

# **VEEDER - ROOT SERIAL INTERFACE MANUAL**

**for**

**TLS-450  
UST Monitoring Systems**

**and**

**Environmental & Inventory  
Management System**

Manual Number 577013-950  
Revision G



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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.

## 2.0 HARDWARE CONNECTIONS

The RS-232 interface is a module accessed via a 9-pin D-connector located on the bottom-left of the console. Table 2.0 describes all allowable serial ports.

Table 2.0 – Console Slots and their Supported Comm Device Types

Comm Device Type	Communication Type	Slot 1		Slot 2		Slot 3		Slot 4		Slot 5	
		P1	P2	P1	P2	P1	P2	P1	P2	P1	P2
RS-232	Serial	X	X	X	X		X	X			
RS-485	Serial	X	X	X	X		X	X			
Internal Modem	Serial	X	X	X	X		X				

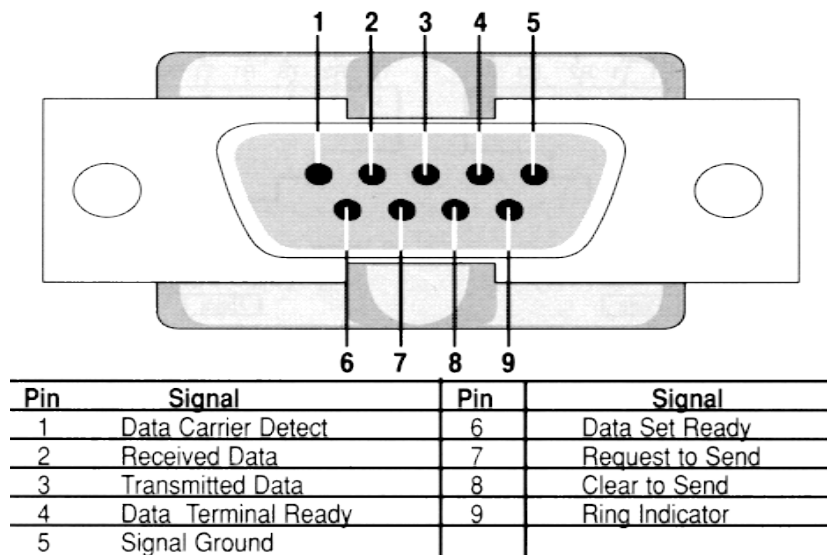
**Notes:**

- P1 is port 1, P2 is port 2.
- Slot 1 (Ports 1 and 2), Slot 2 (Ports 1 and 2), and Slot 3 (Port 2) support Comm Device Types that need Full Handshaking for serial communications.
- Slot 3 Port 1 is not available.
- Slot 4 Port 1 does not support Comm Device Types that need Full Handshaking for serial communications. Slot 4 Port 2 is only available for Ethernet devices.

### 2.1 RS-232

The RS-232 D-connector is a panel mount, 9-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:



## 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.

### **2.3 INTERNAL MODEM**

The optional internal modem operates at up to 115200 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, 9600, 19200, 38400, 57600 or 115200 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**

Not available in the TLS-450

## 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.

## 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.



## 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  $5.8775 \times 10^{-39}$ .

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

## 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 =  $+8,192 \times 1.22070 = 10,000$

## 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
003 to 094 .....	Control Functions
101 to 11F .....	Operational Reports (System)
201 to 2E4 .....	Operational Reports (In-tank)
301 to 347 .....	Operational Reports (Sensor)
373 to 385 .....	Operational Reports (Line Leak)
401 to 408 .....	Operational Reports (I/O Device)
501 to 572 .....	Setup Functions & Reports (System)
520 to 531 .....	Setup Functions & Reports (Communications)
536 to 5BF .....	Setup Functions & Reports (Warning, Alarm, & Auto-print)
5G1 to 5K7 .....	Setup Functions & Reports (Address Book)
5P1 to 5Q1 .....	Setup Functions & Reports (Auto Events)
601 to 6SU .....	Setup Functions & Reports (In-tank)
701 to 749 .....	Setup Functions & Reports (Sensor)
P01 to P06 .....	Setup Functions & Reports (Pump Sensor)
75A to 5A1 .....	Setup Functions & Reports (Pressure Line Leak)
51N to 7H5 .....	Setup Functions & Reports (Reconciliation)
801 to 822 .....	Setup Functions & Reports (I/O Device)
871 to 894 .....	Setup Functions & Reports (Miscellaneous)
902 to 907 .....	Diagnostic Reports (System)
A01 to A76 .....	Diagnostic Reports (In-tank)
B01 to B46 .....	Diagnostic Reports (Sensor)
B61 to B8J .....	Diagnostic Reports (Line Leak)
BA0 to CA2 .....	Diagnostic Reports (Reconciliation)
C01 to 7B5 .....	Reconciliation Reports
G01 to G0D .....	GUI Display Setup
L01 to L07 .....	Line Setup (Line Leak)
N01 to N03 .....	Device VR-Bus Configuration
S51 to SA1 .....	Line Pressure Sensor Setup & Reports (Pressure Line Leak)

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.

## 7.1 CONTROL FUNCTIONS

**Function Code:** 003  
**Function Type:** Remote Alarm Reset

Version 2

**Command Format:**  
**Display:** <SOH>S00300  
**Computer:** <SOH>s00300

### Typical Response Message, Display Format:

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

### Typical Response Message, Computer Format:

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

### Notes:

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

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**Function Code:** 010

Version 1

**Function Type:** Cancel Autodial Computer Mode Session

**Command Format:**

**Display:** <SOH>S01000

**Computer:** <SOH>s01000

Typical Response Message, Display Format:

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

Typical Response Message, Computer Format:

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

Notes:

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

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**Function Code: 052**

Version 1

**Function Type:** Start In-Tank Leak Detect Test

**Command Format:**

**Display:** <SOH>S052TT (Use 203 command for inquiry)

**Computer:** <SOH>s052TT

**Typical Response Message, Display Format:**

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

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

<ETX>

**Typical Response Message, Computer Format:**

<SOH>s052TTYMMDDHHmmTTk&&CCCC<ETX>

**Notes:**

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

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**Function Code: 053**

Version 1

**Function Type:** Stop In-Tank Leak Detect Test

**Command Format:**

**Display:** <SOH>S053TT

**Computer:** <SOH>s053TT

**Typical Response Message, Display Format:**

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

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

**Typical Response Message, Computer Format:**

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

**Notes:**

1. YMMDDHHmm - 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 1

**Command Format:**  
**Display:** <SOH>S054TT149  
**Computer:** <SOH>s054TT149

**Notes:**

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

**Typical Response Message, Display Format:**

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

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

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**Function Code: 081**

Version 1

**Function Type:** Start Pressure Line Leak Test

**Command Format:**

**Display:** <SOH>S081QQ149

**Computer:** <SOH>s081QQ149

**Notes:**

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

**Typical Response Message, Display Format:**

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

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

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**Function Code:** 082

Version 1

**Function Type:** Stop Pressure Line Leak Test

**Command Format:**

**Display:** <SOH>S082QQ149

**Computer:** <SOH>s082QQ149

**Notes:**

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

**Typical Response Message, Display Format:**

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

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

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**Function Code: 087**

Version 1

**Function Type:** Start Pressure Line Leak Test by Type

**Command Format:**

**Display:** <SOH>S087QQ149rr

**Computer:** <SOH>s087QQ149rr

**Notes:**

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

**Typical Response Message, Display Format:**

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

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

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**Function Code:** 089

Version 1

**Function Type:** Pressure Line Leak Pressure Offset Reset

**Command Format:**

**Display:** <SOH>S089QQ149

**Computer:** <SOH>s089QQ149

**Notes:**

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

**Typical Response Message, Display Format:**

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

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

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**Function Code: 091**  
**Function Type:** Close Current Shift

Version 1

**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

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**Function Code: 092**

Version 1

**Function Type:** Start Pressure Line Leak Profile Line Test

**Command Format:**

**Display:** <SOH>S092QQ149

**Computer:** <SOH>s092QQ149

**Notes:**

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

**Typical Response Message, Display Format:**

```
<SOH>
S092QQ
NOV 14, 2001  10:15 PM

START PRESSURE LINE LEAK PROFILE LINE TEST

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 093**

Version 1

**Function Type:** Stop Pressure Line Leak Profile Line Test

**Command Format:**

**Display:** <SOH>S093QQ149

**Computer:** <SOH>s093QQ149

**Notes:**

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

**Typical Response Message, Display Format:**

```
<SOH>
S093QQ
NOV 14, 2001  10:15 PM

STOP PRESSURE LINE LEAK PROFILE LINE TEST

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

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**Function Code: 094**

Version 1

**Function Type:** Recalculate Pressure Line Leak Profile Bulk Modulus

**Command Format:**

**Display:** <SOH>S094QQ149

**Computer:** <SOH>s094QQ149

**Notes:**

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

**Typical Response Message, Display Format:**

```
<SOH>
S094QQ
NOV 14, 2001  10:15 PM

RECALCULATE PRESSURE LINE LEAK PROFILE LINE TEST BULK MODULUS

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## 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>
```

**Typical Response Message, Computer Format:**

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

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
  - 00=All Functions Normal
  - 01=System Alarm
  - 02=Tank Alarm
  - 03=Liquid Sensor Alarm
  - 04=Vapor Sensor Alarm
  - 05=Input Alarm
  - 06=Volumetric Line Leak Alarm (OBSOLETE in TLS-450)
  - 07=Groundwater Sensor Alarm
  - 08=Type A Sensor Alarm
  - 11=Relay Alarm
  - 12=Type B Sensor Alarm
  - 13=Universal Sensor Alarm (OBSOLETE in TLS-450)
  - 14=Auto-Dial Fax Alarm (OBSOLETE in TLS-450)
  - 18=Mechanical Dispenser Interface Alarm (Version 2)
  - 19=Electronic Dispenser Interface Alarm (Version 2)
  - 20=Product Alarm (Version 2)
  - 21=Pressure Line Leak Alarm
  - 26=Wireless PLLD Alarm (OBSOLETE in TLS-450)
  - 28=Smart Sensor Alarm (future)
  - 29=Modbus Alarm (future)
  - 30=ISD Site Alarm (future)
  - 31=ISD Hose Alarm (future)
  - 32=ISD Vapor Flow Meter Alarm (future)
  - 33=PMC Alarm (future)

## Serial Interface Manual

### TLS-450 Monitoring Systems

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#### Function Code 101 Notes: (Continued)

34=Pump Relay Monitor Alarm (future)  
58=ISD Ullage Pressure sensor Alarm (future)  
59=MAG Sensor Alarm  
60=Vacuum Sensor Alarm (future)  
63=Line Pressure Sensor Alarm  
64=Printer Alarm  
65=Pump Alarm  
66=Line Alarms  
73=Communication Alarm  
74=Contact Alarm  
75=AutoEvent Alarm  
99=Externally Detected Alarm (not reported by Console)

3. NN - Alarm Type Number:

- If AA is 01 and NN is:
  - 01=Printer out of Paper (Obsolete)
  - 02=Printer Error (Obsolete)
  - 03=EEPROM Configuration Error (Obsolete)
  - 04=Battery Off (Obsolete)
  - 05=Too Many Tanks (Obsolete)
  - 06=System Security Warning (Obsolete)
  - 07=ROM Revision Warning (Obsolete)
  - 08=Remote Display Communications Error (Obsolete)
  - 09=Autodial Error (Obsolete)
  - 10=Software Module Warning (Obsolete)
  - 11=Tank Test Shutdown Warning (Obsolete)
  - 12=Protective Cover Alarm (Obsolete)
  - 13=BIR Shift Close Pending (Version 2)
  - 14=BIR Daily Close Pending (Version 2)
  - 15=PC(H8) Revision Warning (Obsolete)
  - 16=System Self Test Error (Obsolete)
  - 17=System Clock Incorrect Warning (Obsolete)
  - 18=System Device Poll Timeout (Obsolete)
  - 19=Maintenance Tracker NVMem Removed (Obsolete)
  - 20=Maintenance Tracker Communication Module Removed (Obsolete)
  - 21=Database Error
  - 22=File System Error
  - 23=BIR Status Warning (Version 2)
- 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 (Version 2)
  - 25=Tank HRM Reconciliation Warning (future)
  - 26=Tank HRM Reconciliation Alarm (future)

## Serial Interface Manual

### TLS-450 Monitoring Systems

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#### Function Code 101 Notes: (Continued)

- 27=Tank Cold Temperature Warning
- 28=Tank Missing Delivery Ticket Warning (Version 2)
- 29=Tank/Line Gross Leak Alarm
- 30=Delivery Density Warning (future)
- 31=Density Warning (Version 3)
- 32=Fuel Quality Alarm (Version 3)
- If AA is 03 and NN is:
  - 02=Liquid Sensor Setup Data Warning
  - 03=Liquid Sensor Fuel Alarm
  - 04=Liquid Sensor Out Alarm
  - 05=Liquid Sensor Short Alarm
  - 06=Liquid Sensor Water Alarm
  - 07=Liquid Sensor Water Out Alarm
  - 08=Liquid Sensor High Liquid Alarm
  - 09=Liquid Sensor Low Liquid Alarm
  - 10=Liquid Sensor Liquid Warning
- If AA is 04 and NN is:
  - 02=Vapor Sensor Setup Data Warning
  - 03=Vapor Sensor Fuel Alarm
  - 04=Vapor Sensor Out Alarm
  - 05=Vapor Sensor Short Alarm
  - 06=Vapor Sensor Water Alarm
- If AA is 05 and NN is:
  - 01=Input Setup Data Warning
  - 02=Input Normal
  - 03=Input Alarm
  - 04=Generator Off
  - 05=Generator On
  - 06=Input Out Alarm
- If AA is 06 and NN is: (OBSOLETE in TLS-450)
  - 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 07 and NN is:
  - 02=Groundwater Sensor Setup Data Warning
  - 03=Groundwater Sensor Fuel Alarm
  - 04=Groundwater Sensor Out Alarm
  - 05=Groundwater Sensor Short Alarm
  - 07=Groundwater Sensor Water Out Alarm

**Function Code 101 Notes:** (Continued)

- If AA is 08 and NN is:
  - 02=Type A Sensor Setup Data Warning
  - 03=Type A Sensor Fuel Alarm
  - 04=Type A Sensor Out Alarm
  - 05=Type A Sensor Short Alarm
  - 06=Type A Sensor Water Alarm
- If AA is 11 and NN is:
  - 01=Relay Setup Data Warning
  - 02=Relay Out Alarm
- If AA is 12 and NN is:
  - 02=Type B Sensor Setup Data Warning
  - 03=Type B Sensor Fuel Alarm
  - 04=Type B Sensor Out Alarm
  - 05=Type B Sensor Short Alarm
  - 08=Type B Sensor High Liquid Alarm
  - 10=Type B Sensor Liquid Warning
- If AA is 14 and NN is: (Obsolete, replaced with AA=74)  
Note: Auto-Dial Fax Alarm is obsolete. This alarm category is replaced with CONTACT Alarm [AA=74]
  - 01=Autodial Setup Data Warning (Obsolete)
  - 02=Autodial Failed Alarm (Obsolete)
  - 03=Autodial Service Report Warning (Obsolete)
  - 04=Autodial Alarm Clear Warning (Obsolete)
  - 05=Autodial Delivery Report Warning (Obsolete)
- If AA is 18, 19 and NN is: (Version 2)
  - 01=DIM Setup Data Warning
  - 02=DIM Disabled Alarm
  - 03=DIM Communication Failure Alarm
  - 04=DIM Transaction Alarm
- If AA is 20 and NN is: (Version 2)
  - 01=BIR Setup Data Warning
  - 02=BIR Threshold Alarm
  - 03=BIR Close Shift Warning (Obsolete)
  - 04=BIR Close Daily Warning (Obsolete)
- 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)
  - 08=PLLD Shutdown Alarm
  - 09=PLLD High Pressure Warning (Obsolete)
  - 10=PLLD Continuous Handle On Warning (Obsolete)
  - 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)
  - 16=PLLD Continuous Handle On Alarm
  - 17=PLLD Fuel Out Alarm
  - 18=PLLD Line Equipment Alarm
- If AA is 26 and NN is: (OBSOLETE in TLS-450)
  - 01=WPLLD Setup Data Warning
  - 02=WPLLD Gross Test Fail Alarm
  - 03=WPLLD Periodic Test Fail Alarm
  - 04=WPLLD Periodic Test Needed Warning

## Serial Interface Manual

### TLS-450 Monitoring Systems

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#### Function Code 101 Notes: (Continued)

- 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)
- 10=WPLLD Annual Test Fail Alarm
- 11=WPLLD Annual Test Needed Warning
- 12=WPLLD Annual Test Needed Alarm
- 13=WPLLD High Pressure Warning (Obsolete)
- 14=WPLLD High Pressure Alarm (Obsolete)
- 15=WPLLD Sensor Short Alarm (Obsolete)
- 16=WPLLD Continuous Handle On Alarm
- 17=WPLLD Fuel Out Alarm
- 18=WPLLD Line Equipment Alarm
- If AA is 28 and NN is: (future)
  - 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: (future)
  - 01=Improper Setup alarm
  - 02=Communication Loss alarm
- If AA is 30 and NN is: (future)
  - 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: (future)
  - 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

## Serial Interface Manual

### TLS-450 Monitoring Systems

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#### Function Code 101 Notes: (Continued)

- 06=Flow Performance Hose Blockage Failure alarm
- 07=Vapor Flow Meter Setup alarm
- If AA is 32 and NN is: (future)
  - 01=Locked rotor alarm
  - 02=VFM Setup Data Warning
  - 03=VFM Device Out Alarm
- If AA is 33 and NN is: (future)
  - 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
  - 09=PMC Out Alarm
- If AA is 34 and NN is: (future)
  - 01=Setup Data Warning
  - 02=Pump Relay Alarm
- If AA is 59 and NN is:
  - 02=MAG Sensor Setup Data Warning
  - 03=MAG Sensor Communication Alarm
  - 04=MAG Sensor Fault Alarm
  - 05=MAG Sensor Fuel Warning
  - 06=MAG Sensor Fuel Alarm
  - 07=MAG Sensor Water Warning
  - 08=MAG Sensor Water Alarm
  - 09=MAG Sensor High Liquid Warning
  - 10=MAG Sensor High Liquid Alarm
  - 11=MAG Sensor Low Liquid Warning
  - 12=MAG Sensor Low Liquid Alarm
  - 13=MAG Sensor Temperature Warning
  - 14=MAG Sensor Relay Active
  - 15=MAG Sensor Install Alarm
- If AA is 63 and NN is:
  - 01=LPR Sensor Setup Data Warning
  - 02=LPR Sensor Communication Alarm
- If AA is 64 and NN is:
  - 01=Printer out of Paper
  - 02=Printer Error
- If AA is 65 and NN is:
  - 01=Pump Setup Data Warning
  - 02=Pump Out Alarm
- If AA is 66 and NN is:
  - 01=Line Setup Data Warning
  - 02=Line Out Alarm
- If AA is 73 and NN is:
  - 01=Communication Setup Data Warning
- If AA is 74 and NN is:
  - 01=AutodialSetupDataWarning
  - 02=Autodial Failed Alarm
  - 03=Autodial Service Report Warning (future)
  - 04=Autodial Alarm Clear Warning (Obsolete)
  - 05=Autodial Delivery Report Warning (Obsolete)
  - 06=Autodial No Dialtone Alarm (future)
  - 07=Autodial Fax Failed Alarm
  - 08=Email Failed (future)

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 101 Notes: (Continued)

09=SMS Failed

- If AA is 75 and NN is:
  - 01=Auto Event Setup Data Warning
- 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-450 Monitoring Systems

---

**Function Code: 110**

Version 1

**Function Type:** Combined Alarm History Report

**Command Format:**

**Display:** <SOH>I11000

**Computer:** <SOH>i11000

**Notes:**

1. This command will report history of all priority & non-priority alarms up to the limit of 50 alarms in both display and computer formats.

**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....

COMBINED ALARM HISTORY
ID  CATEGORY  DESCRIPTION                ALARM TYPE          STATE    DATE      TIME
W 3  OTHER    SPECIAL                    WPLLD SHUTDOWN ALM  CLEAR    1-01-96   8:07AM
SYSTEM                                PAPER OUT          CLEAR    12-20-95  12:01PM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i11000YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
                        AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 111

Version 1

**Function Type:** Priority Alarm History Report

**Command Format:**

**Display:** <SOH>I11100

**Computer:** <SOH>i11100

**Notes:**

1. This command will report history of all priority alarms and warnings up to the limit of 50 alarms in both display & computer formats.

**Typical Response Message, Display Format:**

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

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

PRIORITY ALARM HISTORY

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

```
<ETX>
```

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 112**

Version 1

**Function Type:** Non-Priority Alarm History Report

**Command Format:**

**Display:** <SOH>I11200

**Computer:** <SOH>i11200

**Notes:**

1. This command will report history of all non-priority alarms and warnings up to the limit of 50 alarms in both display & computer formats.

**Typical Response Message, Display Format:**

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

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

NON-PRIORITY ALARM HISTORY

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

```
<ETX>
```

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 113  
**Function Type:** Active Alarm Report

Version 1

**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		PAPER OUT	12-20-95	12:00PM
T 2	TANK	SPECIAL	INVALID FUEL LEVEL	12-20-95	11:59AM

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i11300YYMMDDHHmma..ab..bc..cd..dAAccNNTTTYMMDDHHmm...
                                         AAaccNNTTTYMMDDHHmm&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 114  
**Function Type:** Cleared Alarm Report

Version 1

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

**Notes:**

1. This command will report history of all cleared alarms up to the limit of 50 alarms in both display & computer formats.

**Typical Response Message, Display Format:**

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

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

CLEARED ALARMS REPORT

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 11C

Version 1

**Function Type:** Extended Alarm Report - Date Based

**Command Format:**

**Display:** <SOH>I11C00RRyyymmddYYMMDDnnn

**Computer:** <SOH>i11C00RRyyymmddYYMMDDnnn

#### Notes:

1. RR -Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)
  - 00=Active Alarm Report (for Active and Unacknowledged)
  - 01=Alarm History Report - All Alarms
  - 02=Alarm History Report - Priority Alarms
  - 03=Alarm History Report - Non-Priority Alarms
2. yyymmdd -Starting Date (If no start date is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date is given, then the request is limited by the Maximum Records (below))  
Ranges are as follows:
  - yy=Year(01 - 99, for Years 2001-2099)
  - mm=Month (01 - 12, for Months January to December)
  - dd=Day (01 - 31, however, validity depends on Month)
3. YYMMDD -Ending Date (If no end date is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date fields.
4. nnn -Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date, ending by end date, and limited by the Maximum Records Default of 100)

#### Typical Response Message, Display Format:

##### For an Active Alarm Report:

```
<SOH>
I11C0000
JAN 22, 1996  3:06 PM
```

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

Active Alarm Report

#	Label	Alarm Description	Active	Clear
T 12	PRODUCT 12	Probe Out	06-13-04 09:00	06-13-04 09:00
T 2	PRODUCT 2	Probe Out	06-13-04 09:00	06-13-04 09:00

```
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 11C:** (Continued)

**For an Alarm History Report:**

```
<SOH>
I11C0001
JAN 22, 1996  3:06 PM
```

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

```
Selected Range:
Previous 1 Year: 10/15/2004 04:00 PM - 10/15/2005 04:00 PM
```

Alarm History Report - All Alarms

#	Label	Alarm Description	Active	Clear
T 12	PRODUCT 12	Probe Out	06-13-04 09:00	06-13-04 09:00
T 2	PRODUCT 2	Probe Out	06-13-04 09:00	06-13-04 09:00

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i11C00YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 11D

Version 1

**Function Type:** Extended Alarm Report - Date/Time Based

**Command Format:**

**Display:** <SOH>I11D00RRyyymmddhhmmYYMMDDHHMMnnn

**Computer:** <SOH>i11D00RRyyymmddhhmmYYMMDDHHMMnnn

**Notes:**

1. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
00=Active Alarm Report (for Active and Unacknowledged)  
01=Alarm History Report - All Alarms  
02=Alarm History Report - Priority Alarms  
03=Alarm History Report - Non-Priority Alarms

Note: All the entries listed below will be ignored when RR=00 (Active Alarm Report)

2. yyymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:  
yy=Year (01 - 99, for Years 2001-2099)  
mm=Month (01 - 12, for Months January to December)  
dd=Day (01 - 31, however, validity depends on Month)  
hh=Hour (00 - 23)  
mm=Minute (00 - 59)
3. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date/Time fields.
4. nnn - Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

**Typical Response Message, Display Format:**

**For an Active Alarm Report:**

```
<SOH>
I11D0000
JAN 22, 1996  3:06 PM
```

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

Active Alarm Report

#	Label	Alarm Description	Active	Clear
T 12	PRODUCT 12	Probe Out	06-13-04 09:00	06-13-04 09:00
T 2	PRODUCT 2	Probe Out	06-13-04 09:00	06-13-04 09:00

```
<ETX>
```



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 11D:** (Continued)

**For an Alarm History Report:**

```
<SOH>
I11D0001
JAN 22, 1996  3:06 PM
```

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

```
Selected Range:
Previous 1 Year: 10/15/2004 04:00 PM - 10/15/2005 04:00 PM
```

Alarm History Report - All Alarms

#	Label	Alarm Description	Active	Clear
T 12	PRODUCT 12	Probe Out	06-13-04 09:00	06-13-04 09:00
T 2	PRODUCT 2	Probe Out	06-13-04 09:00	06-13-04 09:00

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i11D00YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 11E  
**Function Type:** Last Active Alarm

Version 1

**Command Format:**  
**Display:** <SOH>I11E00AANNTT  
**Computer:** <SOH>i11E00AANNTT

#### 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 - Tank/Sensor Number - When a value of 00 (TT) is applied, the last active alarm of any Tanks/Sensors (TT) for the selected Alarm/Warning Category (AA) and the selected Alarm Type Number (NN) will be displayed.

#### Typical Response Message, Display Format:

##### If custom alarm labels are enabled:

```
<SOH>
I11E0001
JUL 29, 1997  9:02 AM

ID  AC AN Category  Description          Alarm Type          Date    Time
T  3 02 08 Tank      Special          FUEL LEVEL TOO HIGH  1-01-96  8:07AM
<ETX>
```

##### If custom alarm labels are disabled:

```
<SOH>
I11E0001
JUL 29, 1997  9:02 AM

ID  Category  Description          Alarm Type          Date    Time
T  3 Tank      Special          Invalid Fuel Level  1-01-96  8:07AM
<ETX>
```

#### Notes:

1. AC - Alarm/Warning Category  
See explanation for "AA" in Function i10100
2. AN - Alarm Type Number  
See explanation for "NN" in Function i10100

#### Typical Response Message, Computer Format:

```
<SOH>i11E00YYMMDDHHmmAAccNNTTTYMMDDHHmm&&CCCC<ETX>
```

#### Notes:

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

**Function Code:** 11F  
**Function Type:** Extended Sensor Status Report - Date/Time Based  
**Command Format:**  
**Display:** <SOH>I11FTTRNNyymmddhhmmYYMMDDHHMMnnn  
**Computer:** <SOH>i11fTTRNNyymmddhhmmYYMMDDHHMMnnn

Version 1

**Notes:**

1. TT -Device Number (Decimal, 00=all)
2. RR -Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)
  - 00=Sensor Status Report (for Active Sensor Alarms and Normal Sensor Status as of the time of the request)
  - 01=Sensor Status History Report (for Sensor Alarms and Normal Sensor Status for the specified Time Period)
3. NN -Device Type (If no Device Type is given or it's zeroes, it assumes request is for All Device Types as below. Request for All Device Types are only allowed when the request is for All Device Numbers (TT=00))
  - 03=Liquid Sensor
  - 04=Vapor Sensor
  - 07=Ground Water Sensor
  - 08=Type A (2-Wire CL) Sensor
  - 12=Type B (3-Wire CL) Sensor
  - 59=MAG Sensor
4. yymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:
  - yy=Year (01 - 99, for Years 2001-2099)
  - mm=Month (01 - 12, for Months January to December)
  - dd=Day (01 - 31, however, validity depends on Month)
  - hh=Hour (00 - 23)
  - mm=Minute (00 - 59)
5. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date/Time fields.
6. nnn - Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 11F:** (Continued)

**Typical Response Message, Display Format:**

**For a Status Report:**

```
<SOH>
I11F0000
JAN 22, 1996  3:06 PM

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

Sensor Status Report - All Sensors

#      Sensor Location      Status
L 1    Regular STP Pump     Normal
L 2    Ultra STP Pump       Normal
L 2    Diesel STP Pump      Setup Data Warning
Ms 1    Dispenser 1-2       Water Alarm
Ms 1    Dispenser 1-2       Water Warning
Ms 2    Dispenser 3-4       Normal
Ms 3    Dispenser 5-6       Normal
Ms 4    Dispenser 7-8       Normal
Ms 5    Dispenser 9-10      Normal
Ms 6    Dispenser 11-12     Normal
Ms 7    Dispenser 13-14     Normal
Ms 8    Dispenser 15-16     Normal
<ETX>
```

**For a History Report:**

```
<SOH>
I11F0001
JAN 22, 1996  3:06 PM

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

Selected Range:
Previous 1 Year: 10/15/2006 04:00 PM - 10/15/2007 04:00 PM
```

Sensor Status History Report - All Sensors

#	Sensor Location	Status	Active	Clear
L 1	Regular STP Pump	Normal		
L 2	Ultra STP Pump	Normal		
L 2	Diesel STP Pump	Setup Data Warning	06-13-07 09:00	06-13-07 09:00
Ms 1	Dispenser 1-2	Water Alarm	06-13-07 08:05	06-13-07 09:00
Ms 1	Dispenser 1-2	Water Warning	06-13-07 07:06	06-13-07 09:00
Ms 2	Dispenser 3-4	Normal		

```
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 11F:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i11F00YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...  
                                AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

**Notes:**

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

## 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....
```

IN-TANK INVENTORY

TANK	PRODUCT	VOLUME	TC-VOLUME	ULLAGE	HEIGHT	WATER	TEMP
1	REGULAR	5329	5413	4112	51.03	0.00	33.30

```
<ETX>
```

### Typical Response Message, Computer Format:

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

### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

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

Version 1

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

#### Typical Response Message, Display Format:

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

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

DELIVERY REPORT

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

TANK 1:

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 6, 2009 2:59 PM	7000	7000	0.00	60.00	63.34
END: AUG 6, 2009 3:09 PM	9000	9000	0.00	60.00	80.98
AMOUNT:	2000	2000			
START: AUG 6, 2009 2:41 PM	5000	5000	0.00	60.00	48.00
END: AUG 6, 2009 2:47 PM	7000	7000	0.00	60.00	63.35
AMOUNT:	2000	2000			

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 202 Notes: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>i202TTYMMDDHHmmTtpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
TtpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

#### Notes:

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 203**

Version 1

**Function Type:** In-Tank Leak Detect Report

**Command Format:**

**Display:** <SOH>I203TT

**Computer:** <SOH>i203TT

#### Typical Response Message, Display Format:

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

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

TANK      PRODUCT
1         REGULAR UNLEADED
TEST STATUS: OFF
TEST TYPE/RESULT:  0.2  GAL/HR TEST: PASS
START TIME: FEB 15, 2007  9:10 AM
DURATION:         1.0  HOURS
START TEMP:        45.0  DEG F
ENDING TEMP:       45.0  DEG F
START VOLUME:      7953.6 GALLONS
LEAK RATE:         0.00 GALLONS/HR
CUMULATIVE PERIODIC VOLUME CHANGE (GALLONS)
-0.01  -0.02  -0.01  -0.03  -0.05  -0.04
<ETX>
```

#### Typical Response Message, Computer Format:

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

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 204

Version 1

**Function Type:** In-Tank Active Shift Inventory Report

**Command Format:**

**Display:** <SOH>I204TT

**Computer:** <SOH>i204TT

**Notes:**

1. TT - tank number, 00 = all tanks
2. In Display format mode:
  - a. Shifts will displayed in descending time order
  - b. shifts will be labeled as either OPEN or CLOSED
3. In Computer format mode:
  - a. shifts will be sent in descending time order
  - b. only closed shifts will be included in response

**Typical Response Message, Display Format:**

<SOH>  
I20401  
JUN 05, 2008 03:32 PM

Volume=Gallons  
Height=Inches  
Temp=Fahrenheit

Shift Inventory

TANK 1:REGULAR UNLEADED

	Fuel Volume	FuelTC Volume	Ullage 100%	Ullage 90%	Fuel Height	Water Height	Water Volume	Fuel Temp
SHIFT 1 [yy/mm/dd hh:mm - yy/mm/dd hh:mm] CLOSED								
Start	8518	8492	1482	xxxx	76.26	0.00	0	64.57
End	8518	8492	1482	xxxx	76.26	0.00	0	64.57
Delivery	0							
Totals	0							
SHIFT 2 [yy/mm/dd hh:mm - yy/mm/dd hh:mm] CLOSED								
Start	8518	8492	1482	xxxx	76.26	0.00	0	64.57
End	8518	8492	1482	xxxx	76.26	0.00	0	64.57
Delivery	0							
Totals	0							
<ETX>								

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 204 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i204TTYMMDDHHmmTTpssNNFFFFFFFF...  
                TTpssNNFFFFFFFF&&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 - 04]
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
  1. Start Volume
  2. Start Ullage (*100% ullage*)
  3. Start TC Volume
  4. Start Height
  5. Start Water
  6. Start Temperature
  7. End Volume
  8. End Ullage (*100% ullage*)
  9. End TC Volume
  - A. End Height
  - B. End Water
  - C. End Temperature
  - D. Total Value (*Start - End + Delivery*)
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 205  
**Function Type:** In-Tank Status Report

Version 1

**Command Format:**  
**Display:** <SOH>I205TT  
**Computer:** <SOH>i205TT

#### Typical Response Message, Display Format:

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

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

TANK STATUS REPORT

TANK	PRODUCT	STATUS
1	REGULAR UNLEADED	NORMAL

<ETX>

#### Typical Response Message, Computer Format:

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

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 206**

Version 1

**Function Type:** In-Tank Alarm History Report

**Command Format:**

**Display:** <SOH>I206TT

**Computer:** <SOH>i206TT

**Typical Response Message, Display Format:**

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

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

TANK ALARM HISTORY

TANK 1  REGULAR UNLEADED

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

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

<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 206 Notes: (Continued)

#### Typical Response Message, Computer Format:

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

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. nn - Number of alarms in history for tank (Decimal, 00=none)
4. YYMMDDHHmm - Date and time alarm occurred
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-450 Monitoring Systems

**Function Code: 207**

Version 1

**Function Type:** In-Tank Leak Test History Report

**Command Format:**

**Display:** <SOH>I207TT

**Computer:** <SOH>i207TT

#### Typical Response Message, Display Format:

<SOH>  
I207TT  
JUL 29, 1997 9:02 AM

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

TANK LEAK TEST HISTORY

T 1:REGULAR UNLEADED

REPORT TYPE	DATE/TIME	METHOD	HOURS	AVERAGE VOLUME	% VOLUME
FULLEST PERIODIC	08-04-15 12:34	CSLD	199	123456	99.9
FULLEST ANNUAL	08-04-15 12:34	SLD	99	23456	49.9
LAST ANNUAL	08-04-15 12:34	SLD	9	23456	39.9
LAST GROSS	08-04-15 12:34	SLD	22	13456	9.9
LAST PERIODIC	08-04-15 12:34	CSLD	109	3456	29.9

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i207TTYMMDDHHmmTTNNRRnnttYYMMDDHHmmhhhhhhhhVVVVVVVpppppppp...  
TTNNRRnnttYYMMDDHHmmhhhhhhhhVVVVVVVpppppppp&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Leak History Reports to Follow (Hex)
4. RR - Leak Report Type:  
00=Last Test Passed  
01=Fulllest Test Passed  
02=Fulllest Periodic Monthly Test Passed
5. nn - Leak History Number (1-12) for first Monthly Tests Passed.  
For all report types except Fulllest Periodic nn = 1.  
For Fulllest Periodic nn is the number of the month the test was performed.
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-450 Monitoring Systems

**Function Code:** 208  
**Function Type:** In-Tank Leak Test Results Report

Version 1

**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	LEAK RATE	HRS	VOLUME	REASON
ANNUAL	NOV 21, 1995 12:34 AM	PASSED	0.00	12	9088	
PERIODIC	NOV 21, 1995 12:34 AM	FAILED	-0.75	24	12345	
GROSS	NOV 24, 1995 12:04 AM	INVALID	0.00		5432	Product Increase Insuf Smpl 1st Per Insuf Smpl 2nd Per Low Product Level Recent Delivery Zone Temp Change Avg Temp Change Head Temp Change Temp out of Range Test too Short % Vol Too Low Invalid Fuel level

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i208TTYMMDDHHmmTTNNttmmYYMMDDHHmmRRrrrrrrrrrrhhhhhhhhVVVVVVVV...  
TTNNttmmYYMMDDHHmmRRrrrrrrrrrrhhhhhhhhVVVVVVVV&&CCCC<ETX>

#### Notes:

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 209**

Version 1

**Function Type:** Enhanced In-Tank Leak Detect Report

**Command Format:**

**Display:** <SOH>I209TT

**Computer:** <SOH>i209TT

#### Typical Response Message, Display Format:

```
<SOH>
I209TT
JAN 22, 2007  3:06 PM

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

IN-TANK LEAK DETECT

TANK      PRODUCT
 1      REGULAR UNLEADED
TEST STATUS: OFF
TEST TYPE/RESULT:  0.2  GAL/HR TEST: PASS
START TIME: FEB 15, 2007  9:10 AM
DURATION:      1.0  HOURS
START TEMP:      45.0  DEG F
ENDING TEMP:      45.0  DEG F
START VOLUME:    7953.6  GALLONS
PERCENT VOLUME:  79.5  PERCENT
LEAK RATE:       0.00  GALLONS/HR
THRESHOLD:       0.13
FUEL HEIGHT:     70.5  INCHES
WATER HEIGHT:    0.0  INCHES
CUMULATIVE PERIODIC VOLUME CHANGE (GALLONS)
0.00      -0.01  -0.02  -0.01  -0.03  -0.05  -0.04
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i209TTYMMDDHHmmTTpYYMMDDHHmmHHNNFFFFFFFFF...
TTpYYMMDDHHmmHHNNFFFFFFFFF&&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. Fuel Height
  6. Water Height
  7. Threshold
  8. Hourly changes up to the number of fields
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 20B**

Version 2

**Function Type:** BIR Adjusted Delivery Report

**Command Format:**

**Display:** <SOH>I20BTT

**Computer:** <SOH>i20BTT

#### Typical Response Message, Display Format:

```
<SOH>
I20BTT
JAN 22, 2009  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	END	ADJ	ADJ TC
						VOLUME	VOLUME	DELIV	DELIV
JAN 21, 2009	2:52 AM	JAN 21, 1996	3:12 AM	3193	9197	6011	6119		
JAN 19, 2009	3:22 AM	JAN 19, 1996	3:40 AM	4193	8602	4409	4473		
JAN 17, 2009	3:13 AM	JAN 17, 1996	3:40 AM	2739	8749	6010	6113		

<ETX>

#### Typical Response Message, Computer Format:

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

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 20C**

Version 1

**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

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

T 1: UNLEADED

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 6, 2009 2:59 PM	7000	7000	0.00	60.00	63.34
END: AUG 6, 2009 3:09 PM	9000	9000	0.00	60.00	80.98
AMOUNT:	2000	2000			

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>i20CTTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YMMDDHHmm - Starting Date/Time
6. YMMDDHHmm - 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
  11. Starting Mass
  12. Ending Mass
  13. Starting Density
  14. Ending Density
  15. Starting TC Density
  16. Ending TC Density
9. && - Data Termination Flag
10. CCCC - Message Checksum

**Function Code:** 20F  
**Function Type:** Extended Delivery Report - Date/Time Based  
**Command Format:**  
    **Display:** <SOH>I20FTTTRyyymmddhhmmYYMMDDHHMMnnn  
    **Computer:** <SOH>i20FTTTRyyymmddhhmmYYMMDDHHMMnnn

Version 1

**Notes:**

1. TT -Device Number (Decimal, 00=all)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
    00=Delivery History Report (for Inventory Information for the specified Time Period)
3. yyymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:  
    yy=Year (01 - 99, for Years 2001-2099)  
    mm=Month (01 - 12, for Months January to December)  
    dd=Day (01 - 31, however, validity depends on Month)  
    hh=Hour (00 - 23)  
    mm=Minute (00 - 59)
4. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date/Time fields.
5. nnn - Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 20F:** (Continued)

**Typical Response Message, Display Format:**

```
<SOH>
I20F0001
JAN 22, 2008  3:06 PM
```

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

Delivery History Report

Selected Range:  
All Records:

Volume=Gallons  
Height=Inches  
Temp=Fahrenheit

T 1:REGULAR UNLEADED

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 12, 2009  5:06 PM	783465	0	0.00	0.00	267.15
END: AUG 12, 2009  5:16 PM	803434	0	0.00	0.00	272.11
AMOUNT:	19969	0			

TANK 3:REGULAR UNLEADED

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 13, 2009  9:43 AM	783468	0	0.00	0.00	267.15
END: AUG 13, 2009  9:50 AM	803437	0	0.00	0.00	272.11
AMOUNT:	19969	0			

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i20FTTYMMDDHHmmTTpnnnYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
TTpnnnYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF&&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. nnn - Number of TimeStamped Records to follow (Decimal)
5. YYMMDDHHmm - Starting Delivery Time
6. YYMMDDHHmm - Ending Delivery Time
7. NN - Number of eight character Data Fields (Hex)

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 20F Notes: (Continued)

- 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
  - 11. Starting Mass
  - 12. Starting Density
  - 13. Starting TC Density
  - 14. Ending Mass
  - 15. Ending Density
  - 16. Ending TC Density
- 9.     && - Data Termination Flag
- 10.    CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 20G**

Version 1

**Function Type:** Static Leak Test Passed Report

**Command Format:**

**Display:** <SOH>I20GTT

**Computer:** <SOH>i20GTT

#### Typical Response Message, Display Format:

<SOH>  
I20GTT  
JUL 29, 2007 9:02 AM

STATIC LEAK TEST LAST PASSED REPORT

TANK 1: REGULAR UNLEADED

TEST TYPE	DATE & TIME		STATUS	TOTAL HOURS	AVG. VOLUME	% VOLUME
Last Gross	JUL 27, 2007 5:00 AM		Pass		7898	79.0
Last Periodic	JUL 28, 2007 10:32 AM		Pass	10	3509	30.0
Last Annual	JUL 29, 2007 6:02 AM		Pass	9	3580	35.8

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i20GTTYMMDDHHmmTTNNttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppp  
ttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppp  
ttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppp...  
TTNNttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppp&&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. tt - In-Tank Leak Test Type:  
00=0.20 gal/hr test  
01=0.10 gal/hr test  
02=Gross (3 gal/hr)test
5. YYMMDDHHmm - Static Leak Test Pass Time
6. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
7. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
8. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code: 20H**  
**Function Type:** Static Leak Test History

Version 1

**Command Format:**

**Display:** <SOH>I20HTTyymmddhhmmYYMMDDHHMMnnn

**Computer:** <SOH>i20HTTyymmddhhmmYYMMDDHHMMnnn

1. yymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:  
 yy=Year (01 - 99, for Years 2001-2099)  
 mm=Month (01 - 12, for Months January to December)  
 dd=Day (01 - 31, however, validity depends on Month)  
 hh=Hour (00 - 23)  
 mm=Minute (00 - 59)
2. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date/Time fields.
3. nnn - Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

**Typical Response Message, Display Format:**

```
<SOH>
I20HTT
JUL 29, 2007 9:02 AM

STATIC LEAK TEST HISTORY

TANK 1: REGULAR UNLEADED
```

TEST TYPE	DATE & TIME	TEST RESULT	TOTAL HOURS	LEAK RATE	START VOLUME	% VOLUME
Annual	JUL 2, 2008 11:58 PM	Passed	10	0.00	4995	43.0
Periodic	JUL 2, 2008 11:58 PM	Passed	10	0.00	4995	43.0
Gross	JUL 2, 2008 10:56 PM	Passed		-0.01	4995	43.0
Gross	JUL 2, 2008 9:36 PM	Failed		-1.72	4995	43.0
Gross	JUL 2, 2008 8:43 PM	Invalid		0.00	4836	41.6
Gross	JUL 2, 2008 7:36 PM	Failed		-1.73	4996	43.0

