGE again until the correct choice appears (2). Repeat these steps until you have correctly specified all sensors connected to this Smart Sensor module. Press ENTER to confirm your entry:

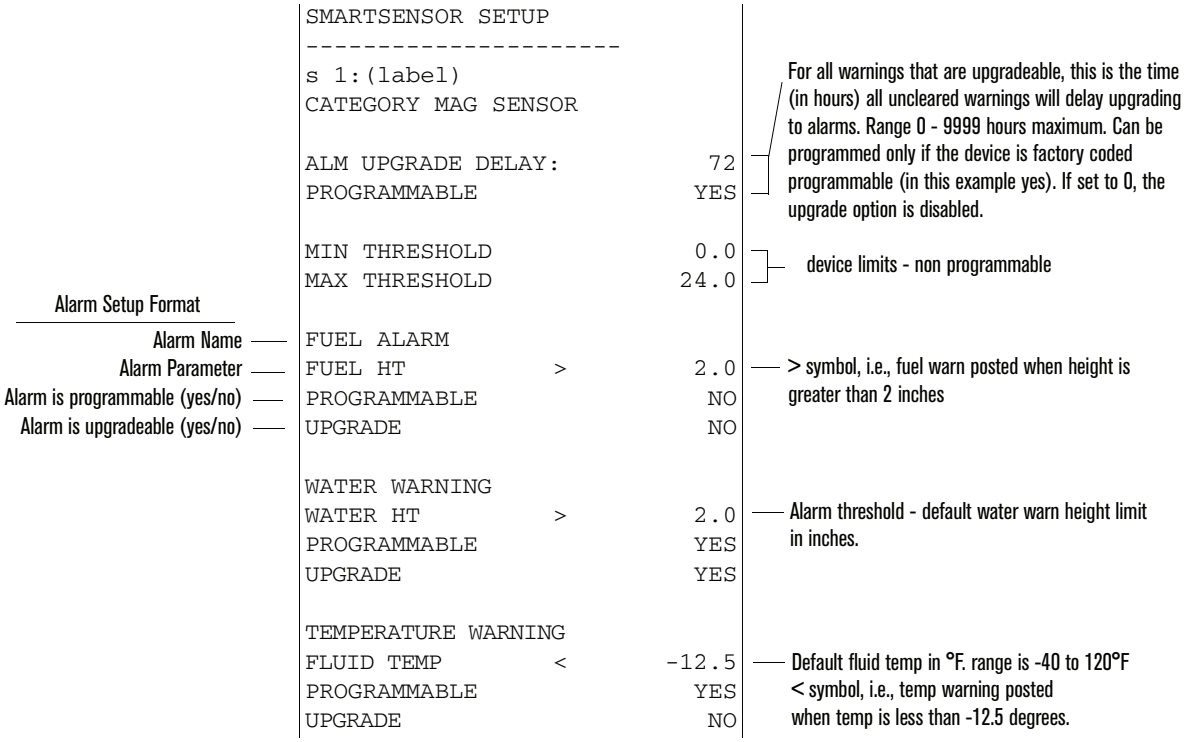
```
SLOT #: X X X X X X X X
PRESS <STEP> TO CONTINUE
```

Press STEP. If more than one module is installed, the system automatically advances to the SS CONFIG message for the next module. Up to 40 smart sensors can be monitored by the console.

**NOTE:** At least one Smart Sensor / Press module is required with Vac Sensors. You can use either additional Smart Sensor / Press Modules or 8-input Smart Sensor Interface Modules if more than 7 Vac Sensors are installed.

Repeat the steps described above for each module until you have entered the configuration information (sensor positions) for all modules and the system displays the ENTER SMARTSENSOR LABEL message.

When you have finished configuring all Smart Sensors, press the PRINT key to printout a copy of each sensors feature set and programming options (see example printout below).




## Smart Sensor Label

If necessary, press STEP until you see the message:

**ENTER SMARTSENSOR LABEL**
**s 1:**

Enter a name for the sensor connected to the selected Smart Sensor connector. Press CHANGE and enter up to 20 alphanumeric characters. Press ENTER to confirm your entry. The system displays:

**s 1: (Name)**
**PRESS <STEP> TO CONTINUE**

Press STEP to continue.

## Selecting Sensor Category

If necessary, press STEP until you see the message:

**s 1: SELECT SS CATEGORY**
**MAG SENSOR**

If necessary, press CHANGE until the desired category appears then press ENTER to confirm your choice.

