

**VEEDER - ROOT
SERIAL INTERFACE MANUAL**

for

**TLS-300 and TLS-350
UST Monitoring Systems**

and

**TLS-350R
Environmental & Inventory
Management System**

through Software Versions 020/128/328/428/520

Manual Number 576013-635

Revision T

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1.0 INTRODUCTION

The serial RS-232 interface is used to connect the system to a controlling computer, a display terminal (CRT) or a printing terminal. A modem can be connected directly to the system to provide telephone line access.

NOTE: The software versions for these systems vary depending on when they were purchased and if software upgrades have been installed. The version in which each function code first appeared is indicated in a box next to its description in Section 7. Commands appearing in software versions greater than 100 are only active in systems equipped with an ECPU.

2.0 HARDWARE CONNECTIONS

The RS-232 interface is a module accessed via a 25-pin D-connector located on the bottom-left of the console.

2.1 RS-232

The RS-232 D-connector is a panel mount, 25-pin female type, wired in a Data Terminal Equipment (DTE) configuration. A modem (DCE) may be connected directly to the interface using a straight-through cable. A CRT or printing terminal (DTE) may be connected to the interface by using a null cable which reverses the sense of the transmit/receive signals. The system does not require or activate any handshake signals.

RS-232 signals are wired to the female D-connector as follows:

PIN	
2	Transmitted Data
3	Received Data
7	Signal Ground (common return) and Chassis

2.2 EIA RS-232 INTERFACE

The EIA RS-232 interface is designed to connect to modems for transmission of data over telephone lines. It can be used for direct local attachment of terminals if the cable run is no more than 50 feet. In practice, cable runs longer than 50 feet have performed satisfactorily; however, since the RS-232 specification is designed for operation up to 50 feet, direct connect cable runs greater than 50 feet are not warranted for proper operation.

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2.3 INTERNAL MODEM

The optional internal modem operates at up to 2400 Baud. The modem module contains two RJ11 jacks for phone line connections, and is accessible at the bottom left of the console.

3.0 CHARACTER FORMAT AND BAUD RATE

The system receives and sends characters via the RS-232 interface in an ASCII format that is configured via the system front panel keypads. Selections consist of: 1 start bit; 7 or 8 data bits; odd, even or no parity; and 1 or 2 stop bits. Communications rate is selectable: 300, 1200, 2400, 4800 or 9600 baud. The system operates in a full duplex mode. Characters are not echoed when received, and transmitted characters must not be echoed back to the system. Transmit and receive can occur simultaneously, and commands can be stacked in the system buffer (up to 128 characters).

4.0 SWITCH SETTINGS

4.1 DIP SWITCH

A four-position DIP switch is located on the CPU board, which is mounted in the right-back of the console printer compartment. The DIP switch is next to the battery switch. The DIP switch enables the security code and the switch positions are assigned as follows:

Switch

- | | |
|------|-----------------------------------|
| 1 | Front Panel Setup Security Enable |
| 2 | RS-232 Security Enable |
| 3, 4 | Unused |

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5.0 COMMAND MESSAGE FORMAT

All command and response messages are configured in a format which includes a surrounding envelope of control characters and a function code and data field message. The control characters are described in this section while the function codes and data field messages are described in subsequent sections.

The system responds to a command message that has the following configuration:

SOH	Security Code	Function Code	Data Field
-----	---------------	---------------	------------

SOH is a control-A character (ASCII 01).

The RS-232 security code is an optional six-digit code used to limit external serial access to the system for security purposes. It can be set to any unique set of characters using either the front panel switches or the external communication interface setup commands. The system will not respond to a command without the proper security code, if the DIP switch is set to enable RS-232 security.

The function code is a six character command code which the system interprets to determine the type of action to take and response to return. System function codes and response messages are defined in subsequent sections.

The data field is optional and contains information necessary to perform the selected function (such as setup information).

If the system receives a command message string containing a function code that it does not recognize, it will respond with a <SOH>9999FF1B<ETX>. The "9999" indicates that the system has not understood the command, while the "FF1B" is the appropriate checksum for the preceding <SOH>9999 string.

There is one command which does not follow the above format. The escape command is performed by sending an ESC (escape character, ASCII 27), to the system. It is a means to halt a response message at any time before its completion.

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6.0 RESPONSE MESSAGE FORMAT

There are two types of response message formats: computer (or packed data format) and display format. Each format uses a different surrounding envelope of control characters.

6.1 COMPUTER FORMAT

The computer format is a stream of numbers without any formatting characters; i.e., carriage return, line feed, spaces, labels, etc. The message format is as follows:

SOH	Function Code	Data Field	&&	Checksum	ETX
-----	---------------	------------	----	----------	-----

The function code is identical to the received command message function code.

The data field contains the response message which is described in subsequent sections.

The "&&" is a fixed tag character which indicates that the checksum immediately follows.

The Checksum is a series of four ASCII-hexadecimal characters which provide a check on the integrity of all the characters preceding it, including the control characters. The four characters represent a 16-bit binary count which is the 2's complemented sum of the 8-bit binary representation of the message characters after the parity bit (if enabled) has been cleared. Overflows are ignored. The data integrity check can be done by converting the four checksum characters to the 16-bit binary number and adding the 8-bit binary representation of the message characters to it. The binary result should be zero.

ETX is programmable if enabled via the S53100f command. If it is disabled, the ETX is a fixed Control-C character (ASCII 03). Caution should be taken before changing the ETX character, because it affects the transmitted messages on ALL communications ports of the system, and additional host devices may be connected to other ports which expect the ETX to be a Control-C.

6.2 DISPLAY FORMAT

The display format is intended for display on a CRT or printer. It includes all the necessary formatting characters such as carriage returns, line feeds, nulls, spaces, labels, etc. The message format is as follows:

SOH	Function Code	Data Field	ETX
-----	---------------	------------	-----

See subsequent sections for a description of the data field response messages.

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6.3 ASCII FLOATING POINT FORMAT

6.3.1 NOTES

6.3.1.1 HHHHHHHH (H = 0-9 or A-F) indicates the 8 "nibble" ASCII-Hexadecimal representation of a 4-Byte Floating Point number. Many data parameters are transmitted in this format.

6.3.1.2 The 32-bits are arranged as follows:

Byte	1		2		3		4	
	S EEE	EEEE	E MMM	MMMM	MMMM	MMMM	MMMM	MMMM
Nibble	1	2	3	4	5	6	7	8

S is the sign bit (0 if positive, 1 if negative).

EEE EEEE E represents the 2's exponent. It is a 2's complement value biased by 127 (7F Hex). The exponent can be determined by subtracting 127 from the value of the E field and raising 2 to the resulting power.

MMM MMMM MMMM MMMM MMMM MMMM represents the 23-bit mantissa. Since the mantissa describes a value which is greater than or equal to 1.0 and less than 2.0, the 24th bit is always assumed to be equal to 1 and is not transmitted or stored. The value of the mantissa can be determined by dividing the value of the M field by 8,388,608 (2^{23}) and adding 1.0.

6.3.1.3 The complete value of the floating point number can then be determined by multiplying the exponent by the mantissa and attaching the appropriate positive or negative sign.

6.3.1.4 By convention, 00 00 00 00 represents the value 0.0 even though it actually converts to 5.8775×10^{-39} .

6.3.1.5 The eight "nibbles" are transmitted in sequence from 1 through 8 as shown in section 6.3.1.2.

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6.3.2 EXAMPLES

6.3.2.1 3F800000 hex = 0011 1111 1000 0000 0000 0000 0000 0000 bin

S = 0 = + (positive)

E = 011 1111 1 bin = 7F hex = 127 dec

M = 000 0000 0000 0000 0000 0000 bin = 0 hex = 0 dec

Exponent = $2^{(127-127)} = 1.0$

Mantissa = $1.0 + (0/8,388,608) = 1.0$

Decimal Value = $+1.0 \times 1.0 = 1.0$

6.3.2.2 B8D1B717 hex = 1011 1000 1101 0001 1011 0111 0001 0111 bin

S = 1 = - (negative)

E = 011 1000 1 bin = 71 hex = 113 dec

M = 101 0001 1011 0111 0001 0111 bin = 51 B7 17 hex = 5,355,287 dec

Exponent = $2^{(113-127)} = 0.0000610352$

Mantissa = $1.0 + (5,355,287/8,388,608) = 1.63840$

Decimal Value = $-0.0000610352 \times 1.63840 = -0.0001$

6.3.2.3 C2C7FAE1 hex = 1100 0010 1100 0111 1111 1010 1110 0001 bin

S = 1 = - (negative)

E = 100 0010 1 bin = 85 hex = 133 dec

M = 100 0111 1111 1010 1110 0001 bin = 47 FA E1 hex = 4,717,281 dec

Exponent = $2^{(133-127)} = 64$

Mantissa = $1.0 + (4,717,281/8,388,608) = 1.56234$

Decimal Value = $-64 \times 1.56234 = -99.99$

6.3.2.4 461C4000 hex = 0100 0110 0001 1100 0100 0000 0000 0000 bin

S = 0 = + (positive)

E = 100 0110 0 bin = 8C hex = 140 dec

M = 001 1100 0100 0000 0000 0000 bin = 1C 40 00 hex = 1,851,392 dec

Exponent = $2^{(140-127)} = 8,192$

Mantissa = $1.0 + (1,851,392/8,388,608) = 1.22070$

Decimal Value = $+8,192 \times 1.22070 = 10,000$

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7.0 FUNCTION CODES AND RESPONSE MESSAGES

All response messages are sent in a format described in previous sections. The function codes and data fields of these message formats are described in this section. The data field response messages are divided into the following major groupings:

Function Codes	Response Types
001 to 09B	Control Functions
101 to 11B	Operational Reports (System)
201 to 2E2	Operational Reports (In-tank)
301 to 34C	Operational Reports (Sensor)
351 to 389	Operational Reports (Line Leak)
391 to 392	Operational Reports (Miscellaneous)
401 to 412	Operational Reports (I/O Device)
501 to 51E	Setup Functions & Reports (System)
520 to 531	Setup Functions & Reports (Communications)
532 to 5E2	Setup Functions & Reports (Warning, Alarm, & Auto-print)
601 to 683	Setup Functions & Reports (In-tank)
701 to 74E	Setup Functions & Reports (Sensor)
751 to 761	Setup Functions & Reports (Volumetric Line Leak)
771 to 773	Setup Functions & Reports (Pump Sensor)
774 to 78F	Setup Functions & Reports (Pressure Line Leak)
790 to 79F	Setup Functions & Reports (Reconciliation)
7A0 to 7AF	Setup Functions & Reports (Wireless PLLD)
7B1 to 7B6	Setup Functions & Reports (Meter Map & Delivery Ticket)
7BC to 80C	Setup Functions & Reports (I/O Device)
851 to 853	Setup Functions & Reports (EEPROM)
881 to 8C2	Setup Functions & Reports (Miscellaneous)
901 to 905	Diagnostic Reports (System)
A01 to A91	Diagnostic Reports (In-tank)
B01 to B4B	Diagnostic Reports (Sensor)
B50 to B8E	Diagnostic Reports (Line Leak)
B91 to BB1	Diagnostic Reports (Reconciliation)
C01 to C09	Reconciliation Reports
C10 to C25	Variance Analysis Reports
V00 to V10	In-Station Diagnostics (Reports)
V40 to V52	In-Station Diagnostics (Setup)
V80 to XE0	In-Station Diagnostics (Diagnostics)

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Most response messages can be requested for either a single device (tank, sensor, line, etc.) or all devices. A "TT" in the function code signifies single device number 01 through 16. When "TT" is 00, it signifies all devices.

Typically, response messages include information on the active devices only. That is, those devices that are connected and working. However, the system can be forced to send data on inactive devices by using an inactive device number. In this case, if no valid data is available on a device, the message is filled out with question marks (?) in the place of numbers.

Computer format response messages do not include any formatting characters such as carriage returns, line feeds, spaces, nulls, labels, etc. Only those characters shown are actually included in the response message. For convenience, the messages are shown in segments and do not actually include any line feeds, carriage returns, etc. Also, the notes to the right and between the message lines are not included in the messages. All number values contained in the response messages retain leading zeroes.

Display format response messages include the formatting characters shown. All message lines end with a carriage return, line feed and six nulls. All response messages start and end with at least one blank line.

The system function codes and response messages are described in detail in the following sections under the major headings given above. A summary list of all function codes is given at the end of this document.

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7.1 CONTROL FUNCTIONS

Function Code: 001
Function Type: System Reset

Version 1

Command Format:
Display: <SOH>S00100
Computer: <SOH>s00100

Typical Response Message, Display Format:

```
<SOH>
S00100
MAR 27, 1996  4:47 PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s00100YYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

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Function Code: 002

Version 1

Function Type: Clear Power Reset Flag

Command Format:

Display: <SOH>S00200

Computer: <SOH>s00200

Typical Response Message, Display Format:

```
<SOH>
S00200
MAR 27, 1996  8:06 PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s00200YYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

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Function Code: 003

Version 1

Function Type: Remote Alarm Reset

Command Format:

Display: <SOH>S00300

Computer: <SOH>s00300

Typical Response Message, Display Format:

```
<SOH>
S00300
MAR 27, 1996  8:04 PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s00300YYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

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Function Code: 010

Version 14

Function Type: Cancel Autodial Computer Mode Session

Command Format:

Display: <SOH>S01000

Computer: <SOH>s01000

Typical Response Message, Display Format:

```
<SOH>
S01000
MAR 27, 1996  8:04 PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s00300YYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

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Function Code: 031

Version 10

Function Type: Confirm Clear Function

Command Format:

Display: <SOH>S03100832382

Computer: <SOH>s03100832382

Typical Response Message, Display Format:

```
<SOH>
S03100
MAR 29, 1996  6:27 PM

CONFIRM CLEAR COMPLETE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s03100YYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

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Function Code: 051

Version 1

Function Type: Clear In-Tank Delivery Reports

Command Format:

Display: <SOH>S051TT

Computer: <SOH>s051TT

Typical Response Message, Display Format:

```
<SOH>
S051TT
MAR 29, 1996  6:27 PM

DELIVERY REPORTS ERASED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s051TTYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. && - Data Termination Flag
4. CCCC - Message Checksum

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Function Code: 052

Version 1

Function Type: Start In-Tank Leak Detect Test

Command Format:

Display: <SOH>S052TT

Computer: <SOH>s052TT

Typical Response Message, Display Format:

```
<SOH>
S052TT
MAR 27, 1996  6:28 PM

TANK    PRODUCT LABEL
  1      UNLEADED REGULAR      LEAK TEST START
                                   TEST BY EXTERN INTERFACE

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s052TTYMMDDHHmmTTk&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. k - Status Flag
0=OFF
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 053

Version 1

Function Type: Stop In-Tank Leak Detect Test

Command Format:

Display: <SOH>S053TT

Computer: <SOH>s053TT

Typical Response Message, Display Format:

```
<SOH>
S053TT
MAR 29, 1996  6:27 PM

TANK   PRODUCT LABEL
  1     REGULAR UNLEADED      LEAK TEST STOP
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s053TTYMMDDHHmmTTk&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. k - Status Flag
 0=OFF
 1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 054

Version 5

Function Type: Delete CSLD Rate Table

Command Format:

Display: <SOH>S054TT149

Computer: <SOH>s054TT149

Notes:

1. TT - Tank Number (command valid for single tank only)
2. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S054TT
MAR 29, 1996  6:27 PM

T 1:REGULAR UNLEADED    CSLD RECORDS DELETED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s054TTYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. && - Data Termination Flag
4. CCCC - Message Checksum

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Function Code: 081

Version 7

Function Type: Start Pressure Line Leak Test (3.00 GPH only in V18)

Command Format:

Display: <SOH>S081QQ149

Computer: <SOH>s081QQ149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S081QQ
MAR 29, 1996  6:27 PM

Q 1:REGULAR UNLEADED
STATUS: TEST COMPLETE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s081QQYYMMDDHHmmQQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.10 gal/hr
 - 04=test aborted
 - 05=running pump (manual test starting)
 - 06=line lockout
 - 07=disable alarm
 - 08=test pending
 - 09=testing delay
 - 0A=pressure check
 - 0B=testing at 0.20 gal/hr
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 082

Version 7

Function Type: Stop Pressure Line Leak Test

Command Format:

Display: <SOH>S082QQ149

Computer: <SOH>s082QQ149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S082QQ
MAR 29, 1996  6:27 PM

Q 1:REGULAR UNLEADED
STATUS: TEST COMPLETE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s082QQYYMMDDHHmmQQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.10 gal/hr
 - 04=test aborted
 - 05=running pump (manual test starting)
 - 06=line lockout
 - 07=disable alarm
 - 08=test pending
 - 09=testing delay
 - 10=pressure check
 - 11=testing at 0.20 gal/hr
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 083

Version 10

Function Type: Start WPLLD Line Leak Test (3.00 GPH only in V18)

Command Format:

Display: <SOH>S083WW149

Computer: <SOH>s083WW149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S083WW
MAR 27, 1996  3:47 PM

W 1:UNLEADED REGULAR
STATUS: TEST PENDING
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s083WWYYMMDDHHmmWWtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.20 gal/hr
 - 04=test aborted
 - 05=line lockout
 - 06=disable alarm
 - 07=test pending
 - 08=test delay
 - 09=testing at 0.10 gal/hr
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 084

Version 10

Function Type: Stop WPLLD Line Leak Test

Command Format:

Display: <SOH>S084WW149

Computer: <SOH>s084WW149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S084WW
MAR 27, 1996  3:48 PM

W 1:UNLEADED REGULAR
STATUS: TEST ABORTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s084WWYYMMDDHHmmWWtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.20 gal/hr
 - 04=test aborted
 - 05=line lockout
 - 06=disable alarm
 - 07=test pending
 - 08=test delay
 - 09=testing at 0.10 gal/hr
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 087

Version 18

Function Type: Start Pressure Line Leak Test by Type

Command Format:

Display: <SOH>S087QQ149rr

Computer: <SOH>s087QQ149rr

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S087QQ
MAR 29, 1999  6:27 PM

Q 1:REGULAR UNLEADED
0.2 GPH SCHEDULED
STATUS: TEST COMPLETE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s087QQYYMMDDHHmmQQrrtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. rr - Test Type
 - 01=0.10 GPH
 - 02=0.20 GPH
 - 03=3.00 GPH
4. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.10 gal/hr
 - 04=test aborted
 - 05=running pump (manual test starting)
 - 06=line lockout
 - 07=disable alarm
 - 08=test pending
 - 09=testing delay
 - 0A=pressure check
 - 0B=testing at 0.20 gal/hr
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 088

Version 18

Function Type: Start WPLLD Line Leak Test by Type

Command Format:

Display: <SOH>S088WW149rr

Computer: <SOH>s088WW149rr

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S088WW
MAR 29, 1999  6:27 PM
```

```
W 1:REGULAR UNLEADED
0.2 GPH SCHEDULED
STATUS: TEST COMPLETE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s088WWYYMMDDHHmmWWrrtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. rr - Test Type
 - 01=0.10 GPH
 - 02=0.20 GPH
 - 03=3.00 GPH
4. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.20 gal/hr
 - 04=test aborted
 - 05=line lockout
 - 06=disable alarm
 - 07=test pending
 - 08=test delay
 - 09=testing at 0.10 gal/hr
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 089

Version 19

Function Type: Pressure Line Leak Pressure Offset Reset

Command Format:

Display: <SOH>S089QQ149

Computer: <SOH>s089QQ149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S089QQ
JAN  1, 2000  6:27 PM

Q 1:REGULAR UNLEADED
PRESSURE OFFSET RESET
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s089QQYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 090

Version 19

Function Type: WPLLD Line Leak Pressure Offset Reset

Command Format:

Display: <SOH>S090WW149

Computer: <SOH>s090WW149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S090WW
JAN  1, 2000  6:27 PM

W 1:REGULAR UNLEADED
PRESSURE OFFSET RESET
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s090WWYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 091

Version 15

Function Type: Close Current Shift

Command Format:

Display: <SOH>S09100

Computer: <SOH>s09100

Typical Response Message, Display Format:

```
<SOH>
S09100
MAR 27, 1996  8:04 PM

CLOSE CURRENT SHIFT: YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s09100YYMMDDHHmmff&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ff - Close Current Shift Flag
01=If close accepted
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 092

Version 23

Function Type: Start Pressure Line Leak Profile Line Test

Command Format:

Display: <SOH>S092QQ149

Computer: <SOH>s092QQ149

Notes:

1. 149 - This verification code must be sent to confirm the comand

Typical Response Message, Display Format:

```
<SOH>
I092QQ
NOV 14, 2001  10:15 PM

START PRESSURE LINE LEAK PROFILE LINE TEST

Q 1:UNLEADED REGULAR
STATUS: RUNNING PUMP
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s092QQYYMMDDHHmmQQtt
      QQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. tt - Test Status
 - 00 = TEST COMPLETE (DONE: BULK MOD 10000)
 - 01 = TURN PUMP ON (RUNNING PUMP)
 - 02 = PUMP ON WAIT (RUNNING PUMP)
 - 03 = PRESSURE 1 WAIT (PUMP OFF)
 - 04 = PRESSURE 2 WAIT (MEASURING Pxx 19.123 PSI)
 - 05 = CALC WAIT TIME (MEASURING Pxx 19.123 PSI)
 - 06 = PRESSURE N WAIT (MEASURING Pxx 19.123 PSI)
 - 07 = EVALUATE PERIOD (MEASURING Pxx 19.123 PSI)
 - 08 = TEST ABORT (ABORTED)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 093

Version 23

Function Type: Stop Pressure Line Leak Profile Line Test

Command Format:

Display: <SOH>S093QQ149

Computer: <SOH>s093QQ149

Notes:

1. 149 - This verification code must be sent to confirm the comand

Typical Response Message, Display Format:

```
<SOH>
I093QQ
NOV 14, 2001  10:15 PM

STOP PRESSURE LINE LEAK PROFILE LINE TEST

Q 1:UNLEADED REGULAR
STATUS: ABORTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s093QQYYMMDDHHmmQQtt
      QQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. tt - Test Status
 - 00 = TEST COMPLETE (DONE: BULK MOD 10000)
 - 01 = TURN PUMP ON (RUNNING PUMP)
 - 02 = PUMP ON WAIT (RUNNING PUMP)
 - 03 = PRESSURE 1 WAIT (PUMP OFF)
 - 04 = PRESSURE 2 WAIT (MEASURING Pxx 19.123 PSI)
 - 05 = CALC WAIT TIME (MEASURING Pxx 19.123 PSI)
 - 06 = PRESSURE N WAIT (MEASURING Pxx 19.123 PSI)
 - 07 = EVALUATE PERIOD (MEASURING Pxx 19.123 PSI)
 - 08 = TEST ABORT (ABORTED)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 094

Version 23

Function Type: Recalculate Pressure Line Leak Profile Bulk Modulus

Command Format:

Display: <SOH>S094QQ149

Computer: <SOH>s094QQ149

Notes:

1. 149 - This verification code must be sent to confirm the comand

Typical Response Message, Display Format:

```
<SOH>
I094QQ
NOV 14, 2001  10:15 PM

RECALCULATE PRESSURE LINE LEAK PROFILE LINE TEST BULK MODULUS

Q 1:UNLEADED REGULAR
STATUS: DONE: BULK MOD      10000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s094QQYYMMDDHHmmQQtt
          QQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. tt - Test Status
 - 00 = TEST COMPLETE (DONE: BULK MOD 10000)
 - 01 = TURN PUMP ON (RUNNING PUMP)
 - 02 = PUMP ON WAIT (RUNNING PUMP)
 - 03 = PRESSURE 1 WAIT (PUMP OFF)
 - 04 = PRESSURE 2 WAIT (MEASURING Pxx 19.123 PSI)
 - 05 = CALC WAIT TIME (MEASURING Pxx 19.123 PSI)
 - 06 = PRESSURE N WAIT (MEASURING Pxx 19.123 PSI)
 - 07 = EVALUATE PERIOD (MEASURING Pxx 19.123 PSI)
 - 08 = TEST ABORT (ABORTED)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 095

Version 24

Function Type: Start Vacuum Sensor Manual Test

Command Format:

Display: <SOH>S095SS149

Computer: <SOH>s095SS149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S095SS
FEB 14, 2004  10:15 AM

START VACUUM SENSOR MANUAL TEST

s 1:VACUUM SENSOR #1

MANUAL TEST STARTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s095SSYYMMDDHHmmSStt...
                        SStt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. tt - Manual Test Status
00=ABORTED
01=STARTED
02=PENDING
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 096

Version 24

Function Type: Stop Vacuum Sensor Manual Evacuation Test

Command Format:

Display: <SOH>S096SS149

Computer: <SOH>s096SS149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S096SS
FEB 14, 2004  10:15 AM

STOP VACUUM SENSOR MANUAL EVACUATION TEST

s 1:VACUUM SENSOR #1

MANUAL TEST ABORTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s096SSYYMMDDHHmmSStt...
                        SStt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. tt - Manual Test Status
00=ABORTED
01=STARTED
02=PENDING
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 097

Version 24

Function Type: Start Vacuum Sensor Evacuation Hold

Command Format:

Display: <SOH>S097SS149

Computer: <SOH>s097SS149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S097SS
FEB 14, 2004 10:15 AM

START VACUUM SENSOR EVACUATION HOLD

s 1:VACUUM SENSOR #1

EVAC HOLD STARTED
EVACUATION STATE: EVAC_HOLD
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s097SSYYMMDDHHmmSSEE...
SSEE&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. EE - Evacuation State (Hex)
 - 00=Vacuum Ok
 - 01=Evacuation Pending
 - 02=Evacuation Active
 - 03=Evacuation Pending Manual
 - 04=Evacuation Active Manual
 - 05=No Vacuum
 - 06=Evacuation Hold
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 098

Version 24

Function Type: Stop Vacuum Sensor Evacuation Hold

Command Format:

Display: <SOH>S098SS149

Computer: <SOH>s098SS149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S098SS
FEB 14, 2004 10:15 AM

STOP VACUUM SENSOR EVACUATION HOLD

s 1:VACUUM SENSOR #1

EVAC HOLD ABORTED
EVACUATION STATE: VACUUM OK
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s098SSYYMMDDHHmmSSEE...
SSEE&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. EE - Evacuation State (Hex)
 - 00=Vacuum Ok
 - 01=Evacuation Pending
 - 02=Evacuation Active
 - 03=Evacuation Pending Manual
 - 04=Evacuation Active Manual
 - 05=No Vacuum
 - 06=Evacuation Hold
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 099

Version 26

Function Type: Start Mag Sump Leak Test

Command Format:

Display: <SOH>S099ss149

Computer: <SOH>s099ss149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S099ss
FEB 14, 2004 10:15 AM

START MAG SUMP LEAK TEST

s 1:SUMP 1
LEAK TEST STARTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s099ssYYMMDDHHmmssstt...
                        sstt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Smart Sensor Number (Decimal, 00=all)
3. tt - Mag Sump Leak Test Status
00=NO TEST DATA AVAILABLE
01=LEAK TEST ABORTED
02=FILL SUMP
03=MEASURING HEIGHT
04=LEAK TEST PASSED
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 09A

Version 26

Function Type: Start Mag Sump Leak Test Measuring Height Phase

Command Format:

Display: <SOH>S09Ass149

Computer: <SOH>s09Ass149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S09Ass
FEB 14, 2004 10:15 AM

START MAG SUMP LEAK TEST MEASURING HEIGHT PHASE

s 1:SUMP 1
STABLILITY PHASE STARTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s09AssYYMMDDHHmmssstt...
                        sstt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Smart Sensor Number (Decimal, 00=all)
3. tt - Mag Sump Leak Test Status
00=NO TEST DATA AVAILABLE
01=LEAK TEST ABORTED
02=FILL SUMP
03=MEASURING HEIGHT
04=LEAK TEST PASSED
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 09B

Version 26

Function Type: Stop Mag Sump Leak Test

Command Format:

Display: <SOH>S09Bss149

Computer: <SOH>s09Bss149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S09Bss
FEB 14, 2004 10:15 AM

STOP MAG SUMP LEAK TEST

s 1:SUMP 1
LEAK TEST ABORTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s09BssYYMMDDHHmmssstt...
                        sstt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Smart Sensor Number (Decimal, 00=all)
3. tt - Mag Sump Leak Test Status
00=NO TEST DATA AVAILABLE
01=LEAK TEST ABORTED
02=FILL SUMP
03=MEASURING HEIGHT
04=LEAK TEST PASSED
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.2 OPERATIONAL REPORTS

7.2.1 SYSTEM REPORTS

Function Code: 101

Version 1

Function Type: System Status Report

Command Format:

Display: <SOH>I10100

Computer: <SOH>i10100

Notes:

1. This command will report all active OR unacknowledged alarms and warnings up to the limit of 25 alarms in display format, and 150 alarms in computer format

Typical Response Message, Display Format:

```
<SOH>
I10100
JUL 29, 1997  9:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
SYSTEM STATUS REPORT
```

```
ALL FUNCTIONS NORMAL
<ETX>
```


Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 101 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i10100YYMMDDHHmmAANNTT...  
AANNTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
 - 00=All Functions Normal
 - 01=System Alarm
 - 02=Tank Alarm
 - 03=Liquid Sensor Alarm
 - 04=Vapor Sensor Alarm
 - 05=Input Alarm
 - 06=Volumetric Line Leak Alarm
 - 07=Groundwater Sensor Alarm
 - 08=Type A Sensor Alarm

 - 12=Type B Sensor Alarm
 - 13=Universal Sensor Alarm
 - 14=Auto-Dial Fax Alarm
 - 18=Mechanical Dispenser Interface Alarm
 - 19=Electronic Dispenser Interface Alarm

 - 20=Product Alarm
 - 21=Pressure Line Leak Alarm
 - 26=Wireless PLLD Alarm
 - 28=Smart Sensor Alarm
 - 29=Modbus Alarm

 - 30=ISD Site Alarm
 - 31=ISD Hose Alarm
 - 32=ISD Vapor Flow Meter Alarm
 - 33=PMC Alarm
 - 34=Pump Relay Monitor Alarm
 - 35=VMCI Dispenser Interface Alarm (Version 28)
 - 36=VMC Alarm (Version 28)

 - 99=Externally Detected Alarm (not reported by Console)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 101 Notes: (Continued)

3. NN - Alarm Type Number:
- If AA is 01 and NN is:
 - 01=Printer out of Paper
 - 02=Printer Error
 - 03=EEPROM Configuration Error
 - 04=Battery Off
 - 05=Too Many Tanks
 - 06=System Security Warning
 - 07=ROM Revision Warning
 - 08=Remote Display Communications Error
 - 09=Autodial Error
 - 10=Software Module Warning
 - 11=Tank Test Shutdown Warning
 - 12=Protective Cover Alarm
 - 13=BIR Shift Close Pending
 - 14=BIR Daily Close Pending
 - 15=PC (H8) Revision Warning
 - 16=System Self Test Error
 - 17=System Clock Incorrect Warning
 - 18=System Device Poll Timeout
 - 19=Maintenance Tracker NVMem Removed
 - 20=Maintenance Tracker Communication Module Removed
 - If AA is 02 and NN is:
 - 01=Tank Setup Data Warning
 - 02=Tank Leak Alarm
 - 03=Tank High Water Alarm
 - 04=Tank Overfill Alarm
 - 05=Tank Low Product Alarm
 - 06=Tank Sudden Loss Alarm
 - 07=Tank High Product Alarm
 - 08=Tank Invalid Fuel Level Alarm
 - 09=Tank Probe Out Alarm
 - 10=Tank High Water Warning
 - 11=Tank Delivery Needed Warning
 - 12=Tank Maximum Product Alarm
 - 13=Tank Gross Leak Test Fail Alarm
 - 14=Tank Periodic Leak Test Fail Alarm
 - 15=Tank Annual Leak Test Fail Alarm
 - 16=Tank Periodic Test Needed Warning
 - 17=Tank Annual Test Needed Warning
 - 18=Tank Periodic Test Needed Alarm
 - 19=Tank Annual Test Needed Alarm
 - 20=Tank Leak Test Active
 - 21=Tank No CSLD Idle Time Warning
 - 22=Tank Siphon Break Active Warning
 - 23=Tank CSLD Rate Increase Warning
 - 24=Tank AccuChart Calibration Warning
 - 25=Tank HRM Reconciliation Warning
 - 26=Tank HRM Reconciliation Alarm
 - 27=Tank Cold Temperature Warning
 - 28=Tank Missing Delivery Ticket Warning
 - 29=Tank/Line Gross Leak Alarm
 - 30=Delivery Density Warning

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 101 Notes: (Continued)

- If AA is 03, 04, 07, 08, 12, or 13 and NN is:
 - 02=Sensor Setup Data Warning
 - 03=Sensor Fuel Alarm
 - 04=Sensor Out Alarm
 - 05=Sensor Short Alarm
 - 06=Sensor Water Alarm
 - 07=Sensor Water Out Alarm
 - 08=Sensor High Liquid Alarm
 - 09=Sensor Low Liquid Alarm
 - 10=Sensor Liquid Warning
- If AA is 05 and NN is:
 - 01=Input Setup Data Warning
 - 02=Input Normal
 - 03=Input Alarm
- If AA is 06 and NN is:
 - 01=VLLD Setup Data Warning
 - 02=VLLD Self Test Alarm
 - 03=VLLD Shutdown Alarm
 - 04=VLLD Leak Test Fail Alarm
 - 05=VLLD Selftest Invalid Warning
 - 06=VLLD Continuous Handle On Warning
 - 07=VLLD Gross Line Test Fail Alarm
 - 08=VLLD Gross Line Selftest Fail Alarm
 - 09=VLLD Gross Pump Test Fail Alarm
 - 10=VLLD Gross Pump Selftest Fail Alarm
 - 11=VLLD Periodic Test Needed Warning
 - 12=VLLD Annual Test Needed Warning
 - 13=VLLD Periodic Test Needed Alarm
 - 14=VLLD Annual Test Needed Alarm
 - 15=VLLD Periodic Line Test Fail Alarm
 - 16=VLLD Periodic Line Selftest Fail Alarm
 - 17=VLLD Periodic Pump Test Fail Alarm
 - 18=VLLD Periodic Pump Selftest Fail Alarm
 - 19=VLLD Annual Line Test Fail Alarm
 - 20=VLLD Annual Line Selftest Fail Alarm
 - 21=VLLD Annual Pump Test Fail Alarm
 - 22=VLLD Annual Pump Selftest Fail Alarm
 - 23=VLLD Pressure Warning
 - 24=VLLD Pressure Alarm
 - 25=VLLD Gross Test Fault Alarm
 - 26=VLLD Periodic Test Fault Alarm
 - 27=VLLD Annual Test Fault Alarm
 - 28=VLLD Fuel Out Alarm
- If AA is 14 and NN is:
 - 01=Autodial Setup Data Warning
 - 02=Autodial Failed Alarm
 - 03=Autodial Service Report Warning (Added in V19)
 - 04=Autodial Alarm Clear Warning (Added in V19)
 - 05=Autodial Delivery Report Warning (Added in V19)
- If AA is 18, 19 and NN is:
 - 02=DIM Disabled Alarm
 - 03=DIM Communication Failure Alarm
 - 04=DIM Transaction Alarm

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TLS-300/350/350R Monitoring Systems

Function Code 101 Notes: (Continued)

- If AA is 20 and NN is:
 - 01=BIR Setup Data Warning
 - 02=BIR Threshold Alarm
 - 03=BIR Close Shift Warning
 - 04=BIR Close Daily Warning

- If AA is 21 and NN is:
 - 01=PLLD Setup Data Warning
 - 02=PLLD Gross Test Fail Alarm
 - 03=PLLD Annual Test Fail Alarm
 - 04=PLLD Periodic Test Needed Warning
 - 05=PLLD Periodic Test Needed Alarm
 - 06=PLLD Sensor Open Alarm
 - 07=PLLD High Pressure Alarm (Obsolete V19)
 - 08=PLLD Shutdown Alarm
 - 09=PLLD High Pressure Warning (Obsolete V19)
 - 10=PLLD Continuous Handle On Warning (Obsolete V19)
 - 11=PLLD Periodic Test Fail Alarm
 - 12=PLLD Annual Test Needed Warning
 - 13=PLLD Annual Test Needed Alarm
 - 14=PLLD Low Pressure Alarm
 - 15=PLLD Sensor Short Alarm (Obsolete V19)
 - 16=PLLD Continuous Handle On Alarm
 - 17=PLLD Fuel Out Alarm
 - 18=PLLD Line Equipment Alarm

- If AA is 26 and NN is:
 - 01=WPLLD Setup Data Warning
 - 02=WPLLD Gross Test Fail Alarm
 - 03=WPLLD Periodic Test Fail Alarm
 - 04=WPLLD Periodic Test Needed Warning
 - 05=WPLLD Periodic Test Needed Alarm
 - 06=WPLLD Sensor Open Alarm
 - 07=WPLLD Communications Alarm
 - 08=WPLLD Shutdown Alarm
 - 09=WPLLD Continuous Handle On Warning (Obsolete V19)
 - 10=WPLLD Annual Test Fail Alarm
 - 11=WPLLD Annual Test Needed Warning
 - 12=WPLLD Annual Test Needed Alarm
 - 13=WPLLD High Pressure Warning (Obsolete V19)
 - 14=WPLLD High Pressure Alarm (Obsolete V19)
 - 15=WPLLD Sensor Short Alarm (Obsolete V19)
 - 16=WPLLD Continuous Handle On Alarm
 - 17=WPLLD Fuel Out Alarm
 - 18=WPLLD Line Equipment Alarm

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 101 Notes: (Continued)

- If AA is 28 and NN is:
 - 01=Smart Sensor Setup Data Warning
 - 02=Smart Sensor Communication Alarm
 - 03=Smart Sensor Fault Alarm
 - 04=Smart Sensor Fuel Warning
 - 05=Smart Sensor Fuel Alarm
 - 06=Smart Sensor Water Warning
 - 07=Smart Sensor Water Alarm
 - 08=Smart Sensor High Liquid Warning
 - 09=Smart Sensor High Liquid Alarm
 - 10=Smart Sensor Low Liquid Warning
 - 11=Smart Sensor Low Liquid Alarm
 - 12=Smart Sensor Temperature Warning
 - 13=Smart Sensor Relay Active
 - 14=Smart Sensor Install Alarm
 - 15=Smart Sensor Sensor Fault Warning
 - 16=Smart Sensor Vacuum Warning
 - 17=Smart Sensor No Vacuum Warning
- If AA is 29 and NN is:
 - 01=Improper Setup alarm
 - 02=Communication Loss alarm
- If AA is 30 and NN is:
 - 01=Stage 1 Transfer Monitoring Failure warning
 - 02=Containment Monitoring Gross Failure warning
 - 03=Containment Monitoring Gross Failure alarm
 - 04=Containment Monitoring Degradation Failure warning
 - 05=Containment Monitoring Degradation Failure alarm
 - 06=Containment Monitoring CVLD Failure warning
 - 07=Containment Monitoring CVLD Failure alarm
 - 08=Vapor Processor Over Pressure Failure warning
 - 09=Vapor Processor Over Pressure Failure alarm
 - 10=Vapor Processor Status Test warning
 - 11=Vapor Processor Status Test alarm
 - 12=Missing Relay Setup alarm
 - 13=Missing Hose Setup alarm
 - 14=Missing Tank Setup alarm
 - 15=Missing Vapor Flow Meter alarm
 - 16=Missing Vapor Pressure Sensor alarm
 - 17=Missing Vapor Pressure Input alarm
 - 18=Setup Fail warning
 - 19=Setup Fail alarm
 - 20=Sensor Out warning
 - 21=Sensor Out alarm
 - 22=PC-ISD Offline
- If AA is 31 and NN is:
 - 01=Collection Monitoring Gross Failure warning
 - 02=Collection Monitoring Gross Failure alarm
 - 03=Collection Monitoring Degradation Failure warning
 - 04=Collection Monitoring Degradation Failure alarm
 - 05=Flow Performance Hose Blockage Failure warning
 - 06=Flow Performance Hose Blockage Failure alarm
 - 07=Vapor Flow Meter Setup alarm

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 101 Notes: (Continued)

- If AA is 32 and NN is:
 - 01=Locked rotor alarm
 - If AA is 33 and NN is:
 - 01=Vapor Processor Run Time Fault warning
 - 02=Processor Monitoring Effluent Emissions Failure warning
 - 03=Processor Monitoring Effluent Emissions Failure alarm
 - 04=Processor Monitoring Over Pressure Failure warning
 - 05=Processor Monitoring Over Pressure Failure alarm
 - 06=Processor Monitoring Duty Cycle Failure warning
 - 07=Processor Monitoring Duty Cycle Failure alarm
 - 08=PMC (stand alone mode only) Setup warning
 - If AA is 34 and NN is:
 - 01=Setup Data Warning
 - 02=Pump Relay Alarm
 - If AA is 35 and NN is:
 - 01=Setup Data Warning
 - 02=Disabled VMCI Alarm
 - If AA is 36 and NN is:
 - 01=VMC Comm timeout
 - 02=Meter Not Connected
 - 03=FP Shutdown Warning
 - 04=FP Shutdown Alarm
 - If AA is 99 and NN is:
 - 01=Externally Detected Communication Alarm
 - 02=Communications - Data Reception Timeout
 - 03=Communications - Failed Checksum
 - 04=Communications - Parity Error
 - 05=Modem - Line Busy
 - 06=Modem - No Answer
 - 07=Modem - No Carrier
 - 08=Modem - No Dial Tone
 - 09=Modem - Modem Error
 - 10=Modem - Modem Not Responding
 - 11=Modem - Port Not Available
 - 12=Polling - Could Not Update Queue
 - 13=Polling - Invalid Data Type Requested
4. TT - Tank/Sensor Number
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 102

Version 1

Function Type: System Configuration Report

Command Format:

Display: <SOH>I10200

Computer: <SOH>i10200

Typical Response Message, Display Format:

<SOH>
I10200
JAN 22, 1996 3:05 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

SYSTEM CONFIGURATION

SLOT	BOARD TYPE	POWER ON RESET	CURRENT
1	4 PROBE / G.T.	164040	166912
2	UNUSED	10191362	10329900
3	UNUSED	10122894	10209602
4	UNUSED	10107912	10186864
5	UNUSED	10115504	10165331
6	UNUSED	10105807	10165451
7	UNUSED	10097749	10164467
8	UNUSED	10102487	10152837
9	4 INPUT BOARD	40158	40158
10	UNUSED	15000000	15000000
11	UNUSED	15000000	15000000
12	UNUSED	15000000	15000000
13	UNUSED	15000000	15000000
14	UNUSED	15000000	15000000
15	UNUSED	15000000	15000000
16	UNUSED	15000000	15000000
	COMM 1 FAXMODEM BOARD	47008	47006
	COMM 2 RS232 SERIAL BD	14764	14753
	COMM 3 ELEC DISP INT.	100725	100748
	COMM 4 UNUSED	15000000	15000000
	COMM 5 UNUSED	15000000	15000000
	COMM 6 UNUSED	15000000	15000000

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 102 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i10200YYMMDDHHmmNNSSTTTTTTTTTTCCCCCCCC...  
SSTTTTTTTTTTCCCCCCCC&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Modules to Follow (Hex)
3. SS - Slot Number (Hex)
4. TT - Type of Module (Hex):
 - 00=Not used
 - 01=Four Probe Module
 - 02=Vapor Sensor Module
 - 03=Liquid Sensor Module
 - 04=Four Relay Module
 - 05=I/O Combo Module
 - 06=Printer Module
 - 07=RS-232 Module
 - 08=Modem Module
 - 09=Volumetric Line Leak Module
 - 0A=Four Probe w/ Ground Temp Module
 - 0B=Groundwater Sensor Module
 - 0C=Type A Sensor Module
 - 0D=Remote Display Module
 - 10=Type B Sensor Module
 - 11=Universal Sensor Module
 - 12=Fax/Modem (1785) Module
 - 13=Remote/Local Printer Module
 - 14=Pump Sensor Module
 - 15=European RS-232 Module
 - 17=Eight Probe Module
 - 18=Mechanical Dispenser Interface Module
 - 19=Electronic Dispenser Interface Module
 - 1A=Pressure Line Leak Sensor Module
 - 1B=Pressure Line Leak Controller Module
 - 1D=Remote Printer Module
 - 1E=External Fax/Modem Module
 - 1F=RS-485 Module
 - 20=Wireless PLLD AC Interface Module
 - 21=Wireless PLLD Communications Module
 - 22=Wireless PLLD Controller Module
 - 23=Hughes Satellite J-Box Module
 - 24=Fax/Modem (1786) Module
 - 25=Serial Satellite Module
 - 26=Four Probe / Four Liquid Sensor Module
 - 27=Four PLLD Sensor Module
 - 28=SmartSensor(8) Module
 - 29=RS-485 Modbus Module
 - 2B=SmartSensor(7) Module
 - 2C=Four Input Module (Version 26)
 - 2D=MT Comm Module (Version 27)
 - 2E=Pump Relay Monitor Module (Version 27)
 - 2F=VMCI Dispenser Interface Module (Version 28)
5. FFFFFFFF - Power On Reset (ASCII Hex IEEE float)
6. CCCCCCCC - Current I/O Reading (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 111

Version 2

Function Type: Priority Alarm History Report

Command Format:

Display: <SOH>I11100

Computer: <SOH>i11100

Typical Response Message, Display Format:

```
<SOH>
I11100
JUL 29, 1997  9:02 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRIORITY ALARM HISTORY
ID  CATEGORY  DESCRIPTION              ALARM TYPE              STATE    DATE    TIME
W 3  OTHER    SPECIAL                WPLLD SHUTDOWN ALM    CLEAR   1-01-96  8:07AM
W 3  OTHER    SPECIAL                WPLLD SHUTDOWN ALM    ALARM   1-01-96  8:06AM
      SYSTEM  BATTERY IS OFF        CLEAR   1-01-96  8:00AM
      SYSTEM  BATTERY IS OFF        ALARM   1-01-96  8:00AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11100YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
      AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Piping Sump
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Tank/Sensor Number
6. SS - Alarm State
01=Alarm cleared
02=Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 112

Version 2

Function Type: Non-Priority Alarm History Report

Command Format:

Display: <SOH>I11200

Computer: <SOH>i11200

Typical Response Message, Display Format:

<SOH>
I11200
JAN 22, 1996 3:05 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

NON-PRIORITY ALARM HISTORY

ID	CATEGORY	DESCRIPTION	ALARM TYPE	STATE	DATE	TIME
	SYSTEM		PAPER OUT	CLEAR	12-20-95	12:01PM
	SYSTEM		PAPER OUT	ALARM	12-20-95	12:00PM
T 2	TANK	SPECIAL	INVALID FUEL LEVEL	CLEAR	12-20-95	11:59AM
T 2	TANK	SPECIAL	INVALID FUEL LEVEL	ALARM	12-20-95	11:59AM

<ETX>

Typical Response Message, Computer Format:

<SOH>i11200YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Piping Sump
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Tank/Sensor Number
6. SS - Alarm State
01=Alarm cleared
02=Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 113
Function Type: Active Alarm Report

Version 14

Command Format:
Display: <SOH>I11300
Computer: <SOH>i11300

Notes:

1. This command will report ALL active alarms and warnings regardless of their acknowledgement state. If there are more than can be contained in the non-priority and priority history storage areas, they will be reported here without time and date stamps

Typical Response Message, Display Format:

```
<SOH>
I11300
JAN 28, 1996 10:09 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

ACTIVE ALARMS REPORT

ID  CATEGORY  DESCRIPTION                ALARM TYPE                DATE      TIME
   SYSTEM
T 2  TANK      SPECIAL                  INVALID FUEL LEVEL        12-20-95  11:59AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11300YYMMDDHHmma..ab..bc..cd..dAAccNNTTYMMDDHHmm...
                                   AAaccNNTTYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. a..a - Station Header 1: 20 ASCII characters
3. b..b - Station Header 2: 20 ASCII characters
4. c..c - Station Header 3: 20 ASCII characters
5. d..d - Station Header 4: 20 ASCII characters
6. AA - Alarm/Warning Category:
 See explanation for "AA" in Function i10100
7. cc - Sensor Category
 00=Other
 01=Annular
 02=Dispenser Pan
 03=Monitoring Well
 04=STP Sump
 05=Piping Sump
8. NN - Alarm Type Number:
 See explanation for "NN" in Function i10100
9. TT - Tank/Sensor Number
10. YYMMDDHHmm - Alarm Date and Time
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 114
Function Type: Cleared Alarm Report

Version 19

Command Format:
Display: <SOH>I11400
Computer: <SOH>i11400

Typical Response Message, Display Format:

```
<SOH>
I11400
JAN 28, 1996 10:09 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

CLEARED ALARMS REPORT

ID	CATEGORY	DESCRIPTION	ALARM TYPE	STATE	DATE	TIME
T 4	TANK	PRODUCT 4	PROBE OUT	CLEAR	1-02-96	4:10AM
T 1	TANK	PRODUCT 1	INVALID FUEL LEVEL	CLEAR	1-02-96	1:12AM
SYSTEM			PAPER OUT	CLEAR	1-02-96	1:09AM

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11400YYMMDDHHmma..ab..bc..cd..dAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

- YYMMDDHHmm - Current Date and Time
- a..a - Station Header 1: 20 ASCII characters
- b..b - Station Header 2: 20 ASCII characters
- c..c - Station Header 3: 20 ASCII characters
- d..d - Station Header 4: 20 ASCII characters
- AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
- cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Piping Sump
- NN - Alarm Type Number:
See explanation for "NN" in Function i10100
- TT - Tank/Sensor Number
- SS - Alarm State
01=Alarm cleared
02=Alarm occurred
- YYMMDDHHmm - Clear Alarm Date and Time
- && - Data Termination Flag
- CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 115

Version 27

Function Type: Maintenance Tracker Unacknowledged Alarm Report

Command Format:

Display: <SOH>I11500

Computer: <SOH>i11500

Typical Response Message, Display Format:

```
<SOH>
I11500
JUL 29, 2006  3:05 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

MAINTENANCE TRACKER UNACKNOWLEDGED ALARM REPORT

ID	CATEGORY	DESCRIPTION	ALARM TYPE	DATE	TIME
L12	OTHER	LIQUID SENS 12	SENSOR OUT	7-08-06	11:12AM
L 1	OTHER	LIQUID SENS 1	SENSOR OUT	7-08-06	10:10AM

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i11500YYMMDDHHmma..ab..bc..cd..dAAccNNTTTYMMDDHHmm...
                                     AaccNNTTTYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. a..a - Station Header 1: 20 ASCII characters
3. b..b - Station Header 2: 20 ASCII characters
4. c..c - Station Header 3: 20 ASCII characters
5. d..d - Station Header 4: 20 ASCII characters
6. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
7. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Piping Sump
8. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
9. TT - Tank/Sensor Number
10. YYMMDDHHmm - Maintenance Tracker Alarm Active Date and Time
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 116
Function Type: Service Report History

Version 19 (Obsolete V27)

Command Format:
Display: <SOH>I11600
Computer: <SOH>i11600

Typical Response Message, Display Format:

```
<SOH>
I11600
MAR 26, 1996  1:47 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

SERVICE REPORT

DATE/TIME	ID	CODE
MAR 29, 1996 8:50 AM	1234567890	12345
MAR 28, 1996 8:50 AM	3482221100	EABC2
FEB 26, 1996 8:15 AM	3482221100	12345
JAN 25, 1996 2:20 PM	3482221100	Z1234
JAN 23, 1996 1:48 PM	3482221100	12345

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11600YYMMDDHHmma..ab..bc..cd..dNNYYMMDDHHmmiiiiiiiiiiiccccc...
                                     YYMMDDHHmmiiiiiiiiiiiccccc&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. a..a - Station Header 1: 20 ASCII characters
3. b..b - Station Header 2: 20 ASCII characters
4. c..c - Station Header 3: 20 ASCII characters
5. d..d - Station Header 4: 20 ASCII characters
6. NN - Number of Records to follow (Decimal)
7. YYMMDDHHmm - Date and Time of entry
8. iiiiiiiiii - Service ID entered by Service Contractor (10 alpha/numeric)
9. ccccc - Service Code entered by Service Contractor (5 alpha/numeric)
10. && - Data Termination Flag
11. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 119

Version 27

Function Type: Maintenance History Report

Command Format:

Display: <SOH>I11900YYMMDDYYMMDD OR <SOH>I11900

Computer: <SOH>i11900YYMMDDYYMMDD OR <SOH>i11900

Notes:

1. YYMMDD - Requested Start Date (year, month, day).
2. YYMMDD - Requested End Date (year, month, day).
3. - If the dates are not specified, the most recent 20 records are returned.

Typical Response Message, Display Format:

<SOH>
I11900
MAR 26, 2006 1:47 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAINTENANCE HISTORY

TYPE	DATE/TIME	DESCRIPTION
LOGOUT	JAN 09, 2006 11:50 AM	J SMITH A12345
SERVICE CODE	JAN 09, 2006 10:27 AM	COLD BOOT SYSTEM 1203
SERVICE CODE	JAN 09, 2006 9:55 AM	INSTALLED PAPER 1211
ALARM ACKNOWLEDGED	JAN 09, 2006 8:52 AM	L12:SENSOR OUT ALARM
ALARM ACKNOWLEDGED	JAN 09, 2006 8:52 AM	L 1:SENSOR OUT ALARM
LOGIN	JAN 09, 2006 8:50 AM	J SMITH A12345
ALARM CLEAR	JAN 08, 2006 7:31 AM	L12:SENSOR OUT ALARM
ALARM CLEAR	JAN 08, 2006 7:30 AM	L 1:SENSOR OUT ALARM
ALARM ACTIVE	JAN 08, 2006 6:52 AM	L12:SENSOR OUT ALARM
ALARM ACTIVE	JAN 08, 2006 6:50 AM	L 1:SENSOR OUT ALARM
MTC ERR	JAN 05, 2006 8:30 PM	
ALARM CLEAR	JAN 03, 2006 8:30 AM	L 1:SENSOR OUT ALARM
ALARM ACTIVE	JAN 03, 2006 6:25 AM	L 1:SENSOR OUT ALARM
HISTORY DISABLED	JAN 02, 2006 7:25 PM	
VLLD TEST	JAN 02, 2006 6:25 PM	P 1 0.2 GPH TEST PASS
WPLLD TEST	JAN 02, 2006 3:45 PM	W 1 0.2 GPH TEST PASS
PLLD TEST	JAN 02, 2006 1:45 PM	Q 1 0.2 GPH TEST PASS
TANK TEST	JAN 02, 2006 10:28 AM	T 1 PERIODIC TEST PASS
HISTORY ENABLED	JAN 01, 2006 6:25 AM	

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 119 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i11900YYMMDDHHmmNNNNYYMMDDHHmmttXXXXXXXXYYMMDDHHmmttXXXXXX...
                                           YYMMDDHHmmttXXXXXX&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NNNNN - Number of records to Follow (Decimal)
3. YYMMDDHHmm - Date/time of record
4. tt - Record type (Hex)
 - 01=Maintenance History Enabled
 - 02=Maintenance History Disabled
 - 03=Maintenance Tracker Login
 - 04=Maintenance Tracker Logout
 - 05=Maintenance Tracker Remote Login
 - 06=Maintenance Tracker Remote Logout
 - 07=Maintenance Alarm Active
 - 08=Maintenance Alarm Inactive
 - 09=Maintenance Alarm Acknowledge
 - 0A=Maintenance Alarm Remote Acknowledge
 - 0B=Service Code
 - 0C=Tank Test, 0.20 Gal/Hr Fullest Monthly
 - 0D=PLLD Test, 0.20 Gal/Hr Latest Monthly
 - 0E=WPLLD Test, 0.20 Gal/Hr Latest Monthly
 - 0F=MT Comm Card Removed
 - 10=VLLD Test, 0.20 Gal/Hr Latest Monthly
5. XXXXXX - Six digit data field:
 - 000000= place filler (unused) for types 01, 02
 - iiiiii= login ID code for types 03, 04, 05, 06 (ASCII, padded with leading zeros)
 - ddttnn= Alarm device #, type, and alarm number for types 07, 08, 09, 0A (Decimal)
 - 00cccc= Four digit service code for type 0B (Decimal, padded with leading zeros)
 - 0000tt= Device # for types 0C, 0D, 0E (Decimal, padded with leading zeros)
 - 000000= Place filler (unused) for type 0F
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 11A
Function Type: Service Report History

Version 27

Command Format:
Display: <SOH>I11A00
Computer: <SOH>i11A00

Typical Response Message, Display Format:

<SOH>
I11A00
MAR 26, 2006 1:47 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

SERVICE REPORT

DATE/TIME		LABEL	ID	LABEL	CODE
MAR 29, 2006	8:50 AM	J DOE	A12345	INSTALLED PAPER	1211
MAR 28, 2006	8:50 AM	D SMITH	A34822	CLEARED PAPER JAM	0204
FEB 26, 2006	8:15 AM	D SMITH	A34822	RECONNECT PHONE LN	0503
JAN 25, 2006	2:20 PM	D SMITH	A34822	REPLACED PROBE	0304
JAN 23, 2006	1:48 PM	D SMITH	A34822	FIX STUCK FLOAT	0305

<ETX>

Typical Response Message, Computer Format:

<SOH>i11A00YYMMDDHHmmNNYYMMDDHHmmiiiiiiicccc...
YYMMDDHHmmiiiiiiicccc&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Records to follow (Decimal)
3. YYMMDDHHmm - Date and Time of entry
4. iiii - Service ID entered by Service Contractor (6 alpha/numeric)
5. cccc - Service Code entered by Service Contractor (4 numeric)
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 11B

Version 28

Function Type: Service Notice Session Report

Command Format:

Display: <SOH>I11B00

Computer: <SOH>i11B00

Typical Response Message, Display Format:

```
<SOH>
I11B00
APR 10, 2007  3:05 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

SERVICE NOTICE SESSION REPORT

START TIME          END TIME
APR 10, 2007  8:00 AM    IN PROGRESS
APR  9, 2007  8:10 AM    APR  9, 2007  9:10 AM
APR  8, 2007  8:05 AM    APR  8, 2007  8:45 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11B00YYMMDDHHmmfYYMMDDHHmmNNYYMMDDHHmmYYMMDDHHmm...
      YYMMDDHHmmYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Service Notice Session Enable
0 = Disabled
1 = Enabled
3. YYMMDDHHmm - Start Date and Time
- if Service Notice Session Enable = 0 (Disabled) then
Start Date/Time is invalid
- if Service Notice Session Enable = 1 (Enabled) then Start
Date/Time is valid
4. NN - Number of Service Notice Session Start/End records to follow
(Hex)
5. YYMMDDHHmm - Start Date and Time
6. YYMMDDHHmm - End Date and Time
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.2.2 IN-TANK REPORTS

Function Code: 201

Version 1

Function Type: In-Tank Inventory Report

Command Format:

Display: <SOH>I201TT

Computer: <SOH>i201TT

Typical Response Message, Display Format:

<SOH>
I201TT
JAN 22, 1996 3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

TANK	PRODUCT	VOLUME	TC	VOLUME	ULLAGE	HEIGHT	WATER	TEMP
1	REGULAR UNLEADED	5329		5413	4699	48.97	0.00	37.39

<ETX>

Typical Response Message, Computer Format:

<SOH>i201TTYMMDDHHmmTTpssssNNFFFFFFFF...
TTpssssNNFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
 - Bit 1 - (LSB) Delivery in Progress
 - Bit 2 - Leak Test in Progress
 - Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only)
 - Bit 4-16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
 1. Volume
 2. TC Volume
 3. Ullage
 4. Height
 5. Water
 6. Temperature
 7. Water Volume
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 202
Function Type: In-Tank Delivery Report

Version 1

Command Format:
Display: <SOH>I202TT
Computer: <SOH>i202TT

Typical Response Message, Display Format:

```
<SOH>
I202TT
JUL 29, 1997  9:02 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

DELIVERY REPORT

T 1:REGULAR UNLEADED
INCREASE   DATE / TIME                GALLONS TC GALLONS WATER  TEMP DEG F  HEIGHT

      END: JUL 28, 1997  3:14 PM        3231        3194  0.00        76.14   48.27
      START: JUL 28, 1997  3:05 PM        1244        1231  0.00        73.89   24.40
      AMOUNT:                1987        1963

      END: JUL 25, 1997  2:48 PM        4460        4414  0.00        74.56   63.06
      START: JUL 25, 1997  2:37 PM        1157        1146  0.00        72.85   23.22
      AMOUNT:                3303        3268
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i202TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
                                TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Volume
 2. Starting TC Volume
 3. Starting Water
 4. Starting Temp
 5. Ending Volume
 6. Ending TC Volume
 7. Ending Water
 8. Ending Temp
 9. Starting Height
 10. Ending Height
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 203

Version 1

Function Type: In-Tank Leak Detect Report

Command Format:

Display: <SOH>I203TT

Computer: <SOH>i203TT

Typical Response Message, Display Format:

```
<SOH>
I203TT
JAN 22, 1996  3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

TANK 1      REGULAR UNLEADED
TEST STATUS: OFF    0.2 GAL/HR TEST PASS
TEST START TIME: OCT 22, 1991 10:30 PM          DURATION:  7 HOURS
START TEMP: 58.7 DEG F      START VOLUME:  2123 GALLONS
ENDING TEMP: 58.1 DEG F      LEAK RATE:  -0.01 GALLONS/HR
CUMULATIVE PERIODIC VOLUME CHANGE (GALLONS):
-0.01  -0.02  -0.01  -0.03  -0.05  -0.04
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i203TTYMMDDHHmmTTpYYMMDDHHmmHHNNFFFFFFFF...
TTpYYMMDDHHmmHHNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. YYMMDDHHmm - Starting Date/Time
5. HH - Test Duration (hours)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Temp
 2. Ending Temp
 3. Starting Volume
 4. Ending Rate
 5. Hourly changes up to the number of fields
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 204

Version 1

Function Type: In-Tank Shift Inventory Report

Command Format:

Display: <SOH>I204TT

Computer: <SOH>i204TT

Typical Response Message, Display Format:

```
<SOH>
I204TT
JAN 22, 1996  3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

TANK PRODUCT
 1 REGULAR UNLEADED      VOLUME TC VOLUME  ULLAGE  HEIGHT  WATER  TEMP
SHIFT 1 STARTING VALUES    8518      8492    1482   76.26   0.00  64.57
      ENDING VALUES      8518      8492    1482   76.26   0.00  64.57
      DELIVERY VALUE           0
      TOTALS                   0
SHIFT 2 STARTING VALUES    8518      8492    1482   76.26   0.00  64.57
      ENDING VALUES      8518      8492    1482   76.26   0.00  64.57
      DELIVERY VALUE           0
      TOTALS                   0

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i204TTYMMDDHHmmTTpssNNFFFFFFFFF...
      TTpssNNFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ss - Shift Number 01, 02, 03
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
 1. Start Volume
 2. Start Ullage
 3. Start TC Volume
 4. Start Height
 5. Start Water
 6. Start Temperature
 7. End Volume
 8. End Ullage
 9. End TC Volume
 - A. End Height
 - B. End Water
 - C. End Temperature
 - D. Total Value
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 205

Version 1

Function Type: In-Tank Status Report

Command Format:

Display: <SOH>I205TT

Computer: <SOH>i205TT

Typical Response Message, Display Format:

```
<SOH>
I205TT
JAN 22, 1996  3:07 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

TANK	PRODUCT	STATUS
------	---------	--------

1	REGULAR UNLEADED	NORMAL
---	------------------	--------

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i205TTYMMDDHHmmTTnnNN...
                                TTnnNN&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. nn - Number of alarms active for tank (Hex, 00=none)
4. NN - Alarm Type Number:
See explanation for "NN" when "AA" is 02 in Function i10100
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 206

Version 1

Function Type: In-Tank Alarm History Report

Command Format:

Display: <SOH>I206TT

Computer: <SOH>i206TT

Typical Response Message, Display Format:

```
<SOH>
I206TT
JAN 22, 1996  3:07 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

TANK ALARM HISTORY

TANK 1  REGULAR UNLEADED

      LOW PRODUCT ALARM          DEC 22, 1995  3:31 PM
                                   DEC 19, 1995 10:05 AM

      INVALID FUEL LEVEL         DEC 20, 1995 11:59 AM
                                   DEC 20, 1995 11:58 AM
                                   DEC 20, 1995 11:57 AM

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i206TTYMMDDHHmmTTnnYYMMDDHHmmaaaa...
                                   TTnnYYMMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. nn - Number of alarms in history for tank (Decimal, 00=none)
4. YYMMDDHHmm - Date and time alarm occurred

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 206 Notes: (Continued)

- 5. aaaa - Type of alarm:
 - 0001=Tank Setup Data Warning
 - 0002=Tank Leak Alarm
 - 0003=Tank High Water Alarm
 - 0004=Tank Overfill Alarm
 - 0005=Tank Low Product Alarm
 - 0006=Tank Sudden Loss Alarm
 - 0007=Tank High Product Alarm
 - 0008=Tank Invalid Fuel Level Alarm
 - 0009=Tank Probe Out Alarm
 - 000A=Tank High Water Warning
 - 000B=Tank Delivery Needed Warning
 - 000C=Tank Maximum Product Alarm
 - 000D=Tank Gross Leak Test Fail Alarm
 - 000E=Tank Periodic Leak Test Fail Alarm
 - 000F=Tank Annual Leak Test Fail Alarm
 - 0010=Tank Periodic Test Needed Warning
 - 0011=Tank Annual Test Needed Warning
 - 0012=Tank Periodic Test Needed Alarm
 - 0013=Tank Annual Test Needed Alarm
 - 0014=Tank Leak Test Active
 - 0015=Tank No CSLD Idle Time Warning
 - 0016=Tank Siphon Break Active Warning
 - 0017=Tank CSLD Rate Increase Warning
 - 0018=Tank AccuChart Calibration Warning
 - 0019=Tank HRM Reconciliation Warning
 - 001A=Tank HRM Reconciliation Alarm
 - 001B=Tank Cold Temperature Warning
 - 001C=Tank Missing Delivery Ticket Warning
 - 001D=Tank/Line Gross Leak Alarm
- 6. && - Data Termination Flag
- 7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 207

Version 2

Function Type: In-Tank Leak Test History Report

Command Format:

Display: <SOH>I207TT

Computer: <SOH>i207TT

Typical Response Message, Display Format:

<SOH>
I207TT
JUL 29, 1997 9:02 AM
TANK LEAK TEST HISTORY

T 1:REGULAR UNLEADED

LAST GROSS TEST PASSED:

TEST START TIME	HOURS	VOLUME	% VOLUME	TEST TYPE
JUL 29, 1997 6:02 AM		2821	48.9	STANDARD

LAST ANNUAL TEST PASSED:

NO TEST PASSED

FULLEST ANNUAL TEST PASS

NO TEST PASSED

LAST PERIODIC TEST PASS:

TEST START TIME	HOURS	VOLUME	% VOLUME	TEST TYPE
JUL 29, 1997 4:15 AM	27	2680	46.4	CSLD

FULLEST PERIODIC TEST
PASSED EACH MONTH:

TEST START TIME	HOURS	VOLUME	% VOLUME	TEST TYPE
JUL 20, 1997 1:52 AM	25	2916	50.5	CSLD

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 207 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i207TTYMMDDHHmmTTNNRRnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppp...  
TTNNRRnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppp&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Leak History Reports to Follow (Hex)
4. RR - Leak Report Type:
 - 00=Last Test Passed
 - 01=Fulllest Test Passed
 - 02=Fulllest Periodic Monthly Test Passed
5. nn - Leak History Number (1-12) for first Monthly Tests Passed
6. tt - In-Tank Leak Test Type:
 - 00=0.20 gal/hr test
 - 01=0.10 gal/hr test
 - 02=Gross (3 gal/hr)test
7. YYMMDDHHmm - In-Tank Leak Test Start Time
8. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
9. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
10. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 208

Version 2

Function Type: In-Tank Leak Test Results Report

Command Format:

Display: <SOH>I208TT

Computer: <SOH>i208TT

Typical Response Message, Display Format:

```
<SOH>
I208TT
JAN 22, 1996  3:07 PM
```

PREVIOUS IN TANK LEAK TEST RESULTS

```
TANK 1      REGULAR UNLEADED
TEST TYPE   START TIME      RESULT      RATE  HOURS  VOLUME
ANNUAL      NOV 21, 1995    8:34 AM    PASSED    0.00   12    9088
PERIODIC    NOV 21, 1995    8:34 AM    PASSED    0.00   12    9088
GROSS       NOV 24, 1995    8:04 AM    PASSED    0.00           9088
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i208TTYMMDDHHmmTTNNttmmYYMMDDHHmmRRrrrrrrrrhVvvvvvvv...
                                     TTNNttmmYYMMDDHHmmRRrrrrrrrrhVvvvvvvv&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Results to Follow (Hex)
4. tt - In-Tank Leak Test Result Type:
 - 00=0.20 gal/hr Test
 - 01=0.10 gal/hr Test
 - 02=Gross (3 gal/hr) Test
5. mm - In-Tank Leak Manifold Status:
 - 00=Tank Not Manifoldered During Leak Test
 - 01=Tank Manifoldered During Leak Test
6. YMMDDHHmm - Previous In-Tank Leak Test Start Time
7. RR - Previous In-Tank Leak Test Result:
 - 00=Test Invalid
 - 01=Test Passed
 - 02=Test Failed
8. rrrrrrrr - Test Rate (ASCII Hex IEEE float)
9. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
10. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 20A

Version 110

Function Type: HRM Adjusted Delivery Report

Command Format:

Display: <SOH>I20ATT

Computer: <SOH>i20ATT

Typical Response Message, Display Format:

```
<SOH>
I20ATT
JAN 22, 1996  3:08 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

ADJUSTED DELIVERY REPORT

T 1:REGULAR UNLEADED

INCREASE	DATE/TIME	INCREASE VOLUME	INCREASE TC VOLUME	ADJUSTMENT	DELIVERY VOLUME	DELIVERY TC VOLUME
JAN 13, 1996	2:06 AM	3795	3859	8	3803	3868
JAN 15, 1996	1:07 PM	5383	5458	30	5413	5487
JAN 17, 1996	3:13 AM	6012	6114	-1	6010	6113
JAN 19, 1996	3:22 AM	4413	4480	-3	4409	4473
JAN 21, 1996	2:52 AM	6005	6112	6	6011	6119

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i20A00YYMMDDHHmmTTpPPrrYYMMDDHHmmNNFFFFFFFFF...
TTpPPrrYYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type
5. rr - Number of Records to follow (Decimal)
6. YYMMDDHHmm - Date/Time of Delivery Start
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Increase Volume
 2. Increase Temp Comp Volume
 3. Adjustment factor
 4. Adjusted Increase Value
 5. Adjusted Temp Comp Volume
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 20B

Version 110

Function Type: BIR Adjusted Delivery Report

Command Format:

Display: <SOH>I20BTT

Computer: <SOH>i20BTT

Typical Response Message, Display Format:

<SOH>
I20BTT
JAN 22, 1996 3:08 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

BIR ADJUSTED DELIVERY REPORT

T 1:REGULAR UNLEADED

DELIVERY START	DATE	DELIVERY END	DATE	START VOLUME	END VOLUME	ADJ DELIV	ADJ TC DELIV
JAN 21, 1996	2:52 AM	JAN 21, 1996	3:12 AM	3193	9197	6011	6119
JAN 19, 1996	3:22 AM	JAN 19, 1996	3:40 AM	4193	8602	4409	4473
JAN 17, 1996	3:13 AM	JAN 17, 1996	3:40 AM	2739	8749	6010	6113

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 20B Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i20BTTYMMDDHHmmTTddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
TTddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. dd - Number of Deliveries to follow
4. YYMMDDHHmm - Starting Date/Time
5. YYMMDDHHmm - Ending Date/Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Volume
 2. Ending Volume
 3. Adjusted Delivery Volume
 4. Adjusted Temperature Compensated Delivery Volume
 5. Starting Fuel Height
 6. Starting Fuel Temperature 1
 7. Starting Fuel Temperature 2
 8. Starting Fuel Temperature 3
 9. Starting Fuel Temperature 4
 10. Starting Fuel Temperature 5
 11. Starting Fuel Temperature 6
 12. Ending Fuel Height
 13. Ending Fuel Temperature 1
 14. Ending Fuel Temperature 2
 15. Ending Fuel Temperature 3
 16. Ending Fuel Temperature 4
 17. Ending Fuel Temperature 5
 18. Ending Fuel Temperature 6
 19. Total Dispensed During Delivery
 20. Starting Fuel Temperature Average
 21. Ending Fuel Temperature Average
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 20C

Version 15

Function Type: In-Tank Most Recent Delivery Report

Command Format:

Display: <SOH>I20CTT

Computer: <SOH>i20CTT

Typical Response Message, Display Format:

```
<SOH>
I20CTT
JUL 29, 1997  9:03 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

LAST DELIVERY REPORT

T 1:REGULAR UNLEADED
INCREASE   DATE / TIME                GALLONS TC GALLONS WATER  TEMP DEG F  HEIGHT
      END: JUL 28, 1997  3:14 PM        3231      3194  0.00        76.14   48.27
      START: JUL 28, 1997  3:05 PM        1244      1231  0.00        73.89   24.40
      AMOUNT:                1987      1963
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i20CTTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
      TTpddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Volume
 2. Starting TC Volume
 3. Starting Water
 4. Starting Temp
 5. Ending Volume
 6. Ending TC Volume
 7. Ending Water
 8. Ending Temp
 9. Starting Height
 10. Ending Height
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 20D

Version 15

Function Type: In-Tank Stick Height Report

Command Format:

Display: <SOH>I20DTT

Computer: <SOH>i20DTT

Notes:

1. This command will respond only if stick height is enabled. Tank stick height is fuel height (without tilt) + stick offset. If the stick height is less than zero, it will be set to zero. If the stick height is greater than tank diameter, it will be set to tank diameter.

Typical Response Message, Display Format:

```
<SOH>
I20DTT
OCT 15, 1996  4:29 PM

TANK STICK HEIGHT

TANK  PRODUCT LABEL      INCHES
  1   REGULAR             25.0
  2   MIDGRADE            67.5
  3   SUPER               66.1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i20DTTYMMDDHHmmTTFFFFFFFF...
                        TFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Stick Height (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 211
Function Type: Tank Chart Report

Version 14

Command Format:
Display: <SOH>I211TThhhhhh
Computer: <SOH>i211TFFFFFFF

Notes:

1. TT - Tank number, 00=All tanks
2. hhhhh - height step size (inches or millimeters). Up to 6 decimal digits. If less than 6 digits are entered, use carriage return to terminate the command.
3. FFFFFFFF - height step size (ASCII Hex IEEE float)

Minimum Step Size: 0.010 inches or 0.397 millimeter

Minimum Resolution: 3 decimal places

Typical Response Message, Display Format:

```
<SOH>
I21101
OCT 15, 1996  4:29 PM

STATION HEADER 1....          TANK 1
STATION HEADER 2....          TANK CALIBRATION CHART
STATION HEADER 3....          REGULAR UNLEADED
STATION HEADER 4....          10028 GALLONS
                                96.00 INCHES
```

DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS
0.000	0	26.000	2413	52.000	5827	78.100	9021
0.500	69	26.500	2474	52.500	5894	78.500	9073
1.000	90	27.000	2535	53.000	5961	79.000	9123
1.500	114	27.500	2596	53.500	6028	79.500	9173
:							
:							

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i211TTYMMDDHHmmTTnnnnaaaaaaaaAAAAAAAAAbbbbBBBBBBBBBB...
TTnnnnaaaaaaaaAAAAAAAAAbbbbBBBBBBBBBB&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. nnnn - Number of eight character Data Fields to follow (Hex)
4. aaaaaaaaa - Height 1 (ASCII Hex IEEE float)
5. AAAAAAAA - Volume 1 (ASCII Hex IEEE float)
6. bbbbbbbbb - Height 2 (ASCII Hex IEEE float)
7. BBBBBBBBB - Volume 2 (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 212

Version 24

Function Type: In-Tank Leak Test History Report 2

Command Format:

Display: <SOH>I212TT

Computer: <SOH>i212TT

Typical Response Message, Display Format:

```
<SOH>
I212TT
JUL 29, 1997  9:02 AM
TANK LEAK TEST HISTORY

T 1:REGULAR UNLEADED

LAST GROSS TEST PASSED:
TEST START TIME          HOURS    VOLUME    % VOLUME    TEST TYPE
JUL 29, 1997  6:02 AM      2821      48.9      STANDARD

LAST ANNUAL TEST PASSED:

NO TEST PASSED

FULLEST ANNUAL TEST PASS

NO TEST PASSED

LAST PERIODIC TEST PASS:
TEST START TIME          HOURS    VOLUME    % VOLUME    TEST TYPE
JUL 29, 1997  4:15 AM      27       2680      46.4      CSLD

FULLEST PERIODIC TEST
PASSED EACH MONTH:

TEST START TIME          HOURS    VOLUME    % VOLUME    TEST TYPE
JUL 20, 1997  1:52 AM      25       2916      50.5      CSLD
<ETX>
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 212 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i212TTYMMDDHHmmTTNNRRnnnttYYMMDDHHmm
      hhhhhhhhVVVVVVVVppppppppzzmmmmmmmm...
      TTNNRRnnnttYYMMDDHHmm
      hhhhhhhhVVVVVVVVppppppppzzmmmmmmmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Leak History Reports to Follow (Hex)
4. RR - Leak Report Type:
 - 00=Last Test Passed
 - 01=Fulllest Test Passed
 - 02=Fulllest Periodic Monthly Test Passed
5. nn - Leak History Number (1-12) for first Monthly Tests Passed
6. tt - In-Tank Leak Test Type:
 - 00=0.20 gal/hr test
 - 01=0.10 gal/hr test
 - 02=Gross (3 gal/hr) test
7. YYMMDDHHmm - In-Tank Leak Test Start Time
8. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
9. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
10. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
11. zz - Number of 8 Byte Fields to Follow (Hex)
12. mmmmmmmm - In-Tank Leak Test Method (Hex)
 - 00000000=Standard
 - 00000001=CSLD
13. && - Data Termination Flag
14. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 213

Version 26

Function Type: In-Tank Extended Standard Delivery Report

Command Format:

Display: <SOH>I213TTnn

Computer: <SOH>i213TTnn

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. nn - Number of most recent deliveries (Decimal)

Typical Response Message, Display Format:

<SOH>
I213TTnn
JUL 29, 1997 9:02 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

DELIVERY REPORT

T 1:REGULAR UNLEADED
INCREASE DATE / TIME

GALLONS TC GALLONS WATER TEMP DEG F HEIGHT

END:	JUL 28, 1997	3:14 PM	3231	3194	0.00	76.14	48.27
START:	JUL 28, 1997	3:05 PM	1244	1231	0.00	73.89	24.40
AMOUNT:			1987	1963			

END:	JUL 25, 1997	2:48 PM	4460	4414	0.00	74.56	63.06
START:	JUL 25, 1997	2:37 PM	1157	1146	0.00	72.85	23.22
AMOUNT:			3303	3268			

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 213 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i213TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (single ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
 1. Starting Volume
 2. Starting TC Volume
 3. Starting Water
 4. Starting Temp
 5. Ending Volume
 6. Ending TC Volume
 7. Ending Water
 8. Ending Temp
 9. Starting Height
 10. Ending Height
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 214

Version 26

Function Type: In-Tank Mass/Density Inventory Report

Command Format:

Display: <SOH>I214TT

Computer: <SOH>i214TT

Typical Response Message, Display Format:

```
<SOH>
I214TT
JUL 22, 1996  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

IN-TANK MASS/DENSITY INVENTORY

TANK	PRODUCT	VOLUME	MASS	DENSITY	HEIGHT	WATER	TEMP
1	REGULAR UNLEADED	5329	20357	5.9987	48.97	0.00	37.39

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i214TTYMMDDHHmmTTpssssNNFFFFFFFF...
                                TTpssssNNFFFFFFFF...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (single ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
 - Bit 1=(LSB) Delivery in Progress
 - Bit 2=Leak Test in Progress
 - Bit 3=Invalid Fuel Height Alarm (MAG Probes Only)
 - Bit 4-16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE float:
 1. Volume
 2. Mass
 3. Density
 4. Height
 5. Water
 6. Temperature
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 215

Version 26

Function Type: In-Tank Mass/Density Delivery Report

Command Format:

Display: <SOH>I215TT

Computer: <SOH>i215TT

Typical Response Message, Display Format:

```
<SOH>
I215TT
JUL 29, 1997  9:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

MASS/DENSITY DELIVERY REPORT

T 1:REGULAR UNLEADED

INCREASE	DATE / TIME	GALLONS	MASS	DENSITY	WATER	TEMP	HEIGHT
END:	JUL 28, 1997 3:14 PM	3231	19380	5.9983	0.00	76.14	48.27
START:	JUL 28, 1997 3:05 PM	1244	7461	5.9983	0.00	73.89	24.40
AMOUNT:		1987	11918				

END:	JUL 25, 1997 2:48 PM	4460	26754	5.9987	0.00	74.56	63.06
START:	JUL 25, 1997 2:37 PM	1157	6940	5.9987	0.00	72.85	23.22
AMOUNT:		3303	19813*				

<ETX>

Note: asterisk (*) indicates default density.