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i20HTTYMMDDHHmmTTNNttYYMMDDHHmmhhSSRRVVVVVVVVpppppppprrrrrrrr
ttYYMMDDHHmmhhSSRRVVVVVVVVpppppppprrrrrrrr
ttYYMMDDHHmmhhSSRRVVVVVVVVpppppppprrrrrrrr...
TTNNttYYMMDDHHmmhhSSRRVVVVVVVVpppppppprrrrrrrr&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Leak History Results to Follow (Decimal)
4. tt - In-Tank Leak Test Type:  
 00=0.20 gal/hr test  
 01=0.10 gal/hr test  
 02=Gross (3 gal/hr) test
5. YYMMDDHHmm - Static Leak Test Start Time
6. hh - Leak Test Duration in Hours (decimal 01-99)
7. SS - test status (00=invalid, 01=pass, 02=fail, 03=error)
8. RR - Number of IEEE floats
9. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
10. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
11. rrrrrrrr - Leak Test leak rate (ASCII Hex IEEE float)
12. && - Data Termination Flag
13. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code: 20I**

Version 1

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

**Command Format:**

**Display:** <SOH>I20ITT

**Computer:** <SOH>i20ITT

#### Typical Response Message, Display Format:

```
<SOH>
I20ITT
JAN 22, 1996  3:06 PM
```

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

Current Inventory Report

Volume=Gallons  
Height=Inches  
Temp=Fahrenheit

Fuel Volume	Fuel TC Volume	Ullage 100%	Ullage xx%	Fuel Height	Water Height	Water Volume	Fuel Temp
Tank 1: Regular Unleaded							
5329	5413	4699	3699	48.97	0.00	0.00	37.39
Tank 2: Supreme Unleaded							
11375	5413	11413	2697	52.36	0.00	0.00	43.39

MANIFOLDED TANKS INVENTORY TOTALS

T1: Regular

T2: Regular

VOLUME = 16705 GALS

TC VOLUME = 10826 GALS

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>i20ITTYMMDDHHmmTTpssssNNFFFFFFFF...
TTpssssNNFFFFFFFF&&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
  8. User Ullage
  9. Mass
  10. Density
  11. TC Density
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 20L

Version 2

**Function Type:** BIR Adjusted Delivery Report with Range

**Command Format:**

**Display:** <SOH>I20LTTyymmddhhmmYYMMDDHHmmnnn

**Computer:** <SOH>i20LTTyymmddhhmmYYMMDDHHmmnnn

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. yymmddhhmm - Starting Date (00000000 = no starting date = first of the month)
3. YYMMDDHHmm - Ending Date (00000000 = no ending date = current date)
4. nnn - Maximum Records [001...999] (100 = default) (decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I20LTT
JAN 22, 1996  3:06 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	END	ADJ	ADJ TC
						VOLUME	VOLUME	DELIV	DELIV
JAN 21, 2009	2:52 AM		JAN 21, 2009	3:12 AM		3193	9197	6011	6119
JAN 19, 2009	3:22 AM		JAN 19, 2009	3:40 AM		4193	8602	4409	4473
JAN 17, 2009	3:13 AM		JAN 17, 2009	3:40 AM		2739	8749	6010	6113

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i20LTTYMMDDHHmmTTdddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
TTdddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. ddd - Number of Deliveries to Follow (Decimal)
4. YYMMDDHHmm - Starting Date and Time
5. YYMMDDHHmm - Ending Date and Time
6. NN - Number of eight character Data Fields to follow (Hex)

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 20L Notes: (Continued)

- 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. Stating FuelTemperature 1
  - 7. Stating FuelTemperature 2
  - 8. Stating FuelTemperature 3
  - 9. Stating FuelTemperature 4
  - 10. Stating FuelTemperature 5
  - 11. Stating FuelTemperature 6
  - 12. Ending Fuel Height
  - 13. Ending FuelTemperature 1
  - 14. Ending FuelTemperature 2
  - 15. Ending FuelTemperature 3
  - 16. Ending FuelTemperature 4
  - 17. Ending FuelTemperature 5
  - 18. Ending FuelTemperature 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-450 Monitoring Systems

**Function Code:** 20M

Version 2

**Function Type:** In-Tank Shift Inventory History Report - Date/Time Based

**Command Format:**

**Display:** <SOH>I20MTTTRyyymmddhhmmYYMMDDHHmmnnn

**Computer:** <SOH>i20MTTTRyyymmddhhmmYYMMDDHHmmnnn

**Notes:**

1. TT - Tank Number (Decimal, 00=All)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
00=Shift Inventory History Report - Times or Manula Shift Closings
3. yyymmddhhmm - Starting Date/Time (If no start date/time is give or either Year, Month or Day are zeros, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:  
yy=Year(01 - 99, for Years 2001-2099)  
mm=Month (01 - 12, for Months January to December)  
dd=Day (01 - 31, however, validity depends on Month)  
hh=Hour (00 - 23)  
mm=Minute (00 - 59)
4. YYMMDDHHmm - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeros, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum records (below)). Ranges are the same as for the Start Date/Time fields.
5. nnn - Maximum Records [001...366] (Absolute Maximum) (Decimal). (If no Maximum records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

**Typical Response Message, Display Format:**

<SOH>  
I20M0001  
JAN 22, 1996 3:06 PM

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

**Selected Range:**

Previous 1 Year: 10/15/2006 04:00 PM - 10/15/2007 04:00 PM

						Volume=Gallons	Height=Inches	Temp=Fahrenheit
Shift Inventory History								
TANK 1:REGULAR UNLEADED								
	Fuel	FuelTC	Ullage	Ullage	Fuel	Water	Water	Fuel
	Volume	Volume	100%	90%	Height	Height	Volume	Temp
Shift 1 mm-dd-yy hh:mm am								
Starting Values	8518	8492	1482	xxxx	76.26	0.00	0	64.57
Ending Values	8518	8492	1482	xxxx	76.26	0.00	0	64.57
Delivery Value	0							
Totals	0							
Shift 2 mm-dd-yy hh:mm am								
Starting Values	8518	8492	1482	xxxx	76.26	0.00	0	64.57
Ending Values	8518	8492	1482	1xxxx	76.26	0.00	0	64.57
Delivery Values	0							
Totals	0							
<ETX>								

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

Function Code 20M: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>i20MTTYMMDDHHmmTTpnnnnssYYMMDDHHmmNNFFFFFFFF...
                                     ssYYMMDDHHmmNNFFFFFFFF...
                                     TTpnnnnssYYMMDDHHmmNNFFFFFFFF...
                                     ssYYMMDDHHmmNNFFFFFFFF...&&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. nnnn - Number of TimeStamped Records to follow (hex)
5. ss - Shift Number [01 - 08]
6. YYMMDDHHmm - TimeStamp
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Start Volume
  2. Start Ullage (100% ullage)
  3. Start TC Volume
  4. Start Height
  5. Start Water
  6. Start Temperature
  7. End Volume
  8. End Ullage (100% ullage)
  9. End TC Volume
  10. End Height
  11. End Water
  12. End Temperature
  13. Total Value (Start - End + Delivery)
  14. End Mass
  15. End Density
  16. End TC Density
  17. End Mass
  18. End Density
  19. End TC Density
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 20N

Version 3

**Function Type:** In-Tank Mass/Density Shift Inventory History Report

**Command Format:**

**Display:** <SOH>I20NTT

**Computer:** <SOH>i20NTT

#### Notes:

1. TT - Tank Number (Decimal, 00=All)
2. In Display format mode:
  - a. Shifts will display in descending time order
  - b. Shifts will be labeled as either OPEN or CLOSED
3. In Computer format mode:
  - a. Shifts will be sent in descending time order
  - b. Only closed Shifts will be included in response

#### Typical Response Message, Display Format:

<SOH>  
I20NTT  
JUN 5, 2008 3:06 PM

Volume=Gallons  
Height=Inches  
Temp=Fahrenheit

Shift Inventory

TANK 1:REGULAR UNLEADED

	Fuel Volume	Fuel Mass	Fuel Density	Fuel TC Density	Fuel Height	Water Height	Water Volume	Fuel Temp
SHIFT 1 [yy/mm/dd hh:mm - yy/mm/dd hh:mm] CLOSED								
Start	8518	44521	45.35	47.10	76.26	0.00	0	64.57
End	8600	45365	46.72	49.55	76.26	0.00	0	64.57
Delivery	0							
Totals	0							
SHIFT 2 [yy/mm/dd hh:mm - yy/mm/dd hh:mm] CLOSED								
Start	8600	45365	45.35	49.55	76.26	0.00	0	64.57
End	8410	40899	41.79	46.80	76.26	0.00	0	64.57
Delivery	0							
Totals	0							

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 20N:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i20NTTYMMDDHHmmTTpssNNFFFFFFFF...  
                TTpssNNFFFFFFFF&&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 - 08]
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
  1. Start Volume
  2. Start Fuel Mass
  3. Start Fuel Density
  4. Start Fuel TC Density
  5. Start Ullage (100% ullage)
  6. Start Height
  7. Start Water
  8. Start Temperature
  9. End Volume
  10. End Fuel Mass
  11. End Fuel Density
  12. End Fuel TC Density
  13. End Ullage (100% ullage)
  14. End Height
  15. End Water
  16. End Temperature
  17. Total Value (Start - End + Delivery)
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code: 211**  
**Function Type:** Tank Chart Report

Version 1

**Command Format:**  
**Display:** <SOH>I211TTThhhhhh  
**Computer:** <SOH>i211TTFFFFFFFF

#### 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)
4. Minimum Step Size: 0.010 inches or 0.397 millimeter
5. Minimum Resolution: 3 decimal places

#### Typical Response Message, Display Format:

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

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

#### TANK CALIBRATION CHART

TANK 1  
REGULAR UNLEADED  
GALLONS 10028  
INCHES 96.00

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

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i211TTYMMDDHHmmTTnnnnaaaaaaaaAAAAAAAAAbbbbBBB...  
TTnnnnaaaaaaaaAAAAAAAAAbbbbBBB&&CCCC<ETX>

#### Notes:

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code: 212**

Version 1

**Function Type:** In-Tank Leak Test History Report 2

**Command Format:**

**Display:** <SOH>I212TT

**Computer:** <SOH>i212TT

**Typical Response Message, Display Format:**

```
<SOH>
I212TT
JUL 29, 1997  9:02 AM

TANK LEAK TEST HISTORY

T 1:REGULAR UNLEADED
```

REPORT TYPE	DATE/TIME	METHOD	HOURS	AVERAGE VOLUME	% VOLUME
FULLEST PERIODIC	08-04-15 12:34	CSLD	199	123456	99.9
FULLEST ANNUAL	08-04-15 12:34	SLD	99	23456	49.9
LAST ANNUAL	08-04-15 12:34	SLD	9	23456	39.9
LAST GROSS	08-04-15 12:34	SLD	22	13456	9.9
LAST PERIODIC	08-04-15 12:34	CSLD	109	3456	29.9

<ETX>

**Function Code 212 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i212TTYMMDDHHmmTTNNRRnnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppppzmmmmmmmm
RRnnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppppzmmmmmmmm...
TTNNRRnnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppppzmmmmmmmm
RRnnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppppzmmmmmmmm...
...&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 213**

Version 1

**Function Type:** In-Tank Extended Standard Delivery Report

**Command Format:**

**Display:** <SOH>I213TTnn

**Computer:** <SOH>i213TTnn

**Notes:**

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

**Typical Response Message, Display Format:**

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

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

DELIVERY REPORT

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

TANK 1:

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 6, 2009 2:59 PM	7000	7000	0.00	60.00	63.34
END: AUG 6, 2009 3:09 PM	9000	9000	0.00	60.00	80.98
AMOUNT:	2000	2000			
START: AUG 6, 2009 2:41 PM	5000	5000	0.00	60.00	48.00
END: AUG 6, 2009 2:47 PM	7000	7000	0.00	60.00	63.35
AMOUNT:	2000	2000			

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 213 Notes: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>i213TTYMMDDHHmmTtpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
TtpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 214**

Version 3

**Function Type:** In-Tank Mass/Density Inventory Report

**Command Format:**

**Display:** <SOH>I214TT

**Computer:** <SOH>i214TT

#### Typical Response Message, Display Format:

```
<SOH>
I214TT
JUL 30, 2009  9:02 AM
```

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

IN-TANK MASS INVENTORY

TANK	PRODUCT	VOLUME	MASS	DENSITY	HEIGHT	WATER	TEMP
1	PRODUCT 1	7343	44521	45.35	16.5	0.0	78.8

<ETX>

#### Typical Response Message, Computer Format:

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

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 215**

Version 3

**Function Type:** In-Tank Mas/Density Delivery Report

**Command Format:**

**Display:** <SOH>I215TT

**Computer:** <SOH>i215TT

#### Typical Response Message, Display Format:

<SOH>  
I215TT  
APR 30, 2010 3:16 PM

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

IN-TANK MASS/DENSITY DELIVERY REPORT

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

TANK 1:PRODUCT 1

Date / Time	Fuel Volume	Mass	Density	Water Height	Fuel Temp	Fuel Height
END: MAY 26, 2010 1:28 PM	5000	0	0.00	0.00	60.00	48.00
START: MAY 26, 2010 11:56 AM	3000	0	0.00	0.00	60.00	32.65
AMOUNT:	2000					

TANK 3:PRODUCT 3

Date / Time	Fuel Volume	Mass	Density	Water Height	Fuel Temp	Fuel Height
END: MAY 26, 2010 1:28 PM	5877	0	0.00	0.00	60.00	54.63
START: MAY 26, 2010 11:56 AM	3877	0	0.00	0.00	60.00	39.49
AMOUNT:	2000					

<ETX>

#### Typical Response Message, Computer Format:

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

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

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

Version 1

**Function Type:** In-Tank Inventory Report With User Ullage (90-100%)

**Command Format:**

**Display:** <SOH>I21ATT

**Computer:** <SOH>i21ATT

#### Typical Response Message, Display Format:

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

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

INVENTORY REPORT

TANK	PRODUCT	FUEL VOLUME	FUEL TC VOLUME	ULLAGE 100%	ULLAGE 95%	FUEL HEIGHT	WATER HEIGHT	FUEL TEMP
1	Regular	3112	3112	6888	6543	29.88	0.00	59.99

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>i21ATTYYMDDHHmmTTpssssNNFFFFFFFF...
                                TtpssssNNFFFFFFFF&&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. User Ullage (90-100% : see 572 cmd for percentage)
  - 4. Height
  - 5. Water
  - 6. Temperature
  - 7. Water Volume
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 21B**

Version 2

**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, 2009  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	END	ADJ	ADJ TC
						VOLUME	VOLUME	DELIV	DELIV
JAN 21, 2009	2:52 AM		JAN 21, 1996	3:12 AM		3193	9197	6011	6119
JAN 19, 2009	3:22 AM		JAN 19, 1996	3:40 AM		4193	8602	4409	4473
JAN 17, 2009	3:13 AM		JAN 17, 1996	3:40 AM		2739	8749	6010	6113

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i21BTTYMMDDHHmmTTddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
TTddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...&&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-450 Monitoring Systems

---

**Function Code:** 21C

Version 1

**Function Type:** In-Tank Most Recent Delivery Report with Manifolded Results

**Command Format:**

**Display:** <SOH>I21CTT

**Computer:** <SOH>i21CTT

**Notes:**

1. TT - Tank Number (Decimal, 00=all). To eliminate duplication, when TT=00 is used for Display Format the command will print information for a Manifolded Tank only if it is the Primary Tank. A non-Manifolded tank will be printed normally.

**Typical Response Message, Display Format:**

**If the Most Recent Delivery involves a Manifolded Tank:**

<SOH>  
I21CTT  
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

Date / Time	Fuel Volume	TC	Fuel Volume	Water Height	Fuel Temp	Fuel Height
Start: Jul 25, 1997 2:37 PM	1157		1146	0.00	72.85	23.22
End: Jul 24, 1997 2:48 PM	4460		4414	0.00	74.56	63.06
Amount:	3303		3268			

T 2:REGULAR UNLEADED

Date / Time	Fuel Volume	TC	Fuel Volume	Water Height	Fuel Temp	Fuel Height
Start: Jul 25, 1997 2:37 PM	2531		2520	0.00	73.58	25.48
End: Jul 24, 1997 2:48 PM	5387		5365	0.00	73.24	66.36
Amount:	2856		2845			

Manifolded Tanks: T1, T2

Volume Increase = 6159 GALS  
TC Volume Increase = 6113 GALS

<ETX>



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 21C Notes: (Continued)

#### If the Most Recent Delivery involves a non-Manifolded Tank:

```
<SOH>
I21CTT
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

Date / Time	Fuel Volume	TC	Fuel Volume	Water Height	Fuel Temp	Fuel Height
Start: Jul 25, 1997 2:37 PM	1157		1146	0.00	72.85	23.22
End: Jul 24, 1997 2:48 PM	4460		4414	0.00	74.56	63.06
Amount:	3303		3268			

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>i21CTTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 21D

Version 1

**Function Type:** In-Tank Current Siphon Manifolded Total Volumes

**Command Format:**

**Display:** <SOH>I21D TT

**Computer:** <SOH>i21D TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all).

**Typical Response Message, Display Format:**

```
<SOH>
I21D TT
JAN 31, 2008 14:42
```

SIPHON MANIFOLDED TANKS INVENTORY TOTALS

```
TANK:PRODUCT
T 1:PRODUCT 1
T 2:PRODUCT 2
T 3:PRODUCT 3
VOLUME      = 9000 GALLONS
TC VOLUME   = 9000 GALLONS

T 4:PRODUCT 4
T 5:PRODUCT 5
VOLUME      = 6000 GALLONS
TC VOLUME   = 6000 GALLONS
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i21D TTYMMDDHHmmNNaabbccvvvvvvvvVVVVVVVV...
NNaabbccvvvvvvvvVVVVVVVV&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. NN - Number of tanks in siphon group (hex)
4. aa...zz - tank ID numbers (hex)
5. vvvvvvvv - Total manifolded volume (IEEE ascii hex)
6. VVVVVVVV - Total manifolded TC volume (IEEE ascii hex)
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 21E  
**Function Type:** Hourly Inventory Volume

Version 2

**Command Format:**  
**Display:** <SOH>I21ETTyymmddhhmm  
**Computer:** <SOH>i21ETTyymmddhhmm

**Notes:**

1. yymmddhhmm - Inventory Hour to request starting with this date to the most recent. If no yymmddhhmm, return the most recent hourly record stored.

**Typical Response Message, Display Format:**

```
<SOH>
I21ETT
MAR 20, 2009  3:25 PM

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

TANK Date/Time          VOLUME TC VOLUME    ULLAGE  HEIGHT    WATER    TEMP
  1  05/01/08 20:00      5329      5413      4699    47.97     0.00     37.39
    05/01/08 19:00      5129      5113      4799    47.97     0.00     37.39
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i21ETTYMMDDHHmmTTpssssyymmddhhmmNNFFFFFFFF...
                                TTpssssyymmddhhmmNNFFFFFFFF&&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 - Number of Hourly Inventory Records to follow (Decimal)
5. yymmddhhmm - Hourly Stored Inventory Date and Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Volume
  2. TC Volume
  3. Ullage
  4. Height
  5. Water
  6. Temperature
  7. Water Volume
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 21F**

Version 2

**Function Type:** Manual Shift Inventory Snapshot Volume

**Command Format:**

**Display:** <SOH>I21Fssdd

**Computer:** <SOH>i21Fssdd

**Notes:**

1. ss - Shift Number (00=All, 01, 02, 03, 04) (Decimal)
2. dd - number Day of Shift (Decimal)
  - 00=all days
  - 01=current day
  - 02=current day-1
  - 03=current day-2

**Typical Response Message, Display Format:**

```
<SOH>
I21F00
MAR 20, 2009  3:25 PM
```

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

SHIFT 1

TANK	TIME	VOLUME	TC	VOLUME	ULLAGE	HEIGHT	WATER	TEMP
1	08-05-15 06:00	8518		8492	1482	76.26	0.00	64.57
2	08-05-15 06:00	8518		8492	1482	76.26	0.00	64.57
3	08-05-15 06:00	8518		8492	1482	76.26	0.00	64.57

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i21F00YYMMDDHHmmssCCttpYYMMDDHHmmNNFFFFFFFFF...
                                ttpYYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ss - Shift Number (Decimal, 00=All, 01-04)
3. CC - Numbre of Tanks to follow (Decimall)
4. tt - Tank Number (Decimal)
5. YYMMDDHHmm - Shift Date and Time close for each tank
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Volume
  2. TC Volume
  3. Ullage
  4. Height
  5. Water
  6. Temperature
  7. Water Volume
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 21G  
**Function Type:** Tank Height Status

Version 2

**Command Format:**  
**Display:** <SOH>I21GTT  
**Computer:** <SOH>i21GTT

**Notes:**

1. TT - Tank Number (Decimal, 00=all).

**Typical Response Message, Display Format:**

```
<SOH>
I21GTT
JAN 31, 2008 14:42
```

```
TANK    FUEL HEIGHT STATUS
-----
  1     HEIGHT STABLE
  2     HEIGHT INCREASING
  3     HEIGHT INCREASING
 16     UNKNOWN
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i21GTTYMMDDHHmmTTF..TTF&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. F - Fuel Height Status  
0=Stable  
1=Increasing  
2=Decreasing  
3=Unknown
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code:** 21H

Version 2

**Function Type:** Time Ordered Chart Sales Comparison

**Command Format:**

**Display:** <SOH>I21HTTIIiiyyymmddYYMMDD

**Computer:** <SOH>i21HTTIIiiyyymmddYYMMDD

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - First Chart ID Number [01..99] (Decimal)
3. ii - Second chart ID number [01..99] (Decimal)
4. yyymmdd - Optional Start Date
5. YYMMDD - Optional End Date
6. This command will show all daily BIR records within the specified date range.
7. Variance = change in inventory volume - sales volume

**Typical Response Message, Display Format:**

```
<SOH>
I21HTT
JAN 31, 2008 14:42
```

TANK nn CHART SALES COMPARISON		BETWEEN yyyy-mm-dd AND YYYY-MM-DD			
DATE	SALES	CHT II VARIANCE	CHT ii VARIANCE	CHT II VARIANCE%	CHT ii VARIANCE%
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
TOTALS: SSSSSSS.S		XXXXXXXXX.X	XXXXXXXXX.X	XXXXXXXXX.X	XXXXXXXXX.X

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i21HTTYMMDDHHmmTTNNNNyyymmddssssssssVVVVVVVVvvvvvvvvPPPPPPPPppppppppp..
      yymmddssssssssVVVVVVVVvvvvvvvvPPPPPPPPppppppppp..
      yyymmddssssssssVVVVVVVVvvvvvvvvPPPPPPPPppppppppp..
      &&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NNNN - Number of Comparison Records to follow (Decimal)
4. yyymmdd - Time Stamp
5. ssssssss - Sales Volume in Gallons/Liters (ASCII Hex IEEE float)
6. VVVVVVVV - Sales Variance in Gallons/Liters for 1st Chart (ASCII Hex IEEE float)
7. vvvvvvvv - Sales Variance in Gallons/Liters for 2nd Chart (ASCII Hex IEEE float)
8. PPPPPPPP - Sales Variance in percent for 1st Chart (ASCII Hex IEEE float)
9. pppppppp - Sales Variance in percent for 2nd Chart (ASCII Hex IEEE float)
10. && - Data Termination Flag
11. CCCC - Message Checksum

**Function Code:** 21I  
**Function Type:** Time Ordered Chart Delivery Comparison

Version 2

**Command Format:**  
**Display:** <SOH>I21ITTIIiiyyymmddYYMMDD  
**Computer:** <SOH>i21ITTIIiiyyymmddYYMMDD

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - First Chart ID Number [01..99] (Decimal)
3. ii - Second Chart ID Number [01..99] (Decimal)
4. yyymmdd - Optional Start Date
5. YYMMDD - Optional End Date
6. This command will show all ticketed deliveries within the specified date range.
7. Variance = estimated delivery volume - ticket delivery volume

**Typical Response Message, Display Format:**

```
<SOH>
I21ITT
JAN 31, 2008 14:42
```

TANK *nn* CHART DELIVERY COMPARISON BETWEEN *yyyy-mm-dd* AND *YYYY-MM-DD*

DATE	TICKETED DELIVERY	CHT <i>II</i> DELIVERY	CHT <i>ii</i> DELIVERY	CHT <i>II</i> VARIANCE	CHT <i>ii</i> VARIANCE	CHT <i>II</i> VAR%	CHT <i>ii</i> VAR%
yyyy-mm-dd	dddddd.d	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x
yyyy-mm-dd	dddddd.d	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x
yyyy-mm-dd	dddddd.d	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x	xxxxxx.x
TOTALS:	SSSSSS.S	XXXXXX.X	XXXXXX.X	XXXXXX.X	XXXXXX.X	XXXXXX.X	XXXXXX.X

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i21ITTYMMDDHHmmTTNNNN
yyymmddDDDDDDDDVVVVVVVVvvvvvvvvRRRRRRRRrrrrrrrrPPPPPPPPpppppppp..
yyymmddDDDDDDDDVVVVVVVVvvvvvvvvRRRRRRRRrrrrrrrrPPPPPPPPpppppppp..
yyymmddDDDDDDDDVVVVVVVVvvvvvvvvRRRRRRRRrrrrrrrrPPPPPPPPpppppppp..
&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NNNN - Number of Comparison Records to follow (Decimal)
4. yyymmdd - Time Stamp
5. DDDDDDDD - Ticketed Delivery Volume in Gallons/Liters (ASCII Hex IEEE float)
6. VVVVVVVV - Delivery Volume for 1st Chart (ASCII Hex IEEE float)
7. vvvvvvvv - Delivery Volume for 2nd Chart (ASCII Hex IEEE float)
8. RRRRRRRR - Delivery Variance volume for 1st Chart (ASCII Hex IEEE float)
9. rrrrrrrr - Delivery Variance volume for 2nd Chart (ASCII Hex IEEE float)
10. PPPPPPPP - Delivery Variance percent for 1st Chart (ASCII Hex IEEE float)
11. pppppppp - Delivery Variance percent for 2nd Chart (ASCII Hex IEEE float)
12. && - Data Termination Flag
13. CCCC - Message Checksum

**Serial Interface Manual**  
**TLS-450 Monitoring Systems**

---

**Function Code:** 21J  
**Function Type:** Histogram Comparison of Tank Charts

Version 2

**Command Format:**  
**Display:** <SOH>I21JTTIIiiyyymmddYYMMDD  
**Computer:** <SOH>i21JTTIIiiyyymmddYYMMDD

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - First Chart ID Number [01..99] (Decimal)
3. ii - Second Chart ID Number [01..99] (Decimal)
4. yyymmdd - Start Date
5. YYMMDD - End Date

**Typical Response Message, Display Format:**

<SOH>  
I21JTT  
JAN 31, 2008 14:42

TANK *nn* CHART HISTOGRAM COMPARISON BETWEEN *yyyy-mm-dd* AND *YYYY-MM-DD*

% SALES	CHT <i>II</i> COUNTS	CHT <i>ii</i> COUNTS
-----	-----	-----
+5.0	AAAA	BBBB
+4.5	AAAA	BBBB
+4.0	AAAA	BBBB
+3.5	AAAA	BBBB
+3.0	AAAA	BBBB
+2.5	AAAA	BBBB
+2.0	AAAA	BBBB
+1.5	AAAA	BBBB
+1.0	AAAA	BBBB
+0.5	AAAA	BBBB
+0.0	AAAA	BBBB
-0.5	AAAA	BBBB
-1.0	AAAA	BBBB
-1.5	AAAA	BBBB
-2.0	AAAA	BBBB
-2.5	AAAA	BBBB
-3.0	AAAA	BBBB
-3.5	AAAA	BBBB
-4.0	AAAA	BBBB
-4.5	AAAA	BBBB
-5.0	AAAA	BBBB

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i21JTTYMMDDHHmmTTyyymmddYYMMDDNNNNrrrrrrrrrAAAABBBB...rrrrrrrrrAAAABBBB  
TTyyymmddYYMMDDNNNNrrrrrrrrrAAAABBBB...rrrrrrrrrAAAABBBB  
&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. yyymmdd - Start Date
4. YYMMDD - End Date
5. NNNN - Number of Histogram Bins to follow (Decimal)
6. rrrrrrrr - Bin Percent (ASCII Hex IEEE float)
7. AAAA - Number of Counts for 1st Chart (ASCII Hex short)
8. BBBB - Number of Counts for 2nd Chart (ASCII Hex short)
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS-450 Monitoring Systems

Function Code: 21K

Version 2

**Function Type:** Error Plot Comparison of Tank Charts

**Command Format:**

**Display:** <SOH>I21KTTIIiiyymddYYMMDD

**Computer:** <SOH>i21KTTIIiiyymmdYYMMDD

Notes:

- ```

1.      TT - Tank Number [01..32], (Decimal, 00=all)
2.      II - First Chart ID Number [01...99] (Decimal)
3.      ii - Second Chart ID Number [01...99] (Decimal)
4.      yymmdd - Optional Start Date
5.      YYMMDD - Optional End Date
6.      Use last 30 days if no dates are supplied

```

Typical Response Message, Display Format:

<SOH>  
I21KTT  
JAN 31, 2008 14:42

TANK *nn* CHART ERROR vs. HEIGHT COMPARISON BETWEEN *yyyy-mm-dd* AND *YYYY-MM-DD*

| %<br>HEIGHT | CHT II<br>VAR% | CHT ii<br>VAR% |
|-------------|----------------|----------------|
| -----       | -----          | -----          |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| XXXX.XX     | XXXX.XX        | XXXX.XX        |
| <ETX>       |                |                |

**Typical Response Message, Computer Format:**

```
<SOH>i21KTTYMMDDHHmmTTyymmddYYMMDDNNNNhhhhhhhhhPPPPPPPPppppppppp...
                                     hhhhhhhhPPPPPPPPppppppppp
                                     TTyymmddYYMMDDNNNNhhhhhhhhhPPPPPPPPppppppppp...
                                     hhhhhhhhPPPPPPPPppppppppp
                                     &CCCC<ETX>
```

**Notes:**

- |     |            |                                                         |
|-----|------------|---------------------------------------------------------|
| 1.  | YYMMDDHHmm | - Current Date and Time                                 |
| 2.  | TT         | - Tank Number [01..32], (Decimal, 00=all)               |
| 3.  | yymmdd     | - Start Date                                            |
| 4.  | YYMMDD     | - End Date                                              |
| 5.  | NNNN       | - Number of Error Points to follow (Decimal)            |
| 6.  | hhhhhhhhh  | - Height Percent (ASCII Hex IEEE float)                 |
| 7.  | PPPPPPPP   | - Variance Percent for 1st Chart (ASCII Hex IEEE float) |
| 8.  | pppppppp   | - Variance Percent for 2nd Chart (ASCII Hex IEEE float) |
| 9.  | &&         | - Data Termination Flag                                 |
| 10. | CCCC       | - Message Checksum                                      |

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 21L  
**Function Type:** Manual Delivery Report

Version 2

**Command Format:**  
**Display:** <SOH>I21LTT  
**Computer:**

#### Typical Response Message, Display Format:

<SOH>  
I21LTT  
JAN 31, 2009 14:42

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

| TANK          | VOLUME | INPROGRESS |
|---------------|--------|------------|
| T 1: REGULAR  | 999999 | NO         |
| T 2: MIDGRADE | 999999 | YES        |

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 221**  
**Function Type:** Ticketed Delivery Report

Version 2

**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, 2009 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, 2009 8:26 AM   | 5901.0        | 5905.0       | -4.0     | 44.8       | 42.4      | 41.0         |
| MAR 9, 2009 11:37 AM  | 5901.0        | 5905.0       | -4.0     | 44.6       | 43.2      | 42.4         |
| MAR 10, 2009 11:34 PM | 4099.0        | 4094.0       | 5.0      | 44.6       | 42.6      | 40.5         |

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i221TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFFF...  
TTpPPdddYYMMDDHHmmNNFFFFFFFF&&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-450 Monitoring Systems

---

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

Version 2

**Command Format:**  
**Display:**  
**Computer:**

**Inquire:**  
<SOH>I222TTtt  
<SOH>i222TTtt

#### Notes:

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

#### Typical Response Message, Display Format:

```
<SOH>
I222TT
MAR 20, 2009  3:25 PM

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

CURRENT PERIOD TICKETED AND BOL DELIVERY REPORT

PROD  1:  UNLEADED GASOLINE

          BOL          TICKET          GAUGE          TC GAUGE
DELIVERY END DATE    NUMBER    VOLUME    VOLUME    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
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i222TTYMMDDHHmmTTpPPdddYYMMDDHHmmAAaa...aaNNFFFFFFFF...FFFFFFFF...
          TTpPPdddYYMMDDHHmmAAaa...aaNNFFFFFFFF...FFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=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-450 Monitoring Systems

---

**Function Code: 225**

Version 2

**Function Type:** Periodic Delivery Variance Report

**Command Format:**

**Display:** <SOH>I225TTtt

**Computer:** <SOH>i225TTtt

**Notes:**

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

**Typical Response Message, Display Format:**

```
<SOH>
I225TT
MAR 20, 2009  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, 2009	8:26 AM		5901.0	5905.0	-4.0
MAR 9, 2009	11:37 AM		5901.0	5905.0	-4.0
MAR 10, 2009	11:34 PM		4099.0	4094.0	5.0
MAR 12, 2009	8:27 PM		3800.0	3797.0	3.0
MAR 14, 2009	8:28 AM		5900.0	5899.0	1.0
MAR 16, 2009	11:39 AM		5902.0	5916.0	-14.0
MAR 18, 2009	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>
```

**Typical Response Message, Computer Format:**

```
<SOH>i225TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNNNNNNNNN...
TTpPPdddYYMMDDHHmmNNNNNNNNNN&&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-450 Monitoring Systems

---

**Function Code: 226**

Version 2

**Function Type:** Weekly Delivery Variance Report

**Command Format:**

**Display:** <SOH>I226TTtt

**Computer:** <SOH>i226TTtt

**Notes:**

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

**Typical Response Message, Display Format:**

```
<SOH>
I226TT
MAR 20, 2009  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 VOLUME	GAUGE VOLUME	VARIANCE
MAR 16, 2009 11:39 AM	5902.0	5916.0	-14.0
MAR 18, 2009 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>i226TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFFF...
TTpPPdddYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 227**

Version 2

**Function Type:** Daily Delivery Variance Report

**Command Format:**

**Display:** <SOH>I227TTMMDD

**Computer:** <SOH>i227TTMMDD

**Notes:**

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

**Typical Response Message, Display Format:**

```
<SOH>
I227TT
MAR 20, 2009  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 VOLUME	GAUGE VOLUME	VARIANCE
MAR 16, 2009 11:39 AM	5902.0	5916.0	-14.0

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i227TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFFF...
TTpPPdddYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

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

Function Code: **22I**

Version 2

Function Type: Ticketed Delivery Daily Report

**Command Format:**

Display: <SOH>I22ITTyyymmddYYMMDDnnn

Computer: <SOH>i22ITTyyymmddYYMMDDnnn

**Notes:**

1. TT - Tank Number (Decimal, 00=All)
2. yyymmdd - Starting Date (000000 = no starting date = first of the month)
3. YYMMDD - Ending Date (000000 = no ending date = current date)
4. nnn - Maximum Records [001...366] (100 = default) (decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I22ITT
MAR 20, 2009  3:25 PM
```

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

```
TICKETED DELIVERY DAILY 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, 2009 8:26 AM	5901.4	5905.2	-4.0	44.8	42.4	41.0
MAR 9, 2009 11:37 AM	5901.2	5905.6	-4.0	44.6	43.2	42.4
MAR 10, 2009 11:34 PM	4099.8	4094.9	5.0	44.6	42.6	40.5

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i22ITTYYMDDHHmmTTpPPddddYYMDDHHmmNNFFFFFFFF...
TTpPPddddYYMDDHHmmNNFFFFFFFF&&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. dddd - Number of deliveries to follow (decimal) if 0, no more data for this tank will follow
6. YYMDDHHmm - 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-450 Monitoring Systems

---

**Function Code:** 22J

Version 2

**Function Type:** Delivery Ticket History Report

**Command Format:**

**Display:** <SOH>I22JTTyymmddYYMMDDnnn

**Computer:** not supported

#### Notes:

1. TT - Tank Number (Decimal, 00=All)
2. yymmdd - Starting Date (000000 = no starting date = first of the month)
3. YYMMDD - Ending Date (000000 = no ending date = current date)
4. nnn - Maximum Records [001...366] (100 = default) (decimal)

#### Typical Response Message, Display Format:

<SOH>  
I22JTT  
MAR 20, 2009 3:25 PM

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

DELIVERY TICKET HISTORY REPORT  
VOLUMES ARE STANDARD

T 1:REGULAR UNLEADED

DELIVERY END DATE	GAUGE VOLUME	TICKET VOLUME	ST TMP	END TMP	EST DLY TMP	BILL OF LADING / DELIVERY ID
MAR 7, 2009 8:26 AM	5901	5905	44.0	48.0	47.0	This would be 20 cha
MAR 29, 2009 11:37 AM	5901	5905	65.0	70.0	68.0	This would be 20 cha
						TRUCK 7
						1010

<ETX>

**Function Code: 234**

Version 3

**Function Type:** In-Tank Mass/Density Inventory Report

**Command Format:**

**Display:** <SOH>I234TT

**Computer:** <SOH>i234TT

**Typical Response Message, Display Format:**

```
<SOH>
I234TT
MAR 20, 2010  3:25 PM

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

IN_TANK MASS INVENTORY

TANK PRODUCT          VOLUME    MASS    TC DENSITY  HEIGHT  WATER  TEMP
1  PRODUCT 1          7343    44521    45.35     16.5    0.0    78.8
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i234TTYMMDDHHmmTTpssssNNFFFFFFFF...
                          TTpssssNNFFFFFFFF...&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 235**

Version 3

**Function Type:** In-Tank Mass/Density Delivery Report

**Command Format:**

**Display:** <SOH>I235TT

**Computer:** <SOH>i235TT

#### Typical Response Message, Display Format:

<SOH>  
I235TT  
APR 30, 2010 3:25 PM

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

#### IN-TANK MASS/DENSITY DELIVERY REPORT

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

##### TANK 1:PRODUCT 1

Date / Time	Fuel Volume	Mass	Density	TC Height	Water Height	Fuel Temp	Fuel Height
END: MAY 26, 2010 1:28 PM	5000	0	0.00	0.00	0.00	60.00	48.00
START: MAY 26, 2010 11:56 AM	3000	0	0.00	0.00	0.00	60.00	32.65
AMOUNT:	2000						

##### TANK 3:PRODUCT 3

Date / Time	Fuel Volume	Mass	Density	TC Height	Water Height	Fuel Temp	Fuel Height
END: MAY 26, 2010 1:28 PM	5877	0	0.00	0.00	0.00	60.00	54.63
START: MAY 26, 2010 11:56 AM	3877	0	0.00	0.00	0.00	60.00	39.49
AMOUNT:	2000						

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 235:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i235TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFf...  
TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFf...&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 251**

Version 1

**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=Increase (software versions 5 and above)
  - 09=Warning (software versions 5 and above)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS-450 Monitoring Systems

Version 1

```

Command Format:
  Display: <SOH>I2E3TTyyymmddYYMMDDnnnn
  Computer: <SOH>i2E3TTyyymmddYYMMDDnnnn

```

**Notes:**

- ```

1.      YYMMDDHHmm - Starting Date (000000 = no starting date)
2.      YYMMDD      - Ending Date   (000000 = no ending date)
3.      nnn         - Maximum Records [001...999] (100 = default) (decimal)

```

**Typical Response Message, Display Format:**

<SOH>  
I2E3TT  
JAN 22, 1996 3:06 PM

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

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

INVENTORY HISTORY REPORT

TANK 1: REGULAR UNLEADED

| DATE/TIME      | FUEL<br>VOLUME | FUEL TC<br>VOLUME | FUEL<br>HEIGHT | WATER<br>HEIGHT | WATER<br>VOLUME | FUEL<br>TEMP |
|----------------|----------------|-------------------|----------------|-----------------|-----------------|--------------|
| 07/01/31 03:00 | 5329           | 5413              | 48.97          | 1.30            | 100             | 37.39        |
| 07/02/01 02:00 | 5329           | 5413              | 48.97          | 1.30            | 100             | 37.39        |
| 07/02/02 01:00 | 5329           | 5413              | 48.97          | 1.30            | 100             | 37.39        |
| <ETX>          |                |                   |                |                 |                 |              |

**Typical Response Message, Computer Format:**

```
<SOH>i2E3T'TYYMMDDHHmmT'TpnnnnsssssYYMMDDHHmmNNFFFFFFF...
                                     ssssYYMMDDHHmmNNFFFFFFF...
                                     T'TpnnnnsssssYYMMDDHHmmNNFFFFFFF...
                                     ssssYYMMDDHHmmNNFFFFFFF&&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.      nnnn - Number of TimeStamped Records to follow (hex)
5.      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
6. YYMMDDHHmm - Timestamp
7.      NN - Number of eight character Data Fields (hex)
8.      FFFFFFFF - ASCII Hex IEEE floats:
              1. Volume
              2. TC Volume
              3. Fuel Height
              4. Water Height
              5. Avg Fuel Temperature
              6. Water Volume
              7. Mass
              8. Density
              9. TC Density
9.      && - Data Termination Flag
10.     CCCC - Message Checksum

```

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code:** 2E4 Version 1  
**Function Type:** Extended In-Tank Inventory Report - Date/Time Based  
**Command Format:**  
**Display:** <SOH>I2E4TTRRyyymmddhhmmYYMMDDHHMMnnn  
**Computer:** <SOH>i2E4TTRRyyymmddhhmmYYMMDDHHMMnnn

#### Notes:

1. TT - Device Number (Decimal, 00=all)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
00=Inventory History Report (Inventory Information for the specified Time Period)
3. yyyymmddhhmm - Starting Date/Time (If a start date/time is not provided or either Year, Month or Day are zeroes, it assumes request is for most recent records. If a start date/time is not provided, then the request is limited by the Maximum Records (below). Ranges are as follows:  
yy=Year (01-99, for Years 2001-2099)  
mm=Month (01-12, for Months January to December)  
dd=Day (01-31, however, validity depends on Month)  
hh=Hour (00-23)  
mm=Minute (00-59)
4. YYMMDDHHMM - Ending Date/Time (If an end date/time is not given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below). Ranges are the same as the Start Date/Time fields.
5. nnn - Maximum Records (1-999, Absolute Maximum) (Decimal). (If Maximum records is not given or it is zeroes, it assumes request is for records from start date/time, ending by end date start/time, and limited by Maximum Records default of 100)

#### Typical Response Message, Display Format:

<SOH>  
I2E40001  
JAN 22, 1996 3:06 PM

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

Volume=LITERS  
Height=MM  
Temp=DEG C

INVENTORY HISTORY REPORT

Selected Range:  
Date Range: JAN 1, 2009 12:00 AM - NOV 1, 2009 12:00 AM

TANK 1: Regular Unleaded

Date/Time	Fuel Volume	Fuel TC Volume	Fuel Height	Water Height	Water Volume	Fuel Temp
07-01-31 03:00	5329	5413	48.97	0.00	0.00	37.39
07-02-01 02:00	5329	5413	48.97	0.00	0.00	37.39
07-02-02 01:00	5329	5413	48.97	0.00	0.00	37.39

TANK 2: Regular Unleaded

Date/Time	Fuel Volume	Fuel TC Volume	Fuel Height	Water Height	Water Volume	Fuel Temp
07-01-31 03:00	5329	5413	48.97	0.00	0.00	37.39
07-02-01 02:00	5329	5413	48.97	0.00	0.00	37.39
07-02-02 01:00	5329	5413	48.97	0.00	0.00	37.39

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 2E4:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i2E4TTYMMDDHHmmTTpnnnnssssYYMMDDHHmmNNFFFFFFFF...
                                ssssYYMMDDHHmmNNFFFFFFFF...
                                TTpnnnnssssYYMMDDHHmmNNFFFFFFFF...
                                ssssYYMMDDHHmmNNFFFFFFFF&&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. nnnn - Number of TimeStamped Records to follow (hex)
5. 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
6. YYMMDDHHmm - Timestamp
7. NN - Number of eight character Data Fields (hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Volume
  2. TC Volume
  3. Fuel Height
  4. Water Height
  5. Avg Fuel Temperature
  6. Water Volume
  7. Mass
  8. Density
  9. TC Density
9. && - Data Termination Flag
10. CCCC - Message Checksum



## 7.2.3 SENSOR REPORTS

**Function Code: 301**  
**Function Type:** Liquid Sensor Status Report

Version 1

**Command Format:**  
**Display:** <SOH>I301SS  
**Computer:** <SOH>i301SS

### Typical Response Message, Display Format:

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

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

LIQUID STATUS REPORT

SENSOR  LOCATION          STATUS
   1  LIQUID # 1          SENSOR NORMAL
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i301SSYYMMDDHHmmSSssss...
                               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-450 Monitoring Systems

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**Function Code: 302**

Version 1

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

**Command Format:**

**Display:** <SOH>I302SS

**Computer:** <SOH>i302SS

**Typical Response Message, Display Format:**

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

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

LIQUID ALARM HISTORY REPORT

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 306**

Version 1

**Function Type:** Vapor Sensor Status Report

**Command Format:**

**Display:** <SOH>I306SS

**Computer:** <SOH>i306SS

**Typical Response Message, Display Format:**

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

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

VAPOR STATUS REPORT

SENSOR	LOCATION	STATUS
1	VAPOR # 1	NORMAL

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i306SSYYMMDDHHmmSSsssss...
SSsssss&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 307**

Version 1

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

**Command Format:**

**Display:** <SOH>I307SS

**Computer:** <SOH>i307SS

**Typical Response Message, Display Format:**

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

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

VAPOR ALARM HISTORY REPORT

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 311**

Version 1

**Function Type:** Groundwater Sensor Status Report

**Command Format:**

**Display:** <SOH>I311SS

**Computer:** <SOH>i311SS

**Typical Response Message, Display Format:**

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

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

GROUNDWATER STATUS REPORT