- Air Flow Meter

- Vapor Pressure
- Mag Sensor
- Vac Sensor
- ATMP Sensor (NOTE: The atmospheric pressure [ATMP] sensor is resident in the Smart Sensor / Press Module. One ATMP sensor is required with Vac Sensor systems per site. You only need to configure the ATMP sensor, there is no setup [other than assigning a label]. A Setup Data Warning will be posted for all Vac Sensors if an ATMP sensor is not present and configured)
- Unknown

## Mag Sensor Setup

If the Mag Sump Sensor you installed has **NO** programmable features (i.e., alarm upgrade delay, water warning height, or water alarm height), you will not be able to enter Mag Sensor Setup after entering Smart Sensor label and Sensor Category.

If necessary, press STEP until you see the message:

```
s 1: MAG SENSOR SETUP
PRESS <ENTER>
```

Press ENTER:

```
s 1: (Name)
ALM UPGRADE DELAY: XXXX
```

This display appears if the alarm upgrade delay has been factory set to programmable. This is the time in hours that all uncleared warnings will delay before upgrading to alarms. Also, this upgrade only applies to Smart Sensor warnings that have been factory set to upgrade.

If necessary, press CHANGE and enter the number of hours (up to 9999) to delay upgrades. Entering 0 disables the Alarm Upgrade Delay feature. Press ENTER to confirm your entry.

Press STEP to continue.:

```
s 1: WATER WARNING
WATER HT      >        0002.0
```

This display appears only if the Water Warning has been factory set to programmable. This is the height in inches (or mm if metric units selected) at which the Water Warning will activate. Refer to your Smart Sensor setup printout's Min/Max Thresholds for the permissible range within which to select this value.

If necessary, press CHANGE and enter the Water Warning height. Press ENTER to confirm your entry.

Press STEP to continue.:

```
s 1: WATER ALARM
WATER HT      >        0005.0
```

This display appears only if the Water Alarm has been factory set to programmable. This is the height in inches (or mm if metric units selected) at which the Water Alarm will activate. Refer to your Smart Sensor Setup printout's Min/Max Thresholds for the permissible range within which to select this value.

If necessary, press CHANGE and enter the Water Alarm height. Press ENTER to confirm your entry.

## Vac Sensor Setup

If necessary, press STEP until you see the message:

```
s 1: VAC SENSOR SETUP
PRESS <ENTER>
```

Press ENTER:

```
s 1: SELECT PUMP #
NONE
```

You must select the pump that will provide the source of vacuum for this Vac Sensor or a Setup Data Warning will be posted for this Vac Sensor. If necessary, press CHANGE until the correct pump's control device displays [QX (PLLD), WX (WPLLD), or RX (Output Relay)]. NOTE: an Output Relay must be set to Pump Control Output to be assigned as a pump. If the selected pump output relay is not assigned to a pump sense device, a Setup Data Warning for this Vac Sensor will be posted.

Press ENTER to confirm your entry.

Press STEP to continue.:

```
s 1: (Vacuum Label)
VOLUME:          501
```

Enter the volume in gallons of the interstitial space being monitored by the Vac Sensor. The permitted range is 1 to 500 gallons. Default is 501. A Setup Data Warning alarm will activate if a volume between 1 and 500 is not entered.

Press CHANGE and enter the interstitial space volume. Press ENTER to confirm your entry.

Press STEP to continue.:

```
s 1:  (Vacuum Label)
RELIEF VALVE: NO
```

### Steel Tank

If this Vac Sensor is monitoring a steel tank's interstitial space, a relief valve is usually not needed. Press STEP to accept the default NO. Press Tank/Sensor to setup another Vac Sensor.

### Fiberglass Tank

If this Vac Sensor is monitoring a fiberglass tank's interstitial space, a relief valve is required to prevent excess vacuum from damaging the tank. Press CHANGE and select YES. Press ENTER to confirm your entry.

Press STEP to continue.:

```
s 1:  (Vacuum Label)
RELIEF VALVE PRESSURE: -9.0
```

Enter the pressure at which the installed Relief Valve is rated to open (the vent pressure is stamped on the body of the V-R Relief Valve). The permitted range is -5 to -9 psi. Default vent pressure is -9. Press ENTER to confirm your entry. Press Tank/Sensor to setup another Vac Sensor.

