

**VEEDER - ROOT
SERIAL INTERFACE MANUAL**

for

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

and

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

through Software Versions 020/129/329/429/520

Manual Number 576013-635
Revision U

Serial Interface Manual

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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
Function Type: Clear Power Reset Flag

Version 1

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>s00200YYMDDHHmm&&CCCC<ETX>
```

Notes:

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

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Function Code: 003
Function Type: Remote Alarm Reset

Version 1

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>s00300YYMDDHHmm&&CCCC<ETX>
```

Notes:

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

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Function Code: 010
Function Type: Cancel Autodial Computer Mode Session

Version 14

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>s00300YYMDDHHmm&&CCCC<ETX>
```

Notes:

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

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Version 10

Function Code: 031
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
Function Type: Clear In-Tank Delivery Reports

Version 1

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. YYMMDDHHmm - 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
Function Type: Start In-Tank Leak Detect Test

Version 1

Command Format:
Display: <SOH>S052TT
Computer: <SOH>s052TT

Typical Response Message, Display Format:

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

TANK   PRODUCT LABEL      LEAK TEST START
  1     UNLEADED REGULAR    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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Version 1

Function Code: 053
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
Function Type: Delete CSLD Rate Table

Version 5

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

Version 7

Command Format:
Display: <SOH>S08100149
Computer: <SOH>s08100149

Notes:

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

Typical Response Message, Display Format:

```
<SOH>
S08100
MAR 29, 1996 6:27 PM
```

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

Typical Response Message, Computer Format:

```
<SOH>s08100YYMDDHHmmQQtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Stop Pressure Line Leak Test

Version 7

Command Format:
Display: <SOH>S08200149
Computer: <SOH>s08200149

Notes:

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

Typical Response Message, Display Format:

```
<SOH>
S08200
MAR 29, 1996 6:27 PM
```

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

Typical Response Message, Computer Format:

```
<SOH>s08200YYMMDDHHmmQQtt&&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
Function Type: Start WPLLD Line Leak Test (3.00 GPH only in V18)

Version 10

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>s083WWYYMDDHHmmWWtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Stop WPLLD Line Leak Test

Version 10

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>s084WWYYMDDHHmmWWtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Start Pressure Line Leak Test by Type

Version 18

Command Format:
Display: <SOH>S08700149rr
Computer: <SOH>s08700149rr

Notes:

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

Typical Response Message, Display Format:

```
<SOH>
S08700
MAR 29, 1999 6:27 PM

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

Typical Response Message, Computer Format:

```
<SOH>s08700YYMMDDHHmmQQrrtt&&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
Function Type: Start WPLLD Line Leak Test by Type

Version 18

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
Function Type: Pressure Line Leak Pressure Offset Reset

Version 19

Command Format:
Display: <SOH>S08900149
Computer: <SOH>s08900149

Notes:

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

Typical Response Message, Display Format:

```
<SOH>
S08900
JAN 1, 2000 6:27 PM

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

Typical Response Message, Computer Format:

```
<SOH>s08900YYMMDDHHmm&&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
Function Type: WPLLD Line Leak Pressure Offset Reset

Version 19

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>s090WWYYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

Version 15

Function Code: 091
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
 Function Type: Start Pressure Line Leak Profile Line Test

Version 23

Command Format:
 Display: <SOH>S09200149
 Computer: <SOH>s09200149

Notes:

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

Typical Response Message, Display Format:

```
<SOH>
I09200
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>s09200YYMMDDHHmmQQtt
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

Version 23

Function Code: 093
 Function Type: Stop Pressure Line Leak Profile Line Test

Command Format:
 Display: <SOH>S09300149
 Computer: <SOH>s09300149

Notes:

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

Typical Response Message, Display Format:

```
<SOH>
I09300
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>s09300YYMDDHHmmQQtt
QQtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Recalculate Pressure Line Leak Profile Bulk Modulus

Version 23

Command Format:
 Display: <SOH>S09400149
 Computer: <SOH>s09400149

Notes:

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

Typical Response Message, Display Format:

```
<SOH>
I09400
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>s09400YYMDDHHmmQQtt
      QQtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Start Vacuum Sensor Manual Test

Version 24

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
Function Type: Stop Vacuum Sensor Manual Evacuation Test

Version 24

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
Function Type: Start Vacuum Sensor Evacuation Hold

Version 24

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
Function Type: Stop Vacuum Sensor Evacuation Hold

Version 24

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
Function Type: Start Mag Sump Leak Test

Version 26

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>s099ssYYMDDHHmmssstt...
ssth&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Start Mag Sump Leak Test Measuring Height Phase

Version 26

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
STABILITY PHASE STARTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s09AssYYMDDHHmmsstt...
sstt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Stop Mag Sump Leak Test

Version 26

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>s09BssYYMDDHHmmsstt...
sstt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: System Status Report

Version 1

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>i 10100YYMMDDHHmmAAANNTT...  
AAANNTT&&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
 - 36=VMC Alarm

(Version 28)
(Version 28)

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

Serial Interface Manual

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
Function Type: System Configuration Report

Version 1

Command Format:
Display: <SOH>I10200
Computer: <SOH>i 10200

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>i10200YYMDDHHmmNNSSTTTTTTTTTFFFFFFFFFFCCCCCCC...
SSTTTTTTTTTFFFFFFFFFFCCCCCCC&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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=MF 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
 Function Type: Priority Alarm History Report

Version 2

Command Format:
 Display: <SOH>I11100
 Computer: <SOH>i 11100

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>i 11100YYMDDHHmmAAccNNTTSSYYMDDHHmm...
AAccNNTTSSYYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 2

Function Code: 112
 Function Type: Non-Priority Alarm History Report

Command Format:
 Display: <SOH>I11200
 Computer: <SOH>i 11200

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>i 11200YYMDDHHmmAAccNNTTSSYYMDDHHmm...
AAccNNTTSSYYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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 12:00PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11300YYMDDHHmma..ab..bc..cd..dAAccNNTTYMDDHHmm...
AAccNNTTYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Alarm Date and Time
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 19

Function Code: 114
 Function Type: Cleared Alarm Report

Command Format:
 Display: <SOH>I11400
 Computer: <SOH>i 11400

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>i 11400YYMDDHHmma. . ab. . bc. . cd. . dAAccNNTTSSYYMDDHHmm. .
AAccNNTTSSYYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. SS - Alarm State
 01=Alarm cleared
 02=Alarm occurred
11. YYMDDHHmm - Clear Alarm Date and Time
12. && - Data Termination Flag
13. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 27

Function Code: 115
 Function Type: Maintenance Tracker Unacknowledged Alarm Report

Command Format:
 Display: <SOH>I11500
 Computer: <SOH>i 11500

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
L1	OTHER	LIQUID SENS 1	SENSOR OUT	7-08-06	10:10AM

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i 11500YYMDDHHmma..ab..bc..cd..dAAccNNTTYMDDHHmm..
AaccNNTTYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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>i11600YYMDDHHmma..ab..bc..cd..dNNYYMDDHHmmi iiii cccc...
YYMDDHHmmi iiii cccc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Date and Time of entry
8. iiii cccc - Service ID entered by Service Contractor (10 alpha/numeric)
9. cccc - 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
 Function Type: Maintenance History Report

Version 27

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
WPLD 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>i 11900YYMDDHHmmNNNNYYMDDHHmmtXXXXXXXXYYMDDHHmmtXXXXXX. . .
                                     YYMDDHHmmtXXXXXX&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. NNNNN - Number of records to Follow (Decimal)
3. YYMDDHHmm - 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

Version 27

Function Code: 11A
 Function Type: Service Report History

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>i11A00YYMDDHHmmNNYYMDDHHmmiiiiii cccc...
YYMDDHHmmiiiiii cccc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. NN - Number of Records to follow (Decimal)
3. YYMDDHHmm - Date and Time of entry
4. iiiiii - 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
 Function Type: Service Notice Session Report

Version 28

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>i11B00YYMDDHHmmfYYMDDHHmmNNYYMDDHHmmYYMDDHHmm...
YYMDDHHmmYYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. f - Service Notice Session Enable
 0 = Disabled
 1 = Enabled
3. YYMDDHHmm - 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. YYMDDHHmm - Start Date and Time
6. YYMDDHHmm - 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
 Function Type: In-Tank Inventory Report

Version 1

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>i201TTYMMDDHHmmTTpssssNNFFFFFFF...
TTpssssNNFFFFFFF&&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. 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>i 202TT

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>i 202TTYMDDHHmmiTpddYYMDDHHmmYYMDDHHmmNNFFFFFFF...
TTpddYYMDDHHmmYYMDDHHmmNNFFFFFFF&&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. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YYMDDHHmm - Starting Date/Time
6. YYMDDHHmm - 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
 Function Type: In-Tank Leak Detect Report

Version 1

Command Format:
 Display: <SOH>I203TT
 Computer: <SOH>i 203TT

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>i 203TTYMMDDHHmmTpYYMMDDHHmmHHNNFFFFFFF...
TTpYYMMDDHHmmHHNNFFFFFFF&&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
 Function Type: In-Tank Shift Inventory Report

Version 1

Command Format:
 Display: <SOH>I204TT
 Computer: <SOH>i 204TT

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>i 204TTYMMDDHHmmTTpssNNFFFFFFF...
      TTpssNNFFFFFFF&&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. 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
Function Type: In-Tank Status Report

Version 1

Command Format:
Display: <SOH>I205TT
Computer: <SOH>i 205TT

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>i 205TTYMMDDHHmmTTnnNN.
TTnnNN&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
Function Type: In-Tank Alarm History Report

Version 1

Command Format:
Display: <SOH>I206TT
Computer: <SOH>i 206TT

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>i 206TTYMMDDHHmmTTnnYYMMDDHHmmaaaa...
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
Function Type: In-Tank Leak Test History Report

Version 2

Command Format:
Display: <SOH>I207TT
Computer: <SOH>i 207TT

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>i207TTYMMDDHHmmTTNRRRnnttYYMMDDHHmmhhhhhhhVVVVVVVpppppppp...
TTNRRRnnttYYMMDDHHmmhhhhhhhVVVVVVVpppppppp&&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=Fulltest Test Passed
 - 02=Fulltest 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
 Function Type: In-Tank Leak Test Results Report

Version 2

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>i208TTYYMDDHHmmTTNNttmmYYMDDHHmmRRrrrrrrrrhhhhhhhVVVVVVV...
TTNNttmmYYMDDHHmmRRrrrrrrrrhhhhhhhVVVVVVV&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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 ManifolDED During Leak Test
 01=Tank ManifolDED During Leak Test
6. YYMDDHHmm - 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

Version 110

Function Code: 20A
 Function Type: HRM Adjusted Delivery Report

Command Format:
 Display: <SOH>I20ATT
 Computer: <SOH>i 20ATT

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>i 20A00YYMDDHHmmTTpPPrrYYMDDHHmmNNFFFFFFF...
TTpPPrrYYMDDHHmmNNFFFFFFF&&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. PP - Probe Type
5. rr - Number of Records to follow (Decimal)
6. YYMDDHHmm - 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

Version 110

Function Code: 20B
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>i20BTTYMMDDHHmmTTddYYMMDDHHmmYYMMDDHHmmNNFFFFFFF...
TTddYYMMDDHHmmYYMMDDHHmmNNFFFFFFF&&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

Version 15

Function Code: 20C
 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>i20CTTYMDDHHmmTTpddYYMDDHHmmYYMDDHHmmNNFFFFFFF...
TTpddYYMDDHHmmYYMDDHHmmNNFFFFFFF&&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. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YYMDDHHmm - Starting Date/Time
6. YYMDDHHmm - 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
Function Type: In-Tank Stick Height Report

Version 15

Command Format:
Display: <SOH>I20DTT
Computer: <SOH>i 20DTT

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>i 20DTTYMDDHHmmTTTTTTTTT...
TTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

Version 14

Function Code: 211
 Function Type: Tank Chart Report

Command Format:
 Display: <SOH>I211TThhhhh
 Computer: <SOH>i211TTFFFFFFF

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 CALIBRATION CHART          TANK 1
STATION HEADER 2...          REGULAR UNLEADED
STATION HEADER 3...          10028 GALLONS
STATION HEADER 4...          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
:							
:							
:							

Typical Response Message, Computer Format:

```
<SOH>i211TTYMDDHHmmTTnnnnnaaaaaaaaaAAAAAAAAAbbbbBbbbBBBBBBBBB...
TTnnnnnaaaaaaaaaAAAAAAAAAbbbbBbbbBBBBBBBBB&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. AAAAAAAAA - Volume 1 (ASCII Hex IEEE float)
6. bbbbbbb - Height 2 (ASCII Hex IEEE float)
7. BBBBBBB - 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
Function Type: In-Tank Leak Test History Report 2

Version 24

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>i212TTYMMDDHHmmiTTNRRnnttYYMDDHHmm  
hhhhhhhVvvvvvvppppppzzzzzzzzzzzzzzzzzzzzzz  
TTNRRnnttYYMDDHHmm  
hhhhhhhVvvvvvvppppppzzzzzzzzzzzzzzzzzzzzzz&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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. zzzzzzzz - 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
 Function Type: In-Tank Extended Standard Delivery Report

Version 26

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>i213TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFF...
      TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFF... &&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

Version 26

Function Code: 214
 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>i214TTYMMDDHHmmTTpssssNNFFFFFFF...
TTpssssNNFFFFFFF... &&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
 Function Type: In-Tank Mass/Density Delivery Report

Version 26

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>i215TTYMDDHHmmTTpddYYMDDHHmmYYMDDHHmmNNFFFFFFf...
TTpddYYMDDHHmmYYMDDHHmmNNFFFFFFf... &&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Starting Date/Time
6. YYMDDHHmm - 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
 Function Type: Tank 50 Point Heights, Volumes and Slope Report

Version 26

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>i216TTYMMDDHHmmTTdddddddffffffffffssssssssnn
      HHHHHHHHVVVVVVVVSSSSSSSS...
      HHHHHHHHVVVVVVVVSSSSSSSS...
TTdddddddffffffffffssssssssnn
      HHHHHHHHVVVVVVVVSSSSSSSS...
      HHHHHHHHVVVVVVVVSSSSSSSS&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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

Version 26

Function Code: 217
Function Type: Tank Profile

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:

- 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:
XXXXXXXXXXXXXXXXXXXXX
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>i218TTYYMDDHHmmTTccccccXXXXXXXXXXXXXXXXXXXXXXXXXXXXxyyyyyyZZZZZZZZZZZZZZZZZZZZ
nnyymmddhhmm..yymmddhhmm..
TTccccccXXXXXXXXXXXXXXXXXXXXXXXXXXXXxyyyyyyZZZZZZZZZZZZZZZZZZZZ
nnyymmddhhmm..yymmddhhmm&&CCCC<ETX>
```

Notes:

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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 26

Function Code: 219
Function Type: Tank Chart Security Status

Command Format:
Display: <SOH>I219TT
Computer: <SOH>i 219TT

Typical Response Message, Display Format:

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

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

Typical Response Message, Computer Format:

```
<SOH>i 21900YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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)
 Function Type: In-Tank Inventory Report With 90/95% Ullage

Version 27

Command Format:
 Display: <SOH>I21ATT
 Computer: <SOH>i 21ATT

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>i 21ATTYYMDDHHmmTTpssssNNFFFFFFF...
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

Version 26

Function Code: 21B
 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>i21BTYYMDDHHmmTTddYYMDDHHmmYYMDDHHmmNNFFFFFFF...
TTddYYMDDHHmmYYMDDHHmmNNFFFFFFF...&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. dd - Number of Deliveries to follow
4. YYMDDHHmm - Starting Date/Time
5. YYMDDHHmm - 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

Version 116

Function Code: 221
 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>i221TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFF...
TTpPPdddYYMMDDHHmmNNFFFFFFF&&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>222TTYMMDDHHmmiTtPPdddYYMMDDHHmmAAaa..aaNNFFFFFFF...FFFFFFF...
TTtPPdddYYMMDDHHmmAAaa..aaNNFFFFFFF...FFFFFFF&&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
 Function Type: Periodic Delivery Variance Report

Version 116

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>i 225TTYMMDDHHmmiTTpPPdddYYMMDDHHmmNNFFFFFFF...
      TTpPPdddYYMMDDHHmmNNFFFFFFF&&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
 Function Type: Weekly Delivery Variance Report

Version 116

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>i226TTYMMDDHHmmiTpPPdddYYMDDHHmmNFFFFFFFF...
TTpPPdddYYMDDHHmmNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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

Version 116

Function Code: 227
 Function Type: Daily Delivery Variance Report

Command Format:
 Display: <SOH>I227TTMDD
 Computer: <SOH>i227TTMDD

Notes:

1. TT - Tank number
2. MDD - 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>i227TTYMDDHHmmTTpPPdddYYMDDHHmmNNFFFFFFF...
TTpPPdddYYMDDHHmmNNFFFFFFF&&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. PP - Probe Type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 000, no more data for this tank will follow
6. YYMDDHHmm - 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

Version 3

Function Code: 251
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

Version 3

Function Code: 281
 Function Type: Fuel Management Report

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...NNFFFFFFF...
PPTTpttp...NNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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

Version 19

Function Code: 282
 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 4248 4265
4281 4307 4339 4405 4456 4573 4701 4854 5022 5160 5276 5345 5450
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i XXXTTYMMDDHHmmTTTTTTTTYYMMDDHHmmNNNNNNNNFF...
TTTTTTTTYYMMDDHHmmNNNNNNNNFF&&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

Version 14

Function Code: 2E2
 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>i2E2TTYMMDDHHmmIYYMDDHHmmTTpssssNNFFFFFFF...
TTpssssNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. II - Inventory Record Number (Decimal 01, 02, 03, 04)
3. YYMDDHHmm - 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
Function Type: Liquid Sensor Status Report

Version 1

Command Format:
Display: <SOH>I301SS
Computer: <SOH>i 301SS

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>i 301SSYYMMDDHHmmSSsss...
SSsss&&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

Version 1

Function Code: 302
 Function Type: Liquid Sensor Alarm History Report

Command Format:
 Display: <SOH>I302SS
 Computer: <SOH>i 302SS

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>i 302SSYYMDDHHmmSSNNYYMDDHHmmaaaa...
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: 306
Function Type: Vapor Sensor Status Report

Version 1

Command Format:
Display: <SOH>I306SS
Computer: <SOH>i 306SS

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>i 306SSYYMMDDHHmmSSssss...
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
Function Type: Vapor Sensor Alarm History Report

Version 1

Command Format:
Display: <SOH>I307SS
Computer: <SOH>i 307SS

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>i 307SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
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

Version 1

Function Code: 311
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
 Function Type: Groundwater Sensor Alarm History Report

Version 1

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>i312SSYYMDDHHmmSSNNYYMDDHHmmaaaa...
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

Version 24

Function Code: 315
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>i315SSYYMMDDHHmmSSsss...
SSsss&&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
 Function Type: Smart Sensor Alarm History Report

Version 24

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

Version 26

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 MNS
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>i317ssYYMDDHHnmssttccYYMDDHHnnNNHHHHHHHTTTTTTThhhhhhhhttttttddddd
RRrrrrrrrrrrrrrrrrrrrrrLLl1111111...
ssttccYYMDDHHnnNNHHHHHHHTTTTTTThhhhhhhhttttttddddd
RRrrrrrrrrrrrrrrrrrrrrrLLl11111111&&CCCC<ETX>
```

Notes:

1. YYMDDHHnn - 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. YYMDDHHnn - 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. mmmmmmm - Temperature Stable Time in minutes (ASCII Hex IEEE float)
15. LL - Leak Rate Status Flag
 - 00=UNKNOWN
 - 01=VALID
 - 02=COMPUTING
16. l1111111 - 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

Version 26

Function Code: 318
 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 MNS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i318ssYYMDDHHmmssttYYMDDHHmNNHHHHHHHTTTTTTTT
                                     hhhhhhhtttttttddddd...
ssttYYMDDHHmNNHHHHHHHTTTTTTTT
                                     hhhhhhhtttttttddddd&&CCCC<ETX>
```

Notes:

1. YYMDDHHm - 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. YYMDDHHm - Start Date/Time
5. NN - Number of 8 bytes data fields to follow (Decimal)
6. HHHHHHH - Starting Height, Inches (ASCII Hex IEEE float)
7. TTTTTTT - Starting Temperature, Degrees F (ASCII Hex IEEE float)
8. hhhhhh - Ending Height (ASCII Hex IEEE float)
9. tttttt - 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

Version 26

Function Code: 319
 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

Typical Response Message, Computer Format:

```
<SOH>i319ssYYMDDHHmmssttYYMDDHHmNNHHHHHHHTTTTTTTT
hhhhhhhtttttttddddd...
YYMDDHHmNNHHHHHHHTTTTTTTT
hhhhhhhtttttttddddd...
ssttYYMDDHHmNNHHHHHHHTTTTTTTT
hhhhhhhtttttttddddd...
YYMDDHHmNNHHHHHHHTTTTTTTT
hhhhhhhtttttttddddd&&CCCC<ETX>
```

Notes:

1. YYMDDHHm - Current Date and Time
2. ss - Smart Sensor Number (Decimal, 00=All)
3. tt - Number of Tests to follow (Max=10)
4. YYMDDHHm - Date/Time Test
5. NN - Number of 8 bytes data fields to follow
6. HHHHHHH - Starting Height, Inches (ASCII Hex IEEE float)
7. TTTTTTT - Starting Temperature, Degrees F (ASCII Hex IEEE float)
8. hhhhhh - Ending Height (ASCII Hex IEEE float)
9. tttttt - 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

Version 26

Function Code: 31A
 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

Typical Response Message, Computer Format:

```
<SOH>i31AssYYMDDHHmmss ttYYMDDHHmmNNHHHHHHHTTTTTTTT
hhhhhhhhtttttttddddd...
YYMDDHHmmNNHHHHHHHTTTTTTTT
hhhhhhhhtttttttddddd...
ssttYYMDDHHmmNNHHHHHHHTTTTTTTT
hhhhhhhhtttttttddddd...
YYMDDHHmmNNHHHHHHHTTTTTTTT
hhhhhhhhtttttttddddd&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. ss - Smart Sensor Number (Decimal, 00=All)
3. tt - Total Tests to follow (Max=3)
4. YYMDDHHmm - 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. 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

Version 27

Function Code: 322
 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   PUMP RELAY
                (OUT)   (IN)   STATUS
1 PUMP RELAY UNLEADED OFF    Q 1: OFF  NORMAL
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i322rrYYMDDHHmmrrabssss...
                rrabssss&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Pump Relay Monitor Alarm History Report

Version 27

Command Format:
Display: <SOH>I323rr
Computer: <SOH>i 323rr

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>i 323rrYYMDDHHmmrrNNYYMDDHHmmaaaa...
rrNNYYMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (ASCII Hex)
4. YYMDDHHmm - 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
Function Type: Smart Sensor Install Log

Version 24

Command Format:
Display: <SOH>I333SS
Computer: <SOH>i 333SS

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>i 333SSYYMDDHHmmnnnYYMDDHHmmSSNNNNNNNNffff...
YYMDDHHmmSSNNNNNNNNffff&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. nnn - Number of Events to Follow (Decimal)
3. YYMDDHHmm - 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

Version 2

Function Code: 341
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>i341SSYYMMDDHHmmSSssss...
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

Version 2

Function Code: 342
 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

Version 2

Function Code: 346
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

Version 2

Function Code: 347
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

Version 4

Function Code: 34B
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

Version 4

Function Code: 34C
 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>i34CSSYYMDDHHmmSSNNYYMDDHHmmaaaa...
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

7.2.4 LINE LEAK REPORTS

Function Code: 351
 Function Type: Volumetric Line Leak Result Report

Version 1

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
Function Type: Volumetric Line Leak Alarm History Report

Version 1

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
Function Type: Volumetric Line Leak Pump Status

Version 2

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>i353PPYYMDDHHmmPPaaaa...
PPaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Pressure Line Leak Test Results (with 0.20 test data)

Version 14

Command Format:
Display: <SOH>I37300
Computer: <SOH>i37300

Typical Response Message, Display Format:

```
<SOH>
I37300
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>i373QQYYMDDHHmmQQyymddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt...
                                     nnYYMDDHHmmRRtt...
QQyymddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt...
                                     nnYYMDDHHmmRRtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yymddhhmm - 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. MMM - 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. YYMDDHHmm - 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. YYMDDHHmm - 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
 Function Type: Pressure Line Leak Test History (with 0.20 test data)

Version 14

Command Format:
 Display: <SOH>I37400
 Computer: <SOH>i37400

Typical Response Message, Display Format:

```
<SOH>
I37400
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>i37400YYMDDHHmmQQyyymddhhmmTTNNYYMDDHHmmttnnYYMDDHHmmtt...
QQyyymddhhmmTTNNYYMDDHHmmttnnYYMDDHHmmtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymddhhmm - 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. YYMDDHHmm - 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. YYMDDHHmm - 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
 Function Type: Pressure Line Leak Status

Version 7

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>i381QQYYMMDDHHmmQQSSSttNNaaaa...
QQSSSttNNaaaa&&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
 Function Type: Pressure Line Leak Alarm History Report

Version 7

Command Format:
 Display: <SOH>I38200
 Computer: <SOH>i38200

Typical Response Message, Display Format:

```
<SOH>
I38200
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>i38200YYMDDHHmmQQNNyymddhhmmaaaa...
QQNNyymddhhmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. NN - number of alarms to follow (Hex)
4. yymddhhmm - 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
Function Type: Pressure Line Leak Test Results (0.10 test data only)

Version 7

Command Format:
Display: <SOH>I38300
Computer: <SOH>i38300

Notes:

1. In Version 12, this command's response is inadvertently identical to I37300. In Versions 7-11, 14, and higher, the response is accurately defined here.

Typical Response Message, Display Format:

```
<SOH>
I38300
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>i383QYYMDDHHmmQQyymddhhmmrrTT PPPPMMMNNYYMDDHHmmRRtt...
QQyymddhhmmrrTT PPPPMMMNNYYMDDHHmmRRtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yymddhhmm - 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. MMM - 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. YYMDDHHmm - 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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 384
 Function Type: Pressure Line Leak Test History (0.10 test data only)

Version 7

Command Format:
 Display: <SOH>I38400
 Computer: <SOH>i38400

Notes:

- In Version 12, this command's response is inadvertently identical to I37400. In Versions 7-11, 14, and higher, the response is accurately defined here.

Typical Response Message, Display Format:

```
<SOH>
I38400
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>i38400YYMDDHHmmQQyymddhhmmTTNNYYMDDHHmmtt...
QQyymddhhmmTTNNYYMDDHHmmtt&&CCCC<ETX>
```

Notes:

- YYMDDHHmm - Current Date and Time
- QQ - Pressure Line Leak sensor number (Decimal, 00=All)
- yymddhhmm - Last 3.00 gal/hr test pass time ("0000000000" if no test yet)
- TT - 3.00 gal/hr test type (unused, always 00)
- NN - Number of 0.10 gal/hr test results (12 character groups) to follow (Hex)
- YYMDDHHmm - Date and time of 0.10 gal/hr test
- tt - 0.10 gal/hr test type (unused, always 00)
- && - Data Termination Flag
- CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

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>i386WWYMMDDHHmmWSSSttNaaaa...
WSSSttNaaaa&&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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

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
 Function Type: WPLLD Line Leak Alarm History Report

Version 10

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>i387WWYYMMDDHHmmWWNNyymddhhmmaaaa...
      WWNNyymddhhmmaaaa&&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. yymddhhmm - 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
Function Type: WPLLD Line Leak Test Results

Version 10

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
<ETX>

(Added in V19)
(Added in V19)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 388 (Continued)

Typical Response Message, Computer Format:

```
<SOH>i388WYYMDDHHmmWyyymmddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt...
                                     nnYYMDDHHmmRRtt...
WyyymmddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt...
                                     nnYYMDDHHmmRRtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. WW - WPLD 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. MMM - 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. YYMDDHHmm - 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. YYMDDHHmm - 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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 389
 Function Type: WPLLD Line Leak Test History

Version 12

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>i389WWYMMDDHHmmWwYymddhmmTTNNYYMDDHHmmt...nnYYMDDHHmmt...
WwYymddhmmTTNNYYMDDHHmmt...nnYYMDDHHmmt&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. yymddhmm - 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. YMMDDHHmm - 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. YMMDDHHmm - 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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.2.5 MISCELLANEOUS REPORTS

Function Code: 391
 Function Type: Tanker Load Report

Version 10

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>i391TTYMDDHHnmfTLLSSNNYYMDDHHnmaaaaaaabbabbbbbb
YYMDDHHnmcccccccddddddeeeeeee...
TLLSSNNYYMDDHHnmaaaaaaabbabbbbbb
YYMDDHHnmcccccccddddddeeeeeee&&CCCC<ETX>
```

Notes:

1. YYMDDHHnm - 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. YYMDDHHnm - Starting Date/Time
7. aaaaaaa - Starting Volume (ASCII Hex IEEE float)
8. bbbbbb - Starting Temperature (ASCII Hex IEEE float)
9. YYMDDHHnm - Ending Date/Time
10. ccccccc - Ending Volume (ASCII Hex IEEE float)
11. ddddddd - Ending Temperature (ASCII Hex IEEE float)
12. eeeeeee - Total (start volume - end volume) (ASCII Hex IEEE float)
13. && - Data Termination Flag
14. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 392
 Function Type: Tanker Load Report II

Version 26

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>
  
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code 392 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i 392TTYMMDDHHmmiTLLSSNNYYMDDHHmmYYMDDHHmmnaaaaaaabbabbbbbbccccccc
      ddddddddeeeeeeeeffffffffggggggghhhhhhh. . .
      TTLSSNNYYMDDHHmmYYMDDHHmmnaaaaaaabbabbbbbbccccccc
      ddddddddeeeeeeeeffffffffggggggghhhhhhh&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Starting Date/Time
7. YYMDDHHmm - 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
Function Type: Input Status Report

Version 1

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>i401IIYYMDDHHmmIIssss...
IIssss&&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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 1

Function Code: 402
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>i402IIYYMDDHHmmIINYYMDDHHmmaaaa...
                               IINYYMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (Hex)
4. YYMDDHHmm - 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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 403
Function Type: Input/Generator Alarm History Report
(Setup parameters determine whether an input is from a generator.)

Version 5

Command Format:
Display: <SOH>I403II
Computer: <SOH>i 403II

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>i 403II YYMDDHHmmI INYYMDDHHmmaaaa...
      IINYYMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (Hex)
4. YYMDDHHmm - 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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 1

Function Code: 406
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>i406RRYYMDDHHmmRRssss...
RRssss&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 28

Function Code: 411
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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 28

Function Code: 412
 Function Type: VMC Alarm History Report

Command Format:
 Display: <SOH>I412xx
 Computer: <SOH>i 412xx

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>i 412xxYYMDDHHmmxxNNYYMDDHHmmaaaa...
                   xxNNYYMDDHHmmaaaa... &&&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.3 SETUP FUNCTIONS & REPORTS

7.3.1 SYSTEM SETUP

Function Code: 501
Function Type: Set Time of day
Command Format:
Display: <SOH>S50100YYMMDDHHmm
Computer: <SOH>s50100YYMMDDHHmm

Version 1

Inquire:
<SOH>I50100
<SOH>i 50100

Typical Response Message, Display Format:

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

SYSTEM DATE AND TIME
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i 50100YYMMDDHHmmYYMMDDHHmm&&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
Function Type: Set Shift Start Time 1, 2, 3, 4

Version 1

Command Format:
Display: <SOH>S502SSHHmm
Computer: <SOH>s502SSHHmm

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>i502SSYYMMDDHHmmSSHHmm&&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
Function Type: Set Print Header Line 1, 2, 3, 4

Version 1

Command Format:
Display: <SOH>S503LLaaaaaaaaaaaaaaaaaaaa
Computer: <SOH>s503LLaaaaaaaaaaaaaaaaaaaa

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>i503LLYYMMDDHHmmaaaaaaaaaaaaaaaaaaaa&&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
Function Type: Set System RS-232 Security Code

Version 1

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>i50400YYMDDHHmmaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set System Type & Language Flags

Version 1

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
MDN DD YYYY HH:MM SS xM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i50500YYMDDHHmmUL&&CCCC<ETX>
```

Notes:

1. For all languages beyond Finnish (L=9), use command S51700.
2. YYMDDHHmm - 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
Function Type: Set Periodic Test Needed Warning

Version 2

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>i50600YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Days Before Periodic Test Needed Warning

Version 4

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
Function Type: Set Days Before Periodic Test Needed Alarm

Version 4

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
Function Type: Set Annual Test Needed Warning

Version 4

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
Function Type: Set Days Before Annual Test Needed Warning

Version 4

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
Function Type: Set Days Before Annual Test Needed Alarm

Version 4

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
Function Type: Set Remote Printer Page Eject Flag

Version 5

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>i50C00YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Print Temperature Compensation Flag

Version 8

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>i50D00YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Temperature Compensation Value

Version 8

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
 Function Type: Set System Date/Time Display Format

Version 10

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
```

```
MDN DD YYYY HH:MM SS xM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i50F00YYMMDDHHMMkx&&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
Function Type: Set BIR Shift Printouts Flag

Version 110

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>i51100YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set BIR Daily Printouts Flag

Version 110

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>i51200YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Tanker Load Report Flag

Version 10

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>i51300YYMDDHHmmf&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set H-Protocol Height/Volume format

Version 10

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>i51400YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i51500YYMDDHHmmx&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Re-direct Local Printout Flag

Version 14

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>i51600YYMDDHHmmx&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set System Type & Language Flags

Version 15

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
MDN DD YYYY HH:MM SS xM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i51700YYMDDHHmmJLL&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Secondary Language Code Page Output

Version 15

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>i51800YYMDDHHmmPP&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set PLLD & WPLD Duration Before Precision Retest

Version 15

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>i51900YYMDDHHmmDDD&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Enable/Disable Auto Daylight Saving Time

Version 15

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>i51A00YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Start/End Daylight Saving Date and Time

Version 15

Command Format:
 Display: <SOH>S51BttMMDDHHmm
 Computer: <SOH>s51BttMMDDHHmm

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. MMDDHHmm - 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>i51BttYYMMDDHHmmMMDDHHmm&&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. MMDDHHmm - 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
Function Type: Set Ticketed Delivery Flag Enable

Version 116

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>i51C00YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Ticketed Delivery Temperature Compensation Flag

Version 116

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>i51D00YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Ticketed Delivery Close Day of Week

Version 116

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:			Inquire:
Display:	<SOH>S52ORRMYYMDDHHmm<CR>	(if M=1)	<SOH>I52ORR
	MMDDHHmm<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)	
Computer:	<SOH>s52ORRMYYMDDHHmm<CR>	(if M=1)	<SOH>i52ORR
	MMDDHHmm<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)	

Typical Response Message, Display Format:

```

<SOH>
I52ORR
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>i 520RRYYMDDHHmmRRNNMYYMDDHHmm ..      (if M=1)
      MMDDHHmm ..                               (if M=2)
      WDDHHmm ..                               (if M=3)
      DDDHHmm ..                               (if M=4)
      HHHmm ..                                 (if M=5)
      ..                                       (if M=6) Reserved
      f...                                       (if M=7) Reserved
      ..                                       (if M=8)

RRNNMYYMDDHHmm&CCCC<ETX> (if M=1)
MMDDHHmm&CCCC<ETX>      (if M=2)
WDDHHmm&CCCC<ETX>      (if M=3)
DDDHHmm&CCCC<ETX>      (if M=4)
HHHm&CCCC<ETX>         (if M=5)
..                       (if M=6) Reserved
f...                     (if M=7) Reserved
f&CCCC<ETX>            (if M=8)

```

Notes:

1. YYMDDHHmm - 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, NNMYMDDHHmm:
 - 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, NNMMDDHHmm:
 - 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, NNMDHHmm:
 - 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, NNMDHHmm:
 - 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, NNMHHmm:
 - 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
Function Type: Set Receiver Configuration Flag

Version 2

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>i521RRYYMDDHHmmRRf...
RRf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Receiver Location Label

Version 2

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
 Function Type: Set Receiver Telephone Number

Version 2

Command Format:
 Display: <SOH>S523RRaaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s523RRaaaaaaaaaaaaaaaaaaaaa

Inquire:
 <SOH>I523RR
 <SOH>i 523RR

Typical Response Message, Display Format:

```
<SOH>
I523RR
JAN 22, 1996  3:14 PM

RECEIVER TELEPHONE NUMBER

RCVR  LOCATION LABEL      PHONE NUMBER
1     HOME OFFICE         aaaaaaaaaaaaaaaaaaaa
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i 523RRYYMMDDHHmmRRaaaaaaaaaaaaaaaaaaaaa...
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
Function Type: Set Receiver Dialing Destination Type

Version 2

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>i524RRYYMDDHHmmRRTT...
RRTT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Receiver Port Number to Dial

Version 2

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
Function Type: Set Receiver Retry Number

Version 2

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
Function Type: Set Receiver Retry Delay Time

Version 2

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>i527RRYYMDDHHmmRRnn...
RRnn&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Receiver Confirmation Report Flag

Version 2

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
Function Type: Set Fax Auto Dial Method

Version 19

Command Format:
Display: <SOH>S52900f
Computer: <SOH>s52900f

Inquire:
<SOH>I52900
<SOH>i 52900

Typical Response Message, Display Format:

```
<SOH>
I52900
MAY 05, 1999 1:54 PM
```

```
ALL PHONES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i 52900YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Receiver Report List

Version 3

Command Format:
 Display: <SOH>S52ARRNRRss
 Computer: <SOH>s52ARRNRRss

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>i52ARRYYMDDHHmmRRNNrrss...
RRNNrrss&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Receiver Auto Dial Type and Start Time

Version 3

Command Format:
 Display: <SOH>S52BRRMYMDDHHmm<CR> (if M=1)
 MMDDHHmm<CR> (if M=2)
 WDHHmm<CR> (if M=3)
 DHHmm<CR> (if M=4)
 HHmm<CR> (if M=5)
 Computer: <SOH>s52BRRMYMDDHHmm<CR> (if M=1)
 MMDDHHmm<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>i52BRRYYMDDHHmmRRMYMDDHHmm          (if M=1)
MMDDHHmm          (if M=2)
WDHHmm            (if M=3)
DHHmm            (if M=4)
HHmm             (if M=5)
RRMYMDDHHmm&&CCCC<ETX> (if M=1)
MMDDHHmm&&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. YYMDDHHmm - 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
Function Type: Set Receiver Auto Dial On Alarms

Version 3

Command Format:
Display: <SOH>S52CRRAANNTSS
Computer: <SOH>s52CRRAANNTSS

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>i52CRRYYMDDHHmmRRnnAAANNTSS...
RRnnAAANNTSS&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Autodial Alarm Status

Version 17

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>i52D00YYMDDHHmmNNf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Delay for Autodial on Alarm Clear

Version 19

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>i52ERRYMMDDHHmmRRhh...
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
 Function Type: Set Receiver Alarm Status

Version 19

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>i52FRRYMDDHHmmNNRRf...
RRf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set RS-232 End of Message

Version 8

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>i53100YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Ticketed Variance Analysis Printout Flags

Version 116

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>i53200YYMDDHHmmPWD&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Ticketed Delivery Book Variance Printout Flags

Version 116

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>i53300YYMDDHHmmPWW&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Ticketed Delivery Variance Printout Flags

Version 116

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>i53400YYMDDHHmmPWW&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set RS-232 Security Code per Port

Version 20

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>i536PPYYMDDHHmsaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHms - 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
Function Type: Set Display Format RS-232 ETX per Port

Version 20

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
Function Type: Set Computer Format RS-232 ETX per Port

Version 20

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 CHARACTERS

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
Function Type: Set Tank Periodic Test Needed Warning

Version 15

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
Function Type: Set Days Before Tank Periodic Test Needed Warning

Version 15

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
Function Type: Set Days Before Tank Periodic Test Needed Alarm

Version 15

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
Function Type: Set Tank Annual Test Needed Warning

Version 15

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>i54900YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Days Before Tank Annual Test Needed Warning

Version 15

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
Function Type: Set Days Before Tank Annual Test Needed Alarm

Version 15

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
 Function Type: Set CSLD Evaporation Reid Vapor Pressure Chart

Version 19

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>
I54C00
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: 54D
Function Type: Set ISO3166 3 Character Country Code

Version 29

Command Format:
Display: <SOH>S54D00aaa
Computer: <SOH>s54D00aaa

Inquire:
<SOH>I54D00
<SOH>i54D00

Typical Response Message, Display Format:

```
<SOH>
I54D00
APR 10, 2007 10:15 AM

ISO3166 COUNTRY CODE: ESP
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i54D00YYMMDDHHmmaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. aaa - ISO3166 Country Code (3 ASCII characters [20h-7EH])
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 553
Function Type: Set Line Re-Enable Method

Version 19

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>i55300YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Periodic Line Leak Test Auto-Confirm

Version 18

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
Function Type: Set Annual Line Leak Test Auto-Confirm

Version 18

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
Function Type: Set Line Periodic Test Needed Warning

Version 15

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>i55600YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Days Before Line Periodic Test Needed Warning

Version 15

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
Function Type: Set Days Before Line Periodic Test Needed Alarm

Version 15

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
Function Type: Set Line Annual Test Needed Warning

Version 15

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>i55900YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Days Before Line Annual Test Needed Warning

Version 15

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
Function Type: Set Days Before Line Annual Test Needed Alarm

Version 15

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
Function Type: Set Mass/Density Enable/Disable

Version 26

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>i56000YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i56400YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i56500YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Service Notice Enable

Version 28

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>i56600YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Service Notice Delivery Override Enable

Version 28

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>i56700YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Service Notice Session Enable

Version 28

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>i56800YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Service Notice Session Duration

Version 28

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>i56900YYMDDHHmmhh&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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: 56A
Function Type: System Tank Chart Security Code Audit Trail

Version 29

Command Format:
Display: <SOH>I56A00
Computer: <SOH>i56A00

Notes:

1. Returns the date/time of the last Tank Chart Security Code modification

Typical Response Message, Display Format:

```
<SOH>
I56A00
APR 10, 2009 10:15 AM
```

```
TANK CHART SECURITY
DATE/TIME
MAR 30, 2008 08:00 AM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i56A00YYMDDHHmmymmddhhmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. yymmddhhmm - Date and Time of Tank Chart Security Code Modification
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 5BC
Function Type: Set Receiver Auto Dial on Alarm II

Version 19

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>i5BCRRYYMDDHHmmRRnnAANNTTSS...
RRnnAANNTTSS&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i5BD00YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>S5BE00AANNfaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s5BE00AANNfaaaaaaaaaaaaaaaaaaaa

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>i5BE00YYMDDHHmmnnAANNfaaaaaaaaaaaaaaaaaaaa...
AANNfaaaaaaaaaaaaaaaaaaaa... &&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Custom Alarm Label, device number, and indications

Version 26

Command Format:
 Display: <SOH>S5BF00AANNTTf1pbdaaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s5BF00AANNTTf1pbdaaaaaaaaaaaaaaaaaaaaa

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>i 5BF00YYMDDHHmmnnAANNnTl pbdaaaaaaaaaaaaaaaaaa...
AANNnTl pbdaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. I - 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
Function Type: Set Inventory Record Time 1, 2, 3, 4

Version 14

Command Format:
Display: <SOH>S5E2SSHHmm
Computer: <SOH>s5E2SSHHmm

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>i5E2SSYYMDDHHmmSSHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Tank Product Label

Version 1

Command Format:
 Display: <SOH>S602TTaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s602TTaaaaaaaaaaaaaaaaaaaa

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>i602TTYMDDHHmmTTaaaaaaaaaaaaaaaaaaaaa...
TTaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Tank 1 Point Full Height Volume

Version 1

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>i604TTYMMDDHHmmTTTTTTTTT...
TTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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: 606
 Function Type: Set Tank 20 Point Full, 95%, 90%, ... Volumes

Version 1

Command Format:
 Display: <SOH>S606TTGGGGGGgggggg...
 or: <SOH>S606TTGGGG, gggg, GGGG, ...
 Computer: <SOH>s606TTFFFFFFFF...

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                9720  9234  8748  8262
  1    REGULAR UNLEADED              7776  7290  6804  6318
                                      5832  5346  4860  4372
                                      3888  3402  2916  2430
                                      1944  1458   972   486

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i606TTYMDDHHmmfTTTTTTTTT...
TTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i607TTYMMDDHHmmTTTTTTTTT...
                TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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>i608TTYMMDDHHmmTTTTTTTTT...
TTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
Function Type: Set Tank Thermal Expansion Coefficient

Version 1

Command Format:
Display: <SOH>S609TTc.cccccc
Computer: <SOH>s609TTTTTTTTT

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          0.000700
 1    REGULAR UNLEADED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i609TTYMMDDHHmmTTTTTTTTT...
                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
 Function Type: Set Tank Linear Calculated Full Volume

Version 9

Command Format:
 Display: <SOH>S60ATTGGGGG
 Computer: <SOH>s60ATTTTTTTTT

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>i60ATTYYMDDHHmmTTTTTTTTT...
                TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Tank Stick Height Function Enable

Version 15

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>i60B00YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Tank Stick Height Offset

Version 15

Command Format:
 Display: <SOH>S60CTTIII. hh
 Computer: <SOH>s60CTTFFFFFFF

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>i60CTTYMMDDHHmmTTTTTTTTTT. . .
TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
 Function Type: Set Tank Programmable Float Parameters

Version 22

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>s60FTTFFFFFFF

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>i60FTTYMDDHHmmTTTTTTTTT...
TTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Tank Delivery Delay

Version 1

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
 Function Type: Set Tank Leak Test Type & Start Time

Version 1

Command Format:		Inquire:
Display:	<SOH>S611TTDDRMYYMDDHHmm<CR> (if M=1)	<SOH>I611TT
	MMDDHHmm<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>s611TTDDRMYYMDDHHmm<CR> (if M=1)	<SOH>i611TT
	MMDDHHmm<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)	

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>i611TTYMDDHHmmTTDDRMYYMDDHHmm (if M=1)
MMDDHHmm (if M=2)
WDHHmm (if M=3)
DHHmm (if M=4)
HHmm (if M=5)
(none) (if M=6)
(none) (if M=7)
TTDDRMYYMDDHHmm&&CCCC<ETX> (if M=1)
MMDDHHmm&&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. YYMDDHHmm - 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
Function Type: Set Tank SIPHON Manifolded Partners

Version 1

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
Function Type: Set CSLD Probability of Detection

Version 3

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
Function Type: Set BIR Meter Data Present

Version 108

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. YYMMDDHHmm - 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
Function Type: Set Tank CSLD Evaporation Compensation

Version 19

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. YYMMDDHHmm - 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
Function Type: Set Tank Stage II Vapor Recovery

Version 19

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
Function Type: Set In-Tank Leak Test Early Stop

Version 20

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>i6A000YYMDDHHmmTTf...
TTf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set In-Tank Static Gross Test Auto-Confirm

Version 121

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
Function Type: Set CSLD Report Only Mode

Version 121

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>i61CTTYMDDHHmmTTf...
TTf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Tank LINE Manifolded Partners

Version 23

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>i61DTTYMDDHHmmTTNNtt...
TTNNtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. dddd
 Computer: <SOH>s61ETTFFFFFFFF

Inquire:
 <SOH>I61ETT
 <SOH>i61ETT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. dd. dddd - 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>i61ETTYMDDHHmmI TFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. dddd
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>i61FTTYMDDHHmmTTtFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Tank Low Level Limit

Version 1

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>i621TTYMMDDHHmmTFFFFFFFF...
                TFFFFFFFF&&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
 Function Type: Set Tank High Level Limit

Version 1

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>i622TTYMMDDHHmmTFFFFFFFF...
                TFFFFFFFFF&&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
 Function Type: Set Tank Overfill Level Limit

Version 1

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>i623TTYMMDDHHmmTFFFFFFFF...
                TFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
 Function Type: Set Tank High Water Level Limit

Version 1

Command Format:
 Display: <SOH>S624TTII.t
 Computer: <SOH>s624TTFFFFFFF

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>i624TTYMMDDHHmmIFFFFFFF...
          TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
Function Type: Set Tank Sudden Loss Limit

Version 1

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>i625TTYMMDDHHmmTFFFFFFFF...
                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
Function Type: Set Tank Leak Alarm Limit

Version 1

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>i626TTYMMDDHHmmTTTTTTTTT...
TTTTTTTTT&&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
 Function Type: Set Tank High Water Warning Limit

Version 2

Command Format:
 Display: <SOH>S627TTII.t
 Computer: <SOH>s627TTFFFFFFF

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>i627TTYMMDDHHmmIFFFFFFF...
          TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
 Function Type: Set Tank Maximum Volume Limit

Version 2

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>i628TTYMMDDHHmmTFFFFFFFF...
          TFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
Function Type: Set Tank Delivery Required Limit

Version 2

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>i629TTYMMDDHHmmTTTTTTTTTT...
TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
Function Type: Set Tank Annual Leak Test Minimum Volume

Version 2

Command Format:
Display: <SOH>S62ATTGGGGG
Computer: <SOH>s62ATTTTTTTTT

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>i62ATTYYMDDHHmmTTTTTTTTFF...
TTTTTTTTFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Tank Last Annual Test

Version 2

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
 Function Type: Set Tank Periodic Test Type

Version 2

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>i62CTTYMDDHHmmTTp...
TTp&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Enable/Disable Tank Leak Test Fail Alarms

Version 2

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>i62DTTYMDDHHmmTTgpa...
TTgpa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set CAPO Probe Conductive Boot Flag

Version 3

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

CAPO PROBE CONDUCTIVE BOOT FLAG

TANK   PRODUCT LABEL           CAPO CONDUCTIVE BOOT:
 1     REGULAR UNLEADED         YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i62ETTYYMDDHHmmTTc...
TTc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. c - CAPO 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

Typical Response Message, Computer Format:

```
<SOH>i62FTTYMDDHHmmTTf...
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
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Added in V22)
 (Added in V22)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 630
Function Type: Set Tank Leak Test Notify

Version 3

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
 Function Type: Set Tank Leak Test Averaging

Version 5

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
Function Type: Set Tank Test Siphon Break

Version 5

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
Function Type: Set Leak Test Report Type

Version 9

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
Function Type: Set Tank HRM Reconciliation Warning Limit

Version 110

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>i634TTYMMDDHHmmTFFFFFFFF...
          TFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
 Function Type: Set Tank HRM Reconciliation Alarm Limit

Version 110

Command Format:
 Display: <SOH>S635TTGGGGGG
 Computer: <SOH>s635TTTTTTTTTTTT

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>i635TTYMMDDHHmmTTTTTTTTTT...
TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
Function Type: Set Tank Periodic Leak Test Minimum Volume

Version 14

Command Format:
Display: <SOH>S636TTGGGGGG
Computer: <SOH>s636TTTTTTTT

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>i636TTYMMDDHHmmTTTTTTTTT...
                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
 Function Type: Set Tank AccuChart End Shape Type and Factor

Version 115

Command Format:
 Display: <SOH>S639TTSU.t
 Computer: <SOH>s639TTSFFFFFFF

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>i639TTYMMDDHHmmTTSFFFFFFF...
TTSFFFFFFF&&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
 Function Type: Set Tank Low Level Threshold for Sequential Line Manifold Version 22

Command Format: Inquire:
 Display: <SOH>S63ATTPP.hh <SOH>I63ATT
 Computer: <SOH>s63ATTTTTTTTTT <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>i79800YYMDDHHmmTTTTTTTTT...
TTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Tank 50 Point Heights and Volumes

Version 26

Command Format:
 Display: <SOH>S63BTTnnffIII. hhGGGGGG. . . ffIII. hhGGGGGG
 or: <SOH>S63BTTnnffII. h, GGGG, . . . ffII. h, GGGG
 Computer: <SOH>s63BTTnnffHHHHHHHHVVVVVVV. . . 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:
XXXXXXXXXXXXXXXXXXXXXXXXX
PROBE S/N : yyyyyy
WEIGHTS AND MEASURES:
ZZZZZZZZZZZZZZZZZZZZZZZ

      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:

```
<SOH>i63BTTYMMDDHHmmTTfccccccccxxxxxxxxxxxxxxxxxxxxxxxxxyyyyyyzzzzzzzzzzzzzzzzzzzz...
      ddddddddfzzzzzzzzzzzzzzzzzzzznnHHHHHHHHHVVVVVVVVV...
                                     HHHHHHHHVVVVVVVVV...
TTfccccccccxxxxxxxxxxxxxxxxxxxxxxxxxyyyyyyzzzzzzzzzzzzzzzzzzzz...
      ddddddddfzzzzzzzzzzzzzzzzzzzznnHHHHHHHHHVVVVVVVVV...
                                     HHHHHHHHVVVVVVVVV&&CCCC<ETX>
```

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. ccccccc - * 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
 Function Type: Set Tank 50 Point Full Volume

Version 26

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>i63CTTYMDDHHmmnnTTVVVVVVVV...
TTVVVVVVVV&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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: 63D
 Function Type: Set Tank Vapor Loss Factor

Version 29

Command Format:
 Display: <SOH>S63DTTo.oo
 Computer: <SOH>s63DTT00000000

Inquire:
 <SOH>I63DTT
 <SOH>i63DTT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. o.oo - Vapor Loss Factor, Percent(Decimal, 0.00 – 0.20)
3. 00000000 - Vapor Loss Factor, Percent(ASCII Hex IEEE Float 0.00–0.20)

Typical Response Message, Display Format:

```
<SOH>
I63D00
APR 10, 2007 10:15 AM
```

TANK VAPOR LOSS FACTOR

TANK	PRODUCT LABEL	FACTOR
1	REGULAR	0.14%
2	PREMIUM	0.15%
3	DIESEL	0.00%

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i63DTTYMDDHHmmNNTT00000000...
TT00000000&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. NN - Number of tank entries to follow(Decimal)
3. TT - Tank Number (Decimal, 00=all)
4. 00000000 - Vapor Loss Factor, Percent(ASCII Hex IEEE Float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 680
Function Type: Fuel Management General Setup Inquiry

Version 6

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
Function Type: Set Fuel Management Delivery Needed Warning

Version 6

Command Format:
Display: <SOH>S6810DD. 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>i68100YYMDDHHmmFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Fuel Management Automatic Report Print Time

Version 6

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>i68200YYMDDHHmmhhmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Fuel Management Average Daily Sales

Version 6

Command Format:
 Display: <SOH>S683TTDVVVVVV
 Computer: <SOH>s683TTDvvvvvvvv

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>i683TTYMDDHHmmNNTTpSSSSSSSSMMMMMMTTTTTTTTWWWWWWW
RRRRRRRRFFFFFFFFSsssssss...
NNTTpSSSSSSSSMMMMMMTTTTTTTTWWWWWWW
RRRRRRRRFFFFFFFFSsssssss&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. MMMMMM - 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
Function Type: Set Liquid Sensor Configuration

Version 1

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>i701SSYYMDDHHmmSSf...
SSf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Liquid Sensor Location Label

Version 1

Command Format:
 Display: <SOH>S702SSaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s702SSaaaaaaaaaaaaaaaaaaaa

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
 Function Type: Set Liquid Sensor Category

Version 2

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
Function Type: Set Vapor Sensor Configuration

Version 1

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
 Function Type: Set Vapor Sensor Location Label

Version 1

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
Function Type: Set Vapor Sensor Alarm Threshold

Version 1

Command Format:
Display: <SOH>S708SSVVVVV
Computer: <SOH>s708SSFFFFFFF

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>i708SSYYMMDDHHmmSSFFFFFFF...
SSFFFFFFF&&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
Function Type: Set Vapor Sensor Category

Version 2

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
Function Type: Set Groundwater Sensor Configuration

Version 1

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
 Function Type: Set Groundwater Sensor Location Label

Version 1

Command Format:
 Display: <SOH>S712SSaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s712SSaaaaaaaaaaaaaaaaaaaa

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
Function Type: Set Groundwater Sensor Category

Version 2

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
Function Type: Set Smart Sensor Configuration

Version 24

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>i721nnYYMDDHHnnYYMDDHHnnSSc...SSc&&CCCC<ETX>
```

Notes:

1. YYMDDHHnn - 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
 Function Type: Set Smart Sensor Label

Version 24

Command Format:
 Display: <SOH>S722SSaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s722SSaaaaaaaaaaaaaaaaaaaa

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
 Function Type: Set Smart Sensor Category

Version 25

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=mag sensor
 - 04=vac Sensor
 - 05=atmospheric sensor
 - 08=vapor valve

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>i723ssYYMDDHHmmsscc...
sscc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. ss - Smart Sensor number
3. cc - category
 - 00=unknown
 - 01=rotary air flow meter
 - 02=vapor pressure sensor
 - 03=mag sensor
 - 04=vac Sensor
 - 05=atmospheric sensor
 - 08=vapor valve
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Version 29)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 727
Function Type: Set MAG Sensor Alarm Upgrade Delay

Version 24

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
 Function Type: Set MAG Sensor Alarm Threshold

Version 24

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>i728SSYYMDDHHmmSSrrPPaaFFppUUnnFFFFFFFPPaaFFppUUnnFFFFFFF...
SSrrPPaaFFppUUnnFFFFFFFPPaaFFppUUnnFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Vacuum Sensor Pump Number

Version 24

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                PUMP NUMBER
 1 VACUUM #1                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>S72ASSGGG.t
 Computer: <SOH>s72ASSFFFFFFF

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>i72ASSYYMDDHHmmSSFFFFFFF.
SSFFFFFFF&&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
Function Type: Set Vacuum Sensor Relief Valve Present

Version 24

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>i72BSSYYMDDHHmmSSf...
SSf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Vacuum Sensor Relief Valve Pressure

Version 24

Command Format:
 Display: <SOH>S72CSSPPPP
 Computer: <SOH>s72CSSFFFFFFFF

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>i72CSSYYMMDDHHmmSSFFFFFFFF.
SSFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - 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
Function Type: Set Type A (2 Wire CL) Sensor Configuration

Version 2

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>i741SSYYMDDHHmmSSf...
SSf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Type A (2 Wire CL) Sensor Location Label

Version 2

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>i742SSYYMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Type A (2 Wire CL) Sensor Type

Version 2

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
Function Type: Set Type A (2 Wire CL) Sensor Category

Version 2

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>i744SSYYMDDHHmmSSc...
SSc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Type B (3 Wire CL) Sensor Configuration

Version 2

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
 Function Type: Set Type B (3 Wire CL) Sensor Location Label

Version 2

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>i747SSYYMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Type B (3 Wire CL) Sensor Type

Version 5

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
Function Type: Set Type B (3 Wire CL) Sensor Category

Version 2

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
Function Type: Set Universal Sensor Configuration

Version 4

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
 Function Type: Set Universal Sensor Location Label

Version 4

Command Format:
 Display: <SOH>S74CSSaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s74CSSaaaaaaaaaaaaaaaaaaaa

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
Function Type: Set Universal Sensor Type

Version 4

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
 Function Type: Set Universal Sensor Category

Version 4

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>i74ESSYYMDDHHmmSSc...
SSc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Volumetric Line Leak Configuration

Version 1

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>i751PPYYMDDHHmmPPf...
PPf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Volumetric Line Leak Tank Number

Version 1

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
Function Type: Set Volumetric Line Leak 2 Inch Pipe Length

Version 1

Command Format:
Display: <SOH>S753PPLL
Computer: <SOH>s753PPFFFFFFF

Inquire:
<SOH>I753PP
<SOH>i 753PP

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>i753PPYYMMDDHHmmPPFFFFFFF...
PPFFFFFFF&&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
Function Type: Set Volumetric Line Leak 3 Inch Pipe Length

Version 1

Command Format:
Display: <SOH>S754PPLLL
Computer: <SOH>s754PPFFFFFFF

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>i754PPYYMMDDHHmmPPFFFFFFF...
PPFFFFFFF&&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
Function Type: Set Volumetric Line Leak Pump PSI

Version 1

Command Format:
Display: <SOH>S755PPppp
Computer: <SOH>s755PPFFFFFFF

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>i755PPYYMMDDHHmmPPFFFFFFF...
PPFFFFFFF&&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
Function Type: Set Volumetric Line Leak Piping Material

Version 1

Command Format:
Display: <SOH>S756PPnm
Computer: <SOH>s756PPnm

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>i756PPYYMMDDHHmmPPnm . . .
PPnm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. nm - 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
Function Type: Set Volumetric Line Leak Shutdown Rate

Version 1

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
Function Type: Set Volumetric Line Leak Pump Side Test

Version 1

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
 Function Type: Set Volumetric Line Leak Test Type & Start Time

Version 1

Command Format:
 Display: <SOH>S759PPrrMYMDDHHmm<CR> (if M=1)
 MMDDHHmm<CR> (if M=2)
 WDHHmm<CR> (if M=3)
 DHHmm<CR> (if M=4)
 HHmm<CR> (if M=5)
 Computer: <SOH>s759PPrrMYMDDHHmm<CR> (if M=1)
 MMDDHHmm<CR> (if M=2)
 WDHHmm<CR> (if M=3)
 DHHmm<CR> (if M=4)
 HHmm<CR> (if M=5)

Inquire:
 <SOH>I759PP

<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>i759PPYYMDDHHmmPPrrMYMDDHHmm (if M=1)
MMDDHHmm (if M=2)
WDHHmm (if M=3)
DHHmm (if M=4)
HHmm (if M=5)
PPrrMYMDDHHmm&&CCCC<ETX> (if M=1)
MMDDHHmm&&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. YYMDDHHmm - 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
 Function Type: Set Line Leak Lockout Schedule (All Types)

Version 1

Command Format:
 Display: <SOH>S75A00SHHmHHm<CR> (if S=0)
 NsHHmeHHm<CR> (if S=1)
 Computer: <SOH>s75A00SHHmHHm<CR> (if S=0)
 NsHHmeHHm<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>i75A00YYMDDHHmSHHmHHm (if S=0)
      NsHHmeHHm (if S=1)
      SHHmHHm&&CCCC<ETX> (if S=0)
      NsHHmeHHm&&CCCC<ETX> (if S=1)
```

Notes:

1. YYMDDHHm - Current Date and Time
2. S - Lockout Schedule Type:
3. - If S=0 (Daily):
 HHm=Start Lockout Time (Hours, minutes)
 HHm=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)
 HHm= Start Lockout Time (Hours, minutes)
 e = End Lockout Day (1=Mon, 2=Tue, ..., 7=Sun)
 HHm= 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
 Function Type: Set Line Disable Alarm Assignments

Version 2

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
Function Type: Set Volumetric Line Leak Last Annual Test

Version 2

Command Format:
Display: <SOH>S75CPPYYMDD
Computer: <SOH>s75CPPYYMDD

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>i75CPPYYMDDHHmmPPYYMDD. . .
PPYYMDD&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. YYMDD - 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
Function Type: Set Volumetric Line Leak Dispense Mode

Version 4

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
Function Type: Set Volumetric Line Leak Fuel Type

Version 4

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
Function Type: Set Volumetric Line Leak Wait Method

Version 5

Command Format:
Display: <SOH>S75FPPrr
Computer: <SOH>s75FPPrr

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
 Function Type: Set Volumetric Line Leak Location Label

Version 6

Command Format:
 Display: <SOH>S760PPaaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s760PPaaaaaaaaaaaaaaaaaaaaa

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>i760PPYYMDDHHmmPPaaaaaaaaaaaaaaaaaaaaa...
PPaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Volumetric Line Leak Blend Partner

Version 7

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
Function Type: Set Pump Sensor Configuration

Version 2

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>i771SSYYMDDHHmmSSf...
SSf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Pump Sensor Tank Number