```
SENSOR  LOCATION          STATUS
   1  GROUND WATER # 1      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-450 Monitoring Systems

---

**Function Code: 312**

Version 1

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

**Command Format:**

**Display:** <SOH>I312SS

**Computer:** <SOH>i312SS

**Typical Response Message, Display Format:**

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

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

GROUNDWATER ALARM HISTORY REPORT

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 31B  
**Function Type:** MAG Sensor Status Report

Version 1

**Command Format:**  
**Display:** <SOH>I31BSS  
**Computer:** <SOH>i31BSS

#### Typical Response Message, Display Format:

```
<SOH>
I31BSS
JAN 22, 2003  3:07 PM
```

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

#### MAG SENSOR STATUS REPORT

SENSOR	LOCATION	STATUS
1	SUMP 1	SENSOR NORMAL
2	SUMP 2	FUEL ALARM
		WATER ALARM
		INSTALL ALARM
3	SUMP 3	SENSOR NORMAL

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>i31BSSYYMMDDHHmmSSNNaaaaa...zzzz
SSNNaaaaa...zzzz&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 31C**

Version 1

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

**Command Format:**

**Display:** <SOH>I31CSS

**Computer:** <SOH>i31CSS

**Typical Response Message, Display Format:**

```
<SOH>
I31CSS
JAN 22, 2003  3:07 PM
```

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

MAG 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>i31CSSYYMMDDHHmmSSnnYYMMDDHHmmaaaa...
                               SSnnYYMMDDHHmmaaaa&&CCCC<ETX>
```

**Notes:**

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 341**

Version 1

**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-450 Monitoring Systems

---

**Function Code: 342**

Version 1

**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-450 Monitoring Systems

---

**Function Code: 346**

Version 1

**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-450 Monitoring Systems

---

**Function Code: 347**

Version 1

**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

## 7.2.4 LINE LEAK REPORTS

**Function Code:** 373

Version 1

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

**Command Format:**

**Display:** <SOH>I373QQ

**Computer:** <SOH>i373QQ

**Typical Response Message, Display Format:**

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

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

PRESSURE LINE LEAK TEST RESULTS

Ln 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

0.20 GAL/HR RESULTS:
  JAN 22, 1996  1:32 AM PASS

NO-VENT TEST ABORTS:
  3 OUT OF 10 TESTS
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

Function Code 373: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>i373QQYYMDDHHmmQQyyymmddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt...
                                     nnYYMDDHHmmRRtt...
                                   QQyyymmddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt...
                                     nnYYMDDHHmmRRtt&&CCCC<ETX>
```

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test time
4. rr - 3.00 gal/hr test result (Hex)
5. TT - 3.00 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.00 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.00 gal/hr tests passed since midnight (Hex)
8. NN - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
9. 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-450 Monitoring Systems

---

**Function Code: 374**

Version 1

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

**Command Format:**

**Display:** <SOH>I374QQ

**Computer:** <SOH>i374QQ

**Typical Response Message, Display Format:**

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

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

PRESSURE LINE LEAK TEST HISTORY

Ln 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>i374QQYYMDDHHmmQQyyymmddhhmmTTNNYYMDDHHmmttnnYYMDDHHmmtt...
QQyyymmddhhmmTTNNYYMDDHHmmttnnYYMDDHHmmtt&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test pass time ("0000000000" if no test yet)
4. TT - 3.00 gal/hr test type (unused, always 00)
5. NN - Number of 0.10 gal/hr test results (12 character groups) to follow (Hex)
6. 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-450 Monitoring Systems

---

**Function Code:**375

Version 1

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

**Command Format:**

**Display:** <SOH>I375QQ

**Computer:** <SOH>i375QQ

**Typical Response Message, Display Format:**

```
<SOH>
I375QQ
JAN 24, 1996  2:52 PM

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

PRESSURE LINE LEAK TEST RESULTS

Ln 1:REGULAR UNLEADED

  3.0 GAL/HR RESULTS:

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

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

0.10 GAL/HR RESULTS:
  JAN 23, 1996 11:59 PM PASS

0.20 GAL/HR RESULTS:
  JAN 22, 1996  1:32 AM PASS

NO-VENT TEST ABORTS:
  3 OUT OF 10 TESTS
<ETX>
```



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### TLS-450 Monitoring Systems

---

**Function Code 375:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i375QQYYMDDHHmmQQyyymmddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt
                                     nnYYMDDHHmmRRttaabb...
      QQyyymmddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt
                                     nnYYMDDHHmmRRttaabb&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.0 gal/hr test time
4. rr - 3.0 gal/hr test result (Hex)
5. TT - 3.0 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.0 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.0 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  
00 = FAIL  
01 = PASS
11. tt - 0.1 gal/hr test type (unused, always 00)
11. nn - Number of 0.20 gal/hr test results (12 character groups) to follow (Hex)
13. YYMDDHHmm - Date and time of 0.20 gal/hr test
14. RR - Test result  
00 = FAIL  
01 = PASS
15. tt - 0.20 gal/hr test type (unused, always 00)
16. aa - Number of no-vent test aborts
17. bb - Number of no-vent tests
18. && - Data Termination Flag
19. CCCC - Message Checksum

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### TLS-450 Monitoring Systems

---

**Function Code: 376**

Version 1

**Function Type:** Pressure Line Leak Passed Tests Results

**Command Format:**

**Display:** <SOH>I376QQ

**Computer:** <SOH>i376QQ

#### Typical Response Message, Display Format:

```
<SOH>
I376QQ
JAN 24, 1996 2:52 PM
```

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

PRESSURE LINE LEAK REPORTS - PASSED TESTS RESULT

Ln 1: PRESSURE LLD #1

Test Type	Date & Time
3.0 GAL/HR.	JAN 24, 1996 2:49 PM
0.2 GAL/HR.	JAN 24, 1996 2:49 PM
0.1 GAL/HR.	JAN 24, 1996 2:49 PM

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>i376QQYYMMDDHHmmQQYYMMDDHHmmRR...
      QQYYMMDDHHmmRR&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 377

Version 1

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

**Command Format:**

**Display:** <SOH>I377QRRyyymmddhhmmYYMMDDHHMMnn

**Computer:** <SOH>i377QRRyyymmddhhmmYYMMDDHHMMnn

**Notes:**

1. QQ - Device Number (Decimal, 00=all)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
00=Passed Test History
3. yyyymmddhhmm - Starting Date/Time (If a start date/time is not provided or either Year, Month or Day are zeroes, it assumes request is for most recent records and is limited by the Maximum Records (below). Ranges are as follows:  
yy=Year (01-99, for Years 2001-2099)  
mm=Month (01-12, for Months January to December)  
dd=Day (01-31, however, validity depends on Month)  
hh=Hour (00-23)  
mm=Minute (00-59)
4. YYMMDDHHMM - Ending Date/Time (If an end date/time is not given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below). Ranges are the same as the Start Date/Time fields.
5. nn - Maximum Records (00-36, Absolute Maximum) (Decimal). (If Maximum records is not given or it is zeroes, and no End Date/Time is given, limited by the Maximum Records Default of 12)

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### TLS-450 Monitoring Systems

---

Function Code 377: (Continued)

Typical Response Message, Display Format:

```
<SOH>
I377QQ
NOV  6, 2008 10:35 AM
```

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

PRESSURE LINE LEAK REPORTS - PASSED TESTS HISTORY

Ln 1: PRESSURE LLD #1

Test Type	Date & Time	Test Method	Gross Test Prev 24 Hours	Gross Test Since Midnight
Gross		PLLD	10	5
Last Gross	NOV  6, 2008 9:38 AM	PLLD		
Last Periodic	NOV  6, 2008 9:43 AM	PLLD		
Last Annual	NOV  6, 2008 9:45 AM	PLLD		
First Periodic	NOV  6, 2008 9:43 AM	PLLD		
First Periodic	OCT 24, 2008 2:20 PM	PLLD		
First Annual	NOV  6, 2008 9:45 AM	PLLD		
First Annual	OCT 24, 2008 2:23 PM	PLLD		

Ln 2: PRESSURE LLD #2

Test Type	Date & Time	Test Method	Gross Test Prev 24 Hours	Gross Test Since Midnight
Gross		PLLD	9	4
Last Gross	NOV  6, 2008 8:17 AM	PLLD		
Last Periodic	NOV  6, 2008 8:23 AM	PLLD		
Last Annual	NOV  6, 2008 8:26 AM	PLLD		
First Periodic	NOV  6, 2008 8:23 AM	PLLD		
First Annual	NOV  6, 2008 8:26 AM	PLLD		

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 377:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i377QQYYMMDDHHmmQQPPPPMMMMyyymmddhhmmTTyyymmddhhmmTTyyymmddhhmmTT
NNYYMMDDHHmmtt...YYMMDDHHmmtnnYYMMDDHHmmtt...YYMMDDHHmmtt...
QQPPPPMMMMyyymmddhhmmTTyyymmddhhmmTTyyymmddhhmmTT
NNYYMMDDHHmmtt...YYMMDDHHmmtnnYYMMDDHHmmtt...YYMMDDHHmmtt&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00 = All)
3. PPPP - Number of 3.0 gal/hr tests passed in previous 24 hours (Hex)
4. MMMM - Number of 3.0 gal/hr tests passed since midnight (Hex)
5. yyymmddhhmm - Last 3.0 gal/hr test time (0000000000 if no test)
6. TT - 3.0 gal/hr test type (unused, always 00)
7. yyymmddhhmm - Last 0.2 gal/hr test time (0000000000 if no test)
8. TT - 0.2 gal/hr test type (unused, always 00)
9. yyymmddhhmm - Last 0.1 gal/hr test time (0000000000 if no test)
10. TT - 0.1 gal/hr test type (unused, always 00)
11. NN - Number of 0.20 gal/hr test results (14 character groups) to follow (Hex)
12. YYMMDDHHmm - Date and time of 0.2 gal/hr test
13. tt - 0.2 gal/hr test type (unused, always 00)
14. nn - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
15. YYMMDDHHmm - Date and time of 0.1 gal/hr test
16. tt - 0.1 gal/hr test type (unused, always 00)
17. && - Data Termination Flag
18. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 381**  
**Function Type:** Pressure Line Leak Status

Version 1

**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
Ln 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-450 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)
  - 0008=PLLD Shutdown Alarm
  - 0009=PLLD High Pressure Warning (Obsolete)
  - 000A=PLLD Continuous Handle On Warning (Obsolete)
  - 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)
  - 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-450 Monitoring Systems

---

**Function Code: 382**

Version 1

**Function Type:** Pressure Line Leak Alarm History Report

**Command Format:**

**Display:** <SOH>I382QQ

**Computer:** <SOH>i382QQ

**Typical Response Message, Display Format:**

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

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

PRESSURE LINE LEAK ALARM HISTORY REPORT

Ln 1:REGULAR UNLEADED

GROSS LINE FAIL

JAN 9, 1995 6:12 AM

<ETX>

**Typical Response Message, Computer Format:**

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

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. NN - number of alarms to follow (Hex)
4. yymmddhhmm - Date and time that the alarm occurred
5. aaaa - type of alarm:
  - 0001=PLLD Setup Data Warning
  - 0002=PLLD Gross Test Fail Alarm
  - 0003=PLLD Annual Test Fail Alarm
  - 0004=PLLD Periodic Test Needed Warning
  - 0005=PLLD Periodic Test Needed Alarm
  - 0006=PLLD Sensor Open Alarm
  - 0007=PLLD High Pressure Alarm (Obsolete)
  - 0008=PLLD Shutdown Alarm
  - 0009=PLLD High Pressure Warning (Obsolete)
  - 000A=PLLD Continuous Handle On Warning (Obsolete)
  - 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)
  - 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-450 Monitoring Systems

---

**Function Code: 383**

Version 1

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

**Command Format:**

**Display:** <SOH>I383QQ

**Computer:** <SOH>i383QQ

#### Typical Response Message, Display Format:

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

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

PRESSURE LINE LEAK TEST RESULTS

Ln 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>
```

#### Typical Response Message, Computer Format:

```
<SOH>i383QQYYMMDDHHmmQQyyymmddhhmmrrTTPPPPMMMMNNYYMMDDHHmmRRtt...
      QQyyymmddhhmmrrTTPPPPMMMMNNYYMMDDHHmmRRtt&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 384**

Version 1

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

**Command Format:**

**Display:** <SOH>I384QQ

**Computer:** <SOH>i384QQ

#### Typical Response Message, Display Format:

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

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

PRESSURE LINE LEAK TEST HISTORY

Ln 1:REGULAR UNLEADED

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

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

<ETX>

#### Typical Response Message, Computer Format:

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

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 385

Version 1

**Function Type:** Pressure Line Leak Test Results (with 0.20 test data listed before 0.10 test data)

**Command Format:**

**Display:** <SOH>I385QQ

**Computer:** <SOH>i385QQ

#### Typical Response Message, Display Format:

```
<SOH>
I385QQ
JAN 24, 1996  2:52 PM

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

PRESSURE LINE LEAK TEST RESULTS

Ln 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
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

Function Code 385: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>i385QQYYMDDHHmmQQyyymmddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt...
                                     nnYYMDDHHmmRRtt...
                                   QQyyymmddhhmmrrTTPPPMMMMNNYYMDDHHmmRRtt...
                                     nnYYMDDHHmmRRtt&&CCCC<ETX>
```

#### Notes:

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

## 7.2.5 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>i401IIYYMMDDHHmmIIsssss...
                                IIsssss&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - 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
  - 0006=Input Out Alarm
4. && - Data Termination Flag
5. CCCC - Message Checksum

**Function Code: 402**

Version 1

**Function Type:** Input Alarm History Report

**Command Format:**

**Display:** <SOH>I402II

**Computer:** <SOH>i402II

**Typical Response Message, Display Format:**

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

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

INPUT ALARM HISTORY REPORT

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

**Typical Response Message, Computer Format:**

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

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (Hex)
4. YYMMDDHHmm - Date and Time of alarm
5. aaaa - Alarm type number:
  - 0001=Input Setup Data Warning
  - 0002=Input Normal
  - 0003=Input Alarm
  - 0006=Input Out Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 403**

Version 1

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

**Command Format:**

**Display:** <SOH>I403II

**Computer:** <SOH>i403II

#### Typical Response Message, Display Format:

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

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

INPUT / GENERATOR ALARM HISTORY REPORT

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

<ETX>
```

#### Typical Response Message, Computer Format:

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

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (Hex)
4. YYMMDDHHmm - Date and Time of alarm
5. aaaa - Alarm type number:
  - 0001=Input Setup Data Warning
  - 0002=Input Normal
  - 0003=Input Alarm
  - 0004=Generator Off
  - 0005=Generator On
  - 0006=Input Out Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 406  
**Function Type:** Relay Status Report

Version 1

**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 *	Active
2	* RELAY 2 *	Inactive

```
<ETX>
```

#### Typical Response Message, Computer Format:

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

#### Notes:

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



Function Code: 407  
Function Type: Input Diagnostics

Version 1

Command Format:  
Display: <SOH>I407II  
Computer: <SOH>i407II

**Typical Response Message, Display Format:**

```
<SOH>
I407II
MAR 27, 1996  5:47 PM
```

INPUT DIAGNOSTIC REPORT

#	ADDRESS	STATUS	DURATION	TYPE
I 1	B1.S4.1	Active	0000 01:01:28	Standard
I 2	B1.S4.2	Inactive	0000 02:01:28	Standard

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i407IIYYMDDHHmmIINNaaa...
IINNaaa..Sdddddddf&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of characters in address (hex)
4. a - Address (len<200) (All ASCII 20h-7Eh)
5. S - Status  
0 - Inactive  
1 - Active
6. dddddddd - Duration
7. f - Type  
1=Standard  
2=Generator  
3=Pump Sense  
4=Standard ACK  
5=Vapor Processor (future)
8. && - Data Termination Flag
9. CCCC - Message Checksum

Function Code: 408  
Function Type: Relay Diagnostics

Version 1

Command Format:  
Display: <SOH>I408RR  
Computer: <SOH>i408RR

**Typical Response Message, Display Format:**

```
<SOH>
I408RR
MAR 27, 1996  5:47 PM
```

RELAY DIAGNOSTIC REPORT

#	ADDRESS	STATUS	DURATION	TYPE
R 1	B1.S4.1	Active	0000 01:01:28	Standard
R 2	B1.S4.2	Inactive	0000 02:01:28	Standard

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i408RRYYMMDDHHmmRRNNaaa...
RRNNaaa...Sdddddddf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. NN - Number of characters in address (hex)
4. a - Address (len<200) (All ASCII 20h-7Eh)
5. S - Status  
0 - Inactive  
1 - Active
6. dddddddd - Duration
7. f - Type  
1=Standard  
2=Momentary  
3=Pump Control Output  
4=Pump Comm Control  
5=Vapor Processor (future)
8. && - Data Termination Flag
9. CCCC - Message Checksum

## 7.3 SETUP FUNCTIONS & REPORTS

### 7.3.1 SYSTEM SETUP

**Function Code:** 501  
**Function Type:** Set Time of day

Version 1

**Command Format:**  
**Display:** <SOH>S50100YYMMDDHHmm  
**Computer:** <SOH>s50100YYMMDDHHmm

**Inquire:**  
<SOH>I50100  
<SOH>i50100

**Typical Response Message, Display Format:**

<SOH>  
I50100  
JAN 22, 1996 3:11 PM  
  
SYSTEM DATE AND TIME  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i50100YYMMDDHHmmYYMMDDHHmm&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 502**  
**Function Type:** Set Shift Close Time

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>
```

**Note:** All Shifts (SS=00) not available for Set or Inquiry Mode.

#### Typical Response Message, Computer Format:

```
<SOH>i502SSYYMMDDHHmmHHmm&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Shift 01-08
3. HHmm - Hour and Minute (EE00=Disabled)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 503**

Version 1

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

**Command Format:**

**Display:** <SOH>S503LLaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s503LLaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I503LL

<SOH>i503LL

**Typical Response Message, Display Format:**

<SOH>

I503LL

JAN 22, 1996 3:12 PM

# 1:STATION HEADER 1....

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i503LLYYMMDDHHmmaaaaaaaaaaaaaaaaaaaaa&&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-450 Monitoring Systems

---

**Function Code:** 50D

Version 1

**Function Type:** Set Print Temperature Compensation Flag

**Command Format:**

**Display:** <SOH>S50D00f

**Computer:** <SOH>s50D00f

**Inquire:**

<SOH>I50D00

<SOH>i50D00

**Typical Response Message, Display Format:**

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

PRINT TC VOLUMES  
ENABLED  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i50D00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 50E**

Version 1

**Function Type:** Set Temperature Compensation Value

**Command Format:**

**Display:** <SOH>S50E00DDD.hh

**Computer:** <SOH>s50E00FFFFFFFF

**Inquire:**

<SOH>I50E00

<SOH>i50E00

**Notes:**

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

**Typical Response Message, Display Format:**

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

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

**Typical Response Message, Computer Format:**

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

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 50G

Version 1

**Function Type:** Set Header - Fax Sender Name

**Command Format:**

**Display:** <SOH>S50G00aaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s50G00aaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I50G00

<SOH>i50G00

**Notes:** Enter ONLY S50G00 to remove Fax Sender Name

#### Typical Response Message, Display Format:

<SOH>  
I50G00  
JAN 22, 2008 3:12 PM

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

FAX SENDER NAME: Veeder-Root  
<ETX>

#### Typical Response Message, Computer Format:

<SOH>i50G00YYMMDDHHmmnnaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of characters in Fax Sender Name (00-30)
3. a - Fax Name (30 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 50H  
**Function Type:** Set Header - Fax Number

Version 1

**Command Format:**  
**Display:** <SOH>S50H00aaaa.....aaaa  
**Computer:** <SOH>s50H00aaaa.....aaaa

**Inquire:**  
<SOH>I50H00  
<SOH>i50H00

**Notes:** Enter ONLY S50H00 to remove Fax Number

#### Typical Response Message, Display Format:

```
<SOH>
I50H00
JAN 22, 2008  3:12 PM
```

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

```
FAX NUMBER:      1-888-561-7942
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i50H00YYMMDDHHmmNNaaaaaaaaaaaaaaaaaaaaCCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of digits in Fax Number(00-40)
3. a - Fax Number (40 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 50I**

Version 1

**Function Type:** Set Display Setup - Number Format

**Command Format:**

**Display:** <SOH>S50I00ab

**Computer:** <SOH>s50I00ab

**Inquire:**

<SOH>I50I00

<SOH>i50I00

**Typical Response Message, Display Format:**

<SOH>

I50I00

JAN 22, 2007 3:16 PM

DISPLAY SETUP - NUMBER FORMAT

Decimal Separator : ,

Thousands Separator: .

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i50I00YYMMDDHHmmab&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. a - Decimal Separator (decimal)
  - 1= ","
  - 2= "."
3. b - Thousands Separator (decimal)
  - 0= "None"
  - 1= ","
  - 2= "."
  - 3= "sp"
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 50J

Version 1

**Function Type:** Set Display Setup - Date & Time Format

**Command Format:**

**Display:** <SOH>S50J00FFc

**Computer:** <SOH>s50J00FFc

**Inquire:**

<SOH>I50J00FF

<SOH>i50J00FF

**Notes:**

1. FF - Field, 00=all Fields, but only valid for Inquiry  
01=Date Format  
02=Date Separator  
03=Time Format
2. c - Configuration (see entry based on field below)

**Typical Response Message, Display Format:**

<SOH>

I50J0000

JAN 22, 1996 3:06 PM

Display Setup - Date & Time Format

Field Name	Configuration
------------	---------------

Date Format	: mm_dd_yyyy
-------------	--------------

Date Separator	: /
----------------	-----

Time Format	: 12-hour xM
-------------	--------------

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i50J00YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration
  - If FF=01 (Date Format)  
0=mon\_dd\_yyyy  
1=yyyy\_mm\_dd  
2=mm\_dd\_yyyy  
3=dd\_mm\_yyyy
  - If FF=02 (Date Separator)  
0=-  
1=/  
2=.
  - If FF=03 (Time Format)  
0=24-hour  
1=12-hour xM
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 50K

Version 2

**Function Type:** Set Inventory Maximum Number of Shifts per Day

**Command Format:**

**Display:** <SOH>S50K00N

**Computer:** <SOH>s50K00N

**Inquire:**

<SOH>I50K00

<SOH>i50K00

**Typical Response Message, Display Format:**

<SOH>

I50K00

JAN 22, 2009 3:06 PM

INVENTORY MAXIMUM NUMBER OF SHIFTS PER DAY

MAX. NUMBER OF SHIFTS/DAY: 3

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i50K00YYMMDDHHmmNc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. N - Number of Shifts (Decimal, [min,max]=[1-8] default is 3)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 50L  
**Function Type:** Inventory Setup

Version 2

**Command Format:**

**Display:** <SOH>I50L00

**Computer:** not supported

**Typical Response Message, Display Format:**

```
<SOH>
I50L00
JAN 16, 2009  3:15 PM

INVENTORY SETUP - SHIFT CLOSE METHOD
CLOSE METHOD:      SNAPSHOT
CLOSE TIMEOUT:    30
NUMBER OF SHIFT PER DAY: 4

INVENTORY SETUP - SHIFT TIMES
SHIFT #1 OPENING TIME:  8:00 AM
SHIFT #2 OPENING TIME: 10:00 AM

INVENTORY SETUP - INVENTORY REPORT TIMES
INVENTORY LOG TIME:     12:00 AM
INVENTORY LOG INTERVAL: 2 Hour
STORAGE LENGTH:         2000
WEEK CLOSE DAY:         Sunday

<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 50M  
**Function Type:** Delivery Setup

Version 2

**Command Format:**

**Display:** <SOH>I50M00

**Computer:** not supported

**Typical Response Message, Display Format:**

<SOH>

I50M00

JAN 16, 2009 3:15 PM

DELIVERY SETUP

DELIVERY METHOD: STANDARD AUTOMATIC

TICKETED DELIVERY: ENABLED

TC TICKETED DELIVERY: TC VOLUME

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 50N  
**Function Type:** Reconciliation Setup

Version 2

**Command Format:**

**Display:** <SOH>I50N00

**Computer:** not supported

**Typical Response Message, Display Format:**

<SOH>  
I50N00  
JAN 16, 2009 3:15 PM

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

RECONCILIATION GENERAL SETUP  
PRODUCT THRESHOLD ALARM: ENABLED  
DAILY CLOSE TIME: 2:00 AM  
WEEK CLOSE DAY: SUNDAY  
ALARM THRESHOLD DELIVERY TYPE: STANDARD  
TEMPERATURE COMPENSATION: DISABLED  
METER CALIBRATION OFFSET%: 0.25  
BIR STATUS WARNING ENABLE: DISABLED  
BIR DAILY CLOSE WARNING ENABLE: DISABLED  
BIR SHIFT CLOSE WARNING ENABLE: DISABLED

RECONCILIATION THRESHOLD ALARMS					
TEST NUMBER	TEST TYPE	THRESHOLD TYPE	CONFIG	PERCENT	OFFSET VALUE
-----	-----	-----	-----	-----	-----
1	MONTHLY	1-THROUGHPUT	ENABLED	1.00	130
		2-CAPACITY	DISABLED	1.00	110
		3-DELIVERY	ENABLED	1.00	100
		4-FIXED	DISABLED		
2	ROLLING DAY	1-THROUGHPUT	ENABLED	1.00	99
		2-CAPACITY	ENABLED	1.00	50
		3-DELIVERY	ENABLED	1.00	75
		4-FIXED ENABLE		1500	
3	DISABLED				
4	DISABLED				

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

Function Code 50N: (Continued)

#### BIR MULTIPLE THRESHOLD SETUP REPORT

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	CONFIG	PERCENT	OFFSET VALUE
1	Monthly	1-Throughput	Enabled	1.00	130
		2-Capacity	Disabled	1.00	130
		3-Delivery	Disabled	1.00	130
		4-Fixed	Disabled		130
2	Disabled	1-Throughput	Disabled	1.00	130
		2-Capacity	Disabled	1.00	130
		3-Delivery	Disabled	1.00	130
		4-Fixed	Disabled		130
3	Disabled	1-Throughput	Disabled	1.00	130
		2-Capacity	Disabled	1.00	130
		3-Delivery	Disabled	1.00	130
		4-Fixed	Disabled		130
4	Disabled	1-Throughput	Disabled	1.00	130
		2-Capacity	Disabled	1.00	130
		3-Delivery	Disabled	1.00	130
		4-Fixed	Disabled		130

#### TANK THRESHOLD ALARMS

TANK	THRESHOLD
------	-----------

1	1.00%
---	-------

2	1.00%
---	-------

3	1.00%
---	-------

<ETX>



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 511**

Version 2

**Function Type:** Set BIR Shift Close Warning

**Command Format:**

**Display:** <SOH>S51100f

**Computer:** <SOH>s51100f

**Inquire:**

<SOH>I51100

<SOH>i51100

**Typical Response Message, Display Format:**

<SOH>

I51100

JAN 22, 2009 3:06 PM

BIR SHIFT CLOSE PENDING

ENABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51100YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 512  
**Function Type:** Set BIR Daily Close Warning

Version 2

**Command Format:**  
**Display:** <SOH>S51200f  
**Computer:** <SOH>s51200f

**Inquire:**  
<SOH>I51200  
<SOH>i51200

#### Typical Response Message, Display Format:

<SOH>  
I51200  
JAN 22, 2009 3:06 PM  
  
BIR DAILY CLOSE PENDING  
ENABLED  
<ETX>

#### Typical Response Message, Computer Format:

<SOH>i51200YYMMDDHHmmf&&CCCC<ETX>

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 514**

Version 1

**Function Type:** Set H-Protocol Height/Volume Format

**Command Format:**

**Display:** <SOH>S51400f

**Computer:** <SOH>s51400f

**Inquire:**

<SOH>I51400

<SOH>i51400

**Typical Response Message, Display Format:**

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

H-PROTOCOL DATA FORMAT  
HEIGHT  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51400YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 517**

Version 1

**Function Type:** Set System Type & Language Flags

**Command Format:**

**Display:** <SOH>S51700ULL

**Computer:** <SOH>s51700ULL

**Inquire:**

<SOH>I51700

<SOH>i51700

#### Typical Response Message, Display Format:

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

DISPLAY SETUP - LANGUAGE & UNITS

```
SYSTEM LANGUAGE ENGLISH
SYSTEM UNITS      US
<ETX>
```

#### Typical Response Message, Computer Format:

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

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. U - System Units:
  - 1=U.S.
  - 2=Metric
  - 3=Imperial Gallons (V2)
3. LL - System Language:
  - 01=English
  - 02=French
  - 03=Spanish
  - 04=German (V2)
  - 05=Portuguese (Unsupported in 450 Version 1)
  - 06=Polish (Unsupported in 450 Version 1)
  - 07=Swedish (Unsupported in 450 Version 1)
  - 08=Japanese (Unsupported in 450 Version 1)
  - 09=Finnish (Unsupported in 450 Version 1)
  - 10=Greek (Unsupported in 450 Version 1)
  - 11=Russian (V2)
  - 12=Turkish (Unsupported in 450 Version 1)
  - 13=Dutch (Unsupported in 450 Version 1)
  - 14=Italian (Unsupported in 450 Version 1)
  - 15=Chinese (V2)
  - 16=Arabic (V2)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 519**

Version 1

**Function Type:** Set PLLD Duration Before Precision Retest

**Command Format:**

**Display:** <SOH>S51900DDD

**Computer:** <SOH>s51900DDD

**Inquire:**

<SOH>I51900

<SOH>i51900

**Typical Response Message, Display Format:**

<SOH>

I51900

JUL 29, 1997 9:04 AM

PRECISION TEST DURATION

HOURS: 12

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51900YYMMDDHHmmDDD&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 51A**

Version 1

**Function Type:** Set Enable/Disable Auto Daylight Saving Time

**Command Format:**

**Display:** <SOH>S51A00f

**Computer:** <SOH>s51A00f

**Inquire:**

<SOH>I51A00

<SOH>i51A00

**Typical Response Message, Display Format:**

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

DAYLIGHT SAVING TIME  
ENABLED ON  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51A00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 51B**

Version 1

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

**Command Format:**

**Display:** <SOH>S51BttMMODHHmm

**Computer:** <SOH>s51BttMMODHHmm

**Inquire:**

<SOH>I51Btt

<SOH>i51Btt

**Notes:**

1. tt - Start or End Time Indicator  
01=Start Date & Time  
02=End Date & Time
2. Display format returns both Start and End Date/Time
3. Computer Format only returns either Start or End Date/Time

**Typical Response Message, Display Format:**

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

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

**Typical Response Message, Computer Format:**

```
<SOH>i51B00YYMMDDHHmmttMMODHHmm&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. tt - Start or End Time Indicator  
01=Start Date & Time  
02=End Date & Time
3. MMODHHmm - Date & Time  
MM=Month (01-12)  
O=Occurrence of Week-day in Month (1-5)  
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-450 Monitoring Systems

---

**Function Code:** 51C

Version 2

**Function Type:** Set Ticketed Delivery Flag Enable

**Command Format:**

**Display:** <SOH>S51C00f

**Computer:** <SOH>s51C00f

**Inquire:**

<SOH>I51C00

<SOH>i51C00

**Typical Response Message, Display Format:**

<SOH>  
I51C00  
JUL 29, 2009 9:04 AM

TICKETED DELIVERY  
ENABLED  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51C00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 51D

Version 2

**Function Type:** Set Ticketed Delivery Temperature Compensation Flag

**Command Format:**

**Display:** <SOH>S51D00f

**Computer:** <SOH>s51D00f

**Inquire:**

<SOH>I51D00

<SOH>i51D00

**Typical Response Message, Display Format:**

<SOH>

I51D00

JUL 29, 2009 9:04 AM

TICKETED DELIVERY TEMP COMPENSATION

STANDARD

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51D00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

**Function Code: 51E**

Version 2

**Function Type:** Set Ticketed Delivery Close Day of Week

**Command Format:**

**Display:** <SOH>S51E00D

**Computer:** <SOH>s51E00D

**Inquire:**

<SOH>I51E00

<SOH>i51E00

**Typical Response Message, Display Format:**

<SOH>  
I51E00  
AUG 28, 2009 4:29 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

**Function Code: 51F**  
**Function Type:** Set Euro Protocol Prefix

Version 1

**Command Format:**  
**Display:** <SOH>S51F00c  
**Computer:** <SOH>s51F00c

**Inquire:**  
<SOH>I51F00  
<SOH>i51F00

**Typical Response Message, Display Format:**

<SOH>  
I51F00  
AUG 28, 2009 4:29 PM  
  
EURO PROTOCOL PREFIX  
S  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51F00YYMMDDHHmmc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. c - Prefix Character (invalid choice will be default to 'S')  
0 = 'S'  
1 = 'd'
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 51G

Version 1

**Function Type:** Set Enable/Disable Custom Help View and Custom Help Edit.

**Command Format:**

**Display:** <SOH>S51G00ve

**Computer:** <SOH>s51G00ve

**Inquire:**

<SOH>I51G00

<SOH>i51G00

#### Typical Response Message, Display Format:

```
<SOH>
I51G00
JUN 22, 2001  3:15 PM

CUSTOM HELP VIEW AND EDIT

VIEW:ENABLED
EDIT:ENABLED
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i51G00YYMMDDHHmmve&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. v - Custom Help View Flag  
0=Disabled  
1=Enabled
3. e - Custom Help Edit Flag  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 51H  
**Function Type:** Set Front Panel Security  
**Command Format:**  
    **Display:** <SOH>S51H00faaaaaaaaaa  
    **Computer:** <SOH>s51H00faaaaaaaaaa

Version 1

**Inquire:**  
<SOH>I51H00  
<SOH>i51H00

**Notes:**

1. f - Enable or Disable Status (if disabled no password is required)
2. aaaaaaaaaa - Password (3 to 10 ASCII Characters from 21h - 7Eh)

**Typical Response Message, Display Format:**

```
<SOH>
I51H00
JUN 22, 2001  3:15 PM

Security - System Security

Field Name           Configuration
Front Panel Security : Enabled
Password             : *****
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i51H00YYMMDDHHmmfaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Front Panel Security Flag  
    0=Disabled  
    1=Enabled
3. nn - Length of Password (decimal)
4. aaaaaaaaaa - Password (3 to 10 ASCII Characters from 21h - 7Eh)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 51M  
**Function Type:** Set Delivery Method

Version 2

**Command Format:**  
**Display:** <SOH>S51M00T  
**Computer:** <SOH>s51M00T

**Inquire:**  
<SOH>I51M00  
<SOH>i51M00

#### Typical Response Message, Display Format:

```
<SOH>
I51M00
JUN 22, 2009  3:12 PM
```

```
DELIVERY METHOD
STANDARD AUTOMATIC
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i51M00YYMMDDHHmmT&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. T - Delivery Method Type  
0=Standard Automatic  
1=Manual  
2=Automatic Quiet Period Warning
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 571  
**Function Type:** Enable User Ullage

Version 1

**Command Format:**  
**Display:** <SOH>S57100e  
**Computer:** <SOH>s57100e

**Inquire:**  
<SOH>I57100  
<SOH>i57100

#### Typical Response Message, Display Format:

<SOH>  
I57100  
JUN 22, 2008 3:15 PM

USER ULLAGE: ENABLED  
<ETX>

#### Typical Response Message, Computer Format:

<SOH>i57100YYMMDDHHmme&&CCCC<ETX>

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 572**  
**Function Type:** Set User Ullage Percent

Version 1

**Command Format:**  
**Display:** <SOH>S57200fff  
**Computer:** <SOH>s57200fff

**Inquire:**  
<SOH>I57200  
<SOH>i57200

**Note:** Valid Ullage Percent Range (Integer), 90-100%

#### Typical Response Message, Display Format:

```
<SOH>
I57200
JUN 22, 2008  3:15 PM
```

```
USER ULLAGE: 90%
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i57200YYMMDDHHmmfff&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. fff - Ullage Percent (Integer)
3. && - Data Termination Flag
4. CCCC - Message Checksum



## 7.3.2 COMMUNICATIONS SETUP

**Function Code:** 521 (Obsolete V2 - See New Command 872)  
**Function Type:** Set Receiver Configuration Flag

Version 1

**Command Format:**  
**Display:** <SOH>S521RRf  
**Computer:** <SOH>s521RRf

**Inquire:**  
<SOH>I521RR  
<SOH>i521RR

### Typical Response Message, Display Format:

```
<SOH>
S521RR
MAR 29, 1996  6:27 PM

RECEIVER CONFIGURATION

DEVICE LABEL          CONFIGURED
  1  HOME OFFICE      ON
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i521RRYYMMDDHHmmRRf...
                      RRf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. f - Receiver Configuration Flag:  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 522 (Obsolete V2 - See New Command 874)  
**Function Type:** Set Receiver Location Label

Version 1

**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-450 Monitoring Systems

---

**Function Code:** 52D  
**Function Type:** Autodial Alarm Status

Version 1

**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
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i52D00YYMMDDHHmmNNf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of receiver alarm flags to follow
3. f - Alarm flags  
0=clear  
1=alarm
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 52G  
**Function Type:** COMM DIM Setup

Version 2

**Command Format:**  
**Display:** <SOH>I52GDD  
**Computer:** not supported

**Notes:**

1. DD - COMM number (00=all)

**Typical Response Message, Display Format:**

```
<SOH>
I52GDD
JAN 16, 2009 8:06 AM

GENERAL COMM SETUP
COMM 1:
  CONFIGURED:          ENABLED
  SLOT:                1
  PORT:                1
  DEVICE:              EDIM CARD
  LABEL:               EDIM 1
  DIM PROTOCOL:        VRPROTOCOLDIM
  BAUD RATE:           9600
  DATA BITS:          7
  PARITY:              ODD
  STOP BITS:           1
  HAND_SHAKING:        NO HANDSHAKING

PROTOCOL COMM SETUP
COMM 1:
  UNIT REPORTED:       GALLONS
  COLLECT CUMMULATIVE TOTALS: YES
  TRANSACTION PRECISION: THOUSANDS
  CUMULATIVE PRECISION: THOUSANDS
  BLENDER ONLY SITE:   NO
  USE PLUS ONE ALGORITHM: NO
  REPORT TANK VOLUMES: NO
  SUPPRESS COMM ALARM: NO

ADVANCE COMM SETUP
COMM 1:
  COMM PORT SECURITY:   DISABLED
  SECURITY CODE:        000000

GENERAL COMM SETUP
COMM 2:
  CONFIGURED:          DISABLED
  SLOT:                NONE
  PORT:                NONE
  DEVICE:              NONE
  LABEL:               NONE
  DIM PROTOCOL:        UNKNOWN
  BAUD RATE:           9600
  DATA BITS:          7
  PARITY:              ODD
  STOP BITS:           1
  HAND_SHAKING:        NO HANDSHAKING

<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 52H  
**Function Type:** Set Comm DIM Protocol

Version 2

**Command Format:**  
**Display:** <SOH>S52HPPdd  
**Computer:** <SOH>s52HPPdd

**Inquire:**  
<SOH>I52HPP  
<SOH>i52HPP

#### Notes:

1. PP - Communication Port Number
2. dd - DIM Protocol
  - 00=Unknown DIM
  - 01=Gilbarco EDIM (V2)
  - 02=Gilbarco CL (V2)
  - 03=Tokheim 67AB
  - 04=Tokheim DHC
  - 05=Wayne CL (V2)
  - 06=Schumberger
  - 07=Schumberger SAM
  - 08=Gasboy RS-422
  - 09=Gasboy CFN
  - 10=VR Protocol DIM (V2)
  - 11=Mechanical (V2)
  - 12=Low Volt Mechanical (V2)
  - 13=Wayne ID POS
  - 14=Smart Crind
  - 15=Tominaga
  - 16=Bennett
  - 17=UK Block
  - 18=Scheidt Bach

#### Typical Response Message, Display Format:

```
<SOH>
I52H00
JAN 22, 2009  3:12 PM

DIM PROTOCOL

COMM   LOCATION   PROTOCOL
  1    OFFICE     Veeder-Root
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 52H:** (Continued)

**Typical Response Message, Computer Format:**

<SOH>i52HPPYYMMDDHHmmPPdd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. dd - DIM Protocol
  - 00=Unknown DIM
  - 01=Gilbarco EDIM (V2)
  - 02=Gilbarco CL (V2)
  - 03=Tokheim 67AB
  - 04=Tokheim DHC
  - 05=Wayne CL (V2)
  - 06=Schumberger
  - 07=Schumberger SAM
  - 08=Gasboy RS-422
  - 09=Gasboy CFN
  - 10=VR Protocol DIM (V2)
  - 11=Mechanical (V2)
  - 12=Low Volt Mechanical (V2)
  - 13=Wayne ID POS
  - 14=Smart Crind
  - 15=Tominaga
  - 16=Bennett
  - 17=UK Block
  - 18=Scheidt Bach
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 530  
**Function Type:** Beeper Enable/Disable

Version 1

**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-450 Monitoring Systems

---

**Function Code:** 531  
**Function Type:** Set RS-232 End of Message

Version 1

**Command Format:**  
**Display:** <SOH>S531PPf  
**Computer:** <SOH>s531PPf

**Inquire:**  
<SOH>I53PP  
<SOH>i531PP

#### Typical Response Message, Display Format:

```
<SOH>
I531PP
JAN 22, 1996   3:16 PM

RS-232 END OF MESSAGE

COMM      LABEL      END OF MESSAGE
1                      DISABLED
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i53100YYMMDDHHmmPPf...
                                PPf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - COMM Number (Decimal, 00=all)
3. f - End of Message flag  
0=Disable  
1=Enable
4. && - Data Termination Flag
5. CCCC - Message Checksum



### 7.3.3 WARNING, ALARM, & AUTO-PRINT SETUP

**Function Code:** 536

Version 1

**Function Type:** Set RS-232 Security Code per Port

**Command Format:**

**Display:** <SOH>S536PPsaaaaaa

**Computer:** <SOH>s536PPsaaaaaa

**Inquire:**

<SOH>I536PP

<SOH>i536PP

**Notes:**

1. PP - Port number (Decimal, 01..03 [..06]; 99=this port)
2. s - Enable or Disable Status (if disabled no password is required)
3. aaaaaa - Security code (6 ASCII characters from 20 Hex-7E Hex)

**Typical Response Message, Display Format:**

```
<SOH>
I536PP
JUN  1, 2009  8:05 AM

232 SECURITY CODE

PORT  SECURITY CODE  STATUS
1      123456      ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i536PPYYMMDDHHmmsaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. s - disabled or enabled status
3. aaaaaa - Security code (6 ASCII characters from 20 Hex-7E Hex)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 537**

Version 1

**Function Type:** Set Display Format RS-232 ETX per Port

**Command Format:**

**Display:** <SOH>S537PPAB

**Computer:** <SOH>s537PPAB

**Inquire:**

<SOH>I537PP

<SOH>i537PP

#### Notes:

1. PP - Port number (Decimal, 01..06]; 99=this port)
2. A - ETX CHAR 1 (value 0-255)
3. B - ETX CHAR 2 (value 0-255)
4. The default end of message character transmitted by the TLS is an <ETX> (Decimal 003 or ^C). If desired, the TLS can be programmed to transmit up to two other characters at the end of each computer format response message.
5. The TLS accepts any ASCII character (000-255) in either of the two positions. However, if the first "A" character is a <NUL> (000), the TLS reverts to its default condition. If the first character "A", is not a NULL but the second character "B" is, only the first character is transmitted as the response message. If neither character is a <NUL>, both characters are transmitted, in sequence, at the end of each computer format response message.
6. This command only sets the ETX characters. To enable the use of the custom ETX, the 531 command must be used to enable the user's custom ETX.

#### Typical Response Message, Display Format:

For printable ASCII characters

```
<SOH>
I537PP
JUN  1, 2000  8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT      ETX      ETX
  1         C        D
<ETX>
```

For non-printable ASCII characters

```
<SOH>
I537PP
JUN  1, 2000  8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT      ETX      ETX
  1       0xCC    0xDD
<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-450 Monitoring Systems

---

**Function Code: 538**

Version 1

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

**Command Format:**

**Display:** <SOH>S538PPAB

**Computer:** <SOH>s538PPAB

**Inquire:**

<SOH>I538PP

<SOH>i538PP

#### Notes:

1. PP - Port number (Decimal, 01..06]; 99=this port)
2. A - ETX CHAR 1 (value 0-255)
3. B - ETX CHAR 2 (value 0-255)
4. The default end of message character transmitted by the TLS is an <ETX> (Decimal 003 or ^C). If desired, the TLS can be programmed to transmit up to two other characters at the end of each computer format response message.
5. The TLS accepts any ASCII character (000-255) in either of the two positions. However, if the first "A" character is a <NUL> (000), the TLS reverts to its default condition. If the first character "A", is not a NULL but the second character "B" is, only the first character is transmitted as the response message. If neither character is a <NUL>, both characters are transmitted, in sequence, at the end of each computer format response message.
6. This command only sets the ETX characters. To enable the use of the custom ETX, the 531 command must be used to enable the user's custom ETX.