# 27 VMC Setup

The Vapor Monitoring Controller (VMC) Setup function allows you to monitor a series of up to 18 dispenser mounted, Gilbarco Vapor Monitor Controllers via an installed VMCI comm board.The VMCI board will poll each VMC on the bus, and periodically upload the VMC information back to the TLS. The TLS supports the installation of only 1 VMCI comm board. Additional VMCI boards will cause Setup Data Warnings. A VMCI board must be installed in the TLS for the VMC Setup function to appear. NOTE: VMC setup will not be saved in E2. On cold boot, the VMC serial numbers entered during setup will have to be reentered following the setup procedure below.

## Selecting the VMC Setup Function

To enter VMC Setup, press FUNCTION until you see the message:

**VMC SETUP**
**PRESS <STEP> TO CONTINUE**

Press STEP to continue. Press PRINT to printout current VMC setup (see example at right).

```
VMC SETUP
- - - - - - - - - - -
VMC      S/N
 1     005830
 2     005813
 3     002209
```

consoles\vmcsetup.eps

## Add a VMC Serial Number

If necessary, press STEP until you see the message:

**ADD VMC SERIAL NUMBER**
**PRESS <ENTER>**

Press ENTER.

**ADD VMC SERIAL NUMBER**
**x 1:**

Enter the serial number of the displayed VMC or press TANK repeatedly until the desired VMC displays. Press CHANGE and enter the VMC's serial number. Press ENTER to confirm your entry. Press STEP to continue.

## Edit a VMC Serial Number

If necessary, press STEP until you see the message:

**EDIT VMC SERIAL NUMBER**
**PRESS <ENTER>**

Press ENTER. If necessary, press TANK repeatedly until the desired VMC displays.

**EDIT VMC SERIAL NUMBER**
**x 1: 111111**

Press CHANGE and enter the revised serial number of the displayed VMC. Press ENTER to confirm your entry. Press STEP to continue.

## Remove a VMC Serial Number

If necessary, press STEP until you see the message:

```
REMOVE VMC SERIAL NUMBER
PRESS <ENTER>
```

Press ENTER. If necessary, press TANK repeatedly until the desired VMC displays.

```
x 1: 111111
REMOVE VMC: NO
```

Press CHANGE.

```
x 1: 111111
REMOVE VMC: YES
```

Press ENTER to confirm..

```
REMOVE VMC: YES
PRESS <STEP> TO CONTINUE
```

Press STEP:

```
REMOVE VMC: 111111
ARE YOU SURE? NO
```

Press CHANGE.

```
REMOVE VMC: 111111
ARE YOU SURE? YES
```

Press STEP:

```
REMOVE VMC SERIAL NUMBER
PRESS <ENTER>
```

# 28 Archive Utility

The Archive Utility allows you to save system setup data to the EEPROM ($E^2$) chip and later restore this saved setup data should a power interruption occur while the battery backup is OFF. Because system setup data is not automatically saved, you have more flexibility when using different setup conditions. Another feature the Archive Utility provides you is the ability to clear current system setup data and replace it with system setup data you stored previously in the $E^2$ chip.

AccuChart users should note that you archive system setup data only in the $E^2$ chip. If AccuChart is complete, the final calibration values are automatically stored in the $E^2$ chip and there will be no need to recalibrate the tank. Incomplete CSLD data, AccuChart data, BIR historical data, etc., are all stored in various RAM locations within the console, not in the $E^2$ chip. When turned ON, the Battery Backup feature will protect these data in the event of a power loss to the console. But should you lose AC power to the console while the Battery Backup switch is OFF, all of this important historical data will be lost (e.g., AccuChart calibration will have to restart and won't be complete for 56 days).

Therefore, if you plan to replace the ECPU board or the battery, you should consider downloading all data (setup and historical) to a computer using Veeder-Root's Inform software (Part No. 848900-X0X).

NOTE: Setup data archived in the $E^2$ chip is not an option to turning the Backup Battery ON. The Backup Battery switch should always be set to the ON position.