Version 2

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
Function Type: Set Pump Sensor Dispense Mode

Version 4

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>i773SSYYMDDHHmmSSf...
SSf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Pressure Line Leak Continuous Handle Alarm Timeout

Version 27

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
 Function Type: Set Pressure Line Leak Profile Line Test Leak Rate

Version 23

Command Format:
 Display: <SOH>S77500rr.rr
 Computer: <SOH>s77500FFFFFFFF

Inquire:
 <SOH>I77500
 <SOH>i77500

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>
I77500
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>s77500YYMMDDHHmmQFFFFFFFFF
QFFFFFFFFF&&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: Inquire:
 Display: <SOH>S77600ppp.pp <SOH>I77600
 Computer: <SOH>s77600FFFFFFFF <SOH>i77600

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>s776QQYYMMDDHHmmQQFFFFFFFF
QQFFFFFFFF&&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
 Function Type: Set Pressure Line Leak Primary Pipe Diameter

Version 23

Command Format:
 Display: <SOH>S777Q0I. hh
 Computer: <SOH>s777Q0FFFFFFFF

Inquire:
 <SOH>I777Q0
 <SOH>i 777Q0

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>
I777Q0
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>s777Q0YYMDDHHmmQ0FFFFFFFF...
Q0FFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Pressure Line Leak Secondary Pipe Diameter

Version 23

Command Format:
 Display: <SOH>S77800I.hh
 Computer: <SOH>s77800FFFFFFFF

Inquire:
 <SOH>I77800
 <SOH>i77800

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>s77800YYMMDDHHmmQFFFFFFFFF...
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: 779
 Function Type: Set Pressure Line Leak Primary Pipe Bulk Modul us

Version 23

Command Format:
 Display: <SOH>S77900BBBBB
 Computer: <SOH>s77900FFFFFFFF

Inquire:
 <SOH>I77900
 <SOH>i77900

Notes:

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. BBBBB - Pipe Bulk Modul us, PSI (Decimal)
3. FFFFFFFF - Pipe Bulk Modul us, PSI (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I77900
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>s77900YYMDDHHmmQFFFFFFFFF...
QFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Bulk Modul us, 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
 Function Type: Set Pressure Line Leak Secondary Pipe Bulk Modulus

Version 23

Command Format:
 Display: <SOH>S77AQQBBBBB
 Computer: <SOH>s77AQQFFFFFFF

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>s77AQQYYMDDHHmmQFFFFFFF...
                QFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Pressure Line Leak Thermal Expansion Coefficient

Version 23

Command Format:
 Display: <SOH>S77BQQc.cccccc
 Computer: <SOH>s77BQQFFFFFFF

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>s77BQQYYMDDHHmmQFFFFFFF...
                QFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Pressure Line Leak Low Pressure Shutoff

Version 19

Command Format:
 Display: <SOH>S77C00f
 Computer: <SOH>s77C00f

Inquire:
 <SOH>I77C00
 <SOH>i77C00

Typical Response Message, Display Format:

```
<SOH>
I77C00
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>i77C00YYMMDDHHmm00f...
00f&&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
 Function Type: Set Pressure Line Leak Altitude Pressure Offset

Version 19

Command Format:
 Display: <SOH>S77DQ0II.p
 Computer: <SOH>s77DQ0FFFFFFF

Inquire:
 <SOH>I77DQ0
 <SOH>i77DQ0

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>
I77DQ0
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>i77DQ0YYMDDHHmmQQFFFFFFF...
QQFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Pressure Line Leak Passive 0.10 GPH Test Enable Flag

Version 24

Command Format:
 Display: <SOH>S77E00f
 Computer: <SOH>s77E00f

Inquire:
 <SOH>I77E00
 <SOH>i77E00

Typical Response Message, Display Format:

```
<SOH>
I77E00
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>i77700YYMMDDHHmm00f...
00f&&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
 Function Type: Set Pressure Line Leak Secondary Pipe Length

Version 17

Only used for the larger diameter line in dual diameter piping configurations

Command Format:
 Display: <SOH>S77FQQLLL
 Computer: <SOH>s77FQQFFFFFFF

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>s77FQQYYMDDHHmmQQFFFFFFF...
QQFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Pressure Line Leak General Setup Inquiry

Version 7

Command Format:
Display: <SOH>I7800Q
Computer: Computer format is not supported for this command

Typical Response Message, Display Format:

```
<SOH>
I7800Q
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
 Function Type: Set Pressure Line Leak Configuration

Version 7

Command Format:
 Display: <SOH>S78100f
 Computer: <SOH>s78100f

Inquire:
 <SOH>I78100
 <SOH>i78100

Typical Response Message, Display Format:

```
<SOH>
I78100
JAN 24, 1996 2:54 PM

PRESSURE LLD CONFIGURATION

DEVICE LABEL CONFIGURED
1 REGULAR UNLEADED ON
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i78100YYMMDDHHmm00f...
00f&&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
 Function Type: Set Pressure Line Leak Label

Version 7

Command Format:
 Display: <SOH>S78200aaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s78200aaaaaaaaaaaaaaaaaaaaa

Inquire:
 <SOH>I78200
 <SOH>i78200

Typical Response Message, Display Format:

```
<SOH>
I78200
JAN 24, 1996  2:54 PM

PRESSURE LLD LABEL

DEVICE LABEL
 1 REGULAR UNLEADED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i78200YYMMDDHHmm00aaaaaaaaaaaaaaaaaaaaa...
00aaaaaaaaaaaaaaaaaaaaa&&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
 Function Type: Set Pressure Line Leak 0.10 GPH Test Schedule

Version 7

Command Format:
 Display: <SOH>S78300f
 Computer: <SOH>s78300f

Inquire:
 <SOH>I78300
 <SOH>i78300

Typical Response Message, Display Format:

```
<SOH>
I78300
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>i78300YYMMDDHHmmQQf...
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
Function Type: Set Pressure Line Leak Shutdown Rate

Version 7

Command Format:
Display: <SOH>S78400rr
Computer: <SOH>s78400rr

Inquire:
<SOH>I78400
<SOH>i78400

Typical Response Message, Display Format:

```
<SOH>
I78400
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>i78400YYMMDDHHmmQQrr...
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
Function Type: Set Pressure Line Leak Tank Number

Version 7

Command Format:
Display: <SOH>S78500tt
Computer: <SOH>s78500tt

Inquire:
<SOH>I78500
<SOH>i78500

Typical Response Message, Display Format:

```
<SOH>
I78500
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>i78500YYMMDDHHmm00tt...
00tt&&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
 Function Type: Set Pressure Line Leak Dispense Mode

Version 7

Command Format:
 Display: <SOH>S78600f
 Computer: <SOH>s78600f

Inquire:
 <SOH>I78600
 <SOH>i78600

Typical Response Message, Display Format:

```
<SOH>
I78600
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>i78600YYMDDHHmm00f...
00f&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Pressure Line Leak Disable Alarm Assignments

Version 7

Command Format:
Display: <SOH>S78700AANNTTSS
Computer: <SOH>s78700AANNTTSS

Inquire:
<SOH>I78700
<SOH>i78700

Typical Response Message, Display Format:

```
<SOH>
I78700
JAN 24, 1996  2:54 PM

PRESSURE LLD SETUP REPORT

Q 1: REGULAR UNLEADED
- NO ALARM ASSIGNMENTS -
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i78700YYMMDDHHmmQQnnAANNTTSS...
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
 Function Type: Set Pressure Line Leak Piping Material

Version 9

Command Format:
 Display: <SOH>S78800tt
 Computer: <SOH>s78800tt

Inquire:
 <SOH>I78800
 <SOH>i78800

Typical Response Message, Display Format:

```
<SOH>
I78800
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>i78800YYMDDHHmm00tt
00tt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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=Omni flex 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=Omni flex 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
 Function Type: Set Pressure Line Leak Primary Pipe Length

Version 9

Also used for the smaller diameter line in dual diameter piping configurations

Command Format:
 Display: <SOH>S789QQLLL
 Computer: <SOH>s789QQFFFFFFF

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>s789QQYYMMDDHHmmQQFFFFFFF...
QQFFFFFFF&&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
 Function Type: Set Pressure Line Leak Sensor Type

Version 11

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: 78C
 Function Type: Set Pressure Line Leak 0.20 GPH Test Schedule

Version 12

Command Format:
 Display: <SOH>S78C00f
 Computer: <SOH>s78C00f

Inquire:
 <SOH>I78C00
 <SOH>i78C00

Typical Response Message, Display Format:

```
<SOH>
I78C00
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>i78C00YYMMDDHHmm00f...
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
 - 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: 78E
 Function Type: Set Pressure Line Leak 0.10 GPH Auto Test Enable

Version 17

Command Format:
 Display: <SOH>S78E00f
 Computer: <SOH>s78E00f

Inquire:
 <SOH>I78E00
 <SOH>i78E00

Typical Response Message, Display Format:

```
<SOH>
I78E00
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>i78E00YYMMDDHHmm00f...
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
 Function Type: Set Pressure Line Leak Dispense Threshold

Version 17

Command Format:
 Display: <SOH>S78F00PP
 Computer: <SOH>s78F00FFFFFFFF

Inquire:
 <SOH>I78F00
 <SOH>i78F00

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>
I78F00
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>s78F00YYMMDDHHmmQFFFFFFFFF...
                QFFFFFFFFF&&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
Function Type: DIM Software Revision

Version 118

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
Function Type: Set Mechanical Dispenser Interface String

Version 106

Command Format:
Display: <SOH>S791NNaaaaaaaaaaaa
Computer: <SOH>s791NNaaaaaaaaaaaa

Inquire:
<SOH>I791NN
<SOH>i791NN

Typical Response Message, Display Format:

```
<SOH>
S791NN
MAR 29, 1996 6:27 PM

DISP. MODULE DATA STRING
MDIM 1: aaaaaaaaaaaaa
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i791NNYYMDDHHmmNNaaaaaaaaaaaa...
NNaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. NN - MDIM Number (Decimal, 00=all)
3. aaaaaaaaaaaaa - 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
Function Type: Set Electronic Dispenser Interface String

Version 106

Command Format:
Display: <SOH>S792NNaaaaaaaaaaaa
Computer: <SOH>s792NNaaaaaaaaaaaa

Inquire:
<SOH>I792NN
<SOH>i792NN

Typical Response Message, Display Format:

```
<SOH>
I792NN
JAN 22, 1996 3:21 PM
```

```
DISP. MODULE DATA STRING
EDIM 1: aaaaaaaaaaaaa
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i792NNYYMDDHHmmNNaaaaaaaaaaaa...
NNaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. NN - EDIM Number (Decimal, 00=all)
3. aaaaaaaaaaaaa - 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
Function Type: Set Reconciliation Auto Daily Closing Time

Version 106

Command Format:
Display: <SOH>S79300HHmm
Computer: <SOH>s79300HHmm

Inquire:
<SOH>I79300
<SOH>i 79300

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>i79300YYMDDHHmmHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Auto Shift Closing Time 1, 2, 3, 4

Version 106

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
Function Type: Set Periodic Reconciliation Mode

Version 106

Command Format:
Display: <SOH>S79500ss
Computer: <SOH>s79500ss

Inquire:
<SOH>I79500
<SOH>i 79500

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
Function Type: Set Periodic Reconciliation Report Length

Version 106

Command Format:
Display: <SOH>S79600dd
Computer: <SOH>s79600dd

Inquire:
<SOH>I79600
<SOH>i 79600

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>i79600YYMDDHHmmdd&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Periodic Reconciliation Alarm Flag

Version 106

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>i79700YYMDDHHmmss&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Periodic Reconciliation Alarm Threshold

Version 106

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>i79800YYMDDHHmmFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Periodic Reconciliation Alarm Offset

Version 106

Command Format:
Display: <SOH>S79900GGGGG
Computer: <SOH>s79900FFFFFFF

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>i79900YYMDDHHmmFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Remote Printer Reconciliation Report Format

Version 106

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>i79A00YYMDDHHmmtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Shift Manual Adjustment Value

Version 106

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>i79BTTYMMDDHHmmiTssFFFFFFFF&&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
Function Type: Set Daily Manual Adjustment Value

Version 106

Command Format:
Display: <SOH>S79CTTMDDGGGGG
Computer: <SOH>s79CTTMDDFFFFFF

Inquire:
<SOH>I79CTT
<SOH>i79CTT

Notes:

1. TT - Tank number
2. MDD - Month and day
3. GGGGG - Adjustment Value, Gallons (Decimal)
4. FFFFFFF - 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>i79CTTYMDDHHmmITMDDFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank number
3. MDD - Month and day
4. FFFFFFF - 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
Function Type: Close Current Reconciliation Shift

Version 106

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>i79D00YYMDDHHmmff&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Clear Tank Map Table

Version 106

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>i79E00YYMDDHHmmss&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i79F00YYMDDHHmmf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: WPLLD Line Leak General Setup

Version 10

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
Function Type: Set WPLLD Line Leak Configuration

Version 10

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
 Function Type: Set WPLLD Line Leak Label

Version 10

Command Format:
 Display: <SOH>S7A2WAAAAAAAAAAAAAAAAAAAA
 Computer: <SOH>s7A2WAAAAAAAAAAAAAAAAAAAA

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...
WWAAAAAAAAAAAAAAAAAAAA&&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
 Function Type: Set WPLLD Line Leak 0.20 GPH Test Schedule

Version 10

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
 Function Type: Set WPLLD Line Leak Shutdown Rate

Version 10

Command Format:
 Display: <SOH>S7A4Wrr
 Computer: <SOH>s7A4Wrr

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>i7A4WWYYMMDDHHmmWrr...
Wrr&&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
Function Type: Set WPLLD Line Leak Tank Number

Version 10

Command Format:
Display: <SOH>S7A5Wwt
Computer: <SOH>s7A5Wwt

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>i7A5WWYYMMDDHHmmWwt...
Wwt&&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
 Function Type: Set WPLLD Line Leak Dispense Mode

Version 10

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=Mani folded: Alternate
 - 3=Mani folded: Sequential
 - 4=Mani folded: All Pumps
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A7
 Function Type: Set WPLLD Line Disable Alarm Assignments

Version 10

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
 Function Type: Set WPLLD Line Leak Pipe Type

Version 10

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)
 - 05=Flexible-C (Omni flex CP1501)
 - 06=Flexible-D (Yellow Enviroflex PP1500)
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Added in V15)
 (Added in V15)
 (Added in V15)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7A9
Function Type: Set WPLLD Line Leak Pipe Length

Version 10

Command Format:
Display: <SOH>S7A9WLLL
Computer: <SOH>s7A9WFFFFFFF

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>s7A8WWYYMDDHHmmWWFFFFFFF...
WWFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set WPLLD Line Leak 0.10 GPH Test Schedule Version 11 (Obsolete at V17, use 7AC)

Command Format:
Display: <SOH>S7AAWWMDD
Computer: <SOH>s7AAWWMDD 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
 Function Type: Set WPLLD Line Leak 0.10 GPH Test Schedule Enable

Version 17

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
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Added in V18)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 7AD
 Function Type: Set WPLLD Line Leak Secondary Pipe Length
 (only used for the larger diameter line in dual diameter piping configurations)

Version 20

Command Format:
 Display: <SOH>S7ADWWLLL
 Computer: <SOH>s7ADWWFFFFFFF

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>s7ADWWYYMMDDHHmmWWFFFFFFF...
WWFFFFFFF&&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
 Function Type: WPLLD Continuous Handle Alarm Timeout

Version 27

Command Format:
 Display: <SOH>S7AEWwt
 Computer: <SOH>s7AEWwt

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>i7AEWWYYMMDDHHmmWWtWWt...
WWt&&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
 Function Type: Set WPLLD Line Leak Altitude Pressure Offset

Version 19

Command Format:
 Display: <SOH>S7AFWWI.p
 Computer: <SOH>s7AFWWFFFFFFFF

Inquire:
 <SOH>I7AFWW
 <SOH>i7AFWW

Notes:

1. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
2. I.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

ALTIUDE 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
 Function Type: Set BIR Meter/Tank Mapping

Version 110

Command Format:
 Display: <SOH>S7B100 B SS FP MM TT
 Computer: Computer format is not supported for this command

Inquire:
 <SOH>I7B100

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
Function Type: Set Meter Calibration Offset

Version 20

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>i7B200YYMDDHHmmFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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: 7B4
 Function Type: Set Individual Meter Offset

Version 29

Command Format:
 Display: <SOH>S7B400 FF MM TT +o.oo
 Computer: Computer format is not supported

Inquire:
 <SOH>I7B400

Notes:

1. FF - Fueling Position (Decimal)
2. MM - Meter Number (Decimal)
3. TT - Tank Number (Decimal)
4. o.oo - Meter Offset, percent (Decimal +/-9.99)

Typical Response Message, Display Format:

```
<SOH>
I7B400
DEC 22, 2006 3:12 PM

INDIVIDUAL METER OFFSET
```

FP	METER	TANK	OFFSET
1	1	1 REGULAR GASOLINE	+0.10%
	2	2 PREM UM GASOLINE	-0.10%
	6	3 DIESEL	0.00%
2	1	1 REGULAR GASOLINE	+0.10%
	2	2 PREM UM GASOLINE	-0.10%
	6	3 DIESEL	0.00%
3	1	1 REGULAR GASOLINE	+0.10%
	2	2 PREM UM GASOLINE	-0.10%
	6	3 DIESEL	0.00%

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i7B400YYMDDHHmmNNNNFFMMITooooooo...
FFMMITooooooo&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. NNNN - Number of entries to follow (ASCII Hex)
3. FF - Fuel Position (Decimal)
4. MM - Meter Number (Decimal)
5. TT - Tank Number (Decimal)
 00= Tank not mapped
6. oooooooo - Meter Offset, percent (Decimal +/-9.99)
7. && - Data Termination Flag
8. 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>S7B5TTeeYYMDDHhmGGGGG
 Computer: <SOH>s7B5TTeeYYMDDHhmFFFFFFF

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. ee - edit function
 01=Edit Ticket (enter, modify)
 02=Insert Ticket Delivery
3. YYMDDHhm - Delivery Date/Time (End Time)
4. GGGGG - 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 VOLUME	GAUGE VOLUME	VARIANCE
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>i7B5TTYMMDDHHmmTTpPPRRYYMMDDHHmmNNFFFFFFF...
TTpPPRRYYMMDDHHmmNNFFFFFFF&&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

Version 23

Function Code: 7B6
 Function Type: Set BOL number

Command Format:
 Display: <SOH>S7B6TTeeYYMDDHHmmaa. .aa
 Computer: <SOH>s7B6TTeeYYMDDHHmmaa. .aa

Notes:

1. TT - Tank Number (Decimal)
2. ee - edit function
 01=Edit Ticket (enter, modify)
 02=Insert Ticketed Delivery
3. YYMDDHHmm - 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..aaNNFFFFFFF...FFFFFFF...
TTpPPRRYYMMDDHHmmAAaa..aaNNFFFFFFF...FFFFFFF&&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
Function Type: Set Line Disable Alarm Assignments II

Version 19

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>i7BCPPYYMMDDHHmmPPnnAANNTTSS...
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
 Function Type: Set Pressure Line Disable Alarm Assignments II

Version 19

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
 Function Type: Set WPLLD Line Disable Alarm Assignments II

Version 19

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>i7BEWWYMMDDHHmmWwnAANNTTSS...
WwnAANNTTSS&&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
Function Type: Set Pump Relay Monitor Configuration

Version 27

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>i7C4rrYYMDDHHmmrrf...
rrf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Pump Relay Monitor Label

Version 27

Command Format:
Display: <SOH>S7C5rraaaaaaaaaaaaaaaaaaaa
Computer: <SOH>s7C5rraaaaaaaaaaaaaaaaaaaa

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>i7C5rrYYMDDHHmmrraaaaaaaaaaaaaaaaaaaaa...
rraaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Pump Relay Monitor Pump Relay

Version 27

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>i7C6rrYYMDDHHmmrrAATT...
rrAATT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Pump Relay Monitor Stuck Relay

Version 27

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>i7C7rrYYMDDHHmmrrFFFFFFFF.rrFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Pump Relay Monitor Max Run Time

Version 27

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>i7C8rrYYMDDHHmmrrFFFFFFFF.rrFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Pump Relay Monitor Type

Version 28

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>i7C9rrYYMDDHHmmrrt...
rrt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i801IIYYMDDHHmmIIIf...
IIIf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Input Location Label

Version 1

Command Format:
 Display: <SOH>S802IIaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s802IIaaaaaaaaaaaaaaaaaaaa

Inquire:
 <SOH>I802II
 <SOH>i802II

Typical Response Message, Display Format:

```
<SOH>
I802II
MAR 26, 1996  1:50 PM

EXTERNAL INPUT LABEL

DEVICE LABEL
 1 aaaaaaaaaaaaaaaaaaaaa
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i802IIYYMDDHHmmIIaaaaaaaaaaaaaaaaaaaa...
IIaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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	