#### Typical Response Message, Display Format:

For printable ASCII characters

```
<SOH>
I538PP
JUN  1, 2000  8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT      ETX      ETX
  1         C        D
<ETX>
```

For non-printable ASCII characters

```
<SOH>
I538PP
JUN  1, 2000  8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT      ETX      ETX
  1      0xCC    0xDD
<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-450 Monitoring Systems

---

**Function Code:** 53A  
**Function Type:** Set Shift Close Method

Version 2

**Command Format:**  
**Display:** <SOH>S53A00M  
**Computer:** <SOH>s53A00M

**Inquire:**  
<SOH>I53A00  
<SOH>i53A00

#### Typical Response Message, Display Format:

```
<SOH>
I53A00
JUN  1, 2009  8:06 AM

SHIFT CLOSE METHOD:  MANUAL
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i53A00YYMMDDHHmmM&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. M - Shift Close Method (Decimal)  
0 = TIMED  
1 = MANUAL
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 545  
**Function Type:** Set TC Density Enable

Version 3

**Command Format:**  
**Display:** <SOH>S54500f  
**Computer:** <SOH>s54500f

**Inquire:**  
<SOH>I54500  
<SOH>i54500

#### Typical Response Message, Display Format:

```
<SOH>
I54500
JUN  1, 2010  8:06 AM

TC DENSITY
ENABLED
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i54500YYMMDDHHmmf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - TC Density Enable Flag (Decimal)  
0 = Disabled  
1 = Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 546**

Version 1

**Function Type:** Set Tank Periodic Test Needed Warning

**Command Format:**

**Display:** <SOH>S54600f

**Computer:** <SOH>s54600f

**Inquire:**

<SOH>I54600

<SOH>i54600

**Typical Response Message, Display Format:**

<SOH>

I54600

JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED WRN: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54600YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 547**

Version 1

**Function Type:** Set Days Before Tank Periodic Test Needed Warning

**Command Format:**

**Display:** <SOH>S54700dd

**Computer:** <SOH>s54700dd

**Inquire:**

<SOH>I54700

<SOH>i54700

**Typical Response Message, Display Format:**

<SOH>

I54700

JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED WRN: DAYS= 25

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54700YYMMDDHHmmdd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Tank Periodic Test Needed Warn (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 548**

Version 1

**Function Type:** Set Days Before Tank Periodic Test Needed Alarm

**Command Format:**

**Display:** <SOH>S54800dd

**Computer:** <SOH>s54800dd

**Inquire:**

<SOH>I54800

<SOH>i54800

**Typical Response Message, Display Format:**

<SOH>  
I54800  
JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED ALM: DAYS= 30  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54800YYMMDDHHmmdd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Tank Periodic Test Needed Alarm (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 549**

Version 1

**Function Type:** Set Tank Annual Test Needed Warning

**Command Format:**

**Display:** <SOH>S54900f

**Computer:** <SOH>s54900f

**Inquire:**

<SOH>I54900

<SOH>i54900

**Typical Response Message, Display Format:**

<SOH>

I54900

JAN 22, 1996 3:12 PM

TANK ANN TEST NEEDED WRN: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54900YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 54A**

Version 1

**Function Type:** Set Days Before Tank Annual Test Needed Warning

**Command Format:**

**Display:** <SOH>S54A00ddd

**Computer:** <SOH>s54A00ddd

**Inquire:**

<SOH>I54A00

<SOH>i54A00

**Typical Response Message, Display Format:**

<SOH>  
I54A00  
JAN 22, 1996 3:12 PM

TANK ANN TST NEEDED WRN: DAYS=355  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54A00YYMMDDHHmmddd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Warning (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 54B**

Version 1

**Function Type:** Set Days Before Tank Annual Test Needed Alarm

**Command Format:**

**Display:** <SOH>S54B00ddd

**Computer:** <SOH>s54B00ddd

**Inquire:**

<SOH>I54B00

<SOH>i54B00

**Typical Response Message, Display Format:**

<SOH>

I54B00

JAN 22, 1996 3:12 PM

TANK ANN TEST NEEDED ALM: DAYS=365

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54B00YYMMDDHHmmddd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before annual Test Needed Alarm (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 54C

Version 1

**Function Type:** Set CSLD Evaporation Reid Vapor Pressure Chart

**Command Format:**

**Display:** <SOH>S54C00GG.G...

**Computer:** <SOH>s54C00FFFFFFFFF...

**Inquire:**

<SOH>I54C00

<SOH>i54C00

**Notes:**

1. GG.G - 12 Reid Vapor Pressures (Decimal)
2. FFFFFFFF - 12 Reid Vapor Pressures (ASCII Hex IEEE floats)
3. The command will be rejected if any value is outside the range 0.0 to 15.0, or all table values are zero.

**Typical Response Message, Display Format:**

```
<SOH>
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-450 Monitoring Systems

---

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

Version 1

**Command Format:**  
**Display:** <SOH>S55300f  
**Computer:** <SOH>s55300f

**Inquire:**  
<SOH>I55300  
<SOH>i55300

#### Typical Response Message, Display Format:

```
<SOH>
I55300
JAN 24, 2000  2:54 PM

LINE RE-ENABLE METHOD
PASS LINE TEST
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i55300YYMMDDHHmmf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Line Re-Enable Method Flag  
0=Pass Line Test  
1=Alarm Acknowledge
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 554**

Version 1

**Function Type:** Set Periodic Line Leak Test Auto-Confirm

**Command Format:**

**Display:** <SOH>S55400f

**Computer:** <SOH>s55400f

**Inquire:**

<SOH>I55400

<SOH>i55400

**Typical Response Message, Display Format:**

<SOH>

I55400

JUL 29, 1997 9:07 AM

0.20 GPH LINE TEST AUTO-CONFIRM: ENABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55400YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 555**

Version 1

**Function Type:** Set Annual Line Leak Test Auto-Confirm

**Command Format:**

**Display:** <SOH>S55500f

**Computer:** <SOH>s55500f

**Inquire:**

<SOH>I55500

<SOH>i55500

**Typical Response Message, Display Format:**

<SOH>

I55500

JUL 29, 1997 9:07 AM

0.10 GPH LINE TEST AUTO-CONFIRM: ENABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55500YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 556**

Version 1

**Function Type:** Set Line Periodic Test Needed Warning

**Command Format:**

**Display:** <SOH>S55600f

**Computer:** <SOH>s55600f

**Inquire:**

<SOH>I55600

<SOH>i55600

**Typical Response Message, Display Format:**

<SOH>

I55600

JAN 22, 1996 3:12 PM

LINE PER TST NEEDED WRN: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55600YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 557**

Version 1

**Function Type:** Set Days Before Line Periodic Test Needed Warning

**Command Format:**

**Display:** <SOH>S55700dd

**Computer:** <SOH>s55700dd

**Inquire:**

<SOH>I55700

<SOH>i55700

**Typical Response Message, Display Format:**

<SOH>

I55700

JAN 22, 1996 3:12 PM

LINE PER TST NEEDED WRN: DAYS= 25

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55700YYMMDDHHmmdd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Periodic Test Needed Warning (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 558**

Version 1

**Function Type:** Set Days Before Line Periodic Test Needed Alarm

**Command Format:**

**Display:** <SOH>S55800dd

**Computer:** <SOH>s55800dd

**Inquire:**

<SOH>I55800

<SOH>i55800

**Typical Response Message, Display Format:**

<SOH>  
I55800  
JAN 22, 1996 3:12 PM

LINE PER TST NEEDED ALM: DAYS= 30  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55800YYMMDDHHmmdd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Periodic Test Needed Alarm (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 559**

Version 1

**Function Type:** Set Line Annual Test Needed Warning

**Command Format:**

**Display:** <SOH>S55900f

**Computer:** <SOH>s55900f

**Inquire:**

<SOH>I55900

<SOH>i55900

**Typical Response Message, Display Format:**

<SOH>

I55900

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED WRN: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55900YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 55A**

Version 1

**Function Type:** Set Days Before Line Annual Test Needed Warning

**Command Format:**

**Display:** <SOH>S55A00ddd

**Computer:** <SOH>s55A00ddd

**Inquire:**

<SOH>I55A00

<SOH>i55A00

**Typical Response Message, Display Format:**

<SOH>

I55A00

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED WRN: DAYS=355

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55A00YYMMDDHHmmddd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Warning (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 55B**

Version 1

**Function Type:** Set Days Before Line Annual Test Needed Alarm

**Command Format:**

**Display:** <SOH>S55B00ddd

**Computer:** <SOH>s55B00ddd

**Inquire:**

<SOH>I55B00

<SOH>i55B00

**Typical Response Message, Display Format:**

<SOH>

I55B00

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED ALM: DAYS=365

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55B00YYMMDDHHmmddd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Alarm (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 564  
**Function Type:** Set Ullage

Version 1

**Command Format:**  
**Display:** <SOH>S56400f  
**Computer:** <SOH>s56400f

**Inquire:**  
<SOH>I56400  
<SOH>i56400

#### Typical Response Message, Display Format:

```
<SOH>
I56400
JUN 22, 2006  3:15 PM

ULLAGE: 90%
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i56400YYMMDDHHmmf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Ullage  
0=90%  
1=95%  
2=Custom (see 572)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 56E**

Version 2

**Function Type:** Set Manual Close Timeout in Minutes

**Command Format:**

**Display:** <SOH>S56E00NN

**Computer:** <SOH>s56E00NN

**Inquire:**

<SOH>I56E00

<SOH>i56E00

**Typical Response Message, Display Format:**

<SOH>

I56E00

JUN 22, 2009 3:15 PM

MANUAL CLOSE TIMEOUT: 30

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i56E00YYMMDDHHmmNN&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Minutes (Decimal, [min,max] = [30(default),60]
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 573**

Version 1

**Function Type:** Set Inventory Report Close Type & Time

**Command Format:**

**Display:** <SOH>S57300T[hhmm]

**Computer:** <SOH>s57300T[hhmm]

**Inquire:**

<SOH>I57300

<SOH>i57300

**Notes:**

1. T - Report Close Type
  - 0 = Disabled
  - 1 = Daily (hh=hour 0-23, mm=minute 0-59)
  - 2 = Hourly (hh=interval hours 1-24, mm=minutes past hour 0-59)
  - 3 = Shift Close
  - 4 = Day Close (BIR must be enabled)

**Typical Response Message, Display Format:**

```
<SOH>
I57300
JUN 22, 2006  3:15 PM

INVENTORY REPORT CLOSE

TYPE      TIME
-----
DAILY     02:00
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i57300YYMMDDHHmmThhmm&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. T - Report Close Type
  - 0=Disabled
  - 1=Daily (hh=hour 0-23, mm=minute 0-59)
  - 2=Hourly (hh=interval hours 1-24, mm=minutes past hour 0-59)
  - 3=Shift Close
  - 4=Day Close (BIR must be enabled)
3. hh - hour of day 0-23, or interval 1-24
4. mm - minutes 0-59
5. && - Data Termination Flag
6. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 577**

Version 2

**Function Type:** Set Inventory Close Start Time

**Command Format:**

**Display:** <SOH>S57700hhmm

**Computer:** <SOH>s57700hhmm

**Inquire:**

<SOH>I57700

<SOH>i57700

**Typical Response Message, Display Format:**

<SOH>

I57700

JUN 22, 2009 3:15 PM

INVENTORY LOG TIME : 12:00

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i57700YYMMDDHHmmhhmm&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. hhmm - Start Time to Record Inventory [0000-2359] where  
0000=midnight (Decimal)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 578**

Version 2

**Function Type:** Set Inventory Reporting Interval

**Command Format:**

**Display:** <SOH>S57800rr

**Computer:** <SOH>s57800rr

**Inquire:**

<SOH>I57800

<SOH>i57800

**Typical Response Message, Display Format:**

<SOH>

I57800

JAN 22, 2009 3:16 PM

INVENTORY LOG INTERVAL : 1 Hour

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i57800YYMMDDHHmmrr&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. rr - Repeat Time to Record Inventory (Decimal)
  - 0=5 Minutes
  - 1=10 Minutes
  - 2=15 Minutes
  - 3=20 Minutes
  - 4=30 Minutes
  - 5=1 hour
  - 6=2 hours
  - 7=3 hours
  - 8=4 hours
  - 9=6 hours
  - 10=8 hours
  - 11=12 hours
  - 12=24 hours
  - 99=Disabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 579**

Version 2

**Function Type:** Get Inventory Storage Length

**Command Format:**

**Display:** <SOH>I57900

**Computer:** <SOH>i57900

**Typical Response Message, Display Format:**

<SOH>

I57900

JAN 22, 2009 3:16 PM

INVENTORY STORAGE LENGTH: 2000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i57900YYMMDDHHmmFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Inventory Storage Length (ASCII Hex IEEE integer)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5BD

Version 1

**Function Type:** Set Enable/Disable Custom Alarms

**Command Format:**

**Display:** <SOH>S5BD00f

**Computer:** <SOH>s5BD00f

**Inquire:**

<SOH>I5BD00

<SOH>i5BD00

**Typical Response Message, Display Format:**

<SOH>  
I5BD00  
JUN 22, 2001 3:15 PM

CUSTOM ALARM LABELS  
ENABLED  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i5BD00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5BF

Version 1

**Function Type:** Set Custom Alarm Label, device number, and indications

**Command Format:**

**Display:** <SOH>S5BF00AANNTTflpbdaaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s5BF00AANNTTflpbdaaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I5BF00

<SOH>i5BF00

#### Notes:

1. AA - Alarm/Warning Category:  
See explanation for "AA" in Function i10100
2. NN - Alarm Type Number:  
See explanation for "NN" in Function i10100
3. TT - Device (or Tank) Number (Decimal, 00=all)
4. f - Custom Alarm Flag  
0=Disabled  
1=Enabled  
**Note:** This flag is ignored in TLS-450. Custom Alarm setting at alarm level is unsupported. This feature is supported at system level only. (by using 5BD command)
5. l - LCD Indication Flag  
In TLS-350:  
0=Disabled  
1=Enabled  
In TLS-450: (*future*)  
0=None  
1=Yellow  
2=Red  
**Note:** TLS-450: Version 01 supports this setting as in TLS-350 only; i.e. 0=Disabled 1=Enabled.
6. p - PRINTOUT Indication Flag  
In TLS-350:  
0=Disabled  
1=Enabled  
In TLS-450:  
**PRINTOUT flag is ignored.**  
(In TLS-450, the alarm-print assignment will be part of Automatic Events Setup - See 5P1, 5P4 & 5P6)
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-450 Monitoring Systems

---

**Function Code 5BF Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i5BF00YYMMDDHHmmnnAANNTTlpbdaaaaaaaaaaaaaaaaaaaaa...  
AANNTTlpbdaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Custom Alarms to follow (Hex)
3. AA - Alarm/Warning Category:  
See explanation for "AA" in Function i10100
4. NN - Alarm Type Number:  
See explanation for "NN" in Function i10100
5. TT - Device (or Tank) Number (Decimal, 00=all)
6. l - LCD Indication Flag  
0=Disabled  
1=Enabled
7. p - PRINTOUT Indication Flag  
0=Disabled  
1=Enabled
8. b - BEEP Indication Flag  
0=Disabled  
1=Enabled
9. d - LED Indication Flag  
0=Disabled  
1=Enabled
10. a - Custom Alarm Label (19 ASCII characters [20h-7Eh])
11. && - Data Termination Flag
12. CCCC - Message Checksum

### 7.3.4. ADDRESS BOOK SETUP

**Function Code:** 5G1  
**Function Type:** Add Contact

Version 1

**Command Format:**  
**Display:** <SOH>S5G100aaa.....aaa  
**Computer:** <SOH>s5G100aaa.....aaa

**Inquire:**  
<SOH>I5G1RR  
<SOH>i5G1RR

**Typical Response Message, Display Format:**

```
<SOH>
I5G1RR
JUL 26, 2007  1:36 PM

CONTACT NAME

CONTACT#  NAME
1      Mrs. Lozier
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i5G1RRYYMMDDHHmmRRnnaaa...aaa ...
RRnnaaa...aaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaa.....aaa - Contact Name (Max. 30 ASCII characters [20h-7Eh])
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5G2  
**Function Type:** Delete Contact

Version 1

**Command Format:**  
**Display:** <SOH>S5G2RR  
**Computer:** <SOH>s5G2RR

**Inquire:**  
<SOH>I5G2RR  
<SOH>i5G2RR

#### Typical Response Message, Display Format:

<SOH>  
I5G2RR  
JUL 26, 2007 1:36 PM

DELETE CONTACT

CONTACT#	NAME	DELETE STATUS
5	Mrs. Lozier	SUCCESS

<ETX>

-OR-

<SOH>  
I5G2RR  
JUL 26, 2007 1:36 PM

DELETE CONTACT

CONTACT#	NAME	DELETE STATUS
5		NO CONTACT EXISTS

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5G2RRYYMMDDHHmmRRSSnnaaa...aaa ...  
RRSSnnaaa...aaa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. SS - Contact delete status  
00-Contact Deleted  
01-No Contact exists  
02-Failed to delete (internal error)
4. nn - Number of characters to follow
5. aaa.....aaa - Contact Name (Max. 30 ASCII characters [20h-7Eh])
6. && - Data Termination Flag
7. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5G3

Version 1

**Function Type:** Set Contact Modem Number

**Command Format:**

**Display:** <SOH>S5G3RRaaaaa.....aaaa

**Computer:** <SOH>s5G3RRaaaaa.....aaaa

**Inquire:**

<SOH>I5G3RR

<SOH>i5G3RR

#### Typical Response Message, Display Format:

<SOH>

I5G3RR

JUL 26, 2007 1:36 PM

CONTACT MODEM NUMBER

CONTACT# CONTACT NAME

1 Mrs. Lozier

MODEM NUMBER

675-5647

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5G3RRYYMMDDHHmmRRnnaaa...aaa ...  
RRnnaaa...aaa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaa....aaaa - Modem Number (Max. 40 ASCII characters [20h-Eh])
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5G4

Version 1

**Function Type:** Set Contact Modem Dial-Out String

**Command Format:**

**Display:** <SOH>S5G4RRaaaaa.....aaaaa

**Computer:** <SOH>s5G4RRaaaaa.....aaaaa

**Inquire:**

<SOH>I5G4RR

<SOH>i5G4RR

#### Typical Response Message, Display Format:

```
<SOH>
I5G4RR
JUL 26, 2007  1:36 PM

CONTACT MODEM DIAL-OUT STRING

CONTACT#           : 1
NAME               : Mrs. Lozier
DIAL-OUT STRING    : V1E0X4&C1&D02Q057-90
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i5G4RRYYMMDDHRRnnaaaaa...aaaaa .....
                      RRnnaaaaa...aaaaa&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaaaa.....aaaaa - Modem Dial-Out String (Max. 50 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5G5

Version 1

**Function Type:** Set Contact Modem Communication Device Number

**Command Format:**

**Display:** <SOH>S5G5RRDD

**Computer:** <SOH>s5G5RRDD

**Inquire:**

<SOH>I5G5RR

<SOH>i5G5RR

#### Typical Response Message, Display Format:

<SOH>

I5G5RR

JUL 26, 2007 1:36 PM

CONTACT MODEM COMMUNICATION DEVICE

CONTACT# CONTACT NAME

1 Mrs. Lozier

COMM DEVICE

Co 1: Modem 1 Label

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5G5RRYYMMDDHRRDD...

RRDD&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. DD - Modem Communication device number (00-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5G6

Version 1

**Function Type:** Set Contact Modem Retry Count

**Command Format:**

**Display:** <SOH>S5G6RRnn

**Computer:** <SOH>s5G6RRnn

**Inquire:**

<SOH>I5G6RR

<SOH>i5G6RR

#### Typical Response Message, Display Format:

<SOH>

I5G6RR

JUL 26, 2007 1:36 PM

CONTACT MODEM RETRY COUNT

CONTACT# CONTACT NAME

RETRY COUNT

1 Mrs. Lozier

3

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5G6RRYYMMDDHHmmRRnn...  
RRnn&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Modem Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5G7

Version 1

**Function Type:** Set Contact Modem Retry Delay Time

**Command Format:**

**Display:** <SOH>S5G7RRnnn

**Computer:** <SOH>s5G7RRnnn

**Inquire:**

<SOH>I5G7RR

<SOH>i5G7RR

#### Typical Response Message, Display Format:

<SOH>

I5G7RR

JUL 29, 1997 9:06 AM

CONTACT MODEM RETRY DELAY TIME

CONTACT# CONTACT NAME

1 Mrs. Lozier

RETRY DELAY

30

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5G7RRYYMMDDHHmmRRnnn...

RRnnn&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - Retry Delay Time (001 to 099 minutes) (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5G8  
**Function Type:** View Full Contact Info

Version 1

**Inquire:**  
<SOH>I5G8RR  
<SOH>i5G8RR

#### Typical Response Message, Display Format:

```
<SOH>
I5G8RR
JUL 26, 2007  1:36 PM

CONTACT NAME

CONTACT#           1
NAME               Mrs. Lozier

MODEM NUMBER       123-4567
MODEM SETUP STRING
MODEM DEVICE       COM1
MODEM NUM RETRIES   3
MODEM RETRY DELAY   5
MODEM IS HANGUP REQD YES

FAX NUMBER         123-4567
FAX SETUP STRING
FAX DEVICE         COM1
FAX NUM RETRIES     3
FAX RETRY DELAY     5

SATELLITE CONNECT
SATELLITE DEVICE    COM3
SATELLITE NUM RETRIES 5
SATELLITE RETRY DELAY 15
SATELLITE IS HANGUP REQD YES

TCP/IP ADDRESS      veeder.com
TCP/IP PORT         10000
TCP/IP DEVICE       COM5
TCP/IP NUM RETRIES   3
TCP/IP RETRY DELAY   30
TCP/IP IS HANGUP REQD NO

EMAIL ADDRESS       johndoe@veeder.com
EMAIL SERVER        smtp@somecompany.com
EMAIL SERVER PORT    25
EMAIL NUM RETRIES    3
EMAIL RETRY DELAY    60
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i5G8RRYYMMDDHHmmRRnnAAAAAAAAAA...GGggSSmmBBBBBBBBBB...nnDD...
RRnnAAAAAAAAAA...&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. AAA.....AAA - Contact Name (Max. 30 ASCII characters [20h-7Eh])
5. GG - Number of Groups to follow
6. gg - Group ID
  - 01 = Modem
  - 02 = FAX
  - 03 = Satellite
  - 04 = TCP/IP
  - 05 = Email
  - 06 = SMS (future)
7. SS - Number of Strings to follow

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 5G8 Notes: (Continued)

- 8. mm - Length of string
- 9. BBB.....BBB - String
  - if gg = 01 (Modem)
    - string 1 = Modem Number
    - string 2 = Modem Setup String
  - if gg = 02 (FAX)
    - string 1 = FAX Number
    - string 2 = FAX Setup String
  - if gg = 03 (Satellite)
    - string 1 = Satellite Connect
  - if gg = 04 (TCP/IP)
    - string 1 = TCP/IP Address
  - if gg = 05 (Email)
    - string 1 = Email Address
    - string 2 = Email Server
- 10. nn - Number of 2-digit decimal values to follow
- 11. DD - Decimal Value (ASCII)
  - if gg = 01 (Modem)
    - value 1 = Modem Device
    - value 2 = Modem Num Retries
    - value 3 = Modem Retry Delay (minutes)
    - value 4 = Modem Is Hangup Required (00=no,01=yes)
  - if gg = 02 (FAX)
    - value 1 = FAX Device
    - value 2 = FAX Num Retries
    - value 3 = FAX Retry Delay (minutes)
  - if gg = 03 (Satellite)
    - value 1 = Satellite Device
    - value 2 = Satellite Num Retries
    - value 3 = Satellite Retry Delay (minutes)
    - value 4 = Satellite Is Hangup Required (00=no,01=yes)
  - if gg = 04 ( ) TCP/IP
    - value 1 = TCP/IP Port
    - value 2 = TCP/IP Device
    - value 3 = TCP/IP Num Retries
    - value 4 = TCP/IP Retry Delay (minutes)
    - value 5 = TCP/IP Is Hangup Required (00=no,01=yes)
  - if gg = 05 (Email)
    - value 1 = Email Server Port
    - value 2 = Email Num Retries
    - value 3 = Email Retry Delay (minutes)
- 12. && - Data Termination Flag
- 13. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5H3

Version 1

**Function Type:** Set Contact FAX Modem Number

**Command Format:**

**Display:** <SOH>S5H3RRaaaaa.....aaaa

**Computer:** <SOH>s5H3RRaaaaa.....aaaa

**Inquire:**

<SOH>I5H3RR

<SOH>i5H3RR

#### Typical Response Message, Display Format:

<SOH>

I5H3RR

JUL 26, 2007 1:36 PM

CONTACT FAX NUMBER

CONTACT# CONTACT NAME

1 Mrs. Lozier

FAX NUMBER

458-5869

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5H3RRYYMMDDHHmmRRnnaaaaa....aaaa ...  
RRnnaaaaa....aaaa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaa.....aaaa - FAX modem Number (Max. 40 ASCII characters [20h-7Eh])
5. && - Data Termination Flag
6. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5H4

Version 1

**Function Type:** Set Contact FAX Dial-Out String

**Command Format:**

**Display:** <SOH>S5H4RRaaaaa.....aaaaa

**Computer:** <SOH>s5H4RRaaaaa.....aaaaa

**Inquire:**

<SOH>I5H4RR

<SOH>i5H4RR

#### Typical Response Message, Display Format:

<SOH>  
I5H4RR  
JUL 26, 2007 1:36 PM

CONTACT FAX DIAL-OUT STRING

CONTACT# : 1  
NAME : Mrs. Lozier  
DIAL-OUT STRING : V1E0X4&C1&D02Q057-90

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5H4RRYYMMDDHRRnnaaaaa...aaaaa ...  
RRnnaaaaa...aaaaa &&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaaa...aaaaa - FAX Dial-Out String (Max. 50 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5H5

Version 1

**Function Type:** Set Contact FAX Communication Device Number

**Command Format:**

**Display:** <SOH>S5H5RRDD

**Computer:** <SOH>s5H5RRDD

**Inquire:**

<SOH>I5H5RR

<SOH>i5H5RR

#### Typical Response Message, Display Format:

<SOH>

I5H5RR

JUL 26, 2007 1:36 PM

CONTACT FAX COMMUNICATION DEVICE DETAILS

CONTACT# CONTACT NAME

1 Mrs. Lozier

COMM DEVICE

Co 1: Fax 1 Label

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5H5RRYYMMDDHRRDD...

RRDD&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. DD - FAX Communication Device Number (00-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5H6  
**Function Type:** Set Contact FAX Retry Count

Version 1

**Command Format:**  
**Display:** <SOH>S5H6RRnn  
**Computer:** <SOH>s5H6RRnn

**Inquire:**  
<SOH>I5H6RR  
<SOH>i5H6RR

#### Typical Response Message, Display Format:

```
<SOH>
I5H6RR
JUL 26, 2007  1:36 PM

CONTACT FAX RETRY COUNT

CONTACT# CONTACT NAME                RETRY COUNT
   1      Mrs. Lozier                  3
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i5H6RRYYMMDDHHmmRRnn...
                        RRnn&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - FAX Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5H7

Version 1

**Function Type:** Set Contact FAX Retry Delay Time

**Command Format:**

**Display:** <SOH>S5H7RRnnn

**Computer:** <SOH>s5H7RRnnn

**Inquire:**

<SOH>I5H7RR

<SOH>i5H7RR

**Typical Response Message, Display Format:**

<SOH>

I5H7RR

JUL 29, 1997 9:06 AM

CONTACT FAX RETRY DELAY TIME

CONTACT# CONTACT NAME

1 Mrs. Lozier

RETRY DELAY

30

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i5H7RRYYMMDDHHmmRRnnn...

RRnnn&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - FAX Retry Delay Time (001 to 099 minutes) (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5I3

Version 1

**Function Type:** Set Contact Remote TCP/IP Address

**Command Format:**

**Display:** <SOH>S5I3RRaaaaa.....aaaa

**Computer:** <SOH>s5I3RRaaaaa.....aaaa

**Inquire:**

<SOH>I5I3RR

<SOH>i5I3RR

#### Typical Response Message, Display Format:

<SOH>

I5I3RR

JUL 26, 2007 1:36 PM

CONTACT REMOTE TCP/IP ADDRESS

CONTACT# CONTACT NAME

1 Mrs. Lozier

REMOTE TCP/IP ADDRESS

remoteserver.gilbarco.com

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5I3RRYYMMDDHHmmRRnnaaaaa.....aaaa ...  
RRnnaaaaa.....aaaa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaa.....aaaa - Remote TCP/IP Address (Max. 40 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5I4

Version 1

**Function Type:** Set Contact Remote TCP/IP Port Number

**Command Format:**

**Display:** <SOH>S5I4RRppppp

**Computer:** <SOH>s5I4RRppppp

**Inquire:**

<SOH>I5I4RR

<SOH>i5I4RR

#### Typical Response Message, Display Format:

<SOH>

I5I4RR

JUL 26, 2007 1:36 PM

CONTACT REMOTE TCP/IP PORT NUMBER

CONTACT# CONTACT NAME

REMOTE TCP/IP PORT

1 Mrs. Lozier

10001

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5I4RRYYMMDDHHRRppppppRRppppp.....

RRpppppp&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. ppppp - Remote TCP/IP Port Number(00000-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5I5

Version 1

**Function Type:** Set Contact Local TCP/IP Communication Device Number

**Command Format:**

**Display:** <SOH>S5I5RRDD

**Computer:** <SOH>s5I5RRDD

**Inquire:**

<SOH>I5I5RR

<SOH>i5I5RR

#### Typical Response Message, Display Format:

```
<SOH>
I5I5RR
JUL 26, 2007  1:36 PM

CONTACT LOCAL TCP/IP COMMUNICATION DEVICE

CONTACT# CONTACT NAME                LOCAL TCP/IP DEVICE
1      Mrs. Lozier                  TCP-IP_DEV 1
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i5I5RRYYMMDDHHRRDD...
RRDD&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. DD - TCP/IP Comm Device Number (00-99??)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5I6

Version 1

**Function Type:** Set Contact TCP/IP Retry Count

**Command Format:**

**Display:** <SOH>S5I6RRnn

**Computer:** <SOH>s5I6RRnn

**Inquire:**

<SOH>I5I6RR

<SOH>i5I6RR

#### Typical Response Message, Display Format:

<SOH>

I5I6RR

JUL 26, 2007 1:36 PM

CONTACT TCP/IP RETRY COUNT

CONTACT# CONTACT NAME

1 Mrs. Lozier

RETRY COUNT

3

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5I6RRYYMMDDHHmmRRnn...  
RRnn&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - TCP/IP Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5I7

Version 1

**Function Type:** Set Contact TCP/IP Retry Delay Time

**Command Format:**

**Display:** <SOH>S5I7RRnnn

**Computer:** <SOH>s5I7RRnnn

**Inquire:**

<SOH>I5I7RR

<SOH>i5I7RR

#### Typical Response Message, Display Format:

<SOH>

I5I7RR

JUL 29, 1997 9:06 AM

CONTACT TCP/IP RETRY DELAY TIME

CONTACT# CONTACT NAME

1 Mrs. Lozier

RETRY DELAY

30

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5I7RRYYMMDDHHmmRRnnn...

RRnnn&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - TCP/IP Retry Delay Time (001 to 099 minutes; (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5J4

Version 1

**Function Type:** Set Contact Satellite Connection String

**Command Format:**

**Display:** <SOH>S5J4RRaaa.....aaa

**Computer:** <SOH>s5J4RRaaa.....aaa

**Inquire:**

<SOH>I5J4RR

<SOH>i5J4RR

**Typical Response Message, Display Format:**

<SOH>

I5J4RR

JUL 26, 2007 1:36 PM

CONTACT SATELLITE CONNECTION STRING

CONTACT# CONTACT NAME

1 Mrs. Lozier

CONNECTION STRING

x258JB87

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i5J4RRYYMMDDHRRnnaaa...aaa ...

RRnnaaa...aaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaa...aaa - Remote Satellite Connection String (Max. 30 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5J5

Version 1

**Function Type:** Set Contact Satellite Communication Device Number

**Command Format:**

**Display:** <SOH>S5J5RRDD

**Computer:** <SOH>s5J5RRDD

**Inquire:**

<SOH>I5J5RR

<SOH>i5J5RR

#### Typical Response Message, Display Format:

```
<SOH>
I5J5RR
JUL 26, 2007  1:36 PM

CONTACT SATELLITE COMMUNICATION DEVICE

CONTACT# CONTACT NAME                COMM DEVICE
1      Mrs. Lozier                   CO 4 : Satellite 1 Label
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i5J5RRYYMMDDHHRRDD...
RRDD&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. DD - FAX Communication Device Number(00-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5J6

Version 1

**Function Type:** Set Contact Satellite Mode Retry Count

**Command Format:**

**Display:** <SOH>S5J6RRnn

**Computer:** <SOH>s5J6RRnn

**Inquire:**

<SOH>I5J6RR

<SOH>i5J6RR

#### Typical Response Message, Display Format:

<SOH>

I5J6RR

JUL 26, 2007 1:36 PM

CONTACT SATELLITE MODE RETRY COUNT

CONTACT# CONTACT NAME

RETRY COUNT

1 Mrs. Lozier

3

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5J6RRYYMMDDHHmmRRnn...  
RRnn&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - TCP/IP Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5J7

Version 1

**Function Type:** Set Contact Satellite Retry Delay Time

**Command Format:**

**Display:** <SOH>S5J7RRnnn

**Computer:** <SOH>s5J7RRnnn

**Inquire:**

<SOH>I5J7RR

<SOH>i5J7RR

**Typical Response Message, Display Format:**

<SOH>

I5J7RR

JUL 26, 2007 1:36 PM

CONTACT SATELLITE RETRY DELAY TIME

CONTACT# CONTACT NAME

1 Mrs. Lozier

RETRY DELAY

30

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i5J7RRYYMMDDHHmmRRnnn...

RRnnn&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - Satellite Retry Delay Time (001 to 099 minutes) (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5K3

Version 1

**Function Type:** Set Contact E-Mail Address

**Command Format:**

**Display:** <SOH>S5K3RRaaaaa.....aaaaa

**Computer:** <SOH>s5K3RRaaaaa.....aaaaa

**Inquire:**

<SOH>I5K3RR

<SOH>i5K3RR

#### Typical Response Message, Display Format:

<SOH>

I5K3RR

JUL 26, 2007 1:36 PM

CONTACT E-MAIL ADDRESS

CONTACT# : 1

CONTACT NAME : John Doe

E-MAIL ADDRESS : johndoe@veeder.com

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5K3RRYYMMDDHHmmRRnnaaaaa.....aaaaa ...  
RRnnaaaaa.....aaaaa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
- 4.aaaaa.....aaaaa - Contact E-Mail Address (Max. 50 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**5K6

Version 1

**Function Type:** Set Contact E-Mail Mode Retry Count

**Command Format:**

**Display:** <SOH>S5K6RRnn

**Computer:** <SOH>s5K6RRnn

**Inquire:**

<SOH>I5K6RR

<SOH>i5K6RR

#### Typical Response Message, Display Format:

<SOH>

I5K6RR

JUL 26, 2007 1:36 PM

CONTACT E-MAIL MODE RETRY COUNT

CONTACT# CONTACT NAME

RETRY COUNT

1 Mr. John Doe

3

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5K6RRYYMMDDHHmmRRnn...  
RRnn&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - E-Mail Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5K7

Version 1

**Function Type:** Set Contact E-Mail Retry Delay Time

**Command Format:**

**Display:** <SOH>S5K7RRnnn

**Computer:** <SOH>s5K7RRnnn

**Inquire:**

<SOH>I5K7RR

<SOH>i5K7RR

#### Typical Response Message, Display Format:

<SOH>

I5K7RR

JUL 26, 2007 1:36 PM

CONTACT E-MAIL RETRY DELAY TIME

CONTACT# CONTACT NAME

1 Mrs. Lozier

RETRY DELAY

30

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i5K7RRYYMMDDHHmmRRnnn...

RRnnn&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - E-Mail Retry Delay Time (001 to 099 minutes) (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum



### 7.3.5. AUTOMATIC EVENTS SETUP

**Function Code:** 5P1

Version 1

**Function Type:** Add/Delete AutoEvent

**Command Format:**

**Display:** <SOH>S5P100IIIICTA (C=1)  
<SOH>S5P100IIIIIC (C=3,9)

**Inquire:**  
<SOH>I5P100IIII

**Computer:**<SOH>s5P100IIIICTA (C=1)  
<SOH>S5P100IIIIIC (C=3,9)

<SOH>i5P100IIII

**Notes:**

1. IIII - AutoEventID  
For Inquire, 0000 means "all"  
For Add, only 0000 is valid  
For Delete, only 0001-9999 is valid  
For DeleteAll, 0000 should be used
2. C - Command (decimal)  
1=Add  
2=Delete  
3=DeleteAll
3. T - Trigger Type  
0=Trigger Not Set  
1=Trigger on Time  
2=Trigger on Event
4. A - Action Type  
0=Action Not Set  
1=Action on Device  
2=Action Print Report  
3=Action Auto Connect

**Typical Response Message, Display Format:**

<SOH>  
I5P100  
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - ALL TASKS REPORT

```
-----
EVENT-ID - 0001
EVENT     - Day Close
REPORT    - BIR Daily Report
CONTACT   - FMS
CON. MODE - FAX - Co 1 : Modem 1 Label
-----
EVENT-ID - 0002
EVENT     - Delivery End: T 1: REGULAR, T 2: UNLEADED
REPORT    - Delivery Report
DEVICE    - Front Desk Printer
-----
EVENT-ID - 0003
TIME      - Weekly, Monday, 6:00 AM
REPORT    - Inventory Report
CONTACT   - Mrs. Lozier
CON. MODE - FAX - Co 1 : Modem 1 Label
-----
EVENT-ID - 0004
EVENT     - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT     - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
ACTION    -
DEVICE    - R 1: Relay 1 Sump
-----
EVENT-ID - 0005
EVENT     - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT     - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 5P1: (Continued)

```
REPORT      - Alarm History Report, Tank Leak History Report
CONTACT     - FMS, Sheetz Maintenance
CON. MODE   - FAX - Co 1 : Modem 1 Label
-----
EVENT-ID    - 0006
EVENT       - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT       - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
ACTION      - Auto Connect
CONTACT     - Sheetz Mgmt.
CON. MODE   - Computer - Co 3 : TCP/IP 1 Label
-----
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i5P100YYMMDDHHmmIIIIIT          (if T=0)
<SOH>i5P100YYMMDDHHmmIIIIITttnnMMWWwwDDhhmmss (if T=1)
<SOH>i5P100YYMMDDHHmmIIIIITGGTTEAANNnnDD... (if T=2 and E=0)
                                   nnDD... (if T=2 and E=1)
                                   OOnnDD... (if T=2 and E=2)

                                   A<ETX> (if A=0)
                                   ALLDD&&CCCC<ETX> (if A=1)
                                   APPnnRRR...&&CCCC<ETX> (if A=2)
                                   AWWnnRRR...nnCC...&&CCCC<ETX> (if A=3)
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. II II - AutoEventID  
For Inquire, 0000 means "all".  
For Add only 0000 is valid.  
For Delete, only 0001-9999 is valid.  
For DeleteAll, 0000 should be used.
3. T - Trigger Type  
0=Trigger Not Set  
1=Trigger on Time  
2=Trigger on Event  
3=Trigger AutoXmit
4. A - Action Type  
0=Action Not Set  
1=Action on Device  
2=Action Print Report  
3=Action Auto Connect  
4=Action AutoXmit
5. tt - Task Period (see command 5P3)
6. nn - Number of 2-digit entries to follow  
See explanation for "nn" in function i5P300
7. MM - Month (see command 5P3)
8. WW - Occurrence of day-of-week in month (see command 5P3)
9. ww - Day of Week (see command 5P3)
10. DD - Day of Month (see command 5P3)
11. hh - Hour of day (see command 5P3)
12. mm - Minute of hour (see command 5P3)
13. GG - Number of Triggers to follow (see command 5P4)
14. TT - Trigger Number (see command 5P4)
15. E - Trigger Event Group (see command 5P4)
16. AA - Alarm/Warning Category: (see command 5P4)
17. NN - Alarm Type Number: (see command 5P4)
18. OO - Notification Type (see command 5P4)
19. nn - Number of Devices to follow (see command 5P4)
20. DD - Device Number (see command 5P4)

**Function Code 5P1 Notes:** (Continued)

- |     |        |                                             |                   |
|-----|--------|---------------------------------------------|-------------------|
| 21. | LL -   | Action Device Type                          |                   |
|     |        | See explanation for "AA" in Function i5P500 |                   |
| 22. | PP -   | Printer Device Number                       | (see command 5P6) |
| 23. | nn -   | Number of Reports to follow                 | (see command 5P6) |
| 24. | RRR -  | Report Type ID                              | (see command 5P6) |
| 25. | WW -   | Connection Mode                             | (see command 5P7) |
| 26. | nn -   | Number of Reports to follow                 | (see command 5P7) |
| 27. | RRR -  | Report Type ID                              | (see command 5P7) |
| 28. | nn -   | Number of Contacts to follow                | (see command 5P7) |
| 29. | CC -   | Contact ID                                  |                   |
| 30. | && -   | Data Termination Flag                       |                   |
| 31. | CCCC - | Message Checksum                            |                   |

**Function Code:** 5P2

Version 1

**Function Type:** Get Number of Auto Events

**Command Format:**

**Display:** <SOH>I5P200

**Computer:** <SOH>i5P200

**Typical Response Message, Display Format:**

```
<SOH>
I5P200
JUL 26, 2007  1:36 PM

AUTOMATIC EVENTS - NUMBER OF AUTO EVENTS REPORT

Number of Automatic Events = 1234
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i5P200NNNN
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NNNN - Number of Auto Events
3. && - Data Termination Flag
4. CCCC - Message Checksum