Typical Response Message, Computer Format:

```
<SOH>i215TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFf...
TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFf...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (single ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00=no data)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
 1. Starting Volume
 2. Starting Mass
 3. Starting Density
 4. Starting Water
 5. Starting Temp
 6. Ending Volume
 7. Ending Mass
 8. Ending Density
 9. Ending Water
 10. Ending Temp
 11. Starting Height
 12. Ending Height
9. f - Default Density Flag (0=new value, 1=default)
10. && - Data Termination Flag
11. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 216

Version 26

Function Type: Tank 50 Point Heights, Volumes and Slope Report

Command Format:

Display: <SOH>I216TT

Computer: <SOH>i216TT

Typical Response Message, Display Format:

```
<SOH>
I216TT
SEP 16, 2004  3:15 PM

TANK 50 POINT HEIGHTS, VOLUMES AND SLOPES

T 1: REGULAR UNLEADED

      DIAMETER      FULL VOLUME      SLOPE
      96.00          10000          104.17

PAIR    HEIGHT      VOLUME      SLOPE
  1      94.08          9800          104.17
  2      92.16          9600          104.17
  3      90.24          9400          104.17
  4      88.32          9200          104.17
  5      86.44          9000          104.17
      :
      :
  45      9.60          1000          104.17
  46      7.68           800          104.17
  47      5.76           600          104.17
  48      3.84           400          104.17
  49      1.92           200          104.17
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i216TTYMMDDHHmmTTdddddddddffffffffffssssssssnn
      HHHHHHHHVVVVVVVVSSSSSSSS...
      HHHHHHHHVVVVVVVVSSSSSSSS...
      TTdddddddddffffffffffssssssssnn
      HHHHHHHHVVVVVVVVSSSSSSSS...
      HHHHHHHHVVVVVVVVSSSSSSSS&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. dddddddd - Tank Diameter, Inches (ASCII Hex IEEE float)
4. ffffffff - Full Volume, Gallons (ASCII Hex IEEE float)
5. ssssssss - Slope, Gallons per Inch (ASCII Hex IEEE float)
6. nn - Number of Height/Volume Pairs to Follow (Hex).
7. HHHHHHHH - Height, Inches (ASCII Hex IEEE float)
8. VVVVVVVV - Volume, Gallons (ASCII Hex IEEE float)
9. SSSSSSSS - Slope, Gallons per Inch (ASCII Hex IEEE float)
10. && - Data Termination Flag
11. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 217
Function Type: Tank Profile

Version 26

Command Format:
Display: <SOH>I217TT
Computer: <SOH>i217TT

Typical Response Message, Display Format:

```
<SOH>
I217TT
SEP 16, 2004  3:15 PM
```

TANK PROFILE

```
T 1: REGULAR UNLEADED
TANK  PRODUCT LABEL      PROFILE
  1    REGULAR UNLEADED    1 PT
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i217TTYMMDDHHmmTTpp...TTpp&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. pp - Tank Profile Selected (Hex)
 - 00= 1 Pt
 - 01= 4 Pts
 - 02=20 Pts
 - 03=Linear
 - 04=50 Pts
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 218
Function Type: Tank Chart Audit Trail

Version 26

```

Command Format:
    Display: <SOH>I218TT
    Computer: <SOH>i218TT

```

Notes:

1. Returns the times of the last 10 tank chart modifications, most recent first

Typical Response Message, Display Format:

```
<SOH>
I218TT
JUL 29, 1997    9:02 AM

TANK CHART AUDIT TRAIL
T 1: REGULAR UNLEADED
TANK CAPACITY      : 1000
CONSOLE SERIAL NUMBER:
  XXXXXXXXXXXXXXXXXXXX
  PROBE S/N          : YYYYYY
WEIGHTS AND MEASURES:
  ZZZZZZZZZZZZZZZZZZZZ

DATE/TIME
SEP 10, 2004    4:33 PM
SEP 09, 2004    3:25 PM
SEP 08, 2004    11:10 AM
SEP 02, 2004    5:30 PM
SEP 01, 2004    3:28 PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i218TTYMMDDHHmmTTccccccccxxxxxxxxxxxxxxxxxxxxxxxxxyyyyyyzzzzzzzzzzzzzzzzzzzzzzzzzzzzzz
nnnyymmdddhmm...yymmdddhmm...
TTccccccccxxxxxxxxxxxxxxxxxxxxxxxxxyyyyyyzzzzzzzzzzzzzzzzzzzzzzzzzzzzzz
nnnyymmdddhmm...yymmdddhmm&CCCC<ETX>
```

Notes:

- ```

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. cccccccc - Tank Capacity, Gallons (ASCII Hex IEEE float)
4. x..x - Console Serial Number (20 ASCII characters [20h-7Eh])
5. yyyyyy - Probe Serial Number (Decimal)
6. z..z - Weights and Measures Office (20 ASCII characters [20h-7Eh])
7. nn - Number of Date/Time fields to follow (Decimal)
8. yymmddhhmm - Date and Time of Tank Chart Modification
9. && - Data Termination Flag
10. CCCC - Message Checksum

```

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code:** 219

Version 26

**Function Type:** Tank Chart Security Status

**Command Format:**

**Display:** <SOH>I219TT

**Computer:** <SOH>i219TT

**Typical Response Message, Display Format:**

```
<SOH>
I21900
JUN 22, 2001 3:15 PM
```

```
TANK CHART SECURITY
ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i21900YYMMDDHHmmf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Tank Chart Security Flag  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 21A (like 201)

Version 27

**Function Type:** In-Tank Inventory Report With 90/95% Ullage

**Command Format:**

**Display:** <SOH>I21ATT

**Computer:** <SOH>i21ATT

**Typical Response Message, Display Format:**

```
<SOH>
I21ATT
JAN 22, 2006 3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

TANK	PRODUCT	VOLUME	TC	VOLUME	95% ULLAGE	HEIGHT	WATER	TEMP
1	REGULAR UNLEADED	8904		8904	596	80.00	0.00	60.00

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i21ATTYYMDDHHmmTTpssssNNFFFFFFF...
 TTpssssNNFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
  - Bit 1 - (LSB) Delivery in Progress
  - Bit 2 - Leak Test in Progress
  - Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only)
  - Bit 4 - 16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
  1. Volume
  2. TC Volume
  3. 90/95% Ullage
  4. Height
  5. Water
  6. Temperature
  7. Water Volume
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 21B

Version 26

**Function Type:** BIR Extended Adjusted Delivery Report

**Command Format:**

**Display:** <SOH>I21BTTnn

**Computer:** <SOH>i21BTTnn

**Notes:**

1. TT - Tank Number (Decimal, 00=All)
2. nn - Number of most recent deliveries (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
I21BTTnn  
JAN 22, 1996 3:08 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

BIR ADJUSTED DELIVERY REPORT

T 1:REGULAR UNLEADED

DELIVERY START	DATE	DELIVERY END	DATE	START VOLUME	END VOLUME	ADJ DELIV	ADJ TC DELIV
JAN 21, 1996	2:52 AM	JAN 21, 1996	3:12 AM	3193	9197	6011	6119
JAN 19, 1996	3:22 AM	JAN 19, 1996	3:40 AM	4193	8602	4409	4473
JAN 17, 1996	3:13 AM	JAN 17, 1996	3:40 AM	2739	8749	6010	6113

<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code 21B Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i21BTTYMMDDHHmmTTddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
TTddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. dd - Number of Deliveries to follow
4. YYMMDDHHmm - Starting Date/Time
5. YYMMDDHHmm - Ending Date/Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Starting Volume
  2. Ending Volume
  3. Adjusted Delivery Volume
  4. Adjusted Temperature Compensated Delivery Volume
  5. Starting Fuel Height
  6. Starting Fuel Temperature 1
  7. Starting Fuel Temperature 2
  8. Starting Fuel Temperature 3
  9. Starting Fuel Temperature 4
  10. Starting Fuel Temperature 5
  11. Starting Fuel Temperature 6
  12. Ending Fuel Height
  13. Ending Fuel Temperature 1
  14. Ending Fuel Temperature 2
  15. Ending Fuel Temperature 3
  16. Ending Fuel Temperature 4
  17. Ending Fuel Temperature 5
  18. Ending Fuel Temperature 6
  19. Total Dispensed During Delivery
  20. Starting Fuel Temperature Average
  21. Ending Fuel Temperature Average
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 221**

Version 116

**Function Type:** Ticketed Delivery Report

**Command Format:**

**Display:** <SOH>I221TTtt

**Computer:** <SOH>i221TTtt

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

**Typical Response Message, Display Format:**

```
<SOH>
I221TT
MAR 20, 1998 3:25 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
CURRENT PERIOD TICKETED DELIVERY REPORT
VOLUMES ARE STANDARD
```

```
T 1:REGULAR UNLEADED
```

DELIVERY END DATE	TICKET VOLUME	GAUGE VOLUME	DLVY VAR	BEFORE TMP	AFTER TMP	EST DLVY TMP
MAR 7, 1998 8:26 AM	5901.0	5905.0	-4.0	44.8	42.4	41.0
MAR 9, 1998 11:37 AM	5901.0	5905.0	-4.0	44.6	43.2	42.4
MAR 10, 1998 11:34 PM	4099.0	4094.0	5.0	44.6	42.6	40.5

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i221TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNNNNNNNNN...
TTpPPdddYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 0, no more data  
for this tank will follow
6. YYMMDDHHmm - Ending date/ time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. ticket volume
  2. gauged volume
  3. delivery variance
  4. start fuel temperature
  5. end fuel temperature
  6. estimated delivery temperature
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 222**  
**Function Type:** Bill of Lading Report

Version 23

**Command Format:**  
**Display:** <SOH>S222TTtt  
**Computer:** <SOH>s222TTtt

**Inquire:**  
 <SOH>I222TT  
 <SOH>i222TT

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. tt - Report Type (if tt is not entered current is default)  
 01=current  
 02=previous

### Typical Response Message, Display Format:

```
<SOH>
2220101
JAN 1, 1996 8:00 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

CURRENT PERIOD TICKETED AND BOL DELIVERY REPORT

PROD 1: UNLEADED GASOLINE
```

DELIVERY END DATE	BOL NUMBER	TICKET VOLUME	GAUGE VOLUME	TC GAUGE VOLUME
DEC  2, 1993  2:00 AM	123456	0.0	502.0	0.0
DEC  6, 1993  2:00 AM	123983	7375.0	7369.0	7375.0
DEC 10, 1993  2:00 AM	123902	2799.0	2790.0	2799.0

### Typical Response Message, Computer Format:

```
<SOH>222TTYMMDDHHmmTTpPPdddYYMMDDHHmmAAaa..aaNNFFFFFFFF....FFFFFFFF...
TTpPPdddYYMMDDHHmmAAaa..aaNNFFFFFFFF....FFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 0=all)
3. p - Product Code (Decimal)
4. PP - Probe type (Decimal)
5. ddd - Number of deliveries to follow (Decimal) if 0, no more data  
for this tank will follow
6. YYMMDDHHmm - Ending date/ time
7. AA - Number of ASCII characters to follow (Hex)
8. aa..aa - Bill of Lading Number (ASCII characters [20h-7Eh])
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats:
  1. Ticketed volume
  2. Gauged volume
  3. Gauged TC volume
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 225**

Version 116

**Function Type:** Periodic Delivery Variance Report

**Command Format:**

**Display:** <SOH>I225TTtt

**Computer:** <SOH>i225TTtt

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

**Typical Response Message, Display Format:**

<SOH>  
I225TT  
MAR 20, 1998 3:25 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

CURRENT PERIOD DELIVERY VARIANCE REPORT  
VOLUMES ARE STANDARD

T 1:REGULAR UNLEADED

	TICKET VOLUME	GAUGE VOLUME	VARIANCE
MAR 7, 1998 8:26 AM	5901.0	5905.0	-4.0
MAR 9, 1998 11:37 AM	5901.0	5905.0	-4.0
MAR 10, 1998 11:34 PM	4099.0	4094.0	5.0
MAR 12, 1998 8:27 PM	3800.0	3797.0	3.0
MAR 14, 1998 8:28 AM	5900.0	5899.0	1.0
MAR 16, 1998 11:39 AM	5902.0	5916.0	-14.0
MAR 18, 1998 2:02 PM	5901.0	5900.0	1.0
TOTALS	37404.0	37417.0	-13.0
PERCENT VARIANCE OF SALES	-13.0=-0.0%		
<ETX>			

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code 225 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i225TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFFF...
TTpPPdddYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Numbers (Decimal, 00=all tanks)
3. p - Product Number (Decimal)
4. PP - Probe type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 000, no more data for this tank will follow
6. YYMMDDHHmm - Delivery Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Ticketed volume
  2. Gauged volume
  3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 226**

Version 116

**Function Type:** Weekly Delivery Variance Report

**Command Format:**

**Display:** <SOH>I226TTtt

**Computer:** <SOH>i226TTtt

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

**Typical Response Message, Display Format:**

```
<SOH>
I226TT
MAR 20, 1998 3:25 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

CURRENT WEEK DELIVERY VARIANCE REPORT
VOLUMES ARE STANDARD

T 1:REGULAR UNLEADED

 TICKET GAUGE VARIANCE
 VOLUME VOLUME
MAR 16, 1998 11:39 AM 5902.0 5916.0 -14.0
MAR 18, 1998 2:02 PM 5901.0 5900.0 1.0

TOTALS 11803.0 11816.0 -13.0

PERCENT VARIANCE OF SALES -13.0=-0.1%
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i226TTYMMDDHHmmTTPpPPdddYYMMDDHHmmNNFFFFFFFFF...
 TTPpPPdddYYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Numbers (Decimal, 00=all tanks)
3. p - Product Number (Decimal)
4. PP - Probe type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 0, no more data  
for this tank will follow
6. YYMMDDHHmm - Delivery Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:  
1. Ticketed volume  
2. Gauged volume  
3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 227**

Version 116

**Function Type:** Daily Delivery Variance Report

**Command Format:**

**Display:** <SOH>I227TTMMDD

**Computer:** <SOH>i227TTMMDD

**Notes:**

1. TT - Tank number
2. MMDD - Month and day for Daily Report, if left blank will report current date

**Typical Response Message, Display Format:**

```
<SOH>
I227TT
MAR 20, 1998 3:26 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

DAILY DELIVERY VARIANCE REPORT
VOLUMES ARE STANDARD

T 1:REGULAR UNLEADED

 TICKET GAUGE VARIANCE
 VOLUME VOLUME
MAR 16, 1998 11:39 AM 5902.0 5916.0 -14.0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i227TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNNNNNNNNN...
 TTpPPdddYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 000, no more data for this tank will follow
6. YYMMDDHHmm - Delivery Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
  1. Ticketed volume
  2. Gauged volume
  3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 251**

Version 3

**Function Type:** CSLD Results Report

**Command Format:**

**Display:** <SOH>I251TT

**Computer:** <SOH>i251TT

**Typical Response Message, Display Format:**

```
<SOH>
I251TT
JAN 22, 1996 3:09 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

CSLD TEST RESULTS
TANK PRODUCT RESULT
 1 REGULAR UNLEADED PER: JAN 22, 1996 PASS
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i251TTYMMDDHHmmTTrr...
 TTrr&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. rr - Tank CSLD Results:
  - 01=PASS
  - 02=FAIL
  - 03=NO RESULTS AVAILABLE
  - 04=INVALID (software versions 3 and 4 only)
  - 08=INCR (software versions 5 and above)
  - 09=WARN (software versions 5 and above)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 281  
**Function Type:** Fuel Management Report

Version 3

**Command Format:**  
**Display:** <SOH>I281TT  
**Computer:** <SOH>i281TT

### Typical Response Message, Display Format:

```
<SOH>
I281TT
JAN 22, 1996 3:09 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

FUEL MANAGEMENT REPORT

REGULAR UNLEADED (TANK 1)
 DAYS FUEL REMAINING: 1.8
INVENTORY : 5308 GAL
95% ULLAGE: 4218 GAL
AVERAGE SALES (GALLONS)
SUN MON TUE WED THR FRI SAT
2696 2075 2602 2046 2471 2805 2824
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i281TTYMMDDHHmmPPTTpttp...NNFFFFFFFF...
PPTTpttp...NNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date and Time
2. PP - Number of tank product code pairs to follow (Hex)
3. TTp,ttp - Tank Number (decimal) and Product Code (ASCII character)
4. NN - Number of eight character Data Fields to follow (Hex)
5. FFFFFFFF - ASCII Hex IEEE floats:
  1. Days Supply of Fuel Remaining
  2. Present Inventory
  3. Present 95% Ullage
  4. Average Sales on Sundays
  5. Average Sales on Mondays
  6. Average Sales on Tuesdays
  7. Average Sales on Wednesdays
  8. Average Sales on Thursdays
  9. Average Sales on Fridays
  10. Average Sales on Saturdays
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 282**

Version 19

**Function Type:** FLS Diagnostic: Volume History Table

**Command Format:**

**Display:** <SOH>I282TT

**Computer:** <SOH>i282TT

### Typical Response Message, Display Format:

```
<SOH>
I282TT
JAN 3, 1996 10:07 PM

FLS DIAGNOSTICS: VOLUME TABLE

T 1:UNLEADED GASOLINE
CURRENT INVENTORY VOLUME: 5345
CURRENT INVENTORY TIME: JAN 3, 1996 10:07:22 PM
MOST RECENT STORED: JAN 3, 1996 10:00:22 PM

 1141 1297 1476 1625 1742 1932 2085 2156 2218 2242 2242 2242 2242
 2248 2265 2281 2307 2339 2405 2456 2573 2701 2854 3022 3141 3297
 3476 3625 3742 3932 4085 4156 0 0 4242 4242 4242 4248 4265
 4281 4307 4339 4405 4456 4573 4701 4854 5022 5160 5276 5345 5450
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iXXXXTTYMMDDHHmmTTTTTTTTFFFFYYMMDDHHmmNNNNNNNNFF...
 TTTTTTTTTFFFFYYMMDDHHmmNNNNNNNNFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. FFFFFFFF - Current Inventory Volume (ASCII Hex IEEE float)
4. YYMMDDHHmm - Date and Time of the most recent stored hourly history volume
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
  1. Latest recorded hourly volume
  2. Intermediate hourly recorded volumes
  3. Oldest recorded hourly volume
7. && - Data Termination Flag
8. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 2E2

Version 14

**Function Type:** In-Tank Stored Inventory Report

**Command Format:**

**Display:** <SOH>I2E2TTII

**Computer:** <SOH>i2E2TTII

### Typical Response Message, Display Format:

```
<SOH>
I2E2TT
JAN 22, 1996 3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

JAN 22, 1996 8:00 AM
TANK PRODUCT VOLUME TC VOLUME ULLAGE HEIGHT WATER TEMP
1 REGULAR UNLEADED 5329 5413 4699 48.97 0.00 37.39
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i2E2TTYMMDDHHmmIIYYMMDDHHmmTTpssssNNFFFFFFFFF...
 TtpssssNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date and Time
2. II - Inventory Record Number (Decimal 01, 02, 03, 04)
3. YMMDDHHmm - Date and Time of Recorded Inventory
4. TT - Tank Number (Decimal, 00=all)
5. p - Product Code (one ASCII character [20h-7Eh])
6. ssss - Tank Status Bits:
  - Bit 1 - (LSB) Delivery in Progress
  - Bit 2 - Leak Test in Progress
  - Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only)
  - Bit 4-16 - Unused
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Volume
  - 2. TC Volume
  - 3. Ullage
  - 4. Height
  - 5. Water
  - 6. Temperature
  - 7. Water Volume
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.2.3 SENSOR REPORTS

**Function Code:** 301

Version 1

**Function Type:** Liquid Sensor Status Report

**Command Format:**

**Display:** <SOH>I301SS

**Computer:** <SOH>i301SS

**Typical Response Message, Display Format:**

```
<SOH>
I301SS
JAN 28, 1995 10:10 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

LIQUID STATUS REPORT

SENSOR	LOCATION	STATUS
1	LIQUID # 1	SENSOR NORMAL

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i301SSYYMMDDHHmmSSsssss...
SSsssss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
  - 0000=Sensor Normal
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 302**

Version 1

**Function Type:** Liquid Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I302SS

**Computer:** <SOH>i302SS

**Typical Response Message, Display Format:**

```
<SOH>
I302SS
JAN 28, 1995 10:10 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

LIQUID ALARM HISTORY REPORT

SENSOR LOCATION
 1 LIQUID # 1
 JAN 6, 1995 8:02 AM FUEL ALARM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i302SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
 SSNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 306**

Version 1

**Function Type:** Vapor Sensor Status Report

**Command Format:**

**Display:** <SOH>I306SS

**Computer:** <SOH>i306SS

**Typical Response Message, Display Format:**

```
<SOH>
I306SS
JAN 28, 1995 10:11 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

VAPOR STATUS REPORT

SENSOR	LOCATION	STATUS
1	VAPOR # 1	SENSOR NORMAL

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i306SSYYMMDDHHmmSSssss...
SSssss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
  - 0000=Sensor Normal
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 307

Version 1

**Function Type:** Vapor Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I307SS

**Computer:** <SOH>i307SS

**Typical Response Message, Display Format:**

```
<SOH>
I307SS
JAN 28, 1995 10:11 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

VAPOR ALARM HISTORY REPORT

SENSOR LOCATION
 1 VAPOR # 1
 JAN 6, 1995 8:02 AM WATER ALARM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i307SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
 SSNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 311**

Version 1

**Function Type:** Groundwater Sensor Status Report

**Command Format:**

**Display:** <SOH>I311SS

**Computer:** <SOH>i311SS

**Typical Response Message, Display Format:**

```
<SOH>
I311SS
JAN 28, 1995 10:11 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

GROUNDWATER STATUS REPORT

SENSOR	LOCATION	STATUS
1	GROUND WATER # 1	SENSOR NORMAL

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i311SSYYMMDDHHmmSSssss...
SSssss&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
  - 0000=Sensor Normal
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 312**

Version 1

**Function Type:** Groundwater Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I312SS

**Computer:** <SOH>i312SS

**Typical Response Message, Display Format:**

```
<SOH>
I312SS
JAN 28, 1995 10:11 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

GROUNDWATER ALARM HISTORY REPORT

SENSOR LOCATION
 1 GROUND WATER # 1
 JAN 6, 1995 8:02 AM OPEN ALARM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i312SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
 SSNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 315**

Version 24

**Function Type:** Smart Sensor Status Report

**Command Format:**

**Display:** <SOH>I315SS

**Computer:** <SOH>i315SS

**Typical Response Message, Display Format:**

```
<SOH>
I315SS
JAN 22, 2003 3:07 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

SMART SENSOR STATUS REPORT

SENSOR LOCATION STATUS

 1 SUMP 1 SENSOR NORMAL
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i315SSYYMMDDHHmmSSsssss...
 SSsssss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. ssss - Sensor status value:
  - 0000=Smart Sensor Normal
  - 0001=Smart Sensor Setup Data Warning
  - 0002=Smart Sensor Communication Alarm
  - 0003=Smart Sensor Fault Alarm
  - 0004=Smart Sensor Fuel Warning
  - 0005=Smart Sensor Fuel Alarm
  - 0006=Smart Sensor Water Warning
  - 0007=Smart Sensor Water Alarm
  - 0008=Smart Sensor High Liquid Warning
  - 0009=Smart Sensor High Liquid Alarm
  - 0010=Smart Sensor Low Liquid Warning
  - 0011=Smart Sensor Low Liquid Alarm
  - 0012=Smart Sensor Temperature Warning
  - 0013=Smart Sensor Relay Active
  - 0014=Smart Sensor Install Alarm
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 316**

Version 24

**Function Type:** Smart Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I316SS

**Computer:** <SOH>i316SS

**Typical Response Message, Display Format:**

```
<SOH>
I316SS
JAN 22, 2003 3:07 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

SMART SENSOR ALARM HISTORY REPORT

SENSOR LOCATION
 1 T1 SUMP
 JUN 23, 2003 2:12 PM WATER WARNING
 JUN 23, 2003 2:12 PM WATER ALARM
 JUN 23, 2003 2:12 PM FUEL ALARM

<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i316SSYYMDDHHmmSSnnYYMDDHHmmaaaa...
 SSnnYYMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. nn - Number of alarms incidents to follow (Decimal, 00=none)
4. YYMDDHHmm - Date and time alarm occurred
5. aaaa - Alarm type number:
  - 0001=Smart Sensor Setup Data Warning
  - 0002=Smart Sensor Communication Alarm
  - 0003=Smart Sensor Fault Alarm
  - 0004=Smart Sensor Fuel Warning
  - 0005=Smart Sensor Fuel Alarm
  - 0006=Smart Sensor Water Warning
  - 0007=Smart Sensor Water Alarm
  - 0008=Smart Sensor High Liquid Warning
  - 0009=Smart Sensor High Liquid Alarm
  - 0010=Smart Sensor Low Liquid Warning
  - 0011=Smart Sensor Low Liquid Alarm
  - 0012=Smart Sensor Temperature Warning
  - 0013=Smart Sensor Relay Active
  - 0014=Smart Sensor Install Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 317

Version 26

**Function Type:** Mag Sump Leak Test In Progress/Last Test Report

**Command Format:**

**Display:** <SOH>I317ss

**Computer:** <SOH>i317ss

**Typical Response Message, Display Format:**

```
<SOH>
I317ss
FEB 19, 2005 9:55 AM

MAG SUMP LEAK TEST
IN PROGRESS

s 1:SUMP NUMBER 1

STATUS:MEASURING HEIGHT
START TIME:
 FEB 19, 2005 9:43 AM
START HT: 20.971 IN.
START TEMP: 76.1 F
CURRENT HT: 20.971 IN.
CURRENT TEMP: 76.1 F
DURATION: 12 MINS
TEMP RATE: 6.0 F/HR
LEAK RATE: 0.0000 IN./HR
<ETX>
```

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code 317 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i3l7ssYMMDDHHmmsssttccYMMDDHHmmNNHHHHHHHTTTTTTTThhhhhhhtttttttddddd
RRrrrrrrrrrrrrrrrrrrrrrLLllllllll...
ssttccYMMDDHHmmNNHHHHHHHTTTTTTTThhhhhhhtttttttddddd
RRrrrrrrrrrrrrrrrrrrrrrLLllllllll&&CCCC<ETX>
```

**Notes:**

- ```

1.      YYMMDDHHmm - Current Date and Time
2.      ss - Smart Sensor Number (Decimal, 00=all)
3.      tt - Mag Sump Leak Test Status
           00=NO TEST DATA AVAILABLE
           01=LEAK TEST ABORTED
           02=FILL SUMP
           03=MEASURING HEIGHT
           04=LEAK TEST PASSED
4.      cc - Abort Reason Code
           00=NOT ABORTED
           01=MAG SENS ALM/WARN
           02=WATER TOO LOW
           03=WATER TOO HIGH
           04=TEMP TOO LOW
           05=TEMP TOO HIGH
           06=WATER INCREASED
           07=WATER DECREASED
           08=INSUFFICIENT DATA
           09=LEAK RATE TOO HIGH
           10=TEST PHASE TIMEOUT
           11=TEMP STABLE TIMEOUT
5.      YYMMDDHHmm - Start Date/Time
6.      NN - Number of 8 bytes data fields to follow (Decimal)
7.      HHHHHHHH - Starting Height, Inches (ASCII Hex IEEE float)
8.      TTTTTTTT - Starting Temperature, Degrees F (ASCII Hex IEEE float)
9.      hhhhhhhh - Ending Height (ASCII Hex IEEE float)
10.     tttttttt - Ending Temperature (ASCII Hex IEEE float)
11.     dddddd - Duration in minutes (ASCII Hex IEEE float)
12.     RR - Temperature Change Rate Status Flag
           00=UNKNOWN
           01=VALID
           02=COMPUTING
           03=STABLE
13.     rrrrrrrr - Temperature Rate Change, Degrees F/Hr (ASCII Hex IEEE float)
14.     mmmmmmmm - Temperature Stable Time in minutes (ASCII Hex IEEE float)
15.     LL - Leak Rate Status Flag
           00=UNKNOWN
           01=VALID
           02=COMPUTING
16.     llllllll - Leak Rate, Inches/Hr (ASCII Hex IEEE float)
17.     && - Data Termination Flag
18.     CCCC - Message Checksum

```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 318

Version 26

Function Type: Mag Sump Leak Test Last Passed Test Report

Command Format:

Display: <SOH>I318ss

Computer: <SOH>i318ss

Typical Response Message, Display Format:

```
<SOH>
I318ss
FEB 21, 2005 10:50 AM

MAG SUMP LEAK TEST
LAST PASSED TEST

s 1:SUMP NUMBER 1

RESULT: TEST PASSED
START TIME:
  FEB 19, 2005  9:43 AM
START HT:      20.971 IN.
START TEMP:      76.1 F
END HT:        20.971 IN.
END TEMP:       76.1 F
DURATION:      120 MINS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i318ssYYMMDDHHmmssttYYMMDDHHmmNNHHHHHHHHHTTTTTTTT
                                     hhhhhhhhhttttttttddddd...
                                ssttYYMMDDHHmmNNHHHHHHHHHTTTTTTTT
                                     hhhhhhhhhttttttttddddd&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Smart Sensor Number (Decimal, 00=all)
3. tt - Mag Sump Leak Test Status
 - 00=NO TEST DATA AVAILABLE
 - 01=LEAK TEST ABORTED
 - 02=FILL SUMP
 - 03=MEASURING HEIGHT
 - 04=LEAK TEST PASSED
4. YYMMDDHHmm - Start Date/Time
5. NN - Number of 8 bytes data fields to follow (Decimal)
6. HHHHHHHH - Starting Height, Inches (ASCII Hex IEEE float)
7. TTTTTTTT - Starting Temperature, Degrees F (ASCII Hex IEEE float)
8. hhhhhhhh - Ending Height (ASCII Hex IEEE float)
9. tttttttt - Ending Temperature (ASCII Hex IEEE float)
10. dddddd - Duration in minutes (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 319

Version 26

Function Type: Mag Sump Leak Test Last 10 Test Passed Report

Command Format:

Display: <SOH>I319ss

Computer: <SOH>i319ss

Typical Response Message, Display Format:

```
<SOH>
I319ss
NOV 15, 2004  8:26 AM
```

```
MAG SUMP LEAK TEST
LAST 10 TEST PASSED
```

```
s 1:SUMP NUMBER 1
```

START DATE/TIME	START HEIGHT	START TEMP	END HEIGHT	END TEMP	DURATION MINUTES
JAN 19, 2005 9:43 AM	22.971	76.1	22.971	76.1	120
DEC 12, 2004 10:24 AM	22.344	75.4	22.338	75.3	120
MAY 3, 2004 1:18 PM	21.972	72.0	21.970	72.2	120
FEB 23, 2004 3:12 PM	21.065	76.2	21.061	76.2	120

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i319ssYYMMDDHHmmsssttYYMMDDHHmmNNHHHHHHHHHTTTTTTTT
      hhhhhhhhhttttttttddddddd...
      YYMMDDHHmmNNHHHHHHHHHTTTTTTTT
      hhhhhhhhhttttttttddddddd...
ssttYYMMDDHHmmNNHHHHHHHHHTTTTTTTT
      hhhhhhhhhttttttttddddddd...
      YYMMDDHHmmNNHHHHHHHHHTTTTTTTT
      hhhhhhhhhttttttttddddddd&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Smart Sensor Number (Decimal, 00=All)
3. tt - Number of Tests to follow (Max=10)
4. YYMMDDHHmm - Date/Time Test
5. NN - Number of 8 bytes data fields to follow
6. HHHHHHHH - Starting Height, Inches (ASCII Hex IEEE float)
7. TTTTTTTT - Starting Temperature, Degrees F (ASCII Hex IEEE float)
8. hhhhhhhh - Ending Height (ASCII Hex IEEE float)
9. tttttttt - Ending Temperature (ASCII Hex IEEE float)
10. dddddddd - Duration in minutes (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 31A

Version 26

Function Type: Mag Sump Leak Test Last Passed Each Year Report

Command Format:

Display: <SOH>I31Ass

Computer: <SOH>i31Ass

Typical Response Message, Display Format:

```
<SOH>
I31Ass
NOV 15, 2004  8:26 AM

MAG SUMP LEAK TEST
LAST PASSED EACH YEAR

s 1:SUMP NUMBER 1
```

START DATE/TIME	START HEIGHT	START TEMP	END HEIGHT	END TEMP	DURATION MINUTES
JAN 19, 2005 9:43 AM	22.971	76.1	22.971	76.1	120
FEB 12, 2004 10:24 AM	22.344	75.4	22.338	75.3	120
MAR 3, 2003 1:18 PM	21.972	72.0	21.970	72.2	120
JAN 23, 2002 3:12 PM	21.065	76.2	21.061	76.2	120

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i31AssYYMMDDHHmmssttYYMMDDHHmmNNHHHHHHHHHTTTTTTTT
      hhhhhhhhhttttttttddddddd...
      YYMMDDHHmmNNHHHHHHHHHTTTTTTTT
      hhhhhhhhhttttttttddddddd...
ssttYYMMDDHHmmNNHHHHHHHHHTTTTTTTT
      hhhhhhhhhttttttttddddddd...
      YYMMDDHHmmNNHHHHHHHHHTTTTTTTT
      hhhhhhhhhttttttttddddddd&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Smart Sensor Number (Decimal, 00=All)
3. tt - Total Tests to follow (Max=3)
4. YYMMDDHHmm - Date/Time Test
5. NN - Number of 8 bytes data fields to follow
6. HHHHHHHH - Starting Height, Inches (ASCII Hex IEEE float)
7. TTTTTTTT - Starting Temperature, Degrees F (ASCII Hex IEEE float)
8. hhhhhhhh - Ending Height (ASCII Hex IEEE float)
9. tttttttt - Ending Temperature (ASCII Hex IEEE float)
10. dddddddd - Duration in minutes (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 322

Version 27

Function Type: Pump Relay Monitor Status Report

Command Format:

Display: <SOH>I322rr

Computer: <SOH>i322rr

Typical Response Message, Display Format:

```
<SOH>
I322rr
JUN 22, 2006  3:12 PM
```

PUMP RELAY MONITOR STATUS REPORT

DEVICE	LABEL	PUMP (OUT)	PUMP RELAY (IN)	STATUS
1	PUMP RELAY UNLEADED	OFF	Q 1: OFF	NORMAL

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i322rrYYMMDDHHmmrrabssss...
                      rrabssss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. a - Pump Status (ASCII Hex)
0=Off
1=On
4. b - Relay Status (ASCII Hex)
0=Off (or N/A - no Pump Relay assigned)
1=On
5. ssss - Number of 8-character data fields to follow (ASCII Hex)
0000=Normal
0001=Setup Data Warning
0002=Pump Relay Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 323

Version 27

Function Type: Pump Relay Monitor Alarm History Report

Command Format:

Display: <SOH>I323rr

Computer: <SOH>i323rr

Typical Response Message, Display Format:

```
<SOH>
I323rr
JUN 22, 2006  3:12 PM

PUMP RELAY MONITOR ALARM HISTORY REPORT

DEVICE LABEL
PUMP RELAY UNLEADED
      JUN  1, 2006   8:02 AM           PUMP RELAY ALARM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i323rrYYMMDDHHmmrrNNYYMMDDHHmmaaaa...
                        rrNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (ASCII Hex)
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm Type number (ASCII Hex):
0001=Setup Data Warning
0002=Pump Relay Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 333

Version 24

Function Type: Smart Sensor Install Log

Command Format:

Display: <SOH>I333SS

Computer: <SOH>i333SS

Typical Response Message, Display Format:

```
<SOH>
I333SS
JAN 22, 2003  3:25 PM

SMART SENSOR INSTALL LOG
```

DATE		SENSOR	SERIAL NUMBER	TYPE
01-01-03	6:00:00	1	123456	MAG SENSOR
01-01-03	6:00:00	2	123457	FLOWMETER

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i333SSYYMMDDHHmmnnnYYMMDDHHmmSSNNNNNNNNNffff...
YYMMDDHHmmSSNNNNNNNNNffff&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. nnn - Number of Events to Follow (Decimal)
3. YYMMDDHHmm - Date and Time of Install Event
4. SS - Smart Sensor Number (Decimal)
5. NNNNNNNN - Sensor Serial Number (ASCII Hex IEEE float)
6. ffff - Smart Sensor Model Number (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 341

Version 2

Function Type: Type A (2 Wire CL) Sensor Status Report

Command Format:

Display: <SOH>I341SS

Computer: <SOH>i341SS

Typical Response Message, Display Format:

```
<SOH>
I341SS
FEB 18, 1990  10:53 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

2 WIRE CL STATUS REPORT

SENSOR  LOCATION                      STATUS
  1  2 WIRE CL SENSOR #1          FUEL ALARM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i341SSYYMMDDHHmmSSsssss...
                        SSsssss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
 - 0000=Sensor Normal
 - 0001=Sensor Setup Data Warning
 - 0002=Sensor Fuel Alarm
 - 0003=Sensor Out Alarm
 - 0004=Sensor Short Alarm
 - 0005=Sensor Water Alarm
 - 0006=Sensor Water Out Alarm
 - 0007=Sensor High Liquid Alarm
 - 0008=Sensor Low Liquid Alarm
 - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 342

Version 2

Function Type: Type A (2 Wire CL) Sensor Alarm History Report

Command Format:

Display: <SOH>I342SS

Computer: <SOH>i342SS

Typical Response Message, Display Format:

```
<SOH>
I342SS
FEB 18, 1990  10:53 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

2 WIRE CL ALARM HISTORY REPORT

SENSOR  LOCATION
  1  2 WIRE CL SENSOR #1
      FEB 12, 1990  11:32 AM          FUEL ALARM
      FEB 10, 1990  10:09 AM          OPEN ALARM

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i342SSYYMDDHHmmSSNNYYMDDHHmmaaaa...
                                SSNNYYMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
 - 0001=Sensor Setup Data Warning
 - 0002=Sensor Fuel Alarm
 - 0003=Sensor Out Alarm
 - 0004=Sensor Short Alarm
 - 0005=Sensor Water Alarm
 - 0006=Sensor Water Out Alarm
 - 0007=Sensor High Liquid Alarm
 - 0008=Sensor Low Liquid Alarm
 - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 346

Version 2

Function Type: Type B (3 Wire CL) Sensor Status Report

Command Format:

Display: <SOH>I346SS

Computer: <SOH>i346SS

Typical Response Message, Display Format:

```
<SOH>
I346SS
FEB 18, 1990  10:53 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

3 WIRE CL STATUS REPORT

SENSOR  LOCATION                      STATUS
  1    3 WIRE CL SENSOR #1          FUEL ALARM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i346SSYYMMDDHHmmSSssss...
                      SSssss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
 - 0000=Sensor Normal
 - 0001=Sensor Setup Data Warning
 - 0002=Sensor Fuel Alarm
 - 0003=Sensor Out Alarm
 - 0004=Sensor Short Alarm
 - 0005=Sensor Water Alarm
 - 0006=Sensor Water Out Alarm
 - 0007=Sensor High Liquid Alarm
 - 0008=Sensor Low Liquid Alarm
 - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 347

Version 2

Function Type: Type B (3 Wire CL) Sensor Alarm History Report

Command Format:

Display: <SOH>I347SS

Computer: <SOH>i347SS

Typical Response Message, Display Format:

```
<SOH>
I347SS
FEB 18, 1990  10:53 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

3 WIRE CL ALARM HISTORY REPORT

SENSOR  LOCATION
  1  3 WIRE CL SENSOR #1
      FEB 12, 1990  11:32 AM          FUEL ALARM
      FEB 10, 1990  10:09 AM          OPEN ALARM

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i347SSYYMDDHHmmSSNNYYMDDHHmmaaaa...
                                SSNNYYMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
 - 0001=Sensor Setup Data Warning
 - 0002=Sensor Fuel Alarm
 - 0003=Sensor Out Alarm
 - 0004=Sensor Short Alarm
 - 0005=Sensor Water Alarm
 - 0006=Sensor Water Out Alarm
 - 0007=Sensor High Liquid Alarm
 - 0008=Sensor Low Liquid Alarm
 - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 34B

Version 4

Function Type: Universal Sensor Status Report

Command Format:

Display: <SOH>I34BSS

Computer: <SOH>i34BSS

Typical Response Message, Display Format:

```
<SOH>
I34BSS
FEB 18, 1990  10:53 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

UNIVERSAL STATUS REPORT

```
SENSOR  LOCATION          STATUS
   1  UNIVERSAL SENSOR #1  FUEL ALARM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i34BSSYYMMDDHHmmSSssss...
                        SSssss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
 - 0000=Sensor Normal
 - 0001=Sensor Setup Data Warning
 - 0002=Sensor Fuel Alarm
 - 0003=Sensor Out Alarm
 - 0004=Sensor Short Alarm
 - 0005=Sensor Water Alarm
 - 0006=Sensor Water Out Alarm
 - 0007=Sensor High Liquid Alarm
 - 0008=Sensor Low Liquid Alarm
 - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 34C

Version 4

Function Type: Universal Sensor Alarm History Report

Command Format:

Display: <SOH>I34CSS

Computer: <SOH>i34CSS

Typical Response Message, Display Format:

```
<SOH>
I34CSS
FEB 18, 1990  10:53 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

UNIVERSAL ALARM HISTORY REPORT

```
SENSOR  LOCATION
  1  UNIVERSAL SENSOR 1
      FEB 12 1990  11:32 AM          FUEL ALARM
      FEB 10 1990  10:09 PM          OPEN ALARM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i34CSSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
                                SSNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
 - 0001=Sensor Setup Data Warning
 - 0002=Sensor Fuel Alarm
 - 0003=Sensor Out Alarm
 - 0004=Sensor Short Alarm
 - 0005=Sensor Water Alarm
 - 0006=Sensor Water Out Alarm
 - 0007=Sensor High Liquid Alarm
 - 0008=Sensor Low Liquid Alarm
 - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.2.4 LINE LEAK REPORTS

Function Code: 351

Version 1

Function Type: Volumetric Line Leak Result Report

Command Format:

Display: <SOH>I351PP

Computer: <SOH>i351PP

Typical Response Message, Display Format:

```
<SOH>
I351PP
MAR 26, 1996  1:55 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

P 1:REGULAR UNLEADED
 3.0 GAL/HR TEST      LINE    SELF    PUMP
   PREV 24 HOURS      104      104     111
   SINCE MIDNIGHT     53       53      56
 0.2 GAL/HR TEST
   MAR 25, 1996  8:14 PM           PASSED
   MAR 25, 1996  2:02 AM           PASSED
   MAR 24, 1996  2:20 AM           PASSED
 0.1 GAL/HR TEST
   MAR 26, 1996  1:48 AM           PASSED
   MAR 25, 1996  4:11 AM           PASSED
   MAR 24, 1996  3:25 AM           PASSED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i351PPYYMMDDHHmmPPLLSSBBllssbbNNYYMMDDHHmmRR...nnYYMMDDHHmmRR...
PPLLSSBBllssbbNNYYMMDDHHmmRR...nnYYMMDDHHmmRR&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. LL - 3.00 GPH Line tests passed in previous 24 hours (Hex)
4. SS - 3.00 GPH Self tests passed in previous 24 hours (Hex)
5. BB - 3.00 GPH Pumpside tests passed in previous 24 hours (Hex)
6. ll - 3.00 GPH Line tests passed since midnight (Hex)
7. ss - 3.00 GPH Self tests passed since midnight (Hex)
8. bb - 3.00 GPH Pumpside tests passed since midnight (Hex)
9. NN - Number of 0.20 GPH test date entries to follow (Decimal)
10. YYMMDDHHmm - Date and Time of test
11. RR - Test result (00=fail, 01=pass)
12. nn - Number of 0.10 GPH test date entries to follow (Decimal)
13. YYMMDDHHmm - Date and Time of test
14. RR - Test result (00=fail, 01=pass)
15. && - Data Termination Flag
16. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 352

Version 1

Function Type: Volumetric Line Leak Alarm History Report

Command Format:

Display: <SOH>I352PP

Computer: <SOH>i352PP

Typical Response Message, Display Format:

```
<SOH>
I352PP
MAR 26, 1996  1:55 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

P 1:REGULAR UNLEADED
  DEC 24, 1991  9:51 PM    LINE LEAK SHUTDOWN
  DEC 23, 1991  9:46 PM    LLD SELF TEST FAIL
  DEC 22, 1991  9:31 PM    LINE LEAK TEST FAIL
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i352PPYYMMDDHHmmPPNNYYMMDDHHmmaaaa...
                                PPNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. NN - Number of Alarm entries to follow (Decimal)
4. YYMMDDHHmm - Date and Time of Alarm

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 352 Notes: (Continued)

5. aaaa - Alarm type code:
 - 0001=VLLD Setup Data Warning
 - 0002=VLLD Self Test Alarm
 - 0003=VLLD Shutdown Alarm
 - 0004=VLLD Leak Test Fail Alarm
 - 0005=VLLD Selftest Invalid Warning
 - 0006=VLLD Continuous Handle On Warning
 - 0007=VLLD Gross Line Test Fail Alarm
 - 0008=VLLD Gross Line Selftest Fail Alarm
 - 0009=VLLD Gross Pump Test Fail Alarm
 - 000A=VLLD Gross Pump Selftest Fail Alarm
 - 000B=VLLD Periodic Test Needed Warning
 - 000C=VLLD Annual Test Needed Warning
 - 000D=VLLD Periodic Test Needed Alarm
 - 000E=VLLD Annual Test Needed Alarm
 - 000F=VLLD Periodic Line Test Fail Alarm
 - 0010=VLLD Periodic Line Selftest Fail Alarm
 - 0011=VLLD Periodic Pump Test Fail Alarm
 - 0012=VLLD Periodic Pump Selftest Fail Alarm
 - 0013=VLLD Annual Line Test Fail Alarm
 - 0014=VLLD Annual Line Selftest Fail Alarm
 - 0015=VLLD Annual Pump Test Fail Alarm
 - 0016=VLLD Annual Pump Selftest Fail Alarm
 - 0017=VLLD Pressure Warning
 - 0018=VLLD Pressure Alarm
 - 0019=VLLD Gross Test Fault Alarm
 - 001A=VLLD Periodic Test Fault Alarm
 - 001B=VLLD Annual Test Fault Alarm
 - 001C=VLLD Fuel Out Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 353

Version 2

Function Type: Volumetric Line Leak Pump Status

Command Format:

Display: <SOH>I353PP

Computer: <SOH>i353PP

Typical Response Message, Display Format:

```
<SOH>
I353PP
MAR 26, 1996  1:55 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

LINE	LOCATION	STATUS
1	REGULAR UNLEADED	ENABLED

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i353PPYYMMDDHHmmPPaaaa...
PPaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. aaaa - Line Status:
0001=Enabled
0002=Disabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 373

Version 14

Function Type: Pressure Line Leak Test Results (with 0.20 test data)

Command Format:

Display: <SOH>I373QQ

Computer: <SOH>i373QQ

Typical Response Message, Display Format:

<SOH>
I373QQ
JAN 24, 1996 2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK TEST RESULTS

Q 1:REGULAR UNLEADED

3.0 GAL/HR RESULTS:

LAST TEST:
JAN 24, 1996 2:49 PM PASS

NUMBER OF TESTS PASSED
PREV 24 HOURS : 149
SINCE MIDNIGHT : 76

0.20 GAL/HR RESULTS:

JAN 22, 1996 1:32 AM PASS

0.10 GAL/HR RESULTS:

JAN 23, 1996 11:59 PM PASS

NO-VENT TEST ABORTS:

3 OUT OF 10 TESTS

<ETX>

(Added in V19)

(Added in V19)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 373: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i373QQYYMMDDHHmmQQyymmddhhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...
                                     nnYYMMDDHHmmRRtt...
QQyymmddhhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...
                                     nnYYMMDDHHmmRRtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yymmddhhmm - Last 3.00 gal/hr test time
4. rr - 3.00 gal/hr test result (Hex)
5. TT - 3.00 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.00 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.00 gal/hr tests passed since midnight (Hex)
8. NN - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
9. YYMMDDHHmm - Date and time of 0.10 gal/hr test
10. RR - Test result
01=PASS
02=FAIL
11. tt - 0.10 gal/hr test type (unused, always 00)
12. nn - Number of 0.20 gal/hr test results (14 character groups) to follow (Hex)
13. YYMMDDHHmm - Date and time of 0.20 gal/hr test
14. RR - Test result
01=PASS
02=FAIL
15. tt - 0.20 gal/hr test type (unused, always 00)
16. && - Data Termination Flag
17. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 374

Version 14

Function Type: Pressure Line Leak Test History (with 0.20 test data)

Command Format:

Display: <SOH>I374QQ

Computer: <SOH>i374QQ

Typical Response Message, Display Format:

```
<SOH>
I374QQ
JAN 24, 1996  2:52 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PRESSURE LINE LEAK TEST HISTORY

Q 1:REGULAR UNLEADED

LAST 3.0 PASS: JAN 24, 1996 2:49 PM

FIRST 0.10 PASS EACH MONTH: JAN 16, 1996 12:38 AM

FIRST 0.20 PASS EACH MONTH: JAN 14, 1996 10:21 PM

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i374QQYYMMDDHHmmQQyyymmddhhmmTTNNYYMMDDHHmmttnnYYMMDDHHmmtt...
      QQyyymmddhhmmTTNNYYMMDDHHmmttnnYYMMDDHHmmtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test pass time ("0000000000" if no test yet)
4. TT - 3.00 gal/hr test type (unused, always 00)
5. NN - Number of 0.10 gal/hr test results (12 character groups) to follow (Hex)
6. YYMMDDHHmm - Date and time of 0.10 gal/hr test
7. tt - 0.10 gal/hr test type (unused, always 00)
8. nn - Number of 0.20 gal/hr test results (12 character groups) to follow (Hex)
9. YYMMDDHHmm - Date and time of 0.20 gal/hr test
10. tt - 0.20 gal/hr test type (unused, always 00)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 381

Version 7

Function Type: Pressure Line Leak Status

Command Format:

Display: <SOH>I381QQ

Computer: <SOH>i381QQ

Typical Response Message, Display Format:

```
<SOH>
I381QQ
JAN 24, 1996  2:52 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PRESSURE LINE LEAK STATUS

LINE	DISPENSING	TEST STATUS	PUMP	HANDLE
Q 1:REGULAR UNLEADED	ENABLED	TESTING 0.10 GAL/HR	OFF	OFF

```
ACTIVE ALARMS:
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i381QQYYMMDDHHmmQQSSSSSttNNaaaa...
                                QQSSSSSttNNaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. SSSS - Status Bits:
 - Bit 1 - (LSB) Dispensing enabled flag
(0=Disabled, 1=Enabled)
 - Bit 2 - Pump power
(0=Pump Off, 1=Pump On)
 - Bit 3 - Dispenser Handle
(0=Handle Off, 1=Handle On)
 - Bit 4-16 - Unused
4. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.10 gal/hr
 - 04=test aborted
 - 05=running pump (manual test starting)
 - 06=line lockout
 - 07=disable alarm
 - 08=test pending
 - 09=test delay
 - 0A=pressure check
 - 0B=testing at 0.20 gal/hr

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 381 Notes: (Continued)

- 5. NN - number of active alarms to follow (Hex)
- 6. aaaa - type of alarm:
 - 0001=PLLD Setup Data Warning
 - 0002=PLLD Gross Test Fail Alarm
 - 0003=PLLD Annual Test Fail Alarm
 - 0004=PLLD Periodic Test Needed Warning
 - 0005=PLLD Periodic Test Needed Alarm
 - 0006=PLLD Sensor Open Alarm
 - 0007=PLLD High Pressure Alarm (Obsolete V19)
 - 0008=PLLD Shutdown Alarm
 - 0009=PLLD High Pressure Warning (Obsolete V19)
 - 000A=PLLD Continuous Handle On Warning (Obsolete V19)
 - 000B=PLLD Periodic Test Fail Alarm
 - 000C=PLLD Annual Test Needed Warning
 - 000D=PLLD Annual Test Needed Alarm
 - 000E=PLLD Low Pressure Alarm
 - 000F=PLLD Sensor Short Alarm (Obsolete V19)
 - 0010=PLLD Continuous Handle On Alarm
 - 0011=PLLD Fuel Out Alarm
 - 0012=PLLD Line Equipment Alarm
- 7. && - Data Termination Flag
- 8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 382

Version 7

Function Type: Pressure Line Leak Alarm History Report

Command Format:

Display: <SOH>I382QQ

Computer: <SOH>i382QQ

Typical Response Message, Display Format:

```
<SOH>
I382QQ
JAN 24, 1996  2:52 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PRESSURE LINE LEAK ALARM HISTORY REPORT

```
Q 1:REGULAR UNLEADED
  GROSS LINE FAIL          JAN  9, 1995  6:12 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i382QQYYMMDDHHmmQQNNyymmddhhmmaaaa...
                                   QQNNyymmddhhmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. NN - number of alarms to follow (Hex)
4. yymmddhhmm - Date and time that the alarm occurred
5. aaaa - type of alarm:
 - 0001=PLLD Setup Data Warning
 - 0002=PLLD Gross Test Fail Alarm
 - 0003=PLLD Annual Test Fail Alarm
 - 0004=PLLD Periodic Test Needed Warning
 - 0005=PLLD Periodic Test Needed Alarm
 - 0006=PLLD Sensor Open Alarm
 - 0007=PLLD High Pressure Alarm (Obsolete V19)
 - 0008=PLLD Shutdown Alarm
 - 0009=PLLD High Pressure Warning (Obsolete V19)
 - 000A=PLLD Continuous Handle On Warning (Obsolete V19)
 - 000B=PLLD Periodic Test Fail Alarm
 - 000C=PLLD Annual Test Needed Warning
 - 000D=PLLD Annual Test Needed Alarm
 - 000E=PLLD Low Pressure Alarm
 - 000F=PLLD Sensor Short Alarm (Obsolete V19)
 - 0010=PLLD Continuous Handle On Alarm
 - 0011=PLLD Fuel Out Alarm
 - 0012=PLLD Line Equipment Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 383

Version 7

Function Type: Pressure Line Leak Test Results (0.10 test data only)

Command Format:

Display: <SOH>I383QQ

Computer: <SOH>i383QQ

Notes:

1. In Version 12, this command's response is inadvertently identical to I373QQ. In Versions 7-11, 14, and higher, the response is accurately defined here.

Typical Response Message, Display Format:

```
<SOH>
I383QQ
JAN 24, 1996  2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK TEST RESULTS

Q 1:REGULAR UNLEADED

  3.0 GAL/HR RESULTS:

LAST TEST:
JAN 24, 1996  2:49 PM PASS

NUMBER OF TESTS PASSED
  PREV 24 HOURS :   149
  SINCE MIDNIGHT :    76

0.10 GAL/HR RESULTS:

JAN 23, 1996 11:59 PM PASS
<ETX>
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 383 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i383QQYYMMDDHHmmQQyymmddhhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...  
QQyymmddhhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yymmddhhmm - Last 3.00 gal/hr test time
4. rr - 3.00 gal/hr test result (Hex)
5. TT - 3.00 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.00 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.00 gal/hr tests passed since midnight (Hex)
8. NN - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
9. YYMMDDHHmm - Date and time of 0.10 gal/hr test
10. RR - Test result
01=PASS
02=FAIL
11. tt - 0.10 gal/hr test type (unused, always 00)
12. && - Data Termination Flag
13. CCCC - Message Checksum

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TLS-300/350/350R Monitoring Systems

Function Code: 384

Version 7

Function Type: Pressure Line Leak Test History (0.10 test data only)

Command Format:

Display: <SOH>I384QQ

Computer: <SOH>i384QQ

Notes:

1. In Version 12, this command's response is inadvertently identical to I374QQ. In Versions 7-11, 14, and higher, the response is accurately defined here.

Typical Response Message, Display Format:

```
<SOH>
I384QQ
JAN 24, 1996  2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK TEST HISTORY

Q 1:REGULAR UNLEADED

LAST  3.0 PASS:                JAN 24, 1996  2:49 PM

FIRST 0.10 PASS EACH MONTH:    JAN 16, 1996 12:38 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i384QQYYMMDDHHmmQQyyymmddhhmmTTNNYYMMDDHHmmtt...
QQyyymmddhhmmTTNNYYMMDDHHmmtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test pass time ("0000000000" if no test yet)
4. TT - 3.00 gal/hr test type (unused, always 00)
5. NN - Number of 0.10 gal/hr test results (12 character groups) to follow (Hex)
6. YYMMDDHHmm - Date and time of 0.10 gal/hr test
7. tt - 0.10 gal/hr test type (unused, always 00)
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

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Function Code: 386
Function Type: WPLLD Line Leak Status

Version 10

Command Format:
Display: <SOH>I386WW
Computer: <SOH>i386WW

Typical Response Message, Display Format:

```
<SOH>
I386WW
JAN 24, 1996  2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

WPLLD LINE LEAK STATUS

LINE          DISPENSING  TEST STATUS          PUMP    HANDLE
W 1:REGULAR UNLEADED  ENABLED    TESTING 0.20 GAL/HR  OFF     OFF

ACTIVE ALARMS:
  PLLD PERIODIC WARN
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i386WWYYMMDDHHmmWWSSSttNNaaaa...
                                WWSSSttNNaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. SSSS - Status Bits:
 - Bit 1 - (LSB) Dispensing enabled flag
(0=Disabled, 1=Enabled)
 - Bit 2 - Pump power
(0=Pump Off, 1=Pump On)
 - Bit 3 - Dispenser Handle
(0=Handle Off, 1=Handle On)
 - Bit 4-16 - Unused
4. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.20 gal/hr
 - 04=test aborted
 - 05=line lockout
 - 06=disable alarm
 - 07=test pending
 - 08=test delay
 - 09=testing at 0.10 gal/hr

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Function Code 386 Notes: (Continued)

- 5. NN - number of active alarms to follow (Hex)
- 6. aaaa - type of alarm:
 - 0001=WPLLD Setup Data Warning
 - 0002=WPLLD Gross Test Fail Alarm
 - 0003=WPLLD Periodic Test Fail Alarm
 - 0004=WPLLD Periodic Test Needed Warning
 - 0005=WPLLD Periodic Test Needed Alarm
 - 0006=WPLLD Sensor Open Alarm
 - 0007=WPLLD Communications Alarm
 - 0008=WPLLD Shutdown Alarm
 - 0009=WPLLD Continuous Handle On Warning (Obsolete V19)
 - 000A=WPLLD Annual Test Fail Alarm
 - 000B=WPLLD Annual Test Needed Warning
 - 000C=WPLLD Annual Test Needed Alarm
 - 000D=WPLLD High Pressure Warning (Obsolete V19)
 - 000E=WPLLD High Pressure Alarm (Obsolete V19)
 - 000F=WPLLD Sensor Short Alarm (Obsolete V19)
 - 0010=WPLLD Continuous Handle On Alarm
 - 0011=WPLLD Fuel Out Alarm
 - 0012=WPLLD Line Equipment Alarm
- 7. && - Data Termination Flag
- 8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 387

Version 10

Function Type: WPLLD Line Leak Alarm History Report

Command Format:

Display: <SOH>I387WW

Computer: <SOH>i387WW

Typical Response Message, Display Format:

```
<SOH>
I387WW
JAN 24, 1996  2:52 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

WPLLD LINE LEAK ALARM HISTORY REPORT

```
W 1:REGULAR UNLEADED
  GROSS LINE FAIL          JAN  9, 1995  6:12 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i387WWYYMMDDHHmmWWNNyymmddhhmmaaaa...
                                WWNNyymmddhhmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. NN - number of alarms to follow (Hex)
4. yymmddhhmm - Date and time that the alarm occurred
5. aaaa - type of alarm:
 - 0001=WPLLD Setup Data Warning
 - 0002=WPLLD Gross Test Fail Alarm
 - 0003=WPLLD Periodic Test Fail Alarm
 - 0004=WPLLD Periodic Test Needed Warning
 - 0005=WPLLD Periodic Test Needed Alarm
 - 0006=WPLLD Sensor Open Alarm
 - 0007=WPLLD Communications Alarm
 - 0008=WPLLD Shutdown Alarm
 - 0009=WPLLD Continuous Handle On Warning (Obsolete V19)
 - 000A=WPLLD Annual Test Fail Alarm
 - 000B=WPLLD Annual Test Needed Warning
 - 000C=WPLLD Annual Test Needed Alarm
 - 000D=WPLLD High Pressure Warning (Obsolete V19)
 - 000E=WPLLD High Pressure Alarm (Obsolete V19)
 - 000F=WPLLD Sensor Short Alarm (Obsolete V19)
 - 0010=WPLLD Continuous Handle On Alarm
 - 0011=WPLLD Fuel Out Alarm
 - 0012=WPLLD Line Equipment Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 388

Version 10

Function Type: WPLLD Line Leak Test Results

Command Format:

Display: <SOH>I388WW

Computer: <SOH>i388WW

Typical Response Message, Display Format:

<SOH>
I388WW
JAN 24, 1996 2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

WPLLD LINE LEAK TEST RESULTS

W 1:REGULAR UNLEADED

3.0 GAL/HR RESULTS:

LAST TEST:
JAN 24, 1996 2:12 PM PASS

NUMBER OF TESTS PASSED
PREV 24 HOURS : 75
SINCE MIDNIGHT : 39

0.20 GAL/HR RESULTS:

JAN 23, 1996 10:59 PM PASS

0.10 GAL/HR RESULTS:

JAN 21, 1996 3:27 AM PASS

NO-VENT TEST ABORTS:
3 OUT OF 10 TESTS

(Added in V19)

(Added in V19)

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 388 (Continued)

Typical Response Message, Computer Format:

```
<SOH>i388WWYYMMDDHHmmWWyymmdddhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...
                                     nnYYMMDDHHmmRRtt...
WWyymmdddhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...
                                     nnYYMMDDHHmmRRtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. yymmdddhmm - Last 3.00 gal/hr test time
4. rr - 3.00 gal/hr test result (Hex)
5. TT - 3.00 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.00 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.00 gal/hr tests passed since midnight (Hex)
8. NN - Number of 0.20 gal/hr test results (14 character groups) to follow (Hex)
9. YYMMDDHHmm - Date and time of test
10. RR - Test result
01=PASS
02=FAIL
11. tt - Test type (unused, always 00)
12. nn - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
13. YYMMDDHHmm - Date and time of test
14. RR - Test result
01=PASS
02=FAIL
15. tt - Test type (unused, always 00)
16. && - Data Termination Flag
17. CCCC - Message Checksum

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TLS-300/350/350R Monitoring Systems

Function Code: 389

Version 12

Function Type: WPLLD Line Leak Test History

Notes:

1. While this command was implemented in Versions 10 & 11, the format shown below was not correct until Version 12. The format used in Versions 10 & 11 is shown in Command I384, except that the WPLLD tests were 0.20 GPH instead of 0.10 GPH.

Command Format:

Display: <SOH>I389WW

Computer: <SOH>i389WW

Typical Response Message, Display Format:

```
<SOH>
I389WW
JAN 24, 1996  2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

WPLLD LINE LEAK TEST HISTORY

W 1:REGULAR UNLEADED

LAST  3.0 PASS:                JAN 24, 1996  2:12 PM

FIRST 0.20 PASS EACH MONTH:    JAN 15, 1996 11:38 PM

FIRST 0.10 PASS EACH MONTH:    JAN 12, 1996  1:21 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i389WWYYMMDDHHmmWWyyymmddhhmmTTNNYYMMDDHHmmtt...nnYYMMDDHHmmtt...
WWyyymmddhhmmTTNNYYMMDDHHmmtt...nnYYMMDDHHmmtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test pass time ("0000000000" if no test yet)
4. TT - 3.00 gal/hr test type (unused, always 00)
5. NN - Number of 0.20 gal/hr test results (12 character groups) to follow (Hex)
6. YYMMDDHHmm - Date and time of 0.20 gal/hr test
7. tt - 0.20 gal/hr test type (unused, always 00)
8. nn - Number of 0.10 gal/hr test results (12 character groups) to follow (Hex)
9. YYMMDDHHmm - Date and time of 0.10 gal/hr test
10. tt - 0.10 gal/hr test type (unused, always 00)
11. && - Data Termination Flag
12. CCCC - Message Checksum

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TLS-300/350/350R Monitoring Systems

7.2.5 MISCELLANEOUS REPORTS

Function Code: 391

Version 10

Function Type: Tanker Load Report

Command Format:

Display: <SOH>I391TT

Computer: <SOH>i391TT

Typical Response Message, Display Format:

```
<SOH>
I391TT
JAN 9, 1995  10:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
TANK  1 REGULAR UNLEADED
```

NO	START DATE/TIME	VOLUME	TEMP	END DATE/TIME	VOLUME	TEMP	TOTAL
4	YY/MM/DD HH:mm	GGGGGG	TT.T	YY/MM/DD HH:mm	GGGGGG	TT.T	GGGGGG
3	YY/MM/DD HH:mm	GGGGGG	TT.T	YY/MM/DD HH:mm	GGGGGG	TT.T	GGGGGG
2	YY/MM/DD HH:mm	GGGGGG	TT.T	YY/MM/DD HH:mm	GGGGGG	TT.T	GGGGGG
1	YY/MM/DD HH:mm	GGGGGG	TT.T	YY/MM/DD HH:mm	GGGGGG	TT.T	GGGGGG

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i391TTYMMDDHHmmTTLLSSNNYYMMDDHHmmaaaaaaaabbbbbbbb
                                YYMMDDHHmmccccccccddddddeeeeeeee...
                                TTLLSSNNYYMMDDHHmmaaaaaaaabbbbbbbb
                                YYMMDDHHmmccccccccddddddeeeeeeee&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. LL - Total Loads for tank (Decimal, no data to follow if 00)
4. SS - Load Sequence Number (Decimal)
5. NN - Number of data items to follow (Hex)
6. YYMMDDHHmm - Starting Date/Time
7. aaaaaaaa - Starting Volume (ASCII Hex IEEE float)
8. bbbbbbbb - Starting Temperature (ASCII Hex IEEE float)
9. YYMMDDHHmm - Ending Date/Time
10. cccccccc - Ending Volume (ASCII Hex IEEE float)
11. dddddddd - Ending Temperature (ASCII Hex IEEE float)
12. eeeeeeee - Total (start volume - end volume) (ASCII Hex IEEE float)
13. && - Data Termination Flag
14. CCCC - Message Checksum

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Function Code: 392

Version 26

Function Type: Tanker Load Report II

Command Format:

Display: <SOH>I392TT

Computer: <SOH>i392TT

Typical Response Message, Display Format:

```
<SOH>
I392TT
JAN 9, 1995  10:02 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

TANK  1  REGULAR UNLEADED

NO      DATE/TIME      VOLUME  TEMP  TC  VOLUME
4  START: YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
   END:  YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
   TOTAL:                GGGGGG      GGGGGG
3  START: YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
   END:  YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
   TOTAL: YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
2  START: YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
   END:  YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
   TOTAL: YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
1  START: YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
   END:  YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
   TOTAL: YY/MM/DD HH:mm GGGGGG  TT.T   GGGGGG
<ETX>
```

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Function Code 392 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i392TTYMMDDHHmmTTLLSSNNYYMMDDHHmmYYMMDDHHmmnnaaaaaaaaabbbbbbbcccccccc
      ddddddddeeeeeeeeeeffffffffggggggggghhhhhhhh...
      TTLLSSNNYYMMDDHHmmYYMMDDHHmmnnaaaaaaaaabbbbbbbcccccccc
      ddddddddeeeeeeeeeeffffffffggggggggghhhhhhhh&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. LL - Total Loads for tank (Decimal, no data to follow if 00)
4. SS - Load Sequence Number (Decimal)
5. NN - Number of 10 byte Date/Times to follow (Hex)
6. YYMMDDHHmm - Starting Date/Time
7. YYMMDDHHmm - Ending Date/Time
8. nn - Number of 8 byte data items to follow (Hex)
9. aaaaaaaa - Starting Volume (ASCII Hex IEEE float)
10. bbbbbbbb - Starting Temperature (ASCII Hex IEEE float)
11. cccccccc - Ending Volume (ASCII Hex IEEE float)
12. dddddddd - Ending Temperature (ASCII Hex IEEE float)
13. eeeeeeee - Total Volume (start volume - end volume) (ASCII Hex IEEE float)
14. ffffffff - Starting TC Volume (ASCII Hex IEEE float)
15. gggggggg - Ending TC Volume (ASCII Hex IEEE float)
16. hhhhhhhh - Total TC Volume (start TC volume - end TC volume) (ASCII Hex IEEE float)
17. && - Data Termination Flag
18. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.2.6 I/O DEVICE REPORTS

Function Code: 401

Version 1

Function Type: Input Status Report

Command Format:

Display: <SOH>I401II

Computer: <SOH>i401II

Typical Response Message, Display Format:

```
<SOH>
I401II
MAR 27, 1996  5:44 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
INPUT    LOCATION          STATUS
  1      * EXTERNAL INPUT 1 *    OFF
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i401IIYYMDDHHmmIIsssss...
                                IIsssss&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. ssss - Input Status:
 - 0001=Input Setup Data Warning
 - 0002=Input Normal
 - 0003=Input Alarm
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 402

Version 1

Function Type: Input Alarm History Report

Command Format:

Display: <SOH>I402II

Computer: <SOH>i402II

Typical Response Message, Display Format:

```
<SOH>
I402II
MAR 27, 1996  5:45 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

INPUT  LOCATION
  1    * EXTERNAL INPUT 1 *
      JAN 15, 1996  8:04 AM          SETUP DATA WARNING

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i402IIYYMMDDHHmmIINNYYMMDDHHmmaaaa...
                                IINNYYMMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (Hex)
4. YYMMDDHHmm - Date and Time of alarm
5. aaaa - Alarm type number:
0001=Input Setup Data Warning
0002=Input Normal
0003=Input Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

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Function Code: 403

Version 5

Function Type: Input/Generator Alarm History Report

(Setup parameters determine whether an input is from a generator.)