Typical Response Message, Computer Format:

```
<SOH>i803IIYYMDDHHmmItnNNTT...
ItnNNTT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Input Dispense Mode

Version 4

Command Format:
Display: <SOH>S804II m
Computer: <SOH>s804II m

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>i804IIYYMDDHHmmII m . . .
II m&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Relay Configuration

Version 1

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>i806RRYYMDDHHmmRRf...
RRf&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Relay Location Label

Version 1

Command Format:
 Display: <SOH>S807RRaaaaaaaaaaaaaaaaaaaaa
 Computer: <SOH>s807RRaaaaaaaaaaaaaaaaaaaaa

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>i807RRYYMDDHHmmRRaaaaaaaaaaaaaaaaaaaaa...
RRaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Relay Alarm Assignments

Version 1

Command Format:
Display: <SOH>S808RRRAANNTTss
Computer: <SOH>s808RRRAANNTTss

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>i808RRYYMMDDHRRnnAANNTTss...
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>i809RRYYMDDHHmmRRs...
RRs&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i80ARRYMMDDHRRt&&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
Function Type: Set Relay Tank Assignment

Version 4

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 0 TT . . . TT
 Computer: <SOH>s80CII t 0 TT . . . 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. 0 - 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>i80CIIYYMDDHHmmIIt0nnTT...TT
IIt0nnTT...TT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. 0 - 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
Function Type: Restore All Setup Data from EEPROM

Version 107

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>i85100YYMDDHHmmSS&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Save All Setup Data to EEPROM

Version 107

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
Function Type: Clear All Setup Data from EEPROM

Version 107

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
Function Type: Set Communication Port Data

Version 9

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>i881PPYYMDDHHmmBBBBBPSDTAA&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Initialize Communication Port Data

Version 9

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
Function Type: Set SiteLink Modem Type

Version 19

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
Function Type: Set Modem Setup String

Version 20

Command Format:
Display: <SOH>S886PPaaaaaaaaaaaaaaaaaaaa
Computer: <SOH>s886PPaaaaaaaaaaaaaaaaaaaa

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 (FXMD)
MODEM SETUP STRING : GJMDAQ
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i886PPYYMDDHHmmaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Dial Tone Validation Interval

Version 20

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 (FXMD)
DIAL TONE VALIDATION INTERVAL: 32 HOURS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i887PPYYMDDHHmmHHHH&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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**
Function Type: **Communication Status Information**

Version 19

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 (FXDD)
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>i 888PPYYMDDHHmmNPPnnCCSSEBBBBBPSDYMMDDHHmmYYMDDHHmm . .
PPnnCCSSEBBBBBPSDYMMDDHHmmYYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Last Communication Date/Time
13. YYMDDHHmm - 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
Function Type: DTR Normal State for Serial Satellite Boards

Version 121

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>i889PPYYMDDHHms&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Communication Diagnostic for SiteLink

Version 23

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>i88DPPYYMMDDHHmmPPMDDrree&&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
Function Type: Set AccuChart Calibration Restart

Version 108

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>i891TTYMMDDHHmmfTTSS&&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

Version 27

Function Code: 8A2
 Function Type: Service Code List

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>i8A200YYMDDHHmmNNNnnnnnnnnnnnnnnnnnnnncccc...
nnnnnnnnnnnnnnnnnnnncccc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Maintenance Tracker Active Hardware Key List

Version 27

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>i8A300YYMDDHHmmNNnnnnnnnnnnnnnnnnnncccccc...
nnnnnnnnnnnnnnnnnncccccc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Maintenance Tracker Block Hardware Key

Version 27

Command Format:
Display: <SOH>S8A400149cccccc
Computer: <SOH>s8A400149cccccc

Inquire:
<SOH>I8A400
<SOH>i 8A400

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>i 8A400YYMDDHHmmNNNnnnnnnnnnnnnnncccccc...
nnnnnnnnnnnnnncccccc&&CCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. CCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: 8BC
 Function Type: Set Relay Alarm Assignments II

Version 19

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>i8BCRRYYMMDDHHmmRRnnAAANNTTSS...
RRnnAAANNTTSS&&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
Function Type: VMC Edit/Add Serial Number

Version 28

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>i8C1xxYYMDDHHmmxxIIIIII...  
xxIIIIII&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: VMC Remove Serial Number

Version 28

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>i8C2xxYYMDDHHmmxxIIIIII&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Self Test Results Report

Version 1

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>i90100YYMMDDHHmmI IRRPP&&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
Function Type: System Revision Level Report

Version 1

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>i90200YYMDDHHmmSOFTWARE# nnnnnn-vvv-rrrCREATED - YY.MM DD. HH. mm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>i90300YYMDDHHmmP..PT..TNNR..RE..ES..St..tr..r&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: System Revision Level Report II

Version 15

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>i90500YYMDDHHmmSOFTWARE# 346abb-Tvv-rrrCREATED - YY.MM DD. HH. mm
nnAABBCCDDEEFFGGHHIIJJKLLS-MODULE# nnnnnn-vvv-r&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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 - UNUSED WAS 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

(Version 29)

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

7.4.2 IN-TANK DIAGNOSTIC REPORTS

Function Code: A01
 Function Type: Probe Type and Serial Number

Version 1

Command Format:
 Display: <SOH>IA01TT
 Computer: <SOH>iA01TT

Typical Response Message, Display Format:

```
<SOH>
IA01TT
JAN 22, 1996 3:25 PM

TYPE CODE LENGTH SERIAL NO. D/CODE
TANK 1 REGULAR UNLEADED MAG C000 96.00 000418 1401
TANK 2 SUPER UNLEADED CAP1 A66C 96.00 278147 2410
TANK 3 PREMIUM UNLEADED CAPO 0001 96.00 200100 0000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iA01TTYMMDDHHmmTTpPPKKKKFFFFFFFSSSSSScccc...
TTpPPKKKKFFFFFFFSSSSSScccc&&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=CAPO
 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
 Function Type: Probe Factory Dry Calibration Values

Version 1

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 CAPO 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>iA02TTYMMDDHHmmTTpPPNNFFFFFFF...
TTpPPNNFFFFFFF&&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=CAPO
 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
 Function Type: Probe Factory Wet Calibration Values

Version 1

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 CAPO 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>iA03TTYMMDDHHmmTTpPPNNFFFFFFF...
TTpPPNNFFFFFFF&&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=CAPO
 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
 Function Type: Probe Updated Dry Calibration Values

Version 1

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 CAPO 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>iA04TTYMMDDHHmmTTpPPNNFFFFFFF...
TTpPPNNFFFFFFF&&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=CAPO
 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
 Function Type: Probe Updated Wet Calibration Values

Version 1

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 CAPO 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>iA05TTYMMDDHHmmTTpPPNNFFFFFFF...
TTpPPNNFFFFFFF&&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=CAPO
 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
 Function Type: Probe Segment Sensitivity Ratios

Version 1

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 CAPO 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>iA06TTYMMDDHHmmTTpPPNNFFFFFFF...
TTpPPNNFFFFFFF&&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=CAPO
 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
 Function Type: Probe Reference Distance Diagnostic

Version 23

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>iA07TTYMMDDHHmmTTpPPYYMDDFFFFFFFYMMDDFFFFFFF...
TTpPPYYMDDFFFFFFFYMMDDFFFFFFF&&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=CAPO and 02=CAP1 are not supported by this command)
03=MAG1
5. YYMDD - Date of reading
6. FFFFFFFF - Original Ref distance reading (ASCII Hex IEEE float)
7. YYMDD - 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
 Function Type: Probe Last Sample Buffers

Version 1

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 CAPO 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>iA10TTYMMDDHHmmTTpPPSSSSNNFFFFFFF...
TTpPPSSSSNNFFFFFFF&&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=CAPO
 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
 Function Type: Probe Fast Average Buffers

Version 1

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>iA11TTYMMDDHHmmTTpPPSSSSNNFFFFFFF...
TTpPPSSSSNNFFFFFFF&&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
 Function Type: Probe Standard Average Buffers

Version 1

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    CAPO     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>iA12TTYMMDDHHmmTTpPPSSSSNNFFFFFFF...
TTpPPSSSSNNFFFFFFF&&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=CAPO
 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
 Function Type: Probe Long Term Average Buffers

Version 1

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 CAPO 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>iA13TTYMMDDHHmmTTpPPSSSSNNFFFFFFF...
TTpPPSSSSNNFFFFFFF&&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=CAPO
 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

Version 19

Function Code: A14
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. YYMMDDHHmm - 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

Version 24

Function Code: A15
Function Type: In-Tank Diagnostic Printout

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>iA15TTYMMDDHHmmTTppppsssssl11111111dddYYMMDDHHmm
      ggggggggzzzzoonnnnNNccccccc...ccccccc
      rrrrrrrruuuuuuuueeeeeeeYYMMDDHHmm
      AAaaaaaaa...aaaaaaa
      YYMMDDhhhhhhhYYMMDDkkkkkkk...
TTppppsssssl11111111dddYYMMDDHHmm
      ggggggggzzzzoonnnnNNccccccc...ccccccc
      rrrrrrrruuuuuuuueeeeeeeYYMMDDHHmm
      AAaaaaaaa...aaaaaaa
      YYMMDDhhhhhhhYYMMDDkkkkkkk&&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
Function Type: Probe Leak Test Flags - Present Test

Version 1

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    CAPO  PRESENT LEAK TEST ANALYSIS REPORT
0.2 GAL/HR FLAGS:
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iA20TTYMDDHHmmTTpPPNNFFFF...
TTpPPNNFFFF&&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. PP - Probe Type:
01=CAPO
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
Function Type: Probe Leak Test Flags - Stored Test

Version 1

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    CAPO  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=CAPO
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
Function Type: Probe Leak Test Flags - Gross Test

Version 2

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      CAPO  GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iA22TTYMMDDHHmmTTpPPNNFFFF. . .
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=CAPO
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**
 Function Type: **Tank Leak Test Averaging Buffers**

Version 5

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>iA23TTYMMDDHHmmiTpPPNNYYMDDHHmmdddddddVVVVVVVRRRRRRR...
nnYYMDDHHmmdddddddVVVVVVVRRRRRRR...
TTpPPNNYYMDDHHmmdddddddVVVVVVVRRRRRRR...
nnYYMDDHHmmdddddddVVVVVVVRRRRRRR&&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. PP - Probe Type
5. NN - Number of 34 character 0.20 gal/hr test records to follow
6. YYMDDHHmm - 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. YYMDDHHmm - 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

Version 3

Function Code: A51
 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>iA51TTYMMDDHHmmfTTRRssNNtttttttFFFFFFFFF...
TTRRssNNtttttttFFFFFFFFF&&ACF7<ETX>
```

Notes:

1. YYMMDDHHmm - 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. ttttttt - 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

Version 3

Function Code: A52
 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>iA52TTYMMDDHHmmTTYYMMDDHHmmSSCCcnnNNFFFFFFF...
          TTYMMDDHHmmSSCCcnnNNFFFFFFF&&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

Version 3

Function Code: A53
 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>iA53TTYMDDHHmmfTTNNhhhhhhhhFFFFFFF...
TTNNhhhhhhhhFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: CSLD Diagnostics: Moving Average Table

Version 3

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>A5401YYMDDHHmmTTSSRRssNNaaaaaaaaFFFFFFFFF...
TTSSRRssNNaaaaaaaaFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. aaaaaaaaa - 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

Version 3

Function Code: A55
 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>iA55TTYMMDDhhmmTTSSFFFFFFF...
TTSSFFFFFFF&&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

Version 121

Function Code: A56
 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>iA56TTYMMDDHHmmTTNNYYMDDHHmmrr...
TTNNYYMDDHHmmrr&&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>iA61TTYMDDHHmmTTpRRYYMDDHHmmFFEEEEEEEESSSSSSSSVVVVVVVV...
TTpRRYYMDDHHmmFFEEEEEEEESSSSSSSSVVVVVVVV&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code
4. RR - Number of records to follow
5. YYMDDHHmm - 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

Version 112

Function Code: **A62**
 Function Type: **HRM Daily History**

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      MN      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>iA61TTYMMDDHHmmiTTpRRYYMMDDHHmmhhaaaaaaabbabbbbbbccccccSS. . .
TTpRRYYMMDDHHmmhhaaaaaaabbabbbbbbccccccSS&&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
 Function Type: Extended HRM Diagnostic Report

Version 26

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  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
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iA63TTYMDDHHmmTTpRRYYMDDHHmmFFNNEEEEEEEEESSSSSSSVVVVVVVVTTTTTTTTT...
TtpRRYYMDDHHmmFFNNEEEEEEEEESSSSSSSVVVVVVVVTTTTTTTTT
&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code
4. RR - Number of records to follow
5. YYMDDHHmm - 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**
Function Type: **Fuel Management Diagnostic Report**

Version 6

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...NNFFFFFFF...
nnTTP...NNFFFFFFF&&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. FFFFFFFF - 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
 Function Type: Power Outage Diagnostic Report

Version 9

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
```

Typical Response Message, Computer Format:

```
<SOH>iA91TTYMDDHHmmTTnnYYMDDHHmmYYMDDHHmmNNFFFFFFF...
      YYMDDHHmmYYMDDHHmmNNFFFFFFF...
      TTnnYYMDDHHmmYYMDDHHmmNNFFFFFFF...
      YYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all).
3. nn - Number of History Records to follow (Decimal)
4. YYMDDHHmm - Power Restored Date/Time
5. YYMDDHHmm - 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
 Function Type: Liquid Sensor Diagnostic Report

Version 1

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

Version 1

Function Code: B06
 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>iB06SSYYMDDHHmmSSNNFFFFFFFF...
SSNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Vapor Sensor Concentration (PPM) Report

Version 3

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>iB07SSYYMMDDHHmmSSNNFFFFFFFF. . .
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 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
 Function Type: Groundwater Sensor Diagnostic Report

Version 1

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>iB11SSYYMDDHHmmSSNNFFFFFFFF...
                SSNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 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>iB21SSYYMDDHHmmSSNNFFFFFFFF...
SSNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: MAG Sensor Diagnostic Report

Version 24

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>iB33SSYYMDDHHmmSSNNFFFFFFFF...
SSNNFFFFFFFF&&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

Version 24

Function Code: B34
 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>iB34SSYYMDDHHmmSSTTTTnnVVVVVVVV...VVVVVVVV&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

Version 24

Function Code: B35
 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>IB35SSYYMMDDHHmmSSnnMMMMMMMMNNNNNNNDDDDDDDDPPPPPPP...
SSnnMMMMMMMMNNNNNNNDDDDDDDDPPPPPPP&&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. MMMMMM - 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
Function Type: Smart Sensor Constant Data

Version 24

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
Function Type: Atmospheric Pressure Sensor Diagnostic Report

Version 24

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>iB37SSYYMDDHHmmSSNNNNNNNnnFFFFFFFF...
SSNNNNNNNnnFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Vacuum Sensor Diagnostic Report

Version 24

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>i B38SSYYMDDHHmmSSNNNNNNNeFcVYYMDDHHmmLLLLLLLv
      YYMDDHHmmTTTTTTTf
      YYMDDHHmmEEEEEEEEPPPPPPppfff
      nnFFFFFFF...FFFFFFF...
      SSNNNNNNNeFcVYYMDDHHmmLLLLLLLv
      YYMDDHHmmTTTTTTTf
      YYMDDHHmmRRRRRRRPPPPPPppfff
      nnFFFFFFF...FFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHnm - Date/Time of Leak Rate
- 9. LLLLLLLL - 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. YYMDDHnm - Date/Time of Time to No Vacuum
- 12. TTTTTTTT - Time to No Vacuum, minutes (Hex)
- 13. f - Valid Evac Ratio flag
 - 0=Evac Ratio invalid
 - 1=Evac Ratio valid

- 14. YYMDDHnm - Date/Time of Evac Ratio
- 15. RRRRRRRR - Evac Ratio, (ASCII Hex IEEE float)
- 16. PPPPPPPP - 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. FFFFFFFF - Compensated Pressure, PSI (ASCII Hex IEEE float)
- 20. FFFFFFFF - 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
Function Type: Vacuum Sensor Evacuation Diagnostic Report

Version 24

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>iB39SSYYMDDHHmmSSnnYYMDDHHmmDDDDDDDD...
YYMDDHHmmDDDDDDDD&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. nn - Number of Evacuation Events to follow (Decimal, 00=none)
4. YYMDDHHmm - 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
 Function Type: Type A Sensor (2 Wire CL) Diagnostic Report

Version 2

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>iB41SSYYMDDHHmmSSNNFFFFFFFF. . .
SSNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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**
 Function Type: **Type B Sensor (3 Wire CL) Diagnostic Report**

Version 2

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>iB46SSYYMDDHHmmSSNNFFFFFFFF...
SSNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

Version 4

Function Code: B4B
 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>iB4BSSYYMDDHHmmSSNNFFFFFFFF...
SSNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Volumetric Line Leak Status

Version 1

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>iB50PPYYMMDDHHmmPPIIppFFss00eeTTdd...
PPIIppFFss00eeTTdd&&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. 00 - 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
 Function Type: Volumetric Line Leak Diagnostic Gross Test History

Version 1

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>iB51PPYYMDDHHmmPPNNYYMDDHHmmTg..gt..tDDDDLLLLRRRRTTTTrr...
PPNNYYMDDHHmmTg..gt..tDDDDLLLLRRRRTTTTrr&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. PP - Pipeline Number (Decimal, 00=all)
3. NN - Number of test data entries to follow (Decimal)
4. YYMDDHHmm - 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
 Function Type: Volumetric Line Leak 0.10 & 0.20 GPH Diagnostic History

Version 1

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>iB52PPYYMDDHHmmPPNNYYMDDHHmmITg..gt..tDDDDLLLLRRRRTTTTrr...
PPNNYYMDDHHmmITg..gt..tDDDDLLLLRRRRTTTTrr&&CCCC<ETX>
```

Notes:

- YYMDDHHmm - Current Date and Time
- PP - Pipeline Number (Decimal, 00=all)
- NN - Number of test data entries to follow (Decimal)
- YYMDDHHmm - 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: B61
Function Type: Vapor Valve Diagnostic

Version 29

Command Format:
Display: <SOH>IB61ss
Computer: <SOH>iB61ss

Typical Response Message, Display Format:

```
<SOH>
IB61ss
JAN 22, 2007 3:11 PM
```

VAPOR VALVE DIAGNOSTIC REPORT

s 1: VAPOR VALVE 1

```
VAPOR VALVE
SERIAL NUMBER 47466902
VALVE POSITION: CLOSED
BATTERY: FULL (only if wireless)
OPEN CAP: CHARGED
CLOSE CAP: CHARGED
AMBNT TEMP: 70.12 F
OUTLET TMP: 72.34 F
```

```
SENSOR FAULTS:
VALVE COMMAND FAULT (only active reason(s) for alarm/warning are listed)
CAP NOT CHARGING FAULT
CAP NOT HOLDING FAULT
REF RESISTOR FAULT
VAPOR RESISTANCE FAULT
TEMPERATURE RANGE FAULT
DATA NOISE FAULT
VALVE NOISE FAULT
NONE
<ETX>
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code B61 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i B61ssYYMDDHHmmssNNNNNNNNPBOCFnnTTTTTTTTttttttt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. ss - Smart Sensor Number
3. NNNNNNNN - Serial Number (Decimal)
4. P - Valve Position
0=Closed
1=Open
5. B - Battery Status (n/a unless wireless)
0=Unknown
1=Full
2=Medium
3=Low
4=Replace
6. 0 - Open Capacitor Status
0=Discharged
1=Charged
7. C - Close Capacitor Status
0=Discharged
1=Charged
8. F - Sensor Fault Bits
Bit 1 = Valve Command Fault - could not OPEN/CLOSE to calibrate
Bit 2 = (unused)
Bit 3 = Cap Not Charging Fault - too long to charge capacitors
Bit 4 = Cap Not Holding Fault - too frequent re-charges needed
Bit 5 = Temperature Range Fault - temp reading(s) out of range
Bit 6 = Reference Resistor Range Fault - reference resistor reading(s) out of range
Bit 7 = Vapor Sensor Resistance Range Fault - vapor sensor resistance reading out of range
Bit 8 = Data Noise Fault - Readings within range but too noisy
Bit 9 = Valve Noise Fault - Coil reading too noisy to calibrate and control valve
9. nn - Number of 8 byte values to follow (Hex)
10. TTTTTTTT - Ambient Temperature, Degrees F (ASCII Hex IEEE float)
11. tttttttt - Outlet Temperature, Degrees F (ASCII Hex IEEE float)
12. && - Data Termination Flag
13. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: B62
 Function Type: Sub Alarm History Report

Version 29

Command Format:
 Display: <SOH>IB6200
 Computer: <SOH>iB6200

Typical Response Message, Display Format:

```
<SOH>
IB6200
JAN 22, 2007 3:11 PM
```

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

SMART SENSOR SUB ALARM HISTORY

ID	TYPE	ALARM TYPE	SUB ALARM	STATE	DATE	TIME
5	14	SENSOR FAULT ALARM	VAPOR RESISTANCE FAULT	CLEAR	1-04-08	10:57AM
5	14	SENSOR FAULT ALARM	VAPOR RESISTANCE FAULT	ALARM	1-04-08	10:44AM
5	14	SENSOR FAULT ALARM	REF RESISTOR FAULT	CLEAR	1-04-08	9:23AM
5	14	SENSOR FAULT ALARM	REF RESISTOR FAULT	ALARM	1-04-08	9:13AM
5	14	SENSOR FAULT ALARM	TEMPERATURE RANGE FAULT	CLEAR	1-04-08	8:45AM
5	14	SENSOR FAULT ALARM	TEMPERATURE RANGE FAULT	ALARM	1-04-08	8:44AM
5	14	SENSOR FAULT ALARM	VALVE COMMAND FAULT	CLEAR	1-04-08	7:23AM
5	14	SENSOR FAULT ALARM	VALVE COMMAND FAULT	ALARM	1-04-08	7:14AM
5	14	SENSOR FAULT ALARM	CAP NOT HOLDING FAULT	CLEAR	1-04-08	6:34AM
5	14	SENSOR FAULT ALARM	CAP NOT HOLDING FAULT	ALARM	1-04-08	6:27AM
5	14	SENSOR FAULT ALARM	CAP NOT CHARGING FAULT	CLEAR	1-04-08	5:12AM
5	14	SENSOR FAULT ALARM	CAP NOT CHARGING FAULT	ALARM	1-04-08	5:00AM

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code B62 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i B6200YYMDDHHmmnnssTTNNSSAAYMDDHHmm . .
                ssTTNNSSAAYMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. nn - Number of Sub Alarm records to follow (Hex)
3. ss - Smart Sensor Number (Hex, 00=all)
4. TT - Smart Sensor Type (Hex)
 - 0E = Vapor Valve
5. NN - Alarm Type Number (Hex):
 - If TT is 0E and NN is:
 - 03 = Sensor Fault Alarm
6. SS - Sub Alarm Type Number (Hex):
 - If TT is 0E and NN is 03 and SS is:
 - 00 = Cap Not Charging Fault
 - 01 = Cap Not Holding Fault
 - 02 = Valve Command Fault
 - 03 = Temperature Range Fault
 - 04 = Ref Resistor Fault
 - 05 = Vapor Resistance Fault
 - 06 = Data Noise Fault
 - 07 = Valve Noise Fault
7. AA - Alarm State (Hex)
 - 00 = Alarm cleared
 - 01 = Alarm occurred
8. YYMDDHHmm - Date/Time Alarm state occurred
9. && - Data Termination Flag
10. 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>iB71SSYYMDDHHmmSSNNttttssssMMMMMM . .
SSNNttttssssMMMMMM&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. MMMMM - Minutes Pump has been Off (Hex)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 27

Function Code: B72
 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   PUMP RELAY  STUCK   RUN
                   (OUT)  (IN)        RELAY   TIME
1 PUMP RELAY UNLEADED OFF    Q 1: OFF   0 SEC   00:00
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iB72rrYYMDDHHmmrrrabNNccccccccddddddd...
rrrabNNccccccccddddddd&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. ccccccc - 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
Function Type: Pressure Line Leak Profile Line Test

Version 23

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>i B7BQQYYMDDHHmmQQaYYMDDHHmmttNNFFFFFFF...FFFFFFF...
      QQaYYMDDHHmmttNNFFFFFFF...FFFFFFF&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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=Omni flex 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=Omni flex 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. 1st Line Length (FEET)
 5. 1st Line Diameter (INCHES)
 6. 2nd Line Length (FEET)
 7. 2nd Line Diameter (INCHES)
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: B7C
 Function Type: Pressure Line Leak Pressure Offset Test

Version 19

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>iB7CQQYYMDDHHmmQQaFFFFFFFFYYMDDHHmm. . .
QQaFFFFFFFFYYMDDHHmm&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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

Version 19

Function Code: B7D
 Function Type: WPLD 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

WPLD 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 - WPLD 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
 Function Type: Pressure Line Leak Pressure Offset Monitor Report

Version 19

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
PO: 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>IB7EQQYYMMDDHHmmQQAA BBBBCCDDDD EEEEEEEEEEEEEEEEEEE
GGHHHHHHHHHIIIIIIJJJJJJJ...
QQAA BBBBCCDDDD EEEEEEEEEEEEEEEEEEE
GGHHHHHHHHHIIIIIIJJJJJJJ&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. AA - PO pass/fail status
00=fail
01=pass
4. BBBB - PO 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

Version 19

Function Code: B7F
 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
PO: 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>IB7FWWYYMMDDHHmmWWAABBBBCCDDDDDEEEEEEEEEFFFFFFFFFF
GGHHHHHHHHI I I I I I I I I I I J J J J J J J J . . .
WWAABBBBCCDDDDDEEEEEEEEEFFFFFFFFFF
GGHHHHHHHHI I I I I I I I I I I J J J J J J J J &&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. AA - PO pass/fail status
00=fail
01=pass
4. BBBB - PO 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. I I I I I I I I - Pon in PSI (ASCII Hex IEEE float)
12. J J J J J J J J - 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
Function Type: Pressure Line Leak Diagnostic Report

Version 7

Command Format:
Display: <SOH>IB8100
Computer: <SOH>iB8100

Typical Response Message, Display Format:

```
<SOH>
IB8100
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>i B81QQYYMDDHHmmQQSSSttNNFFFFFFF...
                QQSSSttNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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**
 Function Type: **WPLLD Line Leak Diagnostic Report**

Version 10

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>iB82WWYYMDDHHmmWSSSttPPPPPPPP...
WSSSttPPPPPPPP&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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**
 Function Type: **WPLLD Line Leak Communication Diagnostic Report**

Version 10

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>iB83WWYYMDDHHmmWSSSSttAAAAAAAABBBBBBBB...
WSSSSttAAAAAAAABBBBBBBB&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. AAAAAAAA - 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
 Function Type: Pressure Line Leak 3.00 GPH Test Diagnostic

Version 19

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>IB87QQYYMDDHHmmQRRLLYYMDDHHmmaaaaaaabbabbbbbbcccccccc...
RRLLYYMDDHHmmaaaaaaabbabbbbbbcccccccc...
RRLLYYMDDHHmmaaaaaaabbabbbbbbcccccccc...
QRRLLYYMDDHHmmaaaaaaabbabbbbbbcccccccc...
RRLLYYMDDHHmmaaaaaaabbabbbbbbcccccccc...
RRLLYYMDDHHmmaaaaaaabbabbbbbbcccccccc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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**
 Function Type: **Pressure Line Leak Mid-range Test Diagnostic**

Version 19

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

MD 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

MD 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>IB88QQYYMDDHHmmQQRRLLYYMDDHHmmaaaaaaabbabbbbbbccccccc...
RRLLYYMDDHHmmaaaaaaabbabbbbbbccccccc...
QQRRLLYYMDDHHmmaaaaaaabbabbbbbbccccccc...
RRLLYYMDDHHmmaaaaaaabbabbbbbbccccccc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - 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
 Function Type: Pressure Line Leak 0.20 GPH Test Diagnostic

Version 19

Command Format:
 Display: <SOH>IB8900
 Computer: <SOH>iB8900

Notes:

- For User Defined Pipe Types PUMP ON will be PMD (Version 23)

Typical Response Message, Display Format:

```
<SOH>
IB8900
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>IB8900YYMDDHHmmQQLLYMDDHHmmRRaaaaaaaabbbbbbbccccccc...
QQLLYMDDHHmmRRaaaaaaaabbbbbbbccccccc&&CCCC<ETX>
```

Notes:

- YYMDDHHmm - Current Date and Time
- QQ - Pressure Line Leak sensor number (Decimal, 00=All)
- LL - Total Tests to follow (Max=10)
- YYMDDHHmm - Date/Time Test
- RR - Test Result
 00=Pass
 01=Fail
- aaaaaaa - Pump on pressure read, PSI (ASCII Hex IEEE float)
- bbbbbbb - Fail ratio (ASCII Hex IEEE float)
- ccccccc - Duration (in minutes) (ASCII Hex IEEE float)
- && - Data Termination Flag
- CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: B8A
 Function Type: Pressure Line Leak 0.10 GPH Test Diagnostic

Version 19

Command Format:
 Display: <SOH>IB8AQQ
 Computer: <SOH>iB8AQQ

Notes:

- For User Defined Pipe Types PUMP ON will be PMD (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>IB8AQQYYMDDHHmmQQLLYMDDHHmmRRaaaaaaaabbbbbbbccccccc...
QQLLYMDDHHmmRRaaaaaaaabbbbbbbccccccc&&CCCC<ETX>
```

Notes:

- YYMDDHHmm - Current Date and Time
- QQ - Pressure Line Leak sensor number (Decimal, 00=All)
- LL - Total Tests to follow (Max=10)
- YYMDDHHmm - Date/Time Test
- RR - Test Result
 00=Pass
 01=Fail
- aaaaaaa - Pump on pressure read, PSI (ASCII Hex IEEE float)
- bbbbbbb - Fail ratio (ASCII Hex IEEE float)
- ccccccc - Duration (in min) (ASCII Hex IEEE float)
- && - Data Termination Flag
- CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 19

Function Code: **B8B**
 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>IB8BWWYYMMDDHHmmWWRRLLYYMMDDHHmmaaaaaaabbabbbbbbccccccc...
RRLLYYMMDDHHmmaaaaaaabbabbbbbbccccccc...
RRLLYYMMDDHHmmaaaaaaabbabbbbbbccccccc...
WWRRLLYYMMDDHHmmaaaaaaabbabbbbbbccccccc...
RRLLYYMMDDHHmmaaaaaaabbabbbbbbccccccc...
RRLLYYMMDDHHmmaaaaaaabbabbbbbbccccccc&&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

Version 19

Function Code: B8C
 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

MD 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

MD 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>IB8CWWYMMDDHHmmWRRLLYMMDDHHmmaaaaaaabbabbbbbbccccccc...
RRLLYMMDDHHmmaaaaaaabbabbbbbbccccccc...
WRRLLYMMDDHHmmaaaaaaabbabbbbbbccccccc...
RRLLYMMDDHHmmaaaaaaabbabbbbbbccccccc&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - 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. YMMDDHHmm - 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

Version 19

Function Code: B8D
 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

Typical Response Message, Computer Format:

```
<SOH>IB8DWWYMMDDHHmmWLLYYMDDHHmmRRaaaaaaaabbbbbbbcccccc...
WLLYYMDDHHmmRRaaaaaaaabbbbbbbcccccc&&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. aaaaaaaa - 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

Version 19

Function Code: B8E
 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>IB8EWWYYMDDHHmmWLLYYMDDHHmmRRaaaaaaaabbbbbbbcccccc...
WLLYYMDDHHmmRRaaaaaaaabbbbbbbcccccc&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. WW - WPLLD Line Leak sensor number (Decimal, 00=All)
3. LL - Total Tests to follow (Max=10)
4. YYMDDHHmm - Date/Time Test
5. RR - Test Result
 00=Pass
 01=Fail
6. aaaaaaaa - 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
 Function Type: AccuChart Diagnostics Report

Version 108

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>iB91TTYMMDDHHmmTTSSNNFFFFFFF...
TTSSNNFFFFFFF&&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
 Function Type: AccuChart Status Report

Version 108

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>iB9301YYMDDHHmmTTSSMMJUAANNNNNNNNNF...
TTSSMMJUAANNNNNNNNNF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: AccuChart Calibration History Report

Version 108

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>iB94TTYMMDDHHmmTTrrYYMMDDHHmmNNFFFFFFF...
TTrrYYMMDDHHmmNNFFFFFFF&&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: BAO
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>iBA000YYMDDHHmmdddFFFFFFFF...
                      ddddFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

Version 28

Function Code: BB1
Function Type: VMC Status Report

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>iBB1xxYYMDDHHmmxxIIIIIsSSrrrrffffeeeetttt...
xxIIIIIsSSrrrrffffeeeetttt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-18, 00=all)
3. IIIII - 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

Version 106

Function Code: C01
 Function Type: Basic Inventory Reconciliation Daily "Row" Report
 Command Format:
 Display: <SOH>IC01PPMDD
 Computer: <SOH>iC01PPMDD

Notes:

1. MDD - 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>iC01PPYYMDDHHmmPPnnTTYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTTYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
6. YYMDDHHmm - 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
Function Type: Basic Inventory Reconciliation Daily "Column" Report

Version 106

Command Format:
Display: <SOH>IC0200MDD
Computer: <SOH>iC0200MDD

Notes:

1. MDD - 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>i C02PPYYMDDHHmmGGPPnnTT... YYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT... YYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
7. YYMDDHHmm - 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

Version 106

Function Code: C03
 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>iC03PPYYMDDHHmmPPnnTT...YYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT...YYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
6. YYMDDHHmm - 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
Function Type: Basic Inventory Reconciliation Shift "Column" Report

Version 106

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>i C04PPYYMDDHHmmGGPPnnTT... YYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT... YYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
7. YYMDDHHmm - 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
 Function Type: Basic Inventory Reconciliation Periodic "Row" Report

Version 106

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		
MAR		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	2:21 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 15	2:00 AM	4612	6213	3896	0	6929	6931	0.00	2
MAR 16	2:00 AM	6896	0	2807	0	4089	4096	0.00	7
MAR 17	2:00 AM	4096	3302	3440	0	3958	3969	0.00	11
MAR 18	2:00 AM	3969	4802	1930	0	6841	6839	0.00	-2
MAR 19	2:00 AM	6839	0	2079	0	4760	4775	0.00	15
MAR 20	2:00 AM	4775	5407	2242	0	7940	7947	0.00	7
MAR 21	2:00 AM	7947	0	2552	0	5395	5398	0.00	3
MAR 22	2:00 AM	5398	5410	3309	0	7499	7510	0.00	11
MAR 23	2:00 AM	7510	0	3055	0	4455	4465	0.00	10
MAR 24	2:00 AM	4465	4812	3200	0	6077	6081	0.00	4
MAR 25	2:00 AM	6081	0	1888	0	4193	4199	0.00	6
MAR 26	2:00 AM								
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>i C05PPYYMDDHHmmPPnnTT... ddYYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT... ddYYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
7. YYMDDHHmm - 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
Function Type: Basic Inventory Reconciliation Periodic "Column" Report

Version 106

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>i C06PPYYMDDHHmmGGPPnnTT... YYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT... YYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
7. YYMDDHHmm - 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

Version 114

Function Code: C07
 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		
MAR		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								
MAR 20	2:00 AM								
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>i C07PPYYMDDHHmmPPnnTT... ddYYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT... ddYYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
7. YYMDDHHmm - 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
Function Type: Basic Inventory Reconciliation Periodic "Column" Report
(Current/Previous)

Version 114

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>i C08PPYYMDDHHmmGGPPnnTT...YYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT...YYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
7. YYMDDHHmm - 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
 Function Type: Individual Basic Reconciliation Daily History Diagnostic

Version 19

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>iC0900YYMDDHHmmTTrrYYMDDHHmmYYMDDHHmmYYMDDHHmmNNFFFFFFF...
TTrrYYMDDHHmmYYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Time of Day.
2. TT - Tank Number (Decimal, 00=all)
3. rr - Number of records to follow (Hex)
4. YYMDDHHmm - Requested start time
5. YYMDDHHmm - Actual start time
6. YYMDDHHmm - 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
 Function Type: Periodic Book Variance

Version 116

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 VOLUME	METERED SALES	TICKET DLVY	MAN ADJ	CLS INVNTRY	BOOK INVNTRY	GAUGED INVNTRY	DAILY VARIANCE
MAR 5	9:18 PM	6279	151	0	0	6128	6128	0=	0.00%
MAR 7	12:00 AM	6128	3069	0	0	3059	3063	-4=	0.13%
MAR 8	12:00 AM	3063	2775	5901	0	6189	6196	-7=	0.25%
MAR 9	12:00 AM	6196	2674	0	0	3522	3526	-4=	0.15%
MAR 10	12:00 AM	3526	2427	5901	0	7000	7007	-7=	0.29%
MAR 11	12:00 AM	7007	2763	4099	0	8343	8344	-1=	0.04%
MAR 12	12:00 AM	8344	3091	0	0	5253	5256	-3=	0.10%
MAR 13	12:00 AM	5256	3085	3800	0	5971	5972	-1=	0.03%
MAR 14	12:00 AM	5972	2818	0	0	3154	3160	-6=	0.21%
MAR 15	12:00 AM	3160	3041	5900	0	6019	6023	-4=	0.13%
MAR 16	12:00 AM	6023	2986	0	0	3037	3030	7=	0.23%
MAR 17	12:01 AM	3030	2539	5902	0	6393	6404	-11=	0.43%
MAR 18	12:00 AM	6404	3061	0	0	3343	3346	-3=	0.10%
MAR 19	12:00 AM	3346	3069	5901	0	6178	6179	-1=	0.03%
MAR 20	12:00 AM	6179	2565	0	0	3614	3617	-3=	0.12%
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>i C10PPYYMDDHHmmPPnnTT...rrYYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT...rrYYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time
7. YYMDDHHmm - 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

Version 116

Function Code: C11
 Function Type: Weekly Book Variance

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 VOLUME	METERED SALES	TICKET DLVY	MAN ADJ	CLS INVENTORY	BOOK INVENTORY	GAUGED INVENTORY	DAILY 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>i C11PPYYMDDHHmmPPnnTT...rrYYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT...rrYYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Open date and time
7. YYMDDHHmm - 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>IC12PPMDD
 Computer: <SOH>iC12PPMDD

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
MAR 18 12:00 AM  VOLUME  SALES     DLVY     ADJ  INVNTY INVNTY    VARIANCE
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...YYMDDHHmmYYMDDHHmmNNFFFFFFF...
PPnnTT...YYMDDHHmmYYMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Open date and time
6. YYMDDHHmm - 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
Function Type: Periodic Variance Analysis Report

Version 116

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	MTR	TEMP	VAP	WATER	UNEX
MAR 19	2:00 AM	VAR	VAR	VAR	%	VAR	VAR	VAR	CHG	VAR
MAR 20	12:00 AM	-48	-13	-35	0.12	-1	-16	0	0	-18

SIGNATURE _____
<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code C20 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i C20PPYYMDDHHmmPPnnTTYMDDHHmmYYMDDHHmmLLLLLLLL11111111
                                     NNFFFFFFF...
PPnnTTYMDDHHmmYYMDDHHmmLLLLLLLL11111111
                                     NNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Opening Date and Time for period
6. YYMDDHHmm - Closing Date and Time for period
7. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
8. 11111111 - 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
 8. Meter variance (V29)
 9. Vapor variance (V29)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: C21
Function Type: Weekly Variance Analysis Report

Version 116

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	MTR	TEMP	VAP	WATER	UNEX
MAR 18	2:00 AM	VAR	VAR	VAR	%	VAR	VAR	VAR	CHG	VAR
MAR 19	12:00 AM	-15	-13	-2	0.17	-2	-2	0	0	0

SIGNATURE _____
<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code C21 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i C21PPYYMDDHHmmPPnnTTYMDDHHmmYYMDDHHmmLLLLLLLL11111111
                                     NNFFFFFFF...
PPnnTTYMDDHHmmYYMDDHHmmLLLLLLLL11111111
                                     NNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. YYMDDHHmm - Open date and time
6. YYMDDHHmm - Close date and time
7. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
8. 11111111 - 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
 8. Meter variance (V29)
 9. Vapor variance (V29)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: C22
Function Type: Daily Variance Analysis Report

Version 116

Command Format:
Display: <SOH>IC22PPMDD
Computer: <SOH>iC22PPMDD

Notes:

1. PP - Product Number (Decimal, 00=all)
2. MDD - 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	MTR	TEMP	VAP	WATER	UNEX
MAR 18	2:00 AM	VAR	VAR	VAR	%	VAR	VAR	VAR	CHG	VAR
MAR 19	12:00 AM	-15	-13	-2	0.17	-1	-2	0	0	0

SIGNATURE _____
<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code C22 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i C22PPYYMDDHHmmPPnnTTYMDDHHmmYYMDDHHmmLLLLLLLL11111111
                                     NNFFFFFFF...
PPnnTTYMDDHHmmYYMDDHHmmLLLLLLLL11111111
                                     NNFFFFFFF&&CCCC<ETX>
```

Notes:

- | | | | |
|-----|-----------|--|-------|
| 1. | YYMDDHHmm | - 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. | YYMDDHHmm | - Open date and time | |
| 6. | YYMDDHHmm | - Close date and time | |
| 7. | LLLLLLLL | - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb) | |
| 8. | 11111111 | - tank chart alarm (bit encoded long integer with tank 1=lsb) | |
| 9. | NN | - Number of eight character Data Fields to follow (Hex) | |
| 10. | FFFFFFF | - 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 | |
| | | 8. Meter variance | (V29) |
| | | 9. Vapor variance | (V29) |
| 11. | && | - Data Termination Flag | |
| 12. | CCCC | - Message Checksum | |

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code: C25
 Function Type: Periodic Variance Analysis Daily Report

Version 19

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 VAR	DLVY VAR	SALES VAR	BK_VAR %	MTR VAR	TEMP VAR	VAP VAR	WATER CHG	UNEX VAR
DEC 10	2:00 AM	7	9	-2	0.54	-1	6	-2	4	-8
DEC 11	2:00 AM	-1	0	-1	0.07	0	0	0	4	-1
DEC 12	2:00 AM	0	0	0	0.00	0	0	0	4	0
DEC 13	2:00 AM	-2	0	-2	0.15	0	0	0	4	-2
DEC 14	2:00 AM	-3	0	-3	0.30	-1	0	-1	4	-3
DEC 15	2:00 AM	-15	-10	-5	1.04	0	0	0	4	-5
DEC 16	2:00 AM	-2	0	-2	0.14	0	0	-2	4	-2
DEC 17	2:00 AM	0	0	0	0.00	0	0	0	4	0
DEC 18	2:00 AM	-2	-5	3	0.13	0	-9	0	4	12
DEC 19	2:00 AM	2	0	2	0.13	0	0	0	4	2
DEC 20	2:00 AM	1	0	1	0.08	-2	0	0	4	1
DEC 21	2:00 AM	-1	0	-1	0.14	0	0	-1	4	-1
DEC 22	2:00 AM	5	0	5	0.36	0	0	-1	4	5
DEC 23	2:00 AM	1	0	1	0.09	0	0	-1	4	1
DEC 24	2:00 AM	-3	0	-3	0.24	0	0	0	4	-3
DEC 25	2:00 AM	7	10	-3	0.51	0	-11	0	4	8
DEC 26	2:00 AM	0	0	0	0.00	0	0	0	4	0
DEC 27	2:00 AM	5	0	5	0.40	-1	0	0	4	5
DEC 28	2:00 AM	0	0	0	0.00	0	0	0	0	0
DEC 29	2:00 AM	0	0	0	0.00	0	0	0	0	0
DEC 30	2:00 AM	-2	0	-2	0.17	0	0	-2	0	-2
DEC 31	2:00 AM	13	10	3	0.98	0	-20	-2	0	23
JAN 1	2:00 AM	-503	-503	0	33.83	-4	31	-2	0	-31

<ETX>

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code C25 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i C25PPYYMDDHHmm . .
      PPnnTT...ddYYMDDHHmmYYMDDHHmmLLLLLLLL11111111NNFFFFFFF...
      PpnnTT...ddYYMDDHHmmYYMDDHHmmLLLLLLLL11111111NNFFFFFFF... &&CCCC<ETX>
```