**Function Code: 5P3**

Version 1

**Function Type:** Set Auto Event Trigger: Time Based

**Command Format:**

**Display:** <SOH>S5P300IIIIITnnMMWWwwDDhhmmss

**Computer:**<SOH>s5P300IIIIITnnMMWWwwDDhhmmss

**Inquire:**

<SOH>I5P300IIII

<SOH>i5P300IIII

**Typical Response Message, Display Format:**

```
<SOH>
I5P1RR
JUL 26, 2007  1:36 PM

AUTOMATIC EVENTS - TIME BASED TRIGGER REPORT

-----
EVENT-ID   - 0001
TIME       - Weekly, Monday, 6:00 AM
REPORT     - Inventory Report
DEVICE     - Front Desk Printer
-----
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i5P300YYMMDDHHmmIIIIITnnMMWWwwDDhhmmss&&CCCC
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. II II - AutoEventID  
See explanation for "II II" in Function i5P1PP .
3. TT - Task Period
  - 02 - Annually by Day of Month, once per year, on given month + day + hour + minute (Jan 31, 12:00 PM)
  - 03 - Annually by Day of Week, once per year, on given month + occurrence of day in month + day of week + hour + minute (Jan, 1<sup>st</sup> Monday, 12:00 PM)
  - 04 - Monthly by Day of Month, once per month, on given day + hour + minute (15<sup>th</sup> Day of Month, at 12:00 PM)
  - 05 - Monthly by Day of Week, once per month, on given occurrence of day in month + day of week + hour + minute (2<sup>nd</sup> Sunday of every Month, 12:00 PM)
  - 06 - Weekly, once per week, on given day of week + hour + minute (Sunday, 12:00 PM)
  - 07 - Daily, once per day, on given hour + minute (12:00 PM)
  - 08 - Interval: once per period specified in HH:MM:SS (Interval must be 2 minutes or longer)
4. nn - Number of 2-digit entries to follow.  
Note - For 450: Version 1, this value is fixed to 7 (i.e. nn=07). This entry is added for supporting any future enhancements. E.g. for "on time" based tasks, command needs to includes "year" entry.
5. MM - Month (01-12; 01-Jan, 12-Dec; if Task Period choice is Annually by Day of Month [TT=02], Annually by Day of Week [TT=03])  
Note: Set this value to "01" when TT=01,05,06, 07 or 08

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### TLS-450 Monitoring Systems

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#### Function Code 5P3 Notes: (Continued)

- 6.           WW - Occurrence of day-of-week in month, (01-05, if Task Period choice is Annually by Day of Week [TT=03], Monthly by Day of Week [TT=05])
  - a. 5 = Last occurrence
  - b. Example: WW=3, ww=02 means third Tuesday in month

Note: Set this value to "01" when TT=01,02,04, 06 or 08
- 7.           ww - Day of Week (00-06, 00-Sunday, 06-Saturday; Weekly, if Task Period choice is Annually by Day of Week [TT=03], Monthly by Day of Week [TT=05])
  - 00-Sunday
  - 01-Monday
  - 02-Tuesday
  - 03-Wednesday
  - 04-Thursday
  - 05-Friday
  - 06-Saturday

Note: Set this value to "00" when TT=01,02,04, 06 or 08
- 8.           DD - Day of Month (01-31, depends on month, if Period choice is Annually by Day of Month [TT=02], Monthly by Day of Month [TT=04])

Note: Set this value to "01" when TT=01,05,06, 07 or 08
- 9.           hh - Hour of day (00-23)
- 10.          mm - Minute of hour (00-59)
- 11.          ss - Second of Minute (00-59)
- 12.          && - Data Termination Flag
- 13.          CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5P4

Version 1

**Function Type:** Set Auto Event Trigger: Event Based

**Command Format:**

**Display:** <SOH>S5P400IIIICTTEAANNnnDD...<CR> (if E=0) <SOH>i5P400IIII  
VVnnDD...<CR> (if E=1)  
OOnnDD...<CR> (if E=2)

**Inquire:**

**Computer:** <SOH>s5P400IIIICTTEAANNnnDD...<CR> (if E=0) <SOH>i5P400IIII  
VVnnDD...<CR> (if E=1)  
OOnnDD...<CR> (if E=2)

**Typical Response Message, Display Format:**

<SOH>  
i5P400  
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - EVENT BASED TRIGGER REPORT

-----  
EVENT-ID - 0006  
EVENT - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED  
EVENT - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL  
ACTION - Auto Connect  
CONTACT - Sheetz Mgmt.  
CON. MODE - Computer - Co 3 : TCP/IP 1 Label  
-----  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i5P400YYMMDDHHmmIIIIIGGTTEAANNnnDD...&&CCCC<ETX> (if E=0)  
VVnnDD...&&CCCC<ETX> (if E=1)  
OOnnDD...&&CCCC<ETX> (if E=2)

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. II II - AutoEventID  
See explanation for "II II" in Function i5P1PP
3. C - Command (decimal)  
1=Add  
2=Change  
3=Delete  
9=Delete All
4. GG - Number of Triggers to follow (This field is used in computer format response message only.)
5. TT - Trigger Number  
00 = for Add and Delete All  
01-99 = for Change and Delete
6. E - Trigger Event Group  
0-Alarms  
1-External Inputs  
2-Notifications
7. AA - Alarm/Warning Category: (Valid only when E=0 [Alarms])  
See explanation for "AA" in Function i10100
8. NN - Alarm Type Number: (Valid only when E=0 [Alarms])  
See explanation for "NN" in Function i10100
9. nn - Number of Devices to follow
10. DD - Device Number (all devices uses NN=01 DD=00)
11. VV - External Input eVent  
01=Input Normal  
02=Input Off  
03=Generator On  
04=Generator Off

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 5P4 Notes: (Continued)

- 12.                   00 - Notification Type (Valid only when E=2)
  - 01=Delivery Start
  - 02=Delivery Complete
  - 03=BIR Daily Close
  - 04=Inventory Shift Close
  - 05=BOL Pending (not in V1 or V2)
  - 06=SLD Test Start
  - 07=SLD Test Complete
  - 08=CSLD Test Complete
  - 09=PLLD Test Start (obsolete)
  - 10=PLLD Test Complete
  - 11=Fuel Level Set Point (not in V1 or V2)
  - 12=Tank Test Shutdown (not in V1 or V2)
  - 13=BIR Monthly Close
  - 14=Delivery Ticket Entered
  - 15=BIR Shift Close
  - 16=Startup (not in V1 or V2)
  - 17=Accuchart Calibration Complete
  - 18=Accuchart New Chart Applied
  - 19=Accuchart Calibration Error
- 13.                   && - Data Termination Flag
- 14.                   CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5P5

Version 1

**Function Type:** Set Auto Event Action: Device Task

**Command Format:**

**Display:** <SOH>S5P500IIIIAADD

**Computer:** <SOH>S5P500IIIIAADD

**Inquire:**

<SOH>I5P500IIII

<SOH>i5P500IIII

**Typical Response Message, Display Format:**

<SOH>  
I5P500  
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - DEVICE TASKS REPORT

-----  
EVENT-ID - 0004  
EVENT - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED  
EVENT - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL  
ACTION -  
DEVICE - R 1: Relay 1 Sump  
-----  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i5P500YYMMDDHHmmIIIIAADD&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. IIII - AutoEventID  
See explanation for "IIII" in Function i5P100
3. AA - Alarm/Warning Category:  
See explanation for "AA" in Function i10100

Note: Relay [AA=11], Line [AA=66] & Pump [AA=65] are the only valid choices for "AA" entry. Also, 'Device Task' actions should always be configured with "Event Based" (using 5P4) triggers only. "Time Based" trigger (5P3) is not valid for "Device Task".

4. DD - Device Number (DD=00 is invalid)

Note: Auto Events will not handle pump control relays. Hence, Pump Control Output relay types can not be assigned for device tasks.

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 5P6

Version 1

**Function Type:** Set Auto Event Action: Print Task

**Command Format:**

**Display:** <SOH>S5P600IIIIIPPnnRRR...

**Computer:** <SOH>S5P600IIIIIPPnnRRR...

**Inquire:**

<SOH>I5P600IIII

<SOH>i5P600IIII

**Typical Response Message, Display Format:**

```
<SOH>
I5P600
JUL 26, 2007  1:36 PM

AUTOMATIC EVENTS - PRINT TASKS REPORT

-----
EVENT-ID    - 0002
EVENT       - Delivery End: T 1: REGULAR, T 2: UNLEADED
REPORT      - Delivery Report
DEVICE      - Front Desk Printer
-----
<ETX>
```

**Typical Response Message, Computer Format:**

<SOH>i5P600YYMMDDHHmmIIIIIPPnnRRR...&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. IIII - AutoEventID  
See explanation for "IIII" in Function i5P100
3. PP - Printer Device Number (00 if not set - inquire only)  
Note: In Release 1 & 2, for Set command, this value  
should always be set be to "01"
4. nn - Number of Reports to follow

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 5P6 Notes: (Continued)

5.                    RRR - Report Type ID
- 001 - Current Inventory Report
  - 002 - Inventory History Report
  - 003 - Shift Inventory Report
  - 004 - Delivery Report (for FAX/EMAIL only)
  - 005 - Most Recent Delivery Report
  - 006 - Combined Tank Test Results (for FAX/EMAIL only)
  - 007 - SLD Last Test Results
  - 008 - CSLD Monthly Report
  - 009 - CSLD Daily Test Results
  - 010 - CSLD State Change Results (for Print only)
  - 011 - PLLD Passed Test Results (for FAX/EMAIL only)
  - 012 - PLLD Passed Test History (for FAX/EMAIL only)
  - 013 - PLLD Last Test Results
  - 014 - Liquid Sensor Status Report
  - 015 - Vapor Sensor Status Report
  - 016 - Type A (2 Wire CL) Sensor Status Report
  - 017 - Type B (3 Wire CL) Sensor Status Report
  - 018 - Ground Water Sensor Status Report
  - 019 - MAG Sensor Status Report
  - 020 - Tank Status Report
  - 021 - Tank Alarm History Report
  - 022 - Active Alarm Report (for FAX/EMAIL only)
  - 023 - Combined Alarm History report (for FAX/EMAIL only)
  - 024 - Priority Alarm History Report (for FAX/EMAIL only)
  - 025 - Non-Priority Alarm History Report (FAX/EMAIL only)
  - 026 - Last Alarm Post Report (for Print only)
  - 027 - Sensor Status Report
  - 028 - Sensor Status History Report (for FAX/EMAIL only)
  - 029 - BIR Daily Report
  - 030 - BIR Previous Week Report
  - 031 - BIR Previous Month Report
  - 032 - BIR Periodic Report
  - 033 - Unused
  - 034 - Unused
  - 035 - AccuChart Anomaly Report
  - 036 - AccuChart Delivery Instructions
  - 037 - AccuChart Completion Status
  - 038 - AccuChart Event Log
  - 039 - Ticketed Delivery Report
  - 040 - Adjusted Delivery Report
  - 041 - BIR Last Shift Report
  - 042 - BIR Last Day Shift Report
  - 043 - BIR Current Week Report
  - 044 - BIR Current Month Report
  - 045 - BIR Daily Book Variance Report
  - 046 - BIR Previous Week Book Variance Report
  - 047 - BIR Previous Month Book Variance Report
  - 048 - BIR Periodic Book Variance Report
  - 049 - BIR Current Week Book Variance Report
  - 050 - BIR Current Month Book Variance Report
6.                    && - Data Termination Flag
7.                    CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 5P7**

Version 1

**Function Type:** Set Auto Event Action: Auto Connect Task  
(FAX/E-MAIL/COMPUTER)

**Command Format:**

**Display:** <SOH>S5P700IIIIWnnRRR...NNCC...

**Computer:** <SOH>s5P700IIIIWnnRRR...NNCC...

**Inquire:**

<SOH>I5P700IIII

<SOH>i5P700IIII

**Typical Response Message, Display Format:**

```
<SOH>
I5P700
JUL 26, 2007  1:36 PM

AUTOMATIC EVENTS - AUTO CONNECT TASKS REPORT

-----
EVENT-ID   - 0006
EVENT      - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT      - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
ACTION     - Auto Connect
CONTACT    - Sheetz Mgmt.
CON. MODE  - Computer - Co 3 : TCP/IP 1 Label
-----
<ETX>
```

**Typical Response Message, Computer Format:**

<SOH>i5P700YYMMDDHHmmIIIIWnnRRR...NNCC...&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. IIII - Auto Event-ID  
See explanation for "IIII" in Function i5P100
3. WW - Connection Mode  
00 = Not Set (Inquire Only)  
01 = Modem (Computer mode connection)  
02 = FAX  
03 = Satellite (Computer mode connection)  
04 = TCP/IP (Computer mode connection)  
05 = Email
4. nn - Number of Reports to follow  
For computer mode connections; "nn" should be "00"  
i.e. for WW = 01, 04
5. RRR - Report Type ID:  
See explanation for "RRR" in Function i5P600  
Note: RRR is valid only for non-computer mode connections  
(FAX[WW=02] / Email[WW=05] / Satellite[WW=03] / SMS [WW=06])
6. NN - Number of Contacts to follow  
Note: For TLS-450 Release 1, this is always 00 or 01.
7. CC - Contact ID
8. && - Data Termination Flag
9. CCCC - Message Checksum

Function Code: 5Q1

Version 1

Function Type: Automatic Events: Task Log

**Command Format:**

**Display:** <SOH>I5Q100IIIIAARRRCCTTMMSSnnn (when MM= 00,01,02 or 03)  
<SOH>I5Q100IIIIAARRRCCTTMMLLDDSSnnn (when MM=04)  
<SOH>I5Q100IIIIAARRRCCTTMMPPSSnnn (when MM=05)  
<SOH>I5Q100IIIIAARRRCCTTMMWWSSnnn (when MM=06)

**Computer:** <SOH>i5Q100IIIIAARRRCCTTMMSSnnn

**Command Notes:**

**Note:** All parameters mentioned below are optional following the rules below.

1.           IIII - AutoEventID  
                  0000 - Task Log for All Auto Events based on the  
                                parameters specified below  
                  0001-9999 - Task Log for Specific Auto Event
2.           AA - Report / Action Type  
                  00 - All Reports and Actions  
                  01 - All Reports  
                  02 - All Actions  
                  03 - Specific Report  
                  Note: This should be set to "00" when IIII is 0001-9999
3.           RRR - Report type ID (Always set to "000" when AA != 03)  
                  See explanation for "RRR" in Function i5P600
4.           CC - Contact (If no Contact Type is given, it assumes the  
                                request is for "All Contacts")  
                  00 - All Contacts  
                  XX - Specific Contact ID  
                  See explanation for "RR" in i5G1RR  
                  Note: This should be set to "00" when IIII is 0001-9999
5.           TT - Select Time Interval (If no Select Time Interval is  
                                given, it assumes the time interval request as  
                                "Unrestricted")  
                  00 - Unrestricted  
                  01 - Current Day  
                  02 - Current Week  
                  03 - Current Month  
                  04 - Current Year
6.           MM - Device Connection Mode (If this entry is not given, then  
                                it assumes the request is for "All Device Connection  
                                Modes")  
                  00 - All Devices And Connection Modes  
                  01 - All Devices  
                  02 - All Printers  
                  03 - All Connection Modes  
                  04 - Specific Device  
                  05 - Specific Printer  
                  06 - Specific Connection Mode  
                  Note: This should be set to "00" when IIII is 0001-9999
7.           LL - Action Device Type (when MM=04 i.e. Specific Device)  
                  See explanation for "AA" in Function i5P500
8.           DD - Action Device Number  
                  Set DD=00 for all devices uses of above device type (LL)
9.           PP - Printer Device Number (when MM=05 i.e. Specific Printer)  
                  See explanation for "PP" in Function i5P600

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 5Q1 Notes: (Continued)

- 10.           WW - Connection Mode (when MM=06 i.e. Specific Connection Mode)
  - 01 = Modem (Computer mode connection)
  - 02 = FAX
  - 03 = Satellite (Computer mode connection)
  - 04 = TCP/IP (Computer mode connection)
  - 05 = Email
- 11.           SS - Status (If no Status is given, it assumes request is for "Any Status")
  - 00 - Any Status
  - 01 - Successful
  - 02 - Pending
  - 03 - Failed
- 12.           nnn - Maximum Records - 001 - 999 (Absolute Maximum) (Decimal).  
(If no Maximum Records is given or it's zeroes, it assumes request is for records matching above criteria and limited by the Maximum Records Default of 100)

#### Typical Response Message, Display Format:

```
<SOH>
I5Q100
SEP 2, 2008  1:36 PM
```

#### Automatic Events - Tasks Log Report

```
-----
EVENT TIME      - 9/12/05 4:32 PM
EVENT ID        - 3
REPORT          - BIR Daily Report
CONTACT         - FMS
LAST TIME ATTEMPTED - 9/12/05 4:37 PM
ATTEMPTS        - 1
CON. MODE       - FAX - Co 1: Modem 1 Label
STATUS          - Success
MESSAGE         - Successfully Sent
-----
EVENT TIME      - 8/10/05 7:11 AM
EVENT ID        - 1
REPORT          - Delivery Report
LAST TIME ATTEMPTED - 8/10/05 7:16 AM
ATTEMPTS        - 3
DEVICE          - Front Desk Printer
STATUS          - Failed
MESSAGE         - Printer not Responding
-----
EVENT TIME      - 7/12/05 4:32 PM
EVENT ID        - 3
REPORT          - BIR Daily Report
CONTACT         - FMS
LAST TIME ATTEMPTED - 7/12/05 4:37 PM
ATTEMPTS        - 1
CON. MODE       - FAX - Co 1: Modem 1 Label
STATUS          - Success
MESSAGE         - Successfully Sent
-----
EVENT TIME      - 4/15/05 1:23 PM
EVENT ID        - 5
ACTION          -
LAST TIME ATTEMPTED - 4/15/05 1:28 PM
RETRIES         - 5
DEVICE          - R 1:Relay Tank 1 Sump
STATUS          - Success
MESSAGE         - Shutdown Signal Sent
-----
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 5Q1: (Continued)

```

EVENT TIME          - 2/24/05 2:38 PM
EVENT ID            - 2
ACTION              - Auto Connect
CONTACT             - Sheetz Mgmt.
LAST TIME ATTEMPTED - 2/24/05 2:58 PM
ATTEMPTS            - 7
CON. MODE           - Computer - Co 2: Modem 2 Label
STATUS              - Pending
MESSAGE             - Modem Busy
-----
EVENT TIME          - 2/23/05 9:00 AM
EVENT ID            - 4
REPORT              - Inventory Report
CONTACT             - Mrs. Lozier
LAST TIME ATTEMPTED - 2/23/05 11:00 AM
ATTEMPTS            - 4
CON. MODE           - FAX - Co 1: Modem 1 Label
STATUS              - Pending
MESSAGE             - Connection Dropped
-----
<ETX>

```

Typical Response Message, Computer Format:

```

<SOH>i5Q100YYMMDDHHmmNNNYYMMDDHHmmIIIIITADDVVnnRRR...MMCCOOYYMMDDHHmmSSEE...
      YYMMDDHHmmIIIIITADDVVnnRRR...MMCCOOYYMMDDHHmmSSEE
      &&CCCC<ETX>

```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Task Log Records to follow
3. YYMMDDHHmm - Event Date and Time
4. IIII - Auto Event ID  
See explanation for "IIII" in Function i5P100
5. T - Trigger Type  
See explanation for "T" in Function i5P100
6. A - Action Type  
See explanation for "A" in function i5P100
7. DD - Action Device Type
  - 1) DD=11 when action is on Relay Device (A=1)
  - 2) DD=65 when action is on Pump Device (A=1)
  - 3) DD=66 when action is on Line Device (A=1)
  - 3) DD=64 when action is on Printer Device (A=2)
  - 4) DD=73 when action is Auto Connect Action (A=3)  
(FAX/Email/Modem/TCPIP/Satellite)
8. VV - Action Device ID  
See explanation for "TT" in function i10100  
Note: VV=00 when MM=05 (Email)
9. nn - Number of Reports to follow
10. RRR - Report Type ID  
See explanation for "RRR" in i5P600
11. MM - Connection Mode  
See explanation for "WW" in i5P700  
Note: This entry is valid only when A=3
12. CC - Contact Identification Number (Decimal)  
See explanation for "RR" in i5G1RR  
Note: This entry is valid only when A=3
13. OO - Number of Attempts made

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 5Q1: (Continued)

- 14. YYMMDDHHmm - Last Attempt Date And Time
- 15. SS - Status
  - 01 - Successful
  - 02 - Pending
  - 03 - Failed
- 16. EE - Extended Status Message
  - 00 - No Extended Status Available
  - 01 - Successful
  - 02 - Printer Not Found
  - 03 - Printer Not Responding
  - 04 - Printer Out Of Paper
  - 05 - Printer Error
  - 06 - Action Device Not Found (Relay/Line/Pump)
  - 07 - Shut Down Signal Sent
  - 08 - Modem Port Busy
  - 09 - Dialed Modem Busy
  - 10 - Modem No Answer
  - 11 - Modem No Carrier
  - 12 - No Dialtone
  - 13 - Modem Internal Error
  - 14 - Waiting For Connection
  - 15 - Connection Dropped
  - 16 - Connection Idle Time Expired
  - 17 - Connection Closed On Command
  - 18 - Connection In-Progress
- 17. && - Data Termination Flag
- 18. CCCC - Message Checksum



### 7.3.6 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-450 Monitoring Systems

---

**Function Code:** 602  
**Function Type:** Set Tank Label

Version 1

**Command Format:**  
**Display:** <SOH>S602TTaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>s602TTaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I602TT  
<SOH>i602TT

#### Typical Response Message, Display Format:

```
<SOH>
I602TT
JAN 22, 1996  3:16 PM

TANK LABEL

TANK   LABEL
1      REGULAR UNLEADED
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i602TTYMMDDHHmmTTaaaaaaaaaaaaaaaaaaaaa...
                                Taaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. a...a - Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 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	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-450 Monitoring Systems

---

**Function Code: 604**

Version 1

**Function Type:** Set Tank 1 Point Full Height Volume

**Command Format:**

**Display:** <SOH>S604TTGGGGGG

**Computer:** <SOH>s604TTFFFFFFFF

**Inquire:**

<SOH>I604TT

<SOH>i604TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I604TT  
JAN 22, 1996 3:16 PM

TANK FULL VOLUME

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	9728

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i604TTYMMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&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-450 Monitoring Systems

---

**Function Code: 605**

Version 1

**Function Type:** Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes

**Command Format:**

**Display:** <SOH>S605TTGGGGGGggggggGGGGGGgggggg

**or:** <SOH>S605TTGGGG,gggg,GGGG,ggg

**Computer:** <SOH>s605TTFFFFFFFFffffffffFFFFFFFFffffffff

**Inquire:**

<SOH>I605TT

<SOH>i605TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Full Height Volume, Gallons (Decimal)
3. gggggg - 3/4 Height Volume, Gallons (Decimal)
4. GGGGGG - 1/2 Height Volume, Gallons (Decimal)
5. gggggg - 1/4 Height Volume, Gallons (Decimal)
6. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)
7. ffffffff - 3/4 Height Volume, Gallons (ASCII Hex IEEE float)
8. FFFFFFFF - 1/2 Height Volume, Gallons (ASCII Hex IEEE float)
9. ffffffff - 1/4 Height Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I605TT  
JAN 22, 1996 3:16 PM

TANK 4 POINT VOLUMES

TANK	LABEL	GALLONS			
1	REGULAR UNLEADED	9728	7296	4864	2432

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i605TTYMMDDHHmmTTFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF...  
TTFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF&&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. ffffffff - 3/4 Height Volume, Gallons (ASCII Hex IEEE float)
5. FFFFFFFF - 1/2 Height Volume, Gallons (ASCII Hex IEEE float)
6. ffffffff - 1/4 Height Volume, Gallons (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS-450 Monitoring Systems

Version 1

<b>Command Format:</b>		<b>Inquire:</b>
<b>Display:</b> <SOH>S606TTGGGGGGggggggg...		<SOH>I606TT
<b>or:</b> <SOH>S606TTGGGG,gggg,GGGG,...		
<b>Computer:</b> <SOH>s606TTFFFFFFFFF...		<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 | LABEL            | GALLONS |      |      |      |
|------|------------------|---------|------|------|------|
| 1    | REGULAR UNLEADED | 9720    | 9234 | 8748 | 8262 |
|      |                  | 7776    | 7290 | 6804 | 6318 |
|      |                  | 5832    | 5346 | 4860 | 4372 |
|      |                  | 3888    | 3402 | 2916 | 2430 |
|      |                  | 1944    | 1458 | 972  | 486  |

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i606TTYMMDDHHmmTFFFFFFFFF...  
                        TTTTTTTT&&CCCC<ETX>
```

**Notes:**

- ```

1.      YYMMDDHHmm - Current Date and Time
2.      TT         - Tank Number (Decimal, 00=all)
3.      FFFFFFFF   - Series of 20 Volumes, Gallons (ASCII Hex IEEE float)
4.      &&         - Data Termination Flag
5.      CCCC       - Message Checksum

```

## Serial Interface Manual

### TLS-450 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. IIII.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	LABEL	INCHES
1	REGULAR UNLEADED	96.00

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i607TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code:** 608  
**Function Type:** Set Tank Tilt

Version 1

**Command Format:**  
**Display:** <SOH>S608TTIIIII.hh  
**Computer:** <SOH>s608TTFFFFFFFF

**Inquire:**  
<SOH>I608TT  
<SOH>i608TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. IIII.hh - Tank Tilt, Inches and hundredths (Decimal, +/- IIII.hh)
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	LABEL	INCHES
1	REGULAR UNLEADED	2.40

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i608TTYMMDDHHmmTTFFFFFFFF...
                        TTTT&&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-450 Monitoring Systems

---

**Function Code: 609**

Version 1

**Function Type:** Set Tank Thermal Expansion Coefficient

**Command Format:**

**Display:** <SOH>S609TTc.cccccc

**Computer:** <SOH>s609TTFFFFFFFF

**Inquire:**

<SOH>I609TT

<SOH>i609TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. c.cccccc - Thermal Expansion Coefficient (decimal)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I609TT
JAN 22, 1996  3:17 PM

TANK THERMAL COEFFICIENT
```

```
TANK   LABEL
 1     REGULAR UNLEADED      0.000700
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i609TTYMMDDHHmmTTFFFFFFFF...
                        TTTFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code:** 60A

Version 1

**Function Type:** Set Tank Linear Calculated Full Volume

**Command Format:**

**Display:** <SOH>S60ATTGGGGGG

**Computer:** <SOH>s60ATTFFFFFFFF

**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	LABEL	TANK PROFILE	GALLONS
1	REGULAR UNLEADED	1 PT	10000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i60ATTYYMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code: 60E**

Version 1

**Function Type:** Set Tank Programmable Float Parameters

**Command Format:**

**Display:** <SOH>S60ETTIIIII.tttIIIII.tttIIIII.tttIIIII.ttt  
**or:** <SOH>S60ETTIII.ttt,III.ttt,III.ttt,III.ttt

**Inquire:**

<SOH>I60ETT

**Computer:** <SOH>s60ETTFFFFFFFFF...FFFFFFFFF

<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>i60ETTYMMDDHHmmTTNNFFFFFFFFF...  
TTNNFFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code:** 60F  
**Function Type:** Set Tank Probe Offset

Version 1

**Command Format:**  
**Display:** <SOH>S60FTTIII.hh  
**Computer:** <SOH>s60FTTFFFFFFFF

**Inquire:**  
<SOH>I60FTT  
<SOH>i60FTT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. IIII.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	LABEL	INCHES
1	REGULAR UNLEADED	2.40

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i60FTTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - 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-450 Monitoring Systems

---

**Function Code:** 60G  
**Function Type:** Set Manual Tank Leak Test

Version 1

**Command Format:**  
**Display:** <SOH>S60GTTRCDD<CR>  
**Computer:** <SOH>s60GTTRCDD<CR>

**Inquire:**  
<SOH>I60GTT  
<SOH>i60GTT

#### Typical Response Message, Display Format:

```
<SOH>
I60GTT
JUN  1, 2000  8:06 AM

MANUAL TANK LEAK TEST
-----
```

TANK	TEST STATUS	TEST CONTROL	DURATION HOURS	TEST RATE GAL/HR
T1: UNLEADED	ON	TIMED DURATION	10	0.10
T2: SUPER	ON	MANUAL STOP	24	0.20
T3: SUPER 2	OFF	TIMED DURATION	3	0.20

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>i60GTTYMMDDHHmmTTNNSRCDD...
TTNNSRCDD&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Data Fields to follow (Hex)
4. S - Test Status (0=OFF, 1=ON)
5. R - Leak test Rate (0=0.2, 1=0.1)
6. C - Test Control (0=Manual, 1=Timed Duration)
7. DD - Leak test Duration in hours  
Note: Timed Control: 02 <= DD <= 24  
Note: Manual Stop: DD=24.
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 60K**

Version 1

**Function Type:** Set Probe Number Installed in Tank

**Command Format:**

**Display:** <SOH>S60KTTpp

**Computer:** <SOH>s60KTTpp

**Inquire:**

<SOH>I60KTT

<SOH>i60KTT

Note: pp = -1 if tank not assigned to probe.

#### Typical Response Message, Display Format:

```
<SOH>
I60KTT
MAR 26, 2007  1:50 PM

TANK INSTALLED PROBE NUMBER CONFIGURATION

TANK   LABEL                PROBE NUM
  1     REGULAR UNLEADED          1
<ETX>
```

#### Notes:

1. All Tanks not supported for Set mode.

#### Typical Response Message, Computer Format:

```
<SOH>i60KTTYMMDDHHmmTTpp...
                        TTPp&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. pp - Probe Number to configure to tank (pp = -1 if not assigned)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 60L

Version 1

**Function Type:** Get Tank Setup Warning Messages

**Command Format:**

**Display:** <SOH>I60LTT

**Computer:** <SOH>i60LTT

#### Typical Response Message, Display Format:

```
<SOH>
I60LTT
JUN  1, 2000  8:06 AM

TANK PARAMETER VALIDATION

T 1: ALL PARAMETERS VIABLE

T 2: DIAMETER OUT OF RANGE
     CAPACITY OUT OF RANGE
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i60LTTYMMDDHHmmTTffffff...
                      Tffffff&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. fffffff - error flags (Hex)
  - 0x0000001 = FULL\_VOLUME\_OUT\_OF\_RANGE
  - 0x0000002 = DIAMETER\_OUT\_OF\_RANGE
  - 0x0000004 = MAX\_VOLUME\_OUT\_OF\_RANGE
  - 0x0000008 = HI\_VOLUME\_LIMIT\_OUT\_OF\_RANGE
  - 0x0000010 = COEFFICIENT\_OUT\_OF\_RANGE
  - 0x0000020 = HIGH\_WATER\_LIMIT\_OUT\_OF\_RANGE
  - 0x0000040 = LO\_VOLUME\_LIMIT\_OUT\_OF\_RANGE
  - 0x0000080 = THEFT\_ALARM\_LIMIT\_OUT\_OF\_RANGE
  - 0x0000100 = TILT\_OUT\_OF\_RANGE
  - 0x0000200 = OVERFILL\_VOLUME\_OUT\_OF\_RANGE
  - 0x0000400 = CHART\_VOLUMES\_INVALID\_ERR
  - 0x0000800 = UNCONFIGURED\_PROBE\_ERR
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**60M

Version 2

**Function Type:** Set Product Label

**Command Format:**

**Display:** <SOH>S60MPPaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s60MPPaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I60MPP

<SOH>i60MPP

**Typical Response Message, Display Format:**

<SOH>  
I60M00  
JAN 22, 2009 3:17 PM

PRODUCT LABEL  
1 REGULAR UNLEADED  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i60MPPYYMMDDHHmmPPaaaaaaaaaaaaaaaaaaaaa...  
PPaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal)
3. aaa...aaa - Product Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 60N  
**Function Type:** Product Setup

Version 2

**Command Format:**  
**Display:** <SOH>S60NPP  
**Computer:** <SOH>s60NPP

#### Typical Response Message, Display Format:

<SOH>  
I60N00  
JAN 22, 2009 3:17 PM

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

PRODUCT SETUP REPORT

PRODUCT LABEL	TANKS
1 REGULAR	T 1: REGULAR SOUTH, T 2: REGULAR NORTH
	T 4: TANK 4
2 MIDGRADE	T 3: MID NORTH, T 4: MID SOUTH, T 7: TANK 7
3 PREMIUM	T 5: PREM NORTH

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i60NPPYYMMDDHHmmPPnnTT..TT  
PPnnTT..TT&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all)
3. nn - Number of tanks to follow. (decimal) (Tanks assigned to this product)
4. TT - Tank Number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**600

Version 2

**Function Type:** Set Product Available in Tank

**Command Format:**

**Display:** <SOH>S600TTPP

**Computer:** <SOH>s600TTPP

**Inquire:**

<SOH>I600TT

<SOH>i600TT

**Notes:**

1. PP - Set to -1 to remove Product assignment

**Typical Response Message, Display Format:**

```
<SOH>
I60000
JAN 22, 2009  3:17 PM

TANK PRODUCT MAPPING

TANK          PRODUCT
T 1, T 2, T 4  F 1: REGULAR UNLEADED
T 3           F 2: UNLEADED
T 5           F 3: DIESEL
T 6, T 7      F 2: UNLEADED
T 8           NOT ASSIGNED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i600TTPPYMMDDHHmmnnTT..TTPP
nnTT..TTPP&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of tanks to follow. (decimal)(Tanks assigned to this product. If nn > 01 then they are manifold tanks)
3. TT - Tank Number (Decimal)
4. PP - Product Number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 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	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-450 Monitoring Systems

**Function Code: 611**

Version 1

**Function Type:** Set Tank Leak Test Type & Start Time

**Command Format:**

**Display:** <SOH>S611TTDDRMYYMMDDHHmm<CR> (if M=1) <SOH>I611TT  
 MMODHHmm<CR> (if M=2)  
 ODHHmm<CR> (if M=3)  
 DHHmm<CR> (if M=4)  
 HHmm<CR> (if M=5)  
 <CR> (if M=6)  
 <CR> (if M=7)  
 MMDDHHmm<CR> (if M=8)  
 DDHHmm<CR> (if M=9)

**Computer:** (same as display format)

<SOH>i611TT

#### Notes:

1. TT - Tank Number (00=all tanks, Decimal)
2. DD - Test Duration in hours [2-24]
3. R - Leak test Rate (0=0.2, 1=0.1)  
 0=0.2 gallons/hour Periodic  
 1=0.1 gallons/hour Annual
4. M - Leak test Method  
 1=On Date  
 2=Annually Day-of-Week  
 3=Monthly Day-of-Week  
 4=Weekly Day-of-Week  
 5=Daily  
 6=Automatic  
 7=CSLD  
 8=Annually Day-of-Month  
 9=Monthly Day-of-Month
5. D - Day-of-Week  
 1=Monday  
 2=Tuesday  
 3=Wednesday  
 4=Thursday  
 5=Friday  
 6=Saturday  
 7=Sunday
6. O - Occurrence [1-5] of day-of-week in month  
 5=last occurrence  
 Example: 0=3, D=2 means third Tuesday in month
7. YYMM - Year (last 2 digits), Month [01...12]
8. HHmm - Hour, Minute (if EE00, set Leak Test Method to NONE)

#### Typical Response Message, Display Format:

<SOH>  
 I611TT  
 JUN 1, 2000 8:06 AM

					<---- TEST START TIME ---->				
TANK	LEAK TEST METHOD	TEST TYPE	TEST HOURS	TEST START METHOD	YEAR	MONTH	DAY	OCCUR	HH:MM
1	SLD	ANNUAL	2	ON DATE	YYYY	MON	DD		HH:MM
				ANNUALLY DoW		MON	DD	N	HH:MM
				ANNUALLY DoM		MON	DD		HH:MM
				MONTHLY DoW			DD	N	HH:MM
				MONTHLY DoM			DD		HH:MM
				WEEKLY			DD		HH:MM
				DAILY					HH:MM
				AUTOMATIC					
2	CSLD	PERIODIC	AUTO	CSLD					
3	CSLD	GROSS	24	AUTOMATIC					

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 611:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i611TTYMMDDHHmmTTDDRMYYMMDDHHmm          (if M=1)
      MODHHmm          (if M=2)
      ODHHmm          (if M=3)
      DHHmm           (if M=4)
      HHmm            (if M=5)
      (none)          (if M=6)
      (none)          (if M=7)
      MMDDHHmm        (if M=8)
      DDHHmm          (if M=9)
TTDDRMYYMMDDHHmm&&CCCC<ETX> (if M=1)
      MODHHmm&&CCCC<ETX> (if M=2)
      ODHHmm&&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)
      MMDDHHmm&&CCCC<ETX> (if M=8)
      DDHHmm&&CCCC<ETX> (if M=9)
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. DD - Leak test Duration in hours (decimal) [2...24]
4. R - Leak test Rate (0=0.2, 1=0.1)
5. M - Leak test Method:
  - If M=1 ON DATE, YYMMDDHHmm:
    - YY =Year
    - MM =Month (01-12)
    - DD =Day
    - HHmm=Hour, Minute (EE00=Disabled)
  - If M=2 ANNUALLY Day-of-Week, MMWDHHmm:
    - MM =Month (01-12)
    - O =Occurrence [1-5] of day-of-week in month
    - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
    - HHmm=Hour, Minute (EE00=Disabled)
  - If M=3 MONTHLY Day-of-Week, WDHHmm:
    - O =Occurrence [1-5] of day-of-week in month
    - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
    - HHmm=Hour, Minute (EE00=Disabled)
  - If M=4 WEEKLY Day-of-Week, DHHmm:
    - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
    - HHmm=Hour, Minute (EE00=Disabled)
  - If M=5 DAILY, HHmm:
    - HHmm=Hour, Minute (EE00=Disabled)
  - If M=8 ANNUALLY Day-of-Month, MMDDHHmm:
    - MM =Month (01-12)
    - DD =Day of month (1-31)
    - HHmm=Hour, Minute (EE00=Disabled)
  - If M=9 MONTHLY Day-of-Month, WDHHmm:
    - DD =Day of month (1-31)
    - HHmm=Hour, Minute (EE00=Disabled)
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 612

Version 1

**Function Type:** Set Tank SIPHON Manifolded Partners

**Command Format:**

**Display:** <SOH>S612TTttTTtt...<CR>

**Computer:** <SOH>s612TTttTTtt...<CR>

**Inquire:**

<SOH>I612TT

<SOH>i612TT

**Typical Response Message, Display Format:**

<SOH>

I612TT

JAN 22, 2002 3:17 PM

TANK MANIFOLDED PARTNERS

TANK	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-450 Monitoring Systems

---

**Function Code: 613**

Version 1

**Function Type:** Set CSLD Probability of Detection

**Command Format:**

**Display:** <SOH>S613TTf

**Computer:** <SOH>s613TTf

**Inquire:**

<SOH>I613TT

<SOH>i613TT

#### Typical Response Message, Display Format:

<SOH>  
I613TT  
JAN 22, 1996 3:17 PM  
CSLD PROBABILITY OF DETECTION

T 1:REGULAR UNLEADED : Pd=95%  
<ETX>

#### Typical Response Message, Computer Format:

<SOH>i613TTYMMDDHHmmTTf...  
TTf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. f - Probability of Detection
  - 1=95%
  - 2=99%
  - 3=CUSTOM (Inquiry Command Only)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 614  
**Function Type:** Set CSLD Climate Factor

Version 1

**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-450 Monitoring Systems

---

**Function Code: 615**

Version 2

**Function Type:** Set BIR Meter Data Present

**Command Format:**

**Display:** <SOH>S615TTf

**Computer:** <SOH>s615TTf

**Inquire:**

<SOH>I615TT

<SOH>i615TT

**Typical Response Message, Display Format:**

<SOH>  
I615TT  
JAN 22, 1996 3:17 PM

TANK	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-450 Monitoring Systems

---

**Function Code: 616**

Version 2

**Function Type:** Set Accuchart Update Scheduling

**Command Format:**

**Display:** <SOH>S616TTf

**Computer:** <SOH>s616TTf

**Inquire:**

<SOH>I616TT

<SOH>i616TT

**Typical Response Message, Display Format:**

<SOH>  
I616TT  
JAN 22, 1996 3:17 PM

TANK	LABEL	CAL UPDATE
1	REGULAR UNLEADED	IMMEDIATE

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i616TTYMMDDHHmmTTf...  
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-450 Monitoring Systems

---

**Function Code: 618**

Version 1

**Function Type:** Set Tank CSLD Evaporation Compensation

**Command Format:**

**Display:** <SOH>S618TTf

**Computer:** <SOH>s618TTf

**Inquire:**

<SOH>I618TT

<SOH>i618TT

**Notes:**

1. Only accepted if both conditions are true for the addressed tank:
  - a. CSLD has been selected as the leak test method (S611TT).
  - b. Climate Factor has been set to Extreme (S614TT).

**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-450 Monitoring Systems

---

**Function Code: 619**

Version 1

**Function Type:** Set Tank Stage II Vapor Recovery

**Command Format:**

**Display:** <SOH>S619TTf

**Computer:** <SOH>s619TTf

**Inquire:**

<SOH>I619TT

<SOH>i619TT

**Notes:**

1. Only allowed if CSLD Evaporation Compensation is enabled

**Typical Response Message, Display Format:**

```
<SOH>
I619TT
JAN 22, 1996  3:16 PM

STAGE II VAPOR RECOVERY

DEVICE  LABEL                      ENABLED
T 1:UNLEADED GASOLINE              YES
T 2:SUPER UNLEADED                 YES
T 3:PREMIUM UNLEADED               YES
T 4:REGULAR GASOLINE               YES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i619TTYMMDDHHmmTTf...
                        TTf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Stage II Vapor Recovery flag:  
0=NO  
1=YES
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 61A

Version 1

**Function Type:** Set In-Tank Leak Test Early Stop

**Command Format:**

**Display:** <SOH>S61ATTf

**Computer:** <SOH>s61ATTf

**Inquire:**

<SOH>I61ATT

<SOH>i61ATT

**Typical Response Message, Display Format:**

```
<SOH>
I61ATT
JUN  1, 2000  8:06 AM

IN-TANK LEAK TEST EARLY STOP

TANK   LABEL                                TST EARLY STOP:
 1     * PRODUCT 1 *                        DISABLED
 2     * PRODUCT 2 *                        DISABLED
 3     * PRODUCT 3 *                        DISABLED
 4     * PRODUCT 4 *                        DISABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i6A000YYMMDDHHmmTTf...
                                TTf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - In-Tank Leak Test Early Stop Flag:  
0=DISABLED  
1=ENABLED
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 61B

Version 1

**Function Type:** Set In-Tank Static Gross Test Auto-Confirm

**Command Format:**

**Display:** <SOH>S61BTTf

**Computer:** <SOH>s61BTTf

**Inquire:**

<SOH>I61BTT

<SOH>i61BTT

**Typical Response Message, Display Format:**

<SOH>  
I61BTT  
OCT 10, 2000 3:11 PM

IN-TANK STATIC GROSS TEST AUTO-CONFIRM:

TANK	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-450 Monitoring Systems

---

**Function Code: 61H**

Version 2

**Function Type:** Set Update Apply Accuchart Chart Dates

**Command Format:**

**Display:** <SOH>S61HTTDF[data]

**Computer:** <SOH>s61HTTDF[data]

**Inquire:**

<SOH>I61HTT

<SOH>i61HTT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. D - Date Number [1..4], (Decimal)
3. F - 1. [data] NNN = Number of Days From Start of Calibration [01-120](Decimal)  
2. [data] yyyyymmdd = apply chart data using current date as start  
    yyyy = Year (Decimal)  
    mm = Month [01..12] (Decimal)  
    dd = Day [01..31] (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I61HTT
JAN 24, 2009  2:52 PM
```

APPLY ACCUCHART CHART DATES

TANK	START DATE		NNN		APPLY DATE	D#
----	-----		---		-----	----
T 1:	2009-01-25	+	20	=	2009-02-14	1
	2009-01-25	+	25	=	2009-02-19	2
	2009-01-25	+	35	=	2009-03-01	3
	2009-01-25	+	40	=	2009-03-06	4
T 2:	2009-01-25	+	32	=	2009-02-26	1
T 3:	2009-01-25	+	34	=	2009-02-28	1
T16:	****-**-**	+	36	=	****-**-**	1

<ETX>

(Note: \*\*\*\*-\*\*-\*\* is displayed when there is no viable date)