Command Format:

Display: <SOH>I403II

Computer: <SOH>i403II

Typical Response Message, Display Format:

```
<SOH>
I403II
MAR 27, 1996  5:47 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

INPUT / GENERATOR ALARM HISTORY REPORT

```
INPUT  LOCATION
1      * EXTERNAL INPUT 1 *
      AUG 19, 1995   2:03 PM  EXTERN INPUT ALARM
      AUG 20, 1995   6:15 AM  EXTERN INPUT ALARM
```

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i403IIYYMMDDHHmmIINNYYMMDDHHmmaaaa...
                               IINNYYMMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (Hex)
4. YYMMDDHHmm - Date and Time of alarm
5. aaaa - Alarm type number:
 - 0001=Input Setup Data Warning
 - 0002=Input Normal
 - 0003=Input Alarm
 - 0004=Generator Off
 - 0005=Generator On
6. && - Data Termination Flag
7. CCCC - Message Checksum

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Function Code: 406

Version 1

Function Type: Relay Status Report

Command Format:

Display: <SOH>I406RR

Computer: <SOH>i406RR

Typical Response Message, Display Format:

```
<SOH>
I406RR
MAR 27, 1996  5:47 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

RELAY	LOCATION	STATUS
1	* RELAY 1 *	OPEN

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i406RRYYMMDDHHmmRRssss...
RRssss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. ssss - Relay Status:
0001=Relay Open
0002=Relay Closed
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 411

Version 28

Function Type: VMCI Alarm History Report

Command Format:

Display: <SOH>I411xx

Computer: <SOH>i411xx

Typical Response Message, Display Format:

```
<SOH>
I41100
JAN 22, 2007  3:11 PM
```

VMCI ALARM HISTORY REPORT

DEVICE	ALARMS			
1	JAN 1, 2007	8:02 AM	SETUP DATA WARNING	
	JAN 20, 2007	12:00 PM	DISABLED ALARM	

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i411xxYYMMDDHHmmxxNNYYMMDDHHmmaaaa...
xxNNYYMMDDHHmmaaaa...&&&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - VMCI Board Number (Decimal, 01-06, 00=all)
3. NN - Number of alarm Incidents to follow (ASCII Hex)
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm Type number (ASCII hex):
 - 0001 = Setup Data Warning:
More than 1 board installed
 - 0002 = Disabled VMCI Board
6. && - Data Termination Flag
7. CCCC - Message Checksum

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Function Code: 412
Function Type: VMC Alarm History Report

Version 28

Command Format:
Display: <SOH>I412xx
Computer: <SOH>i412xx

Typical Response Message, Display Format:

```
<SOH>
I41200
JAN 22, 2007  3:11 PM

VMC ALARM HISTORY REPORT

VMC   S/N    ALARMS
  1   111111  JAN  1, 2007   8:02 AM    METER NOT CONNECTED
                   JAN 10, 2007  12:00 PM    FP SHUTDOWN WARNING
                   JAN 20, 2007  12:00 PM    FP SHUTDOWN ALARM
  2   222222  JAN  1, 2007   8:02 AM    VMC COMM TIMEOUT
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i412xxYYMMDDHHmmxxNNYYMMDDHHmmaaaa...
                      xxNNYYMMDDHHmmaaaa...&&&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Controller Number (Decimal, 01-18, 00=all)
3. NN - Number of alarm Incidents to follow (ASCII Hex)
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm Type number (ASCII hex):
 - 0001 = VMC Communication Timeout Alarm
 - 0002 = Roots meter not connected Alarm
 - 0003 = Fueling Point Shutdown Warning
 - 0004 = Fueling Point Shutdown Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

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7.3 SETUP FUNCTIONS & REPORTS

7.3.1 SYSTEM SETUP

Function Code: 501

Version 1

Function Type: Set Time of day

Command Format:

Display: <SOH>S50100YYMMDDHHmm

Computer: <SOH>s50100YYMMDDHHmm

Inquire:

<SOH>I50100

<SOH>i50100

Typical Response Message, Display Format:

<SOH>
I50100
JAN 22, 1996 3:11 PM

SYSTEM DATE AND TIME
<ETX>

Typical Response Message, Computer Format:

<SOH>i50100YYMMDDHHmmYYMMDDHHmm&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. YYMMDDHHmm - Year, Month, Day, Hour and Minute
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 502

Version 1

Function Type: Set Shift Start Time 1, 2, 3, 4

Command Format:

Display: <SOH>S502SSHmm

Computer: <SOH>s502SSHmm

Inquire:

<SOH>I502SS

<SOH>i502SS

Typical Response Message, Display Format:

```
<SOH>
I50201
JAN 22, 1996  3:12 PM

SHIFT TIME 1 : DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i502SSYYMMDDHHmmSSHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Shift Start time (01, 02, 03, 04)
3. HHmm - Hour and Minute (EE00=Disabled)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 503

Version 1

Function Type: Set Print Header Line 1, 2, 3, 4

Command Format:

Display: <SOH>S503LLaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s503LLaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I503LL

<SOH>i503LL

Typical Response Message, Display Format:

```
<SOH>
I503LL
JAN 22, 1996  3:12 PM

# 1:STATION HEADER 1....
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i503LLYYMMDDHHmmaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. LL - Header line number 1, 2, 3, 4
3. a - Header Line (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 504

Version 1

Function Type: Set System RS-232 Security Code

Command Format:

Display: <SOH>S50400aaaaaa

Computer: <SOH>s50400aaaaaa

Inquire:

<SOH>I50400

<SOH>i50400

Typical Response Message, Display Format:

<SOH>
I50400
JAN 22, 1996 3:12 PM

SYSTEM SECURITY CODE
CODE : 000000
<ETX>

Typical Response Message, Computer Format:

<SOH>i50400YYMMDDHHmmaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. aaaaaa - Security Code (6 ASCII characters [20h-7Eh])
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 505

Version 1

Function Type: Set System Type & Language Flags

Command Format:

Display: <SOH>S50500UL

Computer: <SOH>s50500UL

Inquire:

<SOH>I50500

<SOH>i50500

Typical Response Message, Display Format:

```
<SOH>
I50500
JAN 22, 1996  3:12 PM

SYSTEM TYPE AND LANGUAGE FLAG

SYSTEM UNITS
U.S
SYSTEM LANGUAGE
ENGLISH
SYSTEM DATE/TIME FORMAT
MON DD YYYY HH:MM:SS xM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i50500YYMMDDHHmmUL&&CCCC<ETX>
```

Notes:

1. For all languages beyond Finnish (L=9), use command S51700.
2. YYMMDDHHmm - Current Date and Time
3. U - System Units:
 - 1=U.S
 - 2=Metric
 - 3=Imperial Gallons
4. L - System Language:
 - 1=English
 - 2=French
 - 3=Spanish
 - 4=German
 - 5=Portuguese
 - 6=Polish
 - 7=Swedish
 - 8=Japanese
 - 9=Finnish
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 506

Version 2

Function Type: Set Periodic Test Needed Warning

Command Format:

Display: <SOH>S50600f

Computer: <SOH>s50600f

Inquire:

<SOH>I50600

<SOH>i50600

Typical Response Message, Display Format:

<SOH>

I50600

JAN 22, 1996 3:12 PM

PERIODIC TEST WARNINGS: DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i50600YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Periodic Test Needed Warnings Flag:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 507

Version 4

Function Type: Set Days Before Periodic Test Needed Warning

Command Format:

Display: <SOH>S50700dd

Computer: <SOH>s50700dd

Inquire:

<SOH>I50700

<SOH>i50700

Typical Response Message, Display Format:

<SOH>

I50700

JAN 22, 1996 3:12 PM

PERIODIC TEST WARNING: DAYS= 25

<ETX>

Typical Response Message, Computer Format:

<SOH>i50700YYMMDDHHmmdd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Periodic Test Needed Warning
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 508

Version 4

Function Type: Set Days Before Periodic Test Needed Alarm

Command Format:

Display: <SOH>S50800dd

Computer: <SOH>s50800dd

Inquire:

<SOH>I50800

<SOH>i50800

Typical Response Message, Display Format:

<SOH>

I50800

JAN 22, 1996 3:12 PM

PERIODIC TEST ALARM: DAYS= 30

<ETX>

Typical Response Message, Computer Format:

<SOH>i50800YYMMDDHHmmdd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Periodic Test Needed Alarm
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 509

Version 4

Function Type: Set Annual Test Needed Warning

Command Format:

Display: <SOH>S50900f

Computer: <SOH>s50900f

Inquire:

<SOH>I50900

<SOH>i50900

Typical Response Message, Display Format:

<SOH>
I50900
JAN 22, 1996 3:12 PM

ANNUAL TEST WARNINGS: DISABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i50900YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Annual Test Needed Warnings Flag:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 50A

Version 4

Function Type: Set Days Before Annual Test Needed Warning

Command Format:

Display: <SOH>S50A00ddd

Computer: <SOH>s50A00ddd

Inquire:

<SOH>I50A00

<SOH>i50A00

Typical Response Message, Display Format:

<SOH>

I50A00

JAN 22, 1996 3:12 PM

ANNUAL TEST WARNING: DAYS=355

<ETX>

Typical Response Message, Computer Format:

<SOH>i50A00YYMMDDHHmmddd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Warning
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 50B

Version 4

Function Type: Set Days Before Annual Test Needed Alarm

Command Format:

Display: <SOH>S50B00ddd

Computer: <SOH>s50B00ddd

Inquire:

<SOH>I50B00

<SOH>i50B00

Typical Response Message, Display Format:

<SOH>

I50B00

JAN 22, 1996 3:12 PM

ANNUAL TEST ALARM: DAYS=365

<ETX>

Typical Response Message, Computer Format:

<SOH>i50B00YYMMDDHHmmddd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Alarm
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 50C

Version 5

Function Type: Set Remote Printer Page Eject Flag

Command Format:

Display: <SOH>S50C00f

Computer: <SOH>s50C00f

Inquire:

<SOH>I50C00

<SOH>i50C00

Typical Response Message, Display Format:

<SOH>
I50C00
JAN 22, 1996 3:13 PM

REMOTE PRINTER
DISABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i50C00YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Page Eject Flag:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 50D

Version 8

Function Type: Set Print Temperature Compensation Flag

Command Format:

Display: <SOH>S50D00f

Computer: <SOH>s50D00f

Inquire:

<SOH>I50D00

<SOH>i50D00

Typical Response Message, Display Format:

<SOH>
I50D00
JAN 22, 1996 3:13 PM

PRINT TC VOLUMES
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i50D00YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Print Temperature Compensation Flag
0=Disable
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 50E

Version 8

Function Type: Set Temperature Compensation Value

Command Format:

Display: <SOH>S50E00DDD.hh

Computer: <SOH>s50E00FFFFFFFF

Inquire:

<SOH>I50E00

<SOH>i50E00

Notes:

1. DDD.hh - Compensation Temperature, Degrees and hundredths (Decimal)
2. FFFFFFFF - Compensation Temperature, Degrees (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I50E00
JAN 22, 1996  3:13 PM

TEMP COMPENSATION
VALUE (DEG F ):  60.0
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i50E00YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Compensation Temperature, Degrees (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 50F

Version 10

Function Type: Set System Date/Time Display Format

Command Format:

Display: <SOH>S50F00xx

Computer: <SOH>s50F00xx

Inquire:

<SOH>I50F00

<SOH>i50F00

Typical Response Message, Display Format:

<SOH>
I50F00
JAN 22, 1996 3:13 PM

MON DD YYYY HH:MM:SS xM
<ETX>

Typical Response Message, Computer Format:

<SOH>i50F00YYMMDDHHMMxx&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - Display format for DATE/TIME code
 - 01 - MON DD, YYYY HH:MM:SS xM (12 Hour Clock)
 - 02 - MON DD YYYY HH:MM:SS (24 Hour Clock)
 - 03 - MM-DD-YY HH:MM:SS xM (12 Hour Clock)
 - 04 - MM-DD-YY HH:MM:SS (24 Hour Clock)
 - 05 - DD-MM-YY HH:MM:SS (24 Hour Clock)
 - 06 - YY-MM-DD HH:MM:SS (24 Hour Clock)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 511

Version 110

Function Type: Set BIR Shift Printouts Flag

Command Format:

Display: <SOH>S51100f

Computer: <SOH>s51100f

Inquire:

<SOH>I51100

<SOH>i51100

Typical Response Message, Display Format:

<SOH>
I51100
JAN 22, 1996 3:13 PM

SHIFT BIR PRINTOUTS
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i51100YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Shift Printouts flag
0=Disable
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 512

Version 110

Function Type: Set BIR Daily Printouts Flag

Command Format:

Display: <SOH>S51200f

Computer: <SOH>s51200f

Inquire:

<SOH>I51200

<SOH>i51200

Typical Response Message, Display Format:

<SOH>
I51200
JAN 22, 1996 3:13 PM

DAILY BIR PRINTOUTS
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i51200YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Daily Printouts flag
0=Disable
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 513

Version 10

Function Type: Set Tanker Load Report Flag

Command Format:

Display: <SOH>S51300f

Computer: <SOH>s51300f

Inquire:

<SOH>I51300

<SOH>i51300

Typical Response Message, Display Format:

<SOH>
I51300
JAN 22, 1996 3:14 PM

TANKER LOAD REPORT
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i51300YYMMDDHHmmf&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Tanker Load Report Flag:
0=Disable
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 514

Version 10

Function Type: Set H-Protocol Height/Volume format

Command Format:

Display: <SOH>S51400f

Computer: <SOH>s51400f

Inquire:

<SOH>I51400

<SOH>i51400

Typical Response Message, Display Format:

```
<SOH>
I51400
JAN 24, 1996  2:53 PM

H-PROTOCOL DATA FORMAT
HEIGHT
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51400YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Data Format
0=Height
1=Volume
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 515

Function Type: Set HRM - QPLD Monthly Printout

Version 110

Command Format:

Display: <SOH>S51500x

Computer: <SOH>s51500x

Inquire:

<SOH>I51500

<SOH>i51500

Typical Response Message, Display Format:

```
<SOH>
I51500
JAN 24, 1996  2:53 PM

QPLD MONTHLY PRINTOUT
ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51500YYMMDDHHmmx&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. x - QPLD Monthly Report:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 516

Version 14

Function Type: Set Re-direct Local Printout Flag

Command Format:

Display: <SOH>S51600x

Computer: <SOH>s51600x

Inquire:

<SOH>I51600

<SOH>i51600

Typical Response Message, Display Format:

```
<SOH>
I51600
OCT 15, 1996  4:29 PM

RE-DIRECT LOCAL PRINTOUT
ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51600YYMMDDHHmmx&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. x - Re-direct Local Printout:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 517

Version 15

Function Type: Set System Type & Language Flags

Command Format:

Display: <SOH>S51700ULL

Computer: <SOH>s51700ULL

Inquire:

<SOH>I51700

<SOH>i51700

Typical Response Message, Display Format:

```
<SOH>
I51700
JUL 29, 1997  9:03 AM

SYSTEM TYPE AND LANGUAGE FLAG

SYSTEM UNITS
U.S.
SYSTEM LANGUAGE
ENGLISH
SYSTEM DATE/TIME FORMAT
MON DD YYYY HH:MM:SS xM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51700YYMMDDHHmmULL&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. U - System Units:
 - 1=U.S.
 - 2=Metric
 - 3=Imperial Gallons
3. LL - System Language:
 - 01=English
 - 02=French
 - 03=Spanish
 - 04=German
 - 05=Portuguese
 - 06=Polish
 - 07=Swedish
 - 08=Japanese
 - 09=Finnish
 - 10=Greek
 - 11=Russian
 - 12=Turkish
 - 13=Dutch
 - 14=Italian
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 518

Version 15

Function Type: Set Secondary Language Code Page Output

Command Format:

Display: <SOH>S51800PP

Computer: <SOH>s51800PP

Inquire:

<SOH>I51800

<SOH>i51800

Typical Response Message, Display Format:

<SOH>
I51800
JUL 29, 1997 9:04 AM
ALTERNATE LANGUAGE CODE PAGE

CODE PAGE SELECTED:
WINDOWS
<ETX>

Typical Response Message, Computer Format:

<SOH>i51800YYMMDDHHmmPP&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Code Page selected
00=Windows
01=DOS
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 519

Version 15

Function Type: Set PLLD & WPLLD Duration Before Precision Retest

Command Format:

Display: <SOH>S51900DDD

Computer: <SOH>s51900DDD

Inquire:

<SOH>I51900

<SOH>i51900

Typical Response Message, Display Format:

```
<SOH>
I51900
JUL 29, 1997  9:04 AM

PRECISION TEST DURATION
HOURS: 12
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51900YYMMDDHHmmDDD&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. DDD - Retest Duration in hours (Decimal, 012-744)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 51A

Version 15

Function Type: Set Enable/Disable Auto Daylight Saving Time

Command Format:

Display: <SOH>S51A00f

Computer: <SOH>s51A00f

Inquire:

<SOH>I51A00

<SOH>i51A00

Typical Response Message, Display Format:

```
<SOH>
I51A00
JUL 29, 1997  9:04 AM

DAYLIGHT SAVING TIME
ENABLED ON
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51A00YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Daylight Saving Time Flag
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 51B

Version 15

Function Type: Set Start/End Daylight Saving Date and Time

Command Format:

Display: <SOH>S51BttMMWDHHmm

Computer: <SOH>s51BttMMWDHHmm

Inquire:

<SOH>I51Btt

<SOH>i51Btt

Notes:

1. YYMMDDHHmm - Current Date and Time
2. tt - Start or End Time Indicator
01=Start Date & Time
02=End Date & Time
3. MMWDHHmm - Date & Time
MM=Month (01-12)
W=Week of Month (1-6)
D=Day of Week (1=Monday, 2=Tuesday, .. 7=Sunday)
HH=Hour (00-23)
mm=Minute (00-59)

Typical Response Message, Display Format:

```
<SOH>
I51B00
JUL 29, 1997  9:04 AM
DAYLIGHT SAVING TIME

START DATE    APR   WEEK 1    SUN    2:00 AM
END DATE      OCT   WEEK 4    SUN    2:00 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51BttYYMMDDHHmmMMWDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. tt - Start or End Time Indicator
00=in computer format returns only Start Date & Time
01=Start Date & Time
02=End Date & Time
3. MMWDHHmm - Date & Time
MM=Month (01-12)
W=Week of Month (1-6)
D=Day of Week (1=Monday, 2=Tuesday, .. 7=Sunday)
HH=Hour (00-23)
mm=Minute (00-59)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 51C

Version 116

Function Type: Set Ticketed Delivery Flag Enable

Command Format:

Display: <SOH>S51C00f

Computer: <SOH>s51C00f

Inquire:

<SOH>I51C00

<SOH>i51C00

Typical Response Message, Display Format:

<SOH>
I51C00
MAR 20, 1998 3:27 PM

TICKETED DELIVERY
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i51C00YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Ticketed Delivery flag
0=Disable
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 51D

Version 116

Function Type: Set Ticketed Delivery Temperature Compensation Flag

Command Format:

Display: <SOH>S51D00f

Computer: <SOH>s51D00f

Inquire:

<SOH>I51D00

<SOH>i51D00

Typical Response Message, Display Format:

```
<SOH>
I51D00
MAR 20, 1998  3:27 PM

TICKETED DELIVERY TEMP COMPENSATION
STANDARD
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51D00YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Ticketed Delivery Temperature Compensation flag
0=Standard
1=Temperature compensated
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 51E

Version 116

Function Type: Set Ticketed Delivery Close Day of Week

Command Format:

Display: <SOH>S51E00D

Computer: <SOH>s51E00D

Inquire:

<SOH>I51E00

<SOH>i51E00

Typical Response Message, Display Format:

```
<SOH>
I51E00
MAR 20, 1998  3:28 PM

CLOSE DAY OF WEEK
SUN
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51E00YYMMDDHHmmD&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. D - Day of Week (1=Monday, 2=Tuesday, .. 7=Sunday)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.2 COMMUNICATIONS SETUP

Function Code: 520

Version 20

Function Type: Set Receiver Auto Dial Type and Start Time II

Command Format:

Display: <SOH>S520RRMYMMDDHHmm<CR> (if M=1)
MMWDHHmm<CR> (if M=2)
WDHHmm<CR> (if M=3)
DHHmm<CR> (if M=4)
HHmm<CR> (if M=5)
(if M=6) Reserved
(if M=7) Reserved
f<CR> (if M=8)

Inquire:
<SOH>I520RR

Computer: <SOH>s520RRMYMMDDHHmm<CR> (if M=1)
MMWDHHmm<CR> (if M=2)
WDHHmm<CR> (if M=3)
DHHmm<CR> (if M=4)
HHmm<CR> (if M=5)
(if M=6) Reserved
(if M=7) Reserved
f<CR> (if M=8)

<SOH>i520RR

Typical Response Message, Display Format:

<SOH>
I520RR
JUN 1, 2000 8:02 AM

RECEIVER AUTO DIAL TYPE & START TIME

RCVR	LOCATION LABEL	DIAL TYPE	START TIME
1	TLS LAB R1	DAILY	4:00 PM
2	TLS LAB R2	DAILY	4:30 PM
3	FINANCE R3	DAILY	5:00 PM
4	FINANCE R4	DAILY	5:30 PM
5	TCH SUP R5	DAILY	6:00 PM
6	TCH SUP R6	DAILY	6:30 PM
7	ENG/MKT R7	DAILY	7:00 PM
8	ENG/MKT R8	DAILY	7:30 PM

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 520: (Continued)

Typical Response Message, Computer Format:

```

<SOH>i520RRYYMMDDHHmmRRNNMYMMDDHHmm...      (if M=1)
          MMWDHHmm...                          (if M=2)
          WDHHmm...                            (if M=3)
          DHHmm...                            (if M=4)
          HHmm...                             (if M=5)
          (if M=6) Reserved
          (if M=7) Reserved
          f...                                 (if M=8)

          RRNNMYMMDDHHmm&&CCCC<ETX>          (if M=1)
          MMWDHHmm&&CCCC<ETX>                (if M=2)
          WDHHmm&&CCCC<ETX>                  (if M=3)
          DHHmm&&CCCC<ETX>                  (if M=4)
          HHmm&&CCCC<ETX>                  (if M=5)
          (if M=6) Reserved
          (if M=7) Reserved
          f&&CCCC<ETX>                      (if M=8)

```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal, 00=all)
3. NN - Number of Data Fields to follow (Hex)
4. M - Auto Dial Method (frequency):
 - 1=On Date
 - 2=Annually
 - 3=Monthly
 - 4=Weekly
 - 5=Daily
 - 8=BIR End (V20 - BIR only)
5.
 - If M=1 ON DATE, NNMYMMDDHHmm:
 - NN =0B - Number of characters to follow (Hex)
 - M =1 - ON DATE
 - YY =Year
 - MM =Month (01-12)
 - DD =Day
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=2 ANNUALLY, NNMMWDHHmm:
 - NN =09 - Number of characters to follow (Hex)
 - M =2 - ANNUALLY
 - MM =Month (01-12)
 - W =Week Number (1-4)
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 520 Notes: (Continued)

- If M=3 MONTHLY, NNMWDHm:nn:
 - NN =07 - Number of characters to follow (Hex)
 - M =3 - MONTHLY
 - W =Week Number (1-4)
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=4 WEEKLY, NNMDHm:nn:
 - NN =06 - Number of characters to follow (Hex)
 - M =4 - WEEKLY
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=5 DAILY, NNMHHm:nn:
 - NN =05 - Number of characters to follow (Hex)
 - M =5 - DAILY
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=8 BIR END, NNMf:
 - NN =02 - Number of characters to follow (Hex)
 - M =8 - BIR END
 - f =BIR Period End Enable Flag
 - 0=Disabled
 - 1=Auto Daily Closing
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 521

Version 2

Function Type: Set Receiver Configuration Flag

Command Format:

Display: <SOH>S521RRf

Computer: <SOH>s521RRf

Inquire:

<SOH>I521RR

<SOH>i521RR

Typical Response Message, Display Format:

<SOH>
S521RR
MAR 29, 1996 6:27 PM

RECEIVER CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	HOME OFFICE	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i521RRYYMMDDHHmmRRf...
RRf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. f - Receiver Configuration Flag:
0=Disabled
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 522

Version 2

Function Type: Set Receiver Location Label

Command Format:

Display: <SOH>S522RRaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s522RRaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I522RR

<SOH>i522RR

Typical Response Message, Display Format:

<SOH>
I522RR
JAN 22, 1996 3:14 PM

RECEIVER LABEL

DEVICE LABEL
1 aaaaaaaaaaaaaaaaaaaaaa
<ETX>

Typical Response Message, Computer Format:

<SOH>i522RRYYMMDDHHmmRRaaaaaaaaaaaaaaaaaaaaa...
RRaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 523

Version 2

Function Type: Set Receiver Telephone Number

Command Format:

Display: <SOH>S523RRaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s523RRaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I523RR

<SOH>i523RR

Typical Response Message, Display Format:

<SOH>
I523RR
JAN 22, 1996 3:14 PM

RECEIVER TELEPHONE NUMBER

RCVR	LOCATION LABEL	PHONE NUMBER
1	HOME OFFICE	aaaaaaaaaaaaaaaaaaaaa

<ETX>

Typical Response Message, Computer Format:

<SOH>i523RRYYMMDDHHmmRRaaaaaaaaaaaaaaaaaaaaa...
RRaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. a - Phone Number (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 524

Version 2

Function Type: Set Receiver Dialing Destination Type

Command Format:

Display: <SOH>S524RRTT

Computer: <SOH>s524RRTT

Inquire:

<SOH>I524RR

<SOH>i524RR

Typical Response Message, Display Format:

<SOH>
I524RR
JAN 22, 1996 3:15 PM

RECEIVER DIALING DESTINATION TYPE

RCVR	LOCATION LABEL	FAX TYPE
1	HOME OFFICE	FACSIMILE

<ETX>

Typical Response Message, Computer Format:

<SOH>i524RRYYMMDDHHmmRRTT...
RRTT&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. TT - Dialing Destination Type:
01=Teletype
02=Facsimile
03=Computer
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 525

Version 2

Function Type: Set Receiver Port Number to Dial

Command Format:

Display: <SOH>S525RRn

Computer: <SOH>s525RRn

Inquire:

<SOH>I525RR

<SOH>i525RR

Typical Response Message, Display Format:

<SOH>
I525RR
JUL 29, 1997 9:05 AM

RECEIVER MODEM NUMBER TO DIAL

RCVR	LOCATION LABEL	PORT NUMBER
1	HOME OFFICE	1

<ETX>

Typical Response Message, Computer Format:

<SOH>i525RRYYMMDDHHmmRRn...
RRn&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. n - Port Number (max 3, or 6 in Version 1xx)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 526

Version 2

Function Type: Set Receiver Retry Number

Command Format:

Display: <SOH>S526RRnn

Computer: <SOH>s526RRnn

Inquire:

<SOH>I526RR

<SOH>i526RR

Typical Response Message, Display Format:

<SOH>
I526RR
JUL 29, 1997 9:05 AM

RECEIVER RETRY NUMBER

RCVR	LOCATION LABEL	RETRY NUMBER
1	HOME OFFICE	3

<ETX>

Typical Response Message, Computer Format:

<SOH>i526RRYYMMDDHHmmRRnn...
RRnn&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nn - Retry Number (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 527

Version 2

Function Type: Set Receiver Retry Delay Time

Command Format:

Display: <SOH>S527RRnn

Computer: <SOH>s527RRnn

Inquire:

<SOH>I527RR

<SOH>i527RR

Typical Response Message, Display Format:

<SOH>
I527RR
JUL 29, 1997 9:06 AM

RECEIVER RETRY DELAY TIME

RCVR	LOCATION LABEL	RETRY DELAY
1	HOME OFFICE	3

<ETX>

Typical Response Message, Computer Format:

<SOH>i527RRYYMMDDHHmmRRnn...
RRnn&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nn - Retry Delay Time (00 to 60 minutes)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 528

Version 2

Function Type: Set Receiver Confirmation Report Flag

Command Format:

Display: <SOH>S528RRf

Computer: <SOH>s528RRf

Inquire:

<SOH>I528RR

<SOH>i528RR

Typical Response Message, Display Format:

<SOH>
I528RR
JAN 22, 1996 3:15 PM

RECEIVER CONFIRMATION REPORT FLAG

RCVR	LOCATION LABEL	CONFIRMATION REPORT
1	HOME OFFICE	OFF

<ETX>

Typical Response Message, Computer Format:

<SOH>i528RRYYMMDDHHmmRRf...
RRf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. f - Confirmation Report Flag:
0=OFF
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 529

Version 19

Function Type: Set Fax Auto Dial Method

Command Format:

Display: <SOH>S52900f

Computer: <SOH>s52900f

Inquire:

<SOH>I52900

<SOH>i52900

Typical Response Message, Display Format:

<SOH>
I52900
MAY 05, 1999 1:54 PM

ALL PHONES
<ETX>

Typical Response Message, Computer Format:

<SOH>i52900YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Fax Auto Dial Method
0=ALL PHONES
1=SINGLE PHONE
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 52A

Version 3

Function Type: Set Receiver Report List

Command Format:

Display: <SOH>S52ARRNNRRss

Computer: <SOH>s52ARRNNRRss

Inquire:

<SOH>I52ARR

<SOH>i52ARR

Typical Response Message, Display Format:

<SOH>
I52ARR
JUL 29, 1997 9:06 AM

RECEIVER REPORT LIST

RCVR	LOCATION LABEL	REPORT LIST
1	HOME OFFICE	SYSTEM STATUS IN-TANK STATUS INVENTORY PERIODIC DLVY VAR PERIODIC BOOK VAR DAILY VAR ANALY

<ETX>

Typical Response Message, Computer Format:

<SOH>i52ARRYYMMDDHHmmRRNNrrss...
RRNNrrss&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. NN - Total Number of Reports to Follow (Decimal)
4. rr - Report Number:
 - 01=System Status
 - 02=Priority Alarm History
 - 03=Non-Priority Alarm History
 - 05=In-Tank Status
 - 06=In-Tank Inventory
 - 07=In-Tank Delivery
 - 08=In-Tank Leak Test
 - 09=Shift Report
 - 10=PLLD Results
 - 11=WPLLD Results
 - 12=Volumetric Line Leak Status
 - 13=Periodic Row Report
 - 14=Fuel Management Report
 - 15=CSLD Results
 - 16=Most Recent Delivery Report
 - 17=Current Periodic Delivery Variance Report (Added in V19)
 - 18=Current Periodic Book Variance Report (Added in V19)
 - 19=Daily Variance Analysis Report (Added in V19)
5. ss - Report Status
 - 01=ON
 - 00=OFF
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 52B

Version 3

Function Type: Set Receiver Auto Dial Type and Start Time

Command Format:

Display: <SOH>S52BRRMYMMDDHHmm<CR> (if M=1)
MMWDHHmm<CR> (if M=2)
WDHHmm<CR> (if M=3)
DHHmm<CR> (if M=4)
HHmm<CR> (if M=5)

Computer: <SOH>s52BRRMYMMDDHHmm<CR> (if M=1)
MMWDHHmm<CR> (if M=2)
WDHHmm<CR> (if M=3)
DHHmm<CR> (if M=4)
HHmm<CR> (if M=5)

Inquire:

<SOH>I52BRR

<SOH>i52BRR

Typical Response Message, Display Format:

<SOH>
I52BRR
JAN 22, 1996 3:15 PM

RECEIVER AUTO DIAL TYPE & START TIME

RCVR	LOCATION LABEL	DIAL TYPE	START TIME
1	HOME OFFICE	DAILY	4:15 AM

<ETX>

Typical Response Message, Computer Format:

<SOH>i52BRRYYMMDDHHmmRRMYMMDDHHmm (if M=1)
MMWDHHmm (if M=2)
WDHHmm (if M=3)
DHHmm (if M=4)
HHmm (if M=5)
RRMYMMDDHHmm&&CCCC<ETX> (if M=1)
MMWDHHmm&&CCCC<ETX> (if M=2)
WDHHmm&&CCCC<ETX> (if M=3)
DHHmm&&CCCC<ETX> (if M=4)
HHmm&&CCCC<ETX> (if M=5)

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal, 00=all)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 52B Notes: (Continued)

3. M - Auto Dial Method:
 - 1=On Date
 - 2=Annually
 - 3=Monthly
 - 4=Weekly
 - 5=Daily
 - If M=1 ON DATE, YYMMDDHHmm:
 - YY =Year
 - MM =Month (01-12)
 - DD =Day
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=2 ANNUALLY, MMWDHHmm:
 - MM =Month (01-12)
 - W =Week Number (1-4)
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=3 MONTHLY, WDHHmm:
 - W =Week Number (1-4)
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=4 WEEKLY, DHHmm:
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=5 DAILY, HHmm:
 - HHmm=Hour, Minute (EE00=Disabled)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 52C

Version 3

Function Type: Set Receiver Auto Dial On Alarms

Command Format:

Display: <SOH>S52CRR AANNTTSS

Computer: <SOH>s52CRR AANNTTSS

Inquire:

<SOH>I52CRR

<SOH>i52CRR

Typical Response Message, Display Format:

<SOH>
I52CRR
JAN 22, 1996 3:15 PM

RECEIVER SETUP REPORT

D 1: HOME OFFICE
- NO ALARM ASSIGNMENTS -
<ETX>

Typical Response Message, Computer Format:

<SOH>i52CRRYYMMDDHHmmRRnnAANNTTSS...
RRnnAANNTTSS&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nn - Number of Alarms to Follow (Hex)
4. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
5. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status (Hex):
00=Clear
01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 52D

Version 17

Function Type: Autodial Alarm Status

Command Format:

Display: <SOH>S52DRRf

Computer: <SOH>s52DRRf

Inquire:

<SOH>I52DRR

<SOH>i52DRR

Notes:

1. RR - Receiver number (00=all)
2. f - Alarm clear flag
1=clear; all others ignored

Typical Response Message Display Format:

```
<SOH>
I52DRR
JAN  1, 1996  8:06 AM
```

```
RECEIVER AUTODIAL ALARM STATUS
RCVR      STATUS
1         CLEAR
```

Typical Response Message, Computer Format:

```
<SOH>i52D00YYMMDDHHmmNNf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of receiver alarm flags to follow
3. f - Alarm flags
0=clear
1=alarm
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 52E

Version 19

Function Type: Set Delay for Autodial on Alarm Clear

Command Format:

Display: <SOH>S52ERRhh

Computer: <SOH>s52ERRhh

Inquire:

<SOH>I52ERR

<SOH>i52ERR

Typical Response Message, Display Format:

<SOH>
I52ERR
JAN 28, 1996 10:09 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

RECEIVER CLEARED ALARMS REPORT DELAY PERIOD

RCVR	LOCATION LABEL	DELAY PERIOD
1	Main Office D- 1	1
2	Finance D- 2	3
3	Home Office D- 3	8
4	Service D- 4	3

<ETX>

Typical Response Message, Computer Format:

<SOH>i52ERRYYMMDDHHmmRRhh...
RRhh&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal, 00=All)
3. hh - Number of hours to delay autodial on clear alarm (Decimal, 01-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 52F

Version 19

Function Type: Set Receiver Alarm Status

Command Format:

Display: <SOH>S52FRRAAf

Computer: <SOH>s52FRRAAf

Inquire:

<SOH>I52FRR

<SOH>i52FRR

Notes:

1. RR - Receiver number (00=all)
2. AA - Alarm Type number
00=all
03=Service Report Warning
04=Alarm Clear Warning
05=Delivery Report Warning
06=No Dial Tone Alarm
3. f - Alarm clear flag
0=clear; all others invalid

(Version 20)

Typical Response Message, Display Format:

<SOH>
I52FRR
JAN 1, 2000 8:06 AM

RECEIVER ALARM STATUS

D 1: HOME OFFICE
SERVICE REPORT WARN: CLEAR
ALARM CLEAR WARN : CLEAR
DELIVERY REPORT WRN: CLEAR
NO DIAL TONE ALARM : CLEAR
<ETX>

Typical Response Message, Computer Format:

<SOH>i52FRYYMMDDHHmmNNRRf...
RRf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of receiver alarm flags per receiver
Order of alarms: Service Report Warn, Alarm Clear Warn,
Delivery Report Warn, and No Dial Tone Alarm
3. RR - Receiver number
4. f - Alarm flags
0=clear
1=alarm
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 530
Function Type: Beeper Enable/Disable

Version 26

Command Format:
Display: <SOH>S53000x149
Computer: <SOH>s53000x149

Inquire:
<SOH>I53000
<SOH>i53000

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
I53000
JAN 22, 1996  3:12 PM
```

```
BEEPER: ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i53000YYMMDDHHmmx&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. x - Beeper Enable/Disable Flag
0=Disable
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 531

Version 8

Function Type: Set RS-232 End of Message

Command Format:

Display: <SOH>S53100f

Computer: <SOH>s53100f

Inquire:

<SOH>I53100

<SOH>i53100

Typical Response Message, Display Format:

```
<SOH>
I53100
JAN 22, 1996  3:16 PM

RS-232 END OF MESSAGE
DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i53100YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - End of Message flag
0=Disable
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.3 WARNING, ALARM, & AUTO-PRINT SETUP

Function Code: 532

Version 116

Function Type: Set Ticketed Variance Analysis Printout Flags

Command Format:

Display: <SOH>S53200PWD

Computer: <SOH>s53200PWD

Inquire:

<SOH>I53200

<SOH>i53200

Typical Response Message, Display Format:

<SOH>
I53200
MAR 20, 1998 3:28 PM

PERIODIC, WEEKLY AND DAILY PRINTOUTS
VARIANCE ANALYSIS

PERIODIC
DISABLED

WEEKLY
DISABLED

DAILY
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i53200YYMMDDHHmmPWD&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. P - Periodic Printout flag
0=Disable
1=Enable
3. W - Weekly Printout flag
0=Disable
1=Enable
4. D - Daily Printout flag
0=Disable
1=Enable
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 533

Version 116

Function Type: Set Ticketed Delivery Book Variance Printout Flags

Command Format:

Display: <SOH>S53300PWD

Computer: <SOH>s53300PWD

Inquire:

<SOH>I53300

<SOH>i53300

Typical Response Message, Display Format:

```
<SOH>
I53300
MAR 20, 1998  3:28 PM

PERIODIC, WEEKLY AND DAILY PRINTOUTS
BOOK VARIANCE

PERIODIC
DISABLED

WEEKLY
DISABLED

DAILY
ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i53300YYMMDDHHmmPWD&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. P - Periodic Printout flag
0=Disable
1=Enable
3. W - Weekly Printout flag
0=Disable
1=Enable
4. D - Daily Printout flag
0=Disable
1=Enable
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 534

Version 116

Function Type: Set Ticketed Delivery Variance Printout Flags

Command Format:

Display: <SOH>S53400PWD

Computer: <SOH>s53400PWD

Inquire:

<SOH>I53400

<SOH>i53400

Typical Response Message, Display Format:

```
<SOH>
I53400
MAR 20, 1998  3:28 PM

PERIODIC, WEEKLY AND DAILY PRINTOUTS
DELIVERY VARIANCE

PERIODIC
DISABLED

WEEKLY
DISABLED

DAILY
ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i53400YYMMDDHHmmPWD&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. P - Periodic Printout flag
0=Disable
1=Enable
3. W - Weekly Printout flag
0=Disable
1=Enable
4. D - Daily Printout flag
0=Disable
1=Enable
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 536

Version 20

Function Type: Set RS-232 Security Code per Port

Command Format:

Display: <SOH>S536PPsaaaaaa

Computer: <SOH>s536PPsaaaaaa

Inquire:

<SOH>I536PP

<SOH>i536PP

Notes:

1. PP - Port number (Decimal, 01..03 [..06]; 99=this port)
2. s - Enable or Disable Status (if disabled no password is required)
3. aaaaaa - Security code (6 ASCII characters from 20 Hex-7E Hex)

Typical Response Message, Display Format:

```
<SOH>
I536PP
JUN  1, 2000  8:05 AM

232 SECURITY CODE

PORT  SECURITY CODE  STATUS

1      123456      ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i536PPYYMMDDHHmmsaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. s - disabled or enabled status
3. aaaaaa - Security code (6 ASCII characters from 20 Hex-7E Hex)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 537

Version 20

Function Type: Set Display Format RS-232 ETX per Port

Command Format:

Display: <SOH>S537PPAB

Computer: <SOH>s537PPAB

Inquire:

<SOH>I537PP

<SOH>i537PP

Notes:

1. PP - Port number (Decimal, 01..06]; 99=this port)
2. A - ETX CHAR 1 (value 0-255)
3. B - ETX CHAR 2 (value 0-255)
4. The default end of message character transmitted by the TLS is an <ETX> (Decimal 003 or ^C). If desired, the TLS can be programmed to transmit up to two other characters at the end of each computer format response message.
5. The TLS accepts any ASCII character (000-255) in either of the two positions. However, if the first "A" character is a <NUL> (000), the TLS reverts to its default condition. If the first character "A", is not a NULL but the second character "B" is, only the first character is transmitted as the response message. If neither character is a <NUL>, both characters are transmitted, in sequence, at the end of each computer format response message.
6. This command only sets the ETX characters. To enable the use of the custom ETX, the 531 command must be used to enable the user's custom ETX.

Typical Response Message, Display Format:

```
<SOH>
I537PP
JUN  1, 2000  8:05 AM

DISPLAY MODE RS-232 ETX CHARATERS

PORT      ETX      ETX

 1         A      B
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i537PPYYMMDDHHmmAB&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. A - 1st Character (value 0-255)
3. B - 2nd Character (value 0-255)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 538

Version 20

Function Type: Set Computer Format RS-232 ETX per Port

Command Format:

Display: <SOH>S538PPAB

Computer: <SOH>s538PPAB

Inquire:

<SOH>I538PP

<SOH>i538PP

Notes:

1. PP - Port number (Decimal, 01..06]; 99=this port)
2. A - ETX CHAR 1 (value 0-255)
3. B - ETX CHAR 2 (value 0-255)
4. The default end of message character transmitted by the TLS is an <ETX> (Decimal 003 or ^C). If desired, the TLS can be programmed to transmit up to two other characters at the end of each computer format response message.
5. The TLS accepts any ASCII character (000-255) in either of the two positions. However, if the first "A" character is a <NUL> (000), the TLS reverts to its default condition. If the first character "A", is not a NULL but the second character "B" is, only the first character is transmitted as the response message. If neither character is a <NUL>, both characters are transmitted, in sequence, at the end of each computer format response message.
6. This command only sets the ETX characters. To enable the use of the custom ETX, the 531 command must be used to enable the user's custom ETX.

Typical Response Message, Display Format:

```
<SOH>
I538PP
JUN  1, 2000  8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT      ETX      ETX

 1         C       D
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i538PPYYMMDDHHmmAB&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. A - 1st Character (value 0-255)
3. B - 2nd Character (value 0-255)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 546

Version 15

Function Type: Set Tank Periodic Test Needed Warning

Command Format:

Display: <SOH>S54600f

Computer: <SOH>s54600f

Inquire:

<SOH>I54600

<SOH>i54600

Typical Response Message, Display Format:

<SOH>

I54600

JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED WRN: DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i54600YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Tank Periodic Test Needed Warning Flag:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 547

Version 15

Function Type: Set Days Before Tank Periodic Test Needed Warning

Command Format:

Display: <SOH>S54700dd

Computer: <SOH>s54700dd

Inquire:

<SOH>I54700

<SOH>i54700

Typical Response Message, Display Format:

<SOH>

I54700

JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED WRN: DAYS= 25

<ETX>

Typical Response Message, Computer Format:

<SOH>i54700YYMMDDHHmmdd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Tank Periodic Test Needed Warn (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 548

Version 15

Function Type: Set Days Before Tank Periodic Test Needed Alarm

Command Format:

Display: <SOH>S54800dd

Computer: <SOH>s54800dd

Inquire:

<SOH>I54800

<SOH>i54800

Typical Response Message, Display Format:

<SOH>

I54800

JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED ALM: DAYS= 30

<ETX>

Typical Response Message, Computer Format:

<SOH>i54800YYMMDDHHmmdd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Tank Periodic Test Needed Alarm (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 549

Version 15

Function Type: Set Tank Annual Test Needed Warning

Command Format:

Display: <SOH>S54900f

Computer: <SOH>s54900f

Inquire:

<SOH>I54900

<SOH>i54900

Typical Response Message, Display Format:

<SOH>

I54900

JAN 22, 1996 3:12 PM

TANK ANN TEST NEEDED WRN: DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i54900YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Annual Test Needed Warning Flag:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 54A

Version 15

Function Type: Set Days Before Tank Annual Test Needed Warning

Command Format:

Display: <SOH>S54A00ddd

Computer: <SOH>s54A00ddd

Inquire:

<SOH>I54A00

<SOH>i54A00

Typical Response Message, Display Format:

<SOH>

I54A00

JAN 22, 1996 3:12 PM

TANK ANN TST NEEDED WRN: DAYS=355

<ETX>

Typical Response Message, Computer Format:

<SOH>i54A00YYMMDDHHmmddd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Warning (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 54B

Version 15

Function Type: Set Days Before Tank Annual Test Needed Alarm

Command Format:

Display: <SOH>S54B00ddd

Computer: <SOH>s54B00ddd

Inquire:

<SOH>I54B00

<SOH>i54B00

Typical Response Message, Display Format:

<SOH>

I54B00

JAN 22, 1996 3:12 PM

TANK ANN TEST NEEDED ALM: DAYS=365

<ETX>

Typical Response Message, Computer Format:

<SOH>i54B00YYMMDDHHmmddd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before annual Test Needed Alarm (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 54C

Version 19

Function Type: Set CSLD Evaporation Reid Vapor Pressure Chart

Command Format:

Display: <SOH>S54C00GG.G...

Computer: <SOH>s54C00FFFFFFFFF...

Inquire:

<SOH>I54C00

<SOH>i54C00

Notes:

1. GG.G - 12 Reid Vapor Pressures (Decimal)
2. FFFFFFFF - 12 Reid Vapor Pressures (ASCII Hex IEEE floats)
3. The command will be rejected if any value is outside the range 0.0 to 15.0, or all table values are zero.

Typical Response Message, Display Format:

```
<SOH>
I54COO
JAN 22, 1996  3:27 PM
```

```
CSLD EVAP CONSTANTS
REID VAPOR PRESSURE:
JAN           14.0
FEB           14.0
MAR           12.0
APR           12.0
MAY           11.0
JUN           10.0
JUL           08.0
AUG           04.0
SEP           05.0
OCT           06.0
NOV           09.0
DEC           12.0
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i54C00YYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of eight character Data Fields to follow (Hex)
3. FFFFFFFF - 12 Reid Vapor Pressures (ASCII Hex IEEE floats)
 1. Jan RVP
 2. Feb RVP
 3. Mar RVP
 4. Apr RVP
 5. May RVP
 6. Jun RVP
 7. Jul RVP
 8. Aug RVP
 9. Sep RVP
 10. Oct RVP
 11. Nov RVP
 12. Dec RVP
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 553

Version 19

Function Type: Set Line Re-Enable Method

Command Format:

Display: <SOH>S55300f

Computer: <SOH>s55300f

Inquire:

<SOH>I55300

<SOH>i55300

Typical Response Message, Display Format:

```
<SOH>
I55300
JAN 24, 2000  2:54 PM

LINE RE-ENABLE METHOD
PASS LINE TEST
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i55300YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Line Re-Enable Method Flag
0=Pass Line Test
1=Alarm Acknowledge
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 554

Version 18

Function Type: Set Periodic Line Leak Test Auto-Confirm

Command Format:

Display: <SOH>S55400f

Computer: <SOH>s55400f

Inquire:

<SOH>I55400

<SOH>i55400

Typical Response Message, Display Format:

```
<SOH>
I55400
JUL 29, 1997  9:07 AM

0.20 GPH LINE TEST AUTO-CONFIRM: ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i55400YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Periodic Line Leak Test Auto-Confirm:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 555

Version 18

Function Type: Set Annual Line Leak Test Auto-Confirm

Command Format:

Display: <SOH>S55500f

Computer: <SOH>s55500f

Inquire:

<SOH>I55500

<SOH>i55500

Typical Response Message, Display Format:

```
<SOH>
I55500
JUL 29, 1997  9:07 AM

0.10 GPH LINE TEST AUTO-CONFIRM: ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i55500YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Annual Line Leak Test Auto-Confirm:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 556

Version 15

Function Type: Set Line Periodic Test Needed Warning

Command Format:

Display: <SOH>S55600f

Computer: <SOH>s55600f

Inquire:

<SOH>I55600

<SOH>i55600

Typical Response Message, Display Format:

```
<SOH>
I55600
JAN 22, 1996  3:12 PM

LINE PER TST NEEDED WRN: DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i55600YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Periodic Test Needed Warning Flag:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 557

Version 15

Function Type: Set Days Before Line Periodic Test Needed Warning

Command Format:

Display: <SOH>S55700dd

Computer: <SOH>s55700dd

Inquire:

<SOH>I55700

<SOH>i55700

Typical Response Message, Display Format:

<SOH>

I55700

JAN 22, 1996 3:12 PM

LINE PER TST NEEDED WRN: DAYS= 25

<ETX>

Typical Response Message, Computer Format:

<SOH>i55700YYMMDDHHmmdd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Periodic Test Needed Warning (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 558

Version 15

Function Type: Set Days Before Line Periodic Test Needed Alarm

Command Format:

Display: <SOH>S55800dd

Computer: <SOH>s55800dd

Inquire:

<SOH>I55800

<SOH>i55800

Typical Response Message, Display Format:

<SOH>

I55800

JAN 22, 1996 3:12 PM

LINE PER TST NEEDED ALM: DAYS= 30

<ETX>

Typical Response Message, Computer Format:

<SOH>i55800YYMMDDHHmmdd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Periodic Test Needed Alarm (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 559

Version 15

Function Type: Set Line Annual Test Needed Warning

Command Format:

Display: <SOH>S55900f

Computer: <SOH>s55900f

Inquire:

<SOH>I55900

<SOH>i55900

Typical Response Message, Display Format:

<SOH>

I55900

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED WRN: DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i55900YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Annual Test Needed Warning Flag:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 55A

Version 15

Function Type: Set Days Before Line Annual Test Needed Warning

Command Format:

Display: <SOH>S55A00ddd

Computer: <SOH>s55A00ddd

Inquire:

<SOH>I55A00

<SOH>i55A00

Typical Response Message, Display Format:

<SOH>

I55A00

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED WRN: DAYS=355

<ETX>

Typical Response Message, Computer Format:

<SOH>i55A00YYMMDDHHmmddd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Warning (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 55B

Version 15

Function Type: Set Days Before Line Annual Test Needed Alarm

Command Format:

Display: <SOH>S55B00ddd

Computer: <SOH>s55B00ddd

Inquire:

<SOH>I55B00

<SOH>i55B00

Typical Response Message, Display Format:

<SOH>

I55B00

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED ALM: DAYS=365

<ETX>

Typical Response Message, Computer Format:

<SOH>i55B00YYMMDDHHmmddd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Alarm (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 560

Version 26

Function Type: Set Mass/Density Enable/Disable

Command Format:

Display: <SOH>S56000f

Computer: <SOH>s56000f

Inquire:

<SOH>I56000

<SOH>i56000

Typical Response Message, Display Format:

<SOH>
I56000
JUN 22, 2001 3:15 PM

MASS/DENSITY
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i56000YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Mass/Density Flag
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 564
Function Type: Set Ullage

Version 27

Command Format:
Display: <SOH>S56400f
Computer: <SOH>s56400f

Inquire:
<SOH>I56400
<SOH>i56400

Typical Response Message, Display Format:

<SOH>
I56400
JUN 22, 2006 3:15 PM

ULLAGE: 90%
<ETX>

Typical Response Message, Computer Format:

<SOH>i56400YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Ullage
0=90%
1=95%
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 565

Function Type: Set Maintenance History

Version 27

Command Format:

Display: <SOH>S56500f

Computer: <SOH>s56500f

Inquire:

<SOH>I56500

<SOH>i56500

Typical Response Message, Display Format:

<SOH>
I56500
JUN 22, 2006 3:15 PM

MAINTENANCE HISTORY
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i56500YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Maintenance History Flag
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 566

Version 28

Function Type: Set Service Notice Enable

Command Format:

Display: <SOH>S56600149f

Computer: <SOH>s56600149f

Inquire:

<SOH>I56600

<SOH>i56600

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
I56600
APR 10, 2007 10:15 AM

SERVICE NOTICE: DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i56600YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Service Notice Enable
0 = DISABLED
1 = ENABLED
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 567

Version 28

Function Type: Set Service Notice Delivery Override Enable

Command Format:

Display: <SOH>S56700149f

Computer: <SOH>s56700149f

Inquire:

<SOH>I56700

<SOH>i56700

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

<SOH>

I56700

APR 10, 2007 10:15 AM

SERVICE NOTICE DELIVERY OVERRIDE: DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i56700YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Service Notice Delivery Override Enable
0 = DISABLED
1 = ENABLED
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 568

Version 28

Function Type: Set Service Notice Session Enable

Command Format:

Display: <SOH>S56800149f

Computer: <SOH>s56800149f

Inquire:

<SOH>I56800

<SOH>i56800

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
I56800
APR 10, 2007 10:15 AM
```

```
SERVICE NOTICE SESSION: DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i56800YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Service Notice Session Enable
0 = DISABLED
1 = ENABLED
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 569

Version 28

Function Type: Set Service Notice Session Duration

Command Format:

Display: <SOH>S56900hh

Computer: <SOH>s56900hh

Inquire:

<SOH>I56900

<SOH>i56900

Typical Response Message, Display Format:

<SOH>

I56900

APR 10, 2007 10:15 AM

SERVICE NOTICE SESSION DURATION: 2 HOURS

<ETX>

Typical Response Message, Computer Format:

<SOH>i56900YYMMDDHHmmhh&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. hh - Service Notice Session Duration in Hours (Decimal)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 5BC

Version 19

Function Type: Set Receiver Auto Dial on Alarm II

Command Format:

Display: <SOH>S5BCRRAANNTTSS

Computer: <SOH>s5BCRRAANNTTSS

Inquire:

<SOH>I5BCRR

<SOH>i5BCRR

Typical Response Message, Display Format:

```
<SOH>
I5BCRR
JAN 15, 1996 4:29 PM

RECEIVER SETUP REPORT

D 1: HOME OFFICE

IN-TANK ALARMS
T 1:LEAK ALARM
T 2:LEAK ALARM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i5BCRRYYMMDDHHmmRRnnAANNTTSS...
RRnnAANNTTSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nn - Number of Alarms to Follow (Hex)
4. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
5. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status
00=Clear
01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum.

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 5BD

Function Type: Set Enable/Disable Custom Alarms

Version 23

Command Format:

Display: <SOH>S5BD00f

Computer: <SOH>s5BD00f

Inquire:

<SOH>I5BD00

<SOH>i5BD00

Typical Response Message, Display Format:

<SOH>
I5BD00
JUN 22, 2001 3:15 PM

CUSTOM ALARM LABELS
ENABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i5BD00YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Custom Alarm Labels Flag
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 5BE
Function Type: Set Custom Alarm Labels

Version 23

Command Format:
Display: <SOH>S5BE00AANNfaaaaaaaaaaaaaaaaaaaaa
Computer: <SOH>s5BE00AANNfaaaaaaaaaaaaaaaaaaaaa

Inquire:
<SOH>I5BE00
<SOH>i5BE00

Typical Response Message, Display Format:

```
<SOH>
I5BE00
JUN 22, 2001  3:15 PM

CUSTOM ALARM LABELS

IN-TANK ALARMS
OVERFILL ALARM
(custom alarm label)
LOW PRODUCT ALARM
T 1:(custom alarm label)
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i5BE00YYMMDDHHmmnnAANNfaaaaaaaaaaaaaaaaaaaaa...
AANNfaaaaaaaaaaaaaaaaaaaaa...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Custom Alarm Labels to follow (Hex)
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. f - Custom Alarm Label Flag
0=Disabled
1=Enabled
6. a - Custom Alarm Label (19 ASCII characters [20h-7Eh])
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 5BF

Version 26

Function Type: Set Custom Alarm Label, device number, and indications

Command Format:

Display: <SOH>S5BF00AANNTTflpbdaaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s5BF00AANNTTflpbdaaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I5BF00

<SOH>i5BF00

Notes:

1. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
2. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
3. TT - Device (or Tank) Number (Decimal, 00=all)
4. f - Custom Alarm Flag
0=Disabled
1=Enabled
5. l - LCD Indication Flag
0=Disabled
1=Enabled
6. p - PRINTOUT Indication Flag
0=Disabled
1=Enabled
7. b - BEEP Indication Flag
0=Disabled
1=Enabled
8. d - LED Indication Flag
0=Disabled
1=Enabled
9. a - Custom Alarm Label (19 ASCII characters [20h-7Eh])

Typical Response Message, Display Format:

```
<SOH>
I5BF00
JUN 22, 2001  3:15 PM

CUSTOM ALARM LABELS

IN-TANK ALARMS
OVERFILL ALARM
  T 1:(custom alarm label)
LCD:  ENABLED
PRINT: ENABLED
BEEP:  DISABLED
LED:      ENABLED
  T 2:(custom alarm label)
LCD:  ENABLED
PRINT: ENABLED
BEEP:  DISABLED
LED:      ENABLED
<ETX>
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 5BF Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i5BF00YYMMDDHHmmnnAANNTTlpbdaaaaaaaaaaaaaaaaaaaaaa...
AANNTTlpbdaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Custom Alarms to follow (Hex)
3. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Device (or Tank) Number (Decimal, 00=all)
6. l - LCD Indication Flag
0=Disabled
1=Enabled
7. p - PRINTOUT Indication Flag
0=Disabled
1=Enabled
8. b - BEEP Indication Flag
0=Disabled
1=Enabled
9. d - LED Indication Flag
0=Disabled
1=Enabled
10. a - Custom Alarm Label (19 ASCII characters [20h-7Eh])
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 5E2

Version 14

Function Type: Set Inventory Record Time 1, 2, 3, 4

Command Format:

Display: <SOH>S5E2SSHmm

Computer: <SOH>s5E2SSHmm

Inquire:

<SOH>I5E2SS

<SOH>i5E2SS

Typical Response Message, Display Format:

<SOH>
I5E201
JAN 22, 1996 3:12 PM

RECORD 1 : 2:22 PM
<ETX>

Typical Response Message, Computer Format:

<SOH>i5E2SSYYMMDDHHmmSSHmm&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Inventory Record Time (01, 02, 03, 04)
3. HHmm - Hour and Minute (EE00=Disabled)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.4 IN-TANK SETUP

Function Code: 601
Function Type: Set Tank Configuration

Version 1

Command Format:
Display: <SOH>S601TTf
Computer: <SOH>s601TTf

Inquire:
<SOH>I601TT
<SOH>i601TT

Typical Response Message, Display Format:

<SOH>
I601TT
JAN 22, 1996 3:16 PM

TANK CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	REGULAR UNLEADED	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i601TTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Tank Configuration Flag:
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 602

Version 1

Function Type: Set Tank Product Label

Command Format:

Display: <SOH>S602TTaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s602TTaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I602TT

<SOH>i602TT

Typical Response Message, Display Format:

<SOH>
I602TT
JAN 22, 1996 3:16 PM

TANK PRODUCT LABEL

TANK PRODUCT LABEL
1 REGULAR UNLEADED
<ETX>

Typical Response Message, Computer Format:

<SOH>i602TTYMMDDHHmmTTaaaaaaaaaaaaaaaaaaaaa...
TTaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. a - Product Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 603
Function Type: Set Tank Product Code

Version 1

Command Format:
Display: <SOH>S603TTa
Computer: <SOH>s603TTa

Inquire:
<SOH>I603TT
<SOH>i603TT

Typical Response Message, Display Format:

```
<SOH>
I603TT
JAN 22, 1996  3:16 PM
```

TANK PRODUCT CODE

```
TANK      PRODUCT LABEL
  1        REGULAR UNLEADED      1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i603TTYMMDDHHmmTTa...
                                TTa&&CCCC<ETX>
```

Notes:

- | | | |
|----|------------|--|
| 1. | YYMMDDHHmm | - Current Date and Time |
| 2. | TT | - Tank Number (Decimal, 00=all) |
| 3. | a | - Product Code (one ASCII character [20h-7Eh]) |
| 4. | && | - Data Termination Flag |
| 5. | CCCC | - Message Checksum |

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 604

Version 1

Function Type: Set Tank 1 Point Full Height Volume

Command Format:

Display: <SOH>S604TTGGGGGG

Computer: <SOH>s604TTFFFFFFFF

Inquire:

<SOH>I604TT

<SOH>i604TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I604TT
JAN 22, 1996 3:16 PM

TANK FULL VOLUME

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	9728

<ETX>

Typical Response Message, Computer Format:

<SOH>i604TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 605

Version 1

Function Type: Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes

Command Format:

Display: <SOH>S605TTGGGGGGggggggGGGGGGggggggg

or: <SOH>S605TTGGGG,gggg,GGGG,ggg

Computer: <SOH>s605TTFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

Inquire:

<SOH>I605TT

<SOH>i605TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Full Height Volume, Gallons (Decimal)
3. gggggg - 3/4 Height Volume, Gallons (Decimal)
4. GGGGGG - 1/2 Height Volume, Gallons (Decimal)
5. gggggg - 1/4 Height Volume, Gallons (Decimal)
6. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)
7. ffffffff - 3/4 Height Volume, Gallons (ASCII Hex IEEE float)
8. FFFFFFFF - 1/2 Height Volume, Gallons (ASCII Hex IEEE float)
9. ffffffff - 1/4 Height Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I605TT

JAN 22, 1996 3:16 PM

TANK 4 POINT VOLUMES

TANK	PRODUCT LABEL		GALLONS		
1	REGULAR UNLEADED	9728	7296	4864	2432

<ETX>

Typical Response Message, Computer Format:

<SOH>i605TTYMMDDHHmmTFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF...
 TFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)
4. ffffffff - 3/4 Height Volume, Gallons (ASCII Hex IEEE float)
5. FFFFFFFF - 1/2 Height Volume, Gallons (ASCII Hex IEEE float)
6. ffffffff - 1/4 Height Volume, Gallons (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 606

Version 1

Function Type: Set Tank 20 Point Full, 95%, 90%,...Volumes

Command Format:

Display: <SOH>S606TTGGGGGGggggggg...

or: <SOH>S606TTGGGG,gggg,GGGG,...

Computer: <SOH>s606TTFFFFFFFFF...

Inquire:

<SOH>I606TT

<SOH>i606TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGgggggg - Series of 20 Volumes, Gallons (Decimal)
3. FFFFFFFF - Series of 20 Volumes, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I606TT

JAN 22, 1996 3:16 PM

TANK 20 POINT VOLUMES

TANK	PRODUCT LABEL	GALLONS			
1	REGULAR UNLEADED	9720	9234	8748	8262
		7776	7290	6804	6318
		5832	5346	4860	4372
		3888	3402	2916	2430
		1944	1458	972	486

<ETX>

Typical Response Message, Computer Format:

<SOH>i606TTYMMDDHHmmTTTTTTTTT...

TTTTTTTTT&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Series of 20 Volumes, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 607
Function Type: Set Tank Diameter

Version 1

Command Format:
Display: <SOH>S607TTIII.hh
Computer: <SOH>s607TTFFFFFFFF

Inquire:
<SOH>I607TT
<SOH>i607TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. III.hh - Tank Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Tank Diameter, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I607TT
JAN 22, 1996 3:16 PM

TANK DIAMETER

TANK	PRODUCT LABEL	INCHES
1	REGULAR UNLEADED	96.00

<ETX>

Typical Response Message, Computer Format:

<SOH>i607TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Tank Diameter, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 608
Function Type: Set Tank Tilt

Version 1

Command Format:
Display: <SOH>S608TTIII.hh
Computer: <SOH>s608TTFFFFFFFF

Inquire:
<SOH>I608TT
<SOH>i608TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. III.hh - Tank Tilt, Inches and hundredths (Decimal)
3. FFFFFFFF - Tank Tilt, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I608TT
JAN 22, 1996 3:16 PM

TANK TILT

TANK	PRODUCT LABEL	INCHES
1	REGULAR UNLEADED	2.40

<ETX>

Typical Response Message, Computer Format:

<SOH>i608TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Tank Tilt, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 609

Version 1

Function Type: Set Tank Thermal Expansion Coefficient

Command Format:

Display: <SOH>S609TTc.cccccc

Computer: <SOH>s609TTFFFFFFFF

Inquire:

<SOH>I609TT

<SOH>i609TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. c.cccccc - Thermal Expansion Coefficient (decimal)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I609TT
JAN 22, 1996  3:17 PM

TANK THERMAL COEFFICIENT

TANK  PRODUCT LABEL
1     REGULAR UNLEADED      0.000700
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i609TTYMMDDHHmmTTFFFFFFFF...
                        TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 60A

Version 9

Function Type: Set Tank Linear Calculated Full Volume

Command Format:

Display: <SOH>S60ATTGGGGGG

Computer: <SOH>s60ATTTTTTTTTT

Inquire:

<SOH>I60ATT

<SOH>i60ATT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I60ATT
JAN 22, 1996 3:17 PM

TANK FULL VOLUME

TANK	PRODUCT LABEL	TANK PROFILE	GALLONS
1	REGULAR UNLEADED	1 PT	10000

<ETX>

Typical Response Message, Computer Format:

<SOH>i60ATTYYMMDDHHmmTTTTTTTTTT...
TTTTTTTTTT&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Full height volume (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 60B

Version 15

Function Type: Set Tank Stick Height Function Enable

Command Format:

Display: <SOH>S60B00f

Computer: <SOH>s60B00f

Inquire:

<SOH>I60B00

<SOH>i60B00

Typical Response Message, Display Format:

```
<SOH>
I60B00
JUL 29, 1997  9:07 AM

STICK HEIGHT OFFSET ENABLE STATUS
DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i60B00YYMMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Stick Height Function:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 60C

Version 15

Function Type: Set Tank Stick Height Offset

Command Format:

Display: <SOH>S60CTTIII.hh

Computer: <SOH>s60CTTFFFFFFFF

Inquire:

<SOH>I60CTT

<SOH>i60CTT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. III.hh - Stick Height Offset, Inches and hundredths (Decimal)
3. FFFFFFFF - Stick Height Offset, Inches (ASCII Hex IEEE float). Value must be within the range of +144 to -144 inches. It is used to calculate stick height=height (without tilt) + stick offset

Typical Response Message, Display Format:

<SOH>
I60CTT
JUL 29, 1997 9:07 AM

TANK STICK HEIGHT OFFSET

TANK	PRODUCT LABEL	INCHES
1	REGULAR UNLEADED	0.00

<ETX>

Typical Response Message, Computer Format:

<SOH>i60CTTYMMDDHHmmTFFFFFFFF...
TFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Stick Height Offset, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 60E

Version 22

Function Type: Set Tank Programmable Float Parameters

Command Format:

Display: <SOH>S60ETTIIII.tttIIII.tttIIII.tttIIII.ttt
or: <SOH>S60ETTIII.ttt,III.ttt,III.ttt,III.ttt

Inquire:

<SOH>I60ETT

Computer: <SOH>s60ETTFFFFFFFF...FFFFFFFF

<SOH>i60ETT

Notes:

1. CUSTOM float size must be chosen (Function Code 62F) for these parameters to be set and used.
2. TT - Tank Number (Decimal, 00=all)
3. IIII.ttt - Float Parameters, Inches and thousandths (Decimal)
4. FFFFFFFF - Float Parameters, Inches (ASCII Hex IEEE floats)

Typical Response Message, Display Format:

```
<SOH>
I60ETT
JAN 22, 2001 10:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

CUSTOM FLOAT PARAMETERS

TANK	WATER OFFSET	FUEL OFFSET	INVALID FUEL	WATER MINIMUM
1	-3.160	0.270	8.000	0.750

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i60ETTYMMDDHHmmTTNNFFFFFFFF...
TTNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - Float Parameters, Inches (ASCII Hex IEEE floats):
 1. Water Offset
 2. Fuel Offset
 3. Invalid Fuel Level
 4. Minimum Water Level
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 60F
Function Type: Set Tank Probe Offset

Version 22

Command Format:
Display: <SOH>S60FTTIII.hh
Computer: <SOH>s60FTTFFFFFFFFF

Inquire:
<SOH>I60FTT
<SOH>i60FTT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. III.hh - Probe offset, Inches and hundredths (Decimal)
3. FFFFFFFF - Probe offset, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I60FTT
JAN 22, 1996 3:16 PM

PROBE OFFSET

TANK	PRODUCT LABEL	INCHES
1	REGULAR UNLEADED	2.40

<ETX>

Typical Response Message, Computer Format:

<SOH>i60FTTYMMDDHHmmTTFFFFFFFFF...
TTFFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Probe offset, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 610

Version 1

Function Type: Set Tank Delivery Delay

Command Format:

Display: <SOH>S610TTdd

Computer: <SOH>s610TTdd

Inquire:

<SOH>I610TT

<SOH>i610TT

Typical Response Message, Display Format:

<SOH>
I610TT
JAN 22, 1996 3:17 PM

TANK DELIVERY DELAY

TANK PRODUCT LABEL
1 REGULAR UNLEADED 5
<ETX>

Typical Response Message, Computer Format:

<SOH>i610TTYMMDDHHmmTTdd...
 TTdd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. dd - Indicates the length of time in minutes (01-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 611

Version 1

Function Type: Set Tank Leak Test Type & Start Time

Command Format:

Display: <SOH>S611TTDDRMYYMMDDHHmm<CR> (if M=1)
 MMWDHHmm<CR> (if M=2)
 WDHHmm<CR> (if M=3)
 DHHmm<CR> (if M=4)
 HHmm<CR> (if M=5)
 <CR> (if M=6)
 <CR> (if M=7)

Computer: <SOH>s611TTDDRMYYMMDDHHmm<CR> (if M=1)
 MMWDHHmm<CR> (if M=2)
 WDHHmm<CR> (if M=3)
 DHHmm<CR> (if M=4)
 HHmm<CR> (if M=5)
 <CR> (if M=6)
 <CR> (if M=7)

Inquire:
 <SOH>I611TT

<SOH>i611TT

Typical Response Message, Display Format:

```
<SOH>
I611TT
JUN  1, 2000  8:06 AM

LEAK TEST METHOD
- - - - -
TEST ON DATE : TANK 1
JUN  1, 2000
START TIME : DISABLED
TEST RATE  :0.20 GAL/HR
DURATION   : 2  HOURS
TST EARLY STOP:DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i611TTYMMDDHHmmTTDDRMYYMMDDHHmm (if M=1)
MMWDHHmm (if M=2)
WDHHmm (if M=3)
DHHmm (if M=4)
HHmm (if M=5)
(none) (if M=6)
(none) (if M=7)
TTDDRMYYMMDDHHmm&&CCCC<ETX> (if M=1)
MMWDHHmm&&CCCC<ETX> (if M=2)
WDHHmm&&CCCC<ETX> (if M=3)
DHHmm&&CCCC<ETX> (if M=4)
HHmm&&CCCC<ETX> (if M=5)
&&CCCC<ETX> (if M=6)
&&CCCC<ETX> (if M=7)
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. DD - Leak test Duration in hours (2 <= DD <= 24)
4. R - Leak test Rate (0=0.2, 1=0.1)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 611 Notes: (Continued)

5. M - Leak test Method:
- 1=On Date
 - 2=Annually
 - 3=Monthly
 - 4=Weekly
 - 5=Daily
 - 6=Automatic
 - 7=CSLD
- If M=1 ON DATE, YYMMDDHHmm:
- YY =Year
 - MM =Month (01-12)
 - DD =Day
 - HHmm=Hour, Minute (EE00=Disabled)
- If M=2 ANNUALLY, MMWDHHmm:
- MM =Month (01-12)
 - W =Week Number (1-4)
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
- If M=3 MONTHLY, WDHHmm:
- W =Week Number (1-4)
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
- If M=4 WEEKLY, DHHmm:
- D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
- If M=5 DAILY, HHmm:
- HHmm=Hour, Minute (EE00=Disabled)
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 612

Version 1

Function Type: Set Tank SIPHON Manifolded Partners

Command Format:

Display: <SOH>S612TTttTTtt...<CR>

Computer: <SOH>s612TTttTTtt...<CR>

Inquire:

<SOH>I612TT

<SOH>i612TT

Typical Response Message, Display Format:

<SOH>

I612TT

JAN 22, 2002 3:17 PM

TANK MANIFOLDED PARTNERS

TANK	PRODUCT LABEL	SIPHON MANIFOLDED TANKS	LINE MANIFOLDED TANKS
2	REGULAR UNLEADED	1	3

<ETX>

Typical Response Message, Computer Format:

<SOH>i612TTYMMDDHHmmTTNNtt...

TTNNtt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Number of the first tank to be SIPHON manifolded
3. NN - Number of tanks that are SIPHON manifolded together
4. tt - Tank numbers of other tanks to be SIPHON manifolded to first tank
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 613

Version 3

Function Type: Set CSLD Probability of Detection

Command Format:

Display: <SOH>S613TTf

Computer: <SOH>s613TTf

Inquire:

<SOH>I613TT

<SOH>i613TT

Typical Response Message, Display Format:

<SOH>
I613TT
JAN 22, 1996 3:17 PM
CSLD PROBABILITY OF DETECTION

T 1:REGULAR UNLEADED : Pd=95%
<ETX>

Typical Response Message, Computer Format:

<SOH>i613TTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. f - Probability of Detection
1=95%
2=99%
3=CUSTOM (Inquiry Command Only)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 614
Function Type: Set CSLD Climate Factor

Version 5

Command Format:
Display: <SOH>S614TTf
Computer: <SOH>s614TTf

Inquire:
<SOH>I614TT
<SOH>i614TT

Typical Response Message, Display Format:

<SOH>
I614TT
JAN 22, 1996 3:17 PM
CSLD CLIMATE FACTOR

T 1:REGULAR UNLEADED : MODERATE
<ETX>

Typical Response Message, Computer Format:

<SOH>i614TTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. f - Climate Factor
1=Moderate
2=Extreme
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 615

Version 108

Function Type: Set BIR Meter Data Present

Command Format:

Display: <SOH>S615TTf

Computer: <SOH>s615TTf

Inquire:

<SOH>I615TT

<SOH>i615TT

Typical Response Message, Display Format:

<SOH>
I615TT
JAN 22, 1996 3:18 PM

TANK	PRODUCT LABEL	METER DATA
1	REGULAR UNLEADED	YES

<ETX>

Typical Response Message, Computer Format:

<SOH>i615TTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank number (Decimal, 00=All)
3. f - Meter data availability:
0=No Meter Data Available
1=Meter Data Present
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 616

Function Type: Set AccuChart Update Scheduling

Version 110

Command Format:

Display: <SOH>S616TTf

Computer: <SOH>s616TTf

Inquire:

<SOH>I616TT

<SOH>i616TT

Typical Response Message, Display Format:

```
<SOH>
I616TT
JAN 22, 1996  3:18 PM

TANK   PRODUCT LABEL           CAL UPDATE
1      REGULAR UNLEADED        IMMEDIATE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s616TTYMMDDHHmmTTf...
                        TTf&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank number (Decimal, 00=All)
3. f - AccuChart Update Scheduling:
 - 1=Immediate
 - 2=Periodic
 - 3=Complete
 - 4=Never
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 618

Version 19

Function Type: Set Tank CSLD Evaporation Compensation

Command Format:

Display: <SOH>S618TTf

Computer: <SOH>s618TTf

Inquire:

<SOH>I618TT

<SOH>i618TT

Notes:

1. Only accepted if CSLD has been selected as the leak test method (S611TT) for the addressed tank and its Climate Factor (S614TT) has been set to Extreme. Also, for this feature to take effect, there must be valid entries in the RVP table (S54C00).

Typical Response Message, Display Format:

```
<SOH>
I618TT
JAN 22, 1996  3:16 PM

CSLD EVAPORATION COMPENSATION

DEVICE LABEL          ENABLED
T 1:UNLEADED GASOLINE  YES
T 2:SUPER UNLEADED     YES
T 3:PREMIUM UNLEADED   NO
T 4:REGULAR GASOLINE   YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i618TTYMMDDHHmmTTf...
TTf&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - CSLD Evaporation Compensation flag:
0=NO
1=YES
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 619

Version 19

Function Type: Set Tank Stage II Vapor Recovery

Command Format:

Display: <SOH>S619TTf

Computer: <SOH>s619TTf

Inquire:

<SOH>I619TT

<SOH>i619TT

Notes:

1. Only allowed if CSLD Evaporation Compensation is enabled

Typical Response Message, Display Format:

```
<SOH>
I619TT
JAN 22, 1996  3:16 PM

STAGE II VAPOR RECOVERY

DEVICE LABEL                ENABLED
T 1:UNLEADED GASOLINE       YES
T 2:SUPER UNLEADED          YES
T 3:PREMIUM UNLEADED        YES
T 4:REGULAR GASOLINE        YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i619TTYMMDDHHmmTTf...
                        TTf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Stage II Vapor Recovery flag:
0=NO
1=YES
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 61A

Version 20

Function Type: Set In-Tank Leak Test Early Stop

Command Format:

Display: <SOH>S61ATTf

Computer: <SOH>s61ATTf

Inquire:

<SOH>I61ATT

<SOH>i61ATT

Typical Response Message, Display Format:

```
<SOH>
I61ATT
JUN  1, 2000  8:06 AM

IN-TANK LEAK TEST EARLY STOP

TANK   PRODUCT LABEL          TST EARLY STOP:
  1     * PRODUCT 1 *          DISABLED
  2     * PRODUCT 2 *          DISABLED
  3     * PRODUCT 3 *          DISABLED
  4     * PRODUCT 4 *          DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i6A000YYMMDDHHmmTTf...
                      TTf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - In-Tank Leak Test Early Stop Flag:
0=DISABLED
1=ENABLED
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 61B

Version 121

Function Type: Set In-Tank Static Gross Test Auto-Confirm

Command Format:

Display: <SOH>S61BTTf

Computer: <SOH>s61BTTf

Inquire:

<SOH>I61BTT

<SOH>i61BTT

Typical Response Message, Display Format:

<SOH>
I61BTT
OCT 10, 2000 3:11 PM

IN-TANK STATIC GROSS TEST AUTO-CONFIRM:

TANK	PRODUCT LABEL	AUTO-CONFIRM
1	REGULAR UNLEADED	DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i61BTTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - In-Tank Static Gross Test Auto-Confirm flag
0=Disabled
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 61C

Version 121

Function Type: Set CSLD Report Only Mode

Command Format:

Display: <SOH>S61CTTf

Computer: <SOH>s61CTTf

Inquire:

<SOH>I61CTT

<SOH>i61CTT

Typical Response Message, Display Format:

<SOH>
I61CTT
OCT 10, 2000 10:00 AM

CSLD REPORT ONLY

TANK	PRODUCT LABEL	CSLD REPORT ONLY
1	UNLEADED GASOLINE	DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i61CTTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - CSLD Report Only flag
0=Disabled
1=End of Month
2=Day 15 and End of Month
3=Day 25 and End of Month
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 61D

Version 23

Function Type: Set Tank LINE Manifolded Partners

Command Format:

Display: <SOH>S61DTTttTTtt...<CR>

Computer: <SOH>s61DTTttTTtt...<CR>

Inquire:

<SOH>I61DTT

<SOH>i61DTT

Typical Response Message, Display Format:

<SOH>

I61DTT

JAN 22, 2002 3:17 PM

TANK MANIFOLDED PARTNERS

TANK	PRODUCT LABEL	SIPHON MANIFOLDED TANKS	LINE MANIFOLDED TANKS
2	REGULAR UNLEADED	1	3

<ETX>

Typical Response Message, Computer Format:

<SOH>i61DTTYMMDDHHmmTTNNtt...
TTNNtt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Number of the first tank to be LINE manifolded
3. NN - Number of tanks that are LINE manifolded together
4. tt - Tank numbers of other tanks to be LINE manifolded to first tank
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 61E
Function Type: Set Tank Density

Version 26

Command Format:
Display: <SOH>S61ETTdd.ddddd
Computer: <SOH>s61ETTFFFFFFFF

Inquire:
<SOH>I61ETT
<SOH>i61ETT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. dd.ddddd - Entered Density, relative, actual or API (Decimal)
3. FFFFFFFF - Entered Density, relative, actual or API (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I61ETT
JUN 22, 2001 3:15 PM

TANK DENSITY

TANK	PRODUCT LABEL	DENSITY
1	REGULAR UNLEADED	5.9987

<ETX>

Typical Response Message, Computer Format:

<SOH>i61ETTYMMDDHHmmTTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Entered Density (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 61F
Function Type: Set Delivery Density

Version 26

Command Format:
Display: <SOH>S61FTTtdd.ddddd
Computer: <SOH>s61FTTtFFFFFFFF

Inquire:
<SOH>I61FTTt
<SOH>i61FTTt

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. t - Delivery Type (0=next, 1=last)
3. dd.dddd - Entered Density, relative, actual or API (Decimal)
4. FFFFFFFF - Entered Density, relative, actual or API (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I61FTT0
JUN 22, 2001  3:15 PM

NEXT DELIVERY DENSITY

TANK   PRODUCT LABEL          DENSITY
1      REGULAR UNLEADED       5.9987
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i61FTTYMMDDHHmmTTtFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. t - Delivery Type (0=next, 1=last)
4. FFFFFFFF - Entered Density (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 621

Version 1

Function Type: Set Tank Low Level Limit

Command Format:

Display: <SOH>S621TTGGGGGG

Computer: <SOH>s621TTFFFFFFFF

Inquire:

<SOH>I621TT

<SOH>i621TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Low Level Limit, Gallons (Decimal)
3. FFFFFFFF - Low Level Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I621TT
JAN 22, 1996  3:18 PM

TANK LOW PRODUCT LIMIT

TANK   PRODUCT LABEL           GALLONS
1      REGULAR UNLEADED        1000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i621TTYMMDDHHmmTTTTTTTTTT...
                      TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Low Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 622

Version 1

Function Type: Set Tank High Level Limit

Command Format:

Display: <SOH>S622TTGGGGGG

Computer: <SOH>s622TTFFFFFFFF

Inquire:

<SOH>I622TT

<SOH>i622TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - High Level Limit, Gallons (Decimal)
3. FFFFFFFF - High Level Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I622TT
JAN 22, 1996 3:18 PM

TANK HIGH PRODUCT LIMIT

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	9500

<ETX>

Typical Response Message, Computer Format:

<SOH>i622TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - High Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 623

Version 1

Function Type: Set Tank Overfill Level Limit

Command Format:

Display: <SOH>S623TTGGGGGG

Computer: <SOH>s623TTFFFFFFFF

Inquire:

<SOH>I623TT

<SOH>i623TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Overfill Level Limit, Gallons (Decimal)
3. FFFFFFFF - Overfill Level Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I623TT
JAN 22, 1996 3:18 PM

TANK OVERFILL LEVEL LIMIT

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	9300

<ETX>

Typical Response Message, Computer Format:

<SOH>i623TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Overfill Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 624

Version 1

Function Type: Set Tank High Water Level Limit

Command Format:

Display: <SOH>S624TTII.t

Computer: <SOH>s624TTFFFFFFFF

Inquire:

<SOH>I624TT

<SOH>i624TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. II.t - High Water Level Limit, Inches and tenths (Decimal, Max=05.0)
3. FFFFFFFF - High Water Level Limit, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I624TT

JAN 22, 1996 3:18 PM

TANK HIGH WATER LEVEL LIMIT

TANK	PRODUCT LABEL	INCHES
1	REGULAR UNLEADED	4.5

<ETX>

Typical Response Message, Computer Format:

<SOH>i624TTYMMDDHHmmTFFFFFFFFF...

TFFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - High Water Level Limit, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 625

Version 1

Function Type: Set Tank Sudden Loss Limit

Command Format:

Display: <SOH>S625TTGGGGGG

Computer: <SOH>s625TTFFFFFFFF

Inquire:

<SOH>I625TT

<SOH>i625TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Sudden Loss Limit, Gallons (Decimal)
3. FFFFFFFF - Sudden Loss Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I625TT
JAN 22, 1996  3:18 PM

TANK SUDDEN LOSS LIMIT

TANK   PRODUCT LABEL           GALLONS
1      REGULAR UNLEADED        100
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i625TTYMMDDHHmmTTFFFFFFFF...
                        TFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Sudden Loss Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 626

Version 1

Function Type: Set Tank Leak Alarm Limit

Command Format:

Display: <SOH>S626TTGGGGGG

Computer: <SOH>s626TTFFFFFFFF

Inquire:

<SOH>I626TT

<SOH>i626TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Leak Alarm Limit, Gallons (Decimal)
3. FFFFFFFF - Leak Alarm Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I626TT
JAN 22, 1996 3:18 PM

TANK LEAK ALARM LIMIT

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	50

<ETX>

Typical Response Message, Computer Format:

<SOH>i626TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Leak Alarm Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 627

Version 2

Function Type: Set Tank High Water Warning Limit

Command Format:

Display: <SOH>S627TTII.t

Computer: <SOH>s627TTFFFFFFFF

Inquire:

<SOH>I627TT

<SOH>i627TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. II.t - High Water Warning Limit, Inches and tenths (Decimal, Max=05.0)
3. FFFFFFFF - High Water Warning Limit, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I627TT

JAN 22, 1996 3:18 PM

TANK HIGH WATER WARNING LIMIT

TANK	PRODUCT LABEL	INCHES
1	REGULAR UNLEADED	3.5

<ETX>

Typical Response Message, Computer Format:

<SOH>i627TTYMMDDHHmmTFFFFFFFF...

TFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - High Water Warning Limit, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 628

Version 2

Function Type: Set Tank Maximum Volume Limit

Command Format:

Display: <SOH>S628TTGGGGGG

Computer: <SOH>s628TTFFFFFFFF

Inquire:

<SOH>I628TT

<SOH>i628TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Maximum Volume Limit, Gallons (Decimal)
3. FFFFFFFF - Maximum Volume Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I628TT
JAN 22, 1996 3:19 PM

TANK MAXIMUM VOLUME LIMIT

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	9600

<ETX>

Typical Response Message, Computer Format:

<SOH>i628TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Maximum Volume Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 629

Version 2

Function Type: Set Tank Delivery Required Limit

Command Format:

Display: <SOH>S629TTGGGGGG

Computer: <SOH>s629TTFFFFFFFF

Inquire:

<SOH>I629TT

<SOH>i629TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Delivery Required Limit, Gallons (Decimal)
3. FFFFFFFF - Delivery Required Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I629TT
JAN 22, 1996  3:19 PM

TANK DELIVERY REQUIRED LIMIT

TANK   PRODUCT LABEL           GALLONS
1      REGULAR UNLEADED        1500
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i629TTYMMDDHHmmTTFFFFFFFF...
                        TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Delivery Required Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 62A

Version 2

Function Type: Set Tank Annual Leak Test Minimum Volume

Command Format:

Display: <SOH>S62ATTGGGGGG

Computer: <SOH>s62ATTFFFFFFFF

Inquire:

<SOH>I62ATT

<SOH>i62ATT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Annual Test Minimum Volume, Gallons (Decimal)
3. FFFFFFFF - Annual Test Minimum Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I62ATT
JAN 22, 1996 3:19 PM

ANNUAL LEAK TEST MIN VOLUME

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	6000

<ETX>

Typical Response Message, Computer Format:

<SOH>i62ATTYYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Annual Test Minimum Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 62B

Version 2

Function Type: Set Tank Last Annual Test

Command Format:

Display: <SOH>S62BTTYMMDD

Computer: <SOH>s62BTTYMMDD

Inquire:

<SOH>I62BTT

<SOH>i62BTT

Typical Response Message, Display Format:

<SOH>
I62BTT
JAN 22, 1996 3:19 PM

TANK LAST ANNUAL TEST

TANK	PRODUCT LABEL	DATE
1	REGULAR UNLEADED	940225

<ETX>

Typical Response Message, Computer Format:

<SOH>i62BTTYMMDDHHmmTTYMMDD...
TTYMMDD&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. YYMMDD - Year, Month, Day
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 62C

Version 2

Function Type: Set Tank Periodic Test Type

Command Format:

Display: <SOH>S62CTTp

Computer: <SOH>s62CTTp

Inquire:

<SOH>I62CTT

<SOH>i62CTT

Typical Response Message, Display Format:

<SOH>
I62CTT
JAN 22, 1996 3:19 PM

TANK PERIODIC TEST TYPE

TANK	PRODUCT LABEL	PERIODIC TEST TYPE
1	REGULAR UNLEADED	QUICK

<ETX>

Typical Response Message, Computer Format:

<SOH>i62CTTYMMDDHHmmTTp...
TTp&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Periodic Test Type:
0=Standard Test
1=Quick Test (only Mag Probes may be set to QUICK)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 62D

Version 2

Function Type: Set Enable/Disable Tank Leak Test Fail Alarms

Command Format:

Display: <SOH>S62DTTgpa

Computer: <SOH>s62DTTgpa

Inquire:

<SOH>I62DTT

<SOH>i62DTT

Typical Response Message, Display Format:

<SOH>
I62DTT
JAN 22, 1996 3:19 PM

TANK LEAK TEST FAIL ALARMS

TANK	PRODUCT LABEL	GROSS TEST FAIL	ALARM DISABLED
1	REGULAR UNLEADED	PERIODIC TEST FAIL	ALARM DISABLED
		ANNUAL TEST FAIL	ALARM DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i62DTTYMMDDHHmmTTgpa...
TTgpa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. g - Gross Test Fail Alarm
0=Disabled
1=Enabled
4. p - Periodic Test Fail Alarm
0=Disabled
1=Enabled
5. a - Annual Test Fail Alarm
0=Disabled
1=Enabled
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 62E

Version 3

Function Type: Set CAP0 Probe Conductive Boot Flag

Command Format:

Display: <SOH>S62ETTc

Computer: <SOH>s62ETTc

Inquire:

<SOH>I62ETT

<SOH>i62ETT

Typical Response Message, Display Format:

<SOH>
I62ETT
JAN 22, 1996 3:19 PM

CAP0 PROBE CONDUCTIVE BOOT FLAG

TANK	PRODUCT LABEL	CAP0 CONDUCTIVE BOOT:
1	REGULAR UNLEADED	YES

<ETX>

Typical Response Message, Computer Format:

<SOH>i62ETTYMMDDHHmmTTc...
TTc&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. c - CAP0 Conductive Boot Flag
0=OFF
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 62F
Function Type: Set Mag Probe Float Size

Version 3

Command Format:
Display: <SOH>S62FTTf
Computer: <SOH>s62FTTf

Inquire:
<SOH>I62FTT
<SOH>i62FTT

Typical Response Message, Display Format:

<SOH>
I62FTT
JAN 22, 1996 3:19 PM

MAG PROBE FLOAT SIZE

TANK	PRODUCT LABEL	FLOAT SIZE:
1	REGULAR UNLEADED	4.0 INCHES

<ETX>

Typical Response Message, Computer Format:

<SOH>i62FTTTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Mag Probe Float Size
0=4.0"
1=2.0"
2=3.0"
3=1.0"
9=CUSTOM (Added in V22)
4. && - Data Termination Flag (Added in V22)
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 630

Version 3

Function Type: Set Tank Leak Test Notify

Command Format:

Display: <SOH>S630TTf

Computer: <SOH>s630TTf

Inquire:

<SOH>I630TT

<SOH>i630TT

Typical Response Message, Display Format:

<SOH>
I630TT
JAN 22, 1996 3:20 PM

IN-TANK LEAK TEST NOTIFY

TANK	PRODUCT LABEL	TANK TEST NOTIFY:
1	REGULAR UNLEADED	OFF
<ETX>		

Typical Response Message, Computer Format:

<SOH>i630TTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Tank Leak Test Notify
0=OFF
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 631

Version 5

Function Type: Set Tank Leak Test Averaging

Command Format:

Display: <SOH>S631TTap

Computer: <SOH>s631TTap

Inquire:

<SOH>I631TT

<SOH>i631TT

Typical Response Message, Display Format:

<SOH>
I631TT
JAN 22, 1996 3:20 PM

TANK LEAK TEST AVERAGING

TANK	PRODUCT LABEL	ANNUAL	PERIODIC
1	REGULAR UNLEADED	OFF	OFF

<ETX>

Typical Response Message, Computer Format:

<SOH>i631TTYMMDDHHmmTTap...
TTap&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. a - Annual Leak Test Averaging
0=OFF
1=ON
4. p - Periodic Leak Test Averaging
0=OFF
1=ON
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 632

Version 5

Function Type: Set Tank Test Siphon Break

Command Format:

Display: <SOH>S632TTf

Computer: <SOH>s632TTf

Inquire:

<SOH>I632TT

<SOH>i632TT

Typical Response Message, Display Format:

<SOH>
I632TT
JAN 22, 1996 3:20 PM

TANK TEST SIPHON BREAK

TANK	PRODUCT LABEL	SIPHON BREAK
1	REGULAR UNLEADED	OFF

<ETX>

Typical Response Message, Computer Format:

<SOH>i632TTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Tank Test Siphon Break
0=OFF
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 633

Version 9

Function Type: Set Leak Test Report Type

Command Format:

Display: <SOH>S63300f

Computer: <SOH>s63300f

Inquire:

<SOH>I63300

<SOH>i63300

Typical Response Message, Display Format:

<SOH>

I63300

JAN 22, 1996 3:20 PM

LEAK TEST REPORT FORMAT: NORMAL

<ETX>

Typical Response Message, Computer Format:

<SOH>i63300YYMMDDHHmmf&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Leak test Report Type:
0=Normal
1=Enhanced
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 634

Version 110

Function Type: Set Tank HRM Reconciliation Warning Limit

Command Format:

Display: <SOH>S634TTGGGGGG

Computer: <SOH>s634TTFFFFFFFF

Inquire:

<SOH>I634TT

<SOH>i634TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - HRM Reconciliation Warning Limit, Gallons (Decimal)
3. FFFFFFFF - HRM Reconciliation Warning Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I634TT

JAN 22, 1996 3:20 PM

RECONCILIATION WARNING LIMIT

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	50

<ETX>

Typical Response Message, Computer Format:

<SOH>i634TTYMMDDHHmmTTTTTTTTTT...

TTTTTTTTTT&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - HRM Reconciliation Warning Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 635

Version 110

Function Type: Set Tank HRM Reconciliation Alarm Limit

Command Format:

Display: <SOH>S635TTGGGGGG

Computer: <SOH>s635TTFFFFFFFF

Inquire:

<SOH>I635TT

<SOH>i635TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - HRM Reconciliation Alarm Limit, Gallons (Decimal)
3. FFFFFFFF - HRM Reconciliation Alarm Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I635TT

JAN 22, 1996 3:20 PM

RECONCILIATION ALARM LIMIT

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	90

<ETX>

Typical Response Message, Computer Format:

<SOH>i635TTYMMDDHHmmTFFFFFFFFF...
TFFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - HRM Reconciliation Alarm Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 636

Version 14

Function Type: Set Tank Periodic Leak Test Minimum Volume

Command Format:

Display: <SOH>S636TTGGGGGG

Computer: <SOH>s636TTFFFFFFFF

Inquire:

<SOH>I636TT

<SOH>i636TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Periodic Test Minimum Volume, Gallons (Decimal)
3. FFFFFFFF - Periodic Test Minimum Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I636TT
JAN 22, 1996  3:19 PM

PERIODIC LEAK TEST MIN VOLUME

TANK   PRODUCT LABEL          GALLONS
1      REGULAR UNLEADED       3000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i636TTYMMDDHHmmTTFFFFFFFF...
                        TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Periodic Test Minimum Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 639

Version 115

Function Type: Set Tank AccuChart End Shape Type and Factor

Command Format:

Display: <SOH>S639TTSU.t

Computer: <SOH>s639TTSFFFFFFFF

Inquire:

<SOH>I639TT

<SOH>i639TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. S - End Shape Type
 - 0=None
 - 1=Flat
 - 2=Hemispheric
 - 3=Other (requires factor)
3. U.t - End Shape Factor, Units and tenths (Decimal, 0.0-1.0)
4. FFFFFFFF - End Shape Factor (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I639TT
JUL 29, 1997  9:08 AM
1      REGULAR UNLEADED
END FACTOR: OTHER
END VALUE: 0.1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i639TTYMMDDHHmmTTSFFFFFFFF...
TTSFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. S - End Shape Type
 - 0=None
 - 1=Flat
 - 2=Hemispheric
 - 3=Other (requires factor)
4. FFFFFFFF - End Shape Factor (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 63A

Version 22

Function Type: Set Tank Low Level Threshold for Sequential Line Manifold

Command Format:

Display: <SOH>S63ATTTPP.hh

Computer: <SOH>s63ATTFFFFFFFFF

Inquire:

<SOH>I63ATT

<SOH>i63ATT

Notes:

1. TT - Tank Number (Decimal, set for primary tank)
2. PP.hh - Low Level Pump Threshold, Percent and hundredths (Decimal)
3. FFFFFFFF - Low Level Pump Threshold, Percent (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I63A00

JUN 1, 2001 8:07 AM

LOW LEVEL PUMP THRESHOLD FOR SEQUENTIAL LINE MANIFOLD

TANK	PRODUCT LABEL	PUMP THRESHOLD
------	---------------	----------------

1	REGULAR UNLEADED	10.00%
---	------------------	--------

<ETX>

Typical Response Message, Computer Format:

<SOH>i79800YYMMDDHHmmTTFFFFFFFFF...

TTFFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, set for primary tank)
3. FFFFFFFF - Low Level Pump Threshold, Percent (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 63B

Version 26

Function Type: Set Tank 50 Point Heights and Volumes

Command Format:

Display: <SOH>S63BTTnnffIII.hhGGGGGG...ffIII.hhGGGGGG

or: <SOH>S63BTTnnffII.h, GGGG, ...ffII.h, GGGG

Computer: <SOH>s63BTTnnffHHHHHHHHVVVVVVVV...ffHHH...

Inquire:

<SOH>I63BTT

<SOH>i63BTT

Notes:

1. Set command is only valid if Tank Chart Security is disabled
2. nn - Number of Height/Volume Pairs to Follow (Decimal). A maximum of 14 pairs can be set per command to avoid overflowing the buffer
3. ff - Added/Remove Pair Flag (Hex):
01=Added Height/Volume Pair
02=Remove Height/Volume Pair
4. III.hh - Height Inches and Hundreds (Decimal)
5. GGGGGG - Volume, Gallons (Decimal)
6. HHHHHH - Height, Inches (ASCII Hex IEEE float)
7. VVVVVVVV - Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I63BTT

SEP 16, 2004 3:15 PM

TANK 50 POINT HEIGHTS AND VOLUMES

T 1: REGULAR UNLEADED

TANK CAPACITY : 10000

CONSOLE SERIAL NUMBER:

xxxxxxxxxxxxxxxxxxxxxx

PROBE S/N : YYYYYY

WEIGHTS AND MEASURES:

zzzzzzzzzzzzzzzzzzzz

DIAMETER	FULL VOLUME
96.00	10000

PAIR	HEIGHT	VOLUME
1	94.08	9800
2	92.16	9600
3	90.24	9400
4	88.32	9200
5	86.44	9000
	:	
	:	
45	9.60	1000
46	7.68	800
47	5.76	600
48	3.84	400
49	1.92	200

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 63B Notes: (Continued)

Typical Response Message, Computer Format:

[illegible]

Notes:

- ```

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Tank Chart Security Flag
 1=enabled
 0=disabled

```

The following 4 fields marked with an asterisk are only present if Tank Chart Security is enabled.

- ```

4.      cccccccc - * Tank Capacity, Gallons (ASCII Hex IEEE float)
5.      x..x - * Console Serial Number (20 ASCII characters [20h-7Eh])
6.      yyyyyy - * Probe Serial Number (Decimal)
7.      z..z - * Weights and Measures Office (20 ASCII characters [20h-
              7Eh])

8.      dddddddd - Tank Diameter, Inches (ASCII Hex IEEE float)
9.      ffffffff - Full Volume, Gallons (ASCII Hex IEEE float)
10.     nn - Number of Height/Volume Pairs to Follow (Hex)
11.     HHHHHHHH - Height, Inches (ASCII Hex IEEE float)
12.     VVVVVVVV - Volume, Gallons (ASCII Hex IEEE float)
13.     && - Data Termination Flag
14.     CCCC - Message Checksum

```


Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 63C

Version 26

Function Type: Set Tank 50 Point Full Volume

Command Format:

Display: <SOH>S63CTTGGGGGG

Computer: <SOH>s63CTTVVVVVVVV

Inquire:

<SOH>I63CTT

<SOH>i63CTT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Volume, Gallons (Decimal)
3. VVVVVVVV - Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I63CTT
SEP 16, 2004 3:15 PM

TANK 50 POINT FULL VOLUME

TANK	PRODUCT LABEL	VOLUME
1	REGULAR UNLEADED	100000

<ETX>

Typical Response Message, Computer Format:

<SOH>i63CTTYMMDDHHmmnnTTVVVVVVVV...
TTVVVVVVVV&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. VVVVVVVV - Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 680

Version 6

Function Type: Fuel Management General Setup Inquiry

Command Format:

Display: <SOH>I680TT

Computer: Computer format is not supported for this command

Typical Response Message, Display Format:

```
<SOH>
I680TT
JAN 22, 1996  3:20 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

FUEL MANAGEMENT SETUP

DELIVERY WARN DAYS:  3.5
AUTO PRINT:         10:00 AM

FUEL MANAGEMENT AVERAGE SALES (GALLONS)

REGULAR UNLEADED      ( TANK 1 )
  SUN   MON   TUE   WED   THR   FRI   SAT
  2696  2075  2602  2046  2471  2805  2824
<ETX>
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 681

Version 6

Function Type: Set Fuel Management Delivery Needed Warning

Command Format:

Display: <SOH>S68100DD.hh

Computer: <SOH>s68100FFFFFFFF

Inquire:

<SOH>I68100

<SOH>i68100

Notes:

1. DD.hh - Delivery Needed Warning, Days and hundredths (Decimal)
2. FFFFFFFF - Delivery Needed Warning, Days (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I68100
JAN 22, 1996  3:20 PM

FUEL MANAGEMENT DELIVERY NEEDED WARNING DAYS

DELIVERY WARN DAYS:  2.50
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i68100YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Delivery Needed Warning, Days (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 682

Version 6

Function Type: Set Fuel Management Automatic Report Print Time

Command Format:

Display: <SOH>S68200hhmm

Computer: <SOH>s68200hhmm

Inquire:

<SOH>I68200

<SOH>i68200

Typical Response Message, Display Format:

```
<SOH>
I68200
JAN 22, 1996  3:21 PM

FUEL MANAGEMENT AUTOMATIC REPORT PRINT TIME

AUTO PRINT: 10:00 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i68200YYMMDDHHmmhhmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. hhmm - Report Printout Time (hours, minutes; EE00=disabled)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 683

Version 6

Function Type: Set Fuel Management Average Daily Sales

Command Format:

Display: <SOH>S683TTDvvvvvvv

Computer: <SOH>s683TTDvvvvvvvvv

Inquire:

<SOH>I683TT

<SOH>i683TT

Notes:

1. TT - Tank Number for any Tank Containing the Product
2. D - Day for which to Program the Average Sales Volume (0=All Days, 1=Sunday, 2=Monday, ...7=Saturday)
3. VVVVVV - Average Sales for the Day, Gallons (Decimal, Only one day is programmed per serial command)
4. vvvvvvvv - Average Sales for the Day, Gallons (ASCII Hex IEEE float, Only one day is programmed per serial command)

Typical Response Message, Display Format:

```
<SOH>
I683TT
JAN 22, 1996  3:21 PM

FUEL MANAGEMENT AVERAGE SALES (GALLONS)

REGULAR UNLEADED      ( TANK 1 )
  SUN  MON  TUE  WED  THR  FRI  SAT
  2696 2075 2602 2046 2471 2805 2824
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i683TTYMMDDHHmmNNTTpSSSSSSSSMMMMMMMMTTTTTTTTTWWWWWWW
RRRRRRRRFFFFFFFFFssssssss...
NNTTpSSSSSSSSMMMMMMMMTTTTTTTTTWWWWWWW
RRRRRRRRFFFFFFFFFssssssss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Tank/Product Sets (TTP) to Follow (Hex)
3. TTP - Tank Number (decimal) and Product Code (ASCII character)
4. SSSSSSSS - Avg Sales on Sundays (ASCII Hex IEEE float)
5. MMMMMMMM - Avg Sales on Mondays (ASCII Hex IEEE float)
6. TTTTTTTT - Avg Sales on Tuesdays (ASCII Hex IEEE float)
7. WWWWWWWW - Avg Sales on Wednesdays (ASCII Hex IEEE float)
8. RRRRRRRR - Avg Sales on Thursdays (ASCII Hex IEEE float)
9. FFFFFFFF - Avg Sales on Fridays (ASCII Hex IEEE float)
10. ssssssss - Avg Sales on Saturdays (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.5 SENSOR SETUP

Function Code: 701

Version 1

Function Type: Set Liquid Sensor Configuration

Command Format:

Display: <SOH>S701SSf

Computer: <SOH>s701SSf

Inquire:

<SOH>I701SS

<SOH>i701SS

Typical Response Message, Display Format:

<SOH>
I701SS
JAN 28, 1995 10:39 AM

LIQUID CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	LIQUID SENSOR #1	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i701SSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 702

Version 1

Function Type: Set Liquid Sensor Location Label

Command Format:

Display: <SOH>S702SSaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s702SSaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I702SS

<SOH>i702SS

Typical Response Message, Display Format:

<SOH>
I702SS
JAN 28, 1995 10:39 AM

LIQUID LABEL

DEVICE LABEL
1 LIQUID SENSOR #1
<ETX>

Typical Response Message, Computer Format:

<SOH>i702SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 703
Function Type: Set Liquid Sensor Type

Version 1

Command Format:
Display: <SOH>S703SSt
Computer: <SOH>s703SSt

Inquire:
<SOH>I703SS
<SOH>i703SS

Typical Response Message, Display Format:

```
<SOH>
I703SS
JAN 28, 1995 10:40 AM

LIQUID TYPE

SENSOR  LOCATION          TYPE
   1  LIQUID SENSOR #1    TRI-STATE (SINGLE FLOAT)
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i703SSYYMMDDHHmmSSt...
                      SSt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. t - Liquid Sensor Type:
 - 1=Tri-State
 - 2=Normally Closed
 - 3=Dual Float Hydrostatic
 - 4=Dual Float Discriminating
 - 5=Dual Float High Vapor
 - 6=Interceptor Sensor
 - 7=DW Sump 2-1 Sensor
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 704

Version 2

Function Type: Set Liquid Sensor Category

Command Format:

Display: <SOH>S704SSc

Computer: <SOH>s704SSc

Inquire:

<SOH>I704SS

<SOH>i704SS

Typical Response Message, Display Format:

<SOH>
I704SS
JAN 28, 1995 10:40 AM

LIQUID CATEGORY

SENSOR	LOCATION	TYPE
1	LIQUID SENSOR #1	OTHER

<ETX>

Typical Response Message, Computer Format:

<SOH>i704SSYYMMDDHHmmSSc...
SSc&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. c - Liquid Sensor Category:
 - 1=Other
 - 2=Annular
 - 3=Dispenser Pan
 - 4=Monitoring Well
 - 5=STP Sump
 - 6=Piping Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 706

Version 1

Function Type: Set Vapor Sensor Configuration

Command Format:

Display: <SOH>S706SSf

Computer: <SOH>s706SSf

Inquire:

<SOH>I706SS

<SOH>i706SS

Typical Response Message, Display Format:

<SOH>
I706SS
JAN 28, 1995 10:40 AM

VAPOR CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	VAPOR SENSOR #1	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i706SSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 707

Version 1

Function Type: Set Vapor Sensor Location Label

Command Format:

Display: <SOH>S707SSaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s707SSaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I707SS

<SOH>i707SS

Typical Response Message, Display Format:

<SOH>
I707SS
JAN 28, 1995 10:40 AM

VAPOR LABEL

DEVICE LABEL
1 VAPOR SENSOR #1
<ETX>

Typical Response Message, Computer Format:

SOH>i707SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 708

Version 1

Function Type: Set Vapor Sensor Alarm Threshold

Command Format:

Display: <SOH>S708SSVVVVVV

Computer: <SOH>s708SSFFFFFFFF

Inquire:

<SOH>I708SS

<SOH>i708SS

Notes:

1. SS - Vapor Sensor Number (Decimal, 00=all)
2. VVVVVV - Vapor alarm threshold (Decimal)
3. FFFFFFFF - Vapor alarm threshold (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I708SS
JAN 28, 1995 10:41 AM

VAPOR ALARM THRESHOLD

SENSOR  LOCATION          THRESHOLD
  1  VAPOR SENSOR #1      100000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i708SSYYMMDDHHmmSSFFFFFFFF...
                      SSFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Vapor alarm threshold (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 709

Version 2

Function Type: Set Vapor Sensor Category

Command Format:

Display: <SOH>S709SSt

Computer: <SOH>s709SSt

Inquire:

<SOH>I709SS

<SOH>i709SS

Typical Response Message, Display Format:

<SOH>
I709SS
JAN 28, 1995 10:40 AM

VAPOR CATEGORY

SENSOR	LOCATION	CATEGORY
1	VAPOR SENSOR #1	OTHER

<ETX>

Typical Response Message, Computer Format:

<SOH>i709SSYYMMDDHHmmSSc...
SSc&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. c - Vapor Sensor Category:
 - 1=Other
 - 2=Annular
 - 3=Dispenser Pan
 - 4=Monitoring Well
 - 5=STP Sump
 - 6=Piping Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 711

Version 1

Function Type: Set Groundwater Sensor Configuration

Command Format:

Display: <SOH>S711SSf

Computer: <SOH>s711SSf

Inquire:

<SOH>I711SS

<SOH>i711SS

Typical Response Message, Display Format:

<SOH>
I711SS
JAN 28, 1995 10:41 AM

GROUNDWATER CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	GROUNDWATER #1	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i711SSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Groundwater Sensor Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 712

Version 1

Function Type: Set Groundwater Sensor Location Label

Command Format:

Display: <SOH>S712SSaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s712SSaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I712SS

<SOH>i712SS

Typical Response Message, Display Format:

<SOH>
I712SS
JAN 28, 1995 10:41 AM

GROUNDWATER LABEL

DEVICE LABEL
1 GROUNDWATER #1
<ETX>

Typical Response Message, Computer Format:

<SOH>i712SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Groundwater Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 713

Version 2

Function Type: Set Groundwater Sensor Category

Command Format:

Display: <SOH>S713SSt

Computer: <SOH>s713SSt

Inquire:

<SOH>I713SS

<SOH>i713SS

Typical Response Message, Display Format:

<SOH>
I713SS
JAN 28, 1995 10:41 AM

GROUNDWATER CATEGORY

SENSOR	LOCATION	CATEGORY
1	GROUNDWATER #1	OTHER

<ETX>

Typical Response Message, Computer Format:

SOH>i713SSYYMMDDHHmmSSc...
SSc&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Groundwater Sensor Number (Decimal, 00=all)
3. c - Groundwater Sensor Category:
 - 1=Other
 - 2=Annular
 - 3=Dispenser Pan
 - 4=Monitoring Well
 - 5=STP Sump
 - 6=Piping Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 721

Version 24

Function Type: Set Smart Sensor Configuration

Command Format:

Display: <SOH>S721SSc

Computer: <SOH>s721SSc

Inquire:

<SOH>I721SS

<SOH>i721SS

Notes:

1. Smart Sensor card must be installed
2. SS - Smart Sensor number, 00=all sensors
3. c - configured
0=off
1=on

Typical Response Message, Display Format:

<SOH>

I721SS

JUN 1, 2002 8:07 AM

SMART SENSOR CONFIGURATION

DEVICE	LABEL	CONFIGURED
01	FP 1-2	ON
02	FP 3-4	ON
03	FP 5-6	OFF

<ETX>

Typical Response Message, Computer Format:

<SOH>i721nnYYMMDDHHnnYYMMDDHHmmSSc...SSc&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor number
3. c - Configured
0=off
1=on
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 722

Version 24

Function Type: Set Smart Sensor Label

Command Format:

Display: <SOH>S722SSaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s722SSaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I722SS

<SOH>i722SS

Notes:

1. Smart Sensor card must be installed
2. If SS=00, only configured sensors are used
3. SS - Smart Sensor number, 00=all sensors
4. a - 20 ASCII characters [20h-7Eh]

Typical Response Message, Display Format:

<SOH>
I72200
JUN 1, 2002 8:07 AM

SMART SENSOR LABEL

DEVICE	LABEL
01	FP 1-2
02	FP 3-4
03	FP 5-6

<ETX>

Typical Response Message, Computer Format:

<SOH>i722SSYYMMDDHHSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor number
3. a - 20 ASCII characters [20h-7Eh]
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 723

Version 25

Function Type: Set Smart Sensor Category

Command Format:

Display: <SOH>S723SScc

Computer: <SOH>s723SScc

Inquire:

<SOH>I723SS

<SOH>i723SS

Notes:

1. Smart Sensor card must be installed
2. If category is known, it cannot be changed to another known type
3. If SS=00, only configured sensors are used
4. SS - Smart Sensor number, 00=all sensors
5. cc - category
 - 00=unknown
 - 01=rotary air flow meter
 - 02=vapor pressure sensor
 - 03=vapor pressure
 - 04=vapor pressure
 - 08=mag sensor
 - 09=vac Sensor
 - 10=atmospheric sensor

Typical Response Message, Display Format:

```
<SOH>
I72300
JUN  1, 2002  8:07 AM

SMARTSENSOR ASSIGNMENT

SENSOR#   LABEL           CATEGORY
01        FP 1-2         VAPOR PRESSURE
02        FP 3-4         AIR FLOW METER
03        FP 5-6         AIR FLOW METER
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i723SSYYMMDDHHmm01cc02cc03cc...SScc&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor number
3. cc - category
 - 00=unknown
 - 01=rotary air flow meter
 - 02=vapor pressure sensor
 - 03=vapor pressure
 - 04=vapor pressure
 - 08=mag sensor
 - 09=vac sensor
 - 10=atmospheric sensor
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 727

Version 24

Function Type: Set MAG Sensor Alarm Upgrade Delay

Command Format:

Display: <SOH>S727SSHHHH

Computer: <SOH>s727SSHHHH

Inquire:

<SOH>I727SS

<SOH>i727SS

Notes:

1. Only responds to Smart Sensors that are of type Mag Sensor.
2. SS - Smart Sensor Number (Decimal, 00=all)
3. HHHH - MAG Sensor Alarm Upgrade Delay, Hours (ASCII Decimal)

Typical Response Message, Display Format:

```
<SOH>
I727SS
JAN 22, 2003  3:18 PM

MAG SENSOR ALM UPGRADE DELAY

SENSOR LABEL          DELAY
1      STP SUMP 1      120
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i727SSYYMMDDHHmmSSFFFF...
SSFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. FFFF - Alarm Upgrade Delay (Hex)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 728

Version 24

Function Type: Set MAG Sensor Alarm Threshold

Command Format:

Display: <SOH>S728SSAAxxx.xx

Computer: <SOH>sXXXSSAAFFFFFFFF

Inquire:

<SOH>I728SS

<SOH>i728SS

Notes:

1. Only responds when the Smart Sensor is a Mag Sensor type.
2. SS - Smart Sensor Number (ASCII Decimal, 00=all)
3. AA - Alarm Definition Record ID, (ASCII Decimal)
4. xxx.xx - Alarm Threshold, Inches or Deg. F (ASCII Decimal)
5. FFFFFFFF - Alarm Threshold, Inches or Deg. F (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I728SS

JAN 22, 2003 3:18 PM

MAG SENSOR ALARM THRESHOLD

s 1:SS-01

ID	VALUE	THRESHOLD	ALARM	PROGRAMMABLE	UPGRADE
1	FUEL HT	> 2.0	FUEL ALARM	YES	NO
2	WATER HT	> 5.0	WATER WARNING	YES	YES
3	WATER HT	> 10.0	WATER ALARM	YES	NO
4	INSTALL POS	> 5.0	INSTALL ALARM	NO	NO
5	FLUID TEMP	< -40.0	TEMPERATURE WARNING	YES	NO

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 728 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i728SSYYMMDDHHmmSSrrPPaaFFppUUnnFFFFFFFFFPaaFFppUUnnFFFFFFFF...
SSrrPPaaFFppUUnnFFFFFFFFFPaaFFppUUnnFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (ASCII Decimal)
3. rr - Number of alarm definition records to follow (ASCII Decimal)
4. PP - Value for comparison (Hex)
 - 01=Total Height
 - 02=Fuel Height
 - 03=Water Height
 - 04=Install Position
 - 05=Fluid Temperature
 - 06=Board Temperature
5. aa - Alarm to monitor (Hex)
 - 01=Setup Data Warning
 - 02=Communication Alarm
 - 03=Sensor Fault Alarm
 - 04=Fuel Warning
 - 05=Fuel Alarm
 - 06=Water Warning
 - 07=Water Alarm
 - 08=High Liquid Warning
 - 09=High Liquid Alarm
 - 0A=Low Liquid Warning
 - 0B=Low Liquid Alarm
 - 0C=Temperature Warning
 - 0D=Relay Active
 - 0E=Install Alarm
6. FF - Compare Direction, 00="<", 01=">"
7. pp - Programmable Threshold, 00="No", 01="Yes"
8. UU - Alarm Upgrade, 00="No", 01="Yes"
9. nn - Number of 8-character ASCII Hex Characters to follow
10. FFFFFFFF - Alarm Threshold, Inches or Deg F (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 729

Version 24

Function Type: Set Vacuum Sensor Pump Number

Command Format:

Display: <SOH>S729SSAATT

Computer: <SOH>s729SSAATT

Inquire:

<SOH>I729SS

<SOH>i729SS

Typical Response Message, Display Format:

<SOH>

I729SS

FEB 14, 2004 10:15 PM

VACUUM SENSOR PUMP NUMBER

DEVICE LABEL

1 VACUUM #1

PUMP NUMBER

Q 1:UNLEADED REGULAR

<ETX>

Typical Response Message, Computer Format:

<SOH>i729SSYYMMDDHHmmSSAATT...

SSAATT&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. AA - Device Type (Decimal)
 - 00=None
 - 11=Output Relay
 - 21=PLLD
 - 26=WPLLD
4. TT - Device Number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 72A
Function Type: Set Vacuum Sensor Volume

Version 24

Command Format:
Display: <SOH>S72ASSGGGG.t
Computer: <SOH>s72ASSFFFFFFFF

Inquire:
<SOH>I72ASS
<SOH>i72ASS

Notes:

1. GGGG - Volume, Gallons and tenths (Decimal)
2. FFFFFFFF - Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I72ASS
FEB 14, 2004  10:15 PM

VACUUM SENSOR VOLUME

DEVICE LABEL                VOLUME
  1  VACUUM #1              200.0 GALLONS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i72ASSYYMDDHHmmSSFFFFFFFF...
                      SSFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 72B

Version 24

Function Type: Set Vacuum Sensor Relief Valve Present

Command Format:

Display: <SOH>S72BSSf

Computer: <SOH>s72BSSf

Inquire:

<SOH>I72BSS

<SOH>i72BSS

Typical Response Message, Display Format:

<SOH>
I72BSS
FEB 14, 2004 10:15 PM

VACUUM SENSOR RELIEF VALVE PRESENT

DEVICE	LABEL	RELIEF VALVE
1	VACUUM #1	YES

<ETX>

Typical Response Message, Computer Format:

<SOH>i72BSSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. f - Relief Valve Present
0=No Relief Valve
1=Relief Valve
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 72C

Version 24

Function Type: Set Vacuum Sensor Relief Valve Pressure

Command Format:

Display: <SOH>S72CSSPPPP

Computer: <SOH>s72CSSFFFFFFFFF

Inquire:

<SOH>I72CSS

<SOH>i72CSS

Notes:

1. PPPP - Relief Valve Pressure, PSI (Decimal)
2. FFFFFFFF - Relief Valve Pressure, PSI (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I72CSS
FEB 14, 2004  10:15 PM

VACUUM SENSOR RELIEF VALVE PRESSURE

DEVICE  LABEL                      RELIEF VALVE PRESSURE
   1    VACUUM #1                  -9.0 PSI
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i72CSSYYMDDHHmmSSFFFFFFFFF...
                        SSFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Relief Valve Pressure, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 741

Version 2

Function Type: Set Type A (2 Wire CL) Sensor Configuration

Command Format:

Display: <SOH>S741SSf

Computer: <SOH>s741SSf

Inquire:

<SOH>I741SS

<SOH>i741SS

Typical Response Message, Display Format:

```
<SOH>
I741SS
JAN 28, 1995 10:41 AM

2 WIRE CL CONFIGURATION

DEVICE LABEL CONFIGURED
1 2 WIRE CL SENSOR #1 ON
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i741SSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 742

Version 2

Function Type: Set Type A (2 Wire CL) Sensor Location Label

Command Format:

Display: <SOH>S742SSaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s742SSaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I742SS

<SOH>i742SS

Typical Response Message, Display Format:

```
<SOH>
I742SS
JAN 28, 1995 10:41 AM

2 WIRE CL LABEL

DEVICE LABEL
1 2 WIRE CL SENSOR #1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i742SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 743

Version 2

Function Type: Set Type A (2 Wire CL) Sensor Type

Command Format:

Display: <SOH>S743SSt

Computer: <SOH>s743SSt

Inquire:

<SOH>I743SS

<SOH>i743SS

Typical Response Message, Display Format:

<SOH>
I743SS
JAN 28, 1995 10:41 AM

2 WIRE CL TYPE

SENSOR	LOCATION	TYPE
1	2 WIRE CL SENSOR #1	ULTRA 2

<ETX>

Typical Response Message, Computer Format:

<SOH>i743SSYYMMDDHHmmSSt...
SSt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. t - Type A Sensor Type:
1=ULTRA 2
2=ULTRA 3
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 744

Version 2

Function Type: Set Type A (2 Wire CL) Sensor Category

Command Format:

Display: <SOH>S744SSa

Computer: <SOH>s744SSa

Inquire:

<SOH>I744SS

<SOH>i744SS

Typical Response Message, Display Format:

```
<SOH>
I743SS
JAN 28, 1995 10:41 AM

2 WIRE CL CATEGORY

SENSOR  LOCATION          CATEGORY
  1    2 WIRE CL SENSOR #1  ANNULAR
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i744SSYYMMDDHHmmSSc...
SSc&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. c - Type A Sensor Category:
 - 1=Other
 - 2=Annular
 - 3=Dispenser Pan
 - 4=Monitoring Well
 - 5=STP Sump
 - 6=Piping Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 746

Version 2

Function Type: Set Type B (3 Wire CL) Sensor Configuration

Command Format:

Display: <SOH>S746SSf

Computer: <SOH>s746SSf

Inquire:

<SOH>I746SS

<SOH>i746SS

Typical Response Message, Display Format:

```
<SOH>
I746SS
JAN 28, 1995 10:41 AM

3 WIRE CL CONFIGURATION

DEVICE LABEL CONFIGURED
1 3 WIRE CL SENSOR #1 ON
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i746SSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type B Sensor Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 747

Version 2

Function Type: Set Type B (3 Wire CL) Sensor Location Label

Command Format:

Display: <SOH>S747SSaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s747SSaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I742SS

<SOH>i742SS

Typical Response Message, Display Format:

```
<SOH>
I747SS
JAN 28, 1995 10:41 AM

3 WIRE CL LABEL

DEVICE LABEL
1 3 WIRE CL SENSOR #1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i747SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type B Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 748

Version 5

Function Type: Set Type B (3 Wire CL) Sensor Type

Command Format:

Display: <SOH>S748SSt

Computer: <SOH>s748SSt

Inquire:

<SOH>I748SS

<SOH>i748SS

Typical Response Message, Display Format:

```
<SOH>
I748SS
JAN 28, 1995 10:41 AM

3 WIRE CL TYPE

SENSOR  LOCATION          TYPE
1  3 WIRE CL SENSOR #1    ULTRA/Z-1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i748SSYYMMDDHHmmSSt...
SSt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal)
3. t - Sensor Type
1=ULTRA/Z-1
2=ULTRA/Z-1 HV
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 749

Version 2

Function Type: Set Type B (3 Wire CL) Sensor Category

Command Format:

Display: <SOH>S749SSa

Computer: <SOH>s749SSa

Inquire:

<SOH>I749SS

<SOH>i749SS

Typical Response Message, Display Format:

```
<SOH>
I749SS
JAN 28, 1995 10:41 AM

3 WIRE CL CATEGORY

SENSOR  LOCATION          CATEGORY
  1    3 WIRE CL SENSOR #1  ANNULAR
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i749SSYYMMDDHHmmSSc...
                      SSc&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type B Sensor Number (Decimal, 00=all)
3. t - Type B Sensor Category:
 - 1=Other
 - 2=Annular
 - 3=Dispenser Pan
 - 4=Monitoring Well
 - 5=STP Sump
 - 6=Piping Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 74B

Version 4

Function Type: Set Universal Sensor Configuration

Command Format:

Display: <SOH>S74BSSf

Computer: <SOH>s74BSSf

Inquire:

<SOH>I74BSS

<SOH>i74BSS

Typical Response Message, Display Format:

<SOH>

I74BSS

JAN 28, 1995 10:41 AM

UNIVERSAL CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	UNIVERSAL SENSOR #1	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i74BSSYYMMDDHHmmSSf...

SSf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 74C

Version 4

Function Type: Set Universal Sensor Location Label

Command Format:

Display: <SOH>S74CSSaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s74CSSaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I74CSS

<SOH>i74CSS

Typical Response Message, Display Format:

<SOH>
I74CSS
JAN 28, 1995 10:41 AM

UNIVERSAL LABEL

DEVICE LABEL
1 UNIVERSAL SENSOR #1
<ETX>

Typical Response Message, Computer Format:

<SOH>i74CSSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 74D

Version 4

Function Type: Set Universal Sensor Type

Command Format:

Display: <SOH>S74DSSt

Computer: <SOH>s74DSSt

Inquire:

<SOH>I74DSS

<SOH>i74DSS

Typical Response Message, Display Format:

<SOH>
I74DSS
JAN 28, 1995 10:41 AM

UNIVERSAL TYPE

SENSOR	LOCATION	TYPE
1	UNIVERSAL SENSOR #1	ULTRA/Z-1

<ETX>

Typical Response Message, Computer Format:

<SOH>i74DSSYYMMDDHHmmSSt...
SSt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal)
3. t - Sensor Type
 - 1=TRI-STATE
 - 2=NORMALLY CLOSED
 - 3=DUAL DIFFERENTIATING
 - 4=ULTRA 2
 - 5=ULTRA 3
 - 6=ULTRA/Z-1
 - 7=ULTRA/Z-1 HV
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 74E

Version 4

Function Type: Set Universal Sensor Category

Command Format:

Display: <SOH>S74ESSa

Computer: <SOH>s74ESSa

Inquire:

<SOH>I74ESS

<SOH>i74ESS

Typical Response Message, Display Format:

<SOH>
I74ESS
JAN 28, 1995 10:41 AM

UNIVERSAL CATEGORY

SENSOR	LOCATION	CATEGORY
1	UNIVERSAL SENSOR #1	ANNULAR

<ETX>

Typical Response Message, Computer Format:

<SOH>i74ESSYYMMDDHHmmSSc...
SSc&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal)
3. c - Category
 - 1=Other
 - 2=Annular
 - 3=Dispenser Pan
 - 4=Monitoring Well
 - 5=STP Sump
 - 6=Piping Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.6 VOLUMETRIC LINE LEAK SETUP

Function Code: 751

Version 1

Function Type: Set Volumetric Line Leak Configuration

Command Format:

Display: <SOH>S751PPf

Computer: <SOH>s751PPf

Inquire:

<SOH>I751PP

<SOH>i751PP

Typical Response Message, Display Format:

<SOH>
I751PP
MAR 26, 1996 1:53 PM

LINE LEAK CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	REGULAR UNLEADED	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i751PPYYMMDDHHmmPPf...
PPf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 752

Version 1

Function Type: Set Volumetric Line Leak Tank Number

Command Format:

Display: <SOH>S752PPtt

Computer: <SOH>s752PPtt

Inquire:

<SOH>I752PP

<SOH>i752PP

Typical Response Message, Display Format:

```
<SOH>
I752PP
MAR 26, 1996  1:53 PM

LINE LEAK TANK ASSIGNMENT

LINE  LABEL                      TANK
   1  REGULAR UNLEADED           1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i752PPYYMMDDHHmmPPtt...
                      PPtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. tt - Tank number (00=not assigned)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 753

Version 1

Function Type: Set Volumetric Line Leak 2 Inch Pipe Length

Command Format:

Display: <SOH>S753PPLLL

Computer: <SOH>s753PPFFFFFFFF

Inquire:

<SOH>I753PP

<SOH>i753PP

Notes:

1. PP - Pipeline Number (Decimal, 00=all)
2. LLL - 2" Pipe Length, Feet (Decimal)
3. FFFFFFFF - 2" Pipe Length, Feet (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I753PP
MAR 26, 1996  1:53 PM

LINE LEAK    2" INCH PIPING LENGTH

P 1:REGULAR UNLEADED
2" PIPING LENGTH: 250
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i753PPYYMMDDHHmmPPFFFFFFFF...
PPFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. FFFFFFFF - 2" Pipe Length, Feet (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 754

Version 1

Function Type: Set Volumetric Line Leak 3 Inch Pipe Length

Command Format:

Display: <SOH>S754PPLLL

Computer: <SOH>s754PPFFFFFFFF

Inquire:

<SOH>I754PP

<SOH>i754PP

Notes:

1. PP - Pipeline Number (Decimal, 00=all)
2. LLL - 3" Pipe Length, Feet (Decimal)
3. FFFFFFFF - 3" Pipe Length, Feet (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I754PP
MAR 26, 1996  1:53 PM

LINE LEAK   3" INCH PIPING LENGTH

P 1:REGULAR UNLEADED
3" PIPING LENGTH:   0
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i754PPYYMMDDHHmmPPFFFFFFFF...
PPFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. FFFFFFFF - 3" Pipe Length, Feet (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 755

Version 1

Function Type: Set Volumetric Line Leak Pump PSI

Command Format:

Display: <SOH>S755PPppp

Computer: <SOH>s755PPFFFFFFFFF

Inquire:

<SOH>I755PP

<SOH>i755PP

Notes:

1. PP - Pipeline Number (Decimal, 00=all)
2. ppp - Pump Pressure, PSI (Decimal)
3. FFFFFFFF - Pump Pressure, PSI (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I755PP
MAR 26, 1996  1:53 PM

LINE LEAK PUMP PSI

P 1:REGULAR UNLEADED
PUMP PSI      : 27
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i755PPYYMMDDHHmmPPFFFFFFFFF...
PPFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. FFFFFFFF - Pump Pressure, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 756

Version 1

Function Type: Set Volumetric Line Leak Piping Material

Command Format:

Display: <SOH>S756PPmm

Computer: <SOH>s756PPmm

Inquire:

<SOH>I756PP

<SOH>i756PP

Typical Response Message, Display Format:

```
<SOH>
I756PP
MAR 26, 1996  1:53 PM

LINE LEAK PIPING MATERIAL

P 1:REGULAR UNLEADED
PIPE TYPE: FIBERGLASS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i756PPYYMMDDHHmmPPmm...
PPmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. mm - Piping Material:
 - 01=Steel
 - 02=Fiberglass
 - 03=2-Wall Fiberglass
 - 04=Flexible
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 757

Version 1

Function Type: Set Volumetric Line Leak Shutdown Rate

Command Format:

Display: <SOH>S757PPrr

Computer: <SOH>s757PPrr

Inquire:

<SOH>I757PP

<SOH>i757PP

Typical Response Message, Display Format:

```
<SOH>
I757PP
MAR 26, 1996  1:53 PM

LINE LEAK SHUTDOWN RATE

P 1:REGULAR UNLEADED
SHUTDOWN : 3.0 GAL/HR
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i757PPYYMMDDHHmmPPrr...
PPrr&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. rr - Line Leak Shutdown Rate:
 - 01=3.00 Gal/Hr
 - 02=0.20 Gal/Hr
 - 03=0.10 Gal/Hr
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 758

Version 1

Function Type: Set Volumetric Line Leak Pump Side Test

Command Format:

Display: <SOH>S758PPss

Computer: <SOH>s758PPss

Inquire:

<SOH>I758PP

<SOH>i758PP

Typical Response Message, Display Format:

```
<SOH>
I758PP
MAR 26, 1996  1:53 PM

LINE LEAK PUMP SIDE TEST

P 1:REGULAR UNLEADED
PUMPSIDE TEST: ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i758PPYYMMDDHHmmPPss...
PPss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. ss - Line Leak Pump Side Test:
00=Disable
01=Enable
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 759

Version 1

Function Type: Set Volumetric Line Leak Test Type & Start Time

Command Format:

Display: <SOH>S759PPrrMYMMDDHHmm<CR> (if M=1)
 MMWDHHmm<CR> (if M=2)
 WDHHmm<CR> (if M=3)
 DHHmm<CR> (if M=4)
 HHmm<CR> (if M=5)

Inquire:

<SOH>I759PP

Computer: <SOH>s759PPrrMYMMDDHHmm<CR> (if M=1)
 MMWDHHmm<CR> (if M=2)
 WDHHmm<CR> (if M=3)
 DHHmm<CR> (if M=4)
 HHmm<CR> (if M=5)

<SOH>i759PP

Typical Response Message, Display Format:

```
<SOH>
I759PP
MAR 26, 1996  1:53 PM

LINE LEAK TEST SETUP
- - - - -
TEST ON DATE : ALL LINES
APR  1, 1996
START TIME   :  2:15 PM
TEST RATE    :0.20 GAL/HR
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i759PPYYMMDDHHmmPPrrMYMMDDHHmm (if M=1)
MMWDHHmm (if M=2)
WDHHmm (if M=3)
DHHmm (if M=4)
HHmm (if M=5)
PPrrMYMMDDHHmm&&CCCC<ETX> (if M=1)
MMWDHHmm&&CCCC<ETX> (if M=2)
WDHHmm&&CCCC<ETX> (if M=3)
DHHmm&&CCCC<ETX> (if M=4)
HHmm&&CCCC<ETX> (if M=5)
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. rr - Volumetric Line Leak Test Type:
 - 01=0.20 Gal/Hr
 - 02=0.10 Gal/Hr

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 759 Notes: (Continued)

4. M - Volumetric Line Leak Test Method:
 - 1=On Date
 - 2=Annually
 - 3=Monthly
 - 4=Weekly
 - 5=Daily
 - If M=1 ON DATE, YYMMDDHHmm:
 - YY =Year
 - MM =Month (01-12)
 - DD =Day
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=2 ANNUALLY, MMWDHHmm:
 - MM =Month (01-12)
 - W =Week Number (1-4)
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=3 MONTHLY, WDHHmm:
 - W =Week Number (1-4)
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=4 WEEKLY, DHHmm:
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=5 DAILY, HHmm:
 - HHmm=Hour, Minute (EE00=Disabled)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 75A

Version 1

Function Type: Set Line Leak Lockout Schedule (All Types)

Command Format:

Display: <SOH>S75A00SHHmmHHmm<CR> (if S=0)
NsHHmmeHHmm<CR> (if S=1)
Computer: <SOH>s75A00SHHmmHHmm<CR> (if S=0)
NsHHmmeHHmm<CR> (if S=1)

Inquire:

<SOH>I75A00
<SOH>i75A00

Typical Response Message, Display Format:

```
<SOH>
I75A00
MAR 26, 1996  1:54 PM

LINE LEAK LOCKOUT SETUP
- - - - -
LOCKOUT SCHEDULE
DAILY
START TIME: 10:45 PM
STOP TIME :  4:45 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i75A00YYMMDDHHmmSHHmmHHmm (if S=0)
NsHHmmeHHmm (if S=1)
SHHmmHHmm&&CCCC<ETX> (if S=0)
NsHHmmeHHmm&&CCCC<ETX> (if S=1)
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. S - Lockout Schedule Type:
3. - If S=0 (Daily):
HHmm=Start Lockout Time (Hours, minutes)
HHmm=End Lockout Time (Hours, minutes)
4. - If S=1 (Individual):
N = Lockout Number (0=All Lockouts, 1..7)
s = Start Lockout Day (1=Mon, 2=Tue, ..., 7=Sun)
HHmm= Start Lockout Time (Hours, minutes)
e = End Lockout Day (1=Mon, 2=Tue, ..., 7=Sun)
HHmm= End Lockout Time (Hours, minutes)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 75B

Version 2

Function Type: Set Line Disable Alarm Assignments

Command Format:

Display: <SOH>S75BPPAANNTTSS

Computer: <SOH>s75BPPAANNTTSS

Inquire:

<SOH>I75BPP

<SOH>i75BPP

Typical Response Message, Display Format:

```
<SOH>
I75BPP
MAR 26, 1996  1:54 PM

LINE LEAK SETUP REPORT

P 1:REGULAR UNLEADED
- NO ALARM ASSIGNMENTS -
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i75BPPYYMMDDHHmmPPnnAANNTTSS...
PPnnAANNTTSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. nn - Number of Alarms to Follow
4. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
5. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status:
00=Clear
01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 75C

Version 2

Function Type: Set Volumetric Line Leak Last Annual Test

Command Format:

Display: <SOH>S75CPPYYMMDD

Computer: <SOH>s75CPPYYMMDD

Inquire:

<SOH>I75CPP

<SOH>i75CPP

Typical Response Message, Display Format:

```
<SOH>
I75CPP
MAR 26, 1996  1:54 PM

LINE LEAK LAST ANNUAL TEST

P 1:REGULAR UNLEADED
MAR 26, 1996
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i75CPPYYMMDDHHmmPPYYMMDD...
PPYYMMDD&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. YYMMDD - Year, Month, Day of Last Annual Test
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 75D

Version 4

Function Type: Set Volumetric Line Leak Dispense Mode

Command Format:

Display: <SOH>S75DPPf

Computer: <SOH>s75DPPf

Inquire:

<SOH>I75DPP

<SOH>i75DPP

Typical Response Message, Display Format:

<SOH>
I75DPP
MAR 26, 1996 1:54 PM

LINE LEAK DISPENSE MODE

LINE	LABEL	DISPENSE MODE
1	REGULAR UNLEADED	STANDARD

<ETX>

Typical Response Message, Computer Format:

<SOH>i75DPPYYMMDDHHmmPPf...
PPf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. f - Dispensing Mode:
 - 1=Standard
 - 2=Manifolded: Alternate
 - 3=Manifolded: Sequential
 - 4=Manifolded: All Pumps
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 75E

Version 4

Function Type: Set Volumetric Line Leak Fuel Type

Command Format:

Display: <SOH>S75EPPss

Computer: <SOH>s75EPPss

Inquire:

<SOH>I75EPP

<SOH>i75EPP

Typical Response Message, Display Format:

```
<SOH>
I75EPP
MAR 26, 1996  1:54 PM

LINE LEAK FUEL TYPE

P 1:REGULAR UNLEADED
FUEL TYPE: GASOLINE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i75PPYYMMDDHHmmPPss...
PPss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. ss - Fuel Type:
00=Gasoline
01=Diesel
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 75F

Version 5

Function Type: Set Volumetric Line Leak Wait Method

Command Format:

Display: <SOH>S75FPPr

Computer: <SOH>s75FPPr

Inquire:

<SOH>I7F7PP

<SOH>i7F7PP

Typical Response Message, Display Format:

<SOH>
I75FPP
MAR 26, 1996 1:54 PM

LINE LEAK WAIT MODE

P 1:REGULAR UNLEADED
WAIT MODE: TEMP. MEAS.
<ETX>

Typical Response Message, Computer Format:

<SOH>i75FPPYYMMDDHHmmPPrr...
PPrr&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. rr - Line Leak Wait Method:
 - 1=Temperature Measurement
 - 2=Volume Change Measurement
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 760

Version 6

Function Type: Set Volumetric Line Leak Location Label

Command Format:

Display: <SOH>S760PPaaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s760PPaaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I760SS

<SOH>i760SS

Typical Response Message, Display Format:

```
<SOH>
I760PP
MAR 26, 1996  1:52 PM

LINE LEAK LABEL

DEVICE  LABEL
      1  REGULAR UNLEADED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i760PPYYMMDDHHmmPPaaaaaaaaaaaaaaaaaaaaaa...
      PPaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 761

Version 7

Function Type: Set Volumetric Line Leak Blend Partner

Command Format:

Display: <SOH>S761PPss

Computer: <SOH>s761PPss

Inquire:

<SOH>I761PP

<SOH>i761PP

Typical Response Message, Display Format:

```
<SOH>
I761PP
MAR 26, 1996  1:52 PM
LINE  LABEL                NBP PARTNER
P 1:REGULAR UNLEADED        NONE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i761PPYYMMDDHHmmPPss...
PPss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. ss - Pipeline Number of Blend Partner (Decimal, 00=all)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.7 PUMP SENSOR SETUP

Function Code: 771

Version 2

Function Type: Set Pump Sensor Configuration

Command Format:

Display: <SOH>S771SSf

Computer: <SOH>s771SSf

Inquire:

<SOH>I771SS

<SOH>i771SS

Typical Response Message, Display Format:

<SOH>
I771SS
MAR 27, 1996 5:49 PM

PUMP SENSE CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	UNLEADED REGULAR	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i771SSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Pump Sensor Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 772

Version 2

Function Type: Set Pump Sensor Tank Number

Command Format:

Display: <SOH>S772SStt

Computer: <SOH>s772SStt

Inquire:

<SOH>I772SS

<SOH>i772SS

Typical Response Message, Display Format:

```
<SOH>
I772SS
MAR 27, 1996  5:49 PM

PUMP SENSOR TANK ASSIGNMENT

PUMP SENSOR      TANK
              1          1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i772SSYYMMDDHHmmSStt...
                        SStt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Pump Sensor Number (Decimal, 00=all)
3. tt - Tank Number (Decimal, 00=not assigned)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 773

Version 4

Function Type: Set Pump Sensor Dispense Mode

Command Format:

Display: <SOH>I773SSf

Computer: <SOH>i773SSf

Inquire:

<SOH>I773SS

<SOH>i773SS

Typical Response Message, Display Format:

```
<SOH>
I773SS
MAR 27, 1996  5:50 PM

PUMP SENSOR DISPENSE MODE

PUMP SENSOR  MODE
      1  MANIFOLDED: SEQUENTIAL
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i773SSYYMMDDHHmmSSf...
                        SSf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Pump Sensor Number (Decimal)
3. f - Dispense Mode:
 - 1=Standard
 - 2=Manifolded: Alternate
 - 3=Manifolded: Sequential
 - 4=Manifolded: All Pumps
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.8 PRESSURE LINE LEAK SETUP

Function Code: 774

Version 27

Function Type: Set Pressure Line Leak Continuous Handle Alarm Timeout

Command Format:

Display: <SOH>S774QQtt

Computer: <SOH>s774QQtt

Inquire:

<SOH>I774QQ

<SOH>i774QQ

Notes:

1. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
2. tt - Continuous Handle Alarm Timeout (Decimal, in hours, 1-16)

Typical Response Message, Display Format:

```
<SOH>
I774QQ
SEP 16, 2006  3:15 PM

PLLD CONTINUOUS HANDLE ALARM TIMEOUT

LINE                               TIMEOUT
Q 1:REGULAR UNLEADED              16 HOURS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i774QQYYMMDDHHmmQQttQQtt...
                      QQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. tt - Continuous Handle Alarm Timeout (Decimal, in hours, 1-16)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 775

Version 23

Function Type: Set Pressure Line Leak Profile Line Test Leak Rate

Command Format:

Display: <SOH>S775QQrr.rr

Computer: <SOH>s775QQFFFFFFFFF

Inquire:

<SOH>I775QQ

<SOH>i775QQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
2. rr.rr - Profile Line Test Leak Rate, GPH (Decimal)
3. FFFFFFFF - Profile Line Test Leak Rate, GPH (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I775QQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK PROFILE LINE TEST LEAK RATE

LINE                TEST LEAK RATE
Q 1:UNLEADED REGULAR    3.00 GPH
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s775QQYYMMDDHHmmQQFFFFFFFFF
QQFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. FFFFFFFF - Profile Line Test Leak Rate, GPH (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 776

Version 23

Function Type: Set Pressure Line Leak Profile Line Test Reference Pressure

Command Format:

Display: <SOH>S776QQppp.pp

Computer: <SOH>s776QQFFFFFFFFF

Inquire:

<SOH>I776QQ

<SOH>i776QQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
2. ppp.pp - Profile Line Test Reference Pressure, PSI (Decimal)
3. FFFFFFFF - Profile Line Test Reference Pressure, PSI (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I776QQ
JAN 14, 1995  10:15 PM

PROFILE LINE TEST REFERENCE PRESSURE

LINE                      TEST REF PRESSURE
Q 1:UNLEADED REGULAR      10.00 PSI
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s776QQYYMMDDHHmmQQFFFFFFFFF
QQFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. FFFFFFFF - Profile Line Test Reference Pressure, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 777

Version 23

Function Type: Set Pressure Line Leak Primary Pipe Diameter

Command Format:

Display: <SOH>S777QQI.hh

Computer: <SOH>s777QQFFFFFFFF

Inquire:

<SOH>I777QQ

<SOH>i777QQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. I.hh - Pipe Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I777QQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK PRIMARY PIPE DIAMETER

LINE                               1ST LINE DIAMETER
Q 1:UNLEADED REGULAR              1.75 INCHES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s777QQYYMMDDHHmmQQFFFFFFFF...
                      QFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 778

Version 23

Function Type: Set Pressure Line Leak Secondary Pipe Diameter

Command Format:

Display: <SOH>S778QQI.hh

Computer: <SOH>s778QQFFFFFFFF

Inquire:

<SOH>I778QQ

<SOH>i778QQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. I.hh - Pipe Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I778QQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK SECONDARY PIPE DIAMETER

LINE                2ND LINE DIAMETER
Q 1:UNLEADED REGULAR    1.75 INCHES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s778QQYYMMDDHHmmQQFFFFFFFF...
                QFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 779

Version 23

Function Type: Set Pressure Line Leak Primary Pipe Bulk Modulus

Command Format:

Display: <SOH>S779QQBBBBB

Computer: <SOH>s779QQFFFFFFFFF

Inquire:

<SOH>I779QQ

<SOH>i779QQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. BBBBB - Pipe Bulk Modulus, PSI (Decimal)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I779QQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK PRIMARY PIPE BULK MODULUS

LINE                      1ST BULK MODULUS
Q 1:UNLEADED REGULAR      12000 PSI
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s779QQYYMMDDHHmmQQFFFFFFFFF...
               QQFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 77A

Version 23

Function Type: Set Pressure Line Leak Secondary Pipe Bulk Modulus

Command Format:

Display: <SOH>S77AQQBBBBB

Computer: <SOH>s77AQQFFFFFFFF

Inquire:

<SOH>I77AQQ

<SOH>i77AQQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. BBBBB - Pipe Bulk Modulus, PSI (Decimal)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I77AQQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK SECONDARY PIPE BULK MODULUS

LINE                2ND BULK MODULUS
Q 1:UNLEADED REGULAR    12000 PSI
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s77AQQYYMMDDHHmmQQFFFFFFFF...
               QQFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 77B

Version 23

Function Type: Set Pressure Line Leak Thermal Expansion Coefficient

Command Format:

Display: <SOH>S77BQQc.cccccc

Computer: <SOH>s77BQQFFFFFFFF

Inquire:

<SOH>I77BQQ

<SOH>i77BQQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. c.cccccc - Thermal Expansion Coefficient (Decimal)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I77BQQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK THERMAL COEFFICIENT

LINE	THERMAL COEFFICIENT
Q 1:UNLEADED REGULAR	0.000700

<ETX>

Typical Response Message, Computer Format:

<SOH>s77BQQYYMMDDHHmmQQFFFFFFFF...
QQFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 77C

Version 19

Function Type: Set Pressure Line Leak Low Pressure Shutoff

Command Format:

Display: <SOH>S77CQQf

Computer: <SOH>s77CQQf

Inquire:

<SOH>I77CQQ

<SOH>i77CQQ

Typical Response Message, Display Format:

```
<SOH>
I77CQQ
JAN 24, 2000  2:54 PM

PRESSURE LINE LEAK LOW PRESSURE SHUTOFF

LINE                                LOW PRESSURE SHUTOFF
Q 1:REGULAR UNLEADED                YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i77CQQYYMMDDHHmmQQf...
                      QQf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - Enabled/disabled flag
0=disabled (no)
1=enabled (yes)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 77D

Version 19

Function Type: Set Pressure Line Leak Altitude Pressure Offset

Command Format:

Display: <SOH>S77DQQII.p

Computer: <SOH>s77DQQFFFFFFFFF

Inquire:

<SOH>I77DQQ

<SOH>i77DQQ

Notes:

1. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
2. II.p - Altitude Pressure Offset, PSI or KPA (Decimal)
3. FFFFFFFF - Altitude Pressure Offset, PSI or KPA (ASCII Hex IEEE float)
4. Value must be within the range of +5.0 to -5.0 PSI or 34.4 to -34.4 KPA

Typical Response Message, Display Format:

<SOH>

I77DQQ

JAN 1, 2000 1:44 AM

ALTITUDE PRESSURE OFFSET ADJUSTMENT

LINE

PRESSURE OFFSET

Q 1:REGULAR UNLEADED

0.0 PSI

<ETX>

Typical Response Message, Computer Format:

<SOH>i77DQQYYMMDDHHmmQQFFFFFFFFF...

QQFFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. FFFFFFFF - Altitude Pressure offset, PSI or KPA (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 77E

Version 24

Function Type: Set Pressure Line Leak Passive 0.10 GPH Test Enable Flag

Command Format:

Display: <SOH>S77EQQf

Computer: <SOH>s77EQQf

Inquire:

<SOH>I77EQQ

<SOH>i77EQQ

Typical Response Message, Display Format:

```
<SOH>
I77EQQ
JUL 14, 2004  10:15 PM

PRESSURE LINE LEAK PASSIVE 0.10 GPH

LINE                                PASSIVE 0.10 GPH
Q 1:UNLEADED REGULAR                YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i777QQYYMMDDHHmmQQf...
                      QQf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. f - Passive 0.10 GPH Test Enable Flag (Decimal)
0=Disabled
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 77F

Version 17

Function Type: Set Pressure Line Leak Secondary Pipe Length

Only used for the larger diameter line in dual diameter piping configurations

Command Format:

Display: <SOH>S77FQQLLL

Computer: <SOH>s77FQQFFFFFFFF

Inquire:

<SOH>I77FQQ

<SOH>i77FQQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. LLL - Pipe Length, Feet (Decimal)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I77FQQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK PIPE LENGTH

LINE                1.5 IN DIAM LEN  2.5 IN DIAM LEN
Q 1:UNLEADED REGULAR    50 FEET      250 FEET
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s77FQQYYMMDDHHmmQQFFFFFFFF...
      QQFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 780

Version 7

Function Type: Pressure Line Leak General Setup Inquiry

Command Format:

Display: <SOH>I780QQ

Computer: Computer format is not supported for this command

Typical Response Message, Display Format:

```
<SOH>
I780QQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK SETUP

Q 1:UNLEADED REGULAR

PIPE TYPE:    FIBERGLASS
0.10 GPH TEST: ENABLED
SHUTDOWN RATE: 3.0 GPH
T 3:REGULAR UNLEADED
DISPENSE MODE:
    STANDARD
<ETX>
```


Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 781

Version 7

Function Type: Set Pressure Line Leak Configuration

Command Format:

Display: <SOH>S781QQf

Computer: <SOH>s781QQf

Inquire:

<SOH>I781QQ

<SOH>i781QQ

Typical Response Message, Display Format:

<SOH>
I781QQ
JAN 24, 1996 2:54 PM

PRESSURE LLD CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	REGULAR UNLEADED	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i781QQYYMMDDHHmmQQf...
QQf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - Configuration flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 782

Version 7

Function Type: Set Pressure Line Leak Label

Command Format:

Display: <SOH>S782QQaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s782QQaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I782QQ

<SOH>i782QQ

Typical Response Message, Display Format:

<SOH>
I782QQ
JAN 24, 1996 2:54 PM

PRESSURE LLD LABEL

DEVICE LABEL
1 REGULAR UNLEADED
<ETX>

Typical Response Message, Computer Format:

<SOH>i782QQYYMMDDHHmmQQaaaaaaaaaaaaaaaaaaaaa...
QQaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. a - Indicates any printable ASCII character
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 783

Version 7

Function Type: Set Pressure Line Leak 0.10 GPH Test Schedule

Command Format:

Display: <SOH>S783QQf

Computer: <SOH>s783QQf

Inquire:

<SOH>I783QQ

<SOH>i783QQ

Typical Response Message, Display Format:

```
<SOH>
I783QQ
JAN 24, 1996  2:54 PM

PRESSURE LINE LEAK 0.10 TEST SCHEDULE

LINE                                0.10 GPH TEST
Q 1:REGULAR UNLEADED                DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i783QQYYMMDDHHmmQQf...
                      QQf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - 0.10 GPH Test Schedule
0=Disabled
1=Repetitive
2=Auto
3=Manual
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Added in V17)

(Added in V18)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 784

Version 7

Function Type: Set Pressure Line Leak Shutdown Rate

Command Format:

Display: <SOH>S784QQrr

Computer: <SOH>s784QQrr

Inquire:

<SOH>I784QQ

<SOH>i784QQ

Typical Response Message, Display Format:

```
<SOH>
I784QQ
JAN 24, 2000  2:54 PM

PRESSURE LINE LEAK SHUTDOWN RATE

LINE                               SHUTDOWN RATE
Q 1:REGULAR UNLEADED              3.0 GPH
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i784QQYYMMDDHHmmQQrr...
      QQrr&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. rr - Shutdown rate
 - 01=0.10 gal/hr
 - 02=3.00 gal/hr
 - 03=0.20 gal/hr
 - 04=None
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Added in V19)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 785

Version 7

Function Type: Set Pressure Line Leak Tank Number

Command Format:

Display: <SOH>S785QQtt

Computer: <SOH>s785QQtt

Inquire:

<SOH>I785QQ

<SOH>i785QQ

Typical Response Message, Display Format:

<SOH>

I785QQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK TANK NUMBER

LINE

TANK NUMBER

Q 1:REGULAR UNLEADED

3

<ETX>

Typical Response Message, Computer Format:

<SOH>i785QQYYMMDDHHmmQQtt...

QQtt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. tt - Tank number (Decimal) (00=no tank)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 786

Version 7

Function Type: Set Pressure Line Leak Dispense Mode

Command Format:

Display: <SOH>S786QQf

Computer: <SOH>s786QQf

Inquire:

<SOH>I786QQ

<SOH>i786QQ

Typical Response Message, Display Format:

<SOH>

I786QQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK DISPENSE MODE

LINE

DISPENSE MODE

Q 1:REGULAR UNLEADED

STANDARD

<ETX>

Typical Response Message, Computer Format:

<SOH>i786QQYYMMDDHHmmQQf...

QQf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - Dispensing Mode
 - 1=Standard
 - 2=Manifolded: Alternate
 - 3=Manifolded: Sequential
 - 4=Manifolded: All Pumps
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 787

Version 7

Function Type: Set Pressure Line Leak Disable Alarm Assignments

Command Format:

Display: <SOH>S787QQAANNTTSS

Computer: <SOH>s787QQAANNTTSS

Inquire:

<SOH>I787QQ

<SOH>i787QQ

Typical Response Message, Display Format:

```
<SOH>
I787QQ
JAN 24, 1996  2:54 PM

PRESSURE LLD SETUP REPORT

Q 1:REGULAR UNLEADED
- NO ALARM ASSIGNMENTS -
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i787QQYYMMDDHHmmQQnnAANNTTSS...
      QQnnAANNTTSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. nn - Number of Alarms to Follow
4. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
5. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status:
00=Clear
01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 788

Version 9

Function Type: Set Pressure Line Leak Piping Material

Command Format:

Display: <SOH>S788QQtt

Computer: <SOH>s788QQtt

Inquire:

<SOH>I788QQ

<SOH>i788QQ

Typical Response Message, Display Format:

```
<SOH>
I788QQ
JUN 14, 2001  10:15 PM

PRESSURE LINE LEAK PIPE TYPE

LINE                PIPE TYPE:
Q 1:UNLEADED REGULAR USER DEFINED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i788QQYYMMDDHHmmQQtt
      QQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. tt - Pipe Type:
 - 01=2.0"/3.0" Fiberglass
 - 02=2.0" Steel
 - 03=White Enviroflex PP1501
 - 04=1.5" Environ Geoflex II (Added in V11)
 - 05=Omniflex CP1501 (Added in V15)
 - 06=Yellow Enviroflex PP1500
 - 07=1.5"/2.5" Enviroflex PP1502/2502 (Added in V17)
 - 08=OPW Pisces SP-15 (Added in V18)
 - 09=OPW Pisces CP-15 (Added in V18)
 - 10=WFG Coflex 2000 Ribbed (Added in V19)
 - 11=Enviroflex PP1503/2503 (Added in V19)
 - 12=Omniflex CP1503 (Added in V19)
 - 13=1.5"/2.0" Environ Geoflex D (Added in V19)
 - 14=APT P175SC (Added in V121)
 - 15=OPW Pisces CP15DW (Added in V19)
 - 16=OPW Pisces CP20 (Added in V19)
 - 17=OPW PISCES SP20 (Added in V26)
 - 18=User Defined (Added in V22)
 - 19=PETROTECHNIK UPP EXTRA 63MM (Added in V26)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 789

Version 9

Function Type: Set Pressure Line Leak Primary Pipe Length

Also used for the smaller diameter line in dual diameter piping configurations

Command Format:

Display: <SOH>S789QQLLL

Computer: <SOH>s789QQFFFFFFFF

Inquire:

<SOH>I789QQ

<SOH>i789QQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. LLL - Pipe Length, Feet (Decimal)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I789QQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK PIPE LENGTH

LINE                LINE LENGTH
Q 1:UNLEADED REGULAR 250 FEET
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s789QQYYMMDDHHmmQQFFFFFFFF...
      QQFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 78A

Version 11

Function Type: Set Pressure Line Leak Sensor Type

Command Format:

Display: <SOH>S78AQQp

Computer: <SOH>s78AQQp

Inquire:

<SOH>I78AQQ

<SOH>i78AQQ

Typical Response Message, Display Format:

<SOH>
I78AQQ
JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK

LINE	PUMP
Q 1:REGULAR UNLEADED	NON-VENTED
<ETX>	

Typical Response Message, Computer Format:

<SOH>i78AQQYYMMDDHHmmQQp...
QQp&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. p - Sensor Type
 - 1=Non-vented
 - 2=Vented
 - 3=High Pressure
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 78B

Version 16 (Obsolete at Version 17, use 78E)

Function Type: Set Pressure Line Leak 0.10 GPH Test Schedule

Command Format:

Display: <SOH>S78BPPMMDD

Computer: <SOH>s78BPPMMDD

Inquire:

<SOH>I78BPP

<SOH>i78BPP

Typical Response Message, Display Format:

<SOH>
I78BPP
JAN 24, 1998 2:55 PM

PLLD 0.10 GPH SCHEDULE

LINE	SCHEDULE
P 1:REGULAR UNLEADED	02/11

<ETX>

Typical Response Message, Computer Format:

<SOH>s78BPPYYMMDDHHmmPPMMDD...
PPMMDD&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - PLLD Line Leak sensor number (Decimal, 00=all)
3. MMDD - Month and Day for 0.10 GPH test to start
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 78C

Version 12

Function Type: Set Pressure Line Leak 0.20 GPH Test Schedule

Command Format:

Display: <SOH>S78CQQf

Computer: <SOH>s78CQQf

Inquire:

<SOH>I78CQQ

<SOH>i78CQQ

Typical Response Message, Display Format:

<SOH>

I78CQQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK 0.20 TEST SCHEDULE

LINE

0.20 GPH TEST

Q 1:REGULAR UNLEADED

MONTHLY

<ETX>

Typical Response Message, Computer Format:

<SOH>i78CQQYYMMDDHHmmQQf...

QQf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - 0.20 GPH Test Schedule
 - 0=Disabled
 - 1=Repetitive
 - 2=Monthly (Added in V18)
 - 3=Manual (Added in V18)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 78E

Version 17

Function Type: Set Pressure Line Leak 0.10 GPH Auto Test Enable

Command Format:

Display: <SOH>S78EQQf

Computer: <SOH>s78EQQf

Inquire:

<SOH>I78EQQ

<SOH>i78EQQ

Typical Response Message, Display Format:

<SOH>

I78EQQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK 0.10 AUTO ENABLE

LINE

0.10 GPH AUTO

Q 1:REGULAR UNLEADED

ENABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i78EQQYYMMDDHHmmQQf...

QQf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - 0.10 GPH Test
0=Disabled
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 78F

Version 17

Function Type: Set Pressure Line Leak Dispense Threshold

Command Format:

Display: <SOH>S78FQQPP

Computer: <SOH>s78FQQFFFFFFFFF

Inquire:

<SOH>I78FQQ

<SOH>i78FQQ

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. PP - Low Pressure, PSI (Decimal)
3. FFFFFFFF - Low Pressure, PSI (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I78FQQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK DISPENSE THRESHOLD

LINE                      LOW PRESSURE
Q 1:UNLEADED REGULAR      15 PSI
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s78FQQYYMMDDHHmmQQFFFFFFFFF...
                      QQFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Low Pressure, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.9 RECONCILIATION SETUP

Function Code: 790

Version 118

Function Type: DIM Software Revision

Command Format:

Display: <SOH>I790PP

Computer: <SOH>i790PP

Notes:

1. PP - Communication Port Number (Decimal, 00=all)

Typical Response Message, Display Format:

```
<SOH>
I790PP
JAN  1, 2000  8:00 AM

EDIM:1 VR:330273-002-C   TD:97.11.13.15.52
<ETX>
```

Typical Response Message, Computer Format:

Notes:

1. Response is the same as display format.

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 791

Version 106

Function Type: Set Mechanical Dispenser Interface String

Command Format:

Display: <SOH>S791NNaaaaaaaaaaaaa

Computer: <SOH>s791NNaaaaaaaaaaaaa

Inquire:

<SOH>I791NN

<SOH>i791NN

Typical Response Message, Display Format:

```
<SOH>
S791NN
MAR 29, 1996  6:27 PM

DISP. MODULE DATA STRING
MDIM 1: aaaaaaaaaaaaaa
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i791NNYYMMDDHHmmNNaaaaaaaaaaaaa...
NNaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - MDIM Number (Decimal, 00=all)
3. aaaaaaaaaaaaaa - Data String (12 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 792

Version 106

Function Type: Set Electronic Dispenser Interface String

Command Format:

Display: <SOH>S792NNaaaaaaaaaaaaa

Computer: <SOH>s792NNaaaaaaaaaaaaa

Inquire:

<SOH>I792NN

<SOH>i792NN

Typical Response Message, Display Format:

```
<SOH>
I792NN
JAN 22, 1996  3:21 PM

DISP. MODULE DATA STRING
EDIM 1:  aaaaaaaaaaaaaa
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i792NNYYMMDDHHmmNNaaaaaaaaaaaaa...
NNaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - EDIM Number (Decimal, 00=all)
3. aaaaaaaaaaaaaa - Data String (12 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 793

Version 106

Function Type: Set Reconciliation Auto Daily Closing Time

Command Format:

Display: <SOH>S79300HHmm

Computer: <SOH>s79300HHmm

Inquire:

<SOH>I79300

<SOH>i79300

Typical Response Message, Display Format:

<SOH>

I79300

JAN 22, 1996 3:21 PM

AUTOMATIC DAILY CLOSING

TIME: 2:00 AM

<ETX>

Typical Response Message, Computer Format:

<SOH>i79300YYMMDDHHmmHHmm&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. HHmm - Auto Daily Closing Time (hours & minutes)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 794

Version 106

Function Type: Set Auto Shift Closing Time 1, 2, 3, 4

Command Format:

Display: <SOH>S794SSHHmm

Computer: <SOH>s794SSHHmm

Inquire:

<SOH>I794SS

<SOH>i794SS

Typical Response Message, Display Format:

```
<SOH>
I794SS
MAR 26, 1996  1:49 PM

AUTO SHIFT #1 CLOSING
TIME:  8:00 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i794SSYYMMDDHHmmSSHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Shift Close Number (01, 02, 03, 04)
3. HHmm - Hour and Minute (EE00=Disabled)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 795

Version 106

Function Type: Set Periodic Reconciliation Mode

Command Format:

Display: <SOH>S79500ss

Computer: <SOH>s79500ss

Inquire:

<SOH>I79500

<SOH>i79500

Typical Response Message, Display Format:

```
<SOH>
I79500
JAN 22, 1996  3:22 PM

PERIODIC RECONCILIATION
MODE: MONTHLY
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79500YYMMDDHHmmss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Periodic Reconciliation Mode
1=Monthly
2=Rolling
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 796

Version 106

Function Type: Set Periodic Reconciliation Report Length

Command Format:

Display: <SOH>S79600dd

Computer: <SOH>s79600dd

Inquire:

<SOH>I79600

<SOH>i79600

Typical Response Message, Display Format:

```
<SOH>
I79600
JAN 22, 1996  3:22 PM

PERIODIC RECONCILIATION
LENGTH: 31 DAYS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79600YYMMDDHHmmdd&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Number of days for Rolling Report (Decimal, 01-31)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 797

Version 106

Function Type: Set Periodic Reconciliation Alarm Flag

Command Format:

Display: <SOH>S79700ss

Computer: <SOH>s79700ss

Inquire:

<SOH>I79700

<SOH>i79700

Typical Response Message, Display Format:

```
<SOH>
I79700
JAN 22, 1996  3:22 PM

PERIODIC RECONCILIATION
ALARM: DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79700YYMMDDHHmmss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Reconciliation Alarm Flag
01=Disable
02=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 798

Version 106

Function Type: Set Periodic Reconciliation Alarm Threshold

Command Format:

Display: <SOH>S79800PP.hh

Computer: <SOH>s79800FFFFFFFF

Inquire:

<SOH>I79800

<SOH>i79800

Notes:

1. PP.hh - Alarm Threshold, Percent and hundredths (Decimal)
2. FFFFFFFF - Alarm Threshold, Percent (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I79800
JUN  1, 2000  8:07 AM

PERIODIC RECONCILIATION
ALARM THRESHOLD: 1.00%
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79800YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Alarm Threshold, Percent (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 799

Version 106

Function Type: Set Periodic Reconciliation Alarm Offset

Command Format:

Display: <SOH>S79900GGGGGG

Computer: <SOH>s79900FFFFFFFF

Inquire:

<SOH>I79900

<SOH>i79900

Notes:

1. GGGGGG - Alarm Offset, Gallons (Decimal)
2. FFFFFFFF - Alarm Offset, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I79900
JAN 22, 1996  3:22 PM

PERIODIC RECONCILIATION
ALARM OFFSET:    130
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79900YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Alarm Offset, Gallons (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 79A

Version 106

Function Type: Set Remote Printer Reconciliation Report Format

Command Format:

Display: <SOH>S79A00tt

Computer: <SOH>s79A00tt

Inquire:

<SOH>I79A00

<SOH>i79A00

Typical Response Message, Display Format:

<SOH>
I79A00
JAN 22, 1996 3:22 PM

REMOTE REPORT FORMAT
SELECT: ROW
<ETX>

Typical Response Message, Computer Format:

<SOH>i79A00YYMMDDHHmmtt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. tt - Remote Printer Report Type
01=Row
02=Column
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 79B

Version 106

Function Type: Set Shift Manual Adjustment Value

Command Format:

Display: <SOH>S79BTTssGGGGGG

Computer: <SOH>s79BTTssFFFFFFFF

Inquire:

<SOH>I79BTT

<SOH>i79BTT

Notes:

1. TT - Tank number
2. ss - Shift mode
01=Current
02=Previous
3. GGGGGG - Adjustment Value, Gallons (Decimal)
4. FFFFFFFF - Adjustment Value, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I79BTT
MAR 26, 1996  1:50 PM

T 1:REGULAR UNLEADED
CURRENT SHFT ADJ:    300
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79BTTYMMDDHHmmTTssFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank number
3. ss - Shift mode
01=Current
02=Previous
4. FFFFFFFF - Adjustment Value, Gallons (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 79C

Version 106

Function Type: Set Daily Manual Adjustment Value

Command Format:

Display: <SOH>S79CTTMMDDGGGGGG

Computer: <SOH>s79CTTMMDDFFFFFFFF

Inquire:

<SOH>I79CTT

<SOH>i79CTT

Notes:

1. TT - Tank number
2. MMDD - Month and day
3. GGGGGG - Adjustment Value, Gallons (Decimal)
4. FFFFFFFF - Adjustment value, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I79CTT
MAR 26, 1996  1:50 PM

T 1:REGULAR UNLEADED
MAR 26  ADJ VOL:    300
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79CTTYMMDDHHmmTTMMDDFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank number
3. MMDD - Month and day
4. FFFFFFFF - Adjustment value, Gallons (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 79D

Version 106

Function Type: Close Current Reconciliation Shift

Command Format:

Display: <SOH>S79D00ff

Computer: <SOH>s79D00ff

Inquire:

<SOH>I79D00

<SOH>i79D00

Typical Response Message, Display Format:

```
<SOH>
I79D00
JAN 22, 1996  3:23 PM

MANUAL SHIFT CLOSE
STATION IS BUSY
*** CLOSE SHIFT PENDING ***
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79D00YYMMDDHHmmff&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ff - Close current shift flag
01=Close shift pending
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 79E

Version 106

Function Type: Clear Tank Map Table

Command Format:

Display: <SOH>S79E00149

Computer: <SOH>s79E00149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S79E00
JAN 22, 1996  3:23 PM

RECONCILIATION CLEAR MAPS
MAPS TABLE CLEARED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i79E00YYMMDDHHmmss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Clear status
00=not clear
01=cleared
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 79F

Function Type: Set BIR Temperature Compensation Flag

Version 108

Command Format:

Display: <SOH>S79F00f

Computer: <SOH>s79F00f

Inquire:

<SOH>I79F00

<SOH>i79F00

Typical Response Message, Display Format:

<SOH>
I79F00
JAN 22, 1996 3:24 PM

TEMP COMPENSATION
STANDARD
<ETX>

Typical Response Message, Computer Format:

<SOH>i79F00YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Status
0=Standard
1=TC Volume
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.10 WIRELESS PLLD SETUP

Function Code: 7A0

Version 10

Function Type: WPLLD Line Leak General Setup

Command Format:

Display: <SOH>I7A0WW

Computer: Computer format is not supported for this command

Typical Response Message, Display Format:

```
<SOH>
I7A0WW
JAN 24, 1996  2:54 PM

WPLLD LINE LEAK SETUP

W 1:REGULAR UNLEADED

PIPE TYPE:    FIBERGLASS
LINE LENGTH:  200 FEET
0.20 GPH TEST: ENABLED
SHUTDOWN RATE: 3.0 GPH
T 1:REGULAR UNLEADED
DISPENSE MODE:
  STANDARD
<ETX>
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A1

Version 10

Function Type: Set WPLLD Line Leak Configuration

Command Format:

Display: <SOH>S7A1WWf

Computer: <SOH>s7A1WWf

Inquire:

<SOH>I7A1WW

<SOH>i7A1WW

Typical Response Message, Display Format:

```
<SOH>
I7A1WW
JAN 24, 1996  2:54 PM

WPLLD LLD  CONFIGURATION

DEVICE LABEL                CONFIGURED
  1  REGULAR UNLEADED      ON
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7A1WWYYMMDDHHmmWWf...
                        WWf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. f - Configuration flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A2

Version 10

Function Type: Set WPLLD Line Leak Label

Command Format:

Display: <SOH>S7A2WWaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s7A2WWaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I7A2WW

<SOH>i7A2WW

Typical Response Message, Display Format:

```
<SOH>
I7A2WW
JAN 24, 1996  2:54 PM

WPLLD LLD   LABEL

DEVICE LABEL
  1  REGULAR UNLEADED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7A2WWYYMMDDHHmmWWaaaaaaaaaaaaaaaaaaaaa...
                                   WWaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. a - Indicates any printable ASCII character
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A3

Version 10

Function Type: Set WPLLD Line Leak 0.20 GPH Test Schedule

Command Format:

Display: <SOH>S7A3WWf

Computer: <SOH>s7A3WWf

Inquire:

<SOH>I7A3WW

<SOH>i7A3WW

Typical Response Message, Display Format:

```
<SOH>
I7A3WW
JAN 24, 1996  2:54 PM

WPLLD LINE LEAK 0.20 TEST SCHEDULE

LINE                                0.20 GPH TEST
W 1:REGULAR UNLEADED                MONTHLY
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7A3WWYYMMDDHHmmWWf...
                               WWf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. f - 0.20 GPH Test Schedule
0=Disabled
1=Repetitive
2=Monthly
3=Manual
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Added in V18)
(Added in V18)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A4

Version 10

Function Type: Set WPLLD Line Leak Shutdown Rate

Command Format:

Display: <SOH>S7A4WWrr

Computer: <SOH>s7A4WWrr

Inquire:

<SOH>I7A4WW

<SOH>i7A4WW

Typical Response Message, Display Format:

<SOH>

I7A4WW

JAN 24, 2000 2:55 PM

WPLLD LINE LEAK SHUTDOWN RATE

LINE

SHUTDOWN RATE

W 1:REGULAR UNLEADED

3.0 GPH

<ETX>

Typical Response Message, Computer Format:

<SOH>i7A4WWYYMMDDHHmmWWrr...