Notes:

- | | | | |
|-----|-----------|--|--------------|
| 1. | YYMDDHHmm | - 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. | YYMDDHHmm | - Opening Date and Time for period | |
| 7. | YYMDDHHmm | - Closing Date and Time for period | |
| 8. | LLLLLLLL | - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb) | |
| 9. | 11111111 | - tank chart alarm (bit encoded long integer with tank 1=lsb) | |
| 10. | NN | - Number of eight character Data Fields to follow (Hex) | |
| 11. | FFFFFFF | - 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 | |
| | | 8. Meter variance | (Version 29) |
| | | 9. Vapor variance | (Version 29) |
| 12. | && | - Data Termination Flag | |
| 13. | 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: VOO
 Function Type: ISD CARB Certified Operating Requirements and Monitoring Thresholds

Version 25

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>iV0000YYMDDHHmmoooffNNnnnnnnnn...ppggNNtttttttt...&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. nnnnnnnn - 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. ttttttt - 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	MESSING VAPOR PROCESSOR INPUT ED1 DISABLED DIM ALARM		

FAILURE ALARMS

DATE/TIME	DESCRIPTION	READING	VALUE
03-07-17 17:45:03	MESSING VAPOR PROCESSOR INPUT LLD SELF TEST FAIL		
03-07-17 17:44:58	MESSING 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>iV0100YYMDDHHmmqqqSSSSSSSSaabbccddeettff...f...
rrrSSSSSSSSaabbccddeettff...f...
sssSSSSSSSSaabbccddeettff...f... &&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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 & Degr
 - 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. ffffff - Data type (optional, depends on tt, Hex)
- 32. && - Data Termination Flag
- 33. CCCC - Message Checksum

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Version 25

Function Code: V02
 Function Type: ISD Monthly Status Report

Command Format:
 Display: <SOH>IV0200yyymm
 Computer: <SOH>iV0200yyymm

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    PERIOD  BELOW  ABOVE
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>iV0200YYMDDHHmmooFFNNnnnnnnppgg
      NNttttttqqSSSSSSSaabbccdeettf...f...
      rrrSSSSSSSaabbccdeettf...f...
      sssSSSSSSSaabbccdeettf...f... &&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. nnnnnnnn - 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. fffffff - 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. fffffff - 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 & Degr
 - 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

Version 25

Function Code: V03
 Function Type: ISD Daily Status Report

Command Format:
 Display: <SOH>IV0300YYYYMDD
 Computer: <SOH>iV0300YYYYMDD

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    PERIOD  BELOW  ABOVE
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>iV0300YYMDDHHmmooFFNNnnnnnnppgg
      NNttttttttqqSSSSSSSaabbccdeettf...f...
      rrrSSSSSSSaabbccdeettf...f...
      sssSSSSSSSaabbccdeettf...f...&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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. nnnnnnnm - 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. 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 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 & Degr
 - 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

Version 25

Function Code: V04
 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

Date	ISD EVR Status	ISD %UP	---Containment Tests---					Stage I Xfr	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	FP2 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

Date	Hose Flow Performance			----Collection Tests-----					
	Reg	FP3 Super	FP3 Mid	Reg	FP4 Super	FP4 Mid	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 V04 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iV0400YYMDDHHmmiiiiMDDaddskkkkkkksttttttrrrrrrrrvvvvvvvv
                                scccccccegnffhsmmmmmmmm..
                                nfffhsmmmmmmmmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Time/Date stamp of report
2. iii - Number of Record (Hex)
3. MDD - 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. mmmmmmm - 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

Version 25

Function Code: V05
 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

Date	ISD Status	ISD %UP Time	---Containment Tests---					Leak	Stage I Vapor	----Collection Tests----			Daily Average		
			Gross 95%	Dgrd 75%	Max "wc	Min "wc	CFH			FP1 Reg	FP1 Super	FP1 Mid	FP2 Reg	FP2 Super	FP2 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	Pass	Pass	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	Pass	Pass	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	Pass	Pass	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	Pass	Pass	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	-----Collection Tests-----								
	FP3 Reg	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 V05 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iV0500YYMDDHHmmiiiiMDDaddskkkkkkkstttttttrrrrrrrrrvvvvvvv...
      scccccccegnffhhsnnnnnnnn&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MDD - 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. mn - 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. mmmmmmm - 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
 Function Type: ISD Daily Report Details, 132 columns (by month)

Version 25

Command Format:
 Display: <SOH>IV0600yyyymm
 Computer: <SOH>iV0600yyyymm

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

Date	EVR Status	ISD %UP	---Containment Tests---					Leak	Stage I	Vapor	----Collection Tests----			Daily Average		
			Gross	Dgrd	Max "wc	Min "wc	CFH				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	

Date	-----Collection Tests-----								
	FP3 Reg	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 V06 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iV0600YYMDDHHmmiiiiMDDaddskkkkkkkstttttttrrrrrrrrrvvvvvvv...
      scccccccegnnfhhsmmmmmmmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MDD - 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. mn - 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. mmmmmmm - 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

Version 25

Function Code: V07
 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

Date	ISD EVR Status	ISD %UP Time	---Containment Tests---					Leak	Stage I Vapor	----Collection Tests----			Daily Average		
			Gross 95%	Dgrd 75%	Max "wc"	Min "wc"	CFH			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	Pass	Pass	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	Pass	Pass	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	Pass	Pass	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	Pass	Pass	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	-----Collection Tests-----								
	FP3 Reg	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 V07 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iV0700YYMDDHHmmiiiiMDDaddsskkkkkkkkstttttttrrrrrrrrrvvvvvvv...
      scccccccegnnfhhsmmmmmmmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MDD - 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. mn - 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. mmmmmmm - 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
 Function Type: ISD Daily Report Details (by month)

Version 25

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

Date	ISD Status	ISD %UP	---Containment Tests---					Leak	Stage		----Collection Tests----				Daily Average	
			Gross	Dgrd	Max	Min	"wc		"wc	I	Vapor	FP1	FP1	FP1	FP2	FP2
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	

Date	-----Collection Tests-----										
	FP3	FP3	FP3	FP4	FP4	FP4	FP5	FP5	FP5		
02/19	Blkd	Reg	Super	Mid	Reg	Super	Mid	Reg	Super	Mid	
02/20	Blkd	0.75	1.00N	Blkd	0.87	0.96	Blkd	0.87	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>iV0800YYMDDHHmmiiiiMDDaddsskkkkkkkkstttttttrrrrrrrrrvvvvvvv...
      sccccccccegnffhhsmmmmmmmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MDD - 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. mn - 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. mmmmmmm - 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
 Function Type: ISD Daily Report Details, user input columns (by day(s))

Version 25

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	ISD Status	ISD %UP	---Containment Tests---					Leak CFH	Stage I Xfr	Vapor Prcsr	----Collection Tests----			---Daily Average		
			Gross 95%	Dgrd 75%	Max "wc"	Min "wc"	CFH				FP1 Reg	FP1 Super	FP2 Mid	FP2 Reg	FP2 Super	FP2 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	

Date	-----Collection Tests-----								
	FP3 Reg	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>iV0900YYMDDHHmmiiiiMDDaddsskkkkkkkkstttttttrrrrrrrrvvvvvv...
      scccccccegnnfhhsmmmmmmmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Time/Date stamp of report
2. iiii - Number of Record (Hex)
3. MDD - 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. mn - 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. mmmmmmm - 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: VOA
Function Type: ISD Daily Overall Status Report

Version 25

Command Format:
Display: <SOH>I VOA00yyyymmdd
Computer: <SOH>i VOA00yyyymmdd

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>
I VOA00
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%
EVR/ISD PASS TIME        : 100%
STAGE I TRANSFERS:      1 of 1 PASS
VAPOR PROCESSOR         : PASS
<ETX>
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code VOA Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iVOA00YYMMDDHHmmYYYYmmddEvv.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: VOB
Function Type: ISD Monthly Overall Status Report

Version 25

Command Format:
Display: <SOH>I VOB00yyyyymm
Computer: <SOH>i VOB00yyyyymm

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>
I VOB00
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%
EVR/ISD PASS TIME        : 100%
STAGE I TRANSFERS: 13 of 13 PASS
VAPOR PROCESSOR         : PASS
<ETX>
```


Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code VOB Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iVOB00YYMDDHHmmYYYYmmddE.VV.VVPACNUUsssSSSpptT&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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=ARLD
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

Version 25

Function Code: V10
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
Function Type: Set Vapor Processor Type

Version 25

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>iV4000YYMDDHHmmtt&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Vapor Processor Control Level

Version 25

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>iV4100YYMDDHHmm11&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Clear Sensor/AFM/Hose Maps

Version 25

Command Format:
 Display: <SOH>SV42SS149[AA(F1FL{MI(H1L1)}M2H2L2M3H3L3M4H4L4)
 (F2FL{MI(H1L1)}M2H2L2M3H3L3M4H4L4)]
 Computer: <SOH>sV42SS149[AA(F1FL{MI(H1L1)}M2H2L2M3H3L3M4H4L4)
 (F2FL{MI(H1L1)}M2H2L2M3H3L3M4H4L4)]

Inquire:
 <SOH>IV42SS
 <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>iV4200YYMDDHHmmSSAAF1FLM1H1L1M2H2L2M3H3L3M4H4L4F2FLM1H1L1M2H2L2M3H3L3M4H4L4...
SSAAF1FLM1H1L1M2H2L2M3H3L3M4H4L4F2FLM1H1L1M2H2L2M3H3L3M4H4L4
&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
 Function Type: Set Sensor Table ISD In Use Flag

Version 25

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
Function Type: Set Vapor Processor ON/OFF Pressure Thresholds

Version 25

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) H20 (ab.cd, abc.d also OK)
3. A.BCD - High/on threshold, inches (or mm) H20 (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) H20
HIGH (ON) THRESHOLD -0.200 inches (or mm) H20
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iV4400YYMDDHHmmAAAAAAAABBBBBBBB&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Vapor Processor Maximum Runtime

Version 25

Command Format:
Display: <SOH>SV4500MM
Computer: <SOH>sV4500MM

Inquire:
<SOH>IV4500
<SOH>iV4500

Notes:

1. PMC feature required
2. MM - 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>iV4500YYMDDHHmmMM&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. MM - 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
Function Type: Set Hydrocarbon Alarm Threshold

Version 25

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
Function Type: Set time of day ISD/PMC tests are started and results posted Version 25

Command Format: Inquire:
Display: <SOH>SV4700HHMmmm <SOH>IV4700
Computer: <SOH>sv4700HHMmmm <SOH>i V4700

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. mmm - 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>iV4700YYMDDHHmmHHMmmm&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. HH - start tests hour [00-23] (Decimal)
3. MM - start tests minute [00-59] (Decimal)
4. mmm - 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>iV4800YYMDDHHmmI I S S F 1 H 1 H 2 H 3 H 4 F 2 H 5 H 6 H 7 H & & C C C C <ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Hose Label Table

Version 25

Command Format:
Display: <SOH>SV4900II aaaaaaaaaa
Computer: <SOH>sv4900II aaaaaaaaaa

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>iV4900YYMDDHHmmi aaaaaaaaaa. . .
ii aaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

Version 25

Function Code: V4A
 Function Type: Read Hose Table Data

Command Format:
 Display: <SOH>IV4Ai i
 Computer: <SOH>iV4Ai i

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>iV4A00YYMDDHHmmhhffggaall...
hhffggaall&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

Version 25

Function Code: V4B
 Function Type: Read Grade Table

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>iV4B00YYMDDHHmmffaam1h1m2h2m3h3m4h4&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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>iV4E00YYMDDHHmmEEVV&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set Nozzle Type

Version 25

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>iV4F00YYMDDHHmmAAAAAAAABBBBBBBB&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Set CVLD Minimum Pressure Time Window

Version 25

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>iV5000YYMDDHHmmHHMMddd&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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
Function Type: Perform ISD Setup Verification Test

Version 25

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>iV5100YYMDDhhmmS&&CCCC<ETX>
```

Notes:

1. YYMDDhhmm - 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
Function Type: Accept High ORVR Configuration

Version 25

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>iV5200YYMDDhhmmF&&CCCC<ETX>
```

Notes:

1. YYMDDhhmm - 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. Set command clear buffer
2. PMC Feature and Full Vapor Processor Control required
3. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

When VST Polisher selected:

```
<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 H2O OFF	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>
```

When Veeder-Root Polisher selected:

```
<SOH>
IV8000
JUL 29, 2006 9:04 AM
```

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

VAPOR POLISHER

VALVE EVENT	PRESSURE	EVENT CODE
DATE-TIME	"WC	OPEN PURGE
10-20-07 11:16AM	-0.300	

```
<ETX>
```

Serial Interface Manual

TLS-300/350/350R Monitoring Systems

Function Code V80 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iV8000YYMDDHHmmnnnnTTTTTTTTTiiaaaaaaabbabbbbbbccccccc...
TTTTTTTTTiiaaaaaaabbabbbbbbcccccccS&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. nnnn - number of Vapor Processor cycles (Decimal, 0-20)
3. TTTTTTTT - On time, unsigned long ascii-hex seconds since 1/1/1970
(Valve Event On or Off Time for V-R Polisher)
4. ii - number of floating point fields per cycle (decimal)
5. aaaaaaaa - elapsed time (ASCII Hex IEEE float)
(Event Type Code for V-R Polisher)
 - 9D = No Event
 - F7 = Close Cold Start
 - F8 = Close Timer
 - F9 = Close Test
 - FA = Close No Load
 - FB = Close Force Purge
 - FC = Close No Purge
 - FD = Close HC Limit
 - FE = Close Full
 - FF = Close Near Full
 - 00 = Close Empty
 - 01 = Open Purge
 - 02 = Open Excess Purge
 - 03 = Open Fill
 - 04 = Open Test
 - 05 = Open Timer
6. bbbbbbbb - on pressure in inches(or mm) of H2O (ASCII Hex IEEE float)
(pressure at event time for V-R Polisher)
7. cccccccc - off pressure in inches(or mm) of H2O (ASCII Hex IEEE float)
(0 for V-R Polisher)
8. S - 0=no runtime fault, 1=runtime fault (decimal)
9. && - Data Termination Flag
10. CCCC - Message Checksum

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Function Code: V81
Function Type: Percent Hydrocarbon Report

Version 25

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>iV8100YYMDDHHmmnnnnTTTTTTTTtaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. nnnn - number of HC samples [00-20] (Decimal)
3. TTTTTTTT - sample time (Seconds since 1/1/1970, Hex)
4. aaaaaaaa - 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
 Function Type: Read Sensor Calibration History

Version 25

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>iV8300YYMDDHHmmCCNNIIIYYMDDHHmmSSSSSSSS00000000R&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. CC - Sensor Category
3. NN - Sensor number
4. III - Record number
5. YYMDDHHmm - Calibration Date and Time
6. SSSSSSSS - Slope Value (ASCII Hex IEEE float)
7. 00000000 - 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
 Function Type: ISD Service Report Test Fail Clear

Version 25

Command Format:
 Display: <SOH>SV8500149TTTTFHH
 Computer: <SOH>sv8500149TTTTFHH

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      PLUS- 02/15/03     SUPER- 02/15/03     SUPER+- 02/15/03
02      REG- 03/12/03      REG- 02/15/03
03      SUPER- 04/31/03
```

<ETX>

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Function Code V85 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i V8500YYMDDHHmmYYMDDYYMDDYYMDDYYMDDYYMDDFFHHYYMDD&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. YYMDD - Containment Tests (Gross & Degradation) Date and Time
3. YYMDD - CVLD Date and Time
4. YYMDD - Vapor Processor Date and Time
5. YYMDD - Sensor Out Date and Time
6. YYMDD - Setup Date and Time
7. FF - Fuel Position (Decimal) (Collection)
8. HH - Hose number (Decimal) (Collection)
9. YYMDD - 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

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Function Code: VCO
Function Type: Automatic/Manual Vapor Processor Control

Version 25

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>iVC000YYMDDHHmmC&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - 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

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Function Code: VC1
Function Type: Manual Override of Vapor Processor

Version 25

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>iVC100YYMDDHHmmC&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. C - Control
0=VP is off
1=VP is on
3. && - Data Termination Flag
4. CCCC - Message Checksum

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Function Code: VC5
Function Type: Acknowledge ISD Alarm to Re-Enable Site

Version 25

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>iVC500YYMDDHHmmS&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. S - ISD shutdown alarms overridden
0=Yes
1=No
3. && - Data Termination Flag
4. CCCC - Message Checksum

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Function Code: VC8
 Function Type: Set Manual Override of Veeder-Root Polisher

Version 29

Command Format:
 Display: <SOH>SVC800149R
 Computer: <SOH>sVC800149R

Inquire:
 <SOH>IVC800
 <SOH>iVC800

Notes:

1. VP Control Must be Manual (see VCO Command)
2. Vapor Processor Type must be Veeder-Root Polisher
3. 149 - This verification code must be sent to confirm the command
4. R - Request Vapor Valve Position
 0 = Closed
 1 = Open

Typical Response Message, Display Format:

```
<SOH>
IVC800
JUN  1, 2002  8:07 AM
```