**Typical Response Message, Computer Format:**

```
<SOH>i61HTTYMMDDHHmmTTDNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd
TTDNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. D - Date Number [1..4] (Decimal)
4. NNN - Number of Days From Start of Calibration [01-120](Decimal)
5. yyyyymmdd - Apply Date (Note: This is all zeros when NNN = 00)(Decimal)
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 61I

Version 2

**Function Type:** Set Maximum Accuchart Calibration Period Days

**Command Format:**

**Display:** <SOH>S61ITTDDD

**Computer:** <SOH>s61ITTDDD

**Inquire:**

<SOH>I61ITT

<SOH>i61ITT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. DDD - Max Duration in Days [014..120], (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I61ITT
JAN 24, 2009  2:52 PM

MAXIMUM ACCUCHART CALIBRATION PERIOD DAYS

T 1:  30 DAYS      10 DAYS REMAINING
T 2:  60 DAYS      40 DAYS REMAINING
T 3:  90 DAYS      70 DAYS REMAINING
T16: 120 DAYS      100 DAYS REMAINING
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i61ITTYMMDDHHmmTTDDDRRR...
                        TTDDDRRR&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. DDD - Max Duration in Days [014-120] (Decimal)
4. RRR - Days Remaining (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 61J  
**Function Type:** Set Exclude Calibration Dates

Version 2

**Command Format:**  
**Display:** <SOH>S61JTTTFyyyyymmdd  
**Computer:** <SOH>s61JTTTFyyyyymmdd

**Inquire:**  
<SOH>I61JTT  
<SOH>i61JTT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. F - 1=Exclude Records on this Date,  
2=Include Records on this Date
3. yyy - Year (decimal)
4. mm - Month [01..12] (Decimal)
5. dd - Day [01..31] (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I61JTT
JAN 24, 2009  2:52 PM

DATES EXCLUDED FROM ACCUCHART CALIBRATION

T 1:  2009-01-15
      2009-01-17
      2009-01-19

T 2:  2009-01-15

T 3:  2009-01-15

T16:  2009-01-15
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i61JTTYMMDDHHmmTTNNyyyyymmdd...yyyyymmdd
      TTNNyyyyymmdd...yyyyymmdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NN - Number of Excluded Dates (Hex)
4. yyyy - Year (Decimal)
5. mm - Month [01..12] (Decimal)
6. dd - Day [01..31] (Decimal)
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 61K

Version 2

**Function Type:** Set Enable Accuchart Warnings

**Command Format:**

**Display:** <SOH>S61KTTF

**Computer:** <SOH>s61KTTF

**Inquire:**

<SOH>I61KTT

<SOH>i61KTT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. F - Accuchart Warning (Decimal)  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
I61KTT
JAN 24, 2009  2:52 PM
```

ACCUCHART WARNINGS

```
T 1: ENABLED
T 2: DISABLED
T 3: DISABLED
T16: ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i61KTTYMMDDHHmmTTF...
TTF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. F - Accuchart Warning (Decimal)  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code: 61L**

Version 2

**Function Type:** Set Accuchart Chart Management

**Command Format:**

**Display:** <SOH>S61LTT149IIP[*data*]

**Computer:** <SOH>s61LTT149IIP[*data*]

**Inquire:**

<SOH>I61LTTii

<SOH>i61LTTii

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - Chart ID number [01...99]
3. P - Operation
4. ii - Chart ID number [01...99] 00 = all charts for this tank (Decimal)
5. Chart ID=1 always exists. It cannot have a different source.
6. All set operations require AccuChart to be installed.

P	Operation	[data]	Description
1	Set Label	s...s	Name (Max 20 Ascii Chars)
2	*Set Volume Entry	V	0 = Absolute Volume, 1 = Delta Volume
3	*Add Height-Vol Pair	Hhhh.hh vvvvv.vv	Height- Volume Pair (Decimal)
4	*Add Height-Vol Pair	vvvvv.vv	Height = current height in tank Volume (Decimal)
5	*Remove Height-Vol Pair	nnnn	Pair # [0001...9999] (Decimal)
6	Set Active Chart		
7	*Set Chart Type	T	0 = One Point 1 = Four Point 2 = Twenty Point 3 = Linear 4 = Multi Point (User Entered)
8	*Set Chart Source	C	0 = User Initial Chart 1 = Metered Drop Chart 2 = Metered Dispense Chart 3 = Automatic Chart 4 = Remote Chart
9	*Make Manual Chart		This analyzes all height-volume pairs looking for bad points. If one or more bad points are suspected, they are flagged and the chart status is set to BAD POINTS. If no bad points are found, the chart status is set to READY.

\* This operation cannot be performed on an ACTIVE chart.

## Serial Interface Manual

### TLS-450 Monitoring Systems

Function Code 61L: (Continued)

Typical Response Message, Display Format:

```
<SOH>
I61LTT
JAN 24, 2009  2:52 PM
```

TANK CHARTS

```
-----
TANK:          1          DIAMETER: 96.0
CHART ID:      2          CAPACITY: 10000
LABEL:        SUMMER 2008  ENDSHAPE: 0.000
TYPE:         ONE_POINT   OFFSET:  -1.50
SOURCE:       AUTO DIM METERED CHART  TILT:  1.00
LAST CHANGE:  yyyy-mm-dd  DAYS:    60
MSSE:        123.45       QUALITY:  678
STATUS:       ACTIVE CHART
```

SUFFICIENCY HISTOGRAM

HEIGHT% COUNTS

```
-----+-----+-----+-----+-----+-----+
95 -100      1      ***
90 - 95       6      *****
85 - 90      18      *****
80 - 85       9      *****
75 - 80      32      *****
70 - 75       8      *****
65 - 70      25      *****
60 - 65       4      **
55 - 60       0
50 - 55       1
45 - 50       4      **
40 - 45       6      ***
35 - 40      23      *****
30 - 35      12      *****
25 - 30     100      *****
20 - 25      22      *****
15 - 20       8      *****
10 - 15       7      ***
 5 - 10       0
 0 -  5       0
-----+-----+-----+-----+-----+-----+

```

```
-----
TANK:          1
CHART ID:      1
LABEL:        WINTER 2008
TYPE:         MULTI POINT
SOURCE:       {USER ENTERED, METERED DROP CHART, METERED DISPENSE CHART}
LAST CHANGE:  yyyy-mm-dd
MSSE:        123.45
STATUS:       INCOMPLETE CHART
```

VOLUME: ABSOLUTE VOLUME

#	HEIGHT	VOLUME	F	#	HEIGHT	VOLUME	F	#	HEIGHT	VOLUME	F
001	hhhh.hh	vvvvvv.vv	0	003	hhhh.hh	vvvvvv.vv	0	005	hhhh.hh	vvvvvv.vv	0
002	hhhh.hh	vvvvvv.vv	0	004	hhhh.hh	vvvvvv.vv	0	006	hhhh.hh	vvvvvv.vv	0

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 61L: (Continued)

##### Notes:

- *height-volume pairs will be listed in descending height order.*
- *Metric values will show one digit to the right of the decimal point.*
- *English values will show two digits to the right of the decimal point.*

##### Typical Response Message, Computer Format:

```
<SOH>i61LTTYMMDDHHmmTTIIss...sstcyyyymmddEEEEEEEEESVN[ ]JJ[ ]KKKK[ ]...
                                     TTIIss...sstcyyyymmddEEEEEEEEESVN[ ]JJ[ ]KKKK[ ]&&CCCC<ETX>
```

##### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. II - Chart ID Number [01..99] (Decimal)
4. ss...ss - Label (20 ASCII characters [20h-7Eh])
5. t - Type  
0=One Point  
1=Four Point  
2=Twenty Point  
3=Linear  
4=Multi Point
6. c - Source  
0=User/Initial Chart  
1=Metered Drop Chart  
2=Metered Dispense Chart  
3=Automatic Chart  
4=Remote Chart
7. yyyymmdd - Last Change Date
8. EEEEEEEE - MSSE (ASCII Hex IEEE float)
9. S - Type  
0=Active  
1=Ready  
2=Incomplete  
3=Bad Point  
4=Calculating
10. V - Volume Entry  
0=Absolute Volume  
1=Delta Volume
11. N - Number of IEEE Ascii Float Values to follow
12. dddddddd - Diameter (ASCII Hex IEEE float)
13. cccccccc - Capacity (ASCII Hex IEEE float)
14. eeeeeeee - End Shape (ASCII Hex IEEE float)
15. ooooooooo - Offset (ASCII Hex IEEE float)
16. tttttttt - Tilt (ASCII Hex IEEE float)
17. JJ - Number of Histogram Bins to follow (Hex)
18. bbbb...bbbb - Histogram Bins (ASCII Hex short)
19. KKKK - Number of Height-Volume Pairs to follow (Hex)
20. kkkk - Pair ID Number (Hex)
21. hhhhhhhh - Height (ASCII Hex IEEE float)
22. vvvvvvvv - Volume (ASCII Hex IEEE float)
23. ff - Status (Hex)  
0=Unknown  
1=Good  
2=Bad
24. && - Data Termination Flag
25. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 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	LABEL	GALLONS
1	REGULAR UNLEADED	1000

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i621TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&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-450 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)

\* Set Tank Maximum Volume Limit (628 cmd) must be set before the High Level Limit.

**Typical Response Message, Display Format:**

<SOH>  
I622TT  
JAN 22, 1996 3:18 PM

TANK HIGH PRODUCT LIMIT

TANK	LABEL	GALLONS	PERCENT
1	REGULAR UNLEADED	77000	77

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i622TTYMMDDHHmmTTTTTTTTT...  
TTTTTTTTT&&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-450 Monitoring Systems

---

**Function Code: 623**

Version 1

**Function Type:** Set Tank Overfill Level Limit

**Command Format:**

**Display:** <SOH>S623TTGGGGGG

**Computer:** <SOH>s623TTFFFFFFFF

**Inquire:**

<SOH>I623TT

<SOH>i623TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Overfill Level Limit, Gallons (Decimal)
3. FFFFFFFF - Overfill Level Limit, Gallons (ASCII Hex IEEE float)

\* Set Tank Maximum Volume Limit (628 cmd) must be set before the Overfill Level Limit.

**Typical Response Message, Display Format:**

```
<SOH>
I623TT
JAN 22, 1996  3:18 PM

TANK OVERFILL LEVEL LIMIT

TANK   LABEL                      GALLONS  PERCENT
  1     REGULAR UNLEADED           9300      0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i623TTYMMDDHHmmTTFFFFFFFF...
                        TTTT&&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-450 Monitoring Systems

---

**Function Code: 624**

Version 1

**Function Type:** Set Tank High Water Level Limit

**Command Format:**

**Display:** <SOH>S624TTII.tt

**Computer:** <SOH>s624TTFFFFFFFF

**Inquire:**

<SOH>I624TT

<SOH>i624TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. II.tt - High Water Level Limit, Inches and tenths (Decimal, Min=0.75, Max=05.00, NotSet=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	LABEL	INCHES
1	REGULAR UNLEADED	4.50

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i624TTYMMDDHHmmTTFFFFFFFF...
                        TTTTTTTTTF&&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-450 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	LABEL	GALLONS
1	REGULAR UNLEADED	100

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i625TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&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-450 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	LABEL	GALLONS
1	REGULAR UNLEADED	50

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i626TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 627**

Version 1

**Function Type:** Set Tank High Water Warning Limit

**Command Format:**

**Display:** <SOH>S627TTII.tt

**Computer:** <SOH>s627TTFFFFFFFF

**Inquire:**

<SOH>I627TT

<SOH>i627TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. II.t - High Water Warning Limit, Inches and tenths (Decimal, Min=0.75, Max=05.00, NotSet=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	LABEL	INCHES
1	REGULAR UNLEADED	3.50

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i627TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 628**

Version 1

**Function Type:** Set Tank Maximum Volume Limit

**Command Format:**

**Display:** <SOH>S628TTGGGGGG

**Computer:** <SOH>s628TTFFFFFFFF

**Inquire:**

<SOH>I628TT

<SOH>i628TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Maximum Volume Limit, Gallons (Decimal)
3. FFFFFFFF - Maximum Volume Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I628TT
JAN 22, 1996  3:19 PM

TANK MAXIMUM VOLUME LIMIT
```

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	9600

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i628TTYMMDDHHmmTTFFFFFFFF...
                        TTTT&&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-450 Monitoring Systems

---

**Function Code: 629**

Version 1

**Function Type:** Set Tank Delivery Required Limit

**Command Format:**

**Display:** <SOH>S629TTGGGGGG

**Computer:** <SOH>s629TTFFFFFFFF

**Inquire:**

<SOH>I629TT

<SOH>i629TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Delivery Required Limit, Gallons (Decimal)
3. FFFFFFFF - Delivery Required Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I629TT
JAN 22, 1996  3:19 PM

TANK DELIVERY REQUIRED LIMIT
```

TANK	LABEL	GALLONS	PERCENT
1	TANK 1	200000	20

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i629TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code: 62A**

Version 1

**Function Type:** Set Tank Annual Leak Test Minimum Volume

**Command Format:**

**Display:** <SOH>S62ATTGGGGGG

**Computer:** <SOH>s62ATTFFFFFFFF

**Inquire:**

<SOH>I62ATT

<SOH>i62ATT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Annual Test Minimum Volume, Gallons (Decimal)
3. FFFFFFFF - Annual Test Minimum Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I62ATT
JAN 22, 1996  3:19 PM

ANNUAL LEAK TEST MIN VOLUME
```

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	6000

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i62ATTYYMDDHHmmTTFFFFFFFF...
                        TTTFFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code: 62C**

Version 1

**Function Type:** Set Tank Periodic Test Type

**Command Format:**

**Display:** <SOH>S62CTTp

**Computer:** <SOH>s62CTTp

**Inquire:**

<SOH>I62CTT

<SOH>i62CTT

**Typical Response Message, Display Format:**

<SOH>

I62CTT

JAN 22, 1996 3:19 PM

TANK PERIODIC TEST TYPE

TANK LABEL

1 REGULAR UNLEADED

PERIODIC TEST TYPE

QUICK

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i62CTTYMMDDHHmmTTp...

TTp&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - 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-450 Monitoring Systems

---

**Function Code:** 62D

Version 1

**Function Type:** Set Enable/Disable Tank Leak Test Fail Alarms

**Command Format:**

**Display:** <SOH>S62DDTTgpa

**Computer:** <SOH>s62DDTTgpa

**Inquire:**

<SOH>I62DDTT

<SOH>i62DDTT

#### Typical Response Message, Display Format:

<SOH>  
I62DDTT  
JAN 22, 1996 3:19 PM

TANK LEAK TEST FAIL ALARMS

TANK	LABEL			
1	REGULAR UNLEADED	GROSS TEST FAIL	ALARM DISABLED	
		PERIODIC TEST FAIL	ALARM DISABLED	
		ANNUAL TEST FAIL	ALARM DISABLED	

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i62DDTTYMMDDHHmmTTgpa...  
TTgpa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. g - Gross Test Fail Alarm  
0=Disabled  
1=Enabled
4. p - Periodic Test Fail Alarm  
0=Disabled  
1=Enabled
5. a - Annual Test Fail Alarm  
0=Disabled  
1=Enabled
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 62F  
**Function Type:** Set MAG Probe Float Size

Version 1

**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   LABEL                                FLOAT SIZE:
 1     REGULAR UNLEADED                    4.0 IN. PHASE SEPARATION
 2     PREMIUM                             4.0 IN.
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i62FTTTYMMDDHHmmTTf...
                               Ttf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - MAG Probe Float Size  
    0=4.0 "  
    1=2.0 "  
    2=3.0 "  
    3=1.0 "  
    4=4.0" - Phase Separation  
    9=CUSTOM
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Version 2)

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 62G  
**Function Type:** Set Accuchart Create Chart

Version 2

**Command Format:**  
**Display:** <SOH>S62GTT149  
**Computer:** <SOH>s62GTT149

**Inquire:**  
<SOH>I62GTT  
<SOH>i62GTT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all, inquire only)
2. Set operation requires Accuchart to be installed

**Typical Response Message, Display Format:**

```
<SOH>
I62GTT
JAN 24, 2009  2:52 PM

TANK CHARTS

TANK  CHART ID  STATUS
-----
01      01    ACTIVE CHART
        02    READY CHART
        03    BAD POINT CHART
        04    INCOMPLETE CHART
        05    CALCULATING CHART

02      01    ACTIVE CHART
        02    READY CHART
        03    BAD POINT CHART
        04    INCOMPLETE CHART
        05    CALCULATING CHART

<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i62GTTYMMDDHHmmTTNNIIIs...IIIs
                        TTNNIIIs...IIIs&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NN - Number of charts [00...99] (Decimal)
4. II - Chart ID Number [01...99] (Decimal)
5. s - Status  
0=Active Chart  
1=Ready Chart  
2=Incomplete Chart  
3=Bad Point Chart  
4=Calculating Chart
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

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

Version 1

**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   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-450 Monitoring Systems

---

**Function Code:** 632  
**Function Type:** Set Tank Test Siphon Break

Version 1

**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   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-450 Monitoring Systems

---

**Function Code: 636**

Version 1

**Function Type:** Set Tank Periodic Leak Test Minimum Volume

**Command Format:**

**Display:** <SOH>S636TTGGGGGG

**Computer:** <SOH>s636TTFFFFFFFF

**Inquire:**

<SOH>I636TT

<SOH>i636TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Periodic Test Minimum Volume, Gallons (Decimal)
3. FFFFFFFF - Periodic Test Minimum Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I636TT
JAN 22, 1996  3:19 PM

PERIODIC LEAK TEST MIN VOLUME

TANK   LABEL                      GALLONS
  1    REGULAR UNLEADED           3000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i636TTYMMDDHHmmTTFFFFFFFF...
                      TTTT&&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-450 Monitoring Systems

---

**Function Code: 63A**

Version 1

**Function Type:** Set Tank Low Level Threshold for Sequential Line Manifold

**Command Format:**

**Display:** <SOH>S63ATTPP.hh

**Computer:** <SOH>s63ATTFFFFFFFFF

**Inquire:**

<SOH>I63ATT

<SOH>i63ATT

**Notes:**

1. TT - Tank Number (Decimal, set for primary tank)
2. PP.hh - Low Level Pump Threshold, Percent and hundredths (Decimal)
3. FFFFFFFF - Low Level Pump Threshold, Percent (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I63A00
JUN  1, 2001  8:07 AM

LOW LEVEL PUMP THRESHOLD FOR SEQUENTIAL LINE MANIFOLD

TANK    LABEL                PUMP THRESHOLD
  1     REGULAR UNLEADED      10.00%
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i63A00YYMMDDHHmmTTTTTTTTTT...
                      TTTTTTTTTT&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, set for primary tank)
3. FFFFFFFF - Low Level Pump Threshold, Percent (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 63H  
**Function Type:** Set Accuchart Delete Chart

Version 2

**Command Format:**  
**Display:** <SOH>S63HTT149II  
**Computer:** <SOH>s63HTT149II

**Inquire:**  
<SOH>I63HTT  
<SOH>i63HTT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, set for primary tank)
2. II - Chart ID number [02...99]
3. Chart ID=1 always exists. It cannot be deleted.
4. Set operation requires AccuChart to be installed.

**Typical Response Message, Display Format:**

<SOH>  
I63HTT  
JAN 24, 2009 2:52 PM

TANK CHARTS

TANK	CHART ID	STATUS
----	-----	-----
01	01	ACTIVE CHART
	02	READY CHART
	06	BAD POINT CHART
	07	INCOMPLETE CHART
	08	CALCULATING CHART
02	01	ACTIVE CHART
	06	READY CHART
	07	BAD POINT CHART
	08	INCOMPLETE CHART
	09	CALCULATING CHART

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i63HTTYMMDDHHmmTTNNIIIs...IIIs  
TTNNIIIs...IIIs&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NN - Number of charts [00...99] (Decimal)
4. II - Chart ID Number [01...99] (Decimal)
5. s - Status  
0=Active Chart  
1=Ready Chart  
2=Incomplete Chart  
3=Bad Point Chart  
4=Calculating Chart
6. && - Data Termination Flag
7. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 641  
**Function Type:** Set Density Code

Version 3

**Command Format:**  
**Display:** <SOH>S641PPSSSSSSSSSSSSSSSS  
**Computer:** <SOH>s641PPSSSSSSSSSSSSSSSS

**Inquire:**  
<SOH>I641PP  
<SOH>i641PP

**Notes:**

1. SSSSSSSSSSSSSS - Density Code (Entry is 14 characters or empty))

**Typical Response Message, Display Format:**

```
<SOH>
I641PP
JAN 22, 2010  3:16 PM

DENSITY FLOAT CODE

PROBE   CODE
1       B7053686719512
2
3       A7058696729713
4       B7056772719214
5
6
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i641PPYYMMDDHHmmPPNNSSSSSSSSSSSSSS...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. NN - Number of characters to follow
4. SSSSSSSSSSSSSS - Density Code
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 671  
**Function Type:** Set Tank Density High Limit

Version 3

**Command Format:**  
**Display:** <SOH>S671TTdd.ddd  
**Computer:** <SOH>s671TTFFFFFFFF

**Inquire:**  
<SOH>I671TT  
<SOH>i671TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. dd.ddd - Density High Limit (Decimal)  
Value Range = [42.139, 56.185] [US]  
Value Range = [675.00, 900.00] [Metric]
3. FFFFFFFF - Density High Limit (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I671TT
JAN 22, 2010  3:16 PM

TANK DENSITY HIGH LIMIT

TANK   PRODUCT LABEL          LBS/FT^3
1      REGULAR UNLEADED       56.185
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i671TTYMMDDHHmmTTFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Density High Limit (ASCII Hex IEEE float)  
Value Range = [41.139, 56.185]
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 672  
**Function Type:** Set Tank Density Low Limit

Version 3

**Command Format:**  
**Display:** <SOH>S672TTdd.ddd  
**Computer:** <SOH>s672TTFFFFFFFF

**Inquire:**  
<SOH>I672TT  
<SOH>i672TT

#### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. dd.ddd - Density Low Limit (Decimal)  
Value Range = [42.139, 56.185] [US]  
Value Range = [675.00, 900.00] [Metric]
3. FFFFFFFF - Density Low Limit (ASCII Hex IEEE float)

#### Typical Response Message, Display Format:

```
<SOH>
I672TT
JAN 22, 2010  3:16 PM

TANK DENSITY LOW LIMIT

TANK   PRODUCT LABEL          LBS/FT^3
1      REGULAR UNLEADED       42.139
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i672TTYMMDDHHmmTTFFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Density Low Limit (ASCII Hex IEEE float)  
Value Range = [41.139, 56.185]
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 6A4

Version 1

**Function Type:** Set Tank 1 Point Full Height Volume for Tall Tanks

**Command Format:**

**Display:** <SOH>S6A4TTGGGGGGG

**Computer:** <SOH>s6A4TTFFFFFFFF

**Inquire:**

<SOH>I6A4TT

<SOH>i6A4TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6A4TT  
JAN 22, 1996 3:16 PM

TANK FULL VOLUME

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	9728

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6A4TTYMMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&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-450 Monitoring Systems

Function Code: 6A5

Version 1

**Function Type:** Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes for Tall Tanks

**Command Format:**

**Inquire:**

**Display:** <SOH>S6A5TTGGGGGGGggggggggGGGGGGGgggggggg

<SOH>I6A5TT

**or:** <SOH>S6A5TTGGGGG, ggggg, GGGG, ggg

```
Computer: <SOH>s6A5TTFEEEEEEffffffFEEFFFFFFFFFFf
```

<SOH>i6A5TT

Notes:

- |    |          |                                                      |  |
|----|----------|------------------------------------------------------|--|
| 1. | TT       | - Tank Number (Decimal, 00=all)                      |  |
| 2. | GGGGGGG  | - Full Height Volume, Gallons (Decimal)              |  |
| 3. | ggggggg  | - 3/4 Height Volume, Gallons (Decimal)               |  |
| 4. | GGGGGGG  | - 1/2 Height Volume, Gallons (Decimal)               |  |
| 5. | ggggggg  | - 1/4 Height Volume, Gallons (Decimal)               |  |
| 6. | FFFFFFFF | - Full Height Volume, Gallons (ASCII Hex IEEE float) |  |
| 7. | fffffff  | - 3/4 Height Volume, Gallons (ASCII Hex IEEE float)  |  |
| 8. | FFFFFFFF | - 1/2 Height Volume, Gallons (ASCII Hex IEEE float)  |  |
| 9. | fffffff  | - 1/4 Height Volume, Gallons (ASCII Hex IEEE float)  |  |

**Typical Response Message, Display Format:**

<SOH>  
I6A5TT  
JAN 22, 1996 3:16 PM

TANK 4 POINT VOLUMES

TANK	LABEL	GALLONS			
1	REGULAR UNLEADED	9728	7296	4864	2432
<FTX>					

Typical Response Message, Computer Format:

```
<SOH>i6A5TTYMMDDHHmmTFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF...
                        TFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF&&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.      ffffffff   - 3/4 Height Volume, Gallons (ASCII Hex IEEE float)
5.      FFFFFFFF   - 1/2 Height Volume, Gallons (ASCII Hex IEEE float)
6.      ffffffff   - 1/4 Height Volume, Gallons (ASCII Hex IEEE float)
7.      &&         - Data Termination Flag
8.      CCCC       - Message Checksum

```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 6A6

Version 1

**Function Type:** Set Tank 20 Point Full, 95%, 90%,...Volumes for Tall Tanks

**Command Format:**

**Display:** <SOH>S6A6TTGGGGGGGggggggg...

**or:** <SOH>S6A6TTGGGGG,gggg,GGGG,...

**Computer:** <SOH>s6A6TTFFFFFFFFF...

**Inquire:**

<SOH>I6A6TT

<SOH>i6A6TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGggggggg - Series of 20 Volumes, Gallons (Decimal)
3. FFFFFFFF - Series of 20 Volumes, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I6A6TT
JAN 22, 1996   3:16 PM

TANK 20 POINT VOLUMES

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

<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i6A6TTYMMDDHHmmTTTTTTTTTT...
                      TTTTTTTTTT&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - 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-450 Monitoring Systems

---

**Function Code:** 6A7

Version 1

**Function Type:** Set Tank Diameter for Tall Tanks

**Command Format:**

**Display:** <SOH>S6A7TTIIIII.hh

**Computer:** <SOH>s6A7TTFFFFFFFF

**Inquire:**

<SOH>I6A7TT

<SOH>i6A7TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. IIII.hh - Tank Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Tank Diameter, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6A7TT  
JAN 22, 1996 3:16 PM

TANK DIAMETER

TANK	LABEL	INCHES
1	REGULAR UNLEADED	96.00

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6A7TTYMMDDHHmmTTTTTTTTTT...  
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-450 Monitoring Systems

---

**Function Code:** 6AA

Version 1

**Function Type:** Set Tank Linear Calculated Full Volume for Tall Tanks

**Command Format:**

**Display:** <SOH>S6AATTGGGGGGG

**Computer:** <SOH>s6AATTFFFFFFFFF

**Inquire:**

<SOH>I6AATT

<SOH>i6AATT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6AATT  
JAN 22, 1996 3:17 PM

TANK FULL VOLUME

TANK	LABEL	TANK PROFILE	GALLONS
1	REGULAR UNLEADED	1 PT	10000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6AATTYYMMDDHHmmTTFFFFFFFFF...  
TTFFFFFFFFF&&CCCC<ETX>

**Notes:**

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 6AF

Version 1

**Function Type:** Set Tank Probe Offset for Tall Tanks

**Command Format:**

**Display:** <SOH>S6AFTTIIIII.hh

**Computer:** <SOH>s6AFTTFFFFFFFF

**Inquire:**

<SOH>I6AFTT

<SOH>i6AFTT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. IIII.hh - Probe offset, Inches and hundredths (Decimal)
3. FFFFFFFF - Probe offset, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6AFTT  
JAN 22, 1996 3:16 PM

PROBE OFFSET

TANK	LABEL	INCHES
1	TANK 1	2.80

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6AFTTTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - 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-450 Monitoring Systems

---

**Function Code:** 6C1

Version 1

**Function Type:** Set Tank Low Level Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C1TTGGGGGGG

**Computer:** <SOH>s6C1TTFFFFFFFF

**Inquire:**

<SOH>I6C1TT

<SOH>i6C1TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGG - Low Level Limit, Gallons (Decimal)
3. FFFFFFFFF - Low Level Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6C1TT  
JAN 22, 1996 3:18 PM

TANK LOW PRODUCT LIMIT

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	1000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6C1TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFFF - Low Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 6C2

Version 1

**Function Type:** Set Tank High Level Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C2TTGGGGGGG

**Computer:** <SOH>s6C2TTFFFFFFFF

**Inquire:**

<SOH>I6C2TT

<SOH>i6C2TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGG - High Level Limit, Gallons (Decimal)
3. FFFFFFFF - High Level Limit, Gallons (ASCII Hex IEEE float)

\* Set Tank Maximum Volume Limit (628 or 6C8 cmd) must be set before the High Level Limit.

**Typical Response Message, Display Format:**

<SOH>

I6C2TT

JAN 22, 1996 3:18 PM

TANK HIGH PRODUCT LIMIT

TANK	LABEL	GALLONS	PERCENT
1	REGULAR UNLEADED	770000	77

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6C2TTYMMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - 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-450 Monitoring Systems

---

**Function Code:** 6C3

Version 1

**Function Type:** Set Tank Overfill Level Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C3TTGGGGGGG

**Computer:** <SOH>s6C3TTFFFFFFFF

**Inquire:**

<SOH>I6C3TT

<SOH>i6C3TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGG - Overfill Level Limit, Gallons (Decimal)
3. FFFFFFFF - Overfill Level Limit, Gallons (ASCII Hex IEEE float)

\* Set Tank Maximum Volume Limit (628 cmd) must be set before the Overfill Level Limit.

**Typical Response Message, Display Format:**

<SOH>

I6C3TT

JAN 22, 1996 3:18 PM

TANK OVERFILL LEVEL LIMIT

TANK	LABEL	GALLONS	PERCENT
1	REGULAR UNLEADED	9300	0

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6C3TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code:** 6C5

Version 1

**Function Type:** Set Tank Sudden Loss Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C5TTGGGGGGG

**Computer:** <SOH>s6C5TTFFFFFFFF

**Inquire:**

<SOH>I6C5TT

<SOH>i6C5TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGG - Sudden Loss Limit, Gallons (Decimal)
3. FFFFFFFF - Sudden Loss Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6C5TT  
JAN 22, 1996 3:18 PM

TANK SUDDEN LOSS LIMIT

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	5556

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6C5TTYMMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&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-450 Monitoring Systems

---

**Function Code:** 6C8

Version 1

**Function Type:** Set Tank Maximum Volume Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C8TTGGGGGGG

**Computer:** <SOH>s6C8TTFFFFFFFFF

**Inquire:**

<SOH>I6C8TT

<SOH>i6C8TT

**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>
I6C8TT
JAN 22, 1996  3:19 PM

TANK MAXIMUM VOLUME LIMIT
```

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	9600

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i6C8TTYMMDDHHmmTTFFFFFFFFF...
                                TTTFFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code:** 6C9

Version 1

**Function Type:** Set Tank Delivery Required Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C9TTGGGGGGG

**Computer:** <SOH>s6C9TTFFFFFFFF

**Inquire:**

<SOH>I6C9TT

<SOH>i6C9TT

**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>
I6C9TT
JAN 22, 1996  3:19 PM

TANK DELIVERY REQUIRED LIMIT

TANK   LABEL                GALLONS  PERCENT
  1     TANK 1                2000000    20
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i6C9TTYMMDDHHmmTTFFFFFFFF...
                        TTTTFFFFF&&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-450 Monitoring Systems

---

**Function Code:** 6SU  
**Function Type:** Printout Tank Setup Tabs

Version 2

**Command Format:**  
**Display:** <SOH>I6SUttTT  
**Computer:** not supported

#### Notes:

1. tt - Tank Number (Decimal, [01..32] 00=all tanks)
2. TT - tab number  
00=All tabs  
01=General  
02=Limits  
03=Environmental Tests  
04=All Tanks  
05=Product  
06=Chart  
07=Manual Calibration  
08=Tank Charts  
09=Siphon Sets  
10=Accuchart

#### Typical Response Message, Display Format:

```
<SOH>
I6SU01
JAN 22, 2009  3:19 PM

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

===== SETUP FOR ALL TANKS =====

USER ULLAGE:                ENABLED - 95%
PRINT TC VOLUMES:           ENABLED
TC REFERENCE TEMPERATURE:   60.0 DEG F

PERIODIC TEST NEEDED WARNINGS: ENABLED
DAYS BEFORE PERIODIC WARNING: 30
DAYS BEFORE PERIODIC ALARM:  60

ANNUAL TEST NEEDED WARNINGS: ENABLED
DAYS BEFORE ANNUAL WARNING:   30
DAYS BEFORE ANNUAL ALARM:    60
- - - - -
CSLD REID VAPOR PRESSURES

JAN:  1.0      MAY:  5.0      SEP:  9.0
FEB:  2.0      JUN:  6.0      OCT: 10.0
MAR:  3.0      JUL:  7.0      NOV: 11.0
APR:  4.0      AUG:  8.0      DEC: 12.0
- - - - -
F# PRODUCT LABEL          T# TANK LABEL
- - - - -
01 SUPER                  01 SUPER
02 DIESEL                 02 DIESEL
03 REGULAR                03 NORTH REGULAR 1
                        04 NORTH REGULAR 2
                        05 REGULAR

===== SETUP FOR TANK  3 =====

CONFIGURED:                YES
LABEL:                     NORTH REGULAR 1
PRODUCT CODE:              3
PROBE NUMBER:              3
PROBE OFFSET:              0.0
FULL VOLUME:               10000 GALLONS
```



# Serial Interface Manual

## TLS-450 Monitoring Systems

### Function Code 6SU: (Continued)

```

DIAMETER:                96.0 INCHES
TILT:                    0.0 INCHES
THERMAL COEFFICIENT:     0.0007
METER DATA PRESENT:     NO
PUMP THRESHOLD:          200 GALLONS
STICK OFFSET FUEL:        0.0 INCHES
STICK OFFSET WATER:       0.0 INCHES
DELIVERY DELAY:           5.0 MINUTES
GROSS TEST FAIL:          ALARMS ENABLED
PERIODIC TEST FAIL:       ALARMS ENABLED
ANNUAL TEST FAIL:         ALARMS ENABLED
-----
MAX VOLUME:               9900 GALLONS
HIGH PRODUCT:              98%
DELIVERY OVERFILL:         95%
DELIVERY LIMIT:            90%
LOW PRODUCT:               500 GALLONS
HIGH WATER WARNING:        2.0 INCHES
HIGH WATER ALARM:          3.0 INCHES
LEAK ALARM LIMIT:          99 GALLONS
SUDDEN LOSS LIMIT:        75 GALLONS
-----
TANK TEST METHOD:          CSLD
GROSS TEST AUTO CONFIRM:   ENABLED
PROBABILITY OF DETECTION:  99%
CLIMATE FACTOR:            MODERATE
EVAPORATION COMPENSATION:  DISABLED
STAGE II VAPOR RECOVERY:   DISABLED
-----
TANK TEST METHOD:          SLD
LEAK TEST RATE:            0.2 GPH
PERIODIC TEST TYPE:        STANDARD
TEST FREQUENCY:            mm/dd/yyyy hh:mm
GROSS TEST AUTO CONFIRM:   N/A
TANK TEST SIPHON BREAK:    OFF
DURATION:                  2 HOURS
MINIMUM PERIODIC VOLUME:   50%
MINIMUM ANNUAL VOLUME:     40%
EARLY STOP:                DISABLED
TANK TEST NOTIFY:          ON
-----
TANK PROFILE:              TWENTY POINT

#   HEIGHT_ VOLUME        #   HEIGHT  VOLUME
-----
20   96.0    10000        10   48.0     5000
19   92.2     9600         9   44.4     4650
:     :           :         :
:     :           :         :
12    9.6      900         2    9.6      900
11    4.8      400         1    4.8      450
-----
T3 SIPHON MANIFOLDED TO TANKS: 4,5
T3 LINE MANIFOLDED TO TANKS: NONE
-----
CHART ID:                  1
LABEL:                     SUMMER 2008
TYPE:                      ONE POINT
SOURCE:                    USER ENTERED
LAST CHANGE:               yyyy-mm-dd
STATUS:                    ACTIVE
CAPACITY:                  10000 GALLONS
ENDSHAPE:                  0.000
OFFSET:                    -1.50 INCHES
TILT:                      1.00 INCHES
DIAMETER:                  96.1 INCHES
-----
CHART ID:                  2
LABEL:                     WINTER 2008
TYPE:                      MULTI POINT

```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 6SU: (Continued)

SOURCE:	METERED DROP CHART
LAST CHANGE:	yyyy-mm-dd
STATUS:	INCOMPLETE CHART
VOLUME ENTRY:	ABSOLUTE VOLUME

#	HEIGHT	VOLUME	#	HEIGHT	VOLUME
001	hhhh.hh	vvvvvv.vv	003	hhhh.hh	vvvvvv.vv
002	hhhh.hh	vvvvvv.vv	004	hhhh.hh	vvvvvv.vv

#### ACCUCHART

UPDATE SCHEDULE:	PERIODIC
APPLY DATE 1:	yyyy/mm/dd
APPLY DATE 2:	yyyy/mm/dd
APPLY DATE 3:	yyyy/mm/dd
APPLY DATE 4:	yyyy/mm/dd
CALIBRATION PERIOD:	120 DAYS
WARNINGS:	ENABLED
<ETX>	

### 7.3.7 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>i701SSYYMMDDHHmmSSf...
                      SSf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 702**

Version 1

**Function Type:** Set Liquid Sensor Location Label

**Command Format:**

**Display:** <SOH>S702SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s702SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I702SS

<SOH>i702SS

**Typical Response Message, Display Format:**

```
<SOH>
I702SS
JAN 28, 1995 10:39 AM

LIQUID LABEL

DEVICE LABEL
  1 LIQUID SENSOR #1
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i702SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 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-450 Monitoring Systems

---

**Function Code:** 704  
**Function Type:** Set Liquid Sensor Category

Version 1

**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=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 706**

Version 1

**Function Type:** Set Vapor Sensor Configuration

**Command Format:**

**Display:** <SOH>S706SSf

**Computer:** <SOH>s706SSf

**Inquire:**

<SOH>I706SS

<SOH>i706SS

**Typical Response Message, Display Format:**

<SOH>

I706SS

JAN 28, 1995 10:40 AM

VAPOR CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	VAPOR SENSOR #1	ON

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i706SSYYMMDDHHmmSSf...  
SSf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 707**

Version 1

**Function Type:** Set Vapor Sensor Location Label

**Command Format:**

**Display:** <SOH>S707SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s707SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I707SS

<SOH>i707SS

#### Typical Response Message, Display Format:

<SOH>  
I707SS  
JAN 28, 1995 10:40 AM

VAPOR LABEL

DEVICE LABEL  
1 VAPOR SENSOR #1  
<ETX>

#### Typical Response Message, Computer Format:

SOH>i707SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...  
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 708**

Version 1

**Function Type:** Set Vapor Sensor Alarm Threshold

**Command Format:**

**Display:** <SOH>S708SSVVVVVV

**Computer:** <SOH>s708SSFFFFFFFF

**Inquire:**

<SOH>I708SS

<SOH>i708SS

**Notes:**

1. SS - Vapor Sensor Number (Decimal, 00=all)
2. VVVVVV - Vapor alarm threshold (Decimal)
3. FFFFFFFF - Vapor alarm threshold (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I708SS  
JAN 28, 1995 10:41 AM

VAPOR ALARM THRESHOLD

SENSOR	LOCATION	THRESHOLD
1	VAPOR SENSOR #1	100000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i708SSYYMMDDHHmmSSFFFFFFFF...  
SSFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Vapor alarm threshold (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 709  
**Function Type:** Set Vapor Sensor Category

Version 1

**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=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 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-450 Monitoring Systems

---

**Function Code:** 712

Version 1

**Function Type:** Set Groundwater Sensor Location Label

**Command Format:**

**Display:** <SOH>S712SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s712SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I712SS

<SOH>i712SS

**Typical Response Message, Display Format:**

<SOH>

I712SS

JAN 28, 1995 10:41 AM

GROUNDWATER LABEL

DEVICE LABEL

1 GROUNDWATER #1

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i712SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...

SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Groundwater Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 713**

Version 1

**Function Type:** Set Groundwater Sensor Category

**Command Format:**

**Display:** <SOH>S713SSt

**Computer:** <SOH>s713SSt

**Inquire:**

<SOH>I713SS

<SOH>i713SS

#### Typical Response Message, Display Format:

<SOH>  
I713SS  
JAN 28, 1995 10:41 AM

GROUNDWATER CATEGORY

SENSOR	LOCATION	CATEGORY
1	GROUNDWATER #1	OTHER

<ETX>

#### Typical Response Message, Computer Format:

SOH>i713SSYYMMDDHHmmSSc...  
SSc&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Groundwater Sensor Number (Decimal, 00=all)
3. c - Groundwater Sensor Category:
  - 1=Other
  - 2=Annular
  - 3=Dispenser Pan
  - 4=Monitoring Well
  - 5=STP Sump
  - 6=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 727

Version 1

**Function Type:** Set MAG Sensor Alarm Upgrade Delay

**Command Format:**

**Display:** <SOH>S727SSH HHH

**Computer:** <SOH>s727SSH HHH

**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-450 Monitoring Systems

**Function Code: 728**

Version 1

**Function Type:** Set MAG Sensor Alarm Threshold

**Command Format:**

**Display:** <SOH>S728SSAAxxx.xx

**Computer:** <SOH>s728SSAAFFFFFFFFF

**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>
I728SSAA
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>
```

**Typical Response Message, Computer Format:**

```
<SOH>i728SSYYMMDDHHmmSSrrPPAAFFppUUnnFFFFFFFFPPAAFFppUUnnFFFFFFFF...
SSrrPPAAFFppUUnnFFFFFFFFPPAAFFppUUnnFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (ASCII Decimal)
3. rr - Number of alarm definition records to follow (ASCII Decimal)
4. PP - Value for comparison (Hex)
  - 01=Total Height
  - 02=Fuel Height
  - 03=Water Height
  - 04=Install Position
  - 05=Fluid Temperature
  - 06=Board Temperature
5. AA - Alarm to monitor (Hex)
  - 01=Setup Data Warning
  - 02=Communication Alarm
  - 03=Sensor Fault Alarm
  - 04=Fuel Warning
  - 05=Fuel Alarm
  - 06=Water Warning
  - 07=Water Alarm
  - 08=High Liquid Warning
  - 09=High Liquid Alarm
  - 0A=Low Liquid Warning
  - 0B=Low Liquid Alarm
  - 0C=Temperature Warning
  - 0D=Relay Active
  - 0E=Install Alarm
6. FF - Compare Direction, 00="<", 01=">"
7. pp - Programmable Threshold, 00="No", 01="Yes"
8. UU - Alarm Upgrade, 00="No", 01="Yes"
9. nn - Number of 8-character ASCII Hex Characters to follow
10. FFFFFFFF - Alarm Threshold, Inches or Deg F (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 72E  
**Function Type:** Set MAG Sensor Label

Version 1

**Command Format:**  
**Display:** <SOH>S72ESSaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>s72ESSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I72ESS  
<SOH>i72ESS

**Notes:**

1. MAG Sensor card must be installed
2. If SS=00, only configured sensors are used
3. SS - MAG Sensor number, 00=all sensors
4. a - 20 ASCII characters [20h-7Eh]

**Typical Response Message, Display Format:**

```
<SOH>
I72E00
JUN  1, 2002  8:07 AM

MAG SENSOR LABEL

DEVICE    LABEL
01        MAG-1
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i72ESSYYMMDDHHSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor number
3. a - 20 ASCII characters [20h-7Eh]
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 72F**

**Function Type:** Set MAG Sensor Configuration

Version 1

**Command Format:**

**Display:** <SOH>S72FSSc

**Computer:** <SOH>s72FSSc

**Inquire:**

<SOH>I72FSS

<SOH>i72FSS

**Notes:**

1. MAG Sensor card must be installed
2. SS - MAG Sensor number, 00=all sensors
3. c - configured  
0=off  
1=on

**Typical Response Message, Display Format:**

```
<SOH>
I72FSS
JUN  1, 2002  8:07 AM

MAG SENSOR CONFIGURATION

DEVICE  LABEL          CONFIGURED
01      MAG-1          ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i72FSSYYMMDDHHmmSSc...SSc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor number
3. c - Configured  
0=off  
1=on
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 741**

Version 1

**Function Type:** Set Type A (2 Wire CL) Sensor Configuration

**Command Format:**

**Display:** <SOH>S741SSf

**Computer:** <SOH>s741SSf

**Inquire:**

<SOH>I741SS

<SOH>i741SS

**Typical Response Message, Display Format:**

```
<SOH>
I741SS
JAN 28, 1995 10:41 AM

2 WIRE CL CONFIGURATION

DEVICE LABEL          CONFIGURED
  1  2 WIRE CL SENSOR #1  ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i741SSYYMMDDHHmmSSf...
                        SSf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 742**

Version 1

**Function Type:** Set Type A (2 Wire CL) Sensor Location Label

**Command Format:**

**Display:** <SOH>S742SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s742SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I742SS

<SOH>i742SS

#### Typical Response Message, Display Format:

```
<SOH>
I742SS
JAN 28, 1995 10:41 AM

2 WIRE CL LABEL

DEVICE LABEL
  1 2 WIRE CL SENSOR #1
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>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-450 Monitoring Systems

---

**Function Code: 743**

Version 1

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

**Command Format:**

**Display:** <SOH>S743SSt

**Computer:** <SOH>s743SSt

**Inquire:**

<SOH>I743SS

<SOH>i743SS

**Typical Response Message, Display Format:**

<SOH>

I743SS

JAN 28, 1995 10:41 AM

2 WIRE CL TYPE

SENSOR LOCATION

TYPE

1 2 WIRE CL SENSOR #1 ULTRA 2

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i743SSYYMMDDHHmmSSt...