WWrr&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. rr - Shutdown rate
 - 01=0.20 gal/hr
 - 02=3.00 gal/hr
 - 03=0.10 gal/hr
 - 04=None
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Added in V19)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A5

Version 10

Function Type: Set WPLLD Line Leak Tank Number

Command Format:

Display: <SOH>S7A5WWtt

Computer: <SOH>s7A5WWtt

Inquire:

<SOH>I7A5WW

<SOH>i7A5WW

Typical Response Message, Display Format:

<SOH>
I7A5WW
JAN 24, 1996 2:55 PM

WPLLD LINE LEAK TANK NUMBER

LINE	TANK NUMBER
W 1:REGULAR UNLEADED	1

<ETX>

Typical Response Message, Computer Format:

<SOH>i7A5WWYYMMDDHHmmWWtt...
WWtt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. tt - Tank number (Decimal) (00=no tank)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A6

Version 10

Function Type: Set WPLLD Line Leak Dispense Mode

Command Format:

Display: <SOH>S7A6WWf

Computer: <SOH>s7A6WWf

Inquire:

<SOH>I7A6WW

<SOH>i7A6WW

Typical Response Message, Display Format:

<SOH>

I7A6WW

JAN 24, 1996 2:55 PM

WPLLD LINE LEAK DISPENSE MODE

LINE

DISPENSE MODE

W 1:REGULAR UNLEADED

STANDARD

<ETX>

Typical Response Message, Computer Format:

<SOH>i7A6WWYYMMDDHHmmWWf...

WWf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. f - Dispensing Mode
 - 1=Standard
 - 2=Manifolded: Alternate
 - 3=Manifolded: Sequential
 - 4=Manifolded: All Pumps
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A7

Version 10

Function Type: Set WPLLD Line Disable Alarm Assignments

Command Format:

Display: <SOH>S7A7WWAANNTTSS

Computer: <SOH>s7A7WWAANNTTSS

Inquire:

<SOH>I7A7WW

<SOH>i7A7WW

Typical Response Message, Display Format:

```
<SOH>
I7A7WW
JAN 24, 1996  2:55 PM

WPLLD LLD    SETUP REPORT

W 1:REGULAR UNLEADED
- NO ALARM ASSIGNMENTS -
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7A7WWYYMMDDHHmmWWnnAANNTTSS...
                               WWnnAANNTTSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. nn - Number of Alarms to Follow
4. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
5. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status:
00=Clear
01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A8

Version 10

Function Type: Set WPLLD Line Leak Pipe Type

Command Format:

Display: <SOH>S7A8WWzz

Computer: <SOH>s7A8WWzz

Inquire:

<SOH>I7A8WW

<SOH>i7A8WW

Typical Response Message, Display Format:

```
<SOH>
I7A8WW
JAN 24, 1996  2:55 PM

WPLLD LINE LEAK PIPE TYPE

LINE                PIPE TYPE:
W 1:REGULAR UNLEADED FIBERGLASS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s7A8WWYYMMDDHHmmWWzz...
                WWzz&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=all)
3. zz - Pipe Type:
 - 01=2" Fiberglass
 - 02=2" Steel
 - 03=Flexible-A (White Enviroflex PP1501)
 - 04=Flexible-B (1.5" Environ Geoflex D) (Added in V15)
 - 05=Flexible-C (Omniflex CP1501) (Added in V15)
 - 06=Flexible-D (Yellow Enviroflex PP1500) (Added in V15)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A9

Version 10

Function Type: Set WPLLD Line Leak Pipe Length

Command Format:

Display: <SOH>S7A9WWLLL

Computer: <SOH>s7A9WWFFFFFFFFF

Inquire:

<SOH>I7A9WW

<SOH>i7A9WW

Notes:

1. WW - WPLLD Line Leak sensor number (Decimal, 00=all)
2. LLL - Pipe Length, Feet (Decimal)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I7A9WW
JAN 24, 1996 2:55 PM

WPLLD LINE LEAK LINE LENGTH

LINE	LINE LENGTH
W 1:REGULAR UNLEADED	200 FEET

<ETX>

Typical Response Message, Computer Format:

<SOH>s7A8WWYYMMDDHHmmWWFFFFFFFFF...
WWFFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7AA

Version 11 (Obsolete at Version 17, use 7AC)

Function Type: Set WPLLD Line Leak 0.10 GPH Test Schedule

Command Format:

Display: <SOH>S7AAWMMDD

Computer: <SOH>s7AAWMMDD

Inquire:

<SOH>I7AAWW

<SOH>i7AAWW

Typical Response Message, Display Format:

<SOH>
I7AAWW
JAN 24, 1996 2:55 PM

WPLLD 0.10 GPH SCHEDULE

LINE	SCHEDULE
W 1:REGULAR UNLEADED	02/11

<ETX>

Typical Response Message, Computer Format:

<SOH>s7AAWYYMMDDHHmmWWMMDD...
WWMMDD&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=all)
3. MMDD - Month and Day for 0.10 GPH test to start
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7AC

Version 17

Function Type: Set WPLLD Line Leak 0.10 GPH Test Schedule Enable

Command Format:

Display: <SOH>S7ACWWf

Computer: <SOH>s7ACWWf

Inquire:

<SOH>I7ACWW

<SOH>i7ACWW

Typical Response Message, Display Format:

```
<SOH>
I7ACWW
JAN 24, 1996  2:54 PM

WPLLD LINE LEAK 0.10 TEST SCHEDULE

LINE                                0.10 GPH TEST
W 1:REGULAR UNLEADED                DISABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7ACWWYYMMDDHHmmWWf...
                        WWf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. f - 0.10 GPH Test Schedule
0=Disabled
1=(Reserved)
2=Auto
3=Manual (Added in V18)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7AD

Version 20

Function Type: Set WPLLD Line Leak Secondary Pipe Length
(only used for the larger diameter line in dual diameter piping configurations)

Command Format:

Display: <SOH>S7ADWWLLL

Computer: <SOH>s7ADWWFFFFFFFF

Inquire:

<SOH>I7ADWW

<SOH>i7ADWW

Notes:

1. WW - Wireless Pressure Line Leak Sensor Number (Decimal, 00=all)
2. LLL - Pipe Length, Feet (Decimal)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I7ADWW
JUN  1, 2000  8:09 AM

WPLLD LINE LEAK LINE LENGTH  LARGE

LINE                               LINE LENGTH
W 2:WPLLD NUMBER 2                150 FEET
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s7ADWWYYMMDDHHmmWWFFFFFFFFF...
WWFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7AE

Version 27

Function Type: WPLLD Continuous Handle Alarm Timeout

Command Format:

Display: <SOH>S7AEWWtt

Computer: <SOH>s7AEWWtt

Inquire:

<SOH>I7AEWW

<SOH>i7AEWW

Notes:

1. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
2. tt - Continuous Handle Alarm Timeout (Decimal, in hours, 1-16)

Typical Response Message, Display Format:

```
<SOH>
I7AEQQ
SEP 16, 2006  3:15 PM

WPLLD CONTINUOUS HANDLE ALARM TIMEOUT

LINE                               TIMEOUT
W 1:REGULAR UNLEADED              16 HOURS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7AEWWYYMMDDHHmmWWttWWtt...
                               WWtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. tt - Continuous Handle Alarm Timeout (Decimal, in hours, 1-16)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7AF

Version 19

Function Type: Set WPLLD Line Leak Altitude Pressure Offset

Command Format:

Display: <SOH>S7AFWWII.p

Computer: <SOH>s7AFWWFFFFFFFF

Inquire:

<SOH>I7AFWW

<SOH>i7AFWW

Notes:

1. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
2. II.p - Altitude Pressure Offset, PSI or KPA (Decimal)
3. FFFFFFFF - Altitude Pressure Offset, PSI or KPA (ASCII Hex IEEE float)
4. Value must be within the range of +5.0 to -5.0 PSI or 34.4 to -34.4 KPA

Typical Response Message, Display Format:

<SOH>

I7AFWW

JAN 1, 2000 1:44 AM

ALTITUDE PRESSURE OFFSET ADJUSTMENT

LINE

PRESSURE OFFSET

W 1:REGULAR UNLEADED

0.0 PSI

<ETX>

Typical Response Message, Computer Format:

<SOH>i7AFWWYYMMDDHHmmWWFFFFFFFF...

WWFFFFFFFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. FFFFFFFF - Altitude pressure offset, PSI or KPA (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.11 METER MAP & DELIVERY TICKET SETUP

Function Code: 7B1

Version 110

Function Type: Set BIR Meter/Tank Mapping

Command Format:

Display: <SOH>S7B100 B SS FP MM TT

Inquire:

<SOH>I7B100

Computer: Computer format is not supported for this command

Notes:

1. B - Bus
2=Power Bus (MDIM)
3=Comm Bus
2. SS - Slot
Bus 2: 09-16
Bus 3: 01-06
3. FP - Fueling Position (00-99)
4. MM - Meter (00-99) ** Double-digit meter mapping implemented in Version 23
5. TT - Tank Number (-1, 00, or any legitimate tank number)
-1=Probeless tank
00=Unmap present tank
6. It is not necessary that the meter be in the map prior to mapping the meter to a tank

Typical Response Message, Display Format:

<SOH>

I7B100

JUN 22, 2001 3:24 PM

FUELING POSITION - METER - TANK MAP

BUS	SLOT	FUEL_P	METER	TANK
3	3	0	10	1
3	3	0	11	3
3	3	0	12	2
3	3	1	10	1
3	3	1	11	3
3	3	1	12	2
3	3	2	10	2
3	3	2	11	3
3	3	2	12	1
3	3	3	10	2
3	3	3	11	3
3	3	3	12	1
3	3	4	10	1
3	3	4	11	3
3	3	4	12	2
3	3	5	10	1
3	3	5	11	3
3	3	5	12	2
3	3	6	10	2
3	3	6	11	3

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7B2

Version 20

Function Type: Set Meter Calibration Offset

Command Format:

Display: <SOH>S7B200pp.ppp

Computer: <SOH>s7B200FFFFFFFF

Inquire:

<SOH>I7B200

<SOH>i7B200

Notes:

1. pp.ppp - Meter Calibration Offset, Percent (Decimal)
2. FFFFFFFF - Meter Calibration Offset, Percent (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I7B200
JUN  1, 2000  8:10 AM
```

```
METER CALIBRATION
OFFSET:  0.000%
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7B200YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Meter Calibration Offset, Percent (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7B5
Function Type: Set Ticketed Delivery

Version 116

Command Format:
Display: <SOH>S7B5TTeeYYMMDDHHmmGGGGGG
Computer: <SOH>s7B5TTeeYYMMDDHHmmFFFFFFFF

- Notes:**
1. TT - Tank Number (Decimal, 00=all)
 2. ee - edit function
01=Edit Ticket (enter, modify)
02=Insert Ticket Delivery
 3. YYMMDDHHmm - Delivery Date/Time (End Time)
 4. GGGGGG - Ticket Volume, Gallons (Decimal)
 5. FFFFFFFF - Ticket Volume, Gallons (ASCII Hex IEEE float)
Entering 0 volume will cancel ticketed delivery warning.
VOL TC/STANDARD must match setup for ticketed delivery.

Typical Response Message, Display Format:

```
<SOH>
S7B5TT
JAN  9, 1998  8:08 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

SET TICKETED DELIVERY

VOLUMES ARE STANDARD

T 1:UNLEADED REGULAR

                                TICKET      GAUGE      VARIANCE
                                VOLUME      VOLUME
JAN  8, 1993  2:10 AM      500.0      503.0      3.0
<ETX>
```


Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 7B5: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i7B5TTYMMDDHHmmTTpPPRRYYMMDDHHmmNNFFFFFFFF...  
TTpPPRRYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe type (Decimal)
5. RR - Result code - if an error occurs, just error code will be returned (Decimal)
 - 00=OK and data will follow
 - 01=BIR not enabled
 - 02=Tank number is invalid
 - 03=missing time/date
 - 04=Time Date not numeric
 - 05=invalid date
 - 06=time is invalid
 - 07=Date out of range of period (curr & prev via BIR)
 - 08=If there is no matching time/date for edit
 - 09=Invalid volume
 - 10=Try to insert when gauged exists
 - 30=Reserved
 - 31=Reserved
6. YYMMDDHHmm - Delivery Date/Time (End Time)
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Ticketed volume
 2. Gauged volume
 3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7B6

Version 23

Function Type: Set BOL number

Command Format:

Display: <SOH>S7B6TTeeYYMMDDHHmmaa..aa

Computer: <SOH>s7B6TTeeYYMMDDHHmmaa..aa

Notes:

1. TT - Tank Number (Decimal)
2. ee - edit function
01=Edit Ticket (enter, modify)
02=Insert Ticketed Delivery
3. YYMMDDHHmm - Delivery Date/Time (End Time)
4. aa..aa - Bill of Lading Number

Typical Response Message, Display Format:

<SOH>
I7B60101
FEB 01, 1997 4:29 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

SET TICKETED DELIVERY BOL NUMBER

DELIVERY END DATE	BOL NUMBER	TICKET VOLUME	GAUGE VOLUME	TC GAUGE VOLUME
DEC 2, 1993 2:00 AM	123456	0.0	502.0	0.0

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 7B6 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>s7B6TTYMMDDHHmmTTpPPRRYYMMDDHHmmAAaa..aaNNFFFFFFFF...FFFFFFFF...
      TTpPPRRYYMMDDHHmmAAaa..aaNNFFFFFFFF...FFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. p - Product Code (Decimal)
4. PP - Probe type (Decimal)
5. RR - Result code (Decimal) - if error occurs, only error code is returned
 - 00=OK and data will follow
 - 01=BIR not enabled
 - 02=Tank number is invalid
 - 03=missing time/date
 - 04=Time Date not numeric
 - 05=invalid date
 - 06=time is invalid
 - 07=Date out of range of period (curr & prev via BIR)
 - 08=If there is no matching time/date for edit
 - 30=Reserved
 - 31=Reserved
6. YYMMDDHHmm - Delivery Date/Time (End Time)
7. AA - Number of ASCII characters to follow
8. aa..aa - Bill of Lading Number (ASCII characters [20h-7Eh])
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats - VOL TC/STANDARD must match setup for ticketed delivery
 - 1. Ticketed volume
 - 2. Gauged volume
 - 3. Gauged TC volume
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.12 I/O DEVICE SETUP

Function Code: 7BC

Version 19

Function Type: Set Line Disable Alarm Assignments II

Command Format:

Display: <SOH>S7BCPPAANNTTSS

Computer: <SOH>s7BCPPAANNTTSS

Inquire:

<SOH>I7BCPP

<SOH>i7BCPP

Typical Response Message, Display Format:

```
<SOH>
I7BCPP
JAN 15, 1996 4:29 PM

LINE LEAK SETUP REPORT

P 1: LLD NUMBER 1

LINE LEAK
P 1:ANNUAL LINE FAIL <ETX>
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7BCPPYYMDDHHmmPPnnAANNTTSS...
PPnnAANNTTSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. nn - Number of Alarms to Follow (Hex)
4. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
5. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status:
00=Clear
01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7BD

Version 19

Function Type: Set Pressure Line Disable Alarm Assignments II

Command Format:

Display: <SOH>S7BDQQAANNTTSS

Computer: <SOH>s7BDQQAANNTTSS

Inquire:

<SOH>I7BDQQ

<SOH>i7BDQQ

Typical Response Message, Display Format:

```
<SOH>
I7BDQQ
JAN  3, 1996 11:15 PM

PRESSURE LLD SETUP REPORT

Q 1:PLLD NUMBER 1

IN-TANK ALARMS
ALL:LEAK ALARM
ALL:HIGH WATER ALARM
ALL:OVERFILL ALARM

PRESSURE LINE LEAK
ALL:PLLD OPEN ALARM
ALL:CONT HANDLE ALM
ALL:LN EQUIP FAULT ALM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7BDQQYYMMDDHHmmQQnnAANNTTSS...
                               QQnnAANNTTSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. nn - Number of Alarms to Follow (Hex)
4. AA - Alarm/Warning Category
 - 02=Tank Alarm
 - 21=Pressure Line Leak Alarm
5. NN - Alarm Type Number
 - If AA is 02 and NN is:
 - 02=Tank Leak Alarm
 - 03=Tank High Water Alarm
 - 04=Tank Overfill Alarm
 - If AA is 21 and NN is:
 - 06=PLLD Sensor Open Alarm
 - 16=PLLD Continuous Handle On Alarm
 - 18=PLLD Line Equipment Alarm
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status:
 - 00=Clear
 - 01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7BE

Version 19

Function Type: Set WPLLD Line Disable Alarm Assignments II

Command Format:

Display: <SOH>S7BEWWAANNTTSS

Computer: <SOH>s7BEWWAANNTTSS

Inquire:

<SOH>I7BEWW

<SOH>i7BEWW

Typical Response Message, Display Format:

```
<SOH>
I7BEWW
JAN  3, 1996 11:15 PM

WPLLD LLD SETUP REPORT

W 1:WPLLD NUMBER 1

IN-TANK ALARMS
ALL:LEAK ALARM
ALL:HIGH WATER ALARM
ALL:OVERFILL ALARM

WPLLD LINE LEAK
ALL:WPLLD OPEN ALARM
ALL:CONT HANDLE ALM
ALL:LN EQUIP FAULT ALM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7BEWWYYMMDDHHmmWWnnAANNTTSS...
                               WWnnAANNTTSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak Sensor Number (Decimal, 00=all)
3. nn - Number of Alarms to Follow (Hex)
4. AA - Alarm/Warning Category
 - 02=Tank Alarm
 - 26=Wireless PLLD Alarm
5. NN - Alarm Type Number
 - If AA is 02 and NN is:
 - 02=Tank Leak Alarm
 - 03=Tank High Water Alarm
 - 04=Tank Overfill Alarm
 - If AA is 26 and NN is:
 - 06=WPLLD Sensor Open Alarm
 - 16=WPLLD Continuous Handle On Alarm
 - 18=WPLLD Line Equipment Alarm
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status:
 - 00=Clear
 - 01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7C4

Version 27

Function Type: Set Pump Relay Monitor Configuration

Command Format:

Display: <SOH>S7C4rrf

Computer: <SOH>s7C4rrf

Inquire:

<SOH>I7C4rr

<SOH>i7C4rr

Typical Response Message, Display Format:

<SOH>
I7C4rr
JUN 22, 2006 3:12 PM

PUMP RELAY MONITOR CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	PUMP RELAY UNLEADED	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i7C4rrYYMMDDHHmmrrf...
rrf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. f - Configuration Flag (ASCII Hex)
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7C5

Version 27

Function Type: Set Pump Relay Monitor Label

Command Format:

Display: <SOH>S7C5rraaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s7C5rraaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I7C5rr

<SOH>i7C5rr

Typical Response Message, Display Format:

```
<SOH>
I7C5rr
JUN 22, 2006  3:12 PM

PUMP RELAY MONITOR LABEL

DEVICE  LABEL
      1  PUMP RELAY UNLEADED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7C5rrYYMMDDHHmmrraaaaaaaaaaaaaaaaaaaaaa...
                      raaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. a - Label (20 ASCII characters from 20 Hex - 7E Hex)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7C6

Version 27

Function Type: Set Pump Relay Monitor Pump Relay

Command Format:

Display: <SOH>S7C6rrAATT

Computer: <SOH>s7C6rrAATT

Inquire:

<SOH>I7C6rr

<SOH>i7C6rr

Typical Response Message, Display Format:

```
<SOH>
I7C6rr
JUN 22, 2006  3:12 PM

PUMP RELAY MONITOR PUMP RELAY

DEVICE  LABEL                      PUMP RELAY
   1    PUMP RELAY UNLEADED      Q !: UNLEADED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7C6rrYYMMDDHHmmrrAATT...
rrAATT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. AA - Device Type (Decimal)
 - 00=None
 - 11=Output Relay
 - 15=Pump Sensor
 - 16=VLLD
 - 21=PLLD
 - 26=WPLLD
4. TT - Device Number (Decimal, 00=None)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7C7

Version 27

Function Type: Set Pump Relay Monitor Stuck Relay

Command Format:

Display: <SOH>S7C7rrSSS

Computer: <SOH>s7C7rrFFFFFFFF

Inquire:

<SOH>I7C7rr

<SOH>i7C7rr

Notes:

1. SSS - Stuck Relay, Seconds (Decimal, 5 - 600 seconds)
2. FFFFFFFF - Stuck Relay, Seconds (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I7C7rr
JUN 22, 2006  3:12 PM

PUMP RELAY MONITOR STUCK RELAY

DEVICE LABEL STUCK RELAY
  1  PUMP RELAY UNLEADED  60 SEC
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7C7rrYYMMDDHHmmrrFFFFFFFF...
                                rrFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. FFFFFFFF - Stuck Relay, Seconds (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7C8

Version 27

Function Type: Set Pump Relay Monitor Max Run Time

Command Format:

Display: <SOH>S7C8rrhh

Computer: <SOH>s7C8rrFFFFFFFF

Inquire:

<SOH>I7C8rr

<SOH>i7C8rr

Notes:

1. hh - Max Run Time, Hours (Decimal, 1 - 8 hours)
2. FFFFFFFF - Max Run Time, Hours (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I7C8rr
JUN 22, 2006 3:12 PM

PUMP RELAY MONITOR MAX RUN TIME

DEVICE LABEL MAX RUN TIME
1 PUMP RELAY UNLEADED 8 HR
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i7C8rrYYMMDDHHmmrrFFFFFFFF...
rrFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. FFFFFFFF - Max Run Time, Hours (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7C9

Version 28

Function Type: Set Pump Relay Monitor Type

Command Format:

Display: <SOH>S7C9rrt

Computer: <SOH>s7C9rrt

Inquire:

<SOH>I7C9rr

<SOH>i7C9rr

Typical Response Message, Display Format:

<SOH>
I7C9rr
DEC 22, 2006 3:12 PM

PUMP RELAY MONITOR TYPE

DEVICE	LABEL	TYPE
1	PUMP RELAY UNLEADED	PUMP MONITOR RELAY
2	PROCESSOR	VAPOR PROCESSOR

<ETX>

Typical Response Message, Computer Format:

<SOH>i7C9rrYYMMDDHHmmrrt...
rrt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00 = all)
3. t - Type
 - 1 = Pump Relay Monitor
 - 2 = Vapor Processor
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 801
Function Type: Set Input Configuration

Version 1

Command Format:
Display: <SOH>S801IIIf
Computer: <SOH>s801IIIf

Inquire:
<SOH>I801II
<SOH>i801II

Typical Response Message, Display Format:

```
<SOH>
I801II
MAR 26, 1996  1:50 PM

EXTERNAL INPUT CONFIGURATION

DEVICE  LABEL                CONFIGURED
  1    EXTERNAL INPUT #1      OFF
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i801IIYYMMDDHHmmIIIf...
                      IIIf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 802

Version 1

Function Type: Set Input Location Label

Command Format:

Display: <SOH>S802IIaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s802IIaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I802II

<SOH>i802II

Typical Response Message, Display Format:

<SOH>
I802II
MAR 26, 1996 1:50 PM

EXTERNAL INPUT LABEL

DEVICE LABEL
1 aaaaaaaaaaaaaaaaaaaaaa
<ETX>

Typical Response Message, Computer Format:

<SOH>i802IIYYMMDDHHmmIIaaaaaaaaaaaaaaaaaaaaa...
IIaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 803
Function Type: Set Input Type

Version 1

Command Format:
Display: <SOH>S803IItnTT
Computer: <SOH>s803IItnTT

Inquire:
<SOH>I803II
<SOH>i803II

Typical Response Message, Display Format:

<SOH>
I803II
MAR 26, 1996 1:51 PM

EXTERNAL INPUT TYPE

INPUT	NAME	TYPE	ORIENTATION	TANK#
1	EXTERNAL INPUT #1	GENERATOR	NORMALLY CLOSED	2
2	DCD INPUT	STANDARD ACK	NORMALLY OPEN	

<ETX>

Typical Response Message, Computer Format:

<SOH>i803IIYYMMDDHHmmIItnNNTT...
IItnNNTT&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. t - Input type:
 - 1=Standard
 - 2=Generator
 - 3=Pump Sense
 - 4=Acknowledge Alarm
 - 5=Vapor Processor
4. n - Input Orientation
(Generator & Pump Sense only, not returned for others)
 - 1=Normally Open
 - 2=Normally Closed
5. NN - Number of Tanks to follow (Hex)
(Generator & Pump Sense only, not returned for others)
6. TT - Tank Number (Decimal, 00=none)
(Generator & Pump Sense only, not returned for others)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 804

Version 4

Function Type: Set Input Dispense Mode

Command Format:

Display: <SOH>S804IIIm

Computer: <SOH>s804IIIm

Inquire:

<SOH>I804II

<SOH>i804II

Typical Response Message, Display Format:

```
<SOH>
I804II
MAR 27, 1996  5:51 PM

INPUT DISPENSE MODE

INPUT  MODE
  1  MANIFOLDED: ALTERNATE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i804IIYYMMDDHHmmIIIm...
      IIIm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input (Pump Sensor) Number (Decimal)
3. m - Dispense Mode:
 - 1=Standard
 - 2=Manifolded: Alternate
 - 3=Manifolded: Sequential
 - 4=Manifolded: All Pumps
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 806

Version 1

Function Type: Set Relay Configuration

Command Format:

Display: <SOH>S806RRf

Computer: <SOH>s806RRf

Inquire:

<SOH>I806RR

<SOH>i806RR

Typical Response Message, Display Format:

<SOH>
I806RR
MAR 26, 1996 1:51 PM

RELAY CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	OUTPUT RELAY #1	ON

<ETX>

Typical Response Message, Computer Format:

<SOH>i806RRYYMMDDHHmmRRf...
RRf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. f - Configuration Flag
0=Off
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 807

Version 1

Function Type: Set Relay Location Label

Command Format:

Display: <SOH>S807RRaaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s807RRaaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I807RR

<SOH>i807RR

Typical Response Message, Display Format:

<SOH>
I807RR
MAR 26, 1996 1:51 PM

RELAY LABEL

DEVICE LABEL
1 aaaaaaaaaaaaaaaaaaaaaa
<ETX>

Typical Response Message, Computer Format:

<SOH>i807RRYYMMDDHHmmRRaaaaaaaaaaaaaaaaaaaaaa...
RRaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 808

Version 1

Function Type: Set Relay Alarm Assignments

Command Format:

Display: <SOH>S808RRAANNTTss

Computer: <SOH>s808RRAANNTTss

Inquire:

<SOH>I808RR

<SOH>i808RR

Notes:

1. RR - Relay number (Decimal, RR>00)
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
4. TT - Tank/Sensor Number (Decimal, 00=all)
5. ss - status
00=clear
01=set

Typical Response Message, Display Format:

```
<SOH>
I808RR
JUN  1, 2002  8:07 AM

RELAY SETUP REPORT
R 1: STP
  TYPE:
  STANDARD
  NORMALLY CLOSED

  ISD BAD DATA ALARM
  ISD BAD TEST ALARM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i808RRYYMMDDHHRRnnAANNTTss...
RRnnAANNTTss&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - receiver number (Decimal, RR>00)
3. nn - number of alarms to follow (Hex)
4. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
5. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. ss - status
00=clear
01=set
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 809
Function Type: Set Relay Orientation

Version 2

Command Format:
Display: <SOH>S809RRs
Computer: <SOH>s809RRs

Inquire:
<SOH>I809RR
<SOH>i809RR

Typical Response Message, Display Format:

```
<SOH>
I809RR
MAR 26, 1996  1:51 PM

RELAY ORIENTATION

RELAY DESIGNATION      ORIENTATION
  1 EXTERNAL RELAY #1  NORMALLY OPEN
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i809RRYYMMDDHHmmRRs...
                      RRs&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. s - Orientation:
 1=Normally Open
 2=Normally Closed
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 80A
Function Type: Set Relay Type

Version 4

Command Format:
Display: <SOH>S80ARRt
Computer: <SOH>s80ARRt

Inquire:
<SOH>I80ARR
<SOH>i80ARR

Notes:

1. RR - Relay number (Decimal, 00=all relays)
2. t - type
 - 1=Standard
 - 2=Pump Control Output
 - 3=Momentary
 - 4=Pump Comm Control
 - 5=Vapor Processor (only one relay can be of this type)

Typical Response Message, Display Format:

```
<SOH>
I80ARR
JUN  1, 2002  8:07 AM

RELAY TYPE

RELAY DESIGNATION      TYPE
  1 EXTERNAL RELAY #1  STANDARD
  2 TANK 1              PUMP CONTROL
  3 VAPOR PROCESSOR    VAPOR PROCESSOR
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i80ARRYYMMDDHHRrt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay number (Decimal, 00=all relays)
3. t - type
 - 1=Standard
 - 2=Pump Control Output
 - 3=Momentary
 - 4=Pump Comm Control
 - 5=Vapor Processor (only one relay can be of this type)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 80B

Version 4

Function Type: Set Relay Tank Assignment

Command Format:

Display: <SOH>S80BRRtt

Computer: <SOH>s80BRRtt

Inquire:

<SOH>I80BRR

<SOH>i80BRR

Typical Response Message, Display Format:

<SOH>
I80BRR
MAR 26, 1996 1:51 PM

RELAY TANK ASSIGNMENT

RELAY DESIGNATION	TANK
1 EXTERNAL RELAY #1	1

<ETX>

Typical Response Message, Computer Format:

<SOH>i80BRRYYMMDDHHmmRRtt...
RRtt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=All)
3. tt - Relay Tank Assignment (00=No Assignment)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 80C
Function Type: Set External Input Type

Version 25

Command Format:
Display: <SOH>S80CII t OTT...TT
Computer: <SOH>s80CII t OTT...TT

Inquire:
 <SOH>I80CII
 <SOH>i80CII

Notes:

1. II - Input device number (Decimal, 00=all)
2. t - Input type
 - 1=standard
 - 2=generator
 - 3=pump sense
 - 4=standard acknowledge
 - 5=Vapor Processor
3. O - Input orientation
 - 1=normally open
 - 2=normally closed
4. TT...TT - tank numbers (for input type 2 and 3 only) (Decimal)

Typical Response Message, Display Format:

```
<SOH>
I80CII
JUN  1, 2002  8:07 AM

EXTERNAL INPUT TYPE

INPUT  NAME                TYPE                ORIENTATION        TANK#
   1  EXTERNAL INPUT #1    STANDARD          NORMALLY CLOSED      1
   2  OPW VAPOR PROCESSOR VAPOR PROCESSOR NORMALLY OPEN
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i80CIIYYMMDDHHmmII t OnnTT...TT
                                II t OnnTT...TT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input device number (Decimal)
3. t - input type
 - 1=standard
 - 2=generator
 - 3=pump sense
 - 4=standard acknowledge
 - 5=Vapor Processor
4. O - orientation
 - 1=normally open
 - 2=normally closed
5. nn - number of tanks to follow (Hex)
6. TT...TT - tank numbers (Decimal, 00=none)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.13 EEPROM SETUP

Function Code: 851

Version 107

Function Type: Restore All Setup Data from EEPROM

Command Format:

Display: <SOH>S85100149

Computer: <SOH>s85100149

Inquire:

<SOH>I85100

<SOH>i85100

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

<SOH>
I85100
JAN 24, 1996 2:55 PM

RESTORE SETUP DATA: DISABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i85100YYMMDDHHmmSS&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Status
00=Disabled
01=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 852

Version 107

Function Type: Save All Setup Data to EEPROM

Command Format:

Display: <SOH>S85200149

Computer: <SOH>s85200149

Inquire:

<SOH>I85200

<SOH>i85200

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

<SOH>
I85200
JAN 24, 1996 2:55 PM

SAVE SETUP DATA: DISABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i85200YYMMDDHHmmSS&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Status
00=Disabled
01=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 853

Version 107

Function Type: Clear All Setup Data from EEPROM

Command Format:

Display: <SOH>S85300149

Computer: <SOH>s85300149

Inquire:

<SOH>I85300

<SOH>i85300

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

<SOH>
I85300
JAN 24, 1996 2:55 PM

CLEAR SETUP DATA: DISABLED
<ETX>

Typical Response Message, Computer Format:

<SOH>i85300YYMMDDHHmmSS&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Status
00=Disabled
01=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3.14 MISCELLANEOUS SETUP

Function Code: 881

Version 9

Function Type: Set Communication Port Data

Command Format:

Display: <SOH>S881PPBBBBBPSDTAA

Computer: <SOH>s881PPBBBBBPSDTAA

Inquire:

<SOH>I881PP

<SOH>i881PP

Notes:

1. PP - Communication Port Number (Decimal 01..06)

Typical Response Message, Display Format:

```
<SOH>
I881PP
JUN 1, 2000 8:10 AM
PORT SETTINGS:

COMM BOARD : 1 (RS-232)
BAUD RATE : 9600
PARITY : ODD
STOP BIT : 1 STOP
DATA LENGTH: 7 DATA
RS-232 SECURITY
CODE : 123456
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i881PPYYMMDDHHmmBBBBBPSDTAA&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. BBBBB - Baud Rate (Decimal)
3. P - Parity (Decimal; 0=None, 1 or 2)
4. S - Stop Bit (Decimal; 1 or 2)
5. D - Data Bit (Decimal; 7 or 8)
6. T - Pulse or Tone (Decimal; 0=Tone, 1=Pulse)
7. AA - Number of Rings before Answer (Decimal)
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 882

Version 9

Function Type: Initialize Communication Port Data

Command Format:

Display: <SOH>S882PP149

Computer: <SOH>s882PP149

Inquire:

<SOH>I882PP

<SOH>i882PP

Notes:

1. PP - Communication Port Number (Decimal 01..06)
2. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
I882PP
JUN  1, 2000  8:10 AM
PORT SETTINGS:

COMM BOARD   : 1 (RS-232)
BAUD RATE    : 9600
PARITY       : ODD
STOP BIT     : 1 STOP
DATA LENGTH  : 7 DATA
RS-232 SECURITY
CODE : 123456
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i882PPYYMMDDHHmmBBBBBPSDTAA&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. BBBBBB - Baud Rate (Decimal)
3. P - Parity (Decimal; 0=None, 1 or 2)
4. S - Stop Bit (Decimal; 1 or 2)
5. D - Data Bit (Decimal; 7 or 8)
6. T - Pulse or Tone (Decimal; 0=Tone, 1=Pulse)
7. AA - Number of Rings before Answer (Decimal)
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 885

Version 19

Function Type: Set SiteLink Modem Type

Command Format:

Display: <SOH>S885PPMM

Computer: <SOH>s885PPMM

Inquire:

<SOH>I885PP

<SOH>i885PP

Typical Response Message, Display Format:

<SOH>
I885PP
NOV 5, 1999 12:00 AM

COM BOARD 1: S-LINK
MODEM TYPE : NETCOMM SMART M7F
<ETX>

Typical Response Message, Computer Format:

<SOH>i885PPYYMMDDHHmmMM&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. MM - Modem Type:
00=NETCOMM SMART M7F
01=US ROBOTICS (UK)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 886

Version 20

Function Type: Set Modem Setup String

Command Format:

Display: <SOH>S886PPaaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s886PPaaaaaaaaaaaaaaaaaaaaaa

Inquire:

I886PP

i886PP

Notes:

1. PP - Communication Port Number (Decimal 01..06)

Typical Response Message, Display Format:

<SOH>

I886PP

JUN 1, 2000 8:15 AM

COMM BOARD : 3 (FXMOD)

MODEM SETUP STRING : GJMDAQ

<ETX>

Typical Response Message, Computer Format:

<SOH>i886PPYYMMDDHHmmaaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. a - Modem Setup String (20 ASCII characters)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 887

Version 20

Function Type: Set Dial Tone Validation Interval

Command Format:

Display: S887PPHHHH

Computer: s887PPHHHH

Inquire:

I887PP

i887PP

Notes:

1. PP - Modem or SiteLink Board Number (Port #) (Decimal 01..06)

Typical Response Message, Display Format:

```
<SOH>
I887PP
JUN  1, 2000  8:15 AM

COMM BOARD   : 3 (FXMOD)
DIAL TONE VALIDATION INTERVAL:  32 HOURS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i887PPYYMMDDHHmmHHHH&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. HHHH - Number of Idle Hours Before Receiver board checks for dial tone (Decimal 0001-9999)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 888

Version 19

Function Type: Communication Status Information

Command Format:

Display: <SOH>I888PP

Computer: <SOH>i888PP

Typical Response Message, Display Format:

```
<SOH>
I888PP
JAN  1, 1996  9:12 AM

COMM BOARD   : 1 (RS-232)
CONNECTION   : NONE

COMM BOARD   : 2 (FXMOD)
CONNECTION   : MODEM DIAL IN
FUNCTION      : NONE
ERROR        : UART SETTINGS ERROR
BAUD RATE    : 2400
PARITY       : ODD
STOP BIT     : 1 STOP
DATA LENGTH  : 7 DATA
TIME OF LAST COMM DATA: JAN  1, 1996  9:12 AM
TIME OF LAST COMM ERROR: JAN  1, 1996  8:00 AM
<ETX>
```


Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 888: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i888PPYYMMDDHHmmNNPPnnCCSSEEBBBBBPSDYMMDDHHmmYYMMDDHHmm...
PPnnCCSSEEBBBBBPSDYMMDDHHmmYYMMDDHHmm&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Total Number of Error Reports To Follow
3. PP - Communication Port Number (00=all)
4. nn - Number of Errors to follow for each port
5. CC - Connect Type
 - 00=NO CONNECTION
 - 01=AUTO DIAL TELETYPE
 - 02=AUTO DIAL FAX
 - 03=AUTO DIAL COMPUTER
 - 04=AUTO TRANSMIT
 - 05=MODEM DIAL IN
 - 06=RS232 REQUEST
6. SS - State or Function Code (Decimal):
 - 00=NONE
 - 01=OPEN PHONE PORT
 - 02=MODEM CHECK CONNECTION
 - 03=TRANSMITTING DATA
 - 04=CHECKING FOR CARRIER
 - 05=WAITING FOR DATA
 - 06=HANGING UP
 - 07=FAXMODEM INITIALIZING
 - 08=FAX CHECK CONNECTION
 - 09=FAX CHECK PAGE
 - 10=FAX END PAGE
 - 11=FAX BUILD MESSAGE
7. EE - Error Code (Decimal):
 - 01=UART SETTINGS ERROR
 - 02=MODEM INITIALIZATION FAILED
 - 03=MODEM TIMED OUT
 - 04=LOST CARRIER
 - 05=DATA TIMED OUT
 - 06=HANG UP FAILED
 - 07=FAX INITIALIZATION FAILED
 - 08=FAX CONNECTION FAILED
 - 09=FAX TIMED OUT
 - 10=FAX INTERPAGE ERROR
 - 11=FAX END PAGE ERROR
 - 12=FAX BUILD MESSAGE ERROR
8. BBBB - BAUD of UART During Error (Decimal)
9. P - Parity of UART During Error (Decimal):
 - 0: None
 - 1: Odd
 - 2: Even
 - 3: Mark
 - 4: Space
10. S - Stop Bits of UART During Error (Decimal)
11. D - Data Bits of UART During Error (Decimal)
12. YYMMDDHHmm - Last Communication Date/Time
13. YYMMDDHHmm - Last Error's Date/Time
14. && - Data Termination Flag
15. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 889

Version 121

Function Type: DTR Normal State for Serial Satellite Boards

Command Format:

Display: <SOH>S889PPs

Computer: <SOH>s889PPs

Inquire:

<SOH>I889PP

<SOH>i889PP

Notes:

1. PP - Communication Port Number (01..06)

Typical Response Message, Display Format:

```
<SOH>
I889PP
AUG 22, 2000  4:49 PM

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

Typical Response Message, Computer Format:

```
<SOH>i889PPYYMMDDHHmms&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. s - DTR Normal State for Serial Satellite Board
0=Normally Low
1=Normally High (Default)
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 88D

Version 23

Function Type: Communication Diagnostic for SiteLink

Command Format:

Display: <SOH>I88DPP

Computer: <SOH>i88DPP

Notes:

1. PP - Communication Port Number (Decimal 01..06)

Typical Response Message, Display Format:

```
<SOH>
I88DPP
JUN  1, 2000  8:10 AM

COMMUNICATION DIAGNOSTIC

COMM BOARD   : 1 S-LINK

MODEM TYPE   : VR TLS GSM MODEM
MODEM AUTO DETECTED: VR TLS GSM MODEM
RSSI: XX     BER: XX
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i88DPPYYMMDDHHmmPPMMDDrree&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Communication Port Number (Decimal 01..06)
3. MM - Modem Type:
00=NETCOMM SMART M7F
01=US ROBOTICS (UK)
02=VR TLS ANALOG MOD
03=VR TLS GSM MODEM
4. DD - Modem Auto Detected:
00=NETCOMM SMART M7F
01=US ROBOTICS (UK)
02=VR TLS ANALOG MOD
03=VR TLS GSM MODEM
5. rr - RSSI received signal strength indication (Decimal), only valid if Modem Type is WAVECOM GSM.
00 : -113 dBm or less
01 : -111 dBm
02...30 : -109 to -53 dBm
31 : -51 dBm or greater
99 : not known or not detectable
6. ee - BER channel bit error (Decimal), only valid if Modem Type is VR TLS GSM MODEM
00...7 : as RXQUAL values in the table GSM 05.08
99 : not known or not detectable
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 891

Version 108

Function Type: Set AccuChart Calibration Restart

Command Format:

Display: <SOH>S891TT149

Computer: <SOH>s891TT149

Inquire:

<SOH>I891TT

<SOH>i891TT

Notes:

1. TT - Tank Number (command valid for single tank only)
2. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S891TT
MAR 29, 1996  6:27 PM

T 1:REGULAR UNLEADED ACCU_CHART RESTART
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i891TTYMMDDHHmmTTSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank number (Decimal)
3. SS - Status:
01=AccuChart restarted
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 8A2
Function Type: Service Code List

Version 27

Command Format:
Display: <SOH>I8A200
Computer: <SOH>i8A200

Typical Response Message, Display Format:

```
<SOH>
I8A200
JAN 22, 2006  3:11 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

SERVICE CODE LIST

STANDARD LABEL	CODE
REPROGRAMMED TLS	0101
COLD BOOT SYSTEM	0102
REPLACED PC BOARD	0103
NO PROBLEM FOUND	0104
NO SOLUTION FOUND	0105
OTHER SOLUTION	0106

USER DEFINED LABEL	CODE
MAINTENANCE CALL	9902
MANUAL TEST	9910

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i8A200YYMMDDHHmmNNNnnnnnnnnnnnnnnnnnnnncccc...
nnnnnnnnnnnnnnnnnnnncccc&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NNN - Number of Service Codes to follow (Decimal)
3. nnn...nnn - Service code label (19 characters, ASCII)
4. cccc - Four digit Service Code (ASCII)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 8A3

Version 27

Function Type: Maintenance Tracker Active Hardware Key List

Command Format:

Display: <SOH>I8A300

Computer: <SOH>i8A300

Typical Response Message, Display Format:

<SOH>

I8A300

JAN 22, 2006 3:11 PM

MAINTENANCE TRACKER ACTIVE HARDWARE KEY LIST

LABEL

ID

J SMITH

A12345

J DOE

A54321

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i8A300YMMDDHHmmNNNnnnnnnnnnnnnnnnnnnnncccccc...
```

```
nnnnnnnnnnnnnnnnnnnncccc&&CCCC<ETX>
```

Notes:

- ```

1. YYMMDDHHmm - Current Date and Time
2. NNN - Number of hardware keys to follow (Decimal)
3. nnn...nnn - ID label (17 characters, ASCII)
4. cccccc - Six digit ID code (ASCII)
5. && - Data Termination Flag
6. CCCC - Message Checksum

```

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 8A4

Version 27

**Function Type:** Maintenance Tracker Block Hardware Key

**Command Format:**

**Display:** <SOH>S8A400149cccccc

**Computer:** <SOH>s8A400149cccccc

**Inquire:**

<SOH>I8A400

<SOH>i8A400

**Notes:**

1. 149 - This verification code must be sent to confirm the command
2. ccccc - Six digit ID code to block (ASCII).

**Typical Response Message, Display Format:**

```
<SOH>
I8A400
JAN 22, 2006 3:11 PM

MAINTENANCE TRACKER BLOCK HARDWARE KEY

LABEL ID
J SMITH A12345
J DOE A54321
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i8A400YYMMDDHHmmNNNnnnnnnnnnnnnnnnnnnnncccccc...
nnnnnnnnnnnnnnnnnnnncccccc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NNN - Number of blocked hardware keys to follow (Decimal)
3. nnn...nnn - ID label (17 characters, ASCII)
4. ccccc - Six digit blocked ID codes (ASCII)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 8BC

Version 19

**Function Type:** Set Relay Alarm Assignments II

**Command Format:**

**Display:** <SOH>S8BCRRAANNTTSS

**Computer:** <SOH>s8BCRRAANNTTSS

**Inquire:**

<SOH>I8BCRR

<SOH>i8BCRR

### Typical Response Message, Display Format:

<SOH>  
I8BCRR  
JAN 15, 1996 4:29 PM

RELAY SETUP REPORT

R 1:  
TYPE:  
STANDARD  
NORMALLY OPEN

PRESSURE LINE LEAK  
Q 1:ANNUAL LINE FAIL  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i8BCRRYYMMDDHHmmRRnnAANNTTSS...  
RRnnAANNTTSS&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. nn - Number of Alarms to Follow (Hex)
4. AA - Alarm/Warning Category:  
See explanation for "AA" in Function i10100
5. NN - Alarm Type Number:  
See explanation for "NN" in Function i10100
6. TT - Tank/Sensor Number (Decimal, 00=all)
7. SS - Status:  
00=Clear  
01=Set
8. && - Data Termination Flag
9. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 8C1

Version 28

**Function Type:** VMC Edit/Add Serial Number

**Command Format:**

**Display:** <SOH>S8C1xxIIIIII

**Computer:** <SOH>s8C1xxIIIIII

**Inquire:**

<SOH>I8C1xx

<SOH>i8C1xx

**Notes:**

1. xx - VMC Number (Decimal, 01-18, 00=all)
2. IIIIII - Serial Number (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
I8C1xx  
JAN 22, 2007 3:11 PM

VMC SETUP

VMC S/N  
1 111111  
2 222222  
3 333333

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i8C1xxYYMMDDHHmmxxIIIIII...  
xxIIIIII&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-18, 00=all)
3. IIIIII - Serial Number (Decimal)
4. cccc - Four digit Service Code (ASCII)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** 8C2

Version 28

**Function Type:** VMC Remove Serial Number

**Command Format:**

**Display:** <SOH>S8C2xxIIIIII

**Computer:** <SOH>s8C2xxIIIIII

**Inquire:**

<SOH>I8C2xx

<SOH>i8C2xx

**Notes:**

1. xx - VMC Number (Decimal, 01-18, 00=all)
2. IIIIII - Serial Number (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
S8C2xx
JAN 22, 2007 3:11 PM

REMOVE VMC SERIAL NUMBER

VMC S/N
 1 333333
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i8C2xxYYMMDDHHmmxxIIIIII&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-18, 00=all)
3. IIIIII - Serial Number (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.4 DIAGNOSTIC REPORTS

#### 7.4.1 SYSTEM DIAGNOSTIC REPORTS

**Function Code:** 901

Version 1

**Function Type:** Self Test Results Report

**Command Format:**

**Display:** <SOH>I90100

**Computer:** <SOH>i90100

**Typical Response Message, Display Format:**

```
<SOH>
I90100
JAN 22, 1996 3:24 PM
```

	I/O	RAM	PROM
SYSTEM BOARD	PASS	PASS	PASS
<ETX>			

**Typical Response Message, Computer Format:**

```
<SOH>i90100YYMMDDHHmmIIRRPP&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. II - I/O Test result  
00=pass  
01=fail
3. RR - RAM Test result  
00=pass  
01=fail
4. PP - PROM Test result  
00=pass  
01=fail
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 902**

Version 1

**Function Type:** System Revision Level Report

**Command Format:**

**Display:** <SOH>I90200

**Computer:** <SOH>i90200

### Typical Response Message, Display Format:

```
<SOH>
I90200
JAN 22, 1996 3:24 PM
SOFTWARE REVISION LEVEL
VERSION 110.01
SOFTWARE# 346110-101-B
CREATED - 95.11.20.13.28
```

```
S-MODULE# 330160-115-A
SYSTEM FEATURES:
 PERIODIC IN-TANK TESTS
 ANNUAL IN-TANK TESTS
 CSLD
 BIR
 FUEL MANAGER
PLLD
 0.10 REPETITIV
 0.20 REPETITIV
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i90200YYMMDDHHmmSOFTWARE# nnnnnn-vvv-rrrCREATED - YY.MM.DD.HH.mm&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nnnnnn-vvv - Software version number (ASCII text string)
3. rrr - Software revision level (ASCII text string)
4. YY.MM.DD.HH.mm - Date and time of software creation
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 903**  
**Function Type:** PC Diagnostic Report

Version 106

**Command Format:**  
**Display:** <SOH>I90300  
**Computer:** <SOH>i90300

### Typical Response Message, Display Format:

```
<SOH>
I90300
JAN 22, 1996 3:24 PM
 PC DIAGNOSTIC DATA
 PERIPHERAL CONTROLLER
- - - - -

PC SWARE# 330269-002-B
CREATED - 94.12.16.13.26
PC ROM CHECKSUM=PASSED

PC RESET COUNTS= 6
PC COMM ERRORS = 0
MC CKSUM ERRS = 108
MC->PC COMMS= 36261666
MC<-PC COMMS= 36262714
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i90300YYMMDDHHmmP..PT..TNNR..RE..ES..St..tr..r&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. P..P - Software Part Number (14 characters)
3. Y..T - Software Creation Date and Time (14 characters)  
YY.MM.DD.HH.MM
4. NN - Number of values to follow (Decimal)
5. R..R - PC Reset Counts (Hex, 8 characters)
6. E..E - PC Communication Errors (Hex, 8 characters)
7. S..S - MC Checksum Errors (Hex, 8 characters)
8. t..t - MC -> PC Command Send Counts (Hex, 8 characters)
9. r..r - MC <- PC Command Receive Counts (Hex, 8 characters)
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: 905**

Version 15

**Function Type:** System Revision Level Report II

**Command Format:**

**Display:** <SOH>I90500

**Computer:** <SOH>i90500

**Typical Response Message, Display Format:**

```
<SOH>
I90500
JUL 29, 1997 9:08 AM
SOFTWARE REVISION LEVEL
VERSION 115.00 TEST #05
SOFTWARE# 346115-199-AX5
CREATED - 97.07.10.20.21
```

```
S-MODULE# 330160-115-A
SYSTEM FEATURES:
 PERIODIC IN-TANK TESTS
 ANNUAL IN-TANK TESTS
 CSLD
 BIR
 FUEL MANAGER
 PLLD
 0.10 REPETITIV
 0.20 REPETITIV
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i90500YYMMDDHHmmSOFTWARE# 346abb-Tvv-rrrCREATED - YY.MM.DD.HH.mm
nnAABBCCDDEEFFGGHHIIJJS-MODULE# nnnnnn-vvv-r&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. 346 - Software Base number (fixed)
3. a - Platform
  - 0=Standard CPU, PLLD only
  - 1=Enhanced CPU
  - 2=(Unused)
  - 3=Enhanced CPU 16 Tank
  - 4=Standard CPU without PLLD & WPLLD
  - 5=Standard CPU, WPLLD only
4. bb - Version level (eg version "15")
5. T - Software Type
  - 1="Real"
  - 2="Demo"
  - 3="IFS"

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code 905 Notes: (Continued)

- 6.                   vv - Language
  - 00=English/Spanish
  - 01=English/French
  - 02=English/German
  - 03=English/Swedish
  - 04=English/Portuguese
  - 05=English/Polish
  - 06=English/Finnish
  - 07=English/Japanese
  - 08=English/Greek
  - 09=English/Russian
  - 10=English/Turkish
  - 11=English/Dutch
  - 12=English/Italian
  - 99=English only
  
- 7.                   rrr - Revision level (eg revision "AX1")
- 8. YY.MM.DD.HH.mm - Date and time of software creation
- 9.                   nn - number of 2 byte values to follow (Hex)
- 10.                  AA - PERIODIC IN-TANK TESTS (00=DISABLE, 01=ENABLE)
- 11.                  BB - ANNUAL IN-TANK TESTS (00=DISABLE, 01=ENABLE)
- 12.                  CC - CSLD (00=DISABLE, 01=ENABLE)
- 13.                  DD - BIR (00=DISABLE, 01=ENABLE)
- 14.                  EE - FUEL MANAGER (00=DISABLE, 01=ENABLE)
- 15.                  FF - PRECISION PLLD (00=DISABLE, 01=ENABLE)
- 16.                  GG - TANKER LOAD (00=DISABLE, 01=ENABLE)
- 17.                  HH - 0.2 GPH PLLD (00=DISABLE, 01=ENABLE)
- 18.                  II - PRECISION PLLD ON DEMAND (00=DISABLE, 01=ENABLE)
- 19.                  JJ - SPECIAL 3-TANK/LINE CONSOLE (00=DISABLE, 01=ENABLE)
- 20.                  KK - ISD (00=DISABLE, 01=ENABLE)
- 21.                  LL - PMC (00=DISABLE, 01=ENABLE)
  
- 22.   nnnnnn-vvv-r - SEM Info 3 parts, if none "NO SOFTWARE MODULE"
- 23.                  nnnnnn - SEM number (ASCII text string)
- 24.                  vvv - SEM Software version number (ASCII text string)
- 25.                  r - SEM Software revision level (ASCII text string)
  
- 26.                  && - Data Termination Flag
- 27.                  CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.4.2 IN-TANK DIAGNOSTIC REPORTS

**Function Code:** A01

Version 1

**Function Type:** Probe Type and Serial Number

**Command Format:**

**Display:** <SOH>IA01TT

**Computer:** <SOH>ia01TT

**Typical Response Message, Display Format:**

```
<SOH>
IA01TT
JAN 22, 1996 3:25 PM

TANK 1 REGULAR UNLEADED TYPE CODE LENGTH SERIAL NO. D/CODE
TANK 2 SUPER UNLEADED CAP1 A66C 96.00 278147 2410
TANK 3 PREMIUM UNLEADED CAP0 0001 96.00 200100 0000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia01TTYMMDDHHmmTTpPPKKKKFFFFFFFFFFFFFFFFSSSSSScccc...
TTpPPKKKKFFFFFFFFFFFFFFFFSSSSSScccc&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:
  - 01=CAP0
  - 02=CAP1
  - 03=MAG1
5. KKKK - Circuit Code (Hex)
6. FFFFFFFF - Probe Length (ASCII Hex IEEE float)
7. SSSSSS - Probe Serial Number (Decimal)
8. cccc - Probe Date Code (Hex)
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A02

Version 1

**Function Type:** Probe Factory Dry Calibration Values

**Command Format:**

**Display:** <SOH>IA02TT

**Computer:** <SOH>iA02TT

**Typical Response Message, Display Format:**

```
<SOH>
IA02TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG GRADIENT= 178.1400
TANK 2 SUPER UNLEADED CAP1 FACTORY DRY5
1573.000 1871.000 5020.000 4977.000 4961.000 5006.000 4967.000 5019.000
5033.000 4972.000 5045.000
265.000 311.000 836.000 834.000 827.000 827.000 833.000 834.000
839.000 827.000 837.000
TANK 3 PREMIUM UNLEADED CAP0 FACTORY DRY5
97.000 180.000 649.000 657.000 652.000 655.000 647.000 657.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA02TTYMMDDHHmmTTpPPNNFFFFFFFFFFFF...
TTpPPNNFFFFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A03

Version 1

**Function Type:** Probe Factory Wet Calibration Values

**Command Format:**

**Display:** <SOH>IA03TT

**Computer:** <SOH>IA03TT

### Typical Response Message, Display Format:

```
<SOH>
IA03TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG GRADIENT= 178.1400
TANK 2 SUPER UNLEADED CAP1 FACTORY WETS
3066.000 3197.000 8321.000 8213.000 8230.000 8189.000 8251.000 8296.000
8335.000 8205.000 8332.000
569.000 576.000 1485.000 1486.000 1471.000 1477.000 1479.000 1476.000
1479.000 1472.000 1474.000
TANK 3 PREMIUM UNLEADED CAP0 FACTORY WETS
130.000 335.000 1214.000 1214.000 1204.000 1217.000 1200.000 1222.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>IA03TTYMMDDHHmmTTpPPNNFFFFFFFFFFFF...
TTpPPNNFFFFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A04

Version 1

**Function Type:** Probe Updated Dry Calibration Values

**Command Format:**

**Display:** <SOH>IA04TT

**Computer:** <SOH>iA04TT

**Typical Response Message, Display Format:**

```
<SOH>
IA04TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG
TANK 2 SUPER UNLEADED CAP1 UPDATED DRYs
1573.000 1871.000 5020.000 4977.000 4961.000 5006.000 4967.000 5019.000
5033.000 4972.000 5045.000
265.000 311.000 836.000 834.000 827.000 827.000 833.000 834.000
839.000 827.000 837.000
TANK 3 PREMIUM UNLEADED CAP0 UPDATED DRYs
97.000 180.000 649.000 657.000 652.000 655.000 647.000 657.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA04TTYMMDDHHmmTTpPPNNFFFFFFFFFFFF...
TTpPPNNFFFFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A05

Version 1

**Function Type:** Probe Updated Wet Calibration Values

**Command Format:**

**Display:** <SOH>IA05TT

**Computer:** <SOH>iA05TT

### Typical Response Message, Display Format:

```
<SOH>
IA05TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG
TANK 2 SUPER UNLEADED CAP1 UPDATED WETS
 3119.000 3197.000 8321.000 8213.000 8230.000 8189.000 8251.000 8296.000
 8335.000 8205.000 8332.000
 569.000 576.000 1485.000 1486.000 1471.000 1477.000 1479.000 1476.000
1479.000 1472.000 1474.000
TANK 3 PREMIUM UNLEADED CAP0 UPDATED WETS
 130.000 335.000 1214.000 1214.000 1204.000 1217.000 1200.000 1222.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA05TTYMMDDHHmmTTpPPNNFFFFFFFFFFFF...
 TTpPPNNFFFFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A06**

Version 1

**Function Type:** Probe Segment Sensitivity Ratios

**Command Format:**

**Display:** <SOH>IA06TT

**Computer:** <SOH>ia06TT

**Typical Response Message, Display Format:**

```
<SOH>
IA06TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG
TANK 2 SUPER UNLEADED CAP1 SENSITIVITY RATIOS
 0.000 0.703 0.356 1.002 1.011 0.970 1.032 0.982
 1.000 1.007 0.987
 0.000 0.734 0.353 1.006 1.006 1.005 0.985 0.995
 0.989 1.024 0.977
TANK 3 PREMIUM UNLEADED CAP0 SENSITIVITY RATIOS
 0.000 1.023 0.279 0.971 1.010 1.003 1.010 0.988
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia06TTYMMDDHHmmTTpPPNNFFFFFFFFF...
 TTpPPNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code:** A07

Version 23

**Function Type:** Probe Reference Distance Diagnostic

**Command Format:**

**Display:** <SOH>IA07TT

**Computer:** <SOH>ia07TT

**Typical Response Message, Display Format:**

```
<SOH>
IA07TT
JAN 22, 1996 3:25 PM

TANK 1 REGULAR UNLEADED MAG7
ORIG REF DISTANCE 12/01/00 XXXXX.XX
CURR REF DISTANCE 12/01/01 XXXXX.XX
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia07TTYMMDDHHmmTTpPPYYMMDDFFFFFFFFYYMMDDFFFFFFFF...
TTpPPYYMMDDFFFFFFFFYYMMDDFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (Probe types 01=CAP0 and 02=CAP1 are not supported by this command)  
03=MAG1
5. YYMMDD - Date of reading
6. FFFFFFFF - Original Ref distance reading (ASCII Hex IEEE float)
7. YYMMDD - Date of reading
8. FFFFFFFF - Current Reference distance reading (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A10

Version 1

**Function Type:** Probe Last Sample Buffers

**Command Format:**

**Display:** <SOH>IA10TT

**Computer:** <SOH>iA10TT

**Typical Response Message, Display Format:**

```
<SOH>
IA10TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG NUMBER OF SAMPLES=44520
 694.000 8587.000 8587.000 8587.000 8587.000 8587.000 8589.000 8589.000
 8586.000 8587.000 8587.000 38250.000 31771.000 30813.000 30617.000 30251.000
30253.000 30261.000 38262.000
TANK 2 SUPER UNLEADED CAP1 NUMBER OF SAMPLES= 1081
 6852.000 6930.000 12054.000 11946.000 11963.000 11922.000 11984.000 12029.000
 9026.000 8705.000 8779.000 8290.000 3733.000 4150.000 4144.000 4137.000
 4132.000 4126.000 4120.000 2954.000 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
 0.000
TANK 3 PREMIUM UNLEADED CAP0 NUMBER OF SAMPLES= 1082
 234.000 439.000 1317.000 1319.000 1307.000 1321.000 1104.000 761.000
 104.000 1686.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA10TTYMMDDHHmmTTpPPSSSSNNFFFFFFFFF...
 TTpPPSSSSNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. SSSS - Sample Number (Hex)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A11

Version 1

**Function Type:** Probe Fast Average Buffers

**Command Format:**

**Display:** <SOH>IA11TT

**Computer:** <SOH>iA11TT

**Typical Response Message, Display Format:**

```
<SOH>
IA11TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG NUMBER OF SAMPLES= 5
 695.000 8587.200 8587.400 8587.400 8587.000 8587.000 8587.000 8587.000
 8587.400 8587.000 8587.000 38257.801 31768.199 30813.801 30616.000 30250.398
30252.398 30259.600 38261.801
TANK 2 SUPER UNLEADED CAP1 NUMBER OF SAMPLES= 5
 6852.000 6930.000 12054.000 11946.000 11963.000 11922.000 11984.000 12029.000
 9026.000 8705.000 8777.000 8290.000 3733.000 4150.000 4144.000 4137.000
 4132.000 4126.000 4120.000 2954.000 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
 0.000
TANK 3 PREMIUM UNLEADED CAP0 NUMBER OF SAMPLES= 5
 234.000 439.000 1317.000 1319.000 1307.000 1321.000 1104.000 761.000
 104.000 1686.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA11TTYMMDDHHmmTTpPPSSSSNNFFFFFFFFF...
 TTpPPSSSSNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. SSSS - Number of Samples (Hex)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A12

Version 1

**Function Type:** Probe Standard Average Buffers

**Command Format:**

**Display:** <SOH>IA12TT

**Computer:** <SOH>iA12TT

**Typical Response Message, Display Format:**

```
<SOH>
IA12TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG NUMBER OF SAMPLES= 20
 695.100 8587.000 8587.450 8587.300 8587.050 8587.650 8587.050 8587.050
 8587.200 8587.000 8587.000 38258.148 31767.449 30814.250 30616.801 30250.500
30252.500 30259.801 38261.750
TANK 2 SUPER UNLEADED CAP1 NUMBER OF SAMPLES= 40
 6852.000 6930.000 12054.000 11946.000 11963.000 11922.000 11984.000 12029.000
 9026.000 8705.000 8779.000 8290.000 3733.000 4150.000 4144.000 4137.000
 4132.000 4126.000 4120.000 2954.000 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
 0.000
TANK 3 PREMIUM UNLEADED CAP0 NUMBER OF SAMPLES= 40
 234.000 439.000 1317.000 1317.000 1307.000 1321.000 1104.000 761.000
 104.000 1686.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA12TTYMMDDHHmmTTpPPSSSSNNFFFFFFFFF...
 TTpPPSSSSNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. SSSS - Number of Samples (Hex)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A13**

Version 1

**Function Type:** Probe Long Term Average Buffers

**Command Format:**

**Display:** <SOH>IA13TT

**Computer:** <SOH>iA13TT

**Typical Response Message, Display Format:**

```
<SOH>
IA13TT
JAN 22, 1996 3:26 PM
TANK 1 REGULAR UNLEADED MAG NUMBER OF SAMPLES=44544
 695.555 9687.276 9687.250 9687.222 9687.210 9687.204 9960.201 9960.196
 9960.193 9960.189 9960.189 38259.258 31891.879 30702.641 30339.914 30188.129
 30113.578 30118.578 38260.867
TANK 2 SUPER UNLEADED CAP1 NUMBER OF SAMPLES= 1115
 6852.000 6930.000 12054.000 11946.000 11963.000 11922.000 11984.000 12029.000
 9026.000 8705.000 8777.000 8290.000 3733.000 4150.000 4144.000 4137.000
 4132.000 4126.000 4120.000 2954.000 0.000 0.000 0.000 0.000
 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
 0.000
TANK 3 PREMIUM UNLEADED CAP0 NUMBER OF SAMPLES= 1117
 234.000 439.000 1317.000 1317.000 1307.000 1321.000 1104.000 761.000
 104.000 1686.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA13TTYMMDDHHmmTTpPPSSSSNNFFFFFFFFF...
 TTpPPSSSSNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:
  - 01=CAP0
  - 02=CAP1
  - 03=MAG1
5. SSSS - Number of Samples (Hex)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A14**

Version 19

**Function Type:** Mag Probe Option Table

**Command Format:**

**Display:** <SOH>IA14TT

**Computer:** <SOH>iA14TT

**Typical Response Message, Display Format:**

```
<SOH>
IA14TT
JUN 1, 2000 8:15 AM

MAG PROBE OPTIONS TABLE

TNK LOW
NUM TEMP

 1 NO
 2 NO
 3 NO
 4 NO
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA14TTYMMDDHHmmTTNNL...
 TTNNL&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of option flags to follow
4. L - Low temperature capability  
0=NO  
1=YES
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A15**

**Function Type:** In-Tank Diagnostic Printout

Version 24

**Command Format:**

**Display:** <SOH>IA1500

**Computer:** <SOH>ia1500

**Typical Response Message, Display Format:**

```
<SOH>
IA1500
JUN 3, 2002 8:07 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

IN-TANK DIAGNOSTIC

-----

PROBE DIAGNOSTICS

T1:PROBE TYPE MAG 1

SERIAL NUMBER 064924

LENGTH: 2489.2

DATE CODE 2774

ID CHAN=D004

GRADIENT= 350.0000

PROBE INIT:

AUG 1,2004 12:25PM

NUM SAMPLES= 20

```
C00 811.0 C01 7196.8
C02 7196.5 C03 7196.7
C04 7196.3 C05 7196.8
C06 7196.8 C07 7196.2
C08 7196.6 C09 7196.1
C10 7196.8 C11 42511.1
C12 18534.4 C13 18615.1
C14 18496.6 C15 18518.9
C16 18456.4 C17 18505.8
C18 18534.4
```

SAMPLES READ= 2

SAMPLES USED= 2

LAST ERROR = 0

LAST SAMPLE ERROR TIME:

AUG 2,2004 11:12PM

TEMP SENSOR DATA

T6: 72.6 F

T5: 72.1 F

T4: 70.9 F

T3: 69.4 F

T2: 68.3 F

T1: 67.6 F

REF DISTANCE

12/01/00 XXXXX.XX - (Original Reference Time/Distance)

12/01/01 XXXXX.XX - (Current Reference Time/Distance)

<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code A15 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iA15TTYMMDDHHmmTTppppsssssl1111111111dddddYYMMDDHHmm
 ggggggggzzzzoonnnnnNNcccccccc...cccccccc
 rrrrrrrruuuuuuuueeeeeeeeYYMMDDHHmm
 AAAAAAAAAA...AAAAAAA
 YYMMDDhhhhhhhhYYMMDDkkkkkkkk...
TTppppsssssl1111111111dddddYYMMDDHHmm
 ggggggggzzzzoonnnnnNNcccccccc...cccccccc
 rrrrrrrruuuuuuuueeeeeeeeYYMMDDHHmm
 AAAAAAAAAA...AAAAAAA
 YYMMDDhhhhhhhhYYMMDDkkkkkkkk&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. pppp - Probe Type (Hex)
4. ssssss - Serial Number (Decimal)
5. 11111111 - Probe Length (ASCII Hex IEEE float)
6. dddd - Date Code (Hex)
7. YYMMDDHHmm - Probe Initialized (Date and Time)
8. gggggggg - Gradient (ASCII Hex IEEE float)
9. zzzz - Id Code (Hex)
10. oo - Probe Options (Hex)
  - 00=Not Low Temperature Probe
  - 01=Low Temperature Probe
11. nnnn - Number of Samples (Hex)
12. NN - # of 8-Byte Channel Count Values to Follow (Hex)
13. cccccccc - Channel Count Values (ASCII Hex IEEE float)
14. rrrrrrrr - Samples Read (Hex)
15. uuuuuuuu - Samples Used (Hex)
16. eeeeeeee - Last Error Sample Number (Hex)
17. YYMMDDHHmm - Last Sample Error Time (Date and Time)
18. AA - # of 8-Byte Temperature Sensor Values Follow (Hex)
19. aaaaaaaa - Temperature Sensor Values (ASCII Hex IEEE float)
20. YYMMDD - Original Reference Distance Date
21. hhhhhhhh - Original Reference Distance Value (ASCII Hex IEEE float)
22. YYMMDD - Current Reference Distance Date
23. kkkkkkkk - Current Reference Distance Value (ASCII Hex IEEE float)
24. && - Data Termination Flag
25. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A20