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

VAPOR VALVE POSITION	CURRENT	REQUESTED
<ETX>	CLOSED	OPEN

Typical Response Message, Computer Format:

```
<SOH>iVC800YYMDDHHmmCR&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. C - Current Vapor Valve Position
 0 = Closed
 1 = Open
3. R - requested Vapor Valve Position
 0 = Closed
 1 = Open
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: XEO
Function Type: ISD Setup Data Time Stamp EEPROM

Version 25

Command Format:
Display: <SOH>SXEO00ssssssss
Computer: <SOH>sXE000ssssssss

Inquire:
<SOH>IXEO00
<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>iXE000YYMDDHHmmssssssss&&CCCC<ETX>

Notes:

1. YYMDDHHmm - 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

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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

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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
14	Min_Operating_Capacity	O	Yes

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TANK PROBE DATABASE DB_Ad= TP_ID (21H-3FH)			
Data_Id	Data Element Name	M/O	Supported
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

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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

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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

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9.0 FUNCTION CODE SUMMARY

CONTROL FUNCTIONS (7.1)

Code	Ver	Function
001	1	System Reset
002	1	Clear Power Reset Flag
003	1	Remote Alarm Reset
010	14	Cancel Autodial Computer Mode Session
031	10	Confirm Clear Function
051	1	Clear In-Tank Delivery Reports
052	1	Start In-Tank Leak Detect Test
053	1	Stop In-Tank Leak Detect Test
054	5	Delete CSLD Rate Table
081	7	Start Pressure Line Leak Test (3.00 GPH only in V18)
082	7	Stop Pressure Line Leak Test
083	10	Start WPLLD Line Leak Test (3.00 GPH only in V18)
084	10	Stop WPLLD Line Leak Test
087	18	Start Pressure Line Leak Test by Type
088	18	Start WPLLD Line Leak Test by Type
089	19	Pressure Line Leak Pressure Offset Reset
090	19	WPLLD Line Leak Pressure Offset Reset
091	15	Close Current Shift
092	23	Start Pressure Line Leak Profile Line Test
093	23	Stop Pressure Line Leak Profile Line Test
094	23	Recalculate Pressure Line Leak Profile Bulk Modulus
095	24	Start Vacuum Sensor Manual Test
096	24	Stop Vacuum Sensor Manual Evacuation Test
097	24	Start Vacuum Sensor Evacuation Hold
098	24	Stop Vacuum Sensor Evacuation Hold
099	26	Start Mag Sump Leak Test
09A	26	Start Mag Sump Leak Test Measuring Height Phase
09B	26	Stop Mag Sump Leak Test

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OPERATIONAL REPORTS (7.2)

SYSTEM REPORTS (7.2.1)

Code	Ver	Function
101	1	System Status Report
102	1	System Configuration Report
111	2	Priority Alarm History Report
112	2	Non-Priority Alarm History Report
113	14	Active Alarm Report
114	19	Cleared Alarm Report
115	27	Maintenance Tracker Unacknowledged Alarm Report
116	19	Service Report History (Obsolete V27)
119	27	Maintenance History Report
11A	27	Service Report History
11B	28	Service Notice Session Report

IN-TANK REPORTS (7.2.2)

Code	Ver	Function
201	1	In-Tank Inventory Report
202	1	In-Tank Delivery Report
203	1	In-Tank Leak Detect Report
204	1	In-Tank Shift Inventory Report
205	1	In-Tank Status Report
206	1	In-Tank Alarm History Report
207	2	In-Tank Leak Test History Report
208	2	In-Tank Leak Test Results Report
20A	110	HRM Adjusted Delivery Report
20B	110	BIR Adjusted Delivery Report
20C	15	In-Tank Most Recent Delivery Report
20D	15	In-Tank Stick Height Report
211	14	Tank Chart Report
212	24	In-Tank Leak Test History Report 2
213	26	In-Tank Extended Standard Delivery Report
214	26	In-Tank Mass/Density Inventory Report
215	26	In-Tank Mass/Density Delivery Report
216	26	Tank 50 Point Heights, Volumes and Slope Report
217	26	Tank Profile
218	26	Tank Chart Audit Trail
219	26	Tank Chart Security Status

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IN-TANK REPORTS (7.2.2) (Continued)

Code	Ver	Function
21A	27	In-Tank Inventory Report With 90/95% Ullage
21B	26	BIR Extended Adjusted Delivery Report
221	116	Ticketed Delivery Report
222	23	Bill of Lading Report
225	116	Periodic Delivery Variance Report
226	116	Weekly Delivery Variance Report
227	116	Daily Delivery Variance Report
251	3	CSLD Results Report
281	3	Fuel Management Report
282	19	FLS Diagnostic: Volume History Table
2E2	14	In-Tank Stored Inventory Report

SENSOR REPORTS (7.2.3)

Code	Ver	Function
301	1	Liquid Sensor Status Report
302	1	Liquid Sensor Alarm History Report
306	1	Vapor Sensor Status Report
307	1	Vapor Sensor Alarm History Report
311	1	Groundwater Sensor Status Report
312	1	Groundwater Sensor Alarm History Report
315	24	Smart Sensor Status Report
316	24	Smart Sensor Alarm History Report
317	26	Mag Sump Leak Test In Progress/Last Test Report
318	26	Mag Sump Leak Test Last Passed Test Report
319	26	Mag Sump Leak Test Last 10 Test Passed Report
31A	26	Mag Sump Leak Test Last Passed Each Year Report
322	27	Pump Relay Monitor Status Report
323	27	Pump Relay Monitor Alarm History Report
333	24	Smart Sensor Install Log
341	2	Type A (2 Wire CL) Sensor Status Report
342	2	Type A (2 Wire CL) Sensor Alarm History Report

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SENSOR REPORTS (7.2.3) (Continued)

Code	Ver	Function
346	2	Type B (3 Wire CL) Sensor Status Report
347	2	Type B (3 Wire CL) Sensor Alarm History Report
34B	4	Universal Sensor Status Report
34C	4	Universal Sensor Alarm History Report

LINE LEAK REPORTS (7.2.4)

Code	Ver	Function
351	1	Volumetric Line Leak Result Report
352	1	Volumetric Line Leak Alarm History Report
353	2	Volumetric Line Leak Pump Status
373	14	Pressure Line Leak Test Results (with 0.20 test data)
374	14	Pressure Line Leak Test History (with 0.20 test data)
381	7	Pressure Line Leak Status
382	7	Pressure Line Leak Alarm History Report
383	7	Pressure Line Leak Test Results (0.10 test data only)
384	7	Pressure Line Leak Test History (0.10 test data only)
386	10	WPLLD Line Leak Status
387	10	WPLLD Line Leak Alarm History Report
388	10	WPLLD Line Leak Test Results
389	12	WPLLD Line Leak Test History

MISCELLANEOUS REPORTS (7.2.5)

Code	Ver	Function
391	10	Tanker Load Report
392	26	Tanker Load Report II

I/O DEVICE REPORTS (7.2.6)

Code	Ver	Function
401	1	Input Status Report
402	1	Input Alarm History Report
403	5	Input/Generator Alarm History Report
406	1	Relay Status Report
411	28	VMCI Alarm History Report
412	28	VMC Alarm History Report

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SETUP FUNCTIONS & REPORTS (7.3)

SYSTEM SETUP (7.3.1)

Code	Ver	Function
501	1	Set Time of day
502	1	Set Shift Start Time 1, 2, 3, 4
503	1	Set Print Header Line 1, 2, 3, 4
504	1	Set System RS-232 Security Code
505	1	Set System Type & Language Flags
506	2	Set Periodic Test Needed Warning
507	4	Set Days Before Periodic Test Needed Warning
508	4	Set Days Before Periodic Test Needed Alarm
509	4	Set Annual Test Needed Warning
50A	4	Set Days Before Annual Test Needed Warning
50B	4	Set Days Before Annual Test Needed Alarm
50C	5	Set Remote Printer Page Eject Flag
50D	8	Set Print Temperature Compensation Flag
50E	8	Set Temperature Compensation Value
50F	10	Set System Date/Time Display Format
511	110	Set BIR Shift Printouts Flag
512	110	Set BIR Daily Printouts Flag
513	10	Set Tanker Load Report Flag
514	10	Set H-Protocol Height/Volume format
515	110	Set HRM - QPLD Monthly Printout
516	14	Set Re-direct Local Printout Flag
517	15	Set System Type & Language Flags
518	15	Set Secondary Language Code Page Output
519	15	Set PLLD & WPLLD Duration Before Precision Retest
51A	15	Set Enable/Disable Auto Daylight Saving Time
51B	15	Set Start/End Daylight Saving Date and Time
51C	116	Set Ticketed Delivery Flag Enable
51D	116	Set Ticketed Delivery Temperature Compensation Flag
51E	116	Set Ticketed Delivery Close Day of Week

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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
54D	29	Set IS03166 3 Character Country Code
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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WARNING, ALARM, & AUTO-PRINT SETUP (7.3.3) (Continued)

Code	Ver	Function
556	15	Set Line Periodic Test Needed Warning
557	15	Set Days Before Line Periodic Test Needed Warning
558	15	Set Days Before Line Periodic Test Needed Alarm
559	15	Set Line Annual Test Needed Warning
55A	15	Set Days Before Line Annual Test Needed Warning
55B	15	Set Days Before Line Annual Test Needed Alarm
560	26	Set Mass/Density Enable/Disable
564	27	Set Ullage
565	27	Set Maintenance History
566	28	Set Service Notice Enable
567	28	Set Service Notice Delivery Override Enable
568	28	Set Service Notice Session Enable
569	28	Set Service Notice Session Duration
56A	29	System Tank Chart Security Code Audit Trail
5BC	19	Set Receiver Auto Dial on Alarm II
5BD	23	Set Enable/Disable Custom Alarms
5BE	23	Set Custom Alarm Labels
5BF	26	Set Custom Alarm Label, device number, and indications
5E2	14	Set Inventory Record Time 1, 2, 3, 4

IN-TANK SETUP (7.3.4)

Code	Ver	Function
601	1	Set Tank Configuration
602	1	Set Tank Product Label
603	1	Set Tank Product Code
604	1	Set Tank 1 Point Full Height Volume
605	1	Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes
606	1	Set Tank 20 Point Full, 95%, 90%,... Volumes
607	1	Set Tank Diameter
608	1	Set Tank Tilt
609	1	Set Tank Thermal Expansion Coefficient
60A	9	Set Tank Linear Calculated Full Volume
60B	15	Set Tank Stick Height Function Enable
60C	15	Set Tank Stick Height Offset
60E	22	Set Tank Programmable Float Parameters
60F	22	Set Tank Probe Offset

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IN-TANK SETUP (7.3.4) (Continued)

Code	Ver	Function
610	1	Set Tank Delivery Delay
611	1	Set Tank Leak Test Type & Start Time
612	1	Set Tank SIPHON Manifolded Partners
613	3	Set CSLD Probability of Detection
614	5	Set CSLD Climate Factor
615	108	Set BIR Meter Data Present
616	110	Set AccuChart Update Scheduling
618	19	Set Tank CSLD Evaporation Compensation
619	19	Set Tank Stage II Vapor Recovery
61A	20	Set In-Tank Leak Test Early Stop
61B	121	Set In-Tank Static Gross Test Auto-Confirm
61C	121	Set CSLD Report Only Mode
61D	23	Set Tank LINE Manifolded Partners
61E	26	Set Tank Density
61F	26	Set Delivery Density
621	1	Set Tank Low Level Limit
622	1	Set Tank High Level Limit
623	1	Set Tank Overfill Level Limit
624	1	Set Tank High Water Level Limit
625	1	Set Tank Sudden Loss Limit
626	1	Set Tank Leak Alarm Limit
627	2	Set Tank High Water Warning Limit
628	2	Set Tank Maximum Volume Limit
629	2	Set Tank Delivery Required Limit
62A	2	Set Tank Annual Leak Test Minimum Volume
62B	2	Set Tank Last Annual Test
62C	2	Set Tank Periodic Test Type
62D	2	Set Enable/Disable Tank Leak Test Fail Alarms
62E	3	Set CAP0 Probe Conductive Boot Flag
62F	3	Set Mag Probe Float Size
630	3	Set Tank Leak Test Notify
631	5	Set Tank Leak Test Averaging
632	5	Set Tank Test Siphon Break
633	9	Set Leak Test Report Type
634	110	Set Tank HRM Reconciliation Warning Limit
635	110	Set Tank HRM Reconciliation Alarm Limit

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IN-TANK SETUP (7.3.4) (Continued)

Code	Ver	Function
636	14	Set Tank Periodic Leak Test Minimum Volume
639	115	Set Tank AccuChart End Shape Type and Factor
63A	22	Set Tank Low Level Threshold for Sequential Line Manifold
63B	26	Set Tank 50 Point Heights and Volumes
63C	26	Set Tank 50 Point Full Volume
63D	29	Set Tank Vapor Loss Factor
680	6	Fuel Management General Setup Inquiry
681	6	Set Fuel Management Delivery Needed Warning
682	6	Set Fuel Management Automatic Report Print Time
683	6	Set Fuel Management Average Daily Sales

SENSOR SETUP (7.3.5)

Code	Ver	Function
701	1	Set Liquid Sensor Configuration
702	1	Set Liquid Sensor Location Label
703	1	Set Liquid Sensor Type
704	2	Set Liquid Sensor Category
706	1	Set Vapor Sensor Configuration
707	1	Set Vapor Sensor Location Label
708	1	Set Vapor Sensor Alarm Threshold
709	2	Set Vapor Sensor Category
711	1	Set Groundwater Sensor Configuration
712	1	Set Groundwater Sensor Location Label
713	2	Set Groundwater Sensor Category
721	24	Set Smart Sensor Configuration
722	24	Set Smart Sensor Label
723	25	Set Smart Sensor Category
727	24	Set MAG Sensor Alarm Upgrade Delay
728	24	Set MAG Sensor Alarm Threshold
729	24	Set Vacuum Sensor Pump Number
72A	24	Set Vacuum Sensor Volume
72B	24	Set Vacuum Sensor Relief Valve Present
72C	24	Set Vacuum Sensor Relief Valve Pressure
741	2	Set Type A (2 Wire CL) Sensor Configuration
742	2	Set Type A (2 Wire CL) Sensor Location Label
743	2	Set Type A (2 Wire CL) Sensor Type
744	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 V17, 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 V17, 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
7B4	29	Set Individual Meter 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
7BC	19	Set Line Disable Alarm Assignments II
7BD	19	Set Pressure Line Disable Alarm Assignments II
7BE	19	Set WPLLD Line Disable Alarm Assignments II
7C4	27	Set Pump Relay Monitor Configuration
7C5	27	Set Pump Relay Monitor Label
7C6	27	Set Pump Relay Monitor Pump Relay
7C7	27	Set Pump Relay Monitor Stuck Relay
7C8	27	Set Pump Relay Monitor Max Run Time
7C9	28	Set Pump Relay Monitor Type
801	1	Set Input Configuration
802	1	Set Input Location Label
803	1	Set Input Type
804	4	Set Input Dispense Mode
806	1	Set Relay Configuration
807	1	Set Relay Location Label
808	1	Set Relay Alarm Assignments
809	2	Set Relay Orientation
80A	4	Set Relay Type
80B	4	Set Relay Tank Assignment
80C	25	Set External Input Type

EEPROM SETUP (7.3.13)

Code	Ver	Function
851	107	Restore All Setup Data from EEPROM
852	107	Save All Setup Data to EEPROM
853	107	Clear All Setup Data from EEPROM

MISCELLANEOUS SETUP (7.3.14)

Code	Ver	Function
881	9	Set Communication Port Data
882	9	Initialize Communication Port Data
885	19	Set SiteLink Modem Type
886	20	Set Modem Setup String
887	20	Set Dial Tone Validation Interval
888	19	Communication Status Information
889	121	DTR Normal State for Serial Satellite Boards

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MISCELLANEOUS SETUP (7.3.14) (Continued)

Code	Ver	Function
88D	23	Communication Diagnostic for SiteLink
891	108	Set AccuChart Calibration Restart
8A2	27	Service Code List
8A3	27	Maintenance Tracker Active Hardware Key List
8A4	27	Maintenance Tracker Block Hardware Key
8BC	19	Set Relay Alarm Assignments II
8C1	28	VMC Edit/Add Serial Number
8C2	28	VMC Remove Serial Number

DIAGNOSTIC REPORTS (7.4)

SYSTEM DIAGNOSTIC REPORTS (7.4.1)

Code	Ver	Function
901	1	Self Test Results Report
902	1	System Revision Level Report
903	106	PC Diagnostic Report
905	15	System Revision Level Report II

IN-TANK DIAGNOSTIC REPORTS (7.4.2)

Code	Ver	Function
A01	1	Probe Type and Serial Number
A02	1	Probe Factory Dry Calibration Values
A03	1	Probe Factory Wet Calibration Values
A04	1	Probe Updated Dry Calibration Values
A05	1	Probe Updated Wet Calibration Values
A06	1	Probe Segment Sensitivity Ratios
A07	23	Probe Reference Distance Diagnostic
A10	1	Probe Last Sample Buffers
A11	1	Probe Fast Average Buffers
A12	1	Probe Standard Average Buffers
A13	1	Probe Long Term Average Buffers
A14	19	Mag Probe Option Table
A15	24	In-Tank Diagnostic Printout
A20	1	Probe Leak Test Flags - Present Test
A21	1	Probe Leak Test Flags - Stored Test
A22	2	Probe Leak Test Flags - Gross Test
A23	5	Tank Leak Test Averaging Buffers

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IN-TANK DIAGNOSTIC REPORTS (7.4.2) (Continued)

Code	Ver	Function
A51	3	CSLD Diagnostics: Rate Table
A52	3	CSLD Diagnostics: Rate Test
A53	3	CSLD Diagnostics: Volume History Table
A54	3	CSLD Diagnostics: Moving Average Table
A55	3	CSLD Diagnostics: Leak Test Status
A56	121	CSLD Monthly Report
A61	110	HRM Diagnostic Report
A62	112	HRM Daily History
A63	26	Extended HRM Diagnostic Report
A81	6	Fuel Management Diagnostic Report
A91	9	Power Outage Diagnostic Report

SENSOR DIAGNOSTIC REPORTS (7.4.3)

Code	Ver	Function
B01	1	Liquid Sensor Diagnostic Report
B06	1	Vapor Sensor Diagnostic Report
B07	3	Vapor Sensor Concentration (PPM) Report
B11	1	Groundwater Sensor Diagnostic Report
B21	1	Ground Temperature Sensor Diagnostic Report
B33	24	MAG Sensor Diagnostic Report
B34	24	Smart Sensor Last Sample Diagnostic
B35	24	Smart Sensor Type and Serial Number
B36	24	Smart Sensor Constant Data
B37	24	Atmospheric Pressure Sensor Diagnostic Report
B38	24	Vacuum Sensor Diagnostic Report
B39	24	Vacuum Sensor Evacuation Diagnostic Report
B41	2	Type A Sensor (2 Wire CL) Diagnostic Report
B46	2	Type B Sensor (3 Wire CL) Diagnostic Report
B4B	4	Universal Sensor Diagnostic Report

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LINE LEAK DIAGNOSTIC REPORTS (7.4.4)

Code	Ver	Function
B50	1	Volumetric Line Leak Status
B51	1	Volumetric Line Leak Diagnostic Gross Test History
B52	1	Volumetric Line Leak 0.10 & 0.20 GPH Diagnostic History
B61	29	Vapor Valve Diagnostic
B62	29	Sub Alarm History Report
B71	2	Pump Sensor Diagnostic
B72	27	Pump Relay Monitor Diagnostic
B7B	23	Pressure Line Leak Profile Line Test
B7C	19	Pressure Line Leak Pressure Offset Test
B7D	19	WPLLD Line Leak Pressure Offset Test
B7E	19	Pressure Line Leak Pressure Offset Monitor Report
B7F	19	WPLLD Line Leak Pressure Offset Monitor Report
B81	7	Pressure Line Leak Diagnostic Report
B82	10	WPLLD Line Leak Diagnostic Report
B83	10	WPLLD Line Leak Communication Diagnostic Report
B87	19	Pressure Line Leak 3.00 GPH Test Diagnostic
B88	19	Pressure Line Leak Mid-range Test Diagnostic
B89	19	Pressure Line Leak 0.20 GPH Test Diagnostic
B8A	19	Pressure Line Leak 0.10 GPH Test Diagnostic
B8B	19	WPLLD Line Leak 3.00 GPH Test Diagnostic
B8C	19	WPLLD Line Leak Mid-range Test Diagnostic
B8D	19	WPLLD Line Leak 0.20 GPH Test Diagnostic
B8E	19	WPLLD Line Leak 0.10 GPH Test Diagnostic

RECONCILIATION DIAGNOSTIC REPORTS (7.4.5)

Code	Ver	Function
B91	108	AccuChart Diagnostics Report
B93	108	AccuChart Status Report
B94	108	AccuChart Calibration History Report
BA0	110	MDIM Totalizer Report
BB1	28	VMC Status Report

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RECONCILIATION REPORTS (7.5)

Code	Ver	Function
C01	106	Basic Inventory Reconciliation Daily "Row" Report
C02	106	Basic Inventory Reconciliation Daily "Column" Report
C03	106	Basic Inventory Reconciliation Shift "Row" Report
C04	106	Basic Inventory Reconciliation Shift "Column" Report
C05	106	Basic Inventory Reconciliation Periodic "Row" Report
C06	106	Basic Inventory Reconciliation Periodic "Column" Report
C07	114	Basic Inventory Reconciliation Periodic "Row" Report
C08	114	Basic Inventory Reconciliation Periodic "Column" Report
C09	19	Individual Basic Reconciliation Daily History Diagnostic

VARIANCE ANALYSIS REPORTS (7.6)

Code	Ver	Function
C10	116	Periodic Book Variance
C11	116	Weekly Book Variance
C12	116	Daily Book Variance
C20	116	Periodic Variance Analysis Report
C21	116	Weekly Variance Analysis Report
C22	116	Daily Variance Analysis Report
C25	19	Periodic Variance Analysis Daily Report

IN-STATION DIAGNOSTICS (ISD) (7.7)

ISD REPORTS (7.7.1)

Code	Ver	Function
V00	25	ISD CARB Certified Operating Requirements and Monitoring
V01	25	ISD Alarm Status Report
V02	25	ISD Monthly Status Report
V03	25	ISD Daily Status Report
V04	25	ISD Daily Report Details (by month)
V05	25	ISD Daily Report Details (by day(s))
V06	25	ISD Daily Report Details, 132 columns (by month)
V07	25	ISD Daily Report Details (by day(s))
V08	25	ISD Daily Report Details (by month)
V09	25	ISD Daily Report Details, user input columns (by day(s))
V0A	25	ISD Daily Overall Status Report
V0B	25	ISD Monthly Overall Status Report
V10	25	ISD Version Number

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ISD SETUP (7.7.2)

Code	Ver	Function
V40	25	Set Vapor Processor Type
V41	25	Set Vapor Processor Control Level
V42	25	Set Clear Sensor/AFM/Hose Maps
V43	25	Set Sensor Table ISD In Use Flag
V44	25	Set Vapor Processor ON/OFF Pressure Thresholds
V45	25	Set Vapor Processor Maximum Runtime
V46	25	Set Hydrocarbon Alarm Threshold
V47	25	Set time of day ISD/PMC tests are started and results posted
V48	25	Read Airflow Meter Table
V49	25	Set Hose Label Table
V4A	25	Read Hose Table Data
V4B	25	Read Grade Table
V4E	25	Set ISD EVR TYPE
V4F	25	Set Nozzle Type
V50	25	Set CVLD Minimum Pressure Time Window
V51	25	Perform ISD Setup Verification Test
V52	25	Accept High ORVR Configuration

ISD DIAGNOSTIC REPORTS (7.7.3)

Code	Ver	Function
V80	25	Vapor Processor Report
V81	25	Percent Hydrocarbon Report
V83	25	Read Sensor Calibration History
V85	25	ISD Service Report Test Fail Clear
VC0	25	Automatic/Manual Vapor Processor Control
VC1	25	Manual Override of Vapor Processor
VC5	25	Acknowledge ISD Alarm to Re-Enable Site
VC8	29	Set Manual Override of Veeder-Root Polisher
XE0	25	ISD Setup Data Time Stamp EEPROM