SSt&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. t - Type A Sensor Type:
  - 1=ULTRA 2
  - 2=DISCRIM. INTERSTITIAL
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 744**

Version 1

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

**Command Format:**

**Display:** <SOH>S744SSa

**Computer:** <SOH>s744SSa

**Inquire:**

<SOH>I744SS

<SOH>i744SS

**Typical Response Message, Display Format:**

```
<SOH>
I743SS
JAN 28, 1995 10:41 AM

2 WIRE CL CATEGORY

SENSOR  LOCATION          CATEGORY
  1    2 WIRE CL SENSOR #1  ANNULAR
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i744SSYYMMDDHHmmSSc...
                        SSc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. c - Type A Sensor Category:
  - 1=Other
  - 2=Annular
  - 3=Dispenser Pan
  - 4=Monitoring Well
  - 5=STP Sump
  - 6=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 746**

Version 1

**Function Type:** Set Type B (3 Wire CL) Sensor Configuration

**Command Format:**

**Display:** <SOH>S746SSf

**Computer:** <SOH>s746SSf

**Inquire:**

<SOH>I746SS

<SOH>i746SS

**Typical Response Message, Display Format:**

```
<SOH>
I746SS
JAN 28, 1995 10:41 AM

3 WIRE CL CONFIGURATION

DEVICE LABEL CONFIGURED
  1 3 WIRE CL SENSOR #1 ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i746SSYYMDDHHmmSSf...
                      SSf&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - 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-450 Monitoring Systems

---

**Function Code: 747**

Version 1

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

**Command Format:**

**Display:** <SOH>S747SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s747SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I742SS

<SOH>i742SS

#### Typical Response Message, Display Format:

```
<SOH>
I747SS
JAN 28, 1995 10:41 AM

3 WIRE CL LABEL

DEVICE LABEL
  1 3 WIRE CL SENSOR #1
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i747SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
                                SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type B Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 748**

Version 1

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

**Command Format:**

**Display:** <SOH>S748SSt

**Computer:** <SOH>s748SSt

**Inquire:**

<SOH>I748SS

<SOH>i748SS

#### Typical Response Message, Display Format:

```
<SOH>
I748SS
JAN 28, 1995 10:41 AM

3 WIRE CL TYPE

SENSOR  LOCATION          TYPE
   1   3 WIRE CL SENSOR #1  ULTRA/Z-1
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i748SSYYMMDDHHmmSSt...
                        SSt&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal)
3. t - Sensor Type  
1=ULTRA/Z-1  
2=ULTRA/Z-1 HV
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 749**

Version 1

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

**Command Format:**

**Display:** <SOH>S749SSa

**Computer:** <SOH>s749SSa

**Inquire:**

<SOH>I749SS

<SOH>i749SS

**Typical Response Message, Display Format:**

```
<SOH>
I749SS
JAN 28, 1995 10:41 AM

3 WIRE CL CATEGORY

SENSOR  LOCATION          CATEGORY
  1    3 WIRE CL SENSOR #1  ANNULAR
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i749SSYYMMDDHHmmSSc...
                               SSc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Type B Sensor Number (Decimal, 00=all)
3. t - Type B Sensor Category:
  - 1=Other
  - 2=Annular
  - 3=Dispenser Pan
  - 4=Monitoring Well
  - 5=STP Sump
  - 6=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

## 7.3.8 PUMP SENSOR SETUP

**Function Code:** P01  
**Function Type:** Set Pump configured

Version 1

**Command Format:**  
**Display:** <SOH>SP01QQf  
**Computer:** <SOH>sp01QQf

**Inquire:**  
<SOH>IP01QQ  
<SOH>ip01QQ

### Typical Response Message, Display Format:

<SOH>  
IP01QQ  
JAN 24, 1996 2:54 PM

#### PUMP CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	REGULAR UNLEADED	ON

<ETX>

### Typical Response Message, Computer Format:

<SOH>ip01QQYYMMDDHHmmQQf...  
QQf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Pump number (Decimal)
3. f - Configuration flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** P02  
**Function Type:** Set Pump Label

Version 1

**Command Format:**

**Display:** <SOH>SP02QQaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>SP02QQaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>IP02QQ  
<SOH>iP02QQ

**Typical Response Message, Display Format:**

<SOH>  
IP02QQ  
JAN 24, 1996 2:54 PM  
  
PUMP LABEL  
  
DEVICE LABEL  
1 REGULAR UNLEADED  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iP02QQYYMMDDHHmmQQaaaaaaaaaaaaaaaaaaaaa...  
QQaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal)
3. a - Indicates any printable ASCII character (max 20)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** P03  
**Function Type:** Set Pump Mode

Version 1

**Command Format:**  
**Display:** <SOH>SP03QQf  
**Computer:** <SOH>sp03QQf

**Inquire:**  
<SOH>IP03QQ  
<SOH>ip03QQ

#### Typical Response Message, Display Format:

```
<SOH>
IP03QQ
JAN 24, 1996  2:54 PM

PUMP MODE

PUMP                MODE
Pm 1:REGULAR UNLEADED  TLS Pump Control
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>ip03QQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. f - Mode
  - 1= TLS Pump Control (for PLLD and line manifold)
  - 2= Pump Sense (pump sense only (as for CSLD 3 gph)
  - 3= External Pump Control
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** P04  
**Function Type:** Set Pump Tank Number

Version 1

**Command Format:**  
**Display:** <SOH>SP04QQtt  
**Computer:** <SOH>SP04QQtt

**Inquire:**  
<SOH>IP04QQ  
<SOH>iP04QQ

#### Typical Response Message, Display Format:

```
<SOH>
IP04QQ
JAN 24, 1996  2:54 PM

PUMP TANK NUMBER

PUMP                TANK NUMBER
Q 1:                3
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iP04QQYYMMDDHHmmQQtt...
                      QQtt&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. tt - Tank number (Decimal) (00=no tank)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** P05  
**Function Type:** Set Pump Control Devices

Version 1

**Command Format:**  
**Display:** <SOH>SP05QQttff  
**Computer:** <SOH>sp05QQttff

**Inquire:**  
<SOH>IP05QQ  
<SOH>ip05QQ

**Notes:**

1. Unassigned - To de-assign the Pump Control Device the user must set both tt = 00 and ff = 00 for the operation to be valid.

**Typical Response Message, Display Format:**

```
<SOH>
IP05QQ
JAN 24, 1996  2:54 PM

PUMP CONTROL DEVICES
```

```
PUMP  DEVICE TYPE      DEVICE ID
Pm 1: RELAY_          1
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ip04QQYYMMDDHHmmQQttff...
                      QQttff&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. tt - Device Type (Decimal)  
00 - NULL\_DEV\_TYPE  
11 - RELAY  
ff - Device ID (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: P06**

Version 1

**Function Type:** Set Pump - Pump Sense Device

**Command Format:**

**Display:** <SOH>SP06QQttff

**Computer:** <SOH>sp06QQttff

**Inquire:**

<SOH>IP06QQ

<SOH>ip06QQ

**Notes:**

1. Unassigned - To de-assign the Pump Sense Device the user must set both tt = 00 and ff = 00 for the operation to be valid.
2. Pump Mode - Assignment of a Pump Sense Device is not allowed for a Pump with a Pump Mode of "External Pump Control".

**Typical Response Message, Display Format:**

```
<SOH>
IP06QQ
JAN 24, 1996  2:54 PM
```

PUMP SENSE DEVICES

PUMP	DEVICE TYPE	DEVICE ID
Pm 1:	EXTERNAL INPUT	1

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>ip04QQYYMMDDHHmmQQttff...
                                QQttff&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. tt - Device Type (Decimal)  
00 - NULL\_DEV\_TYPE  
05 - External Input - (see 80F Input type - pump sense)
4. ff - Device ID (Decimal)
5. && - Data Termination Flag  
CCCC - Message Checksum

## 7.3.9 PRESSURE LINE LEAK SETUP

**Function Code:** 75A

Version 1

**Function Type:** Set Line Leak Lockout Schedule (All Types)

**Command Format:**

**Display:** <SOH>S75A00SHHmmHHmm<CR> (if S=0)

NsHHmmeHHmm<CR> (if S=1)

**Computer:** <SOH>s75A00SHHmmHHmm<CR> (if S=0)

NsHHmmeHHmm<CR> (if S=1)

**Inquire:**

<SOH>I75A00

<SOH>i75A00

**Typical Response Message, Display Format:**

```
<SOH>
I75A00
MAR 26, 1996  1:54 PM

LINE LEAK LOCKOUT SETUP
- - - - -
LOCKOUT SCHEDULE
DAILY
START TIME: 10:45 PM
STOP TIME :  4:45 AM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i75A00YYMMDDHHmmSHHmmHHmm          (if S=0)
                      NsHHmmeHHmm          (if S=1)
                      SHHmmHHmm&&CCCC<ETX> (if S=0)
                      NsHHmmeHHmm&&CCCC<ETX> (if S=1)
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. S - Lockout Schedule Type:
3. - If S=0 (Daily):
  - HHmm=Start Lockout Time (Hours, minutes)
  - HHmm=End Lockout Time (Hours, minutes)
4. - If S=1 (Individual):
  - N = Lockout Number (0=All Lockouts, 1..7)
  - s = Start Lockout Day (1=Mon, 2=Tue, ..., 7=Sun)
  - HHmm= Start Lockout Time (Hours, minutes)
  - e = End Lockout Day (1=Mon, 2=Tue, ..., 7=Sun)
  - HHmm= End Lockout Time (Hours, minutes)
5. && - Data Termination Flag
6. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 774**

Version 1

**Function Type:** Set Pressure Line Leak Continuous Handle Alarm Timeout

**Command Format:**

**Display:** <SOH>S774QQtt

**Computer:** <SOH>s774QQtt

**Inquire:**

<SOH>I774QQ

<SOH>i774QQ

**Notes:**

1. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
2. tt - Continuous Handle Alarm Timeout (Decimal, in hours, 1-16)

**Typical Response Message, Display Format:**

```
<SOH>
I774QQ
SEP 16, 2006  3:15 PM

PLLD CONTINUOUS HANDLE ALARM TIMEOUT

LINE                               TIMEOUT
Q 1:REGULAR UNLEADED              16 HOURS
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i774QQYYMMDDHHmmQQttQQtt...
                      QQtt&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. tt - Continuous Handle Alarm Timeout (Decimal, in hours, 1-16)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 775**

Version 1

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

**Command Format:**

**Display:** <SOH>S775QQrr.rr

**Computer:** <SOH>s775QQFFFFFFFFF

**Inquire:**

<SOH>I775QQ

<SOH>i775QQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
2. rr.rr - Profile Line Test Leak Rate, GPH (Decimal)
3. FFFFFFFF - Profile Line Test Leak Rate, GPH (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I775QQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK PROFILE LINE TEST LEAK RATE

LINE                      TEST LEAK RATE
Q 1:UNLEADED REGULAR      3.00 GPH
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s775QQYYMMDDHHmmQQFFFFFFFFF
QQFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. FFFFFFFF - Profile Line Test Leak Rate, GPH (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 776**

Version 1

**Function Type:** Set Pressure Line Leak Profile Line Test Reference Pressure

**Command Format:**

**Display:** <SOH>S776QQppp.pp

**Computer:** <SOH>s776QQFFFFFFFF

**Inquire:**

<SOH>I776QQ

<SOH>i776QQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
2. ppp.pp - Profile Line Test Reference Pressure, PSI (Decimal)
3. FFFFFFFF - Profile Line Test Reference Pressure, PSI (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I776QQ
JAN 14, 1995  10:15 PM

PROFILE LINE TEST REFERENCE PRESSURE

LINE                      TEST REF PRESSURE
Q 1:UNLEADED REGULAR      10.00 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>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-450 Monitoring Systems

---

**Function Code: 777**

Version 1

**Function Type:** Set Pressure Line Leak Primary Pipe Diameter

**Command Format:**

**Display:** <SOH>S777QQI.hh

**Computer:** <SOH>s777QQFFFFFFFFF

**Inquire:**

<SOH>I777QQ

<SOH>i777QQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. I.hh - Pipe Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I777QQ  
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK PRIMARY PIPE DIAMETER

LINE	1ST LINE DIAMETER
Q 1:UNLEADED REGULAR	1.75 INCHES
<ETX>	

**Typical Response Message, Computer Format:**

<SOH>s777QQYYMMDDHHmmQQFFFFFFFFF...  
QQFFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code: 778**

Version 1

**Function Type:** Set Pressure Line Leak Secondary Pipe Diameter

**Command Format:**

**Display:** <SOH>S778QQI.hh

**Computer:** <SOH>s778QQFFFFFFFFF

**Inquire:**

<SOH>I778QQ

<SOH>i778QQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. I.hh - Pipe Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I778QQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK SECONDARY PIPE DIAMETER

LINE                      2ND LINE DIAMETER
Q 1:UNLEADED REGULAR      1.75 INCHES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s778QQYYMMDDHHmmQQFFFFFFFFF...
                      QQFFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code: 779**

Version 1

**Function Type:** Set Pressure Line Leak Primary Pipe Bulk Modulus

**Command Format:**

**Display:** <SOH>S779QQBBBBBB

**Computer:** <SOH>s779QQFFFFFFFF

**Inquire:**

<SOH>I779QQ

<SOH>i779QQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. BBBBBB - Pipe Bulk Modulus, PSI (Decimal)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. Set to Default - To set Bulk Modulus to default enter 0

**Typical Response Message, Display Format:**

```
<SOH>
I779QQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK PRIMARY PIPE BULK MODULUS

LINE                      1ST BULK MOD
Q 1:UNLEADED REGULAR      12000 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s779QQYYMMDDHHmmQQFFFFFFFF...
                      QQFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 77A

Version 1

**Function Type:** Set Pressure Line Leak Secondary Pipe Bulk Modulus

**Command Format:**

**Display:** <SOH>S77AQQBBBBBB

**Computer:** <SOH>s77AQQFFFFFFFF

**Inquire:**

<SOH>I77AQQ

<SOH>i77AQQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. BBBBBB - Pipe Bulk Modulus, PSI (Decimal)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. Set to Default - To set Bulk Modulus to default enter 0

**Typical Response Message, Display Format:**

```
<SOH>
I77AQQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK SECONDARY PIPE BULK MODULUS

LINE                2ND BULK MOD
Q 1:UNLEADED REGULAR 12000 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s77AQQYYMMDDHHmmQQFFFFFFFF...
                      QQFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 77B**

Version 1

**Function Type:** Set Pressure Line Leak Thermal Expansion Coefficient

**Command Format:**

**Display:** <SOH>S77BQQc.cccccc

**Computer:** <SOH>s77BQQFFFFFFFF

**Inquire:**

<SOH>I77BQQ

<SOH>i77BQQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. c.cccccc - Thermal Expansion Coefficient (Decimal)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I77BQQ
JAN 14, 1995  10:15 PM

PRESSURE LINE LEAK THERMAL COEFFICIENT

LINE                THERMAL COEFF
Q 1:UNLEADED REGULAR      0.000700
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s77BQQYYMMDDHHmmQQFFFFFFFF...
                      QQFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 77C

Version 1

**Function Type:** Set Pressure Line Leak Low Pressure Shutoff

**Command Format:**

**Display:** <SOH>S77CQQf

**Computer:** <SOH>s77CQQf

**Inquire:**

<SOH>I77CQQ

<SOH>i77CQQ

**Typical Response Message, Display Format:**

```
<SOH>
I77CQQ
JAN 24, 2000  2:54 PM

PRESSURE LINE LEAK LOW PRESSURE SHUTOFF

LINE                                LP SHUTOFF
Q 1:REGULAR UNLEADED                YES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i77CQQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - Enabled/disabled flag  
0=disabled (no)  
1=enabled (yes)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 77D

Version 1

**Function Type:** Set Pressure Line Leak Altitude Pressure Offset

**Command Format:**

**Display:** <SOH>S77DQQII.p

**Computer:** <SOH>s77DQQFFFFFFFF

**Inquire:**

<SOH>I77DQQ

<SOH>i77DQQ

**Notes:**

1. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
2. II.p - Altitude Pressure Offset, PSI or KPA (Decimal)
3. FFFFFFFF - Altitude Pressure Offset, PSI or KPA (ASCII Hex IEEE float)
4. Value must be within the range of +5.0 to -5.0 PSI or 34.4 to -34.4 KPA

**Typical Response Message, Display Format:**

<SOH>

I77DQQ

JAN 1, 2000 1:44 AM

ALTITUDE PRESSURE OFFSET ADJUSTMENT

LINE

OFFSET

Q 1:REGULAR UNLEADED

0.0 PSI

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i77DQQYYMDDHHmmQQFFFFFFFF...  
QQFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code:** 77E

Version 1

**Function Type:** Set Pressure Line Leak Passive 0.10 GPH Test Enable Flag

**Command Format:**

**Display:** <SOH>S77EQQf

**Computer:** <SOH>s77EQQf

**Inquire:**

<SOH>I77EQQ

<SOH>i77EQQ

**Typical Response Message, Display Format:**

```
<SOH>
I77EQQ
JUL 14, 2004  10:15 PM

PRESSURE LINE LEAK PASSIVE 0.10 GPH

LINE                               PASSIVE
Q 1:UNLEADED REGULAR              YES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i777QQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. f - Passive 0.10 GPH Test Enable Flag (Decimal)  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 77F**

Version 1

**Function Type:** Set Pressure Line Leak Secondary Pipe Length

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

**Command Format:**

**Display:** <SOH>S77FQQLLLL

**Computer:** <SOH>s77FQQFFFFFFFFF

**Inquire:**

<SOH>I77FQQ

<SOH>i77FQQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. LLLL - 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 LINE LENGTH LARGE

LINE                      LINE LENGTH
Q 1:UNLEADED REGULAR      200 FEET
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s77FQQYYMMDDHHmmQQFFFFFFFFF...
                               QQFFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code:** 77G

Version 1

**Function Type:** Set Pressure Line Leak Fuel out limit

**Command Format:**

**Display:** <SOH>S77GQQI.hh

**Computer:** <SOH>s77GQQFFFFFFFF

**Inquire:**

<SOH>I77GQQ

<SOH>i77GQQ

**Typical Response Message, Display Format:**

<SOH>

I77GQQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK FUEL OUT LIMIT

LINE

LIMIT

Q 1:REGULAR UNLEADED

12.2 INCHES

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i77GQQYYMMDDHHmmQQFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. FFFFFFFF - Fuel out limit (inches, IEEE float)
4. && - Data Termination Flag
5. CCCC -Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 780

Version 1

**Function Type:** Pressure Line Leak General Setup Inquiry

**Command Format:**

**Display:** <SOH>I780QQ

**Computer:** Computer format is not supported for this command

**Typical Response Message, Display Format:**

```
<SOH>
I780QQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK SETUP

Q 1:UNLEADED REGULAR
PIPE TYPE:  FIBERGLASS
0.10 GPH TEST: ENABLED
SHUTDOWN RATE:  3.0 GPH
T 3:REGULAR UNLEADED
DISPENSE MODE:
  STANDARD
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 781**

Version 1

**Function Type:** Set Pressure Line Leak Configuration

**Command Format:**

**Display:** <SOH>S781QQf

**Computer:** <SOH>s781QQf

**Inquire:**

<SOH>I781QQ

<SOH>i781QQ

**Typical Response Message, Display Format:**

<SOH>

I781QQ

JAN 24, 1996 2:54 PM

PRESSURE LLD CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	REGULAR UNLEADED	ON

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i781QQYYMMDDHHmmQQf...  
QQf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 782

Version 1

**Function Type:** Set Pressure Line Leak Label

**Command Format:**

**Display:** <SOH>S782QQaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s782QQaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I782QQ

<SOH>i782QQ

#### Typical Response Message, Display Format:

```
<SOH>
I782QQ
JAN 24, 1996  2:54 PM

PRESSURE LLD LABEL

DEVICE LABEL
      1  REGULAR UNLEADED
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i782QQYYMMDDHHmmQQaaaaaaaaaaaaaaaaaaaaa...
      QQaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

#### Notes:

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 783**

Version 1

**Function Type:** Set Pressure Line Leak 0.10 GPH Test Schedule

**Command Format:**

**Display:** <SOH>S783QQf

**Computer:** <SOH>s783QQf

**Inquire:**

<SOH>I783QQ

<SOH>i783QQ

**Typical Response Message, Display Format:**

```
<SOH>
I783QQ
JAN 24, 1996  2:54 PM

PRESSURE LINE LEAK 0.10 TEST SCHEDULE

LINE                                0.10 GPH TEST
Q 1:REGULAR UNLEADED                DISABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i783QQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - 0.10 GPH Test Schedule
  - 0=Disabled
  - 1=Repetitive
  - 2=Auto
  - 3=Manual
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 784**

Version 1

**Function Type:** Set Pressure Line Leak Shutdown Rate

**Command Format:**

**Display:** <SOH>S784QQrr

**Computer:** <SOH>s784QQrr

**Inquire:**

<SOH>I784QQ

<SOH>i784QQ

**Typical Response Message, Display Format:**

```
<SOH>
I784QQ
JAN 24, 2000  2:54 PM

PRESSURE LINE LEAK SHUTDOWN RATE

LINE                               SHUTDOWN RATE
Q 1:REGULAR UNLEADED              3.0 GPH
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i784QQYYMMDDHHmmQQrr...
                               QQrr&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. rr - Shutdown rate
  - 01=0.10 gal/hr
  - 02=3.00 gal/hr
  - 03=0.20 gal/hr
  - 04=None
4. && - Data Termination Flag
5. CCCC - Message Checksum

**Function Code: 786**

Version 1

**Function Type:** Set Pressure Line Leak Dispense Mode

**Command Format:**

**Display:** <SOH>S786QQf

**Computer:** <SOH>s786QQf

**Inquire:**

<SOH>I786QQ

<SOH>i786QQ

Note: See L06 if setting line leak dispensing mode to pump sense.

**Typical Response Message, Display Format:**

```
<SOH>
I786QQ
JAN 24, 1996  2:54 PM

PRESSURE LINE LEAK DISPENSE MODE

LINE                               DISPENSE MODE
Q 1:REGULAR UNLEADED              STANDARD
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i786QQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - Dispensing Mode
  - 1=Standard
  - 2=Manifolded: Alternate
  - 3=Manifolded: Sequential
  - 4=Manifolded: All Pumps
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 788**

Version 1

**Function Type:** Set Pressure Line Leak Piping Material

**Command Format:**

**Display:** <SOH>S788QQtt

**Computer:** <SOH>s788QQtt

**Inquire:**

<SOH>I788QQ

<SOH>i788QQ

**Typical Response Message, Display Format:**

<SOH>

I788QQ

JUN 14, 2001 10:15 PM

PRESSURE LINE LEAK PIPE TYPE

LINE

Q 1:UNLEADED REGULAR

<ETX>

PIPE TYPE:

USER DEFINED

**Typical Response Message, Computer Format:**

<SOH>i788QQYYMMDDHHmmQQtt

QQtt&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
3. tt - Pipe Type:
  - 01=2/3 inch Fiberglass
  - 02=2 inch Steel
  - 03=White Enviroflex PP1501 (Obsolete)
  - 04=1.5 inch Environ Geoflex II
  - 05=Omniflex CP1501
  - 06=Yellow Enviroflex PP1500 (Obsolete)
  - 07=1.5"/2.5" Enviroflex PP1502/2502 (Obsolete)
  - 08=OPW Pisces SP-15
  - 09=OPW Pisces CP-15
  - 10=WFG Coflex 2000 Ribbed
  - 11=Enviroflex PP1503/2503
  - 12=Omniflex CP1503
  - 13=1.5/2.0 inch Environ Geoflex D
  - 14=APT P175SC
  - 15=OPW Pisces CP15DW
  - 16=OPW Pisces CP20
  - 17=OPW PISCES SP20
  - 18=User Defined
  - 19=PETROTECHNIK UPP EXTRA 63MM
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 789**

Version 1

**Function Type:** Set Pressure Line Leak Primary Pipe Length

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

**Command Format:**

**Display:** <SOH>S789QQLLLL

**Computer:** <SOH>s789QQFFFFFFF

**Inquire:**

<SOH>I789QQ

<SOH>i789QQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. LLLL - 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-450 Monitoring Systems

---

**Function Code:** 78C

Version 1

**Function Type:** Set Pressure Line Leak 0.20 GPH Test Schedule

**Command Format:**

**Display:** <SOH>S78CQQf

**Computer:** <SOH>s78CQQf

**Inquire:**

<SOH>I78CQQ

<SOH>i78CQQ

**Typical Response Message, Display Format:**

```
<SOH>
I78CQQ
JAN 24, 1996  2:54 PM

PRESSURE LINE LEAK 0.20 TEST SCHEDULE

LINE                                0.20 GPH TEST
Q 1:REGULAR UNLEADED                MONTHLY
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i78CQQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - 0.20 GPH Test Schedule
  - 0=Disabled
  - 1=Repetitive
  - 2=Monthly
  - 3=Manual
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 78E

Version 1

**Function Type:** Set Pressure Line Leak 0.10 GPH Auto Test Enable

**Command Format:**

**Display:** <SOH>S78EQQf

**Computer:** <SOH>s78EQQf

**Inquire:**

<SOH>I78EQQ

<SOH>i78EQQ

**Typical Response Message, Display Format:**

<SOH>

I78EQQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK 0.10 GPH AUTO ENABLE

LINE

0.10 AUTO

Q 1:REGULAR UNLEADED

ENABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i78EQQYYMMDDHHmmQQf...

QQf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - 0.10 GPH Test  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 78F**

Version 1

**Function Type:** Set Pressure Line Leak Shutoff value  
(in TLS350 this command was Pressure Line Leak dispense threshold)

**Command Format:**

**Display:** <SOH>S78FQQpppppp

**Computer:** <SOH>s78FQQFFFFFFFFF

**Inquire:**

<SOH>I78FQQ

<SOH>i78FQQ

**Notes:**

1. QQ - Pressure Line Leak Sensor Number (Decimal, 00=all)
2. ppppp - Shutoff Value, PSI or KPA (Decimal)
3. FFFFFFFF - Shutoff Value, PSI or KPA (ASCII Hex IEEE float) Value must be within the range of 0.0 to 25.0 PSI or 0.0 to 172.0 KPA

**Typical Response Message, Display Format:**

<SOH>

I78FQQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK SHUTOFF VALUE

LINE

SHUTOFF VALUE

Q 1:REGULAR UNLEADED

15.0 PSI

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i78FQQYYMMDDHHmmQQFFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. FFFFFFFF - Shutoff value, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 78G  
**Function Type:** Set controlling pump

Version 1

**Command Format:**  
**Display:** <SOH>S78GQQnn  
**Computer:** <SOH>s78GQQnn

**Inquire:**  
<SOH>I78GQQ  
<SOH>i78GQQ

#### Typical Response Message, Display Format:

```
<SOH>
I78GQQ
JAN 24, 1996  2:54 PM

PRESSURE LINE LEAK CONTROLLING PUMP

LINE                                CONTROLLING PUMP
Q 1:REGULAR UNLEADED                5
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i78GQQYYMMDDHHmmQQnn&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** L01  
**Function Type:** Set Line Configuration

Version 1

**Command Format:**  
**Display:** <SOH>SL01QQf  
**Computer:** <SOH>sL01QQf

**Inquire:**  
<SOH>IL01QQ  
<SOH>iL01QQ

#### Typical Response Message, Display Format:

```
<SOH>
IL01QQ
JAN 24, 1996  2:54 PM

PRESSURE LLD CONFIGURATION
```

DEVICE	LABEL	CONFIGURED
1	REGULAR UNLEADED	ON

```
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iL01QQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** L03

Version 1

**Function Type:** Set Pressure Line Leak Monitoring

**Command Format:**

**Display:** <SOH>SL03QQf

**Computer:** <SOH>sL03QQf

**Inquire:**

<SOH>IL03QQ

<SOH>iL03QQ

**Typical Response Message, Display Format:**

<SOH>

IL03QQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK MONITORING

LINE

MONITORING

Q 1:REGULAR UNLEADED

PLLD

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iL03QQYYMMDDHHmmQQf...

QQf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - Leak Monitoring  
0=None  
1=PLLD
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** L04  
**Function Type:** Set Pressure Line Sensor

Version 1

**Command Format:**  
**Display:** <SOH>SL04QQff  
**Computer:** <SOH>sL04QQff

**Inquire:**  
<SOH>IL04QQ  
<SOH>iL04QQ

#### Typical Response Message, Display Format:

```
<SOH>
IL04QQ
JAN 24, 1996  2:54 PM

PRESSURE LINE LEAK

LINE                      LPR Sensor
Q 1:REGULAR UNLEADED      1
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iL04QQYYMMDDHHmmQQff...
                      QQff&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** L05  
**Function Type:** Set Line Manifoldded

Version 1

**Command Format:**  
**Display:** <SOH>SL05LLf  
**Computer:** <SOH>sL05LLf

**Inquire:**  
<SOH>IL05LL  
<SOH>iL05LL

#### Typical Response Message, Display Format:

<SOH>  
IL05LL  
JAN 24, 1996 2:54 PM

LINE MANIFOLDING

LINE	MANIFOLDED
Ln 1:REGULAR UNLEADED	ON

<ETX>

#### Typical Response Message, Computer Format:

<SOH>iL05LLYYMMDDHHmmLLf...  
LLf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. LL - Line number (Decimal, 00=All)
3. f - Manifoldded  
1=ON  
0=OFF
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** L06  
**Function Type:** Set Line Dispense Mode

Version 1

**Command Format:**  
**Display:** <SOH>SL06QQf  
**Computer:** <SOH>sL06QQf

**Inquire:**  
<SOH>IL06QQ  
<SOH>iL06QQ

#### Typical Response Message, Display Format:

```
<SOH>
IL06QQ
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>iL06QQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. f - Dispensing Mode
  - 1=Standard
  - 2=Manifolded: Alternate
  - 3=Manifolded: Sequential
  - 4=Manifolded: All Pumps
  - 5=PumpSense
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** L07

Version 1

**Function Type:** Set Line Associated Pump Numbers

**Command Format:**

**Display:** <SOH>SL07LLpppp...

**Computer:** <SOH>sL07LLpppp...

**Inquire:**

<SOH>iL07LL

<SOH>iL07LL

**Notes:**

1. pp - A sequence of one or more 2-digit-wide zero-padded Pump numbers. If a unique zero entry (00) is given for Pump Numbers then all current Pump assignments for the Line will be removed. Multiple Pump entries are only allowed for Manifolded Lines.

**Typical Response Message, Display Format:**

```
<SOH>
iL07LL
JAN 24, 1996  2:54 PM
```

LINE-ASSOCIATED PUMPS

LINE	PUMP
Ln 1:REGULAR UNLEADED	1

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iL07LLYYMMDDHHmmLLnnpppp...
                               LLnnpppp&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. LL - Line Number (Decimal, 00=All)
3. nn - number of pumps to follow
4. pp - Pump number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

**Function Code: S51**

Version 1

**Function Type:** Set LPR Sensor Configuration

**Command Format:**

**Display:** <SOH>SS51QQf

**Computer:** <SOH>sS51QQf

**Inquire:**

<SOH>IS51QQ

<SOH>iS51QQ

**Typical Response Message, Display Format:**

```
<SOH>
IS51QQ
JAN 24, 1996  2:54 PM

LINE PRESSURE SENSOR CONFIGURATION
DEVICE LABEL CONFIGURED
  1 REGULAR UNLEADED ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iS51QQYYMMDDHHmmQQf...
                               QQf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - 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-450 Monitoring Systems

---

**Function Code:** S53

Version 1

**Function Type:** Set LPR sensor Label

**Command Format:**

**Display:** <SOH>SS53QQaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>sS53QQaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>IS53QQ

<SOH>iS53QQ

#### Typical Response Message, Display Format:

```
<SOH>
IS53QQ
JAN 24, 1996  2:54 PM

LINE_PRESSURE_SENSOR LABEL

DEVICE LABEL
  1 REGULAR UNLEADED
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iS53QQYYMMDDHHmmQQaaaaaaaaaaaaaaaaaaaaa...
                                QQaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - sensor number (Decimal)
3. a - Indicates any printable ASCII character
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: S54**

Version 1

**Function Type:** Get LPR sensor serial number

**Command Format:**

**Display:** <SOH>IS54QQ

**Computer:** <SOH>iS54QQ

**Typical Response Message, Display Format:**

```
<SOH>
IS54QQ
OCT 09, 2008 01:36 PM

LINE PRESSURE SENSOR

SENSOR LABEL SERIAL NUMBER
  1 LINE LABEL 1 1179401887
  2 Line Label Two 0000000998
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iS54QQYYMMDDHHmmQQaaaaaaaa...
                                QQaaaaaaaaCCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - sensor number (Decimal)
3. aaaaaaaaaa - Serial number (IEEE ASCII HEX long)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** S55

Version 1

**Function Type:** Line Pressure Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>IS55QQ

**Computer:** <SOH>iS55QQ

#### Typical Response Message, Display Format:

```
<SOH>
IS55SS
JAN 22, 2003  3:07 PM
```

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

LINE PRESSURE SENSOR ALARM HISTORY REPORT

```
SENSOR  LOCATION
  1  LPR # 1
      JUN 23, 2003  2:12 PM      DATA SETUP WARNING
      JUN 23, 2003  2:12 PM      COMMUNICATION ALARM
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iS55SSYYMDDHHmmSSnnYYMDDHHmmaaaa...
                               SSnnYYMDDHHmmaaaa&&CCCC<ETX>
```

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - LPR 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=LPR Sensor Setup Data Warning  
0002=LPR Sensor Communication Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** S56

Version 1

**Function Type:** Get Pressure LPR Sensor sample data

**Command Format:**

**Display:** <SOH>IS56QQ

**Computer:** <SOH>iS56QQ

**Typical Response Message, Display Format:**

```
<SOH>
IS56QQ
JAN 24, 1996  2:54 PM
```

LINE\_PRESSURE\_SENSOR SAMPLES

DEVICE	TIME	SAMPLES
1	JAN 24, 1996  2:54 PM	124.343

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iS56QQYYMMDDHHmmQQNNFFFFFFFFF...
      QQtt&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPRSensor number (Decimal, 00=All)
3. NN - Number of samples followed (maximum 60 samples)
4. FFFFFFFF - sample readings ( ASCII Hex IEEE floats)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** SA1

Version 1

**Function Type:** Get Line Pressure Sensor Status

**Command Format:**

**Display:** <SOH>ISA1SS

**Computer:** <SOH>iSA1SS

**Typical Response Message, Display Format:**

```
<SOH>
ISA100
MAY 12, 2008  3:06 PM
```

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

LINE PRESSURE SENSOR STATUS REPORT

SENSOR	LABEL	STATUS
1	LPR SENSOR #1	NORMAL
2	LPR SENSOR #2	Setup Data Warning
3	LPR SENSOR #3	NORMAL

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iSA1QQYYMMDDHHmmSSnnNN...
SSnnNN...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - LPRSensor number (Decimal, 00=All)
3. nn - Number of alarms active for LPR Sensor (Decimal, 00=none)
4. NN - Alarm Type Number (See explanation for NN when AA is 63 in Function i10100)
5. && - Data Termination Flag
6. CCCC - Message Checksum

### 7.3.10 Reconciliation Setup

**Function Code:** 51N  
**Function Type:** Set LV/MDIM Configuration

Version 2

**Command Format:**  
**Display:** <SOH>S51NIIIf  
**Computer:** <SOH>s51NIIIf

**Inquire:**  
<SOH>I51NII  
<SOH>i51NII

**Typical Response Message, Display Format:**

```
<SOH>
I51NII
JUN 22, 2009  3:12 PM

LV/MDIM CONFIGURATION

DEVICE  LABEL                      CONFIGURED
   1    MDIM #1                      ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i51NIIYYMDDHHmmIIIf...
                        IIf&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. II - LV/MDIM Number (Decimal, 00-all)
3. f - LV/MDIM Configuration Flag  
    0=Off  
    1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 51P  
**Function Type:** Set LV/MDIM Setup Configuration

Version 2

**Command Format:**  
**Display:** <SOH>S51PNNUUpPQQQQ  
**Computer:** <SOH>s51PNNUUpPQQQQ

**Inquire:**  
<SOH>I51P00  
<SOH>i51P00

#### Notes:

1. NN - DIM Device Number (Decimal)
2. UU - Unit Conversion (Decimal)
3. pp - Pulse Conversion (Decimal)
4. QQQQ - Custom Pulse Conversion (Decimal)  
    QQQQ is optional when PP is not custom.

#### Typical Response Message, Display Format:

```
<SOH>
I51P00
JUN 22, 2009  3:12 PM

DIM CONFIGURATION SETUP
DEVICE    LABEL      PULSE CONVERSION    PULSE UNITS
  1      MDIM1        500                  US
  2      MDIM2       1000                  METRICS
  3      MDIM3     9999 (CUSTOM)             US
  4      MDIM4        ½                  US
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i51P00YYMMDDHHmmNNFFUUpP...
                        NNFFUUpP&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - DIM Device Number (Decimal)
3. UU - Pulse Units  
    01=US  
    02=Metric  
    03=Imperial
4. pp - Pulse Conversion  
    01 - ½ Pulse Conversion  
    02 - 1 Pulse Conversion  
    03 - 2.5 Pulse Conversion  
    04 - 10 Pulse Conversion  
    05 - 25 Pulse Conversion  
    06 - 100 Pulse Conversion  
    07 - 250 Pulse Conversion  
    08 - 500 Pulse Conversion  
    09 - 1000 Pulse Conversion  
    10 - Custom Pulse Conversion
5. QQQQ - Custom Conversion (0001 - 9999)
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 51Q  
**Function Type:** Set LV/MDIM Label

Version 2

**Command Format:**  
**Display:** <SOH>S51QIIaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>s51QIIaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I51QII  
<SOH>i51QII

#### Typical Response Message, Display Format:

```
<SOH>
I51QII
JUN 22, 2009  3:12 PM

LV/MDIM LABEL

DEVICE  LABEL
      1  MDIM #1
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i51QIIYYMMDDHHmmIIaaaaaaaaaaaaaaaaaaaaa...
                        IIaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - LV/MDIM Number (Decimal, 00-all)
3. aaa...aaa - LV/MDIM Label (20 ASCII Characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum



**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: 7VR:GILBARCO 001.ATD:Jan  4 2010
<ETX>
```

**Typical Response Message, Computer Format:**

**Notes:**

1. Response is the same as display format.

**Function Code: 792**

Version 2

**Function Type:** Set Electronic Dispenser Interface String

**Command Format:**

**Display:** <SOH>I792NN

**Computer:** <SOH>i792NN

**Typical Response Message, Display Format:**

```
<SOH>
I792NN
JUN 22, 2009  3:12 PM

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

**Typical Response Message, Computer Format:**

```
<SOH>i792NNYYMMDDHHmmNNaaaaaaaaaaaaa...
NNaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - EDIM Number (Decimal, 00=all)
3. aaaaaaaaaaaaaa - Data String (12 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 793**

Version 2

**Function Type:** Set Reconciliation Auto Daily Closing Time

**Command Format:**

**Display:** <SOH>S79300HHmm

**Computer:** <SOH>s79300HHmm

**Inquire:**

<SOH>I79300

<SOH>i79300

#### Typical Response Message, Display Format:

<SOH>

I79300

JAN 22, 2009 3:24 PM

AUTOMATIC DAILY CLOSING

TIME: 2:00 AM

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i79300YYMMDDHHmmHHmm&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. HHmm - Auto Daily Closing Time (hours & minutes)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 794**

Version 2

**Function Type:** Set Auto Shift Closing Time 1, 2, 3, 4

**Command Format:**

**Display:** <SOH>S794SSHHmm

**Computer:** <SOH>s794SSHHmm

**Inquire:**

<SOH>I794SS

<SOH>i794SS

#### Typical Response Message, Display Format:

<SOH>  
I794SS  
JAN 22, 2009 3:24 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-450 Monitoring Systems

---

**Function Code: 795**

Version 2

**Function Type:** Set Periodic Reconciliation Mode

**Command Format:**

**Display:** <SOH>S79500ss

**Computer:** <SOH>s79500ss

**Inquire:**

<SOH>I79500

<SOH>i79500

#### Typical Response Message, Display Format:

<SOH>

I79500

JAN 22, 2009 3:24 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-450 Monitoring Systems

---

**Function Code: 796**

Version 2

**Function Type:** Set Periodic Reconciliation Report Length

**Command Format:**

**Display:** <SOH>S79600dd

**Computer:** <SOH>s79560dd

**Inquire:**

<SOH>I79600

<SOH>i79600

#### Typical Response Message, Display Format:

<SOH>

I79600

JAN 22, 2009 3:24 PM

PERIODIC RECONCILIATION

LENGTH: 31 DAYS

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i79600YYMMDDHHmmdd&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Number of days for Rolling Report (Decimal, 01-31)
3. && - Data Termination Flag
4. CCCC - Message Checksum

**Function Code: 797**

Version 2

**Function Type:** Set Periodic Reconciliation Alarm Flag

**Command Format:**

**Display:** <SOH>S79700ss

**Computer:** <SOH>s79700ss

**Inquire:**

<SOH>I79700

<SOH>i79700

**Typical Response Message, Display Format:**

<SOH>

I79700

JAN 22, 2009 3:24 PM

PERIODIC RECONCILIATION

ALARM: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79700YYMMDDHHmmss&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ss - Reconciliation Alarm Flag  
01=Disable  
02=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 798**

Version 2

**Function Type:** Set Periodic Reconciliation Alarm Threshold

**Command Format:**

**Display:** <SOH>S79800PP.hh

**Computer:** <SOH>s79800FFFFFFFFF

**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:**

i) When per-tank alarm threshold is disabled (using 7C1 command)

```
<SOH>
I79800
JUN  1, 2000  8:07 AM

PERIODIC RECONCILIATION
ALARM THRESHOLD: 1.00%
<ETX>
```

ii) When per-tank alarm threshold is enabled (using 7C1 command)

```
<SOH>
I79800
JAN 22, 2009  3:24 PM

THE SYSTEM PERIODIC RECONCILIATION ALARM THRESHOLD CAN'T BE DISPLAYED
IF TANK PERIODIC RECONCILIATION ALARM THRESHOLD IS ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

<SOH>i79800YYMMDDHHmmFFFFFFFFF&&CCCC<ETX>

**Notes:**

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



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 799**

Version 2

**Function Type:** Set Periodic Reconciliation Alarm Offset

**Command Format:**

**Display:** <SOH>S79900GGGGGG

**Computer:** <SOH>s79900FFFFFFFF

**Inquire:**

<SOH>I79900

<SOH>i79900

**Notes:**

1. GGGGGG - Alarm Offset, Gallons (Decimal)
2. FFFFFFFF - Alarm Threshold, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I79900
JAN 22, 2009  3:24 PM

PERIODIC RECONCILIATION
ALARM OFFSET:    130
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79900YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 79B**

Version 2

**Function Type:** Set Shift Manual Adjustment Value

**Command Format:**

**Display:** <SOH>S79BTTssGGGGGG

**Computer:** <SOH>s79BTTssFFFFFFFF

**Inquire:**

<SOH>I79BTTss

<SOH>i79BTTss

**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
JAN 22, 2009  3:24 PM

T 1:REGULAR UNLEADED
CURRENT SHFT ADJ:    300
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79BTTYMMDDHHmmTTssFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. ss - Shift Mode  
0=Current  
1=Previous
4. FFFFFFFF - Adjustmnet Value, Gallons (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 79C**