Version 1

**Function Type:** Probe Leak Test Flags - Present Test

**Command Format:**

**Display:** <SOH>IA20TT

**Computer:** <SOH>iA20TT

**Typical Response Message, Display Format:**

```
<SOH>
IA20TT
JAN 28, 1995 10:15 AM
TANK 1 REGULAR UNLEADED MAG PRESENT LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 2 SUPER UNLEADED CAP1 PRESENT LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 3 PREMIUM UNLEADED CAP0 PRESENT LEAK TEST ANALYSIS REPORT
0.2 GAL/HR FLAGS:
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA20TTYMMDDHHmmTTpPPNNFFFF...
 TTpPPNNFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:
  - 01=CAP0
  - 02=CAP1
  - 03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A21

Version 1

**Function Type:** Probe Leak Test Flags - Stored Test

**Command Format:**

**Display:** <SOH>IA21TT

**Computer:** <SOH>iA21TT

**Typical Response Message, Display Format:**

```
<SOH>
IA21TT
JAN 28, 1995 10:15 AM
TANK 1 REGULAR UNLEADED MAG STORED LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 2 SUPER UNLEADED CAP1 STORED LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 3 PREMIUM UNLEADED CAP0 STORED LEAK TEST ANALYSIS REPORT
0.2 GAL/HR FLAGS:
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA21TTYMMDDHHmmTTpPPNNFFFF...
 TTpPPNNFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A22

Version 2

**Function Type:** Probe Leak Test Flags - Gross Test

**Command Format:**

**Display:** <SOH>IA22TT

**Computer:** <SOH>ia22TT

**Typical Response Message, Display Format:**

```
<SOH>
IA22TT
APR 14, 1995 9:05 AM
TANK 1 REGULAR UNLEADED MAG GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
TANK 2 SUPER UNLEADED CAP1 GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
TANK 3 PREMIUM UNLEADED CAP0 GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia22TTYMMDDHHmmTTpPPNNFFFF...
 TTpPPNNFFFF&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type:
  - 01=CAP0
  - 02=CAP1
  - 03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A23

Version 5

**Function Type:** Tank Leak Test Averaging Buffers

**Command Format:**

**Display:** <SOH>IA23TT

**Computer:** <SOH>ia23TT

**Typical Response Message, Display Format:**

```
<SOH>
IA23TT
APR 8, 1995 8:27 AM
TANK 1 SUPER UNLEADED MAG LEAK TEST AVERAGING BUFFERS
0.20 GAL/HR LEAK TEST BUFFER
START TIME HOURS VOLUME RATE
APR 8, 1995 5:22 AM 3.0 6107 -0.059
APR 8, 1995 1:01 AM 4.0 6107 -0.058
APR 7, 1995 9:56 PM 3.0 6108 -0.060
APR 7, 1995 6:51 PM 3.0 6108 -0.045
APR 7, 1995 4:49 PM 2.0 6108 -0.039
AVERAGE 3.0 6108 -0.052
0.10 GAL/HR LEAK TEST BUFFER
START TIME HOURS VOLUME RATE
APR 8, 1995 5:22 AM 3.0 6107 -0.059
APR 8, 1995 1:01 AM 4.0 6107 -0.058
APR 7, 1995 9:56 PM 3.0 6108 -0.060
APR 7, 1995 6:51 PM 3.0 6108 -0.045
AVERAGE 3.3 6107 -0.056
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia23TTYMMDDHHmmTTpPPNNYYMMDDHHmmddddddddVVVVVVVVRRRRRRR...
nnYYMMDDHHmmddddddddVVVVVVVVRRRRRRR...
TTpPPNNYYMMDDHHmmddddddddVVVVVVVVRRRRRRR...
nnYYMMDDHHmmddddddddVVVVVVVVRRRRRRR&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type
5. NN - Number of 34 character 0.20 gal/hr test records to follow
6. YYMMDDHHmm - Leak test start time - year, month, day, hour, min
7. dddddddd - Leak test duration in hours (ASCII Hex IEEE float)
8. VVVVVVVV - Leak test volume (gallons) (ASCII Hex IEEE float)
9. RRRRRRRR - Leak test rate (gal/hr) (ASCII Hex IEEE float)
10. nn - Number of 34 character 0.10 gal/hr test records to follow
11. YYMMDDHHmm - Leak test start time - year, month, day, hour, min
12. dddddddd - Leak test duration in hours (ASCII Hex IEEE float)
13. VVVVVVVV - Leak test volume (gallons) (ASCII Hex IEEE float)
14. RRRRRRRR - Leak test rate (gal/hr) (ASCII Hex IEEE float)
15. && - Data Termination Flag
16. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A51**

Version 3

**Function Type:** CSLD Diagnostics: Rate Table

**Command Format:**

**Display:** <SOH>IA51TT

**Computer:** <SOH>ia51TT

**Typical Response Message, Display Format:**

```
<SOH>
IA51TT
JAN 22, 1996 3:26 PM

CSLD DIAGNOSTICS: RATE TABLE
T 1:REGULAR UNLEADED
 TIME ST LRT AVTMP TPTMP BDTMP TMRT DSPNS VOL INTVL DEL ULLG EVAP
9601210514 2 -0.194 35.9 35.6 33.1 0.06 853 9324 53.5 1.4 188 7.8
9601220056 3 -0.028 36.9 35.7 33.3 0.02 1528 6829 134.0 21.1 320 7.8
9601220417 1 -0.007 37.0 35.8 33.3 0.02 1470 6825 25.0 24.5 320 7.8
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia51TTYMMDDHHmmTTRRssNNtttttttttFFFFFFFFF...
 TTRRssNNtttttttttFFFFFFFFF&&ACF7<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. RR - Number of records to follow
4. ss - Test acceptability:
  - 00=Acceptable
  - 01=Rejected - less than minimum duration requirement
  - 02=Rejected - within delivery threshold
  - 03=Rejected - excessive dispensing
  - 04=Rejected - excessive temperature change
  - 06=Rejected - outside weighted STD
5. NN - Number of eight character Data Fields to follow (decimal)
6. tttttttt - Test starting time (seconds since 1/1/70, unsigned long)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Leak rate
  2. Accept
  3. 0.0 (Obsolete)
  4. Rate of change of temperature
  5. Dispense factor
  6. Volume
  7. Test interval (minutes)
  8. Hours since last delivery
  9. Average temperature
  10. Top temperature
  11. Board temperature
  12. Ullage area
  13. Throughput
  14. Evaporation rate
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A52**

Version 3

**Function Type:** CSLD Diagnostics: Rate Test

**Command Format:**

**Display:** <SOH>IA52TT

**Computer:** <SOH>ia52TT

**Typical Response Message, Display Format:**

```
<SOH>
IA52TT
JAN 22, 1996 3:27 PM

CSLD DIAGNOSTICS: RATE TEST

TK DATE LRATE INTVL ST AVLRTE VOL C1 C3 FDBK ACPT THPUT EVAP RJT
1 9601220417 -0.024 22.6 1 -0.030 5436 67 22 30.4 36.8 7.8 0.100 0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia52TTYMMDDHHmmTTYMMDDHHmmSSCCccNNFFFFFFFF...
TTYMMDDHHmmSSCCccNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. YYMMDDHHmm - Date of last tank evaluation
4. SS - Status code:
  - 01=PASS
  - 02=FAIL
  - 05=NO RESULTS - Insufficient number of records
  - 06=NO RESULTS - Insufficient test time interval
  - 07=NO RESULTS - Insufficient test date range
  - 08=INVALID - excessive positive leak rate
  - 09=INVALID - negative leak waiting period
5. CC - Total count of records
6. cc - Total count of acceptable records
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Compensated leak rate
  - 2. Total test time (hours)
  - 3. Uncompensated leak rate
  - 4. Average volume during tests
  - 5. Feedback factor (minutes)
  - 6. Acceptance factor (minutes)
  - 7. Last throughput \* tank capacity/1000
  - 8. DF multiplier
  - 9. Positive rejects
  - 10. Average evaporation rate
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A53

Version 3

**Function Type:** CSLD Diagnostics: Volume History Table

**Command Format:**

**Display:** <SOH>IA53TT

**Computer:** <SOH>iA53TT

### Typical Response Message, Display Format:

```
<SOH>
IA53TT
MAR 26, 1996 1:48 PM

CSLD DIAGNOSTICS: VOLUME TABLE
T 1:REGULAR UNLEADED
LAST HOUR=229957
 3141.9 3297.9 3476.7 3625.4 3742.9 3932.8 4085.4 4156.5
 4218.2 4242.4 4242.5 4242.4 4242.0 4247.0 4265.9 4281.5
 4307.5 4339.7 4405.7 4456.5 4573.2 4701.3 4854.2 5022.6
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA53TTYMMDDHHmmTTNNhhhhhhhhFFFFFFFF...
 TTNNhhhhhhhhFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. NN - Number of eight character Data Fields to follow (Hex)
4. hhhhhhhh - Last hour recorded (seconds since 1/1/70, unsigned long)
5. FFFFFFFF - ASCII Hex IEEE floats:
  1. Latest recorded hourly volume
  2. Intermediate hourly recorded volumes
  3. Oldest recorded hourly volume
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A54**

Version 3

**Function Type:** CSLD Diagnostics: Moving Average Table

**Command Format:**

**Display:** <SOH>IA54TT

**Computer:** <SOH>ia54TT

### Typical Response Message, Display Format:

<SOH>  
IA54TT  
MAR 26, 1996 1:48 PM

CSLD DIAGNOSTICS: MOVING AVERAGE TABLE

T 1:REGULAR UNLEADED

TIME	SMPLS	TCVOL	HEIGHT	AVGTEMP	TOPTEMP	BDTEMP
960326132554	31	3074.65	32.279	45.86	45.49	48.19
960326132624	30	3072.62	32.263	45.86	45.49	48.19
960326132654	31	3072.46	32.262	45.86	45.49	48.20
960326132724	30	3072.54	32.263	45.86	45.49	48.20
960326132754	31	3073.13	32.267	45.86	45.49	48.21
960326132824	31	3072.97	32.266	45.86	45.49	48.21

MOVING AVERAGE: 3056.51

DISPENSE STATE: ACTIVE \* 702.324829  
<ETX>

### Typical Response Message, Computer Format:

<SOH>A5401YYMMDDHHmmTTSSRRssNNaaaaaaaaFFFFFFFFF...  
TTSSRRssNNaaaaaaaaFFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. SS - Current Test State:
  - 0=No test
  - 1=Test pre-start
  - 2=Test in-progress
  - 3=Test complete
  - 4=Abort test
  - 5=Pre-delay
  - 6=End delay
4. RR - Number of records to follow
5. ss - Number of samples averaged into this record
6. NN - Number of eight character Data Fields to follow (Hex)
7. aaaaaaaa - Time recorded (seconds since 1/1/70, unsigned long)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Time
  2. Temperature compensated volume
  3. Height
  4. Fuel temperature
  5. 0.0
  6. Current moving average
  7. Top temperature
  8. Board temperature
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A55**

Version 3

**Function Type:** CSLD Diagnostics: Leak Test Status

**Command Format:**

**Display:** <SOH>IA55TT

**Computer:** <SOH>ia55TT

**Typical Response Message, Display Format:**

```
<SOH>
IA55TT
MAR 26, 1996 1:49 PM

CSLD DIAGNOSTICS: LEAK TEST STATUS

TANK TEST STATUS DURATION
 1 NO TEST 0.0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia55TTYMMDDhhmmTTSSFFFFFFFF...
 TTSSFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. SS - Status:
  - 00=NO TEST
  - 01=TEST PRE-START
  - 02=TEST IN PROGRESS
  - 03=TEST COMPLETE
  - 04=TEST ABORT
  - 05=TEST PRE-DELAY
  - 06=TEST END DELAY
4. FFFFFFFF - Elapsed time in minutes (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A56**

Version 121

**Function Type:** CSLD Monthly Report

**Command Format:**

**Display:** <SOH>IA56TTt

**Computer:** <SOH>iA56TTt

### Typical Response Message, Display Format:

```
<SOH>
IA56TT
OCT 25, 2000 10:00 AM

CSLD MONTHLY REPORT

CURRENT MONTH
0.2 GAL/HR TEST

T 1:UNLEADED GASOLINE
PROBE SERIAL NUM 627020

OCT 25, 2000 7:15 AM RESULT: NO RESULTS AVAIL
OCT 24, 2000 3:22 PM RESULT: PASS
OCT 23, 2000 6:26 AM RESULT: FAIL
OCT 20, 2000 12:44 PM RESULT: INCR
OCT 20, 2000 5:23 AM RESULT: WARN
OCT 19, 2000 8:23 AM RESULT: INVL
OCT 18, 2000 9:53 PM STATUS: NO IDLE DATA
OCT 16, 2000 6:14 AM STATUS: ACTIVE
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA56TTYMMDDHHmmtTTNNYYMMDDHHmmrr...
TTNNYYMMDDHHmmrr&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. t - Report Type  
0=Current Month  
1=Previous Month
3. TT - Tank Number (Decimal, 00=all)
4. NN - Number of CSLD State Changes (12 char) to follow (Hex)
5. YYMMDDHHmm - Date and Time of CSLD State Change
6. rr - CSLD State Change:  
01=RESULT: PASS  
02=RESULT: FAIL  
03=RESULT: NO RESULTS AVAILABLE  
04=RESULT: INVALID  
08=RESULT: INCR  
98=STATUS: NO IDLE DATA  
99=STATUS: ACTIVE
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A61  
**Function Type:** HRM Diagnostic Report

Version 110

**Command Format:**  
**Display:** <SOH>IA61TT  
**Computer:** <SOH>iA61TT

### Typical Response Message, Display Format:

```
<SOH>
IA61TT
JUL 29, 1997 9:08 AM
T 1:REGULAR UNLEADED
TIME STAMP ENDTEMP ENDVOL SALES STAT HR VAR
9707240757 70.61 2633.02 118.2 0 -0.037
9707240918 70.79 2547.48 204.0 0 -0.099
9707240948 70.82 2531.58 220.0 0 0.056
9707241114 70.93 2464.84 275.1 0 -11.729
9707241224 71.09 2420.87 331.2 0 11.767
9707241310 71.25 2347.41 404.2 0 -0.754
9707241412 71.38 2298.75 453.0 0 -0.019
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA61TTYMMDDHHmmTTpRRYYMMDDHHmmFFFFFFFFEEEESSSSSSSSVVVVVVVV...
TTpRRYYMMDDHHmmFFFFFFFFEEEESSSSSSSSVVVVVVVV&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code
4. RR - Number of records to follow
5. YYMMDDHHmm - Record Date and Time stamp
6. FF - Status Flag (Hex)
  - 00=Data Used
  - 01=Not mapped
  - 02=Time Set Back
  - 03=Gap Too Long
  - 04=Delivery
  - 05=Temp Low
  - 06=Temp High
  - 07=Temp Increase
  - 08=Volume High
  - 09=Volume Low
  - 0A=Volume Change
  - 0B=Not Calibrated
  - 0C=Cal Time Filter
  - 0D=No Sales Data
  - 0E=Temp Decrease
  - 0F=Reset Filter
  - 10=Therm Flag
  - 11=DIM Reset
  - 12=BDIM Transaction
7. EEEEEEEE - Ending Volume (ASCII Hex IEEE float)
8. SSSSSSSS - Sales (ASCII Hex IEEE float)
9. VVVVVVVV - Hourly Variance (ASCII Hex IEEE float)
10. && - Data Termination Flag
11. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A62  
**Function Type:** HRM Daily History

Version 112

**Command Format:**  
**Display:** <SOH>IA62TT  
**Computer:** <SOH>ia62TT

### Typical Response Message, Display Format:

<SOH>  
IA62TT  
AUG 26, 1996 1:47 PM

T 1:REGULAR UNLEADED

DAILY HRM HISTORY

TIME/DATE	RECORDS	MIN	MAX	AVE	STATUS
9510010200	24	-0.562	0.000	-0.230	PASS
9510020200	21	-0.385	0.650	-0.057	PASS
9510030200	24	-0.402	0.092	-0.135	PASS
9510040300	24	-0.436	0.150	-0.147	PASS

<ETX>

### Typical Response Message, Computer Format:

<SOH>ia61TTYMMDDHHmmTTpRRYYMMDDHHmmhhaaaaaaabbabbbbbbccccccccSS...  
TTpRRYYMMDDHHmmhhaaaaaaabbabbbbbbccccccccSS&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code (one ASCII character [20h-7Eh])
4. RR - Number of history records to follow
5. YYMMDDHHmm - Record Date and Time stamp
6. hh - Number of hours in record (decimal)
7. aaaaaaaa - Minimum Value (ASCII Hex IEEE float)
8. bbbbbbbb - Maximum Value (ASCII Hex IEEE float)
9. cccccccc - Average Value (ASCII Hex IEEE float)
10. SS - Status
  - 00=No Data Available
  - 01=Pass
  - 02=Warning
  - 03=Fail
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A63**

Version 26

**Function Type:** Extended HRM Diagnostic Report

**Command Format:**

**Display:** <SOH>IA63TT

**Computer:** <SOH>iA63TT

**Typical Response Message, Display Format:**

```
<SOH>
IA63TT
JUL 29, 1997 9:08 AM

T 1:REGULAR UNLEADED
TIME STAMP ENDTEMP ENDEVOL SALES STAT HR VAR
9707240757 70.61 2633.02 118.2 0 -0.037
9707240918 70.79 2547.48 204.0 0 -0.099
9707240948 70.82 2531.58 220.0 0 0.056
9707241114 70.93 2464.84 275.1 0 -11.729
9707241224 71.09 2420.87 331.2 0 11.767
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA63TTYMMDDHHmmTtpRRYYMMDDHHmmFFNNEEEEEEEEESSSSSSSSVVVVVVVVTTTTTTTTT...
TtpRRYYMMDDHHmmFFNNEEEEEEEEESSSSSSSSVVVVVVVVTTTTTTTTT
&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code
4. RR - Number of records to follow
5. YYMMDDHHmm - Record Date and Time stamp
6. FF - Status Flag (Hex)
  - 00=Data Used
  - 01=Not mapped
  - 02=Time Set Back
  - 03=Gap Too Long
  - 04=Delivery
  - 05=Temp Low
  - 06=Temp High
  - 07=Temp Increase
  - 08=Volume High
  - 09=Volume Low
  - 0A=Volume Change
  - 0B=Not Calibrated
  - 0C=Cal Time Filter
  - 0D=No Sales Data
  - 0E=Temp Decrease
  - 0F=Reset Filter
  - 10=Therm Flag
  - 11=DIM Reset
  - 12=BDIM Transaction
7. NN - Number of eight character data fields to follow (Hex)
8. EEEEEEEE - Ending Volume (ASCII Hex IEEE float)
9. SSSSSSSS - Sales (ASCII Hex IEEE float)
10. VVVVVVVV - Hourly Variance (ASCII Hex IEEE float)
11. TTTTTTTT - Ending Temperature (ASCII Hex IEEE float)
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** A81

Version 6

**Function Type:** Fuel Management Diagnostic Report

**Command Format:**

**Display:** <SOH>IA81TT

**Computer:** <SOH>ia81TT

**Notes:**

1. TT - Tank number for any tank containing desired product

**Typical Response Message, Display Format:**

<SOH>  
IA81TT  
JAN 24, 1996 2:55 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

FUEL MANAGEMENT DIAGNOSTIC REPORT

REGULAR UNLEADED ( TANK 1 )

DAYS FUEL REMAINING: 2.7

INVENTORY : 2969 GAL

95% ULLAGE: 2516 GAL

LAST SALES: 910

PREDICTED SALES: 1122

AVERAGE SALES (GALLONS)

SUN	MON	TUE	WED	THR	FRI	SAT
1211	462	1362	1005	1123	1184	970
910	783	1083	1176	1080	1108	946
1122	427	1261	929	1039	1096	897

<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code A81 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iA81TTYMMDDHHmmnnTTP...NNFFFFFFFF...
nnTTP...NNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of tanks of this product type - number of tank product code (TTP) sets to follow
3. TTP - Tank numbers and product codes of this product type
4. NN - Number of eight character Data Fields to follow (Hex)
5. FFFFFFFFFF - ASCII Hex IEEE floats:
  1. Days supply of fuel remaining
  2. Inventory
  3. 95% Ullage
  4. Average sales for Sunday
  5. Average sales for Monday
  6. Average sales for Tuesday
  7. Average sales for Wednesday
  8. Average sales for Thursday
  9. Average sales for Friday
  10. Average sales for Saturday
  11. Last sales for Sunday
  12. Last sales for Monday
  13. Last sales for Tuesday
  14. Last sales for Wednesday
  15. Last sales for Thursday
  16. Last sales for Friday
  17. Last sales for Saturday
  18. Predicted sales for Sunday
  19. Predicted sales for Monday
  20. Predicted sales for Tuesday
  21. Predicted sales for Wednesday
  22. Predicted sales for Thursday
  23. Predicted sales for Friday
  24. Predicted sales for Saturday
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: A91**

Version 9

**Function Type:** Power Outage Diagnostic Report

**Command Format:**

**Display:** <SOH>IA91TT

**Computer:** <SOH>iA91TT

### Typical Response Message, Display Format:

```
<SOH>
IA91TT
JAN 24, 1996 2:56 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

POWER OUTAGE REPORT

T 1:REGULAR UNLEADED
INCREASE DATE / TIME FUEL VOLUME WATER VOLUME TEMP DEG F

POWER REMOVED: JAN 16, 1996 7:46:23 AM 3367 0 43.1
POWER RESTORED: JAN 16, 1996 8:00:15 AM 3367 0 43.1
GROSS VOLUME CHANGE: 0
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA91TTYMMDDHHmmTTnnYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 YYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 TTnnYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 YYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all).
3. nn - Number of History Records to follow (Decimal)
4. YYMMDDHHmm - Power Restored Date/Time
5. YYMMDDHHmm - Power Removed Date/Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Power Removed Fuel Volume
  2. Power Removed Water Volume
  3. Power Removed Temperature
  4. Power Restored Fuel Volume
  5. Power Restored Water Volume
  6. Power Restored Temperature
  7. Gross Change
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.4.3 SENSOR DIAGNOSTIC REPORTS

**Function Code:** B01

Version 1

**Function Type:** Liquid Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB01SS

**Computer:** <SOH>iB01SS

**Typical Response Message, Display Format:**

```
<SOH>
IB01SS
JAN 24, 1996 2:56 PM

LIQUID DIAGNOSTIC REPORT
```

	SAMPLE	HIGH	LOW	
SENSOR COUNTER	REF	REF	VALUE	
1	5	1072	193	145727

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB01SSYYMMDDHHmmSSNNFFFFFFFF...
SSNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample counter
  2. High Reference Channel
  3. Low Reference Channel
  4. Liquid Channel Last Reading
  5. Liquid Channel Average Reading
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B06

Version 1

**Function Type:** Vapor Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB06SS

**Computer:** <SOH>iB06SS

**Typical Response Message, Display Format:**

```
<SOH>
IB06SS
JAN 24, 1996 2:56 PM

VAPOR DIAGNOSTIC REPORT

 SAMPLE HIGH LOW
SENSOR COUNTER REF REF VALUE1 VALUE2
 1 5 1080 208 322 175355
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB06SSYYMMDDHHmmSSNNNNNNNNNN...
 SSNNNNNNNNNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample counter
  2. High Reference Channel
  3. Low Reference Channel
  4. Vapor Channel Last Reading
  5. Vapor Channel Average Reading
  6. Water Channel Last Reading
  7. Water Channel Average Reading
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B07

Version 3

**Function Type:** Vapor Sensor Concentration (PPM) Report

**Command Format:**

**Display:** <SOH>IB07SS

**Computer:** <SOH>iB07SS

**Typical Response Message, Display Format:**

```
<SOH>
IB07SS
JAN 24, 1996 2:56 PM

VAPOR DIAGNOSTIC REPORT - VAPOR CONCENTRATION

SENSOR PPM
 1 0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB07SSYYMMDDHHmmSSNNFFFFFFFFF...
 SSNNFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor number (Decimal, 00=All)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE float:
  1. Vapor concentration (ppm)
5. && - Data Termination Flag
6. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B11

Version 1

**Function Type:** Groundwater Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB11SS

**Computer:** <SOH>iB11SS

**Typical Response Message, Display Format:**

<SOH>  
IB11SS  
JAN 28, 1995 10:16 AM

GROUNDWATER DIAGNOSTIC REPORT

	SAMPLE	HIGH	LOW		
SENSOR	COUNTER	REF	REF	VALUE1	VALUE2
1	5	5440	930	49875	90972

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB11SSYYMMDDHHmmSSNNFFFFFFFFF...  
SSNNFFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFFFF - ASCII Hex IEEE float:
  1. Sample counter
  2. High Reference Channel
  3. Low Reference Channel
  4. Hydrocarbon Channel Last Reading
  5. Hydrocarbon Channel Average Reading
  6. Water Channel Last Reading
  7. Water Channel Average Reading
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B21  
**Function Type:** Ground Temperature Sensor Diagnostic Report

Version 1

**Command Format:**  
**Display:** <SOH>IB21SS  
**Computer:** <SOH>iB21SS

**Typical Response Message, Display Format:**

```
<SOH>
IB21SS
JAN 24, 1996 2:56 PM

GROUNDTEMP DIAGNOSTIC REPORT

 SAMPLE HIGH LOW
SENSOR COUNTER REF REF VALUE
 1 50 1086 215 28393
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB21SSYYMMDDHHmmSSNNFFFFFFFFF...
 SSNNFFFFFFFFF&&CCCC<ETX>
```

- Notes:**
1. YYMMDDHHmm - Current Date and Time
  2. SS - Sensor Number (Decimal, 00=all)
  3. NN - Number of eight character Data Fields to follow (Hex)
  4. FFFFFFFF - ASCII Hex IEEE floats:
    1. Sample counter
    2. High Reference Channel
    3. Low Reference Channel
    4. Temperature Channel Last Reading
    5. Temperature Channel Average Reading
  5. && - Data Termination Flag
  6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B33

Version 24

**Function Type:** MAG Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB33SS

**Computer:** <SOH>iB33SS

### Typical Response Message, Display Format:

```
<SOH>
IB33SS
JAN 22, 2003 3:06 PM

MAG SENSOR DIAGNOSTIC REPORT

s 1: T1 SUMP

TOTAL HT 15.0 IN.
FUEL HT 5.0 IN.
WATER HT 10.0 IN.
INSTALL POS 5.0 IN.
FLUID TEMP 67.3 F
BOARD TEMP 70.3 F
<ETX>
```

### Notes:

1. Only parameters that are enabled to be displayed are shown.

### Typical Response Message, Computer Format:

```
<SOH>iB33SSYYMDDHHmmSSNNFFFFFFFFF...
SSNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - MAG SENSOR NUMBER (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Total Height
  2. Fuel Height
  3. Water Height
  4. Install Position
  5. Fuel Temperature
  6. Board Temperature(-99.9 indicates a value is not enabled for display)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B34**

Version 24

**Function Type:** Smart Sensor Last Sample Diagnostic

**Command Format:**

**Display:** <SOH>IB34SS

**Computer:** <SOH>iB34SS

**Typical Response Message, Display Format:**

```
<SOH>
IB34SS
JAN 22, 2003 3:25 PM

SMART SENSOR CHANNEL DATA: LAST SAMPLE

s 1: SUMP 1
MAG SENSOR
SERIAL NUMBER: 123456

 0 1 2 3 4 5 6 7 8 9
00 XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX
10 XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX
20 XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX

 XX XXXX
<ETX>
```

### Notes:

1: Values are in ASCII Hex IEEE float format.

**Typical Response Message, Computer Format:**

```
<SOH>iB34SSYYMMDDHHmmSSTTTTnnVVVVVVVV...VVVVVVVV&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. TTTT - Smart Sensor Type:
  - 0001=Air Flow Meter.
  - 0002=Vapor Pressure.
  - 0003=Vapor Pressure.
  - 0004=Vapor Pressure.
  - 0008=Mag Sensor.
  - 0009=Vac Sensor.
  - 0010=Atmospheric Sensor.
4. nn - Number of channels to follow (Hex)
5. VVVVVVVV - Channel Value (Hex)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B35**

Version 24

**Function Type:** Smart Sensor Type and Serial Number

**Command Format:**

**Display:** <SOH>IB35SS

**Computer:** <SOH>IB35SS

**Typical Response Message, Display Format:**

```
<SOH>
IB35SS
JAN 22, 2003 3:25 PM
```

SMART SENSOR SERIAL NUMBER

SENSOR	LABEL	TYPE	SERIAL NUMBER	DATE CODE
1	SUMP UNLEADED PLUS	008-MAG SENSOR	123456	26214

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>IB35SSYYMMDDHHmmSSnnMMMMMMMMNNNNNNNNDDDDDDDDPPPPPPPP...
SSnnMMMMMMMMNNNNNNNNDDDDDDDDPPPPPPPP&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. nn - Number of 8-byte values to follow.
4. MMMMMMMM - Smart Sensor Model (Hex)
5. NNNNNNNN - Smart Sensor Serial Number (Hex)
6. DDDDDDDD - Smart Sensor Date Code (Hex)
7. PPPPPPPP - Smart Sensor Protocol Version (Hex)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B36

Version 24

**Function Type:** Smart Sensor Constant Data

**Command Format:**

**Display:** <SOH>IB36SS

**Computer:** <SOH>IB36SS

**Typical Response Message, Display Format:**

```
<SOH>
IB36SS
JUN 1, 2000 8:15 AM

SMART SENSOR CONSTANTS DIAGNOSTIC

s 1: SUMP UNLEADED

MAG SENSOR
SERIAL NUMBER 123456
MODEL 101
LENGTH 24.0
GRADIENT 360.000
MIN THRESHOLD 0.0
MAX THRESHOLD 24.0
NUM FLOATS 2
TEMPERATURE YES
INSTALL POS YES
<ETX>
```

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code B36 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>IB36YYMMDDHHmmSSNNVVVVVVVVvvvvvvvv...VVVVVVVVvvvvvvvv...
NNVVVVVVVVvvvvvvvv...VVVVVVVVvvvvvvvv&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. NN - Number of eight character data fields to follow
  - NN=08 for Mag Sensors
4. VVVVVVVV - Model Number (Hex)
5. vvvvvvvv - Sensor Length (ASCII Hex IEEE float)
6. VVVVVVVV - Gradient (ASCII Hex IEEE float)
7. vvvvvvvv - Min Threshold (ASCII Hex IEEE float)
8. VVVVVVVV - Max Threshold (ASCII Hex IEEE float)
9. vvvvvvvv - Number of Floats (1 or 2) (Hex)
10. VVVVVVVV - Temperature enabled (0 or 1) (Hex)
11. vvvvvvvv - Install Position enabled (0 or 1) (Hex)
  - NN=03 for Vacuum Sensors
12. VVVVVVVV - Model Number (Hex)
13. vvvvvvvv - Calibration Data, Slope (ASCII Hex IEEE float)
14. VVVVVVVV - Calibration Data, Offset (ASCII Hex IEEE float)
  - NN=04 for Atmospheric Pressure Sensors
15. VVVVVVVV - Model Number (Hex)
16. vvvvvvvv - Software Version (Hex)
17. VVVVVVVV - Calibration Data, Slope (ASCII Hex IEEE float)
18. VVVVVVVV - Calibration Data, Offset (ASCII Hex IEEE float)
19. && - Data Termination Flag
20. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B37

Version 24

**Function Type:** Atmospheric Pressure Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB37SS

**Computer:** <SOH>iB37SS

**Typical Response Message, Display Format:**

```
<SOH>
IB37SS
JAN 22, 2004 3:25 PM

ATM P SENSOR DIAGNOSTIC REPORT

s 8:ATMP SENSOR #1

ATM P SENSOR
SERIAL NUMBER 7
ATM PRESSURE 0.062 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB37SSYYMMDDHHmmSSNNNNNNNNnnFFFFFFFFF...
 SSNNNNNNNNnnFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. NNNNNNNN - Serial Number (Hex)
4. nn - Number of 8-byte values to follow (Hex)
5. FFFFFFFF - Atmospheric Pressure, PSI (ASCII Hex IEEE float)
6. && - Data Termination Flag
7. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B38**

Version 24

**Function Type:** Vacuum Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB38SS

**Computer:** <SOH>iB38SS

**Typical Response Message, Display Format:**

```
<SOH>
IB38SS
JAN 22, 2004 3:25 PM

VAC SENSOR DIAGNOSTIC REPORT

s 1:VACUUM SENSOR #1

VAC SENSOR
SERIAL NUMBER 24
COMPENSATED PRESSURE:
 -9.000 PSI
UNCOMPENSATED PRESSURE:
 -9.123 PSI
EVACUATION STATE:
 VACUUM OK
FLUID STATUS: NORMAL
VCV: CLOSED

4-12-04 11:28AM
LEAK RATE: 0.123 GPH
TIME TO NO VAC:
 150:20 HHHH:MM
4-12-04 10:15AM
EVAC RATIO:5.2 @ -4.3PSI

SENSOR FAULTS:
 RELIEF VALVE FAULT
<ETX>
```

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code B38 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iB38SSYYMMDDHHmmSSNNNNNNNNNeFcVYYMMDDHHmmLLLLLLLLLv
 YYMMDDHHmmTTTTTTTTTf
 YYMMDDHHmmEEEEEEEEPPPPPPPPffff
 nnFFFFFFFF...FFFFFFFF...
 SSNNNNNNNNNeFcVYYMMDDHHmmLLLLLLLLLv
 YYMMDDHHmmTTTTTTTTTf
 YYMMDDHHmmRRRRRRRRPPPPPPPPffff
 nnFFFFFFFF...FFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. NNNNNNNN - Serial Number (Hex)
4. e - Evacuation State (Hex)
  - 0=Vacuum Ok
  - 1=Evacuation Pending
  - 2=Evacuation Active
  - 3=Evacuation Pending Manual
  - 4=Evacuation Active Manual
  - 5=No Vacuum
  - 6=Evacuation Hold
5. F - Fluid Status (Hex)
  - 0=Normal
  - 1=Fault
  - 2=Fluid
6. c - Vacuum Control Valve State (Hex)
  - 0=Closed
  - 1=Open
  - 2=Fault
7. V - Valid Leak Rate flag
  - 0=Leak Rate invalid
  - 1=Leak Rate valid

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code B38 Notes: (Continued)

- 8.       YYMMDDHHmm - Date/Time of Leak Rate
- 9.       LLLLLLLLL - Leak Rate, GPH (ASCII Hex IEEE float)
- 10.       v - Valid Time to No Vacuum flag  
          0=Time to No Vacuum invalid  
          1=Time to No Vacuum valid
  
- 11.       YYMMDDHHmm - Date/Time of Time to No Vacuum
- 12.       TTTTTTTTT - Time to No Vacuum, minutes (Hex)
- 13.       f - Valid Evac Ratio flag  
          0=Evac Ratio invalid  
          1=Evac Ratio valid
  
- 14.       YYMMDDHHmm - Date/Time of Evac Ratio
- 15.       RRRRRRRRR - Evac Ratio, (ASCII Hex IEEE float)
- 16.       PPPPPPPPP - Evac Ratio Pressure, PSI (ASCII Hex IEEE float)
- 17.       ffff - Sensor Fault Bits:  
          Bit 1=Fluid Sensor Fault  
          Bit 2=Pressure Sensor Fault  
          Bit 3=Relief Valve Fault  
          Bit 4=VCV Fault  
          Bit 5 - 16=Unused
  
- 18.       nn - Number of 8-byte values to follow.
- 19.       FFFFFFFFF - Compensated Pressure, PSI (ASCII Hex IEEE float)
- 20.       FFFFFFFFF - Uncompensated Pressure, PSI (ASCII Hex IEEE float)
- 21.       && - Data Termination Flag
- 22.       CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B39

Version 24

**Function Type:** Vacuum Sensor Evacuation Diagnostic Report

**Command Format:**

**Display:** <SOH>IB39SS

**Computer:** <SOH>iB39SS

**Typical Response Message, Display Format:**

```
<SOH>
IB3901
MAY 4, 2004 1:58 PM

VAC SENSOR EVACUATION DIAGNOSTIC REPORT

s 1:VACUUM SENSOR #1

START DATE/TIME DURATION
HH:MM:SS
04-05-04 09:06:58 0:02:24
04-05-04 09:06:58 0:02:24
04-05-04 09:15:33 0:01:44
04-05-04 09:19:26 0:00:47
04-05-04 09:20:11 0:01:46
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB39SSYYMMDDHHmmSSnnYYMMDDHHmmDDDDDDDD...
YYMMDDHHmmDDDDDDDD&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. nn - Number of Evacuation Events to follow (Decimal, 00=none)
4. YYMMDDHHmm - Start Date and Time of Evacuation Event
5. DDDDDDDD - Duration of Evacuation in Seconds (ASCII Hex IEEE float)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B41

Version 2

**Function Type:** Type A Sensor (2 Wire CL) Diagnostic Report

**Command Format:**

**Display:** <SOH>IB41SS

**Computer:** <SOH>iB41SS

**Typical Response Message, Display Format:**

```
<SOH>
IB41SS
MAR 26, 1996 1:45 PM

2 WIRE CL DIAGNOSTIC REPORT
```

	SAMPLE	HIGH	LOW	
SENSOR COUNTER	REF	REF	VALUE	
1 5	1815	7823	4193	

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iB41SSYYMMDDHHmmSSNNFFFFFFFFF...
SSNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample Counter Value
  2. High Reference Value
  3. Low Reference Value
  4. Last Reading
  5. Current Average Value
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B46

Version 2

**Function Type:** Type B Sensor (3 Wire CL) Diagnostic Report

**Command Format:**

**Display:** <SOH>IB46SS

**Computer:** <SOH>iB46SS

**Typical Response Message, Display Format:**

```
<SOH>
IB46SS
JAN 28, 1995 10:16 AM

3 WIRE CL DIAGNOSTIC REPORT

 SAMPLE HIGH LOW
SENSOR COUNTER REF REF VALUE1 VALUE2
 1 5 8900 32000 5200 100000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB46SSYYMMDDHHmmSSNNFFFFFFFFF...
 SSNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample Counter Value
  2. High Reference Value 1
  3. Low Reference Value 1
  4. Last Reading 1
  5. Current Average Value 1
  6. High Reference Value 2
  7. Low Reference Value 2
  8. Last Reading 2
  9. Current Average Value 2
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B4B

Version 4

**Function Type:** Universal Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB4BSS

**Computer:** <SOH>iB4BSS

**Typical Response Message, Display Format:**

<SOH>  
IB4BSS  
FEB 18, 1990 10:53 AM

UNIVERSAL DIAGNOSTIC REPORT

	SAMPLE	HIGH	LOW		
SENSOR	COUNTER	REF	REF	VALUE1	VALUE2
1	5	8900	32000	5200	100000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB4BSSYYMMDDHHmmSSNNFFFFFFFFF...  
SSNNFFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE float:
  1. Sample Counter Value
  2. High Reference Value 1
  3. Low Reference Value 1
  4. Last Reading 1
  5. Current Average Value 1
  6. High Reference Value 2
  7. Low Reference Value 2
  8. Last Reading 2
  9. Current Average Value 2
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.4.4 LINE LEAK DIAGNOSTIC REPORTS

**Function Code:** B50

Version 1

**Function Type:** Volumetric Line Leak Status

**Command Format:**

**Display:** <SOH>IB50PP

**Computer:** <SOH>IB50PP

**Typical Response Message, Display Format:**

```
<SOH>
IB50PP
MAR 26, 1996 1:46 PM

P 1:REGULAR UNLEADED
PMP IN=OFF PMP OUT=OFF
PRS SW= ON EQU VLV=OFF
FIN SW=OFF TST VLV=OFF
STR SW= ON DISABLE= ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB50PPYYMMDDHHmmPPIIppFFssOOeeTTdd...
PPIIppFFssOOeeTTdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. II - Pump In signal state (00=off, 01=on)
4. pp - Pressure switch state (00=off, 01=on)
5. FF - Final switch state (00=off, 01=on)
6. ss - Start switch state (00=off, 01=on)
7. OO - Pump Out signal state (00=off, 01=on)
8. ee - Equalizing valve state (00=off, 01=on)
9. TT - Test valve state (00=off, 01=on)
10. dd - Disable output state (00=off, 01=on)
11. && - Data Termination Flag
12. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B51

Version 1

**Function Type:** Volumetric Line Leak Diagnostic Gross Test History

**Command Format:**

**Display:** <SOH>IB51PP

**Computer:** <SOH>iB51PP

**Typical Response Message, Display Format:**

```
<SOH>
IB51PP
MAR 26, 1996 1:46 PM

P 1:REGULAR UNLEADED
DATE/TIME TYP GRND TANK DELY LGTH RSET TEST RSLT
MAR 26, 1996 1:43 PM 6 46.9 45.9 1 300.0 0.0 7.8 PASSED
MAR 26, 1996 1:43 PM 5 46.9 45.9 1 10.0 0.5 10.0 PASSED
MAR 26, 1996 1:42 PM 4 46.9 45.9 0 13.5 0.0 5.3 PASSED
MAR 26, 1996 1:42 PM 3 46.9 45.9 0 13.5 0.0 13.5 PASSED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB51PPYYMMDDHHmmPPNNYYMMDDHHmmTTg..gt..tDDDDLLLLRRRRTTTTTr...
PPNNYYMMDDHHmmTTg..gt..tDDDDLLLLRRRRTTTTTr&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. NN - Number of test data entries to follow (Decimal)
4. YYMMDDHHmm - Date and Time of test
5. TT - Test type code (Hex)
6. g..g - Ground Temp dispenser off (8 character ASCII Hex IEEE float)
7. t..t - Tank Temp dispenser off (8 character ASCII Hex IEEE float)
8. DDDD - Minutes since dispenser off (Hex)
9. LLLL - Allowed tenths of a second for Final Switch to actuate (Hex)
10. RRRR - Tenths of a second for Start Switch to close (Hex)
11. TTTT - Actual tenths of a second for Final Switch to actuate (Hex)
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B52**

Version 1

**Function Type:** Volumetric Line Leak 0.10 & 0.20 GPH Diagnostic History

**Command Format:**

**Display:** <SOH>IB52PP

**Computer:** <SOH>iB52PP

**Typical Response Message, Display Format:**

```
<SOH>
IB52PP
MAR 26, 1996 1:47 PM

P 1:REGULAR UNLEADED
DATE/TIME TYP GRND TANK DELY LGTH RSET TEST RSLT
MAR 26, 1996 1:48 AM 14 45.3 45.4 81 300.0 0.0 7.5 PASSED
MAR 26, 1996 1:45 AM 13 45.3 45.4 78 146.0 0.1 146.0 PASSED
MAR 26, 1996 1:41 AM 12 45.3 45.4 74 794.0 0.0 251.3 PASSED
MAR 26, 1996 1:27 AM 11 45.3 45.4 60 794.0 0.0 794.1 PASSED
MAR 25, 1996 8:14 PM 10 44.8 45.3 29 300.0 0.0 7.3 PASSED
MAR 25, 1996 8:12 PM 9 44.8 45.3 27 60.0 4.9 60.0 PASSED
MAR 25, 1996 8:10 PM 8 44.8 45.3 25 326.0 1.1 97.7 PASSED
MAR 25, 1996 8:05 PM 7 44.8 45.3 20 326.0 0.0 326.0 PASSED
<ETX>
```

**Notes:**

- Numbers in "TYP" column above and "TT" below refer to 0.20 GPH tests (7-10) or 0.10 GPH tests (11-14)

**Typical Response Message, Computer Format:**

```
<SOH>iB52PPYYMMDDHHmmPPNNYYMMDDHHmmTTg..gt..tDDDDLLLLRRRRTTTTTrr...
PPNNYYMMDDHHmmTTg..gt..tDDDDLLLLRRRRTTTTTrr&&CCCC<ETX>
```

**Notes:**

- YYMMDDHHmm - Current Date and Time
- PP - Pipeline Number (Decimal, 00=all)
- NN - Number of test data entries to follow (Decimal)
- YYMMDDHHmm - Date and Time of test
- TT - Test type code (Hex)
- g..g - Ground Temp dispenser off (8 character ASCII Hex IEEE float)
- t..t - Tank Temp dispenser off (8 character ASCII Hex IEEE float)
- DDDD - Minutes since dispenser off (Hex)
- LLLL - Allowed tenths of a second for Final Switch to actuate (Hex)
- RRRR - Tenths of a second for Start Switch to close (Hex)
- TTTT - Actual tenths of a second for Final Switch to actuate (Hex)
- rr - Test result code (Hex)
- && - Data Termination Flag
- CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B71  
**Function Type:** Pump Sensor Diagnostic

Version 2

**Command Format:**  
**Display:** <SOH>IB71SS  
**Computer:** <SOH>iB71SS

### Typical Response Message, Display Format:

```
<SOH>
IB7102
JAN 17, 1995 8:35 AM
PUMP SENSOR DIAGNOSTIC
S 2: SUPER UNLEADED
CARD 1 INPUT 2
TANK #: 3
PUMP OFF
MINS PUMP OFF=14
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iB71SSYYMMDDHHmmSSNNttttssssMMMMMMMMM...
SSNNttttssssMMMMMMMMM&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Pump Sensor Number (Decimal, 00=all)
3. NN - Number of 4 character Data Blocks to Follow (Hex)
4. tttt - Tank Number (Hex)
5. ssss - Pump Status  
0001=ON  
0000=OFF
6. MMMMMMMM - Minutes Pump has been Off (Hex)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B72

Version 27

**Function Type:** Pump Relay Monitor Diagnostic

**Command Format:**

**Display:** <SOH>IB72rr

**Computer:** <SOH>iB72rr

**Typical Response Message, Display Format:**

```
<SOH>
IB72rr
JUN 22, 2006 3:12 PM
```

PUMP RELAY MONITOR DIAGNOSTIC

DEVICE	LABEL	PUMP (OUT)	PUMP RELAY (IN)	STUCK RELAY	RUN TIME
1	PUMP RELAY UNLEADED	OFF	Q 1: OFF	0 SEC	00:00

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iB72rrYYMMDDHHmmrrabNNccccccccdddddddd...
rrabNNccccccccdddddddd&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. a - Pump Status (ASCII Hex)  
0=Off  
1=On
4. b - Relay Status (ASCII Hex)  
0=Off (or N/A - no Pump Relay assigned)  
1=On
5. NN - Number of 8-character data fields to follow (ASCII Hex)
6. cccccccc - Stuck Relay, Seconds (ASCII Hex IEEE float)  
0 if N/A - no Pump Relay assigned
7. dddddddd - Run Time, Hours (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B7B

Version 23

**Function Type:** Pressure Line Leak Profile Line Test

**Command Format:**

**Display:** <SOH>IB7BQQ

**Computer:** <SOH>iB7BQQ

**Typical Response Message, Display Format:**

```
<SOH>
IB7BQQ
JUL 15, 2001 1:27 PM

PRESSURE LINE LEAK PROFILE LINE TEST

Q 1:REGULAR UNLEADED
LAST PROFILE LINE TEST: NOV 15, 2001 10:15 AM
BULK MODULUS: 12000 PSI
TEST LEAK RATE: 1.50 GPH
REF PRESSURE: 30.00 PSI

TYP:USER DEFINED
1ST LINE LEN :100 FEET
2ND LINE LEN :200 FEET
1ST LINE DIAM: 1.50 IN.
2ND LINE DIAM: 2.50 IN.
<ETX>
```

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code B7B Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iB7BQQYYMMDDHHmmQQaYYMMDDHHmmttNNFFFFFFFF...FFFFFFFF...
 QQaYYMMDDHHmmttNNFFFFFFFF...FFFFFFFF&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. a - Valid profile line test flag
  - 0=profile line test invalid
  - 1=profile line test valid
4. YYMMDDHHmm - Date and Time of Last Profile Line Test
5. tt - Pipe Type:
  - 01=2.0"/3.0" Fiberglass
  - 02=2.0" Steel
  - 03=White Enviroflex PP1501
  - 04=1.5" Environ Geoflex II (Added in V11)
  - 05=Omniflex CP1501 (Added in V15)
  - 06=Yellow Enviroflex PP1500
  - 07=1.5"/2.5" Enviroflex PP1502/2502 (Added in V17)
  - 08=OPW Pisces SP-15 (Added in V18)
  - 09=OPW Pisces CP-15 (Added in V18)
  - 10=WFG Coflex 2000 Ribbed (Added in V19)
  - 11=Enviroflex PP1503/2503 (Added in V19)
  - 12=Omniflex CP1503 (Added in V19)
  - 13=1.5"/2.0" Environ Geoflex D (Added in V19)
  - 14=APT P175SC (Added in V121)
  - 15=OPW Pisces CP15DW (Added in V19)
  - 16=OPW Pisces CP20 (Added in V19)
  - 17=OPW PISCES SP20 (Added in V26)
  - 18=User Defined (Added in V22)
  - 19=PETROTECHNIK UPP EXTRA 63MM (Added in V26)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE float:
  1. Bulk Modulus
  2. Test Leak Rate (GPH)
  3. Test Reference Pressure (PSI)
  4. 1<sup>st</sup> Line Length (FEET)
  5. 1<sup>st</sup> Line Diameter (INCHES)
  6. 2<sup>nd</sup> Line Length (FEET)
  7. 2<sup>nd</sup> Line Diameter (INCHES)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B7C

Version 19

**Function Type:** Pressure Line Leak Pressure Offset Test

**Command Format:**

**Display:** <SOH>IB7CQQ

**Computer:** <SOH>iB7CQQ

**Typical Response Message, Display Format:**

<SOH>

IB7CQQ

JAN 1, 2000 6:27 PM

PRESSURE LINE LEAK PRESSURE OFFSET TEST

Q 1:REGULAR UNLEADED

LAST PRESSURE OFFSET TEST: +2.5 PSI DEC 1, 1999 5:20 PM

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB7CQQYYMMDDHHmmQQaFFFFFFFFYYMMDDHHmm...

QQaFFFFFFFFYYMMDDHHmm&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. a - Valid pressure flag  
0=pressure invalid  
1=pressure valid
4. FFFFFFFF - Last Pressure Offset Test Pressure in PSI (ASCII Hex IEEE float)
5. YYMMDDHHmm - Date and Time of last Pressure Offset Test
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B7D

Version 19

**Function Type:** WPPLD Line Leak Pressure Offset Test

**Command Format:**

**Display:** <SOH>IB7DWW

**Computer:** <SOH>iB7DWW

**Typical Response Message, Display Format:**

<SOH>

IB7DWW

JAN 1, 2000 6:27 PM

WPPLD LINE LEAK PRESSURE OFFSET TEST

W 1:REGULAR UNLEADED

LAST PRESSURE OFFSET TEST: +2.5 PSI DEC 1, 1999 5:20 PM

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB7DWWYYMMDDHHmmWWaFFFFFFFFYYMMDDHHmm...

WWaFFFFFFFFYYMMDDHHmm&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPPLD Line Leak sensor number (Decimal, 00=All)
3. a - Valid pressure flag  
0=pressure invalid  
1=pressure valid
4. FFFFFFFF - Last Pressure Offset Test Pressure in PSI (ASCII Hex IEEE float)
5. YYMMDDHHmm - Date and Time of last Pressure Offset Test
6. && - Data Termination Flag
7. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B7E**

Version 19

**Function Type:** Pressure Line Leak Pressure Offset Monitor Report

**Command Format:**

**Display:** <SOH>IB7EQQ

**Computer:** <SOH>iB7EQQ

**Typical Response Message, Display Format:**

```
<SOH>
IB7EQQ
JAN 1, 2000 2:56 PM

PRESSURE LINE LEAK PRESSURE OFFSET MONITORS REPORT

Q 1:REGULAR UNLEADED
P0: PASS
 LAST UPDATE: 21 DAYS
Pd: FAIL
 LAST UPDATE: 44 DAYS
Pd= 40.1 PSI
Pd Ref=32.3 PSI
Pv: PASS
Pv =28.1 PSI
Pon=44.1 PSI
Pd =40.1 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB7EQQYYMMDDHHmmQQAABBBBCCDDDDDEEEEEEEEEEEEEEEEEEEF
 GGHHHHHHHHHHIIIIIIIIJJJJJJJJ...
QAABBBBCCDDDDDEEEEEEEEEEEEEEEEEEEF
 GGHHHHHHHHHHIIIIIIIIJJJJJJJJ&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. AA - P0 pass/fail status  
00=fail  
01=pass
4. BBBB - P0 last update in days
5. CC - Pd pass/fail status  
00=fail  
01=pass
6. DDDD - Pd last update in days
7. EEEEEEEE - Pd in PSI (ASCII Hex IEEE float)
8. FFFFFFFF - Pd Ref in PSI (ASCII Hex IEEE float)
9. GG - Pd pass/fail status  
00=fail  
01=pass
10. HHHHHHHH - Pv in PSI (ASCII Hex IEEE float)
11. IIIIIIII - Pon in PSI (ASCII Hex IEEE float)
12. JJJJJJJJ - Pd in PSI (ASCII Hex IEEE float)
13. && - Data Termination Flag
14. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B7F**

Version 19

**Function Type:** WPLLD Line Leak Pressure Offset Monitor Report

**Command Format:**

**Display:** <SOH>IB7FWW

**Computer:** <SOH>iB7FWW

**Typical Response Message, Display Format:**

```
<SOH>
IB7FWW
JAN 1, 2000 2:56 PM

WPLLD LINE LEAK PRESSURE OFFSET MONITORS REPORT

W 1:REGULAR UNLEADED
P0: PASS
 LAST UPDATE: 21 DAYS
Pd: FAIL
 LAST UPDATE: 44 DAYS
Pd= 40.1 PSI
Pd Ref=32.3 PSI
Pv: PASS
Pv =28.1 PSI
Pon=44.1 PSI
Pd =40.1 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB7FWWYYMMDDHHmmWWAABBBBCCDDDDDEEEEEEEEEEEEEEEEEEEF
 GGHHHHHHHHHHIIIIIIIIJJJJJJJJ...
 WWAABBBBCCDDDDDEEEEEEEEEEEEEEEEEEEF
 GGHHHHHHHHHHIIIIIIIIJJJJJJJJ&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. AA - P0 pass/fail status  
00=fail  
01=pass
4. BBBB - P0 last update in days
5. CC - Pd pass/fail status  
00=fail  
01=pass
6. DDDD - Pd last update in days
7. EEEEEEEE - Pd in PSI (ASCII Hex IEEE float)
8. FFFFFFFF - Pd Ref in PSI (ASCII Hex IEEE float)
9. GG - Pd pass/fail status  
00=fail  
01=pass
10. HHHHHHHH - Pv in PSI (ASCII Hex IEEE float)
11. IIIIIIII - Pon in PSI (ASCII Hex IEEE float)
12. JJJJJJJJ - Pd in PSI (ASCII Hex IEEE float)
13. && - Data Termination Flag
14. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B81

Version 7

**Function Type:** Pressure Line Leak Diagnostic Report

**Command Format:**

**Display:** <SOH>IB81QQ

**Computer:** <SOH>iB81QQ

**Typical Response Message, Display Format:**

<SOH>

IB81QQ

JAN 24, 1996 2:56 PM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

LINE	DISPENSING	TEST STATUS	PUMP	HANDLE
Q 1:REGULAR UNLEADED	ENABLED	TESTING 0.10 GAL/HR	OFF	OFF
14.397 PSI				

A/D COUNTS

LOW REF= 5926 CNTS

HIGH REF= 551 CNTS

SENSOR= 1556 CNTS

<ETX>

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code B81 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iB81QQYYMMDDHHmmQQSSSttNNNNNNNNNN...
 QQSSSttNNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. SSSS - Status Bits:
  - Bit 1 - (LSB) Dispensing enabled flag  
(0=Disabled, 1=Enabled)
  - Bit 2 - Pump power  
(0=Pump Off, 1=Pump On)
  - Bit 3 - Dispenser Handle  
(0=Handle Off, 1=Handle On)
  - Bit 4-16 - Unused
4. tt - Test status
  - 00=test complete
  - 01=dispensing
  - 02=testing at 3.00 gal/hr
  - 03=testing at 0.10 gal/hr
  - 04=test aborted
  - 05=running pump (manual test starting)
  - 06=line lockout
  - 07=disable alarm
  - 08=test pending
  - 09=test delay
  - 0A=pressure check
  - 0B=testing at 0.20 gal/hr
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Pressure sensor reading
  - 2. A/D low reference counts
  - 3. A/D high reference counts
  - 4. A/D sensor counts
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B82**

Version 10

**Function Type:** WPLLD Line Leak Diagnostic Report

**Command Format:**

**Display:** <SOH>IB82WW

**Computer:** <SOH>iB82WW

**Typical Response Message, Display Format:**

```
<SOH>
IB82WW
JAN 24, 1996 2:56 PM

WPLLD LINE LEAK DIAGNOSTIC REPORT

LINE DISPENSING TEST STATUS PUMP HANDLE
W 1:REGULAR UNLEADED ENABLED DISPENSING ON ON

34.782 PSI

P 0:-99.000 PSI P 7:-99.000 PSI
P 1:-99.000 PSI P 8:-99.000 PSI
P 2:-99.000 PSI P 9:-99.000 PSI
P 3:-99.000 PSI P10:-99.000 PSI
P 4:-99.000 PSI P11:-99.000 PSI
P 5:-99.000 PSI P12:-99.000 PSI
P 6:-99.000 PSI P13:-99.000 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB82WWYYMMDDHHmmWWSSSSSttPPPPPPPP...
WWSSSSSttPPPPPPPP&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. SSSS - Status Bits:
  - Bit 1 - (LSB) Dispensing enabled flag  
(0=Disabled, 1=Enabled)
  - Bit 2 - Pump power  
(0=Pump Off, 1=Pump On)
  - Bit 3 - Dispenser Handle  
(0=Handle Off, 1=Handle On)
  - Bit 4-16 - Unused
4. tt - Test status
  - 00=test complete
  - 01=dispensing
  - 02=testing at 3.00 gal/hr
  - 03=testing at 0.20 gal/hr
  - 04=test aborted
  - 05=line lockout
  - 06=disable alarm
  - 07=test pending
  - 08=test delay
  - 09=testing at 0.10 gal/hr
5. PPPPPPPP - Current Pressure in PSI (ASCII Hex IEEE float)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B83**

Version 10

**Function Type:** WPLLD Line Leak Communication Diagnostic Report

**Command Format:**

**Display:** <SOH>IB83WW

**Computer:** <SOH>iB83WW

**Typical Response Message, Display Format:**

```
<SOH>
IB83WW
JAN 24, 1996 2:56 PM

WPLLD LINE LEAK COMMUNICATION REPORT

W 1:REGULAR UNLEADED
CRC:0 PARITY:0
#: 349666-666-666
95.11.09.14.46
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB83WWYYMMDDHHmmWWSSSttAAAAAAAAABBBBBBBB...
 WWSSSttAAAAAAAAABBBBBBBB&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (decimal)
3. SSSS - Status Bits:
  - Bit 1 - (LSB) Dispensing enabled flag  
(0=Disabled, 1=Enabled)
  - Bit 2 - Pump power  
(0=Pump Off, 1=Pump On)
  - Bit 3 - Dispenser Handle  
(0=Handle Off, 1=Handle On)
  - Bit 4-16 - Unused
4. tt - Test status
  - 00=test complete
  - 01=dispensing
  - 02=testing at 3.00 gal/hr
  - 03=testing at 0.20 gal/hr
  - 04=test aborted
  - 06=line lockout
  - 06=disable alarm
  - 07=test pending
  - 08=test delay
  - 09=testing at 0.10 gal/hr
5. AAAAAAAAA - Checksum error count (ASCII Hex IEEE float)
6. BBBBBBBB - Parity error count (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B87**

Version 19

**Function Type:** Pressure Line Leak 3.00 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB87QQ

**Computer:** <SOH>iB87QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB87QQ
OCT 15, 1996 4:29 PM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1

3.0 TEST PASSES
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

3.0 TEST FAILS
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

3.0 HI PRESSURE EVENTS
DATE/TIME PUMP ON FIRST READ SECOND READ
NO TEST DATA AVAILABLE
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB87QQYYMMDDHHmmQQRRLLYYMMDDHHmmaaaaaaaaabbbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaaaabbbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaaaabbbbbbbcccccccc...
QQRRLLYYMMDDHHmmaaaaaaaaabbbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaaaabbbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. RR - Test result type
  - 00=Pass
  - 01=Fail
  - 02=Hi-pressure events
4. LL - Total Events to follow (Max=5 each)
5. YYMMDDHHmm - Date/Time Test Passed
6. aaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - First pressure read (ASCII Hex IEEE float)
8. cccccccc - Second pressure read (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B88**

Version 19

**Function Type:** Pressure Line Leak Mid-range Test Diagnostic

**Command Format:**

**Display:** <SOH>IB88QQ

**Computer:** <SOH>iB88QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB88QQ
JAN 1, 1996 8:24 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1

MID TEST PASSES
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

MID TEST FAILS
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB88QQYYMMDDHHmmQQRRLLYYMMDDHHmmaaaaaaaabbbbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaaabbbbbbbbcccccccc...
QQRRLLYYMMDDHHmmaaaaaaaabbbbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaaabbbbbbbbcccccccc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. RR - Test result type
  - 00=Pass
  - 01=Fail
4. LL - Total Events to follow (Max=5 each)
5. YYMMDDHHmm - Date/Time Test Passed
6. aaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - First pressure read (ASCII Hex IEEE float)
8. cccccccc - Second pressure read (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B89

Version 19

**Function Type:** Pressure Line Leak 0.20 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB89QQ

**Computer:** <SOH>iB89QQ

**Notes:**

1. For User Defined Pipe Types PUMP ON will be PMID (Version 23)

**Typical Response Message, Display Format:**

```
<SOH>
IB89QQ
JAN 1, 1996 8:26 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1
0.20 TEST RESULTS
DATE/TIME PUMP ON RATIO DURATION RESULTS
JUL 10, 1995 9:33 AM 0.0 PSI 0.00 0 PASSED
JUN 9, 1995 8:52 AM 0.0 PSI 0.00 0 PASSED
MAY 9, 1995 8:10 AM 0.0 PSI 0.00 0 PASSED
APR 8, 1995 7:28 AM 0.0 PSI 0.00 0 PASSED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB89QQYYMMDDHHmmQQLLYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
QQLLYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. LL - Total Tests to follow (Max=10)
4. YYMMDDHHmm - Date/Time Test
5. RR - Test Result  
00=Pass  
01=Fail
6. aaaaaaaaa - Pump on pressure read, PSI (ASCII Hex IEEE float)
7. bbbbbbbb - Fail ratio (ASCII Hex IEEE float)
8. cccccccc - Duration (in minutes) (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B8A**

Version 19

**Function Type:** Pressure Line Leak 0.10 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB8AQQ

**Computer:** <SOH>iB8AQQ

### Notes:

1. For User Defined Pipe Types PUMP ON will be PMID (Version 23)

### Typical Response Message, Display Format:

```
<SOH>
IB8AQQ
JAN 1, 1996 8:30 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1
0.10 TEST RESULTS
DATE/TIME PUMP ON RATIO DURATION RESULTS
JUL 10, 1995 10:20 AM 0.0 PSI 0.00 0 PASSED
JUN 9, 1995 9:39 AM 0.0 PSI 0.00 0 PASSED
MAY 9, 1995 8:57 AM 0.0 PSI 0.00 0 PASSED
APR 8, 1995 8:15 AM 0.0 PSI 0.00 0 PASSED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>IB8AQQYYMMDDHHmmQQLLYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
QQLLYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. LL - Total Tests to follow (Max=10)
4. YYMMDDHHmm - Date/Time Test
5. RR - Test Result  
00=Pass  
01=Fail
6. aaaaaaaaa - Pump on pressure read, PSI (ASCII Hex IEEE float)
7. bbbbbbbb - Fail ratio (ASCII Hex IEEE float)
8. cccccccc - Duration (in min) (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B8B**

Version 19

**Function Type:** WPLLD Line Leak 3.00 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB8BWW

**Computer:** <SOH>iB8BWW

**Typical Response Message, Display Format:**

```
<SOH>
IB8BWW
OCT 15, 1996 4:29 PM

WPLLD LINE LEAK DIAGNOSTIC REPORT

W 1:WPLLD NUMBER 1

 3.0 TEST PASSES
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

 3.0 TEST FAILS
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

 3.0 HI PRESSURE EVENTS
DATE/TIME PUMP ON FIRST READ SECOND READ
NO TEST DATA AVAILABLE
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB8BWWYYMMDDHHmmWWRRLLYYMMDDHHmmaaaaaaaaabbbbbbbbbbcccccccc...
 RRLYYMMDDHHmmaaaaaaaaabbbbbbbbbbcccccccc...
 RRLYYMMDDHHmmaaaaaaaaabbbbbbbbbbcccccccc...
 WWRRLYYMMDDHHmmaaaaaaaaabbbbbbbbbbcccccccc...
 RRLYYMMDDHHmmaaaaaaaaabbbbbbbbbbcccccccc...
 RRLYYMMDDHHmmaaaaaaaaabbbbbbbbbbcccccccc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. RR - Test result type
  - 00=Pass
  - 01=Fail
  - 02=Hi-pressure events
4. LL - Total Events to follow (Max=5 each)
5. YYMMDDHHmm - Date/Time Test Passed
6. aaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - First pressure read (ASCII Hex IEEE float)
8. cccccccc - Second pressure read (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B8C

Version 19

**Function Type:** WPLLD Line Leak Mid-range Test Diagnostic

**Command Format:**

**Display:** <SOH>IB8CWW

**Computer:** <SOH>iB8CWW

**Typical Response Message, Display Format:**

```
<SOH>
IB8CWW
JAN 1, 1996 8:24 AM

WPLLD LINE LEAK DIAGNOSTIC REPORT

W 1:WPLLD NUMBER 1

MID TEST PASSES
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

MID TEST FAILS
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB8CWWYYMMDDHHmmWWRRLLYYMMDDHHmmaaaaaaabbabbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaabbabbbbbbcccccccc...
WWRRLLYYMMDDHHmmaaaaaaabbabbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaabbabbbbbbcccccccc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. RR - Test result type  
00=Pass  
01=Fail
4. LL - Total Events to follow (Max=5 each)
5. YYMMDDHHmm - Date/Time Test Passed
6. aaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - First pressure read (ASCII Hex IEEE float)
8. cccccccc - Second pressure read (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** B8D

Version 19

**Function Type:** WPLLD Line Leak 0.20 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB8DWW

**Computer:** <SOH>iB8DWW

**Typical Response Message, Display Format:**

```
<SOH>
IB8DWW
JAN 1, 1996 8:26 AM

WPLLD LINE LEAK DIAGNOSTIC REPORT

W 1:WPLLD NUMBER 1
0.20 TEST RESULTS
DATE/TIME PUMP ON RATIO DURATION RESULTS
JUL 10, 1995 9:33 AM 0.0 PSI 0.00 0 PASSED
JUN 9, 1995 8:52 AM 0.0 PSI 0.00 0 PASSED
MAY 9, 1995 8:10 AM 0.0 PSI 0.00 0 PASSED
APR 8, 1995 7:28 AM 0.0 PSI 0.00 0 PASSED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB8DWWYYMMDDHHmmWWLLYYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
 WWLLYYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. LL - Total Tests to follow (Max=10)
4. YYMMDDHHmm - Date/Time Test
5. RR - Test Result  
00=Pass  
01=Fail
6. aaaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - Fail ratio (ASCII Hex IEEE float)
8. cccccccc - Duration (in min) (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B8E**

Version 19

**Function Type:** WPLLD Line Leak 0.10 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB8EWW

**Computer:** <SOH>iB8EWW

### Typical Response Message, Display Format:

```
<SOH>
IB8EWW
JAN 1, 1996 8:30 AM

WPLLD LINE LEAK DIAGNOSTIC REPORT

W 1:WPLLD NUMBER 1
0.10 TEST RESULTS
DATE/TIME PUMP ON RATIO DURATION RESULTS
JUL 10, 1995 10:20 AM 0.0 PSI 0.00 0 PASSED
JUN 9, 1995 9:39 AM 0.0 PSI 0.00 0 PASSED
MAY 9, 1995 8:57 AM 0.0 PSI 0.00 0 PASSED
APR 8, 1995 8:15 AM 0.0 PSI 0.00 0 PASSED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>IB8EWWYYMMDDHHmmWWLLYYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
 WWLLYYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. LL - Total Tests to follow (Max=10)
4. YYMMDDHHmm - Date/Time Test
5. RR - Test Result  
00=Pass  
01=Fail
6. aaaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - Fail ratio (ASCII Hex IEEE float)
8. cccccccc - Duration (in min) (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.4.5 RECONCILIATION DIAGNOSTIC REPORTS

**Function Code:** B91

Version 108

**Function Type:** AccuChart Diagnostics Report

**Command Format:**

**Display:** <SOH>IB91TT

**Computer:** <SOH>iB91TT

**Typical Response Message, Display Format:**

```
<SOH>
IB91TT
JAN 24, 1996 2:56 PM

ACCU_CHART DIAGNOSTICS

TK STATUS DIAMETER LENGTH OFFSET TILT SHAPE F CAPACITY
1 ENABLED 91.0 144.4 0.00 1.00 1.00 5774
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB91TTYMMDDHHmmTTSSNNFFFFFFFF...
 TTSSNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank number (Decimal, 00=All)
3. SS - Status:
  - 00=AccuChart disabled
  - 01=AccuChart enabled
4. NN - Number of eight character Data Fields to follow (Hex)
5. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Tank diameter
  - 2. Tank length
  - 3. Probe offset
  - 4. Tank tilt
  - 5. Tank end shape factor
  - 6. Tank capacity
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B93**

Version 108

**Function Type:** AccuChart Status Report

**Command Format:**

**Display:** <SOH>IB93TT

**Computer:** <SOH>iB93TT

**Typical Response Message, Display Format:**

<SOH>  
IB93TT  
JAN 24, 1996 2:56 PM

ACCU\_CHART STATUS

TK STATUS	MODE	USER STATUS	DURATION	ALARM	FITNESS	DATA
1 ENABLED	CALIBRATE	DISABLED	9.2	OFF	0.00	566

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB9301YYMMDDHHmmTTSSMMUUAANNFFFFFFFF...  
TTSSMMUUAANNFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank number (Decimal, 00=All)
3. SS - Status:  
00=AccuChart disabled  
01=AccuChart enabled
4. MM - Mode:  
00=Calibrate  
01=Monitor
5. UU - User enable:  
00=user chart  
01=AccuChart
6. AA - Alarm status:  
00=No Alarm  
01=Alarm  
02=Alarm latched
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:  
1. Mode duration in days  
2. Calibration fitness factor  
3. Data quantity factor
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: B94**

Version 108

**Function Type:** AccuChart Calibration History Report

**Command Format:**

**Display:** <SOH>IB94TT

**Computer:** <SOH>iB93TT

**Typical Response Message, Display Format:**

```
<SOH>
IB94TT
JAN 24, 1996 2:57 PM

ACCU_CHART CALIBRATION HISTORY

T 1:REGULAR UNLEADED

DATE/TIME DIAM LENGTH OFFSET TILT SHAPE F CAPACITY FITNESS
96/01/01 08:03 91.0 144.4 0.00 1.00 1.00 5774 0.00
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB94TTYMMDDHHmmTTrrYYMMDDHHmmNNNNNNNNNN...
 TTrrYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank number (Decimal, 00=All)
3. rr - Number of calibration records to follow
4. YYMMDDHHmm - Calibration Date and Time
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
  1. Tank diameter
  2. Tank length
  3. Probe offset
  4. Tank tilt
  5. Tank end shape factor
  6. Tank capacity
  7. Calibration fitness
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** BA0  
**Function Type:** MDIM Totalizer Report

Version 110

**Command Format:**  
**Display:** <SOH>IBA000  
**Computer:** <SOH>iBA000

### Typical Response Message, Display Format:

```
<SOH>
IBA000
FEB 4, 1995 6:25 AM

MDIM TOTALIZER
 1 0.000
 2 0.000
 3 0.000
 4 0.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iBA000YYMMDDHHmmddddFFFFFFFFF...
 ddddFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. dddd - Dim identifier
3. FFFFFFFF - Totalizer value (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** BB1  
**Function Type:** VMC Status Report

Version 28

**Command Format:**  
**Display:** <SOH>IBB1xx  
**Computer:** <SOH>iBB1xx

**Notes:**

1. xx - VMC Number (Decimal, 01-18, 00=all)

**Typical Response Message, Display Format:**

```
<SOH>
IBB101
JAN 22, 2007 3:11 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

VMC REPORT

VMC S/N SIDE STATUS RECOVER RATE FUEL CNT ERR CNT REM TIME
 1 111111 A IDLE 85.2 12382 372 0
 1 111111 B IDLE 93.8 13875 436 0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iBB1xxYYMMDDHHmmxxIIIIIIIsSSrrrrrrffffeeeetttt...
 xxIIIIIIIsSSrrrrrrffffeeeetttt&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-18, 00=all)
3. IIIIII - Serial Number (Decimal)
4. s - Side (1=A, 2=B) (ASCII Hex)
5. SS - Status (ASCII Hex)
  - 00=Roots meter not connected
  - 01=Idle
  - 02=Running
  - 03=Last transaction failed
  - 04=FP shutdown warning
  - 05=FP shutdown alarm
  - FE=Status Unknown
  - FF=VMC Comm Timeout
6. rrrr - Recover Rate (ASCII decimal, x10)
7. ffff - Fueling Counter (ASCII Hex)
8. eeee - Error Counter (ASCII Hex)
9. tttt - Remaining Time, minutes (ASCII Hex)
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.5 RECONCILIATION REPORTS

**Function Code:** C01

Version 106

**Function Type:** Basic Inventory Reconciliation Daily "Row" Report

**Command Format:**

**Display:** <SOH>IC01PPMMDD

**Computer:** <SOH>ic01PPMMDD

**Notes:**

1. MMDD - Month and Day for Daily Report

**Typical Response Message, Display Format:**

```
<SOH>
IC01PP
MAR 26, 1996 1:43 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAR 26, 1996 1:43 PM

DAILY RECONCILIATION REPORT

T 1:REGULAR UNLEADED

DATE TIME OPENING METERED MANUAL CALC'D PHYSICAL WATER
MAR 25 2:00 AM VOLUME DLVRIES SALES ADJUST INVNTY INVNTY HEIGHT VARIANCE
MAR 26 2:00 AM 6081 0 1888 0 4193 4199 0.00 6

SIGNATURE _____
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ic01PPYYMMDDHHmmPPnnTTYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
PPnnTTYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. YYMMDDHHmm - Opening Date and Time
6. YYMMDDHHmm - Closing Date and Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C02

Version 106

**Function Type:** Basic Inventory Reconciliation Daily "Column" Report

**Command Format:**

**Display:** <SOH>IC0200MMDD

**Computer:** <SOH>iC0200MMDD

**Notes:**

1. MMDD - Month and Day for Daily Report

**Typical Response Message, Display Format:**

```
<SOH>
IC0200
MAR 26, 1996 1:43 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAR 26, 1996 1:43 PM

DAILY RECONCILIATION REPORT

PRODUCT UNLEADED

OPENING DATE MAR 25, 1996
OPENING TIME 2:00 AM

OPENING VOLUME 6081
DELIVERIES 0
METERED SALES 1888
MANUAL ADJUST 0
CALC'D INVNTY 4193
PHYSICAL INVNTY 4199
WATER HEIGHT 0.00
VARIANCE 6

CLOSING DATE MAR 26, 1996
CLOSING TIME 2:00 AM

SIGNATURE _____
<ETX>
```

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code C02:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC02PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C03

Version 106

**Function Type:** Basic Inventory Reconciliation Shift "Row" Report

**Command Format:**

**Display:** <SOH>IC03PPtt

**Computer:** <SOH>iC03PPtt

**Notes:**

1. tt - Shift Type (01=Current, 02=Previous)

**Typical Response Message, Display Format:**

```
<SOH>
IC03PP
MAR 26, 1996 1:44 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
MAR 26, 1996 1:44 PM
```

```
CURRENT SHIFT RECONCILIATION REPORT
```

```
T 1:REGULAR UNLEADED
```

DATE	TIME	OPENING	METERED	MANUAL	CALC'D	PHYSICAL	WATER		
MAR 26	6:00 AM	VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
MAR 26	1:42 PM	4114	0	1083	0	3031	3026	0.00	-5

```
SIGNATURE _____
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iC03PPYYMMDDHHmmPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. YYMMDDHHmm - Opening Date and Time
6. YYMMDDHHmm - Closing Date and Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C04

Version 106

**Function Type:** Basic Inventory Reconciliation Shift "Column" Report

**Command Format:**

**Display:** <SOH>IC0400tt

**Computer:** <SOH>iC0400tt

**Notes:**

1. tt - Shift Type (01=Current, 02=Previous)

**Typical Response Message, Display Format:**

<SOH>  
IC0400  
MAR 26, 1996 1:44 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

MAR 26, 1996 1:44 PM

PREVIOUS SHIFT RECONCILIATION REPORT

PRODUCT UNLEADED

OPENING DATE MAR 26, 1996  
OPENING TIME 6:00 AM

OPENING VOLUME	4114
DELIVERIES	0
METERED SALES	1083
MANUAL ADJUST	0
CALC'D INVNTY	3031
PHYSICAL INVNTY	3026
WATER HEIGHT	0.00
VARIANCE	-5

CLOSING DATE MAR 26, 1996  
CLOSING TIME 1:42 PM

SIGNATURE \_\_\_\_\_  
<ETX>



## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code C04:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC04PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

Function Code: C05

Version 106

Function Type: Basic Inventory Reconciliation Periodic "Row" Report

Command Format:

Display: <SOH>IC05PP

Computer: <SOH>iC05PP

Typical Response Message, Display Format:

<SOH>  
IC05PP  
MAR 26, 1996 1:42 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