## Accessing the Archive Utility Function

To select the Archive Utility, press FUNCTION until you see the message:

```
ARCHIVE UTILITY
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

The system also provides interactive access to Archive Utility functions by prompting you to restore previously saved setup data upon power up, if the battery switch is set to OFF.

For example, if you power up the system while the battery switch is set to OFF, and setup data was previously saved, the system displays a message such as the following:

```
MMM DD, YYYY HH:MM:SS XM
RESTORE SETUP DATA: NO
```

To restore setup data in response to this message, press CHANGE, then press ENTER.

## Archiving Setup Data

Once you have selected the Archive Utility, press STEP, if necessary, until you see the message:

```
ARCHIVE UTILITY
SAVE SETUP DATA: NO
```

If you do not wish to save setup data, press STEP. (The system displays the RESTORE SETUP DATA message.)

To save setup data, press CHANGE, then press ENTER. The system confirms your choice with the message:

```
SAVE SETUP DATA: YES
PRESS <STEP> TO CONTINUE
```

The system asks you to reconfirm your choice with the following message:

```
SAVE SETUP DATA: YES
ARE YOU SURE?: NO
```

To abandon the save process, press STEP. (The system displays the RESTORE SETUP DATA message.) To continue saving setup data, press CHANGE, then press ENTER. The system displays the message:

```
ARE YOU SURE?: YES
PRESS <STEP> TO CONTINUE
```

When you press STEP in response to this message, the system starts saving your setup data to the EEPROM. This process may take a minute or so. When the save is completed, the system returns the original message:

```
ARCHIVE UTILITY
PRESS <STEP> TO CONTINUE
```

Press STEP to use another archive feature or press either FUNCTION or MODE to exit the Archive Utility.

## Restoring Archived Setup Data

NOTE: If you are restoring after a reboot (switching the console Off and then back On), the system will wait 5 minutes before processing your request to restore archived setup data. This delay is to allow all hardware to initialize.

If necessary, press STEP until you see the message:

```
ARCHIVE UTILITY
RESTORE SETUP DATA: NO
```

If you do not wish to restore setup data, press STEP. (The system displays the CLEAR SETUP DATA menu.)

To restore setup data, press CHANGE, then press ENTER. The system confirms your choice with the message:

```
RESTORE SETUP DATA: YES
PRESS <STEP> TO CONTINUE
```

The system asks you to reconfirm your choice with the following message:

```
RESTORE SETUP DATA: YES
ARE YOU SURE?: NO
```

To abandon the restore process, press STEP. (The system displays the CLEAR SETUP DATA menu.) To continue restoring setup data, press CHANGE, then press ENTER. The system displays the message:

```
ARE YOU SURE?: YES
PRESS <STEP> TO CONTINUE
```

When you press STEP in response to this message, the system starts restoring previously saved setup data from the EEPROM. This process may take a minute or so. When the restore is completed, the system returns the original message:

```
ARCHIVE UTILITY
PRESS <STEP> TO CONTINUE
```

The system also prints a complete listing of all restored setup data.

Press STEP to use another archive feature or press either FUNCTION or MODE to exit the Archive Utility.

## Clearing Archived Setup Data

If necessary, press STEP until you see the message:

```
ARCHIVE UTILITY
CLEAR SETUP DATA: NO
```

If you do not wish to clear setup data in EEPROM, press STEP. (The system returns to the SAVE SETUP DATA message.)

To clear all current setup data in the EEPROM, press CHANGE, then press ENTER. The system confirms your choice with the message:

```
CLEAR SETUP DATA: YES
PRESS <STEP> TO CONTINUE
```

The system asks you to reconfirm your choice with the following message:

```
CLEAR SETUP DATA: YES
ARE YOU SURE?: NO
```

To abandon the clear process, press STEP. (The system returns to the SAVE SETUP DATA message.) To continue clearing setup data, press CHANGE, then press ENTER. The system displays the message:

```
ARE YOU SURE?: YES
PRESS <STEP> TO CONTINUE
```

When you press STEP in response to this message, the system starts clearing all current setup information in the EEPROM. When the clear process is completed, the system returns the original message:

```
ARCHIVE UTILITY
PRESS <STEP> TO CONTINUE
```

Press STEP to use another archive feature or press either FUNCTION or MODE to exit the Archive Utility.

# Appendix A: Calculating Tank Tilt - International

TLS-350R only--Entering a Tank Tilt value is not recommended if the system is performing automatic Business Inventory Reconciliation and AccuChart.

If the probe is installed in the center of the tank, the value is 000.00 Metric.

Within Setup Mode, Press FUNCTION until you In-Tank Setup, then press STEP until you see the message:

**T1: (Product Label)**
**TANK TILT: +000.00**

Tank Tilt allows you to compensate for a difference between fuel height at the ideal probe location (on the centreline of the tank with no striker plate underneath) and at the actual probe position (offset from the tank centreline and/or over a striker plate).

TLS-350R only--Entering a Tank Tilt value is not recommended if the system is performing automatic Business Inventory Reconciliation and AccuChart.

Table A-1 lists offset values for various tank diametres/probe offset combinations (used in determining Tank Tilt).

**Table A-1.- Typical Tank Offset Values**

| Imp. Diam. ft-in | Metric Diam. mm | Probe offset from C/L 50 mm | Probe offset from C/L 100 mm | Probe offset from C/L 150 mm | Probe offset from C/L 200 mm | Probe offset from C/L 250 mm |
|---|---|---|---|---|---|---|
| 6-0 | 1829 | 1 | 5 | 12 | 22 | 35 |
| 7-0 | 2134 | 1 | 5 | 11 | 19 | 30 |
| 8-0 | 2438 | 1 | 4 | 9 | 17 | 26 |
| 9-0 | 2743 | 1 | 4 | 8 | 15 | 23 |
| 9-10 | 2997 | 1 | 3 | 8 | 13 | 21 |

Vertical offset values given in Table A-1 were derived from the formula:

$$Oh = R - \sqrt{R - Od}$$

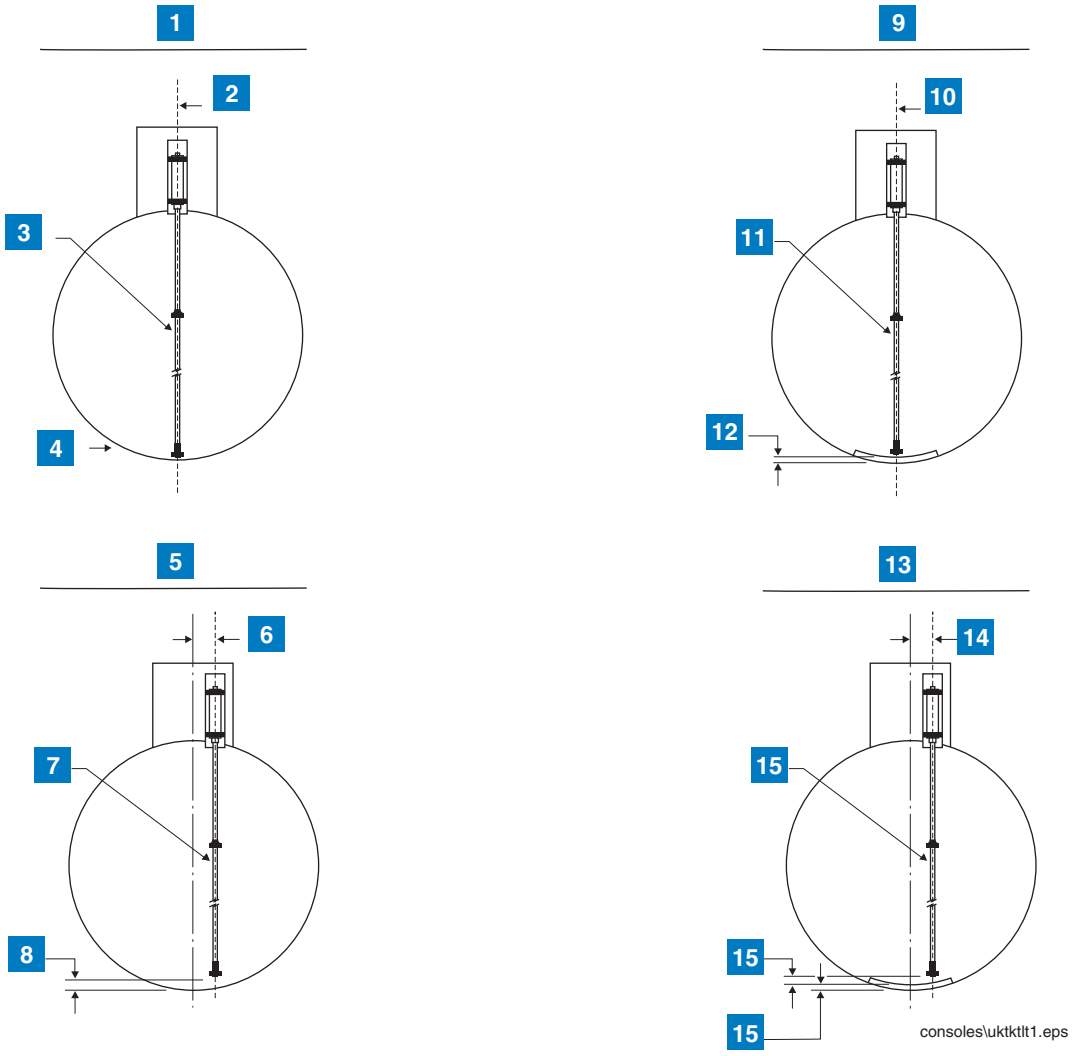
Where, Oh = vertical offset height

R = tank radius

Od = offset distance from centreline (C/L).

Figure A-1 illustrates the four possible Tank Tilt computational scenarios.

.




**Legend for numbered boxes:**

1. Tank Tilt = +000.00
2. No offset
3. Probe
4. No striker plate
5. Tank Tilt = Offset Value (No Striker Plate)
6. No offset
7. Probe
8. Tank Tilt (mm) (read from table)
9. Tank Tilt = Striker Plate Thickness
10. No offset
11. Probe
12. Thickness of striker plate
13. Tank Tilt = Offset Value + Striker Plate Thickness
14. No offset
15. Probe
16. Offset value (read from table)

**Figure A-1. Methods for Determining the Tank Tilt Entry**

## ENTERING THE TANK TILT VALUE

To enter the Tank Tilt value for the selected tank, press CHANGE. If the value is negative, press the +/- key so that a minus (-) sign appears on the display. Enter the value as calculated according to the above procedures (inches or millimetres depending on the units specified in System Setup). Press ENTER to confirm your entry. The system displays:

```
TANK TILT: ±XXX.XX
PRESS <STEP> TO CONTINUE
```

Press STEP to continue.

# Appendix B: Setup Parameters for TLS-300 System - International

The following list of setup parameters is intended for use as a programming guide for the commissioning engineer.

## System Setup

**Table B-1. System Setup**

| Parameter | Default | Set As |
|---|---|---|
| Time & Date | 08:00 01:01:94 | Current Time & Date |
| System Units | Metric | Default |
| System Language | English | As Required |
| Header Message 1 | None | Site Name |
| Header Message 2 | None | Site Address |
| Header Message 3 | None | Site Address |
| Header Message 4 | None | Site Address |
| Shift Time 1 | Disabled | Default |
| Shift Time 2 | Disabled | Default |
| Shift Time 3 | Disabled | Default |
| Shift Time 4 | Disabled | Default |
| Tank Per Tst Needed Wrn | Disabled | Default |
| Tank Ann Tst Needed Wrn | Disabled | Default |
| Print TC Vol. | Enabled | Disable |
| Temp. Comp. ℃ | 15.6 | Default |
| Stick Height Offset | Disabled | Disabled |
| Daylight Savings Time | Enabled | Default |
| H Protocol Format | Height | Default |
| Security Code | 000000 | xxxxxx |

## Comm Board (1, 2, etc.) Setup

**Table B-2. Comm Board Setup**

| Parameter | Default | Set As |
|---|---|---|
| Baud Rate | 1200 | Comm Rate for Third Party Equip. |
| Parity | Odd | Parity for Third Party Equip. |
| Stop Bit | 1 Stop | Default |
| Data Length | 7 Data | Default |

## In-Tank Setup

**Table B-3. In-tank Setup**

| Parameter | Default | Set As |
|---|---|---|
| Product Label | None | As Tank Product<br>(e.g. UL UNLEADED) |
| Product Code | 1 to 8 | Default |
| Thermal Coeff. | 000000 | 0.00126 Spirit, 0.00300 LPG<br>0.00081 DV |
| Tank Diameter | 00000 | As Tank Diameter |
| Tank Profile | 1 Point | 1 Point Flat Ends<br>4 Point Shallow-dished Ends.<br>20 Point Hemispherical Ends.<br>Linear for Vertical Cylindrical & Rectangular Tanks |
| Full Volume | 00000 | 100% Tank Volume |
| Label Vol. | As 100% Vol. | As Tank Label |
| Float Size | Depends on probe type | Enter as used |
| Water Warning | 00.00 | 25.0 mm |
| Water Limit | 00.0 | 32.0 mm |
| Overfill Vol.<br>High Product | 000%<br>000% | 99%<br>98% if Label Volume >25,000 litres, or 96% if Label Volume <25,000 litres |
| Delivery Limit | 001% | Default |

**Table B-3. In-tank Setup**

| Parameter | Default | Set As |
|---|---|---|
| Low Product:<br>Mag Type 8473<br>Mag Type 8493 | <br>00000<br>0000 | <br>Vol at 250 mm<br>Vol at 125 mm |
| Leak Alarm Limit | 374 | 10 litres |
| Sudden Loss Limit | 374 | 200 litres |
| Tank Tilt | 0 | 10 mm |
| Manifold Tanks | None | Default* |
| Leak Min. Annual | 0 | 60% |
| Periodic Test Type | Standard | Default |
| Annual Test fail Al. | Disabled | Default |
| Periodic Test Fail Al. | Disabled | Default |
| Gross Test Fail | Disabled | Default |
| Ann. Test Averaging | OFF | Default |
| Per. Test Averaging | OFF | Default |
| Tank Test Notify | OFF | ON |
| Tank Test Siphon B | OFF | Default |
| Delivery Delay | 1 Minute | 15 Minutes |

The product code for all partners should be the same, e.g., tank 1 product code 1 manifold partner tank 4 product code 1.

## Leak Test Method Setup

**Table B-4. Leak Test Method Setup**

| Parameter | Default | Set As |