MAR 26, 1996 1:42 PM

CURRENT PERIODIC RECONCILIATION REPORT

T 1:REGULAR UNLEADED

DATE	TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER	
		VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
MAR 1	2:00 AM	5429	0	3341	0	2088	2092	0.00	4
MAR 2	2:00 AM	2092	5409	1876	0	5625	5625	0.00	0
MAR 3	2:00 AM	5625	3336	3065	0	5896	5862	0.00	-34
MAR 4	2:00 AM	5874	2009	2207	0	5676	5672	0.00	-4
MAR 5	2:00 AM	5672	0	1568	0	4104	4108	0.00	4
MAR 6	2:00 AM	4108	6503	2170	0	8441	8443	0.00	2
MAR 7	2:00 AM	8444	0	1574	0	6870	6872	0.00	2
MAR 8	2:00 AM	6872	0	2295	0	4577	4581	0.00	4
MAR 9	2:00 AM	4581	5405	2881	0	7105	7099	0.00	-6
MAR 10	2:00 AM	7099	0	3312	0	3787	3793	0.00	6
MAR 11	2:00 AM	3793	3898	2436	0	5255	5253	0.00	-2
MAR 12	2:00 AM	5253	0	1745	0	3508	3497	0.00	-11
MAR 13	2:00 AM	3497	4811	1599	0	6709	6718	0.00	9
MAR 13	2:21 AM	6718	0	2111	0	4607	4612	0.00	5
MAR 14	2:00 AM	4612	6213	3896	0	6929	6931	0.00	2
MAR 15	2:00 AM	6896	0	2807	0	4089	4096	0.00	7
MAR 16	2:00 AM	4096	3302	3440	0	3958	3969	0.00	11
MAR 17	2:00 AM	3969	4802	1930	0	6841	6839	0.00	-2
MAR 18	2:00 AM	6839	0	2079	0	4760	4775	0.00	15
MAR 19	2:00 AM	4775	5407	2242	0	7940	7947	0.00	7
MAR 20	2:00 AM	7947	0	2552	0	5395	5398	0.00	3
MAR 21	2:00 AM	5398	5410	3309	0	7499	7510	0.00	11
MAR 22	2:00 AM	7510	0	3055	0	4455	4465	0.00	10
MAR 23	2:00 AM	4465	4812	3200	0	6077	6081	0.00	4
MAR 24	2:00 AM	6081	0	1888	0	4193	4199	0.00	6
TOTALS		5407	61317	62578	0	4146	4199	0.00	53

THRESHOLD:

755

SIGNATURE \_\_\_\_\_

<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code C05:** (Continued)

### Typical Response Message, Computer Format:

```
<SOH>iC05PPYYMMDDHHmmPPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
PPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. dd - Number of reconciliation days to follow (Hex)
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C06

Version 106

**Function Type:** Basic Inventory Reconciliation Periodic "Column" Report

**Command Format:**

**Display:** <SOH>IC0600

**Computer:** <SOH>iC0600

**Typical Response Message, Display Format:**

```
<SOH>
IC0600
MAR 26, 1996 1:42 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAR 26, 1996 1:42 PM

CURRENT PERIODIC RECONCILIATION REPORT

PRODUCT UNLEADED

OPENING DATE MAR 1, 1996
OPENING TIME 2:00 AM

OPENING VOLUME 5407
DELIVERIES 61317
METERED SALES 62578
MANUAL ADJUST 0
CALC'D INVNTY 4146
PHYSICAL INVNTY 4199
WATER HEIGHT 0.00
VARIANCE 53
THRESHOLD 755

CLOSING DATE MAR 20, 1996
CLOSING TIME 2:00 AM

SIGNATURE _____
<ETX>
```

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code C06:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC06PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C07

Version 114

**Function Type:** Basic Inventory Reconciliation Periodic "Row" Report  
(Current/Previous)

**Command Format:**

**Display:** <SOH>IC07PPtt

**Computer:** <SOH>iC07PPtt

**Notes:**

1. PP - Product Number (00=all products)
2. tt - Report type  
00=Current Period  
01=Previous Period

**Typical Response Message, Display Format:**

<SOH>  
IC07PP  
MAR 26, 1996 1:42 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

APR 11, 1996 1:42 PM

PREVIOUS PERIODIC RECONCILIATION REPORT

T 1:REGULAR UNLEADED

DATE	TIME	OPENING	METERED	MANUAL	CALC'D	PHYSICAL	WATER		
		VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
MAR 1	2:00 AM	5429	0	3341	0	2088	2092	0.00	4
MAR 2	2:00 AM	2092	5409	1876	0	5625	5625	0.00	0
MAR 4	2:00 AM	5625	3336	3065	0	5896	5862	0.00	-34
MAR 5	2:00 AM	5874	2009	2207	0	5676	5672	0.00	-4
MAR 6	2:00 AM	5672	0	1568	0	4104	4108	0.00	4
MAR 7	2:00 AM	4108	6503	2170	0	8441	8443	0.00	2
MAR 8	2:00 AM	8444	0	1574	0	6870	6872	0.00	2
MAR 9	2:00 AM	6872	0	2295	0	4577	4581	0.00	4
MAR 10	2:00 AM	4581	5405	2881	0	7105	7099	0.00	-6
MAR 11	2:00 AM	7099	0	3312	0	3787	3793	0.00	6
MAR 12	2:00 AM	3793	3898	2436	0	5255	5253	0.00	-2
MAR 13	2:00 AM	5253	0	1745	0	3508	3497	0.00	-11
MAR 13	2:21 AM	3497	4811	1599	0	6709	6718	0.00	9
MAR 14	2:00 AM	6718	0	2111	0	4607	4612	0.00	5
MAR 16	2:00 AM	4612	6213	3896	0	6929	6931	0.00	2
MAR 17	2:00 AM	6896	0	2807	0	4089	4096	0.00	7
MAR 18	2:00 AM	4096	3302	3440	0	3958	3969	0.00	11
MAR 19	2:00 AM	3969	4802	1930	0	6841	6839	0.00	-2
MAR 20	2:00 AM	6839	0	2079	0	4760	4775	0.00	15
TOTALS		5407	45688	46332	0	4763	4775	0.00	12

THRESHOLD: 755

SIGNATURE \_\_\_\_\_  
<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code C07:** (Continued)

### Typical Response Message, Computer Format:

```
<SOH>iC07PPYYMMDDHHmmPPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
PPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. dd - Number of reconciliation days to follow (Hex)
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C08

Version 114

**Function Type:** Basic Inventory Reconciliation Periodic "Column" Report  
(Current/Previous)

**Command Format:**

**Display:** <SOH>IC0800tt

**Computer:** <SOH>iC0800tt

**Notes:**

1. tt - Report type  
00=Current Period  
01=Previous Period

**Typical Response Message, Display Format:**

```
<SOH>
IC0800
MAR 26, 1996 1:42 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAR 26, 1996 1:42 PM

PREVIOUS PERIODIC RECONCILIATION REPORT

PRODUCT UNLEADED

OPENING DATE MAR 1, 1996
OPENING TIME 2:00 AM

OPENING VOLUME 5407
DELIVERIES 61317
METERED SALES 62578
MANUAL ADJUST 0
CALC'D INVNTY 4146
PHYSICAL INVNTY 4199
WATER HEIGHT 0.00
VARIANCE 53
THRESHOLD 755

CLOSING DATE MAR 20, 1996
CLOSING TIME 2:00 AM

SIGNATURE _____
<ETX>
```



## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code C08:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC08PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C09

Version 19

**Function Type:** Individual Basic Reconciliation Daily History Diagnostic

**Command Format:**

**Display:** <SOH>IC09TTD

**Computer:** <SOH>iC09TTD

**Notes:**

1. TT - Tank Number (Decimal; 00=all)
2. D - If 1, will use ticketed delivery else if not entered, default will use gauged delivery

**Typical Response Message, Display Format:**

```
<SOH>
IC09TT1
JAN 1, 2000 3:30 PM
INDIVIDUAL BASIC RECONCILIATION HISTORY DIAGNOSTIC

T 1:* MAG PROBE #1 *
STRT TIME END TIME STRT HT END HT STRT VL END VL SALES DELIV OFFSET VAR
9912311104 0001010130 45.737 48.000 4700.0 5000.0 0.0 300.0 0.0 0.0
0001010130 0001010931 48.000 47.895 5000.0 4986.1 0.0 0.0 0.0 -13.9
```

**Typical Response Message, Computer Format:**

```
<SOH>iC0900YYMMDDHHmmTTrrYYMMDDHHmmYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
TTrrYYMMDDHHmmYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Time of Day.
2. TT - Tank Number (Decimal, 00=all)
3. rr - Number of records to follow (Hex)
4. YYMMDDHHmm - Requested start time
5. YYMMDDHHmm - Actual start time
6. YYMMDDHHmm - End time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Start height
  2. End height
  3. Start Volume
  4. End Volume
  5. Metered sales (dispensed volume)
  6. Ticket Delivery
  7. Gauged Delivery
  8. Offset volume
  9. Variance (calculated with ticketed volume)
  10. Variance (calculated with gauged volume)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.6 VARIANCE ANALYSIS REPORTS

**Function Code:** C10

Version 116

**Function Type:** Periodic Book Variance

**Command Format:**

**Display:** <SOH>IC10PPtt

**Computer:** <SOH>iC10PPtt

**Notes:**

1. PP - Product Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

**Typical Response Message, Display Format:**

<SOH>  
IC10PP  
MAR 20, 1998 3:29 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

CURRENT PERIOD BOOK VARIANCE

T 1:REGULAR UNLEADED

DATE	TIME	OPENING	METERED	TICKET	MAN	CLS	BOOK	GAUGED	DAILY
		VOLUME	SALES	DLVY	ADJ	INVNTY	INVNTY	INVNTY	VARIANCE
MAR 5	9:18 PM	6279	151	0	0	6128	6128		0= 0.00%
MAR 6	12:00 AM	6128	3069	0	0	3059	3063		-4= 0.13%
MAR 7	12:00 AM	3063	2775	5901	0	6189	6196		-7= 0.25%
MAR 8	12:00 AM	6196	2674	0	0	3522	3526		-4= 0.15%
MAR 9	12:00 AM	3526	2427	5901	0	7000	7007		-7= 0.29%
MAR 10	12:00 AM	7007	2763	4099	0	8343	8344		-1= 0.04%
MAR 11	12:00 AM	8344	3091	0	0	5253	5256		-3= 0.10%
MAR 12	12:00 AM	5256	3085	3800	0	5971	5972		-1= 0.03%
MAR 13	12:00 AM	5972	2818	0	0	3154	3160		-6= 0.21%
MAR 14	12:00 AM	3160	3041	5900	0	6019	6023		-4= 0.13%
MAR 15	12:00 AM	6023	2986	0	0	3037	3030		7= 0.23%
MAR 16	12:01 AM	3030	2539	5902	0	6393	6404		-11= 0.43%
MAR 17	12:00 AM	6404	3061	0	0	3343	3346		-3= 0.10%
MAR 18	12:00 AM	3346	3069	5901	0	6178	6179		-1= 0.03%
MAR 19	12:00 AM	6179	2565	0	0	3614	3617		-3= 0.12%
MAR 20	12:00 AM								
TOTALS		6279	40114	37404	0	3569	3617		-48= 0.12%

THRESHOLD:

531

SIGNATURE \_\_\_\_\_

<ETX>

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code C10:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC10PPYYMMDDHHmmPPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
PPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) (Decimal)
5. rr - Number of records to follow (decimal) if 0, no more data for this tank will follow
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C11  
**Function Type:** Weekly Book Variance

Version 116

**Command Format:**  
**Display:** <SOH>IC11PPtt  
**Computer:** <SOH>iC11PPtt

### Notes:

1. PP - Product Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

### Typical Response Message, Display Format:

<SOH>  
IC11PP  
MAR 20, 1998 3:30 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### CURRENT WEEK BOOK VARIANCE

##### T 1:REGULAR UNLEADED

DATE	TIME	OPENING	METERED	TICKET	MAN	CLS	BOOK	GAUGED	DAILY
		VOLUME	SALES	DLVY	ADJ	INVNTY	INVNTY		VARIANCE
MAR 16	12:00 AM	3030	2539	5902	0	6393	6404	-11=	0.43%
MAR 17	12:01 AM	6404	3061	0	0	3343	3346	-3=	0.10%
MAR 18	12:00 AM	3346	3069	5901	0	6178	6179	-1=	0.03%

TOTALS		3030	8669	11803	0	6164	6179	-15=	0.17%
--------	--	------	------	-------	---	------	------	------	-------

THRESHOLD:

216

SIGNATURE \_\_\_\_\_  
<ETX>

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code C11 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC11PPYYMMDDHHmmPPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
PPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal), 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) mapped to product (Decimal)
5. rr - Number of records to follow
6. YYMMDDHHmm - Open date and time
7. YYMMDDHHmm - Close date and time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C12  
**Function Type:** Daily Book Variance

Version 116

**Command Format:**  
**Display:** <SOH>IC12PPMMDD  
**Computer:** <SOH>iC12PPMMDD

### Notes:

1. PP - Product Number (Decimal, 00=all)
2. MMDD - Month and day for report (if not entered, will default to current day)

### Typical Response Message, Display Format:

<SOH>  
IC12PP  
MAR 20, 1998 3:30 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

DAILY BOOK VARIANCE

T 1:REGULAR UNLEADED									
DATE	TIME	OPENING	METERED	TICKET	MAN	CLS	BOOK	GAUGED	DAILY
		VOLUME	SALES	DLVY	ADJ		INVNTY	INVNTY	VARIANCE
MAR 18	12:00 AM								
MAR 19	12:00 AM	3346	3069	5901	0		6178	6179	-1= 0.03%

THRESHOLD:

148

SIGNATURE \_\_\_\_\_  
<ETX>

### Typical Response Message, Computer Format:

<SOH>iC10PPYYMMDDHHmmPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) (Decimal)
5. YYMMDDHHmm - Open date and time
6. YYMMDDHHmm - Close date and time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C20

Version 116

**Function Type:** Periodic Variance Analysis Report

**Command Format:**

**Display:** <SOH>IC20PPtt

**Computer:** <SOH>iC20PPtt

**Notes:**

1. PP - Product Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

**Typical Response Message, Display Format:**

<SOH>  
IC20PP  
MAR 20, 1998 3:30 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

CURRENT PERIOD VARIANCE ANALYSIS

T 1:REGULAR UNLEADED

DATE	TIME	BOOK	DLVY	SALES	BK_VAR	TEMP	WATER	UNEX
MAR 5	9:18 PM	VAR	VAR	VAR	VAR	VAR	CHG	VAR
MAR 20	12:00 AM	-48	-13	-35	0.12	-16	0	-18

SIGNATURE \_\_\_\_\_  
<ETX>



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code C20 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC20PPYYMMDDHHmmPPnnTTYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
NNNNNNNNF...
PPnnTTYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
NNNNNNNNF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Number (Decimal, 00=all)
5. YYMMDDHHmm - Opening Date and Time for period
6. YYMMDDHHmm - Closing Date and Time for period
7. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
8. llllllll - tank chart alarm (bit encoded long integer with tank 1=lsb)
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats:
  1. book variance
  2. delivery variance
  3. sales variance
  4. book variance percent
  5. temperature variance
  6. water change
  7. unexplained variance
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C21

Version 116

**Function Type:** Weekly Variance Analysis Report

**Command Format:**

**Display:** <SOH>IC21PPtt

**Computer:** <SOH>iC21PPtt

**Notes:**

1. PP - Product Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

**Typical Response Message, Display Format:**

<SOH>  
IC21PP  
MAR 20, 1998 3:30 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

CURRENT WEEK VARIANCE ANALYSIS

T 1:REGULAR UNLEADED

DATE	TIME	BOOK	DLVY	SALES	BK_VAR	TEMP	WATER	UNEX
MAR 16	12:00 AM	VAR	VAR	VAR	_%	VAR	CHG	VAR
MAR 19	12:00 AM	-15	-13	-2	0.17	-2	0	0

SIGNATURE \_\_\_\_\_  
<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code C21 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC21PPYYMMDDHHmmPPnnTTYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
NNNNNNNNF...
PPnnTTYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
NNNNNNNNF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Number (Decimal, 00=all)
5. YYMMDDHHmm - Open date and time
6. YYMMDDHHmm - Close date and time
7. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
8. llllllll - tank chart alarm (bit encoded long integer with tank 1=lsb)
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats:
  1. book variance
  2. delivery variance
  3. sales variance
  4. book variance percent
  5. temperature variance
  6. water change
  7. unexplained variance
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C22

Version 116

**Function Type:** Daily Variance Analysis Report

**Command Format:**

**Display:** <SOH>IC22PPMMDD

**Computer:** <SOH>iC22PPMMDD

**Notes:**

1. PP - Product Number (Decimal, 00=all)
2. MMDD - Month and day for report (if not entered, will default to current day)

**Typical Response Message, Display Format:**

```
<SOH>
IC22PP
MAR 20, 1998 3:31 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

DAILY VARIANCE ANALYSIS

T 1:REGULAR UNLEADED

DATE	TIME	BOOK	DLVY	SALES	BK_VAR	TEMP	WATER	UNEX
MAR 18	12:00 AM	VAR	VAR	VAR	%	VAR	CHG	VAR
MAR 19	12:00 AM	-15	-13	-2	0.17	-2	0	0

```
SIGNATURE _____
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iC22PPYYMMDDHHmmPPnnTTYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
NNNNNNNNNN...
PPnnTTYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
NNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Number (Decimal, 00=all)
5. YYMMDDHHmm - Open date and time
6. YYMMDDHHmm - Close date and time
7. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
8. llllllll - tank chart alarm (bit encoded long integer with tank 1=lsb)
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats:
  1. book variance
  2. delivery variance
  3. sales variance
  4. book variance percent
  5. temperature variance
  6. water change
  7. unexplained variance
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** C25

Version 19

**Function Type:** Periodic Variance Analysis Daily Report

**Command Format:**

**Display:** <SOH>IC25PPtt

**Computer:** <SOH>iC25PPtt

**Notes:**

1. PP - Product Number (Decimal, 00=all Products)
2. tt - Report Type  
01=current  
02=previous

**Typical Response Message, Display Format:**

<SOH>  
IC25PP  
JAN 1, 1996 8:05 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

CURRENT PERIOD VARIANCE ANALYSIS

T 1:UNLEADED GASOLINE

DATE	TIME	BOOK	DLVY	SALES	BK VAR	TEMP	WATER	UNEX
		VAR	VAR	VAR	%	VAR	CHG	VAR
DEC 10	2:00 AM	7	9	-2	0.54	6	4	-8
DEC 11	2:00 AM	-1	0	-1	0.07	0	4	-1
DEC 12	2:00 AM	0	0	0	0.00	0	4	0
DEC 13	2:00 AM	-2	0	-2	0.15	0	4	-2
DEC 14	2:00 AM	-3	0	-3	0.30	0	4	-3
DEC 15	2:00 AM	-15	-10	-5	1.04	0	4	-5
DEC 16	2:00 AM	-2	0	-2	0.14	0	4	-2
DEC 17	2:00 AM	0	0	0	0.00	0	4	0
DEC 18	2:00 AM	-2	-5	3	0.13	-9	4	12
DEC 19	2:00 AM	2	0	2	0.13	0	4	2
DEC 20	2:00 AM	1	0	1	0.08	0	4	1
DEC 21	2:00 AM	-1	0	-1	0.14	0	4	-1
DEC 22	2:00 AM	5	0	5	0.36	0	4	5
DEC 23	2:00 AM	1	0	1	0.09	0	4	1
DEC 24	2:00 AM	-3	0	-3	0.24	0	4	-3
DEC 25	2:00 AM	7	10	-3	0.51	-11	4	8
DEC 26	2:00 AM	0	0	0	0.00	0	4	0
DEC 27	2:00 AM	5	0	5	0.40	0	4	5
DEC 28	2:00 AM	0	0	0	0.00	0	0	0
DEC 29	2:00 AM	0	0	0	0.00	0	0	0
DEC 30	2:00 AM	-2	0	-2	0.17	0	0	-2
DEC 31	2:00 AM	13	10	3	0.98	-20	0	23
JAN 1	2:00 AM	-503	-503	0	33.83	31	0	-31

<ETX>

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code C25:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC25PPYYMMDDHHmmPPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Code (Decimal)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Number (Decimal, 0=all)
5. dd - Number of reconciliation records to follow
6. YYMMDDHHmm - Opening Date and Time for period
7. YYMMDDHHmm - Closing Date and Time for period
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Book variance
  2. Delivery variance
  3. Sales variance
  4. Book variance percent
  5. Temperature variance
  6. Water change
  7. Unexplained variance
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.7 IN-STATION DIAGNOSTICS (ISD)

#### 7.7.1 ISD REPORTS

**Function Code:** V00

Version 25

**Function Type:** ISD CARB Certified Operating Requirements and Monitoring Thresholds

**Command Format:**

**Display:** <SOH>IV0000

**Computer:** <SOH>iV0000

**Notes:**

1. ISD feature required

**Typical Response Message, Display Format:**

```
<SOH>
IV0000
JUN 1, 2002 8:07 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

CARB EVR CERTIFIED OPERATING REQUIREMENTS

	Min	Max
VAPOR COLLECTION ASSIST SYSTEM A/L RANGE	0.90	1.10

ISD MONITORING TEST PASS/FAIL THRESHOLDS

	Period	Below	Above
VAPOR COLLECTION BALANCE SYS FLOW PERFORMANCE	7dys	0.60	----
VAPOR CONTAINMENT GROSS FAIL, 95TH PERCENTILE	7dys	----	1.30"wcg
VAPOR CONTAINMENT DEGRADATION, 75TH PERCENTILE	30dys	----	0.30"wcg
VAPOR CONTAINMENT LEAK DETECTION FAIL @2"WCG	7dys	----	13.5cfh
STAGE I VAPOR TRANSFER FAIL, 75TH PERCENTILE	20min	----	2.50"wcg

CARB STANDARD REPORT FORMAT - CP201 APPENDIX "EVR-ISD MONTHLY STATUS REPORT"  
<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iV0000YYMMDDHHmmooFFNNmmmmmmmm...ppggNNtttttttt...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. oo - Number of CARB EVR Certified Operating Requirement fields (Decimal)
3. ff - Type of CARB EVR Certified Operating Requirement field  
01=Vapor Collection Assist System A/L Range (min/max)  
[Assist only]
4. NN - number of ASCII Hex IEEE float data fields to follow (Decimal)
5. mmmmmmmmm - CARB EVR Certified Operating Requirement field data (ASCII Hex IEEE float)
6. pp - Number of ISD Monitoring Test Pass/Fail Threshold fields (Decimal)

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code V00 Notes: (Continued)

7.                   gg - Type of ISD Monitoring Test Pass/Fail Threshold field  
                    01=Vapor Collection Assist System A/L Gross Fail  
                    (Days/Low/High) [Assist only]  
  
                    02=Vapor Collection Assist System A/L Degradation Fail  
                    (Days/Low/High) [Assist only]  
  
                    03=Vapor Collection Balance System Flow Performance  
                    (Days/High) [Balance Only]  
  
                    04=Vapor Containment Gross Fail, ?? Percentile  
                    (Days/High)  
  
                    05=Vapor Containment Degradation, ?? Percentile  
                    (Days/High)  
  
                    06=Vapor Containment Leak Detection Fail @2\ "WCG  
                    (Days/High)  
  
                    07=Stage I Vapor Transfer Fail, ?? Percentile  
                    (Minutes/High)  
  
                    08=Vapor Processor Pressure Fail, Performed Daily [Vapor  
                    Processor Required]  
  
                    09=Vapor Processor Self Test Fail (Days) [VP Required, VP  
                    Control Level: No Control]  
  
                    10=Vapor Processor HC Emission Concentration Fail  
                    (Days/High) [VP Control Level: Full Control]  
  
                    11=Vapor Processor Duty Cycle Fail, Performed Daily [VP  
                    Control Level: Full Control]
8.                   NN - number of ASCII Hex IEEE float data fields to follow  
                    (Decimal)
9.                   tttttttt - ISD Monitoring Test Pass/Fail Thresholds field data (ASCII  
                    Hex IEEE float)
10.                  && - Data Termination Flag
11.                  CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V01  
**Function Type:** ISD Alarm Status Report

Version 25

**Command Format:**  
**Display:** <SOH>IV0100  
**Computer:** <SOH>iV0100

### Notes:

1. ISD feature required
2. Last 10 of each alarm group

### Typical Response Message, Display Format:

```
<SOH>
IV0100
JUN 1, 2002 8:07 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

ISD ALARM STATUS REPORT

EVR TYPE: BALANCE
ISD TYPE: 01.00
VAPOR PROCESSOR TYPE: NO VAPOR PROCESSOR

OVERALL STATUS :FAIL EVR VAPOR COLLECTION :NO TEST
EVR VAPOR CONTAINMENT :PASS
ISD MONITOR UP-TIME : 97% STAGE I TRANSFERS: 12 of 12 PASS
EVR/ISD PASS TIME : 5%

WARNING ALARMS
DATE/TIME DESCRIPTION READING VALUE
03-07-17 17:45:11 MISSING VAPOR PROCESSOR INPUT ED1
 DISABLED DIM ALARM

FAILURE ALARMS
DATE/TIME DESCRIPTION READING VALUE
03-07-17 17:45:03 MISSING VAPOR PROCESSOR INPUT
 LLD SELF TEST FAIL
03-07-17 17:44:58 MISSING VAPOR PROCESSOR INPUT
 LLD SELF TEST FAIL

SHUTDOWN & MISCELLANEOUS EVENTS
DATE/TIME DESCRIPTION ACTION/NAME
03-07-17 14:04:07 ISD STARTUP
03-07-17 14:04:05 READINESS ISD:PF EVR:NNN CHECK ISD SENSORS
03-07-17 14:04:05 READINESS ISD:FN EVR:NNN CHECK SETUP CONFIGURATION
03-07-17 14:04:05 READINESS ISD:PP EVR:FFP EVR READINESS PENDING
03-07-17 14:04:05 ISD STARTUP
03-07-17 13:58:53 ISD SHUTDOWN

CARB STANDARD REPORT FORMAT - CP201 APPENDIX "EVR-ISD ALARM STATUS REPORT"
<ETX>
```

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V01 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0100YYMMDDHHmmqqqSSSSSSSSaabbccddeettff...f...
rrrSSSSSSSSaabbccddeettff...f...
sssSSSSSSSSaabbccddeettff...f...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. qqq - number of ISD Warning Alarms to follow (Decimal)
3. SSSSSSSS - Timestamp of the Warning Alarm (Seconds since 1/1/1970, Hex)
4. aa - primary warn event category
5. bb - primary warn event type
6. cc - device ID (Hex)
7. dd - secondary warn event category (Hex)
8. ee - secondary warn event type (Hex)
9. tt - Data type to follow  
00=No Data  
01=integer  
02=floating point number
10. ff - Data type (optional, depends on tt)
11. ffffffff - Data type (optional, depends on tt, Hex)
12. rrr - Number of ISD Failure Alarms to follow (Decimal)
13. SSSSSSSS - Timestamp of the Failure Alarm (Seconds since 1/1/1970, Hex)
14. aa - primary failure event category (Hex)
15. bb - primary failure event type (Hex)
16. cc - device ID (Hex)
17. dd - secondary failure event category (Hex)
18. ee - secondary failure event type (Hex)
19. tt - Data type to follow  
00=No Data  
01=integer  
02=floating point number
20. ff - Data type (optional, depends on tt)
21. ffffffff - Data type (optional, depends on tt, Hex)
22. sss - Number of ISD Shutdown & Misc. Events to follow (Decimal)
23. SSSSSSSS - Timestamp of the Shutdown/Misc. Event (Seconds since 1/1/1970, Hex)
24. aa - primary misc event category  
01=System Event  
02=Pumps Re-enabled  
03=Test Manually Cleared  
04=Disabled Dispensers  
05=Disabled FP  
06=EVR/ISD Readiness Check  
99=Internal Error

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code V01 Notes: (Continued)

- 25.                   bb - primary misc event type
  - If aa=01:
    - 01=ISD Startup at:
    - 02=ISD Shutdown at:
    - 03=Time Change Detected at:
  - If aa=03:
    - 01=ISD SelfTest
    - 02=Vapor Processor
    - 03=Containment Gross & Degrd
    - 04=Containment Vapor Leakage
    - 05=Collection Test HHhh grade
    - 06=Sensor Out
  - If aa=04:
    - 01=Vapor Containment Leakage,
    - 02=Containment Gross,
    - 03=Containment Pressure Degradation,
    - 04=Vapor Processor Problem
  - If aa=05:
    - 01=A/L Ratio Gross Blockage,
    - 02=A/L Ratio Degradation,
    - 03=Flow Performance Blk
  - If aa=06:
    - 01=Check Setup Configuration
    - 02=ISD Sensors Readiness Pending
    - 03=Check ISD Sensors
- 26.                   cc - hose number (Hex)
- 27.                   dd - secondary misc event category (Hex) (future uses)
- 28.                   ee - secondary misc event type (Hex) (future uses)
- 29.                   tt - Data type to follow
  - 00=No Data
  - 01=integer
  - 02=floating point number
- 30.                   ff - Data type (optional, depends on tt)
- 31.                   fffffff - Data type (optional, depends on tt, Hex)
- 32.                   && - Data Termination Flag
- 33.                   CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V02**

Version 25

**Function Type:** ISD Monthly Status Report

**Command Format:**

**Display:** <SOH>IV0200yyyyymm

**Computer:** <SOH>iV0200yyyyymm

**Notes:**

1. ISD feature required
2. yyyy - year number (e.g. 2002)
3. mm - month number, 01=January, 02=February, etc.

**Typical Response Message, Display Format:**

```
<SOH>
IV0200
JUN 1, 2002 8:07 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

ISD MONTHLY STATUS REPORT

EVR TYPE: BALANCE
ISD TYPE: V1.00
VAPOR PROCESSOR TYPE: NO VAPOR PROCESSOR

OVERALL STATUS :FAIL EVR VAPOR COLLECTION :NO TEST
EVR VAPOR CONTAINMENT :PASS
ISD MONITOR UP-TIME : 97% STAGE I TRANSFERS: 12 of 12 PASS
EVR/ISD PASS TIME : 5%

CARB EVR CERTIFIED OPERATING REQUIREMENTS

VAPOR COLLECTION ASSIST SYSTEM A/L RANGE Min Max
 0.90 1.10

ISD MONITORING TEST PASS/FAIL THRESHOLDS
VAPOR COLLECTION BALANCE SYS FLOW PERFORMANCE 7DYS 0.60 ----
VAPOR CONTAINMENT GROSS FAIL, 95TH PERCENTILE 7DYS ---- 1.30"WCG
VAPOR CONTAINMENT DEGRADATION, 75TH PERCENTILE 30DYS ---- 0.30"WCG
VAPOR CONTAINMENT PRESSURE INTEGRITY FAIL @2"WCG 7DYS ---- 13.5CFH
STAGE I VAPOR TRANSFER FAIL, 75TH PERCENTILE 20MIN ---- 2.50"WCG

ISD WARNING ALARMS

DATE TIME DESCRIPTION READING VALUE
2002/06/06 23:55 A/L RATIO GROSS BLOCKAGE FP1 SUPER BLKD
2002/06/06 23:55 A/L RATIO GROSS BLOCKAGE FP4 REG BLKD

FAILURE ALARMS

DATE TIME DESCRIPTION READING VALUE
2002/06/07 23:55 A/L RATIO GROSS BLOCKAGE FP8 SUPER BLKD
2002/06/06 23:55 A/L RATIO GROSS BLOCKAGE FP3 REG BLKD
2002/06/06 23:55 A/L RATIO GROSS BLOCKAGE FP8 SUPER BLKD

SHUTDOWN & MISC. EVENT LOG

DATE TIME DESCRIPTION ACTION OR NAME
2002/03/07 23:55 A/L RATIO GROSS BLOCKAGE DISABLED FP8
2002/03/06 23:55 A/L RATIO GROSS BLOCKAGE DISABLED FP3
2002/03/06 23:55 A/L RATIO GROSS BLOCKAGE DISABLED FP8
2002/03/05 23:59 READINESS CODE ISD:PP EVR: PPPP EVR/ISD SYSTEM READY

CARB STANDARD REPORT FORMAT - CP201 APPENDIX "EVR-ISD MONTHLY STATUS REPORT"
<ETX>
```

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V02 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0200YYMMDDHHmmoooffNNmmmmmmmmppgg
NNttttttttqqqSSSSSSSSaabbccddeettf...f...
rrrSSSSSSSSaabbccddeettf...f...
sssSSSSSSSSaabbccddeettf...f...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. oo - Number of CARB EVR Certified Operating Requirement fields (Decimal)
3. ff - Type of CARB EVR Certified Operating Requirement field  
01=Vapor Collection Assist System A/L Range (min/max) [Assist only]
4. NN - number of ASCII Hex IEEE float data fields to follow (Decimal)
5. mmmmmmmmm - CARB EVR Certified Operating Requirement field data (ASCII Hex IEEE float)
6. pp - Number of ISD Monitoring Test Pass/Fail Threshold fields (Decimal)
7. gg - Type of ISD Monitoring Test Pass/Fail Threshold field  
01=Vapor Collection Assist System A/L Gross Fail (Days/Low/High) [Assist only]  
  
02=Vapor Collection Assist System A/L Degradation Fail (Days/Low/High) [Assist only]  
  
03=Vapor Collection Balance System Flow Performance (Days/High) [Balance Only]  
  
04=Vapor Containment Gross Fail, ?? Percentile (Days/High)  
  
05=Vapor Containment Degradation, ?? Percentile (Days/High)  
  
06=Vapor Containment Leak Detection Fail @2\ "WCG (Days/High)  
  
07=Stage I Vapor Transfer Fail, ?? Percentile (Minutes/High)  
  
08=Vapor Processor Pressure Fail, Performed Daily [Vapor Processor Required]  
  
09=Vapor Processor Self Test Fail (Days) [VP Required, VP Control Level: No Control]  
  
10=Vapor Processor HC Emission Concentration Fail (Days/High) [VP Control Level: Full Control]  
  
11=Vapor Processor Duty Cycle Fail, Performed Daily [VP Control Level: Full Control]

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

## Function Code V02 Notes: (Continued)

- ```

8.      NN - number of ASCII Hex IEEE float data fields to follow
          (Decimal)
9.      tttttttt - ISD Monitoring Test Pass/Fail Thresholds field data (ASCII
          Hex IEEE float)
10.     qqq - number of ISD Warning Alarms to follow (Hex)
11.     SSSSSSSS - Timestamp of the Warning Alarm (Seconds since 1/1/1970, Hex)

12.     aa - primary warn event category
13.     bb - primary warn event type
14.     cc - device ID (Hex)
15.     dd - secondary warn event category (Hex)
16.     ee - secondary warn event type (Hex)
17.     tt - Data type to follow
          00=No Data
          01=integer
          02=floating point number
18.     ff - Data type (optional, depends on tt)
19.     ffffffff - Data type (optional, depends on tt, Hex)
20.     rrr - Number of ISD Failure Alarms to follow (Hex)
21.     SSSSSSSS - Timestamp of the Failure Alarm (Seconds since 1/1/1970, Hex)
22.     aa - primary failure event category (Hex)
23.     bb - primary failure event type (Hex)
24.     cc - device ID (Hex)
25.     dd - secondary failure event category (Hex)
26.     ee - secondary failure event type (Hex)
27.     tt - Data type to follow
          00=No Data
          01=integer
          02=floating point number
28.     ff - Data type (optional, depends on tt)
29.     ffffffff - Data type (optional, depends on tt, Hex)
30.     sss - Number of ISD Shutdown & Misc. Events to follow (Hex)
31.     SSSSSSSS - Timestamp of the Shutdown & Misc. Event (Seconds since
          1/1/1970, Hex)

```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code V02 Notes: (Continued)

- 32. aa - primary misc event category
 - 01=System Event
 - 02=Pumps Re-enabled
 - 03=Test Manually Cleared
 - 04=Disabled Dispensers
 - 05=Disabled FP
 - 06=EVR/ISD Readiness Check
 - 99=Internal Error
- 33. bb - primary misc event type
 - If aa=01:
 - 01=ISD Startup at:
 - 02=ISD Shutdown at:
 - 03=Time Change Detected at:
 - If aa=03:
 - 01=ISD SelfTest
 - 02=Vapor Processor
 - 03=Containment Gross & Degrd
 - 04=Containment Vapor Leakage
 - 05=Collection Test HHhh grade
 - 06=Sensor Out
 - If aa=04:
 - 01=Vapor Containment Leakage,
 - 02=Containment Gross,
 - 03=Containment Pressure Degradation,
 - 04=Vapor Processor Problem
 - If aa=05:
 - 01=A/L Ratio Gross Blockage,
 - 02=A/L Ratio Degradation,
 - 03=Flow Performance Blk
 - If aa=06:
 - 01=Check Setup Configuration
 - 02=ISD Sensors Readiness Pending
 - 03=Check ISD Sensors
- 34. cc - hose number (Hex)
- 35. dd - secondary misc event category (Hex) (future uses)
- 36. ee - secondary misc event type (Hex) (future uses)
- 37. tt - Data type to follow
 - 00=No Data
 - 01=integer
 - 02=floating point number
- 38. ff - Data type (optional, depends on tt)
- 39. ffffff - Data type (optional, depends on tt, Hex)
- 40. && - Data Termination Flag
- 41. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: V03
Function Type: ISD Daily Status Report

Version 25

Command Format:
Display: <SOH>IV0300YYYYMMDD
Computer: <SOH>iV0300YYYYMMDD

Notes:

1. ISD feature required
2. YYYYMMDD - Year/Month/Day of records

Typical Response Message, Display Format:

```
<SOH>
IV0300
JUN  1, 2002  8:07 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

ISD DAILY STATUS REPORT:  Report Date - MMM DD, YYYY

EVR TYPE: BALANCE
ISD TYPE: V1.00
VAPOR PROCESSOR TYPE: NO VAPOR PROCESSOR

OVERALL STATUS           :FAIL  EVR VAPOR COLLECTION :NO TEST
EVR VAPOR CONTAINMENT    :PASS
ISD MONITOR UP-TIME      : 97%  STAGE I TRANSFERS:  12 of 12 PASS
EVR/ISD PASS TIME       :   5%

CARB EVR CERTIFIED OPERATING REQUIREMENTS

VAPOR COLLECTION ASSIST SYSTEM A/L RANGE           Min      Max
                                                    0.90      1.10

ISD MONITORING TEST PASS/FAIL THRESHOLDS
VAPOR COLLECTION BALANCE SYS FLOW PERFORMANCE    7DYS      0.60      ----
VAPOR CONTAINMENT GROSS FAIL, 95TH PERCENTILE    7DYS      ----      1.30"WCG
VAPOR CONTAINMENT DEGRADATION, 75TH PERCENTILE   30DYS     ----      0.30"WCG
VAPOR CONTAINMENT PRESSURE INTEGRITY FAIL @2"WCG  7DYS      ----      13.5CFH
STAGE I VAPOR TRANSFER FAIL, 75TH PERCENTILE     20MIN     ----      2.50"WCG

ISD WARNING ALARMS

DATE      TIME      DESCRIPTION                      READING      VALUE
2002/06/07 23:55    A/L RATIO GROSS BLOCKAGE          FP7 MID      BLKD
2002/06/06 23:55    A/L RATIO GROSS BLOCKAGE          FP1 SUPER    BLKD
2002/06/06 23:55    A/L RATIO GROSS BLOCKAGE          FP4 REG      BLKD

FAILURE ALARMS

DATE      TIME      DESCRIPTION                      READING      VALUE
2002/06/07 23:55    A/L RATIO GROSS BLOCKAGE          FP8 SUPER    BLKD
2002/06/06 23:55    A/L RATIO GROSS BLOCKAGE          FP3 REG      BLKD
2002/06/06 23:55    A/L RATIO GROSS BLOCKAGE          FP8 SUPER    BLKD

SHUTDOWN & MISC. EVENT LOG

DATE      TIME      DESCRIPTION                      ACTION OR NAME
2002/03/06 23:55    A/L RATIO GROSS BLOCKAGE          DISABLED FP3
2002/03/06 23:55    A/L RATIO GROSS BLOCKAGE          DISABLED FP8
2002/03/05 23:59    READINESS CODE ISD:PP EVR: PPPP EVR/ISD SYSTEM READY

CARB STANDARD REPORT FORMAT - CP201 APPENDIX "EVR-ISD DAILY STATUS REPORT"
<ETX>
```


Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code V03 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iV0300YYMMDDHHmmoooffNNmmmmmmmmppgg
NNttttttttqqqSSSSSSSSaabbccddeettff...f...
rrrSSSSSSSSaabbccddeettff...f...
sssSSSSSSSSaabbccddeettff...f...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Time/Date stamp of report
2. oo - Number of CARB EVR Certified Operating Requirement fields (Decimal)
3. ff - Type of CARB EVR Certified Operating Requirement field
01=Vapor Collection Assist System A/L Range (min/max) [Assist only]
4. NN - number of ASCII Hex IEEE float data fields to follow (Decimal)
5. mmmmmmmmm - CARB EVR Certified Operating Requirement field data (ASCII Hex IEEE float)
6. pp - Number of ISD Monitoring Test Pass/Fail Threshold fields (Decimal)
7. gg - Type of ISD Monitoring Test Pass/Fail Threshold field
01=Vapor Collection Assist System A/L Gross Fail (Days/Low/High) [Assist only]

02=Vapor Collection Assist System A/L Degradation Fail (Days/Low/High) [Assist only]

03=Vapor Collection Balance System Flow Performance (Days/High) [Balance Only]

04=Vapor Containment Gross Fail, ?? Percentile (Days/High)

05=Vapor Containment Degradation, ?? Percentile (Days/High)

06=Vapor Containment Leak Detection Fail @2\ "WCG (Days/High)

07=Stage I Vapor Transfer Fail, ?? Percentile (Minutes/High)

08=Vapor Processor Pressure Fail, Performed Daily [Vapor Processor Required]

09=Vapor Processor Self Test Fail (Days) [VP Required, VP Control Level: No Control]

10=Vapor Processor HC Emission Concentration Fail (Days/High) [VP Control Level: Full Control]

11=Vapor Processor Duty Cycle Fail, Performed Daily [VP Control Level: Full Control]

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code V03 Notes: (Continued)

- ```

8. NN - number of ASCII Hex IEEE float data fields to follow
 (Decimal)
9. tttttttt - ISD Monitoring Test Pass/Fail Thresholds field data (ASCII
 Hex IEEE float)
10. qq - number of ISD Warning Alarms to follow (Hex)
11. SSSSSSSS - Timestamp of the Warning Alarm (Seconds since 1/1/1970, Hex)
12. aa - primary warn event category
13. bb - primary warn event type
14. cc - device ID (Hex)
15. dd - secondary warn event category (Hex)
16. ee - secondary warn event type (Hex)
17. tt - Data type to follow
 00=No Data
 01=integer
 02=floating point number
18. ff - Data type (optional, depends on tt)
19. ffffffff - Data type (optional, depends on tt, Hex)
20. rrr - Number of ISD Failure Alarms to follow (Hex)
21. SSSSSSSS - Timestamp of the Failure Alarm (Seconds since 1/1/1970, Hex)
22. aa - primary failure event category (Hex)
23. bb - primary failure event type (Hex)
24. cc - device ID (Hex)
25. dd - secondary failure event category (Hex)
26. ee - secondary failure event type (Hex)
27. tt - Data type to follow
 00=No Data
 01=integer
 02=floating point number
28. ff - Data type (optional, depends on tt)
29. ffffffff - Data type (optional, depends on tt, Hex)
30. sss - Number of ISD Shutdown & Misc. Events to follow (Hex)
31. SSSSSSSS - Timestamp of the Shutdown & Misc. Event (Seconds since
 1/1/1970, Hex)

```

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code V03 Notes: (Continued)

- 32.           aa - primary misc event category
  - 01=System Event
  - 02=Pumps Re-enabled
  - 03=Test Manually Cleared
  - 04=Disabled Dispensers
  - 05=Disabled FP
  - 06=EVR/ISD Readiness Check
  - 99=Internal Error
- 33.           bb - primary misc event type
  - If aa=01:
    - 01=ISD Startup at:
    - 02=ISD Shutdown at:
    - 03=Time Change Detected at:
  - If aa=03:
    - 01=ISD SelfTest
    - 02=Vapor Processor
    - 03=Containment Gross & Degrd
    - 04=Containment Vapor Leakage
    - 05=Collection Test HHhh grade
    - 06=Sensor Out
  - If aa=04:
    - 01=Vapor Containment Leakage,
    - 02=Containment Gross,
    - 03=Containment Pressure Degradation,
    - 04=Vapor Processor Problem
  - If aa=05:
    - 01=A/L Ratio Gross Blockage,
    - 02=A/L Ratio Degradation,
    - 03=Flow Performance Blk
  - If aa=06:
    - 01=Check Setup Configuration
    - 02=ISD Sensors Readiness Pending
    - 03=Check ISD Sensors
- 34.           cc - hose number (Hex)
- 35.           dd - secondary misc event category (Hex) (future uses)
- 36.           ee - secondary misc event type (Hex) (future uses)
- 37.           tt - Data type to follow
  - 00=No Data
  - 01=integer
  - 02=floating point number
- 38.           ff - Data type (optional, depends on tt)
- 39.           ffffff - Data type (optional, depends on tt, Hex)
- 40.           && - Data Termination Flag
- 41.           CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V04**

Version 25

**Function Type:** ISD Daily Report Details (by month)

**Command Format:**

**Display:** <SOH>IV0400yyyyymm

**Computer:** <SOH>iV0400yyyyymm

### Notes:

1. ISD feature required
2. yyyy - year number (e.g. 2002)
3. mm - month number, 01=January, 02=February, etc.

### Typical Response Message, Display Format:

<SOH>  
IV0400  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

ISD DAILY REPORT DETAILS

EVR Type: BALANCE  
ISD Type: V1.00  
Vapor Processor Type: VST VAPOR PROCESSOR

OVERALL STATUS :FAIL EVR VAPOR COLLECTION :NO TEST  
EVR VAPOR CONTAINMENT :PASS  
ISD MONITOR UP-TIME : 97% STAGE I TRANSFERS: 12 of 12 PASS  
EVR/ISD PASS TIME : 5%

Status Codes: (W)Warn (F)Fail (D)Degradation (G)Gross Fail (ISD-W) ISD SelfTest-Warn (ISD-F) ISD SelfTest-Fail (N)No Test

	ISD	ISD	---Containment Tests---					Stage	----Collection Tests----					Daily Average	
Date	EVR	Status	%UP	Gross	Dgrd	Max	Min	Leak	I	Vapor	FP1	FP1	FP1	FP2	FP2
			Time	95%	75%	"wc	"wc	CFH	Xfr	PrCSR	Reg	Super	Mid	Reg	Super
02/19	F	100%	2.1N	-0.1N	0.0	-0.1	10N	Pass	Pass	Pass	0.79	1.00	1.09	1.06	1.05
02/20	F	100%	0.3N	-0.1N	-0.4	0.4	5 N	Pass	Pass	Pass	1.05	0.97	1.08	1.08	1.03
02/21	F	100%	-0.2N	-0.2N	-0.6	0.6	0 N	Pass	Pass	Pass	1.17	1.03	1.08	1.01	0.98
02/22	F	100%	0.9	-0.1N	-0.2	0.2	0	Pass	Pass	Pass	1.05	0.96	1.05	0.96	0.93
02/23	F	100%	-0.1	-0.2N	-0.9	0.9	0	Pass	Pass	Pass	0.93	1.02	1.06	1.04	0.92
02/24	F	100%	0.4	-0.2N	-0.3	0.3	0	Pass	Pass	Pass	1.03	1.02	1.05	1.04	0.98
02/25	F	100%	-0.3	-0.2N	-0.8	0.8	0	Pass	Pass	Pass	0.86	1.02	1.06	0.99	0.99
02/26	F	100%	0.6	-0.2N	-0.4	0.4	0	Pass	Pass	Pass	Blkd	Blkd	1.05	Blkd	1.11
02/27	F	100%	-0.3	-0.2N	-0.7	0.7	0	Pass	Pass	Pass	1.00	Blkd	1.05	1.01	1.10
02/28	F	100%	-0.1	-0.2N	-0.6	0.6	0	Pass	Pass	Pass	1.05	Blkd	1.01	1.02	0.98

	Hose Flow Performance-----Collection Tests-----									
Date	FP3	FP3	FP3	FP4	FP4	FP4	FP5	FP5	FP5	
	Reg	Super	Mid	Reg	Super	Mid	Reg	Super	Mid	
02/19	Blkd	0.68N	1.00N	Blkd	0.87	0.96	Blkd	0.87	0.92	
02/20	Blkd	0.75	1.00N	Blkd	0.83	0.97	0.86	1.09	0.92	
02/21	Blkd	0.80	1.04	Blkd	0.89	1.00	0.88	1.12	1.03	
02/22	Blkd	0.77	1.09	Blkd	Blkd	0.95	Blkd	1.12	1.04	
02/23	Blkd	0.95	1.03	Blkd	Blkd	0.93	Blkd	1.15	0.99	
02/24	N N	0.96	0.99	Blkd	0.72N	0.98	Blkd	1.02	0.89	
02/25	N N	0.90	1.07	0.76	0.67N	0.99	Blkd	1.01	0.91	
02/26	0.69N	0.90	1.06	0.71	Blkd	0.93	Blkd	0.99	0.95	
02/27	Blkd	0.97	1.06	Blkd	Blkd	0.94	Blkd	1.02	0.88	
02/28	Blkd	0.82	1.02	Blkd	Blkd	0.89	Blkd	0.90	1.14	

CARB Standard Report Format - CP201 Appendix "EVR-ISD Monthly Details Report"  
<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V04 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0400YYMMDDHHmmiiiiMMDDaddskkkkkkkksttttttttrrrrrrrrvvvvvvvv
 scccccccegnffhhsmmmmmmmmmm...
 nnffhhsmmmmmmmmmm&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MMDD - Date stamp of the day detail record
4. a - ISD EVR 1 status character
5. dd - ISD Monitor Up Time % (Hex) (00-64)
6. s - status for containment gros
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
7. kkkkkkkk - Containment Gross value (-0.01=Blkd) (ASCII Hex IEEE float)
8. s - status for containment degradation
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
9. tttttttt - Containment Degradation value (-0.01=Blkd) (ASCII Hex IEEE float)
10. rrrrrrrr - Containment Min value (-0.01=Blkd) (ASCII Hex IEEE float)
11. vvvvvvvv - Containment Max value (-0.01=Blkd) (ASCII Hex IEEE float)
12. s - status for containment leak
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
13. cccccccc - Containment Leak value (-0.01=Blkd) (ASCII Hex IEEE float)
14. e - status for Stage I Transfer
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
15. g - status for Vapor Processor
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
16. nn - number of records consisting of 1 status character & one ASCII Hex IEEE Float to follow (Hex)
17. ff - fuel position number (Decimal)
18. hh - hose number (Decimal)
19. s - status for hose
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
20. mmmmmmmm - A/L Ratio value (-0.01=Blkd) (ASCII Hex IEEE float)
21. && - Data Termination Flag
22. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

Function Code: V05

Version 25

Function Type: ISD Daily Report Details (by day(s))

### Command Format:

Display: <SOH>IV0500ddd

Computer: <SOH>iV0500ddd

### Notes:

1. ISD feature required
2. ddd - number of days  
000=current day  
001=yesterday & today  
002=including two days ago, etc.

### Typical Response Message, Display Format:

<SOH>  
IV0500  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

ISD DAILY REPORT DETAILS

EVR Type: BALANCE  
ISD Type: V1.00  
Vapor Processor Type: VST VAPOR PROCESSOR

OVERALL STATUS :FAIL EVR VAPOR COLLECTION :NO TEST  
EVR VAPOR CONTAINMENT :PASS  
ISD MONITOR UP-TIME : 97% STAGE I TRANSFERS: 12 of 12 PASS  
EVR/ISD PASS TIME : 5%

Status Codes: (W)Warn (F)Fail (D)Degradation (G)Gross Fail (ISD-W) ISD SelfTest-Warn (ISD-F) ISD SelfTest-Fail (N)No Test

	ISD	ISD	---Containment Tests---					Stage	----Collection Tests----					Daily Average		
	EVR	%UP	Gross	Dgrd	Max	Min	Leak	I	Vapor	FP1	FP1	FP1	FP2	FP2	FP2	
Date	Status	Time	95%	75%	"wc	"wc	CFH	Xfr	PrCSR	Reg	Super	Mid	Reg	Super	Mid	
02/19	F	100%	2.1N	-0.1N	0.0	-0.1	10N	Pass	Pass	0.79	1.00	1.09	1.06	1.05	1.00	
02/20	F	100%	0.3N	-0.1N	-0.4	0.4	5 N			1.05	0.97	1.08	1.08	1.03	0.90	
02/21	F	100%	-0.2N	-0.2N	-0.6	0.6	0 N	Pass	Pass	1.17	1.03	1.08	1.01	0.98	0.91	
02/22	F	100%	0.9	-0.1N	-0.2	0.2	0			1.05	0.96	1.05	0.96	0.93	1.06	
02/23	F	100%	-0.1	-0.2N	-0.9	0.9	0	Pass	Pass	0.93	1.02	1.06	1.04	0.92	0.97	
02/24	F	100%	0.4	-0.2N	-0.3	0.3	0			1.03	1.02	1.05	1.04	0.98	0.94	
02/25	F	100%	-0.3	-0.2N	-0.8	0.8	0	Pass	Pass	0.86	1.02	1.06	0.99	0.99	1.00	
02/26	F	100%	0.6	-0.2N	-0.4	0.4	0	Pass	Pass	Blkd	Blkd	1.05	Blkd	1.11	1.06	
02/27	F	100%	-0.3	-0.2N	-0.7	0.7	0			1.00	Blkd	1.05	1.01	1.10	0.0W	
02/28	F	100%	-0.1	-0.2N	-0.6	0.6	0	Pass	Pass	1.05	Blkd	1.01	1.02	0.98	1.06	

	-----Collection Tests-----									
	FP3	FP3	FP3	FP4	FP4	FP4	FP5	FP5	FP5	
Date	Reg	Super	Mid	Reg	Super	Mid	Reg	Super	Mid	
02/19	Blkd	0.68N	1.00N	Blkd	0.87	0.96	Blkd	0.87	0.92	
02/20	Blkd	0.75	1.00N	Blkd	0.83	0.97	0.86	1.09	0.92	
02/21	Blkd	0.80	1.04	Blkd	0.89	1.00	0.88	1.12	1.03	
02/22	Blkd	0.77	1.09	Blkd	Blkd	0.95	Blkd	1.12	1.04	
02/23	Blkd	0.95	1.03	Blkd	Blkd	0.93	Blkd	1.15	0.99	
02/24	N N	0.96	0.99	Blkd	0.72N	0.98	Blkd	1.02	0.89	
02/25	N N	0.90	1.07	0.76	0.67N	0.99	Blkd	1.01	0.91	
02/26	0.69N	0.90	1.06	0.71	Blkd	0.93	Blkd	0.99	0.95	
02/27	Blkd	0.97	1.06	Blkd	Blkd	0.94	Blkd	1.02	0.88	
02/28	Blkd	0.82	1.02	Blkd	Blkd	0.89	Blkd	0.90	1.14	

CARB Standard Report Format - CP201 Appendix "EVR-ISD Monthly Details Report"  
<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V05 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0500YYMMDDHHmmiiiiMMDDaddskkkkkkkksttttttttrrrrrrrrvvvvvvvv...
 sccccccccegnnffhhsmmmmmmmmmm&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MMDD - Date stamp of the day detail record
4. a - ISD EVR 1 status character
  - 0=N/A
  - 1=WARN
  - 2=FAIL
  - 3=PASS
  - 4=ISD/W
  - 5=ISD/F
5. dd - ISD Monitor Up Time % (Hex) (0-100)
6. s - status for containment gross
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
7. kkkkkkkk - Containment Gross value (ASCII Hex IEEE float) (-0.01=Blkd)
8. s - status for containment degradation
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
9. tttttttt - Containment Degradation value (ASCII Hex IEEE float) (-0.01=Blkd)
10. rrrrrrrr - Containment Min value (ASCII Hex IEEE float) (-0.01=Blkd)
11. vvvvvvvv - Containment Max value (ASCII Hex IEEE float) (-0.01=Blkd)
12. s - status for containment leak
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
13. cccccccc - Containment Leak value (ASCII Hex IEEE float) (-0.01=Blkd)
14. e - status for Stage I Transfer
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
15. g - status for Vapor Processor
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code V05 Notes: (Continued)

- 16.                nn - number of records consisting of 1 status character & one  
                     ASCII Hex IEEE Float to follow (-0.01=Blkd) (Decimal)
- 17.                ff - fuel position number (Decimal)
- 18.                hh - hose number (Decimal)
- 19.                s - status for hose  
                     0=NO TEST  
                     1=WARN  
                     2=FAIL  
                     3=PASS
- 20.                mmmmmmmmm - A/L Ratio value (ASCII Hex IEEE float)
- 21.                && - Data Termination Flag
- 22.                CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V06**

Version 25

**Function Type:** ISD Daily Report Details, 132 columns (by month)

**Command Format:**

**Display:** <SOH>IV0600yyyyymm

**Computer:** <SOH>iV0600yyyyymm

### Notes:

1. ISD feature required
2. yyyy - year number (e.g. 2002)
3. mm - month number, 01=January, 02=February, etc.

### Typical Response Message, Display Format:

<SOH>  
IV0600  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

ISD DAILY REPORT DETAILS

EVR Type: BALANCE  
ISD Type: V1.00  
Vapor Processor Type: VST VAPOR PROCESSOR

OVERALL STATUS :FAIL EVR VAPOR COLLECTION :NO TEST  
EVR VAPOR CONTAINMENT :PASS  
ISD MONITOR UP-TIME : 97% STAGE I TRANSFERS: 12 of 12 PASS  
EVR/ISD PASS TIME : 5%

Status Codes: (W)Warn (F)Fail (D)Degradation (G)Gross Fail (ISD-W) ISD SelfTest-Warn (ISD-F) ISD SelfTest-Fail (N)No Test

	ISD	ISD	---Containment Tests---						Stage	----Collection Tests----						Daily Average	
	EVR	Status	%UP	Gross	Dgrd	Max	Min	Leak	I	Vapor	FP1	FP1	FP1	FP2	FP2	FP2	
Date			Time	95%	75%	"wc	"wc	CFH	Xfr	PrCSR	Reg	Super	Mid	Reg	Super	Mid	
02/19	F		100%	2.1N	-0.1N	0.0	-0.1	10N	Pass	Pass	0.79	1.00	1.09	1.06	1.05	1.00	
02/20	F		100%	0.3N	-0.1N	-0.4	0.4	5 N			1.05	0.97	1.08	1.08	1.03	0.90	
02/21	F		100%	-0.2N	-0.2N	-0.6	0.6	0 N	Pass	Pass	1.17	1.03	1.08	1.01	0.98	0.91	
02/22	F		100%	0.9	-0.1N	-0.2	0.2	0			1.05	0.96	1.05	0.96	0.93	1.06	
02/23	F		100%	-0.1	-0.2N	-0.9	0.9	0	Pass	Pass	0.93	1.02	1.06	1.04	0.92	0.97	
02/24	F		100%	0.4	-0.2N	-0.3	0.3	0			1.03	1.02	1.05	1.04	0.98	0.94	
02/25	F		100%	-0.3	-0.2N	-0.8	0.8	0	Pass	Pass	0.86	1.02	1.06	0.99	0.99	1.00	
02/26	F		100%	0.6	-0.2N	-0.4	0.4	0	Pass	Pass	Blkd	Blkd	1.05	Blkd	1.11	1.06	
02/27	F		100%	-0.3	-0.2N	-0.7	0.7	0			1.00	Blkd	1.05	1.01	1.10	0.0W	
02/28	F		100%	-0.1	-0.2N	-0.6	0.6	0	Pass	Pass	1.05	Blkd	1.01	1.02	0.98	1.06	

	-----Collection Tests-----									
	FP3	FP3	FP3	FP4	FP4	FP4	FP5	FP5	FP5	
Date	Reg	Super	Mid	Reg	Super	Mid	Reg	Super	Mid	
02/19	Blkd	0.68N	1.00N	Blkd	0.87	0.96	Blkd	0.87	0.92	
02/20	Blkd	0.75	1.00N	Blkd	0.83	0.97	0.86	1.09	0.92	
02/21	Blkd	0.80	1.04	Blkd	0.89	1.00	0.88	1.12	1.03	
02/22	Blkd	0.77	1.09	Blkd	Blkd	0.95	Blkd	1.12	1.04	
02/23	Blkd	0.95	1.03	Blkd	Blkd	0.93	Blkd	1.15	0.99	
02/24	N N	0.96	0.99	Blkd	0.72N	0.98	Blkd	1.02	0.89	
02/25	N N	0.90	1.07	0.76	0.67N	0.99	Blkd	1.01	0.91	
02/26	0.69N	0.90	1.06	0.71	Blkd	0.93	Blkd	0.99	0.95	
02/27	Blkd	0.97	1.06	Blkd	Blkd	0.94	Blkd	1.02	0.88	
02/28	Blkd	0.82	1.02	Blkd	Blkd	0.89	Blkd	0.90	1.14	

CARB Standard Report Format - CP201 Appendix "EVR-ISD Monthly Details Report"  
<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V06 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0600YYMMDDHHmmiiiiMMDDaddskkkkkkkksttttttttrrrrrrrrvvvvvvvv...
 sccccccccegnnfhhsmmmmmmmmm&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MMDD - Date stamp of the day detail record
4. a - ISD EVR 1 status character
  - 0=N/A
  - 1=WARN
  - 2=FAIL
  - 3=PASS
  - 4=ISD/W
  - 5=ISD/F
5. dd - ISD Monitor Up Time % (Hex) (0-100)
6. s - status for containment gross
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
7. kkkkkkkk - Containment Gross value (ASCII Hex IEEE float) (-0.01=Blkd)
8. s - status for containment degradation
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
9. tttttttt - Containment Degradation value (ASCII Hex IEEE float) (-0.01=Blkd)
10. rrrrrrrr - Containment Min value (ASCII Hex IEEE float) (-0.01=Blkd)
11. vvvvvvvv - Containment Max value (ASCII Hex IEEE float) (-0.01=Blkd)
12. s - status for containment leak
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
13. cccccccc - Containment Leak value (ASCII Hex IEEE float) (-0.01=Blkd)
14. e - status for Stage I Transfer
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
15. g - status for Vapor Processor
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code V06 Notes: (Continued)

- 16.               nn - number of records consisting of 1 status character & one  
                  ASCII Hex IEEE Float to follow (-0.01=Blkd) (Decimal)
- 17.               ff - fuel position number (Decimal)
- 18.               hh - hose number (Decimal)
- 19.               s - status for hose  
                  0=NO TEST  
                  1=WARN  
                  2=FAIL  
                  3=PASS
- 20.               mmmmmmmmmm - A/L Ratio value (ASCII Hex IEEE float)
- 21.               && - Data Termination Flag
- 22.               CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

Function Code: V07

Version 25

Function Type: ISD Daily Report Details (by day(s))

### Command Format:

Display: <SOH>IV0700ddd

Computer: <SOH>iV0700ddd

### Notes:

1. ISD feature required
2. ddd - number of days  
000=current day  
001=yesterday & today  
002=including two days ago, etc.

### Typical Response Message, Display Format:

<SOH>  
IV0700  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

ISD DAILY REPORT DETAILS

EVR Type: BALANCE  
ISD Type: V1.00  
Vapor Processor Type: VST VAPOR PROCESSOR

OVERALL STATUS :FAIL EVR VAPOR COLLECTION :NO TEST  
EVR VAPOR CONTAINMENT :PASS  
ISD MONITOR UP-TIME : 97% STAGE I TRANSFERS: 12 of 12 PASS  
EVR/ISD PASS TIME : 5%

Status Codes: (W)Warn (F)Fail (D)Degradation (G)Gross Fail (ISD-W) ISD SelfTest-Warn (ISD-F) ISD SelfTest-Fail (N)No Test

	ISD	ISD	---Containment Tests---					Stage	----Collection Tests----					---Daily Average---		
	EVR	%UP	Gross	Dgrd	Max	Min	Leak	I	Vapor	FP1	FP1	FP1	FP2	FP2	FP2	
Date	Status	Time	95%	75%	"wc	"wc	CFH	Xfr	PrCSR	Reg	Super	Mid	Reg	Super	Mid	
02/19	F	100%	2.1N	-0.1N	0.0	-0.1	10N	Pass	Pass	0.79	1.00	1.09	1.06	1.05	1.00	
02/20	F	100%	0.3N	-0.1N	-0.4	0.4	5 N			1.05	0.97	1.08	1.08	1.03	0.90	
02/21	F	100%	-0.2N	-0.2N	-0.6	0.6	0 N	Pass	Pass	1.17	1.03	1.08	1.01	0.98	0.91	
02/22	F	100%	0.9	-0.1N	-0.2	0.2	0			1.05	0.96	1.05	0.96	0.93	1.06	
02/23	F	100%	-0.1	-0.2N	-0.9	0.9	0	Pass	Pass	0.93	1.02	1.06	1.04	0.92	0.97	
02/24	F	100%	0.4	-0.2N	-0.3	0.3	0			1.03	1.02	1.05	1.04	0.98	0.94	
02/25	F	100%	-0.3	-0.2N	-0.8	0.8	0	Pass	Pass	0.86	1.02	1.06	0.99	0.99	1.00	
02/26	F	100%	0.6	-0.2N	-0.4	0.4	0	Pass	Pass	Blkd	Blkd	1.05	Blkd	1.11	1.06	
02/27	F	100%	-0.3	-0.2N	-0.7	0.7	0			1.00	Blkd	1.05	1.01	1.10	0.0W	
02/28	F	100%	-0.1	-0.2N	-0.6	0.6	0	Pass	Pass	1.05	Blkd	1.01	1.02	0.98	1.06	

	-----Collection Tests-----									
Date	Reg	Super	Mid	Reg	Super	Mid	Reg	Super	Mid	
02/19	Blkd	0.68N	1.00N	Blkd	0.87	0.96	Blkd	0.87	0.92	
02/20	Blkd	0.75	1.00N	Blkd	0.83	0.97	0.86	1.09	0.92	
02/21	Blkd	0.80	1.04	Blkd	0.89	1.00	0.88	1.12	1.03	
02/22	Blkd	0.77	1.09	Blkd	Blkd	0.95	Blkd	1.12	1.04	
02/23	Blkd	0.95	1.03	Blkd	Blkd	0.93	Blkd	1.15	0.99	
02/24	N N	0.96	0.99	Blkd	0.72N	0.98	Blkd	1.02	0.89	
02/25	N N	0.90	1.07	0.76	0.67N	0.99	Blkd	1.01	0.91	
02/26	0.69N	0.90	1.06	0.71	Blkd	0.93	Blkd	0.99	0.95	
02/27	Blkd	0.97	1.06	Blkd	Blkd	0.94	Blkd	1.02	0.88	
02/28	Blkd	0.82	1.02	Blkd	Blkd	0.89	Blkd	0.90	1.14	

CARB Standard Report Format - CP201 Appendix "EVR-ISD Monthly Details Report"  
<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V07 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0700YYMMDDHHmmiiiiMMDDadddskkkkkkkksttttttttrrrrrrrrvvvvvvvv...
 sccccccccegnnffhhsmmmmmmmmmm&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MMDD - Date stamp of the day detail record
4. a - ISD EVR 1 status character
  - 0=N/A
  - 1=WARN
  - 2=FAIL
  - 3=PASS
  - 4=ISD/W
  - 5=ISD/F
5. dd - ISD Monitor Up Time % (Hex) (0-100)
6. s - status for containment gross
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
7. kkkkkkkk - Containment Gross value (ASCII Hex IEEE float) (-0.01=Blkd)
8. s - status for containment degradation
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
9. tttttttt - Containment Degradation value (ASCII Hex IEEE float) (-0.01=Blkd)
10. rrrrrrrr - Containment Min value (ASCII Hex IEEE float) (-0.01=Blkd)
11. vvvvvvvv - Containment Max value (ASCII Hex IEEE float) (-0.01=Blkd)
12. s - status for containment leak
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
13. cccccccc - Containment Leak value (ASCII Hex IEEE float) (-0.01=Blkd)
14. e - status for Stage I Transfer
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
15. g - status for Vapor Processor
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code V07 Notes: (Continued)

- 16.               nn - number of records consisting of 1 status character & one  
                  ASCII Hex IEEE Float to follow (-0.01=Blkd) (Decimal)
- 17.               ff - fuel position number (Decimal)
- 18.               hh - hose number (Decimal)
- 19.               s - status for hose
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
- 20.               mmmmmmmmmm - A/L Ratio value (ASCII Hex IEEE float)
- 21.               && - Data Termination Flag
- 22.               CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V08**

Version 25

**Function Type:** ISD Daily Report Details (by month)

**Command Format:**

**Display:** <SOH>IV0800yyyyymmCCC

**Computer:** <SOH>iV0800yyyyymmCCC

### Notes:

1. ISD feature required
2. yyyy - year number (e.g. 2002)
3. mm - month number, 01=January, 02=February, etc.
4. CCC - Number of columns, Default=255 [055-999] (Decimal)

### Typical Response Message, Display Format:

<SOH>  
IV0800  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

ISD DAILY REPORT DETAILS

EVR Type: BALANCE  
ISD Type: V1.00  
Vapor Processor Type: VST VAPOR PROCESSOR

OVERALL STATUS :FAIL EVR VAPOR COLLECTION :NO TEST  
EVR VAPOR CONTAINMENT :PASS  
ISD MONITOR UP-TIME : 97% STAGE I TRANSFERS: 12 of 12 PASS  
EVR/ISD PASS TIME : 5%

Status Codes: (W)Warn (F)Fail (D)Degradation (G)Gross Fail (ISD-W) ISD SelfTest-Warn (ISD-F) ISD SelfTest-Fail (N)No Test

	ISD	ISD	---Containment Tests---					Stage	----Collection Tests----					Daily Average		
	EVR	%UP	Gross	Dgrd	Max	Min	Leak	I Vapor	FP1	FP1	FP1	FP2	FP2	FP2		
Date	Status	Time	95%	75%	"wc	"wc	CFH	Xfr Prcsr	Reg	Super	Mid	Reg	Super	Mid		
02/19	F	100%	2.1N	-0.1N	0.0	-0.1	10N	Pass Pass	0.79	1.00	1.09	1.06	1.05	1.00		
02/20	F	100%	0.3N	-0.1N	-0.4	0.4	5 N		1.05	0.97	1.08	1.08	1.03	0.90		
02/21	F	100%	-0.2N	-0.2N	-0.6	0.6	0 N	Pass Pass	1.17	1.03	1.08	1.01	0.98	0.91		
02/22	F	100%	0.9	-0.1N	-0.2	0.2	0		1.05	0.96	1.05	0.96	0.93	1.06		
02/23	F	100%	-0.1	-0.2N	-0.9	0.9	0	Pass Pass	0.93	1.02	1.06	1.04	0.92	0.97		
02/24	F	100%	0.4	-0.2N	-0.3	0.3	0		1.03	1.02	1.05	1.04	0.98	0.94		
02/25	F	100%	-0.3	-0.2N	-0.8	0.8	0	Pass Pass	0.86	1.02	1.06	0.99	0.99	1.00		
02/26	F	100%	0.6	-0.2N	-0.4	0.4	0	Pass Pass	Blkd	Blkd	1.05	Blkd	1.11	1.06		
02/27	F	100%	-0.3	-0.2N	-0.7	0.7	0		1.00	Blkd	1.05	1.01	1.10	0.0W		
02/28	F	100%	-0.1	-0.2N	-0.6	0.6	0	Pass Pass	1.05	Blkd	1.01	1.02	0.98	1.06		

	-----Collection Tests-----									
	FP3	FP3	FP3	FP4	FP4	FP4	FP5	FP5	FP5	
Date	Reg	Super	Mid	Reg	Super	Mid	Reg	Super	Mid	
02/19	Blkd	0.68N	1.00N	Blkd	0.87	0.96	Blkd	0.87	0.92	
02/20	Blkd	0.75	1.00N	Blkd	0.83	0.97	0.86	1.09	0.92	
02/21	Blkd	0.80	1.04	Blkd	0.89	1.00	0.88	1.12	1.03	
02/22	Blkd	0.77	1.09	Blkd	Blkd	0.95	Blkd	1.12	1.04	
02/23	Blkd	0.95	1.03	Blkd	Blkd	0.93	Blkd	1.15	0.99	
02/24	N N	0.96	0.99	Blkd	0.72N	0.98	Blkd	1.02	0.89	
02/25	N N	0.90	1.07	0.76	0.67N	0.99	Blkd	1.01	0.91	
02/26	0.69N	0.90	1.06	0.71	Blkd	0.93	Blkd	0.99	0.95	
02/27	Blkd	0.97	1.06	Blkd	Blkd	0.94	Blkd	1.02	0.88	
02/28	Blkd	0.82	1.02	Blkd	Blkd	0.89	Blkd	0.90	1.14	

CARB Standard Report Format - CP201 Appendix "EVR-ISD Monthly Details Report"  
<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V08 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0800YYMMDDHHmmiiiiMMDDadddskkkkkkkksttttttttrrrrrrrrvvvvvvvv...
 sccccccccegnnffhhsmmmmmmmmmm&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MMDD - Date stamp of the day detail record
4. a - ISD EVR 1 status character
  - 0=N/A
  - 1=WARN
  - 2=FAIL
  - 3=PASS
  - 4=ISD/W
  - 5=ISD/F
5. dd - ISD Monitor Up Time % (Hex) (0-100)
6. s - status for containment gross
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
7. kkkkkkkk - Containment Gross value (ASCII Hex IEEE float) (-0.01=Blkd)
8. s - status for containment degradation
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
9. tttttttt - Containment Degradation value (ASCII Hex IEEE float) (-0.01=Blkd)
10. rrrrrrrr - Containment Min value (ASCII Hex IEEE float) (-0.01=Blkd)
11. vvvvvvvv - Containment Max value (ASCII Hex IEEE float) (-0.01=Blkd)
12. s - status for containment leak
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
13. cccccccc - Containment Leak value (ASCII Hex IEEE float) (-0.01=Blkd)
14. e - status for Stage I Transfer
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
15. g - status for Vapor Processor
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS



## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code V08 Notes: (Continued)

- 16.               nn - number of records consisting of 1 status character & one  
                  ASCII Hex IEEE Float to follow (-0.01=Blkd) (Decimal)
- 17.               ff - fuel position number (Decimal)
- 18.               hh - hose number (Decimal)
- 19.               s - status for hose
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
- 20.               mmmmmmmmmm - A/L Ratio value (ASCII Hex IEEE float)
- 21.               && - Data Termination Flag
- 22.               CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V09**

Version 25

**Function Type:** ISD Daily Report Details, user input columns (by day(s))

**Command Format:**

**Display:** <SOH>IV0900dddCCC

**Computer:** <SOH>iV0900dddCCC

### Notes:

1. ISD feature required
2. ddd - number of days  
000=current day  
001=yesterday & today  
002=including two days ago, etc.
3. CCC - Number of columns, Default=255 [055-999] (Decimal)

### Typical Response Message, Display Format:

<SOH>  
IV0900  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

ISD DAILY REPORT DETAILS

EVR Type: BALANCE

ISD Type: V1.00

Vapor Processor Type: VST VAPOR PROCESSOR

OVERALL STATUS :FAIL EVR VAPOR COLLECTION :NO TEST  
EVR VAPOR CONTAINMENT :PASS  
ISD MONITOR UP-TIME : 97% STAGE I TRANSFERS: 12 of 12 PASS  
EVR/ISD PASS TIME : 5%

Status Codes: (W)Warn (F)Fail (D)Degradation (G)Gross Fail (ISD-W) ISD SelfTest-Warn (ISD-F) ISD SelfTest-Fail (N)No Test

Date	Status	ISD EVR	ISD %UP	---Containment Tests---				Stage I	Vapor	PrCSR	----Collection Tests----			Daily Average		
				Gross 95%	Dgrd 75%	Max "wc	Min "wc				Leak CFH	FP1 Reg	FP1 Super	FP1 Mid	FP2 Reg	FP2 Super
02/19	F	100%	2.1N	-0.1N	0.0	-0.1	10N	Pass	Pass		0.79	1.00	1.09	1.06	1.05	1.00
02/20	F	100%	0.3N	-0.1N	-0.4	0.4	5 N				1.05	0.97	1.08	1.08	1.03	0.90
02/21	F	100%	-0.2N	-0.2N	-0.6	0.6	0 N	Pass	Pass		1.17	1.03	1.08	1.01	0.98	0.91
02/22	F	100%	0.9	-0.1N	-0.2	0.2	0				1.05	0.96	1.05	0.96	0.93	1.06
02/23	F	100%	-0.1	-0.2N	-0.9	0.9	0	Pass	Pass		0.93	1.02	1.06	1.04	0.92	0.97
02/24	F	100%	0.4	-0.2N	-0.3	0.3	0				1.03	1.02	1.05	1.04	0.98	0.94
02/25	F	100%	-0.3	-0.2N	-0.8	0.8	0	Pass	Pass		0.86	1.02	1.06	0.99	0.99	1.00
02/26	F	100%	0.6	-0.2N	-0.4	0.4	0	Pass	Pass	Blkd	Blkd	Blkd	1.05	Blkd	1.11	1.06
02/27	F	100%	-0.3	-0.2N	-0.7	0.7	0				1.00	Blkd	1.05	1.01	1.10	0.0W
02/28	F	100%	-0.1	-0.2N	-0.6	0.6	0	Pass	Pass		1.05	Blkd	1.01	1.02	0.98	1.06

Date	Reg	-----Collection Tests-----								
		FP3 Super	FP3 Mid	FP4 Reg	FP4 Super	FP4 Mid	FP5 Reg	FP5 Super	FP5 Mid	
02/19	Blkd	0.68N	1.00N	Blkd	0.87	0.96	Blkd	0.87	0.92	
02/20	Blkd	0.75	1.00N	Blkd	0.83	0.97	0.86	1.09	0.92	
02/21	Blkd	0.80	1.04	Blkd	0.89	1.00	0.88	1.12	1.03	
02/22	Blkd	0.77	1.09	Blkd	Blkd	0.95	Blkd	1.12	1.04	
02/23	Blkd	0.95	1.03	Blkd	Blkd	0.93	Blkd	1.15	0.99	
02/24	N N	0.96	0.99	Blkd	0.72N	0.98	Blkd	1.02	0.89	
02/25	N N	0.90	1.07	0.76	0.67N	0.99	Blkd	1.01	0.91	
02/26	0.69N	0.90	1.06	0.71	Blkd	0.93	Blkd	0.99	0.95	
02/27	Blkd	0.97	1.06	Blkd	Blkd	0.94	Blkd	1.02	0.88	
02/28	Blkd	0.82	1.02	Blkd	Blkd	0.89	Blkd	0.90	1.14	

CARB Standard Report Format - CP201 Appendix "EVR-ISD Monthly Details Report"  
<ETX>

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V09 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0900YYMMDDHHmmiiiiMMDDadddskkkkkkkksttttttttrrrrrrrrvvvvvvvv...
 sccccccccegnnffhhsmmmmmmmmmm&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MMDD - Date stamp of the day detail record
4. a - ISD EVR 1 status character
  - 0=N/A
  - 1=WARN
  - 2=FAIL
  - 3=PASS
  - 4=ISD/W
  - 5=ISD/F
5. dd - ISD Monitor Up Time % (Hex) (0-100)
6. s - status for containment gross
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
7. kkkkkkkk - Containment Gross value (ASCII Hex IEEE float) (-0.01=Blkd)
8. s - status for containment degradation
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
9. tttttttt - Containment Degradation value (ASCII Hex IEEE float) (-0.01=Blkd)
10. rrrrrrrr - Containment Min value (ASCII Hex IEEE float) (-0.01=Blkd)
11. vvvvvvvv - Containment Max value (ASCII Hex IEEE float) (-0.01=Blkd)
12. s - status for containment leak
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
13. cccccccc - Containment Leak value (ASCII Hex IEEE float) (-0.01=Blkd)
14. e - status for Stage I Transfer
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS
15. g - status for Vapor Processor
  - 0=NO TEST
  - 1=WARN
  - 2=FAIL
  - 3=PASS

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### Function Code V09 Notes: (Continued)

- 16.               nn - number of records consisting of 1 status character & one  
                  ASCII Hex IEEE Float to follow (-0.01=Blkd) (Decimal)
- 17.               ff - fuel position number (Decimal)
- 18.               hh - hose number (Decimal)
- 19.               s - status for hose  
                  0=NO TEST  
                  1=WARN  
                  2=FAIL  
                  3=PASS
- 20.               mmmmmmmmmm - A/L Ratio value (ASCII Hex IEEE float)
- 21.               && - Data Termination Flag
- 22.               CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V0A

Version 25

**Function Type:** ISD Daily Overall Status Report

**Command Format:**

**Display:** <SOH>IV0A00yyyymmdd

**Computer:** <SOH>iV0A00yyyymmdd

**Notes:**

1. ISD feature required
2.       yyyy - year number (e.g. 2002)
3.       mm - month number, 01=January, 02=February, etc.
4.       dd - day 01-31

**Typical Response Message, Display Format:**

<SOH>  
IV0A00  
FEB 2, 2005 12:08 AM

ISD DAILY REPORT  
REPORT DATE: JAN 29, 2005  
EVR TYPE: VACUUM ASSIST  
ISD TYPE: 01.00  
VAPOR PROCESSOR TYPE: VST VAPOR PROCESSOR

OVERALL STATUS	:PASS	EVR VAPOR COLLECTION :PASS
EVR VAPOR CONTAINMENT	:NOTEST	
ISD MONITOR UP-TIME	:100%	STAGE I TRANSFERS: 1 of 1 PASS
EVR/ISD PASS TIME	:100%	VAPOR PROCESSOR : PASS
<ETX>		

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V0A Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0A00YYMMDDHHmmYYYYmmddEvv.VVPACNUUsssSSSpptT&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. YYYYmmdd - Report Date (4 byte Decimal, 2 byte Decimal, 2 byte Decimal)
3. E - EVR Type
  - 0=Assist
  - 1=Balance
4. VV.VV - ISD Version number (ASCII)
5. P - Processor Type
  - 0=None
  - 1=VST
  - 2=OPW
  - 3=ARID
  - 4=User Defined
6. A - Overall Status
  - 0=Unknown
  - 1=Warning
  - 2=Failure
  - 3=Pass
7. C - Collection Status
  - 0=Unknown
  - 1=Warning
  - 2=Failure
  - 3=Pass
8. N - Containment Status
  - 0=Unknown
  - 1=Warning
  - 2=Failure
  - 3=Pass
9. UU - Percentage Up (Hex 00-64)
10. sss - Stage 1 Passing Count (Hex)
11. SSS - Stage 1 Total Count (Hex) Total fail=(SSS-sss)
12. pp - Percent ISD Pass (Hex 0-64)
13. t - Processor Installed
  - 0=No
  - 1=Yes
14. T - Processor Status
  - 0=Unknown
  - 1=Warning
  - 2=Failure
  - 3=Pass
15. && - Data Termination Flag
16. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V0B

Version 25

**Function Type:** ISD Monthly Overall Status Report

**Command Format:**

**Display:** <SOH>IV0B00yyyymm

**Computer:** <SOH>iV0B00yyyymm

**Notes:**

1. ISD feature required
2. yyyy - year number (e.g. 2002)
3. mm - month number, 01=January, 02=February, etc.

**Typical Response Message, Display Format:**

<SOH>  
IV0B00  
FEB 2, 2005 12:05 AM

ISD MONTHLY REPORT  
REPORT DATE: JAN 2005  
EVR TYPE: VACUUM ASSIST  
ISD TYPE: 01.00  
VAPOR PROCESSOR TYPE: VST VAPOR PROCESSOR

OVERALL STATUS	:PASS	EVR VAPOR COLLECTION :PASS
EVR VAPOR CONTAINMENT	:NOTEST	
ISD MONITOR UP-TIME	:100%	STAGE I TRANSFERS: 13 of 13 PASS
EVR/ISD PASS TIME	:100%	VAPOR PROCESSOR : PASS
<ETX>		

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code V0B Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV0B00YYMMDDHHmmYYYYmmddEvv.VVPACNUUsssSSSpptT&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Time/Date stamp of report
2. YYYYmmdd - Beginning of the report period (for monthly report dd=01) (4 byte Decimal, 2 byte Decimal, 2 byte Decimal)
3. E - EVR Type
  - 0=Assist
  - 1=Balance
4. VV.VV - ISD Version number
5. P - Processor Type
  - 0=None
  - 1=VST
  - 2=OPW
  - 3=ARID
  - 4=User Defined
6. A - Overall Status
  - 0=Unknown
  - 1=Warning
  - 2=Failure
  - 3=Pass
7. C - Collection Status
  - 0=Unknown
  - 1=Warning
  - 2=Failure
  - 3=Pass
8. N - Containment Status
  - 0=Unknown
  - 1=Warning
  - 2=Failure
  - 3=Pass
9. UU - Percentage Up (Hex 0-64)
10. sss - Stage 1 Passing Count (Hex)
11. SSS - Stage 1 Total Count (Hex) Total fail=(SSS-sss)
12. pp - Percent ISD Pass (Hex 0-64)
13. t - Processor Installed
  - 0=No
  - 1=Yes
14. T - Processor Status
  - 0=Unknown
  - 1=Warning
  - 2=Failure
  - 3=Pass
15. && - Data Termination Flag
16. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V10

Version 25

**Function Type:** ISD Version Number

**Command Format:**

**Display:** <SOH>IV1000

**Computer:** <SOH>iV1000

**Typical Response Message, Display Format:**

```
<SOH>
IV1000
JUN 7, 2004 4:07 PM
```

```
ISD VERSION: 01.00
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iV1000YYMMDDHHmmvv.rr&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. vv - ISD Version
3. rr - ISD Revision
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.7.2 ISD SETUP

**Function Code:** V40

Version 25

**Function Type:** Set Vapor Processor Type

**Command Format:**

**Display:** <SOH>SV4000tt

**Computer:** <SOH>sv4000tt

**Inquire:**

<SOH>IV4000

<SOH>iv4000

**Notes:**

1. PMC feature required
2. tt - type of Vapor Processor
  - 00 = None
  - 01 = VST Vapor Processor
  - 05 = Veeder-Root Polisher
  - 06 = Husky Polisher (ISD SEM required)

**Typical Response Message, Display Format:**

```
<SOH>
IV4000
JUN 1, 2002 8:07 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
VAPOR PROCESSOR TYPE
VST VAPOR PROCESSOR
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iv4000YYMMDDHHmmtt&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. tt - type of Vapor Processor
  - 00 = None
  - 01 = VST Vapor Processor
  - 02 = OPW Vapor Processor (Obsolete V28)
  - 03 = Arid Vapor Processor (Obsolete V28)
  - 04 = User Defined (Obsolete V28)
  - 05 = Veeder-Root Polisher
  - 06 = Husky Polisher (ISD SEM required)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V41**

Version 25

**Function Type:** Set Vapor Processor Control Level

**Command Format:**

**Display:** <SOH>SV410011

**Computer:** <SOH>sv410011

**Inquire:**

<SOH>IV4100

<SOH>iv4100

**Notes:**

1. PMC feature required
2. 11 - level  
00=Full Control  
01=Partial Control  
02=No Control

**Typical Response Message, Display Format:**

<SOH>  
IV4100  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

PROCESSOR CONTROL LEVEL: FULL  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iv4100YYMMDDHHmm11&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. 11 - level  
00=Full Control  
01=Partial Control  
02=No Control
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V42

Version 25

**Function Type:** Set Clear Sensor/AFM/Hose Maps

**Command Format:**

**Inquire:**

**Display:** <SOH>SV42SS149[AA(F1FL{M1(H1L1)}M2H2L2M3H3L3M4H4L4)  
(F2FL{M1(H1L1)}M2H2L2M3H3L3M4H4L4)] <SOH>IV42SS  
**Computer:** <SOH>SV42SS149[AA(F1FL{M1(H1L1)}M2H2L2M3H3L3M4H4L4)  
(F2FL{M1(H1L1)}M2H2L2M3H3L3M4H4L4)] <SOH>iV42SS

### Notes:

1. ISD feature required
2. - Brackets [], (), {} are not included, they explain the relationship of the data
3. SS - index to Sensor Table [01-99]  
00149 Clears all tables. This will do the following:
  - Set all AFM sensors to disable. All other types of sensors such as hydrocarbon and pressure sensors are left untouched
  - Clears all AFM table entries
  - Clears all Fuel grade table entries
  - Removes all Hose devices and associated table entries from system
4. AA - Airflow meter ID [01-99, 00=unassigned] Assigned to Grade Table and Hose Table entries
5. Fn - Fuel position ID in the Grade Table [01-99, 00=unassigned]
6. FL - Fuel position Label used when creating the Hose Table Entries for each Hn [00-99]
7. Mn - Meter n of the nth fuel grade table entry [01-06, 09=blend, 00=unassigned]
8. Hn - Hose ID used for hose grade table entry [01-99, 00=unassigned]
9. Ln - Hose Label Id used when creating the hose entry [01-10, 00=Non EVR meter]
10. Sensor Table -
  - Uses SS as index into sensor table and set sensor to ENABLED (used by ISD)
  - Only valid if SS is an AFM sensor. If it is not AFM, command will fail
11. AFM Table -
  - Use SS as sensor index
  - New AFM is defined with AA
  - Data between [] used to build AFM table
  - If one already exists, command will fail (clear all entries with SS=0 before setting up tables)
  - Fn and Hn are used to make up the hose entries in the AFM table
  - Only one hose entry is made for each unique Hn entry. So if a hose is used more than once, it will only appear once in the AFM table
  - If Fuel Grade table entry exists with another AFM id already defined, command will fail

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### Function Code V42 Notes: (Continued)

12. Hose Table -
  - Hose table entry is made for each unique Hn
  - Hoses may be used more than once. Only one Hose device is created for each unique hose. If Hose entry already exists, the command does NOT fail
  - Ln used when creating the Hn table entry is the only Ln assigned. Duplicate HnLn pairs are ignored if Hn is already found in the Hose table
  - FL, fuel position label is used when creating Hn table entry
  - FI, fuel position id is assigned only when creating Hn table entry
13. Fuel Grade Table -
  - If Fuel Grade Table entry exists for Fn, the command will fail
  - New FGT entry is created for each Fn
  - Grade entry n is made for each {MnHn} combination
  - If Hn Hose Table entry FI does not match Fuel Grade Table index, command will fail (hose previously used on another fp)
  - Data between () is used to define Fuel Grade Table
  - List the active meters from low to high. M1 should not be 00 while M2-M4 have values. All unused meters appear at the end of the list for that fuel position

### Typical Response Message, Display Format:

```
<SOH>
IV42SS
JUN 27, 2003 10:49 AM

Sensor / Airflow Meter / Hose Table / Grade Table Relationship
SS AA F1 FL M1H1L1 M2H2L2 M3H3L3 M4H4L4 F2 L2 M1H1L1 M2H2L2 M3H3L3 M4H4L4
01 03 06 05 020502 030502 100502 06UU01 07 06 020602 030602 100602 06UU01
04 01 02 01 020102 030102 100102 000001 03 02 020202 030202 100202 000001
07 02 04 03 020302 030302 100302 000001 05 04 020402 030402 100402 000001
<ETX>
```

(Note: UU=unassigned)

### Typical Response Message, Computer Format:

```
<SOH>iV4200YYMMDDHHmmSSAAF1FLM1H1L1M2H2L2M3H3L3M4H4L4F2FLM1H1L1M2H2L2M3H3L3M4H4L4...
SSAAF1FLM1H1L1M2H2L2M3H3L3M4H4L4F2FLM1H1L1M2H2L2M3H3L3M4H4L4
&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor
3. AA - Airflow Meter
4. Fn - Fuel Position Number
5. FL - Fuel Position Label
6. Mn - Meter Number
7. Hn - Hose Number, UU=Unassigned
8. Ln - Label Id
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V43**

Version 25

**Function Type:** Set Sensor Table ISD In Use Flag

**Command Format:**

**Display:** <SOH>SV4300149SSF

**Computer:** <SOH>sv4300149SSF

**Inquire:**

<SOH>IV4300SS

<SOH>iv4300SS

### Notes:

1. ISD feature required
2. SS - Sensor index [00=all (inquire only), 01-99]
3. F - In Use Flag  
0=Not Used  
1=Used

### Typical Response Message, Display Format:

<SOH>  
IV4300  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### SENSOR INDEX TABLE

SENSOR	TYPE	S/N	IN USE FLAG
01	AIR FLOW METER	10220AF001	YES
02	PRESSURE SENSOR	74210PS001	YES
03	HYDROCARBON SENSOR	74210HC001	NO
05	AIR FLOW METER	14520AF001	YES

<ETX>

### Typical Response Message, Computer Format:

<SOH>iv4300YYMMDDHHmmSSF..SSF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor index (Decimal)
3. F - In Use Flag  
0=Not Used  
1=Used
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V44**

Version 25

**Function Type:** Set Vapor Processor ON/OFF Pressure Thresholds

**Command Format:**

**Display:** <SOH>SV4400149 -a.bcd -A.BCD

**Computer:** <SOH>sv4400149AAAAAAAABBBBBBBB

**Inquire:**

<SOH>IV4400

<SOH>iv4400

**Notes:**

1. PMC (only) feature required
2. a.bcd - Low/off threshold, inches (or mm) H2O (ab.cd, abc.d also OK)
3. A.BCD - High/on threshold, inches (or mm) H2O (AB.CD, ABC.D also OK)
4. AAAAAAAA - Low/off threshold (ASCII Hex IEEE float)
5. BBBBBBBB - High/on threshold (ASCII Hex IEEE float)
6. English units: -8.000 <= low/off threshold < high/on threshold <= 3.000
7. Metric units: -203.20 <= low/off threshold < high/on threshold <= 76.20

**Typical Response Message, Display Format:**

```
<SOH>
IV4400
JUN 1, 2001 8:07 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
VAPOR PROCESSOR
LOW (OFF) THRESHOLD -0.600 inches (or mm) H2O
HIGH (ON) THRESHOLD -0.200 inches (or mm) H2O
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iv4400YYMMDDHHmmAAAAAAAABBBBBBBB&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. AAAAAAAA - Vapor Pressure low threshold, (ASCII Hex IEEE float)
3. BBBBBBBB - Vapor Pressure high threshold, (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V45**

Version 25

**Function Type:** Set Vapor Processor Maximum Runtime

**Command Format:**

**Display:** <SOH>SV4500MMM

**Computer:** <SOH>sv4500MMM

**Inquire:**

<SOH>IV4500

<SOH>iv4500

**Notes:**

1. PMC feature required
2. MMM - Runtime threshold in minutes [010-180] (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
IV4500  
JUL 29, 1997 9:04 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

VAPOR PROCESSOR  
MAX RUNTIME MINUTES 113  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iv4500YYMMDDHHmmMMM&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. MMM - Runtime threshold in minutes [010-180] (Decimal)
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V46**

Version 25

**Function Type:** Set Hydrocarbon Alarm Threshold

**Command Format:**

**Display:** <SOH>SV4600xx.xx

**Computer:** <SOH>sv4600AAAAAAAA

**Inquire:**

<SOH>IV4600

<SOH>iv4600

**Notes:**

1. PMC only feature required to set new value
2. xx.xxx - ASCII alarm threshold
3. AAAAAAAA - alarm threshold (ASCII Hex IEEE float)  
0.00% <= threshold <= 100.0%, Default=10%

**Typical Response Message, Display Format:**

<SOH>  
IV4600  
JUN 1, 2001 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

EFFLUENT EMISSIONS LIMIT 10.00 PERCENT  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iv4600YYMMDDHHmmAAAAAAAA&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. AAAAAAAA - Alarm threshold (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V47**

Version 25

**Function Type:** Set time of day ISD/PMC tests are started and results posted

**Command Format:**

**Display:** <SOH>SV4700HHMMmmmm

**Computer:** <SOH>sv4700HHMMmmmm

**Inquire:**

<SOH>IV4700

<SOH>iv4700

**Notes:**

1. ISD or PMC features required
2. If the difference between post results time and start tests time is less than the time needed to perform all tests, then the results will be posted as soon as they become available  
Default Start-of-Tests time=11:59  
Default time delay minutes=1
3. Data being analyzed will be limited to 5 minutes before Start-of-Tests time
4. HH - Hour of day tests are started [00-23] (Decimal)
5. MM - minute of hour tests are started [00-59] (Decimal)
6. mmmm - time delay between time tests are started and time test results are posted in minutes [000-720] (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
IV4700  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

ASSESSMENT TIME    START TIME    11:59 PM    TIME DELAY MINUTES 1  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iv4700YYMMDDHHmmHHMMmmmm&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. HH - start tests hour [00-23] (Decimal)
3. MM - start tests minute [00-59] (Decimal)
4. mmmm - time delay minutes [000-720] (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V48  
**Function Type:** Read Airflow Meter Table

Version 25

**Command Format:**  
**Display:** <SOH>IV48SS  
**Computer:** <SOH>iV48SS

**Inquire:**

### Notes:

1. ISD feature required
2. Inquire only, use Function Code V42 to set

### Typical Response Message, Display Format:

```
<SOH>
IV4800
JUN 22, 2001 3:24 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

AIRFLOW METER TABLE

MTR-ID INDEX F1 H1 H2 H3 H4 F2 H1 H2 H3 H4
01 05 01 xx 01 02 03 02 04 05 06 xx
02 09 03 xx 07 08 09 04 10 11 12 xx
03 11 05 xx xx xx xx 06 xx xx xx xx
04 22 07 13 14 15 xx xx xx xx xx xx
<ETX>

(xx=unassigned)
```

### Typical Response Message, Computer Format:

```
<SOH>iV4800YYMMDDHHmmIISSF1H1H2H3H4F2H5H6H7H&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Meter ID [01-99] (use 00 for all meters) (Decimal)
3. SS - index to Sensor Table [00-99] (Decimal)
4. Fn - fuel position ID [01-99] (Decimal)
5. Hn - Hose ID [01-99] (Decimal)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V49**

Version 25

**Function Type:** Set Hose Label Table

**Command Format:**

**Display:** <SOH>SV4900IIaaaaaaaaaaaa

**Computer:** <SOH>sv4900IIaaaaaaaaaaaa

**Inquire:**

<SOH>IV4900

<SOH>iv4900

**Notes:**

1. ISD feature required
2. II - Hose Label ID (02-10, 01=Unassigned)
3. a - 10 ASCII characters [20h-7Eh]

**Typical Response Message, Display Format:**

```
<SOH>
IV4900
JUN 22, 2001 3:24 PM
```

```
LABEL TABLE
ID LABEL
01 UNASSIGNED
02 BLEND3
03 REGULAR
04 MID GRADE
05 PREMIUM
06 GOLD
07 BRONZE
08 SILVER
09 BLEND2
10 BLEND4
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iv4900YYMMDDHHmmiiaaaaaaaaaaaaa...
iiaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ii - Label ID (00-10) (Decimal)
3. aaaaaaaaaa - 10 ASCII characters [20h-7Eh]
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V4A**

Version 25

**Function Type:** Read Hose Table Data

**Command Format:**

**Display:** <SOH>IV4Aii

**Computer:** <SOH>iV4Aii

**Notes:**

1. ISD feature required
2. Inquire only, use Function Code V42 to set

**Typical Response Message, Display Format:**

```
<SOH>
IV4A00
JUN 27, 2003 10:06 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

ISD HOSE TABLE

HOSE ID	FP ID	FP LABEL	AFM ID	HOSE LABEL
01	02	02	01	UNLEADED
02	03	03	01	UNLEADED
03	04	04	02	SUPER
04	05	05	02	SUPER
05	06	06	03	BLEND
06	07	07	03	BLEND

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iV4A00YYMMDDHHmmhhffggaall...
 hhffggaall&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. hh - Hose ID [01-99] (Hex)
3. ff - Mapped Fuel position id (Hex)
4. gg - Visual Fuel Position Number [00-99] (Hex)
5. aa - Air flow meter id [00-99] (Hex)
6. ll - Hose Label Id (Hex)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V4B**  
**Function Type:** Read Grade Table

Version 25

**Command Format:**  
**Display:** <SOH>IV4B00  
**Computer:** <SOH>iV4B00

**Notes:**

1. ISD feature required
2. Inquire only, use Function Code V42 to set

**Typical Response Message, Display Format:**

<SOH>  
IV4B00  
JUN 22, 2001 3:24 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

PRODUCT/HOSE	MAP	TABLE	FP	AFID	M1/H1	M2/H2	M3/H3	M4/H4
01	01	01/01	xx/xx	xx/xx	xx/xx			
02	02	02/02	xx/xx	xx/xx	xx/xx			
03	03	03/03	xx/xx	xx/xx	xx/xx			
04	04	04/04	xx/xx	xx/xx	xx/xx			
05	05	05/05	xx/xx	xx/xx	xx/xx			
06	06	06/06	xx/xx	xx/xx	xx/xx			
07	07	xx/xx	xx/xx	xx/xx	xx/xx			
08	08	xx/xx	xx/xx	xx/xx	xx/xx			
09	09	xx/xx	xx/xx	xx/xx	xx/xx			

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iV4B00YYMMDDHHmmffaam1h1m2h2m3h3m4h4&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ff - Real fuel position (Decimal)
3. aa - Air flow meter Id (Decimal)
4. mx - Meter id (x=1-4)
5. hx - Hose id (x=1-4)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V4E  
**Function Type:** Set ISD EVR TYPE

Version 25

**Command Format:**  
**Display:** <SOH>SV4E00EEVV  
**Computer:** <SOH>SV4E00EEVV

**Inquire:**  
<SOH>IV4E00EEVV  
<SOH>iv4E00EEVV

### Notes:

1. ISD feature required
2. EE - EVR Type  
01=Balance  
02=Vacuum Assist
3. VV - Vacuum Assist Type  
01=Vapor Vac  
02=Wayne Vac  
03=Healy Vac  
04=Vapor Vac ORVR

### Typical Response Message, Display Format:

<SOH>  
IV4E00  
JUN 1, 2002 8:07 AM  
  
STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....  
  
EVR/ISD SETUP  
TYPE: VACUUM ASSIST  
VACUUM ASSIST TYPE: VAPOR VAC  
  
<ETX>

### Typical Response Message, Computer Format:

<SOH>iv4E00YYMMDDHHmmEEVV&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. EE - EVR Type  
01=Balance  
02=Vacuum Assist
3. VV - Vacuum Assist Type  
01=Vapor Vac  
02=Wayne Vac  
03=Healy Vac  
04=Vapor Vac ORVR
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V4F**

Version 25

**Function Type:** Set Nozzle Type

**Command Format:**

**Display:** <SOH>SV4F00 a.bcd A.BCD

**Computer:** <SOH>SV4F00AAAAAAAABBBBBBBB

**Inquire:**

<SOH>IV4F00

<SOH>iV4F00

### Notes:

1. ISD feature required
2. a.bcd - Low Nozzle A/L Range Value, minimum Value=0.5
3. A.BCD - High Nozzle A/L Range Value, maximum Value=1.5
4. AAAAAAAA - Low Nozzle A/L Range Value (ASCII Hex IEEE float)
5. BBBBBBBB - High Nozzle A/L Range Value (ASCII Hex IEEE float)

### Typical Response Message, Display Format:

<SOH>  
IV4F00  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

NOZZLE A/L RANGE  
A/L RATIO: 1.00 - 1.20  
<ETX>

### Typical Response Message, Computer Format:

<SOH>iV4F00YYMMDDHHmmAAAAAAAABBBBBBBB&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. AAAAAAAA - Low Nozzle A/L Range Value (ASCII Hex IEEE float)
3. BBBBBBBB - High Nozzle A/L Range Value (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V50

Version 25

**Function Type:** Set CVLD Minimum Pressure Time Window

**Command Format:**

**Display:** <SOH>SV5000HHMMddd

**Computer:** <SOH>sv5000HHMMddd

**Inquire:**

<SOH>IV5000

<SOH>iv5000

**Notes:**

1. ISD and PMC features required
2. If VST Vapor Processor, then not Balance and not Healy VAC are required
3. HH - window start hour of day, Default=02, [00-23] (Decimal)
4. MM - window start minute of hour, Default=00, [00-59] (Decimal)
5. ddd - window duration in minutes, Default=120, [000-720] (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
IV5000  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

CVLD MINIMUM PRESSURE TIME WINDOW  
START TIME: 2:00 AM  
DURATION: 120 MINUTES  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iv5000YYMMDDHHmmHHMMddd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. HH - window start hour of day [00-23] (Decimal)
3. MM - window start minute of hour [00-59] (Decimal)
4. ddd - window duration in minutes [000-720] (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V51**

Version 25

**Function Type:** Perform ISD Setup Verification Test

**Command Format:**

**Display:** <SOH>IV5100

**Computer:** <SOH>iV5100

**Notes:**

1. ISD and/or PMC features required
2. Inquire only

**Typical Response Message, Display Format:**

```
<SOH>
IV5100
JAN 1, 1996 11:05 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
ISD/PMC TEST STATUS: PASS
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iV5100YYMMDDhhmmS&&CCCC<ETX>
```

**Notes:**

1. YYMMDDhhmm - Current Date and Time
2. S - Status of ISD/PMC Setup Test  
0=Pass  
1=Fail
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V52**

Version 25

**Function Type:** Accept High ORVR Configuration

**Command Format:**

**Display:** SV5200F

**Computer:** sV5200F

**Inquire:**

<SOH>IV5200

<SOH>iV5200

**Notes:**

1. ISD and/or PMC features required
2. F - Enable/Disable Flag  
0=Enable  
1=Disable

**Typical Response Message, Display Format:**

<SOH>  
IV5200  
JAN 1, 1996 11:05 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

ACCEPT HIGH ORVR: YES  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iV5200YYMMDDhhmmF&&CCCC<ETX>

**Notes:**

1. YYMMDDhhmm - Current Date and Time.
2. F - Enable/Disable Flag  
0=Enable  
1=Disable
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

### 7.7.3 ISD DIAGNOSTIC REPORTS

**Function Code:** V80  
**Function Type:** Vapor Processor Report

Version 25

**Command Format:**  
**Display:** <SOH>SV8000149  
**Computer:** <SOH>sv8000149

**Inquire:**  
<SOH>IV8000  
<SOH>iv8000

**Notes:**

1. PMC Feature and Full Vapor Processor Control Required
2. Set command clears buffer

**Typical Response Message, Display Format:**

<SOH>  
IV8000  
JUL 29, 1997 9:04 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

VAPOR PROCESSOR

DATE-TIME ON	ELAPSED MINUTES	PRESSURE ON	INCHES OFF	H2O RUNTIME FAULT
12-26-01 10:51 AM	xxx.xx	-x.xxx	-x.xxx	NO
12-27-01 11:01 PM	xxx.xx	-x.xxx	-x.xxx	YES

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iv8000YYMMDDHHmmnnnnTTTTTTTTiiiaaaaaaabbabbbbbbcccccccc...  
TTTTTTTTiiiaaaaaaabbabbbbbbcccccccc...s&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nnnn - number of Vapor Processor cycles [00-20] (Decimal)
3. TTTTTTTT - On time (Seconds since 1/1/1970, Hex)
4. ii - number of floating point fields per cycle (Decimal)
5. aaaaaaaa - elapsed time (ASCII Hex IEEE float)
6. bbbbbbbb - on pressure in inches (or mm) of H2O (ASCII Hex IEEE float)
7. cccccccc - off pressure in inches (or mm) of H2O (ASCII Hex IEEE float)
8. s - status  
0=no runtime fault  
1=runtime fault
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** V81

Version 25

**Function Type:** Percent Hydrocarbon Report

**Command Format:**

**Display:** <SOH>SV8100149

**Computer:** <SOH>sv8100149

**Inquire:**

<SOH>IV8100

<SOH>iv8100

**Notes:**

1. PMC Feature and Full Vapor Processor Control Required
2. Set command clears buffer

**Typical Response Message, Display Format:**

```
<SOH>
IV8100
JUL 29, 1997 9:04 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

HYDROCARBON SENSOR DIAGNOSTIC
DATE/TIME READING %
12-26-01 10:51:15 AM 5.101
12-26-01 10:51:30 AM 5.102
12-26-01 10:51:45 PM 5.103
12-26-01 10:52:00 AM 5.104
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iv8100YYMMDDHHmmnnnnTTTTTTTTaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nnnn - number of HC samples [00-20] (Decimal)
3. TTTTTTTT - sample time (Seconds since 1/1/1970, Hex)
4. aaaaaaaaa - percent (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V83**

Version 25

**Function Type:** Read Sensor Calibration History

**Command Format:**

**Display:** <SOH>IV8300CCNNIII

**Computer:** <SOH>iV8300CCNNIII

**Notes:**

1. CC - Sensor Category  
00=All  
01=Smart Sensors  
02=MODBus Sensors  
03=Serial Sensors
2. NN - Sensor Number (Decimal, 00=all)
3. III - Requested number of records per category [001-255] (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
IV8300
JUN 1, 2001 8:07 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

SMART SENSOR CALIBRATION HISTORY
DATE NUMBER TYPE S/N LABEL SLOPE OFFSET P/F
12-26-01 10:59 01 AIR FLOW 123 AFM 2 5.023 5.000 P
12-15-01 12:59 01 AIR FLOW 123 AFM 2 5.023 5.000 F
12-15-01 12:59 02 PRESSURE 1231231230 PRESSURE10 1.104 0.033 P

MODBUS SENSOR CALIBRATION HISTORY
DATE NUMBER TYPE S/N LABEL SLOPE OFFSET P/F
12-15-01 12:59 01 HYDROCARBON 123 HC SENSOR1 5.023 5.000 P

SERIAL SENSOR CALIBRATION HISTORY
NONE
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iV8300YYMMDDHHmmCCNNIIIIYYMMDDHHmmSSSSSSSSOOOOOOOOR&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. CC - Sensor Category
3. NN - Sensor number
4. III - Record number
5. YYMMDDHHmm - Calibration Date and Time
6. SSSSSSSS - Slope Value (ASCII Hex IEEE float)
7. OOOOOOOO - Offset Value (ASCII Hex IEEE float)
8. R - Test result  
0=fail  
1=pass
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code: V85**

Version 25

**Function Type:** ISD Service Report Test Fail Clear

**Command Format:**

**Display:** <SOH>SV8500149TTFFHH

**Computer:** <SOH>SV8500149TTFFHH

**Inquire:**

<SOH>IV8500

<SOH>iV8500

### Notes:

1. ISD feature required
2. TT - Test Type
  - 01=Containment
  - 02=CVLD
  - 03=Vapor Processor
  - 04=Sensor Out
  - 05=Setup
  - 06=Collection
3. FF - fuel position label (used only for collection test, Decimal)
4. HH - hose id (used only for collection test, Decimal)
  - a) FF=00, HH=00: All FP's and hoses are cleared
  - b) FF=FP Label, HH=00: All hoses for the FP are cleared
  - c) FF=FP Label, HH=Hose Id: The selected hose is cleared

### Typical Response Message, Display Format:

<SOH>  
IV8500  
JUN 1, 2002 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

CONTAINMENT TESTS (GROSS AND DEGRADATION): 02/15/03  
CONTINUOUS VAPOR LEAK DETECTION TEST : 02/15/03  
VAPOR PROCESSOR TESTS : 02/15/03  
SENSOR OUT TEST : 02/15/03  
SETUP TEST : 02/15/03

COLLECTION TESTS				
FP	HOSE-DATE	HOSE-DATE	HOSE-DATE	HOSE-DATE
01	REG-02/15/03		SUPER-02/15/03	SUPER+-02/15/03
02	REG-03/12/03	PLUS-02/15/03	SUPER-02/15/03	
03	SUPER-04/31/03	REG-02/15/03		

<ETX>

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

**Function Code V85 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iV8500YYMMDDHHmmYYMMDDYYMMDDYYMMDDYYMMDDYYMMDDFFHHYYMMDD&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. YYMMDD - Containment Tests (Gross & Degradation) Date and Time
3. YYMMDD - CVLD Date and Time
4. YYMMDD - Vapor Processor Date and Time
5. YYMMDD - Sensor Out Date and Time
6. YYMMDD - Setup Date and Time
7. FF - Fuel Position (Decimal) (Collection)
8. HH - Hose number (Decimal) (Collection)
9. YYMMDD - Time/Date stamp of the test clear time for the Collection tests on the fuel position and hose
10. && - Data Termination Flag
11. CCCC - Message Checksum



# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** VCO

Version 25

**Function Type:** Automatic/Manual Vapor Processor Control

**Command Format:**

**Display:** <SOH>SVC000149C

**Computer:** <SOH>sVC000149C

**Inquire:**

<SOH>IVC000

<SOH>iVC000

**Notes:**

1. PMC Feature and Vapor Processor relay required
2. Changing from automatic to manual while VP is on turns VP (and HC sensor) off
3. C - Control  
0=Set VP to Manual  
1=Set VP to Automatic

**Typical Response Message, Display Format:**

<SOH>  
IVC000  
JUN 1, 2001 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

VAPOR PROCESSOR AUTOMATIC CONTROL  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iVC000YYMMDDHHmmC&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. n - Control  
0=VP is set to Manual  
1=VP is set to Automatic
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** VC1

Version 25

**Function Type:** Manual Override of Vapor Processor

**Command Format:**

**Display:** <SOH>SVC100149C

**Computer:** <SOH>sVC100149C

**Inquire:**

<SOH>IVC100

<SOH>iVC100

**Notes:**

1. PMC Feature and Vapor Processor relay required
2. VP control MUST be Manual (see VC0 command)
3. C - Control  
0=Turn VP off  
1=Turn VP on

**Typical Response Message, Display Format:**

<SOH>  
IVC100  
JUN 1, 2001 8:07 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

VAPOR PROCESSOR ON  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iVC100YYMMDDHHmmC&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. C - Control  
0=VP is off  
1=VP is on
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** VC5

Version 25

**Function Type:** Acknowledge ISD Alarm to Re-Enable Site

**Command Format:**

**Display:** <SOH>SVC500149

**Computer:** <SOH>sVC500149

**Inquire:**

<SOH>IVC500

<SOH>iVC500

**Notes:**

1. ISD feature required
2. Set command acknowledges alarm

**Typical Response Message, Display Format:**

```
<SOH>
IVC500
JUN 1, 2002 8:07 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
ISD SHUTDOWN ALARMS OVERRIDDEN: YES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iVC500YYMMDDHHmmS&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. S - ISD shutdown alarms overridden  
0=Yes  
1=No
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS-300/350/350R Monitoring Systems

**Function Code:** XE0

Version 25

**Function Type:** ISD Setup Data Time Stamp EEPROM

**Command Format:**

**Display:** <SOH>SXE000ssssssss

**Computer:** <SOH>sXE000ssssssss

**Inquire:**

<SOH>IXE000

<SOH>iXE000

**Typical Response Message, Display Format:**

**Notes:**

1. Response is the same as computer format. To be used with EEPROM only

**Typical Response Message, Computer Format:**

<SOH>iXE000YYMMDDHHmmssssssss&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ssssssss - ISD Setup Data Time Stamp (Seconds since 1/1/1970, Hex)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

## 8.0 IFSF DATABASE SUPPORT

When equipped with the appropriate software and interface module, these systems can respond to commands using the International Forecourt Standards Forum (IFSF) tank gauge communications protocols as defined in the following tables. Please see the IFSF documents "PART II, COMMUNICATION SPECIFICATION" and "PART III.3 TANK LEVEL GAUGE APPLICATION" for further details.

### 8.1 TANK LEVEL GAUGE DATABASE

TANK LEVEL GAUGE DATABASE DB_Ad=TLG_DAT (01H)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION DATA			
1	Nb_Tanks	M	Yes
2	Reference_Temp	O	Yes
3	TLG_Measurement_Units	O	Yes
6	Country_Code	M	Yes
7	Maint_Password	M	Yes
50	TLG_Manufacturer_Id	M	Yes
51	TLG_Model	M	Yes
52	TLG_Type	M	Yes
53	TLG_Serial_Nb	M	Yes
54	TLG_Appl_Software_Ver	M	Yes
58	IFSF_Protocol_Ver	M	Yes
59	Current_Date	O	Yes
60	Current_Time	O	Yes
61	SW_Checksum	M	Yes
TLG COMMAND			
70	Enter_Maint_Mode	M	Yes
71	Exit_Maint_Mode	M	Yes

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### 8.2 TANK LEVEL GAUGE ERROR CODE DATABASE

TANK LEVEL GAUGE ERROR CODE DATABASE DB_Ad=TLG_DAT (01H) + TLG_ER_DAT (41H) + TLG_ER_ID (01H-40H)			
Data_Id	Data Element Name	M/O	Supported
ERROR DATA			
1	TLG_Error_Type	M	Yes
2	TLG_Err_Description	O	Yes
3	TLG_Error_Total	M	Yes
4	TLG_Error_Total_Erase_Date	O	Yes
UNSOLICITED DATA			
100	TLG_Error_Type_Mes	M	Yes

#### 8.3 TANK PROBE DATABASE

TANK PROBE DATABASE DB_Ad=TP_ID (21H-3FH)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION			
1	TP_Manufacturer_Id	M	Yes
2	TP_Type	M	Yes
3	TP_Serial_Nb	M	Yes
4	TP_Model	M	Yes
5	TP_Appl_Software_Ver	M	Yes
6	Prod_Nb	O	Yes
7	Prod_Description	O	Yes
8	Prod_Group_Code	O	Yes
9	Ref_Density	O	No
10	Tank_Diameter	O	Yes
11	Shell_Capacity	O	Yes
12	Max_Safe_Fill_Capacity	O	Yes
13	Low_Capacity	O	Yes

**Serial Interface Manual**  
**TLS-300/350/350R Monitoring Systems**

TANK PROBE DATABASE DB_Ad=TP_ID (21H-3FH)			
Data_Id	Data Element Name	M/O	Supported
14	Min_Operating_Capacity	O	Yes
15	HiHi_Level_Setpoint	O	No
16	Hi_Level_Setpoint	O	No
17	Lo_Level_Setpoint	O	No
18	LoLo_Level_Setpoint	O	No
19	Hi_Water_Setpoint	O	Yes
20	Water_Detection_Thresh	O	Yes
21	Tank_Tilt_Offset	O	Yes
22	Tank_Manifold_Partners	O	Yes
23	TP_Measurement_Units	O	Yes
CONTROL DATA			
32	TP_Status	M	Yes
33	TP_Alarm	M	Yes
TANK READING			
64	Product_Level	M	Yes
65	Total_Observed_Volume	O	Yes
66	Gross_Standard_Volume	O	Yes
67	Average_Temp	O	Yes
68	Water_Level	M	Yes
69	Observed_Density	O	No
70	Last_Reading_Date	O	Yes
71	Last_Reading_Time	O	Yes
UNSOLICITED			
100	TP_Status_Message	M	Yes

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### 8.4 TANK CONTENTS TABLE DATABASE

TANK CONTENTS TABLE DATABASE DB_Ad=TP_ID (21H-3FH) + CAL_DAT (21H) + ENTRY (01H-FFH)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION			
1	Strap_Level	O	No
2	Strap_Vol	O	No

#### 8.5 TANK TEMPERATURE TABLE DATABASE

TANK TEMPERATURE TABLE DATABASE DB_Ad=TP_ID (21H-3FH) + TEMP_DAT (22H) + TEMP_ADDR (01H-08H)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION			
1	Temp_height	O	Yes
2	Temp_value	O	Yes

#### 8.6 TANK PROBE ERROR CODE DATABASE

TANK PROBE ERROR CODE DATABASE DB_Ad=TP_ID (21H-3FH) + TP_ER_DAT (41H) + TP_ER_ID (01H-40H)			
Data_Id	Data Element Name	M/O	Supported
ERROR DATA			
1	TP_Error_Type	M	Yes
2	TP_Err_Description	O	Yes
3	TP_Error_Total	M	Yes
4	TP_Error_Total_Erase_Date	O	Yes
5	TP_Error_Status	M	Yes
UNSOLICITED DATA			
100	TP_Error_Type_Mes	M	Yes



## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### 8.7 DATA DOWNLOAD DATABASE

DATA DOWNLOAD DATABASE DB_Ad=SW_DAT (81H)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION DATA			
1	Data_Type	O	No
2	Software_Block_Id	O	No
3	Start_Addr	O	No
4	Nb_Bytes	O	No
5	Data_Download	O	No
6	Data_Checksum	O	No
COMMAND			
10	Activate_Software	O	No
11	Restart	O	No

#### 8.8 COMMUNICATION SERVICE DATABASE

COMMUNICATION SERVICE DATABASE DB_Ad=00H		
Data_Id	Variable Name	Supported
CONFIGURATION		
1	Communication_Protocol_Ver (read only)	Yes
2	Local_Node_Address	Yes
3	Recipient_Addr_Table	Yes
4	Heartbeat_Interval	Yes
5	Max_Block_Length	Yes
COMMANDS		
10	Heartbeat_Error	Yes
11	Add_Recipient_Addr	Yes
12	Remove_Recipient_Addr	Yes

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

## 9.0 FUNCTION CODE SUMMARY

### CONTROL FUNCTIONS (7.1)

Code	Ver	Function
<b>001</b>	1	System Reset
<b>002</b>	1	Clear Power Reset Flag
<b>003</b>	1	Remote Alarm Reset
<b>010</b>	14	Cancel Autodial Computer Mode Session
<b>031</b>	10	Confirm Clear Function
<b>051</b>	1	Clear In-Tank Delivery Reports
<b>052</b>	1	Start In-Tank Leak Detect Test
<b>053</b>	1	Stop In-Tank Leak Detect Test
<b>054</b>	5	Delete CSLD Rate Table
<b>081</b>	7	Start Pressure Line Leak Test (3.00 GPH only in V18)
<b>082</b>	7	Stop Pressure Line Leak Test
<b>083</b>	10	Start WPLLD Line Leak Test (3.00 GPH only in V18)
<b>084</b>	10	Stop WPLLD Line Leak Test
<b>087</b>	18	Start Pressure Line Leak Test by Type
<b>088</b>	18	Start WPLLD Line Leak Test by Type
<b>089</b>	19	Pressure Line Leak Pressure Offset Reset
<b>090</b>	19	WPLLD Line Leak Pressure Offset Reset
<b>091</b>	15	Close Current Shift
<b>092</b>	23	Start Pressure Line Leak Profile Line Test
<b>093</b>	23	Stop Pressure Line Leak Profile Line Test
<b>094</b>	23	Recalculate Pressure Line Leak Profile Bulk Modulus
<b>095</b>	24	Start Vacuum Sensor Manual Test
<b>096</b>	24	Stop Vacuum Sensor Manual Evacuation Test
<b>097</b>	24	Start Vacuum Sensor Evacuation Hold
<b>098</b>	24	Stop Vacuum Sensor Evacuation Hold
<b>099</b>	26	Start Mag Sump Leak Test
<b>09A</b>	26	Start Mag Sump Leak Test Measuring Height Phase
<b>09B</b>	26	Stop Mag Sump Leak Test

## **Serial Interface Manual**

### **TLS-300/350/350R Monitoring Systems**

#### **OPERATIONAL REPORTS (7.2)**

##### **SYSTEM REPORTS (7.2.1)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>101</b>	1	System Status Report
<b>102</b>	1	System Configuration Report
<b>111</b>	2	Priority Alarm History Report
<b>112</b>	2	Non-Priority Alarm History Report
<b>113</b>	14	Active Alarm Report
<b>114</b>	19	Cleared Alarm Report
<b>115</b>	27	Maintenance Tracker Unacknowledged Alarm Report
<b>116</b>	19	Service Report History (Obsolete V27)
<b>119</b>	27	Maintenance History Report
<b>11A</b>	27	Service Report History
<b>11B</b>	28	Service Notice Session Report

##### **IN-TANK REPORTS (7.2.2)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>201</b>	1	In-Tank Inventory Report
<b>202</b>	1	In-Tank Delivery Report
<b>203</b>	1	In-Tank Leak Detect Report
<b>204</b>	1	In-Tank Shift Inventory Report
<b>205</b>	1	In-Tank Status Report
<b>206</b>	1	In-Tank Alarm History Report
<b>207</b>	2	In-Tank Leak Test History Report
<b>208</b>	2	In-Tank Leak Test Results Report
<b>20A</b>	110	HRM Adjusted Delivery Report
<b>20B</b>	110	BIR Adjusted Delivery Report
<b>20C</b>	15	In-Tank Most Recent Delivery Report
<b>20D</b>	15	In-Tank Stick Height Report
<b>211</b>	14	Tank Chart Report
<b>212</b>	24	In-Tank Leak Test History Report 2
<b>213</b>	26	In-Tank Extended Standard Delivery Report
<b>214</b>	26	In-Tank Mass/Density Inventory Report
<b>215</b>	26	In-Tank Mass/Density Delivery Report
<b>216</b>	26	Tank 50 Point Heights, Volumes and Slope Report
<b>217</b>	26	Tank Profile
<b>218</b>	26	Tank Chart Audit Trail
<b>219</b>	26	Tank Chart Security Status

## **Serial Interface Manual**

### **TLS-300/350/350R Monitoring Systems**

#### **IN-TANK REPORTS (7.2.2) (Continued)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>21A</b>	27	In-Tank Inventory Report With 90/95% Ullage
<b>21B</b>	26	BIR Extended Adjusted Delivery Report
<b>221</b>	116	Ticketed Delivery Report
<b>222</b>	23	Bill of Lading Report
<b>225</b>	116	Periodic Delivery Variance Report
<b>226</b>	116	Weekly Delivery Variance Report
<b>227</b>	116	Daily Delivery Variance Report
<b>251</b>	3	CSLD Results Report
<b>281</b>	3	Fuel Management Report
<b>282</b>	19	FLS Diagnostic: Volume History Table
<b>2E2</b>	14	In-Tank Stored Inventory Report

#### **SENSOR REPORTS (7.2.3)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>301</b>	1	Liquid Sensor Status Report
<b>302</b>	1	Liquid Sensor Alarm History Report
<b>306</b>	1	Vapor Sensor Status Report
<b>307</b>	1	Vapor Sensor Alarm History Report
<b>311</b>	1	Groundwater Sensor Status Report
<b>312</b>	1	Groundwater Sensor Alarm History Report
<b>315</b>	24	Smart Sensor Status Report
<b>316</b>	24	Smart Sensor Alarm History Report
<b>317</b>	26	Mag Sump Leak Test In Progress/Last Test Report
<b>318</b>	26	Mag Sump Leak Test Last Passed Test Report
<b>319</b>	26	Mag Sump Leak Test Last 10 Test Passed Report
<b>31A</b>	26	Mag Sump Leak Test Last Passed Each Year Report
<b>322</b>	27	Pump Relay Monitor Status Report
<b>323</b>	27	Pump Relay Monitor Alarm History Report
<b>333</b>	24	Smart Sensor Install Log
<b>341</b>	2	Type A (2 Wire CL) Sensor Status Report
<b>342</b>	2	Type A (2 Wire CL) Sensor Alarm History Report

## **Serial Interface Manual**

### **TLS-300/350/350R Monitoring Systems**

#### **SENSOR REPORTS (7.2.3) (Continued)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>346</b>	2	Type B (3 Wire CL) Sensor Status Report
<b>347</b>	2	Type B (3 Wire CL) Sensor Alarm History Report
<b>34B</b>	4	Universal Sensor Status Report
<b>34C</b>	4	Universal Sensor Alarm History Report

#### **LINE LEAK REPORTS (7.2.4)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>351</b>	1	Volumetric Line Leak Result Report
<b>352</b>	1	Volumetric Line Leak Alarm History Report
<b>353</b>	2	Volumetric Line Leak Pump Status
<b>373</b>	14	Pressure Line Leak Test Results (with 0.20 test data)
<b>374</b>	14	Pressure Line Leak Test History (with 0.20 test data)
<b>381</b>	7	Pressure Line Leak Status
<b>382</b>	7	Pressure Line Leak Alarm History Report
<b>383</b>	7	Pressure Line Leak Test Results (0.10 test data only)
<b>384</b>	7	Pressure Line Leak Test History (0.10 test data only)
<b>386</b>	10	WPLLD Line Leak Status
<b>387</b>	10	WPLLD Line Leak Alarm History Report
<b>388</b>	10	WPLLD Line Leak Test Results
<b>389</b>	12	WPLLD Line Leak Test History

#### **MISCELLANEOUS REPORTS (7.2.5)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>391</b>	10	Tanker Load Report
<b>392</b>	26	Tanker Load Report II

#### **I/O DEVICE REPORTS (7.2.6)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>401</b>	1	Input Status Report
<b>402</b>	1	Input Alarm History Report
<b>403</b>	5	Input/Generator Alarm History Report
<b>406</b>	1	Relay Status Report
<b>411</b>	28	VMCI Alarm History Report
<b>412</b>	28	VMC Alarm History Report

## Serial Interface Manual

### TLS-300/350/350R Monitoring Systems

#### SETUP FUNCTIONS & REPORTS (7.3)

##### SYSTEM SETUP (7.3.1)

Code	Ver	Function
<b>501</b>	1	Set Time of day
<b>502</b>	1	Set Shift Start Time 1, 2, 3, 4
<b>503</b>	1	Set Print Header Line 1, 2, 3, 4
<b>504</b>	1	Set System RS-232 Security Code
<b>505</b>	1	Set System Type & Language Flags
<b>506</b>	2	Set Periodic Test Needed Warning
<b>507</b>	4	Set Days Before Periodic Test Needed Warning
<b>508</b>	4	Set Days Before Periodic Test Needed Alarm
<b>509</b>	4	Set Annual Test Needed Warning
<b>50A</b>	4	Set Days Before Annual Test Needed Warning
<b>50B</b>	4	Set Days Before Annual Test Needed Alarm
<b>50C</b>	5	Set Remote Printer Page Eject Flag
<b>50D</b>	8	Set Print Temperature Compensation Flag
<b>50E</b>	8	Set Temperature Compensation Value
<b>50F</b>	10	Set System Date/Time Display Format
<b>511</b>	110	Set BIR Shift Printouts Flag
<b>512</b>	110	Set BIR Daily Printouts Flag
<b>513</b>	10	Set Tanker Load Report Flag
<b>514</b>	10	Set H-Protocol Height/Volume format
<b>515</b>	110	Set HRM - QPLD Monthly Printout
<b>516</b>	14	Set Re-direct Local Printout Flag
<b>517</b>	15	Set System Type & Language Flags
<b>518</b>	15	Set Secondary Language Code Page Output
<b>519</b>	15	Set PLLD & WPLLD Duration Before Precision Retest
<b>51A</b>	15	Set Enable/Disable Auto Daylight Saving Time
<b>51B</b>	15	Set Start/End Daylight Saving Date and Time
<b>51C</b>	116	Set Ticketed Delivery Flag Enable
<b>51D</b>	116	Set Ticketed Delivery Temperature Compensation Flag
<b>51E</b>	116	Set Ticketed Delivery Close Day of Week

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### TLS-300/350/350R Monitoring Systems

#### COMMUNICATIONS SETUP (7.3.2)

Code	Ver	Function
520	20	Set Receiver Auto Dial Type and Start Time II
521	2	Set Receiver Configuration Flag
522	2	Set Receiver Location Label
523	2	Set Receiver Telephone Number
524	2	Set Receiver Dialing Destination Type
525	2	Set Receiver Port Number to Dial
526	2	Set Receiver Retry Number
527	2	Set Receiver Retry Delay Time
528	2	Set Receiver Confirmation Report Flag
529	19	Set Fax Auto Dial Method
52A	3	Set Receiver Report List
52B	3	Set Receiver Auto Dial Type and Start Time
52C	3	Set Receiver Auto Dial On Alarms
52D	17	Autodial Alarm Status
52E	19	Set Delay for Autodial on Alarm Clear
52F	19	Set Receiver Alarm Status
530	26	Beeper Enable/Disable
531	8	Set RS-232 End of Message

#### WARNING, ALARM, & AUTO-PRINT SETUP (7.3.3)

Code	Ver	Function
532	116	Set Ticketed Variance Analysis Printout Flags
533	116	Set Ticketed Delivery Book Variance Printout Flags
534	116	Set Ticketed Delivery Variance Printout Flags
536	20	Set RS-232 Security Code per Port
537	20	Set Display Format RS-232 ETX per Port
538	20	Set Computer Format RS-232 ETX per Port
546	15	Set Tank Periodic Test Needed Warning
547	15	Set Days Before Tank Periodic Test Needed Warning
548	15	Set Days Before Tank Periodic Test Needed Alarm
549	15	Set Tank Annual Test Needed Warning
54A	15	Set Days Before Tank Annual Test Needed Warning
54B	15	Set Days Before Tank Annual Test Needed Alarm
54C	19	Set CSLD Evaporation Reid Vapor Pressure Chart
553	19	Set Line Re-Enable Method
554	18	Set Periodic Line Leak Test Auto-Confirm
555	18	Set Annual Line Leak Test Auto-Confirm

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### TLS-300/350/350R Monitoring Systems

#### WARNING, ALARM, & AUTO-PRINT SETUP (7.3.3) (Continued)

Code	Ver	Function
<b>556</b>	15	Set Line Periodic Test Needed Warning
<b>557</b>	15	Set Days Before Line Periodic Test Needed Warning
<b>558</b>	15	Set Days Before Line Periodic Test Needed Alarm
<b>559</b>	15	Set Line Annual Test Needed Warning
<b>55A</b>	15	Set Days Before Line Annual Test Needed Warning
<b>55B</b>	15	Set Days Before Line Annual Test Needed Alarm
<b>560</b>	26	Set Mass/Density Enable/Disable
<b>564</b>	27	Set Ullage
<b>565</b>	27	Set Maintenance History
<b>566</b>	28	Set Service Notice Enable
<b>567</b>	28	Set Service Notice Delivery Override Enable
<b>568</b>	28	Set Service Notice Session Enable
<b>569</b>	28	Set Service Notice Session Duration
<b>5BC</b>	19	Set Receiver Auto Dial on Alarm II
<b>5BD</b>	23	Set Enable/Disable Custom Alarms
<b>5BE</b>	23	Set Custom Alarm Labels
<b>5BF</b>	26	Set Custom Alarm Label, device number, and indications
<b>5E2</b>	14	Set Inventory Record Time 1, 2, 3, 4

#### IN-TANK SETUP (7.3.4)

Code	Ver	Function
<b>601</b>	1	Set Tank Configuration
<b>602</b>	1	Set Tank Product Label
<b>603</b>	1	Set Tank Product Code
<b>604</b>	1	Set Tank 1 Point Full Height Volume
<b>605</b>	1	Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes
<b>606</b>	1	Set Tank 20 Point Full, 95%, 90%,... Volumes
<b>607</b>	1	Set Tank Diameter
<b>608</b>	1	Set Tank Tilt
<b>609</b>	1	Set Tank Thermal Expansion Coefficient
<b>60A</b>	9	Set Tank Linear Calculated Full Volume
<b>60B</b>	15	Set Tank Stick Height Function Enable
<b>60C</b>	15	Set Tank Stick Height Offset
<b>60E</b>	22	Set Tank Programmable Float Parameters
<b>60F</b>	22	Set Tank Probe Offset



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### TLS-300/350/350R Monitoring Systems

#### IN-TANK SETUP (7.3.4) (Continued)

Code	Ver	Function
<b>610</b>	1	Set Tank Delivery Delay
<b>611</b>	1	Set Tank Leak Test Type & Start Time
<b>612</b>	1	Set Tank SIPHON Manifolded Partners
<b>613</b>	3	Set CSLD Probability of Detection
<b>614</b>	5	Set CSLD Climate Factor
<b>615</b>	108	Set BIR Meter Data Present
<b>616</b>	110	Set AccuChart Update Scheduling
<b>618</b>	19	Set Tank CSLD Evaporation Compensation
<b>619</b>	19	Set Tank Stage II Vapor Recovery
<b>61A</b>	20	Set In-Tank Leak Test Early Stop
<b>61B</b>	121	Set In-Tank Static Gross Test Auto-Confirm
<b>61C</b>	121	Set CSLD Report Only Mode
<b>61D</b>	23	Set Tank LINE Manifolded Partners
<b>61E</b>	26	Set Tank Density
<b>61F</b>	26	Set Delivery Density
<b>621</b>	1	Set Tank Low Level Limit
<b>622</b>	1	Set Tank High Level Limit
<b>623</b>	1	Set Tank Overfill Level Limit
<b>624</b>	1	Set Tank High Water Level Limit
<b>625</b>	1	Set Tank Sudden Loss Limit
<b>626</b>	1	Set Tank Leak Alarm Limit
<b>627</b>	2	Set Tank High Water Warning Limit
<b>628</b>	2	Set Tank Maximum Volume Limit
<b>629</b>	2	Set Tank Delivery Required Limit
<b>62A</b>	2	Set Tank Annual Leak Test Minimum Volume
<b>62B</b>	2	Set Tank Last Annual Test
<b>62C</b>	2	Set Tank Periodic Test Type
<b>62D</b>	2	Set Enable/Disable Tank Leak Test Fail Alarms
<b>62E</b>	3	Set CAP0 Probe Conductive Boot Flag
<b>62F</b>	3	Set Mag Probe Float Size
<b>630</b>	3	Set Tank Leak Test Notify
<b>631</b>	5	Set Tank Leak Test Averaging
<b>632</b>	5	Set Tank Test Siphon Break
<b>633</b>	9	Set Leak Test Report Type
<b>634</b>	110	Set Tank HRM Reconciliation Warning Limit
<b>635</b>	110	Set Tank HRM Reconciliation Alarm Limit

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#### IN-TANK SETUP (7.3.4) (Continued)

Code	Ver	Function
<b>636</b>	14	Set Tank Periodic Leak Test Minimum Volume
<b>639</b>	115	Set Tank AccuChart End Shape Type and Factor
<b>63A</b>	22	Set Tank Low Level Threshold for Sequential Line Manifold
<b>63B</b>	26	Set Tank 50 Point Heights and Volumes
<b>63C</b>	26	Set Tank 50 Point Full Volume
<b>680</b>	6	Fuel Management General Setup Inquiry
<b>681</b>	6	Set Fuel Management Delivery Needed Warning
<b>682</b>	6	Set Fuel Management Automatic Report Print Time
<b>683</b>	6	Set Fuel Management Average Daily Sales

#### SENSOR SETUP (7.3.5)

Code	Ver	Function
<b>701</b>	1	Set Liquid Sensor Configuration
<b>702</b>	1	Set Liquid Sensor Location Label
<b>703</b>	1	Set Liquid Sensor Type
<b>704</b>	2	Set Liquid Sensor Category
<b>706</b>	1	Set Vapor Sensor Configuration
<b>707</b>	1	Set Vapor Sensor Location Label
<b>708</b>	1	Set Vapor Sensor Alarm Threshold
<b>709</b>	2	Set Vapor Sensor Category
<b>711</b>	1	Set Groundwater Sensor Configuration
<b>712</b>	1	Set Groundwater Sensor Location Label
<b>713</b>	2	Set Groundwater Sensor Category
<b>721</b>	24	Set Smart Sensor Configuration
<b>722</b>	24	Set Smart Sensor Label
<b>723</b>	25	Set Smart Sensor Category
<b>727</b>	24	Set MAG Sensor Alarm Upgrade Delay
<b>728</b>	24	Set MAG Sensor Alarm Threshold
<b>729</b>	24	Set Vacuum Sensor Pump Number
<b>72A</b>	24	Set Vacuum Sensor Volume
<b>72B</b>	24	Set Vacuum Sensor Relief Valve Present
<b>72C</b>	24	Set Vacuum Sensor Relief Valve Pressure
<b>741</b>	2	Set Type A (2 Wire CL) Sensor Configuration
<b>742</b>	2	Set Type A (2 Wire CL) Sensor Location Label
<b>743</b>	2	Set Type A (2 Wire CL) Sensor Type
<b>744</b>	2	Set Type A (2 Wire CL) Sensor Category

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#### SENSOR SETUP (7.3.5) (Continued)

Code	Ver	Function
746	2	Set Type B (3 Wire CL) Sensor Configuration
747	2	Set Type B (3 Wire CL) Sensor Location Label
748	5	Set Type B (3 Wire CL) Sensor Type
749	2	Set Type B (3 Wire CL) Sensor Category
74B	4	Set Universal Sensor Configuration
74C	4	Set Universal Sensor Location Label
74D	4	Set Universal Sensor Type
74E	4	Set Universal Sensor Category

#### VOLUMETRIC LINE LEAK SETUP (7.3.6)

Code	Ver	Function
751	1	Set Volumetric Line Leak Configuration
752	1	Set Volumetric Line Leak Tank Number
753	1	Set Volumetric Line Leak 2 Inch Pipe Length
754	1	Set Volumetric Line Leak 3 Inch Pipe Length
755	1	Set Volumetric Line Leak Pump PSI
756	1	Set Volumetric Line Leak Piping Material
757	1	Set Volumetric Line Leak Shutdown Rate
758	1	Set Volumetric Line Leak Pump Side Test
759	1	Set Volumetric Line Leak Test Type & Start Time
75A	1	Set Line Leak Lockout Schedule (All Types)
75B	2	Set Line Disable Alarm Assignments
75C	2	Set Volumetric Line Leak Last Annual Test
75D	4	Set Volumetric Line Leak Dispense Mode
75E	4	Set Volumetric Line Leak Fuel Type
75F	5	Set Volumetric Line Leak Wait Method
760	6	Set Volumetric Line Leak Location Label
761	7	Set Volumetric Line Leak Blend Partner

#### PUMP SENSOR SETUP (7.3.7)

Code	Ver	Function
771	2	Set Pump Sensor Configuration
772	2	Set Pump Sensor Tank Number
773	4	Set Pump Sensor Dispense Mode

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#### PRESSURE LINE LEAK SETUP (7.3.8)

Code	Ver	Function
774	27	Set Pressure Line Leak Continuous Handle Alarm Timeout
775	23	Set Pressure Line Leak Profile Line Test Leak Rate
776	23	Set Pressure Line Leak Profile Line Test Reference Pressure
777	23	Set Pressure Line Leak Primary Pipe Diameter
778	23	Set Pressure Line Leak Secondary Pipe Diameter
779	23	Set Pressure Line Leak Primary Pipe Bulk Modulus
77A	23	Set Pressure Line Leak Secondary Pipe Bulk Modulus
77B	23	Set Pressure Line Leak Thermal Expansion Coefficient
77C	19	Set Pressure Line Leak Low Pressure Shutoff
77D	19	Set Pressure Line Leak Altitude Pressure Offset
77E	24	Set Pressure Line Leak Passive 0.10 GPH Test Enable Flag
77F	17	Set Pressure Line Leak Secondary Pipe Length
780	7	Pressure Line Leak General Setup Inquiry
781	7	Set Pressure Line Leak Configuration
782	7	Set Pressure Line Leak Label
783	7	Set Pressure Line Leak 0.10 GPH Test Schedule
784	7	Set Pressure Line Leak Shutdown Rate
785	7	Set Pressure Line Leak Tank Number
786	7	Set Pressure Line Leak Dispense Mode
787	7	Set Pressure Line Leak Disable Alarm Assignments
788	9	Set Pressure Line Leak Piping Material
789	9	Set Pressure Line Leak Primary Pipe Length
78A	11	Set Pressure Line Leak Sensor Type
78B	16	Set Pressure Line Leak 0.10 GPH Test Schedule (Obsolete at Version 17, use 78E)
78C	12	Set Pressure Line Leak 0.20 GPH Test Schedule
78E	17	Set Pressure Line Leak 0.10 GPH Auto Test Enable
78F	17	Set Pressure Line Leak Dispense Threshold

#### RECONCILIATION SETUP (7.3.9)

Code	Ver	Function
790	118	DIM Software Revision
791	106	Set Mechanical Dispenser Interface String
792	106	Set Electronic Dispenser Interface String
793	106	Set Reconciliation Auto Daily Closing Time
794	106	Set Auto Shift Closing Time 1, 2, 3, 4
795	106	Set Periodic Reconciliation Mode
796	106	Set Periodic Reconciliation Report Length
797	106	Set Periodic Reconciliation Alarm Flag
798	106	Set Periodic Reconciliation Alarm Threshold
799	106	Set Periodic Reconciliation Alarm Offset
79A	106	Set Remote Printer Reconciliation Report Format

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#### RECONCILIATION SETUP (7.3.9) (Continued)

Code	Ver	Function
79B	106	Set Shift Manual Adjustment Value
79C	106	Set Daily Manual Adjustment Value
79D	106	Close Current Reconciliation Shift
79E	106	Clear Tank Map Table
79F	108	Set BIR Temperature Compensation Flag

#### WIRELESS PLLD SETUP (7.3.10)

Code	Ver	Function
7A0	10	WPLLD Line Leak General Setup
7A1	10	Set WPLLD Line Leak Configuration
7A2	10	Set WPLLD Line Leak Label
7A3	10	Set WPLLD Line Leak 0.20 GPH Test Schedule
7A4	10	Set WPLLD Line Leak Shutdown Rate
7A5	10	Set WPLLD Line Leak Tank Number
7A6	10	Set WPLLD Line Leak Dispense Mode
7A7	10	Set WPLLD Line Disable Alarm Assignments
7A8	10	Set WPLLD Line Leak Pipe Type
7A9	10	Set WPLLD Line Leak Pipe Length
7AA	11	Set WPLLD Line Leak 0.10 GPH Test Schedule (Obsolete at Version 17, use 7AC)
7AC	17	Set WPLLD Line Leak 0.10 GPH Test Schedule Enable
7AD	20	Set WPLLD Line Leak Secondary Pipe Length
7AE	27	WPLLD Continuous Handle Alarm Timeout
7AF	19	Set WPLLD Line Leak Altitude Pressure Offset

#### METER MAP & DELIVERY TICKET SETUP (7.3.11)

Code	Ver	Function
7B1	110	Set BIR Meter/Tank Mapping
7B2	20	Set Meter Calibration Offset
7B5	116	Set Ticketed Delivery
7B6	23	Set BOL number

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#### I/O DEVICE SETUP (7.3.12)

Code	Ver	Function
<b>7BC</b>	19	Set Line Disable Alarm Assignments II
<b>7BD</b>	19	Set Pressure Line Disable Alarm Assignments II
<b>7BE</b>	19	Set WPLLD Line Disable Alarm Assignments II
<b>7C4</b>	27	Set Pump Relay Monitor Configuration
<b>7C5</b>	27	Set Pump Relay Monitor Label
<b>7C6</b>	27	Set Pump Relay Monitor Pump Relay
<b>7C7</b>	27	Set Pump Relay Monitor Stuck Relay
<b>7C8</b>	27	Set Pump Relay Monitor Max Run Time
<b>7C9</b>	28	Set Pump Relay Monitor Type
<b>801</b>	1	Set Input Configuration
<b>802</b>	1	Set Input Location Label
<b>803</b>	1	Set Input Type
<b>804</b>	4	Set Input Dispense Mode
<b>806</b>	1	Set Relay Configuration
<b>807</b>	1	Set Relay Location Label
<b>808</b>	1	Set Relay Alarm Assignments
<b>809</b>	2	Set Relay Orientation
<b>80A</b>	4	Set Relay Type
<b>80B</b>	4	Set Relay Tank Assignment
<b>80C</b>	25	Set External Input Type

#### EEPROM SETUP (7.3.13)

Code	Ver	Function
<b>851</b>	107	Restore All Setup Data from EEPROM
<b>852</b>	107	Save All Setup Data to EEPROM
<b>853</b>	107	Clear All Setup Data from EEPROM

#### MISCELLANEOUS SETUP (7.3.14)

Code	Ver	Function
<b>881</b>	9	Set Communication Port Data
<b>882</b>	9	Initialize Communication Port Data
<b>885</b>	19	Set SiteLink Modem Type
<b>886</b>	20	Set Modem Setup String
<b>887</b>	20	Set Dial Tone Validation Interval
<b>888</b>	19	Communication Status Information
<b>889</b>	121	DTR Normal State for Serial Satellite Boards

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#### MISCELLANEOUS SETUP (7.3.14) (Continued)

Code	Ver	Function
<b>88D</b>	23	Communication Diagnostic for SiteLink
<b>891</b>	108	Set AccuChart Calibration Restart
<b>8A2</b>	27	Service Code List
<b>8A3</b>	27	Maintenance Tracker Active Hardware Key List
<b>8A4</b>	27	Maintenance Tracker Block Hardware Key
<b>8BC</b>	19	Set Relay Alarm Assignments II
<b>8C1</b>	28	VMC Edit/Add Serial Number
<b>8C2</b>	28	VMC Remove Serial Number

#### DIAGNOSTIC REPORTS (7.4)

##### SYSTEM DIAGNOSTIC REPORTS (7.4.1)

Code	Ver	Function
<b>901</b>	1	Self Test Results Report
<b>902</b>	1	System Revision Level Report
<b>903</b>	106	PC Diagnostic Report
<b>905</b>	15	System Revision Level Report II

##### IN-TANK DIAGNOSTIC REPORTS (7.4.2)

Code	Ver	Function
<b>A01</b>	1	Probe Type and Serial Number
<b>A02</b>	1	Probe Factory Dry Calibration Values
<b>A03</b>	1	Probe Factory Wet Calibration Values
<b>A04</b>	1	Probe Updated Dry Calibration Values
<b>A05</b>	1	Probe Updated Wet Calibration Values
<b>A06</b>	1	Probe Segment Sensitivity Ratios
<b>A07</b>	23	Probe Reference Distance Diagnostic
<b>A10</b>	1	Probe Last Sample Buffers
<b>A11</b>	1	Probe Fast Average Buffers
<b>A12</b>	1	Probe Standard Average Buffers
<b>A13</b>	1	Probe Long Term Average Buffers
<b>A14</b>	19	Mag Probe Option Table
<b>A15</b>	24	In-Tank Diagnostic Printout
<b>A20</b>	1	Probe Leak Test Flags - Present Test
<b>A21</b>	1	Probe Leak Test Flags - Stored Test
<b>A22</b>	2	Probe Leak Test Flags - Gross Test
<b>A23</b>	5	Tank Leak Test Averaging Buffers

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#### IN-TANK DIAGNOSTIC REPORTS (7.4.2) (Continued)

Code	Ver	Function
<b>A51</b>	3	CSLD Diagnostics: Rate Table
<b>A52</b>	3	CSLD Diagnostics: Rate Test
<b>A53</b>	3	CSLD Diagnostics: Volume History Table
<b>A54</b>	3	CSLD Diagnostics: Moving Average Table
<b>A55</b>	3	CSLD Diagnostics: Leak Test Status
<b>A56</b>	121	CSLD Monthly Report
<b>A61</b>	110	HRM Diagnostic Report
<b>A62</b>	112	HRM Daily History
<b>A63</b>	26	Extended HRM Diagnostic Report
<b>A81</b>	6	Fuel Management Diagnostic Report
<b>A91</b>	9	Power Outage Diagnostic Report

#### SENSOR DIAGNOSTIC REPORTS (7.4.3)

Code	Ver	Function
<b>B01</b>	1	Liquid Sensor Diagnostic Report
<b>B06</b>	1	Vapor Sensor Diagnostic Report
<b>B07</b>	3	Vapor Sensor Concentration (PPM) Report
<b>B11</b>	1	Groundwater Sensor Diagnostic Report
<b>B21</b>	1	Ground Temperature Sensor Diagnostic Report
<b>B33</b>	24	MAG Sensor Diagnostic Report
<b>B34</b>	24	Smart Sensor Last Sample Diagnostic
<b>B35</b>	24	Smart Sensor Type and Serial Number
<b>B36</b>	24	Smart Sensor Constant Data
<b>B37</b>	24	Atmospheric Pressure Sensor Diagnostic Report
<b>B38</b>	24	Vacuum Sensor Diagnostic Report
<b>B39</b>	24	Vacuum Sensor Evacuation Diagnostic Report
<b>B41</b>	2	Type A Sensor (2 Wire CL) Diagnostic Report
<b>B46</b>	2	Type B Sensor (3 Wire CL) Diagnostic Report
<b>B4B</b>	4	Universal Sensor Diagnostic Report



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#### LINE LEAK DIAGNOSTIC REPORTS (7.4.4)

Code	Ver	Function
<b>B50</b>	1	Volumetric Line Leak Status
<b>B51</b>	1	Volumetric Line Leak Diagnostic Gross Test History
<b>B52</b>	1	Volumetric Line Leak 0.10 & 0.20 GPH Diagnostic History
<b>B71</b>	2	Pump Sensor Diagnostic
<b>B72</b>	27	Pump Relay Monitor Diagnostic
<b>B7B</b>	23	Pressure Line Leak Profile Line Test
<b>B7C</b>	19	Pressure Line Leak Pressure Offset Test
<b>B7D</b>	19	WPPLD Line Leak Pressure Offset Test
<b>B7E</b>	19	Pressure Line Leak Pressure Offset Monitor Report
<b>B7F</b>	19	WPLLD Line Leak Pressure Offset Monitor Report
<b>B81</b>	7	Pressure Line Leak Diagnostic Report
<b>B82</b>	10	WPLLD Line Leak Diagnostic Report
<b>B83</b>	10	WPLLD Line Leak Communication Diagnostic Report
<b>B87</b>	19	Pressure Line Leak 3.00 GPH Test Diagnostic
<b>B88</b>	19	Pressure Line Leak Mid-range Test Diagnostic
<b>B89</b>	19	Pressure Line Leak 0.20 GPH Test Diagnostic
<b>B8A</b>	19	Pressure Line Leak 0.10 GPH Test Diagnostic
<b>B8B</b>	19	WPLLD Line Leak 3.00 GPH Test Diagnostic
<b>B8C</b>	19	WPLLD Line Leak Mid-range Test Diagnostic
<b>B8D</b>	19	WPLLD Line Leak 0.20 GPH Test Diagnostic
<b>B8E</b>	19	WPLLD Line Leak 0.10 GPH Test Diagnostic

#### RECONCILIATION DIAGNOSTIC REPORTS (7.4.5)

Code	Ver	Function
<b>B91</b>	108	AccuChart Diagnostics Report
<b>B93</b>	108	AccuChart Status Report
<b>B94</b>	108	AccuChart Calibration History Report
<b>BA0</b>	110	MDIM Totalizer Report
<b>BB1</b>	28	VMC Status Report

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### TLS-300/350/350R Monitoring Systems

#### RECONCILIATION REPORTS (7.5)

Code	Ver	Function
<b>C01</b>	106	Basic Inventory Reconciliation Daily "Row" Report
<b>C02</b>	106	Basic Inventory Reconciliation Daily "Column" Report
<b>C03</b>	106	Basic Inventory Reconciliation Shift "Row" Report
<b>C04</b>	106	Basic Inventory Reconciliation Shift "Column" Report
<b>C05</b>	106	Basic Inventory Reconciliation Periodic "Row" Report
<b>C06</b>	106	Basic Inventory Reconciliation Periodic "Column" Report
<b>C07</b>	114	Basic Inventory Reconciliation Periodic "Row" Report
<b>C08</b>	114	Basic Inventory Reconciliation Periodic "Column" Report
<b>C09</b>	19	Individual Basic Reconciliation Daily History Diagnostic

#### VARIANCE ANALYSIS REPORTS (7.6)

Code	Ver	Function
<b>C10</b>	116	Periodic Book Variance
<b>C11</b>	116	Weekly Book Variance
<b>C12</b>	116	Daily Book Variance
<b>C20</b>	116	Periodic Variance Analysis Report
<b>C21</b>	116	Weekly Variance Analysis Report
<b>C22</b>	116	Daily Variance Analysis Report
<b>C25</b>	19	Periodic Variance Analysis Daily Report

#### IN-STATION DIAGNOSTICS (ISD) (7.7)

##### ISD REPORTS (7.7.1)

Code	Ver	Function
<b>V00</b>	25	ISD CARB Certified Operating Requirements and Monitoring
<b>V01</b>	25	ISD Alarm Status Report
<b>V02</b>	25	ISD Monthly Status Report
<b>V03</b>	25	ISD Daily Status Report
<b>V04</b>	25	ISD Daily Report Details (by month)
<b>V05</b>	25	ISD Daily Report Details (by day(s))
<b>V06</b>	25	ISD Daily Report Details, 132 columns (by month)
<b>V07</b>	25	ISD Daily Report Details (by day(s))
<b>V08</b>	25	ISD Daily Report Details (by month)
<b>V09</b>	25	ISD Daily Report Details, user input columns (by day(s))
<b>V0A</b>	25	ISD Daily Overall Status Report
<b>V0B</b>	25	ISD Monthly Overall Status Report
<b>V10</b>	25	ISD Version Number

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### **TLS-300/350/350R Monitoring Systems**

#### **ISD SETUP (7.7.2)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>V40</b>	25	Set Vapor Processor Type
<b>V41</b>	25	Set Vapor Processor Control Level
<b>V42</b>	25	Set Clear Sensor/AFM/Hose Maps
<b>V43</b>	25	Set Sensor Table ISD In Use Flag
<b>V44</b>	25	Set Vapor Processor ON/OFF Pressure Thresholds
<b>V45</b>	25	Set Vapor Processor Maximum Runtime
<b>V46</b>	25	Set Hydrocarbon Alarm Threshold
<b>V47</b>	25	Set time of day ISD/PMC tests are started and results posted
<b>V48</b>	25	Read Airflow Meter Table
<b>V49</b>	25	Set Hose Label Table
<b>V4A</b>	25	Read Hose Table Data
<b>V4B</b>	25	Read Grade Table
<b>V4E</b>	25	Set ISD EVR TYPE
<b>V4F</b>	25	Set Nozzle Type
<b>V50</b>	25	Set CVLD Minimum Pressure Time Window
<b>V51</b>	25	Perform ISD Setup Verification Test
<b>V52</b>	25	Accept High ORVR Configuration

#### **ISD DIAGNOSTIC REPORTS (7.7.3)**

<b>Code</b>	<b>Ver</b>	<b>Function</b>
<b>V80</b>	25	Vapor Processor Report
<b>V81</b>	25	Percent Hydrocarbon Report
<b>V83</b>	25	Read Sensor Calibration History
<b>V85</b>	25	ISD Service Report Test Fail Clear
<b>VC0</b>	25	Automatic/Manual Vapor Processor Control
<b>VC1</b>	25	Manual Override of Vapor Processor
<b>VC5</b>	25	Acknowledge ISD Alarm to Re-Enable Site
<b>XE0</b>	25	ISD Setup Data Time Stamp EEPROM