|---|---|---|
| Test on Date | Current T & D All Tanks | Default |
| Start Time | Disabled | Default |
| Test Rate | 0.76 LPH | 0.38 LPH |
| Duration | 2 Hours | 4 Hours |

# Appendix C: Setup Parameters for TLS-350 System - International

The following list of setup parameters is intended for use as a programming guide for the commissioning engineer.

**Table C-1. System Setup**

| Parameter | Default | Set As |
|---|---|---|
| Time & Date | 08:00 01:01:94 | Current Time & Date |
| System Units | Metric | Default |
| System Language | English | Default |
| Time/Date Format | DD-MM-YY HH-MM-SS | MON-DD-YY HH:MM:SS |
| Header Message 1 | None | Site Name |
| Header Message 2 | None | Site Address |
| Header Message 3 | None | Site Address |
| Header Message 4 | None | Site Address |
| Shift Time 1 | Disabled | Default |
| Shift Time 2 | Disabled | Default |
| Shift Time 3 | Disabled | Default |
| Shift Time 4 | Disabled | Default |
| Shift BIR Prn | Disable | Default |
| Daily BIR Prn | Enabled | Default* |
| Ticketed Delivery | Disabled | Default |
| TC Ticketed Delivery | Disabled | Default |
| Close Day of Week | Sun | Default |
| Tank Per Tst Needed Wrn | Disabled | Default |
| Tank Per Tst Needed Wrn Days | Disabled | Default |
| Tank Per Tst Needed Alm Days | Disabled | Default |
| Tank Ann Tst Needed Wrn | Disabled | Default |
| Tank Ann Tst Needed Wrn Days | Disabled | Default |
| Tank Ann Tst Needed Alm Days | 355 days | Default |
| Line Per Tst Needed Wrn | Disabled | Default |
| Line Per Tst Needed Wrn Days | Disabled | Default |
| Line Per Tst Needed Alm Days | Disabled | Default |

**Table C-1. System Setup**

| Parameter | Default | Set As |
|---|---|---|
| Line Ann Tst Needed Wrn | Disabled | Default |
| Line Ann Tst Needed Wrn Days | Disabled | Default |
| Line Ann Tst Needed Alm Days | Disabled | Default |
| Remote Printer Page Eject | Disabled | Default |
| Print TC Vol. | Enabled | Disable |
| Temp. Comp. 15.6°C | Enabled | Default |
| Stick Height Offset | Disabled | Disabled |
| H Protocol Format | Height | Default |
| Precision Test Duration | | |
| Precision Line Test Auto-Confirm | Enabled | |
| Daylight Savings Time | Enabled | MAR WK6 SUN 03:00AM<br>OCT WK6 SUN 04:00AM |
| Re-Direct Local Printout | Disabled | Default |
| QPLD Monthly Printout | Enabled | Default* |
| BDIM Transaction Delay | 24 | Default |
| Euro Protocol Prefix | S | Default |
| Security Code | 000000 | XXXXXX |

*IMPORTANT: If Gilbarco T24 (BDIM) Site Controllers are to be interfaced to the gauge on a Non-24-Hour site, this parameter should be set to DISABLED.

**Table C-2. Comm Board (1, 2, Etc.) Setup**

| Parameter | Default | Set As |
|---|---|---|
| Baud Rate | 1200 | Comm Rate for Third Party Equip. |
| Parity | Odd | Parity for Third Party Equip. |
| Stop Bit | 1 Stop | Default |
| Data Length | 7 Data | Default |

**Table C-3. In-tank Setup**

| Parameter | Default | Set As |
|---|---|---|
| Product Label | None | As Tank Product<br>(e.g. UL unleaded) |
| Product Code | 1 to 8 | Default |
| Thermal Coeff. | 000000 | 0.00126 Spirit, 0.00300 LPG<br>0.00081 DV |
| Tank Diameter | 00000 | As Tank Diameter |
| Tank Profile | 1 Point | 1 Point Flat Ends<br>4 Point Shallow-dished Ends.<br>20 Point Hemispherical Ends.<br>Linear for Vertical Cylindrical & Rectangular Tanks |
| Full Volume | 00000 | 100% Tank Volume |
| Point 2 | 00000 | 75% Tank Diameter |
| Point 3 | 00000 | 50% Tank Diameter |
| Point 4 | 00000 | 25% Tank Diameter |
| Meter Data | No | Yes |
| End Factor | | Other |
| Cal. Update | Periodic | Default (except select NEVER for Linear Tanks) |
| Float Size | 101 mm (8496 and 8499 types) | 50 or 76 mm (according to size fitted) |
| Water Warning | 00.00 | 25.0 mm |
| Water Limit | 00.0 | 32.0 mm |
| Label Vol. | as 100% Vol. | As Tank Label |
| Overfill Vol.<br><br>High Product | 000%<br><br>000% | 99%<br><br>98% if Label Volume >25,000 litres, or 96% if Label Volume <25,000 litres |
| Delivery Limit | 001% | Default |
| Low Product:<br>Mag Type 8473<br>Mag Type 8493 | <br>00000<br>0000 | <br>Vol at 250 mm<br>Vol at 125 mm |
| Leak Alarm Limit | 374 | 10 litres |
| Sudden Loss Limit | 374 | 200 litres |
| Tank Tilt | 0 | 10 mm |
| Manifold Tanks | None | Default* |

**Table C-3. In-tank Setup**

| Parameter | Default | Set As |
|---|---|---|
| Leak Min. Annual | 0 | 60% |
| Periodic Test Type | Standard | Default |
| Annual Test fail Al. | Disabled | Default |
| Periodic Test Fail Al. | Disabled | Default |
| Gross Test Fail | Disabled | Default |
| Ann. Test Averaging | OFF | Default |
| Per. Test Averaging | OFF | Default |
| Tank Test Notify | OFF | ON |
| Tank Test Siphon B | OFF | Default |
| Recon Warning Limit | 3 litres | 4 litres* |
| Recon Alarm Limit | 4 litres | 5 litres* |
| Delivery Delay | 1 Minute | 15 Minutes |

*When manifolded tanks are to be configured in order that the system does not give false RECONCILIATION WARNINGS AND ALARMS, the parameters for reconciliation should be set to 7 LITRES for RECON WARNINGS and 8 LITRES for RECON ALARMS.

The product code for all partners should be the same, e.g., tank 1 product code 1 manifold partner tank 4 product code 1.

The calibration update setup parameter must be set to NEVER as systems using a BDIM are theoretically unable to carry out good calibration. "NEVER" will allow the system to run using only the 1, 4, or 20 point user data input at time of commissioning.

All of the above setup parameters are required whenever manifolds are to be set if a BDIM is in use.

NOTE: METER DATA should be set to YES – this will allow BIR to run for the manifolded tanks on site.

**Table C-4. Leak Test Method Setup**

| Parameter | Default | Set As |
|---|---|---|
| Test on Date | Current T & D All Tanks | Default |
| Start Time | Disabled | Default |
| Test Rate | 0.76 LPH | Default |
| Duration | 2 Hours | 4 Hours |

**Table C-5. Reconciliation Setup**

| Parameter | Default | Set As |
|---|---|---|
| DIM 1 | Default String | As Site Controller |
| Auto Daily Closing | 02:00 AM | Default |
| To Shift 1 Closing Time | Disabled | Default |
| To Shift 2 Closing Time | Disabled | Default |
| To Shift 3 Closing Time | Disabled | Default |
| To Shift 4 Closing Time | Disabled | Default |
| Periodic Recon. Mode | Monthly | Rolling** |

**Setting Periodic Recon Mode to Rolling will ensure 31 days of data may be viewed at any time (after the first 31 days of operation).

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