Version 2

**Function Type:** Set Daily Manual Adjustment Value

**Command Format:**

**Display:** <SOH>S79CTTMMDDGGGGGG

**Computer:** <SOH>s79CTTMMDDFFFFFFFF

**Inquire:**

<SOH>I79CTTMMDD

<SOH>i79CTTMMDD

**Notes:**

1. TT - Tank Number
2. MMDD - Month and Day
3. GGGGGG - Adjustment Value, Gallons (Decimal)
4. FFFFFFFF - Adjustment Value, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I79CTT
JAN 22, 2009  3:24 PM

T 1:REGULAR UNLEADED
MAR 26  ADJ VOL:    300
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79CTTYMMDDHHmmTTMMDDFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. MMDD - Month and Day
4. FFFFFFFF - Adjustment Value, Gallons (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 79D

Version 2

**Function Type:** Close Current Reconciliation Shift

**Command Format:**

**Display:** <SOH>S79D00ff

**Computer:** <SOH>s79D00ff

**Inquire:**

<SOH>I79D00

<SOH>i79D00

#### Typical Response Message, Display Format:

```
<SOH>
I79D00
JAN 22, 1996  3:23 PM
```

```
MANUAL SHIFT CLOSE
```

```
RECONCILIATION SHIFT CLOSE STATUS:
```

```
STATION IS BUSY
```

```
*** CLOSE SHIFT PENDING ***
```

```
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i79D00YYMMDDHHmmff&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. ff - Close current shift flag  
01=Close shift pending (for BIR)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 79E  
**Function Type:** Clear Tank Map Table

Version 2

**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, 2009  3:23 PM

RECONCILIATION CLEAR MAPS
MAPS TABLE CLEARED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79E00YYMMDDHHmmss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ss - Clear status  
00=not clear  
01=cleared
3. && - Data Termination Flag
4. CCCC - Message Checksum

**Function Code: 79F**

**Function Type:** Set BIR Temperature Compensation Flag

Version 2

**Command Format:**

**Display:** <SOH>S79F00f

**Computer:** <SOH>s79F00f

**Inquire:**

<SOH>I79F00

<SOH>i79F00

**Typical Response Message, Display Format:**

<SOH>  
I79F00  
JAN 22, 2009 3:24 PM

TEMP COMPENSATION  
STANDARD  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79F00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 79G  
**Function Type:** Set Meter Tank Map

Version 2

**Command Format:**

**Display:** <SOH>S79G00 Bxx.Sx FP MM F NN  
<SOH>S79G00 Cxx FP MM F NN

**Inquire:**  
<SOH>I79G00  
<SOH>I79G00

**Computer:** <SOH>s79G00 Bxx.Sx FP MM F NN  
<SOH>s79G00 Cxx FP MM F NN

<SOH>i79G00  
<SOH>i79G00

**Notes:**

1. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
2. FP - Real fueling position number (Decimal)
3. MM - Real meter number (Decimal)
4. F - Flag for Tank, Blend, Unassigned  
T=Tank  
B=Blend  
X=Probeless  
?=Unmapped
5. NN - Tank or Blend Number (Decimal)  
(00 if Flag is Probeless Tank or Unmapped)

**Typical Response Message, Display Format:**

<SOH>  
I79G00  
JAN 22, 2009 3:24 PM

SOURCE	REAL	REAL	TANK	/
ADDRESS	FP	METER	BLEND	
B1.S2	00	00	T 1	REGULAR
B1.S2	00	01	T 2	SILVER
B1.S2	00	03	T 3	BLUE
B1.S3	00	01	B1 3	BLUE
B1.S2	01	02	?	
B1.S2	02	01	X	
COMM 1	01	00	T 4	E90
COMM 1	01	01	R	

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79G00YYMMDDHHmm Bxx.Sx FP MM F NN...  
Cxx FP MM F NN&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FP - Real Fueling Position number (Decimal)
4. MM - Real meter number
5. F - Flag for Tank, Blend, Unmapped  
T=Tank  
B=Blend  
X=Probeless  
?=Unmapped  
R=Retired
6. NN - Tank or Blend Number (Decimal) (00 if Flag is Unmapped)
7. && - Data Termination Flag
8. CCCC - Message Checksum

**Function Code: 79H**

Version 2

**Function Type:** Set Meter Map Lock/Unlock by Position

**Command Format:**

**Display:** <SOH>S79H00 Bxx.Sx FP MM L  
<SOH>S79H00 Cxx FP MM L

**Inquire:**

<SOH>I79H00  
<SOH>I79H00

**Computer:** <SOH>s79H00 Bxx.Sx FP MM L  
<SOH>s79H00 Cxx FP MM L

<SOH>i79H00  
<SOH>i79H00

**Notes:**

1. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
2. FP - Real fueling position number (Decimal)
3. MM - Real meter number (Decimal)
4. L - Locked flag  
0=Unlocked  
1=Locked

**Typical Response Message, Display Format:**

```
<SOH>
I79H00
JAN 22, 2009  3:24 PM

SOURCE      REAL REAL
ADDRESS     FP  METER LOCKED
B1.S2       00   00     NO
B1.S2       00   01     NO
B1.S2       00   03     YES
COMM  2     01   00     YES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79H00YYMMDDHHmm Bxx.Sx FP MM L...
                        Cxx FP MM L&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FP - Real Fueling Position number (Decimal)
4. MM - Real meter number
5. L - Locked flag  
0=Unlocked  
1=Locked
6. && - Data Termination Flag
7. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 79I**

**Function Type:** Set Meter Map Lock/Unlock All Position

Version 2

**Command Format:**

**Display:** <SOH>S79I00L

**Computer:** <SOH>s79I00L

**Inquire:**

<SOH>I79I00

<SOH>i79I00

#### Typical Response Message, Display Format:

```
<SOH>
I79I00
JAN 22, 2009  3:24 PM

SOURCE      REAL  REAL
ADDRESS     FP   METER LOCKED
B1.S2       00   00     NO
B1.S2       00   01     NO
B1.S2       00   03     YES
COMM  2     01   00     YES
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i79H00YYMMDDHHmm Bxx.Sx FP MM L...
                                Cxx FP MM L&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FP - Real Fueling Position number (Decimal)
4. MM - Real meter number
5. L - Locked flag  
0=Unlocked  
1=Locked
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 79J**

Version 2

**Function Type:** Set Daily Manual Adjustment Value (Date Range)

**Command Format:**

**Display:** <SOH>S79JTTYMMDDGGGGGG

**Computer:** <SOH>s79JTTYMMDDFFFFFFFF

**Inquire:**

<SOH>I79JTTYMMDD

<SOH>i79JYYTTMMDD

**Notes:**

1. TT - Tank Number
2. YYMMDD - Date
3. GGGGGG - Manual Adjustment Volume, Gallons (Decimal)
4. FFFFFFFF - Manual Adjustment Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I79JTT
JAN 22, 2009  3:24 PM
```

DAILY MANUAL ADJUSTMENT VALUE

TANK	DATE/TIME	MANUAL ADJ.
1	JAN 8, 2009	500

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i79JTTYMMDDHHmmTTYMMDDFFFFFFFF...
                      TTYMMDDFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. YYMMDD - Date
4. FFFFFFFF - Manual Adjustment Volume, (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

**Function Code: 79K**

Version 2

**Function Type:** Set BIR Status Warning Enable

**Command Format:**

**Display:** <SOH>S79K00s

**Computer:** <SOH>s79K00s

**Inquire:**

<SOH>I79K00

<SOH>i79K00

**Typical Response Message, Display Format:**

<SOH>

I79K00

JAN 22, 2009 3:24 PM

BIR STATUS WARNING: ENABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79K00YYMMDDHHmms&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. s - Status Warning  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 79L

Version 2

**Function Type:** Set Reconciliation Report Close Day

**Command Format:**

**Display:** <SOH>S79L00D

**Computer:** <SOH>s79L00D

**Inquire:**

<SOH>I79L00

<SOH>i79L00

#### Typical Response Message, Display Format:

<SOH>

I79L00

JAN 22, 2009 3:24 PM

PERIODIC RECONCILIATION

CLOSE DAY: SUNDAY

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i79L00YYMMDDHHmmD&&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

**Function Code: 79M**

Version 2

**Function Type:** Set Alarm Threshold Delivery Type

**Command Format:**

**Display:** <SOH>S79M00d

**Computer:** <SOH>s79M00d

**Inquire:**

<SOH>I79M00

<SOH>i79M00

**Typical Response Message, Display Format:**

<SOH>

I79M00

JAN 22, 2009 3:24 PM

ALARM THRESHOLD DELIVERY TYPE: STANDARD

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79M00YYMMDDHHmmd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. d - Delivery Type  
0=Standard  
1=Ticketed
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 79N

Version 2

**Function Type:** Set Shift Manual Adjustment Value (Date Range/Shift Number)

**Command Format:**

**Display:** <SOH>S79NTTSSYYMMDDGGGGGG

**Computer:** <SOH>s79NTTSSYYMMDDFFFFFFFF

**Inquire:**

<SOH>I79NTTSSYYMMDD

<SOH>i79NTTSSYYMMDD

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. SS - Shift Number (Decimal, 00=all)
3. YYMMDD - Date
4. GGGGGG - Manual Adjustment Volume, Gallons (Decimal)
5. FFFFFFFF - Manual Adjustment Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I79NTT
JAN 22, 2009  3:24 PM

SHIFT MANUAL ADJUSTMENT VALUE

SHIFT 1

TANK  DATE/TIME          MANUAL ADJ.
  1   JAN  8, 2009          500
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79NTTYMMDDHHmmTTYMMDDNNSSFFFFFFFFSSFFFFFFFF...
                      TTYMMDDNNSSFFFFFFFFSSFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. YYMMDD - Date
4. NN - Number of shift, volume data fields to follow (Decimal)
5. SS - Shift Number (Decimal)
6. FFFFFFFF - Manual Adjustment Volume, (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 79Q  
**Function Type:** Set User Fueling Position

Version 2

**Command Format:**

**Display:** <SOH>S79Q00 Bxx.Sx FF BB  
<SOH>S79Q00 Cxx FP BB

**Inquire:**  
<SOH>I79Q00  
<SOH>I79Q00

**Computer:** <SOH>s79Q00 Bxx.Sx FF BB  
<SOH>s79Q00 Cxx FP BB

<SOH>i79Q00  
<SOH>i79Q00

**Notes:**

1. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
2. FF - Real fueling position number (Decimal)
3. BB - User fueling position number (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
I79Q00  
JAN 22, 2009 3:16 PM

SOURCE	REAL	USER
ADDRESS	FP	FP
B1.S2	00	1
B1.S2	00	1
B1.S2	00	1
B1.S2	01	12
B1.S2	01	12
B1.S2	01	12
COMM 2	02	10

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79Q00YYMMDDHHmm Bxx.Sx FF BB...  
Cxx FF BB&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FF - Real fueling position number (Decimal)
4. BB - User fueling position number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 79S  
**Function Type:** Get Tank Map

Version 2

**Command Format:**  
**Display:** <SOH>I79S00  
**Computer:** <SOH>i79S00

#### Typical Response Message, Display Format:

```
<SOH>
I79S00
JAN 22, 2009  3:16 PM

SOURCE      USER    REAL REAL  TANK /
ADDRESS     FP      FP  METER BLEND
B1.S2       1       00   00    T  1 REGULAR
B1.S2       1       00   01    T  2 SILVER
B1.S2       1       00   03    T  3 BLUE
B1.S2  2  01 01  BL 3 BLUE  NO  08/12/18 01:01
B1.S2       2       01   02    ?
B1.S2       3       02   01    X
COMM 1      1       00   04    T  4 E90
COMM 1      1       00   01    R
<ETX>
```

SOURCE		USER	REAL	REAL	TANK /	LOCKED	LAST REPORT
ADDRESS		FP	FP	METER	BLEND		TIME
B1.S2		1	00	00	T 1 REGULAR	NO	08/12/18 01:01
B1.S2		1	00	01	T 2 SILVER	NO	08/12/18 01:01
B1.S2		1	00	03	T 3 BLUE	NO	08/12/18 01:01
<b>B1.S2</b>	<b>2</b>	<b>01</b>	<b>01</b>	<b>BL 3 BLUE</b>	<b>NO</b>	<b>08/12/18 01:01</b>	
B1.S2		2	01	02	?	NO	08/12/19 11:01
B1.S2		3	02	01	X	NO	08/12/28 03:28
COMM	1	1	00	04	T 4 E90	NO	08/12/18 01:01
COMM	1	1	00	01	R	NO	08/12/18 01:01

#### Typical Response Message, Computer Format:

```
<SOH>i79S00YYMMDDHHmm UU Bxx.Sx FP MM F NN L YYMMDDHHmm...
                                UU Cxx FP MM F NN L YYMMDDHHmm&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. UU - User fueling position number (Decimal)
3. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
4. FP - Real fueling position number (Decimal)
5. MM - Real meter number (Decimal)
6. F - Flag for Tank, Blend, Unmapped  
T=Tank  
B=Blend  
X=Probeless  
?=Unmapped  
R=Retired
7. NN - Tank or Blend Number (Decimal)  
(00 if Flag is Probeless Tank or Unmapped)
8. L - Locked flag.  
0=Unlocked  
1=Locked
9. YYMMDDHHmm - Last Report Date and Time
10. && - Data Termination Flag
11. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7B2

Version 2

**Function Type:** Set Meter Calibration Offset

**Command Format:**

**Display:** <SOH>S7B200pp.ppp

**Computer:** <SOH>s7B200FFFFFFFF

**Inquire:**

<SOH>I7B200

<SOH>i7B200

**Notes:**

1. pp.ppp - Meter Calibration Offset, Percent (Decimal)
2. FFFFFFFF - Meter Calibration Offset, Percent (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I7B200
JUN  1, 2009  8:10 AM
```

```
METER CALIBRATION
OFFSET:  0.000%
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i7B200YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Meter Calibration Offset, Percent (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7B5  
**Function Type:** Set Ticketed Delivery

Version 2

**Command Format:**  
**Display:** <SOH>S7B5TTeeYYMMDDHHmmGGGGGG  
**Computer:** <SOH>s7B5TTeeYYMMDDHHmmFFFFFFFF

#### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. ee - edit function
  - 01=Edit Ticket (enter, modify)
  - 02=Insert Ticket Delivery
3. YYMMDDHHmm - Delivery Date/Time (End Time)
4. GGGGGG - Ticket Volume, Gallons (Decimal)
5. FFFFFFFF - Ticket Volume, Gallons (ASCII Hex IEEE float)  
Entering 0 volume will cancel ticketed delivery warning.  
VOL TC/STANDARD must match setup for ticketed delivery.

#### Typical Response Message, Display Format:

```
<SOH>
S7B5TT
JAN  9, 2009  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, 2009  2:10 AM	500.0	503.0	3.0
<ETX>			

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 7B5:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i7B5TTYMMDDHHmmTTpPPRRYYMMDDHHmmNNFFFFFFFF...  
TTpPPRRYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe type (Decimal)
5. RR - Result code - if an error occurs, just error code will be returned (Decimal)
  - 00=OK and data will follow
  - 01=BIR not enabled
  - 02=Tank number is invalid
  - 03=missing time/date
  - 04=Time Date not numeric
  - 05=invalid date
  - 06=time is invalid
  - 07=Date out of range of period (curr & prev via BIR)
  - 08=If there is no matching time/date for edit
  - 09=Invalid volume
  - 10=Try to insert when gauged exists
  - 30=Reserved
  - 31=Reserved
6. YYMMDDHHmm - Delivery Date/Time (End Time)
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Ticketed volume
  - 2. Gauged volume
  - 3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7B6  
**Function Type:** Set BOL number

Version 2

**Command Format:**  
**Display:** <SOH>S7B6TTeeYYMMDDHHmmaa..aa  
**Computer:** <SOH>s7B6TTeeYYMMDDHHmmaa..aa

#### Notes:

1. TT - Tank Number (Decimal)
2. ee - edit function  
01=Edit Ticket (enter, modify)  
02=Insert Ticketed Delivery
3. YYMMDDHHmm - Delivery Date/Time (End Time)
4. aa..aa - Bill of Lading Number

#### Typical Response Message, Display Format:

<SOH>  
I7B60101  
FEB 01, 2009 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, 2009 2:00 AM	123456	0.0	502.0	0.0

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 7B6 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>s7B6TTYMMDDHHmmTTpPPRRYYMMDDHHmmAAaa..aaNNFFFFFFFF...FFFFFFFF...  
TTpPPRRYYMMDDHHmmAAaa..aaNNFFFFFFFF...FFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. p - Product Code (Decimal)
4. PP - Probe type (Decimal)
5. RR - Result code (Decimal) - if error occurs, only error code is returned
  - 00=OK and data will follow
  - 01=BIR not enabled
  - 02=Tank number is invalid
  - 03=missing time/date
  - 04=Time Date not numeric
  - 05=invalid date
  - 06=time is invalid
  - 07=Date out of range of period (curr & prev via BIR)
  - 08=If there is no matching time/date for edit
  - 30=Reserved
  - 31=Reserved
6. YYMMDDHHmm - Delivery Date/Time (End Time)
7. AA - Number of ASCII characters to follow
8. aa..aa - Bill of Lading Number (ASCII characters [20h-7Eh])
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats - VOL TC/STANDARD must match setup for ticketed delivery
  1. Ticketed volume
  2. Gauged volume
  3. Gauged TC volume
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS-450 Monitoring Systems

Version 2

```

Command Format:
Display: <SOH>S7BGTTEEYMMDDHHmmGGGGGG,
              gggggg,TTT.TT,
              aa.aa,DD..DD
Computer: <SOH>s7BGTTEEYMMDDHHmmFFFFFFFFF
              gggggg,TTT.TT,
              aa.aa,DD..DD

```

**Notes:**

- ```

1.          TT - Tank Number (Decimal, 00=all)
2.          ee - edit function
                01=Edit Ticket (enter, modify)
                02=Insert Ticket Delivery
3.  YYMMDDHHmm - Delivery Date/Time (End Time)
4.          GGGGGG - Ticket Volume, Gallons (Decimal)
5.          gggggg - TC Ticket Volume, Gallons (Decimal)
6.          TTT.TT - Delivery Temperature (Float)
7.          aa..aa - Bill of Lading Number (20 ASCII characters [20h-7Eh])
8.          DD..DD - Delivery Id (20 ASCII characters [20h-7Eh])
9.          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>  
S7BGT  
JAN 9, 2009 8:08 AM

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

SET TICKETED DELIVERY

VOLUMES ARE STANDARD

T 1:UNLEADED REGULAR

|       |    |      |        |        |          |     |        |      |      |          |    |
|-------|----|------|--------|--------|----------|-----|--------|------|------|----------|----|
|       |    |      | TICKET | GAUGE  | VARIANCE | TC  | TICKET | TEMP | BOL  | DELIVERY |    |
|       |    |      | VOLUME | VOLUME | VOLUME   |     | VOLUME |      |      | ID       |    |
| JAN   | 8, | 2009 | 2:10   | AM     | 500      | 503 | 3      | 501  | 80.2 | 0812     | 94 |
| <ETX> |    |      |        |        |          |     |        |      |      |          |    |

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 7BG: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>i7BGTTYMMDDHHmmeeTTpPPRRYYMMDDHHmmNNFFFFFFFaa.aaDD..DD...  
TTpPPRRYYMMDDHHmmNNFFFFFFFaa.aaDD..DD...&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. ee - edit function
  - 01=Edit Ticket (enter, modify)
  - 02=Insert Ticket Delivery
3. TT - Tank Number (Decimal)
4. p - Product Code (one ASCII character [20h-7Eh])
5. PP - Probe type (Decimal)
6. 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
7. YYMMDDHHmm - Delivery Date/Time (End Time)
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Ticketed volume
  2. Gauged volume
  3. Delivery variance
  4. TC Ticketed volume
  5. Temperature
10. aa..aa - Bill of Lading Number (20 ASCII characters [20h-7Eh])
11. DD..DD - Delivery Id (20 ASCII characters [20h-7Eh])
12. && - Data Termination Flag
13. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7C1

Version 2

**Function Type:** Set Tank Periodic Reconciliation Alarm Threshold Enable

**Command Format:**

**Display:** <SOH>S7C100f

**Computer:** <SOH>s7C100f

**Inquire:**

<SOH>I7C100

<SOH>i7C100

#### Typical Response Message, Display Format:

```
<SOH>
I7C100
JUN 22, 2009  3:12 PM
```

```
TANK PERIODIC RECONCILIATION ALARM THRESHOLD: DISABLED
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i7C100YYMMDDHHmmf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. f - Configuration Flag (ASCII Hex)  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7C2

Version 2

**Function Type:** Set Tank Periodic Reconciliation Alarm Threshold

**Command Format:**

**Display:** <SOH>S7C2TTPP.hh

**Computer:** <SOH>s7C2TTFFFFFFFF

**Inquire:**

<SOH>I7C2TT

<SOH>i7C2TT

**Notes:**

1. TT - Tank Number (Decimal, 00 = all)
2. PP.hh - Tank Alarm Threshold, Percent and hundredths (Decimal)
3. FFFFFFFF - Tank Alarm Threshold, Percent (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I7C2TT
JUN 22, 2009  3:12 PM

TANK PERIODIC RECONCILIATION ALARM THRESHOLD
TANK  LABEL                THRESHOLD
  1    REGULAR UNLEADED          1.00%
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i7C2TTYMMDDHHmmTTFFFFFFFF&&CCCC<ETX>
```

**Notes:**

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7D6

Version 3

**Function Type:** Accuchart Operating Volume Span

**Command Format:**

**Display:** <SOH>S7D6TTaabb

**Computer:** <SOH>s7D6TTaabb

**Inquire:**

<SOH>I7D6TT

<SOH>i7D6TT

**Notes:**

1. TT - Tank Number [01..32] (Decimal, 00 = all)
2. aa - Max operating level in percent of capacity [50-99] (Decimal)
3. bb - Min operating level in percent of capacity [00-45] (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
I7D6TT  
JUN 22, 2010 3:12 PM

ACCUCHART OPERATING SPAN

TANK	LABEL	MIN	MAX
1	UNLEADED	5%	95%
2	MIDGRADE	1%	99%
3	PREMIUM	2%	50%
16	DIESEL	5%	45%

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i7D6TTYMMDDHHmmTTaabb...  
TTaabb&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32] (Decimal, 00=all)
3. aa - Max operating level in percent of capacity [50-99] (Decimal)
4. bb - Min operating level in percent of capacity [00-45] (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7H0

Version 2

**Function Type:** BIR Multiple Threshold Setup Report

**Command Format:**

**Display:** <SOH>I7H0TT

**Computer:** not supported

#### Typical Response Message, Display Format:

<SOH>  
I7H0TT  
JUN 22, 2009 3:12 PM

#### BIR MULTIPLE THRESHOLD SETUP REPORT

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	CONFIG	PERCENT	OFFSET VALUE
1	MONTHLY	1-THROUGHPUT	ENABLE	1.00	130
		2-CAPACITY	DISABLED	1.00	110
		3-DELIVERY	ENABLE	1.00	100
		4-FIXED	DISABLED		130
2	ROLLING - 10 DAYS	1-THROUGHPUT	ENABLE	1.00	99
		2-CAPACITY	ENABLE	1.00	50
		3-DELIVERY	ENABLE	1.00	75
		4-FIXED	ENABLE		1500
3	DISABLED				
4	DISABLED				

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7H1

Version 2

**Function Type:** Set BIR Multiple Threshold Test Type

**Command Format:**

**Display:** <SOH>S7H1TTff

**Computer:** <SOH>s7H1TTff

**Inquire:**

<SOH>I7H1TT

<SOH>i7H1TT

#### Typical Response Message, Display Format:

```
<SOH>
I7H1TT
JUN 22, 2009  3:12 PM
```

```
TEST    TYPE
1        MONTHLY
2        ROLLING DAYS
3        DISABLED
4        DISABLED
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i7H1TTYMMDDHHmmTTff...
                        TTff&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. ff - Test Type Value
  - 00=Disabled
  - 01=Monthly
  - 02=Rolling Days
  - 03=Daily
  - 04=Rolling Consecutive Days
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7H2

Version 2

**Function Type:** Set BIR Multiple Threshold Rolling Days

**Command Format:**

**Display:** <SOH>S7H2TTdd

**Computer:** <SOH>s7H2TTdd

**Inquire:**

<SOH>I7H2TT

<SOH>i7H2TT

**Notes:**

1. dd - Only valid when Test Type is 02 - Rolling or 03 - Rolling Consecutive

**Typical Response Message, Display Format:**

```
<SOH>
I7H2TT
JUN 22, 2009  3:12 PM

BIR MULTIPLE THRESHOLD ROLLING DAYS

TEST   TYPE                                NUMBER OF DAYS
1      MONTHLY
2      ROLLING - 10 DAYS                    10
3      ROLLING CONSECUTIVE - 10 DAYS        3
4      DISABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i7H2TTYMMDDHHmmTTdd...
TTdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. dd - Number of Rolling Days (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7H3

**Function Type:** Set BIR Multiple Threshold Type Enable

Version 2

**Command Format:**

**Display:** <SOH>S7H3TTttf

**Computer:** <SOH>s7H3TTttf

**Inquire:**

<SOH>I7H3TT

<SOH>i7H3TT

#### Typical Response Message, Display Format:

<SOH>  
I7H3TT  
JUN 22, 2009 3:12 PM

BIR MULTIPLE THRESHOLD TYPE ENABLE

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	CONFIGURED
1	MONTHLY	1-THROUGHPUT	ENABLE
		2-CAPACITY	DISABLED
		3-DELIVERY	ENABLE
		4-FIXED	DISABLED
2	ROLLING - 10 DAYS	1-THROUGHPUT	ENABLE
		2-CAPACITY	DISABLED
		3-DELIVERY	ENABLE
		4-FIXED	DISABLED

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i7H3TTYMMDDHHmmTTttf...  
TTttf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. tt - Number of Rolling Days (Decimal)
  - 01-Percent of Throughput
  - 02-Percent of Capacity
  - 03-Percent of Deliveries
  - 04-Fixed Value
4. f - Enable/Disable Flag
  - 0=Disable
  - 1=Enable
5. && - Data Termination Flag
6. CCCC - Message Checksum

**Serial Interface Manual**  
**TLS-450 Monitoring Systems**

---

**Function Code:** 7H4  
**Function Type:** Set BIR Multiple Threshold Percentage

Version 2

**Command Format:**  
**Display:** <SOH>S7H4TTttxx.xx  
**Computer:** <SOH>s7H4TTttxx.xx

**Inquire:**  
<SOH>I7H4TT  
<SOH>i7H4TT

**Typical Response Message, Display Format:**

```
<SOH>
I7H4TT
JUN 22, 2009  3:12 PM

BIR MULTIPLE THRESHOLD PERCENTAGE
```

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	PERCENT
1	MONTHLY	1-THROUGHPUT	1.00
		2-CAPACITY	1.00
		3-DELIVERY	1.00
2	ROLLING - 10 DAYS	1-THROUGHPUT	1.00
		2-CAPACITY	1.00
		3-DELIVERY	1.00

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i7H4TTYMMDDHHmmTTttEEEEEEEE...
                        TTttEEEEEEEE&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. tt - Number of Rolling Days (Decimal)  
01-Percent of Throughput  
02-Percent of Capacity  
03-Percent of Deliveries
4. EEEEEEEE - Percentage value (IEEE format)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 7H5

**Function Type:** Set BIR Multiple Threshold Offset Value

Version 2

**Command Format:**

**Display:** <SOH>S7H5TTttxxxxxx

**Computer:** <SOH>s7H5TTttEEEEEEEE

**Inquire:**

<SOH>I7H5TT

<SOH>i7H5TT

#### Typical Response Message, Display Format:

<SOH>

I7H5TT

JUN 22, 2009 3:12 PM

BIR MULTIPLE THRESHOLD OFFSET VALUE

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	OFFSET VALUE
1	MONTHLY	1-THROUGHPUT	130
		2-CAPACITY	110
		3-DELIVERY	100
		4-FIXED	1500
2	ROLLING - 10 DAYS	1-THROUGHPUT	99
		2-CAPACITY	50
		3-DELIVERY	75
		4-FIXED	350
3	DISABLED		

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i7H5TTYMMDDHHmmTTttEEEEEEEE...  
TTttEEEEEEEE&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. tt - Threshold Type
  - 01-Percent of Throughput
  - 02-Percent of Capacity
  - 03-Percent of Deliveries
  - 04-Fixed Value
4. EEEEEEEE - Offset value (IEEE format)
5. && - Data Termination Flag
6. CCCC - Message Checksum



### 7.3.11 I/O DEVICE SETUP

**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-450 Monitoring Systems

---

**Function Code: 802**

Version 1

**Function Type:** Set Input Location Label

**Command Format:**

**Display:** <SOH>S802IIaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s802IIaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I802II

<SOH>i802II

**Typical Response Message, Display Format:**

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

EXTERNAL INPUT LABEL

DEVICE LABEL
    1  aaaaaaaaaaaaaaaaaaaaaa
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i802IIYYMDDHHmmIIaaaaaaaaaaaaaaaaaaaaa...
                                IIaaaaaaaaaaaaaaaaaaaaa&&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-450 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>i806RRYYMMDDHHmmRRf...
RRf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 807**

Version 1

**Function Type:** Set Relay Location Label

**Command Format:**

**Display:** <SOH>S807RRaaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s807RRaaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I807RR

<SOH>i807RR

#### Typical Response Message, Display Format:

```
<SOH>
I807RR
MAR 26, 1996  1:51 PM

RELAY LABEL

DEVICE LABEL
    1  aaaaaaaaaaaaaaaaaaaaaa
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i807RRYYMMDDHHmmRRaaaaaaaaaaaaaaaaaaaaaa...
                                RRaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 809  
**Function Type:** Set Relay Orientation

Version 1

**Command Format:**  
**Display:** <SOH>S809RRs  
**Computer:** <SOH>s809RRs

**Inquire:**  
<SOH>I809RR  
<SOH>i809RR

#### Typical Response Message, Display Format:

```
<SOH>
I809RR
MAR 26, 1996  1:51 PM

RELAY ORIENTATION

RELAY DESIGNATION      ORIENTATION
   1 EXTERNAL RELAY #1  NORMALLY OPEN
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i809RRYYMMDDHHmmRRs...
                      RR&&CCCC<ETX>
```

#### Notes:

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

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 80A  
**Function Type:** Set Relay Type

Version 1

**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)  
(Not in Version 1)

#### 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)  
(Not in Version 1)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 80D

Version 1

**Function Type:** Set External Input Orientation

**Command Format:**

**Display:** <SOH>S80DQQf

**Computer:** <SOH>s80DQQf

**Inquire:**

<SOH>I80DQQ

<SOH>i80DQQ

#### Typical Response Message, Display Format:

<SOH>

I80DQQ

JAN 24, 1996 2:54 PM

EXTERNAL INPUT ORIENTATION

INPUT NAME

1 REGULAR UNLEADED

ORIENTATION

Normally Open

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i80DQQYYMMDDHHmmQQf...

QQf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - external input number (Decimal, 00=All)
3. f - Type
  - 1=Normally Open
  - 2=Normally Closed
4. && - Data Termination Flag
5. CCCC - Message Checksum

Function Code: 80F  
Function Type: Set Input Type

Version 1

Command Format:  
Display: <SOH>S80FII t  
Computer: <SOH>s80FII t

Inquire:  
<SOH>I80FII  
<SOH>i80FII

**Typical Response Message, Display Format:**

```
<SOH>
I80FII
MAR 26, 1996  1:51 PM

EXTERNAL INPUT TYPE

INPUT  NAME                      TYPE
   1  EXTERNAL INPUT #1         Generator
   2  DCD INPUT                 Acknowledge Alarm
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i80FIIYYMMDDHHmmII t..
                      II t&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. t - Input type:
  - 1=Standard
  - 2=Generator
  - 3=Pump Sense
  - 4=Acknowledge Alarm
  - 5=Vapor Processor
4. && - Data Termination Flag
5. CCCC - Message Checksum

(Not in Version 1 or 2)



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 821  
**Function Type:** Set Probe Configuration

Version 1

**Command Format:**  
**Display:** <SOH>S821PPf  
**Computer:** <SOH>s821PPf

**Inquire:**  
<SOH>I821PP  
<SOH>i821PP

#### Typical Response Message, Display Format:

<SOH>  
I821PP  
MAR 26, 2007 1:50 PM

#### PROBE CONFIGURATION

PROBE	LABEL	CONFIGURED
1	PROBE #1	ON
2	PROBE #2	OFF

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i821PPYYMMDDHHmmPPf...  
PPf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. f - Configuration Flag  
0=OFF  
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**822

Version 1

**Function Type:** Set Probe Label

**Command Format:**

**Display:** <SOH>S822PPaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s822PPaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I822PP

<SOH>i822PP

**Typical Response Message, Display Format:**

<SOH>  
I822PP  
MAR 26, 2007 1:50 PM

PROBE LABEL

PROBE LABEL  
1 MAG PROBE 1  
2 MAG PROBE 2  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i822PPYYMMDDHHmmPPaaaaaaaaaaaaaaaaaaaaa...  
PPaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. a - Probe Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## 7.3.12 MISCELLANEOUS SETUP

**Function Code:** 871  
**Function Type:** Setup Communication Card

Version 1

**Command Format:**  
**Display:** <SOH>S871PPMMSSQQ  
**Computer:** <SOH>s871PPMMSSQQ

**Inquire:**  
<SOH>I871PP  
<SOH>i871PP

### Typical Response Message, Display Format:

```
<SOH>
I871PP
NOV 5, 2007 12:00 AM

COMMUNICATION CARD SETUP

COMM #      SLOT #      PORT #      CARD TYPE
  1          1          1          RS232
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i871PPYYMMDDHHmmppMMSSQQ&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (decimal)
3. MM - Comm Card Type:
  - 00=No Card
  - 01=RS232
  - 02=RS485
  - 03=Internal Modem
  - 04=Dim (Version 2)
  - 05=ISFS (Not supported)
  - 06=Ethernet
  - 07=Satellite - Jbox
  - 08=Satellite - Ssat
  - 09=USB
  - 10=CDIM (Version 2)
4. SS - Slot Number (decimal)
5. QQ - Port Number (decimal)
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 872**

Version 2

**Function Type:** Set Communication Card Configuration Flag

**Command Format:**

**Display:** <SOH>S872ppf

**Computer:** <SOH>s872ppf

**Inquire:**

<SOH>I872pp

<SOH>i872pp

**Typical Response Message, Display Format:**

<SOH>  
I872pp  
JUN 1, 2007 8:10 AM

COMMUNICATION CARD CONFIGURATION

COMM #	SLOT #	PORT #	LABEL	CONFIGURED
1	1	1	HOME OFFICE	ON

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i872ppYYMMDDHHmmppSSQQf...  
ppSSQQf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. SS - Baud Rate (Decimal)
4. QQ - Data Bit (Decimal; 7 or 8)
5. f - Parity (Decimal)  
0=Disabled  
1=Enabled
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 873**

Version 1

**Function Type:** Set Communication Port Data

**Command Format:**

**Display:** <SOH>S873PPBBBBBBBDPSH

**Computer:** <SOH>s873PPBBBBBBBDPSH

**Inquire:**

<SOH>I873PP

<SOH>i873PP

**Notes:**

1. PP - Communication Port Number (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I873PP
JUN  1, 2007  8:10 AM
PORT SETTINGS:

COMM PORT      : 1
COMM BOARD     : RS-232
BAUD RATE      : 9600
DATA LENGTH    : 7 DATA
PARITY         : ODD
STOP BIT       : 1 STOP
HANDSHAKING    : No Handshaking
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code 873 Notes:** (Continued)

**Typical Response Message, Computer Format:**

<SOH>i873PPYYMMDDHHmmppBBBBBBDPSH&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. BB - Baud Rate (Decimal)
  - 00=Unknown
  - 01=Proprietary
  - 02=300
  - 03=600
  - 04=1200
  - 05=2400
  - 06=4800
  - 07=9600
  - 08=19200
  - 09=38400
  - 10=57600
  - 11=115200
4. D - Data Bit (Decimal)
  - 0=Unknown
  - 1=Proprietary
  - 2=7
  - 3=8
5. P - Parity (Decimal)
  - 0=Unknown
  - 1=Proprietary
  - 2=None
  - 3=Odd
  - 4=Even
  - 5=Mark
  - 6=Space
6. S - Stop Bit (Decimal)
  - 0=Unknown
  - 1=Proprietary
  - 2=1
  - 3=2
7. H - Handshaking (Decimal)
  - 0=No Handshaking
  - 1=RTS/CTS
  - 2=Xon/Xoff
  - 3=DTRDSR
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 874  
**Function Type:** Set Communication Card Location Label

Version 2

**Command Format:**

**Display:** <SOH>S874ppaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>s874ppaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I874pp  
<SOH>i874pp

**Notes:**

1. PP - Communication Port Number (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I874pp
JUN  1, 2007  8:10 AM

COMMUNICATION CARD LABEL

COMM #      SLOT #      PORT #      LABEL
  1           1           1      HOME OFFICE
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i874ppYMMDDHHmmppSSQQaaaaaaaaaaaaaaaaaaaaa...
                                ppSSQQaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. SS - Slot Number (Decimal)
4. QQ - Port Number (Decimal)
5. aaa...aaa - Location Label (20 ASCII characters [20h-7Eh])
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 87B  
**Function Type:** Set Modem Dial Type

Version 1

**Command Format:**  
**Display:** <SOH>S87B00f  
**Computer:** <SOH>s87B00f

**Inquire:**  
<SOH>I87B00  
<SOH>i87B00

#### Typical Response Message, Display Format:

<SOH>  
I87B00  
JAN 22, 2007 3:16 PM

COMM	LABEL	DIAL TYPE
1	OFFICE	TONE

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i87B00YYMMDDHHmmppf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. f - Dial Tone Flag  
0=Tone  
1=Pulse
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 87D

Version 1

**Function Type:** Set Modem Answer-On Interval

**Command Format:**

**Display:** <SOH>S87D00f

**Computer:** <SOH>s87D00f

**Inquire:**

<SOH>I87D00

<SOH>i87D00

**Typical Response Message, Display Format:**

<SOH>

I87D00

JAN 22, 2007 3:16 PM

COMM	LABEL	ANSWER-ON
1	OFFICE	4 RINGS

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i87D00YYMMDDHHmmppf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. f - Number of Rings (Decimal: 0-9)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 87E  
**Function Type:** Set Modem Dial-In String

Version 1

**Command Format:**  
**Display:** <SOH>S87ERRaaaaaaaaaaaaaaaaaaaaa...  
**Computer:** <SOH>s87ERRaaaaaaaaaaaaaaaaaaaaa...

**Inquire:**  
<SOH>I87ERR  
<SOH>i87ERR

#### Typical Response Message, Display Format:

<SOH>  
I87ERR  
JAN 22, 2007 3:14 PM

MODEM DIAL-IN STRING

RCVR	LABEL	DIAL-IN STRING
1	HOME OFFICE	aaaaaaaaaaaaaaaaaaaaa

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i87ERRYMMDDHHmppaaaaaaaaaaaaaaaaaaaaa...  
ppaaaaaaaaaaaaaaaaaaaaa....&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. a - Dial-in string (50 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 87F  
**Function Type:** Set Modem Dial-Out String

Version 1

**Command Format:**  
**Display:** <SOH>S87FRRaaaaaaaaaaaaaaaaaaaaa...  
**Computer:** <SOH>s87FRRaaaaaaaaaaaaaaaaaaaaa...

**Inquire:**  
<SOH>I87FRR  
<SOH>i87FRR

#### Typical Response Message, Display Format:

<SOH>  
I87FRR  
JAN 22, 2007 3:14 PM

MODEM DIAL-OUT STRING

RCVR	LABEL	DIAL-OUT STRING
1	HOME OFFICE	aaaaaaaaaaaaaaaaaaaaa

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i87FRRYYMDDHHmppaaaaaaaaaaaaaaaaaaaaa...  
ppaaaaaaaaaaaaaaaaaaaaa....&&CCCC<ETX>

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. a - Dial-out string (50 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 87J  
**Function Type:** Set DIM Units Reported

Version 2

**Command Format:**  
**Display:** <SOH>S87JppU  
**Computer:** <SOH>s87JppU

**Inquire:**  
<SOH>I87Jpp  
<SOH>i87Jpp

#### Typical Response Message, Display Format:

<SOH>  
I87Jpp  
JAN 22, 2007 3:14 PM

DIM UNITS REPORTED

COMM #	LOCATION	UNITS
1	ISLAND 3	U.S.

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i87JppYYMMDDHHmmppU...ppU&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. U - Units (Decimal)
  - 1=U.S.
  - 2=Metric
  - 3=Imperial Gallons
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 87Q  
**Function Type:** Suppress DIM Comm Alarms

Version 2

**Command Format:**  
**Display:** <SOH>S87QPPf  
**Computer:** <SOH>s87QPPf

**Inquire:**  
<SOH>I87QPP  
<SOH>i87QPP

**Notes:**

1. PP - Port number (Decimal, 00 = All ports)  
Port is a BIR DIM.
2. f - Alarms Suppression Setting Flag (Decimal)  
0 = Disable Alarm Suppression  
1 = Enable Alarm Suppression

**Typical Response Message, Display Format:**

```
<SOH>
I87Q00
JAN 22, 2009  3:14 PM
```

```
SUPPRESS DIM COMM ALARMS
```

COMM LOCATION	SUPPRESS ALARMS
1	NO

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i87QPPYYMMDDHHmmPPf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Port Number (Decimal, 00=All Products)  
Port is a BIR DIM.
3. f - Alarm suppression Status (Decimal)  
0 = Disable Alarm Suppression  
1 = Enable Alarm Suppression
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 887

Version 1

**Function Type:** Set Dial Tone Validation Interval

**Command Format:**

**Display:** S887PPHHHH

**Computer:** s887PPHHHH

**Inquire:**

I887PP

i887PP

**Notes:**

1. PP - Modem or SiteLink Board Number (Port #) (Decimal 01..06)

**Typical Response Message, Display Format:**

```
<SOH>
I887PP
JUN  1, 2000  8:15 AM

COMM BOARD   : 3 (FXMOD)
DIAL TONE VALIDATION INTERVAL:  32 HOURS
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i887PPYYMMDDHHmmHHHH&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. HHHH - Number of Idle Hours Before Receiver board checks for dial tone (Decimal 0001-9999)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 889**

Version 1

**Function Type:** DTR Normal State for Serial Satellite Boards

**Command Format:**

**Display:** <SOH>S889PPs

**Computer:** <SOH>s889PPs

**Inquire:**

<SOH>I889PP

<SOH>i889PP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I889PP
AUG 22, 2000  4:49 PM

S-SAT : DTR NORMAL STATE

COMM  LABEL      DTR STATE
  1    LOCATION 1  NORMALLY HIGH
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i889PPYYMMDDHHmms&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. s - DTR Normal State for Serial Satellite Board  
0=Normally Low  
1=Normally High (Default)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88E  
**Function Type:** Set Satellite Connection String

Version 1

**Command Format:**  
**Display:** <SOH>S88ERRaaaaaaaaaaaaaaaaaaaaa...  
**Computer:** <SOH>s88ERRaaaaaaaaaaaaaaaaaaaaa...

**Inquire:**  
<SOH>I88ERR  
<SOH>i88ERR

#### Typical Response Message, Display Format:

```
<SOH>
I88ERR
JAN 22, 2007  3:14 PM

SATELLITE CONNECTION STRING

RCVR   LOCATION LABEL      CONNECTION STR
 1      HOME OFFICE         aaaaaaaaaaaaaaaaaaaa
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i88ERRYYMDDHHmppaaaaaaaaaaaaaaaaaaaaa...
                      pppaaaaaaaaaaaaaaaaaaaaa...&&CCCC<ETX>
```

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. a - Conn. string (30 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88G  
**Function Type:** Set IP Assignment

Version 1

**Command Format:**  
**Display:** <SOH>S88GPPf  
**Computer:** <SOH>s88GPPf

**Inquire:**  
<SOH>I88GPP  
<SOH>i88GPP

**Notes:**

1. PP - Communication Port Number  
For Setup Changes to take effect this command must be followed by 88Y

**Typical Response Message, Display Format:**

<SOH>  
I88G00  
JAN 22, 2007 3:16 PM

IP ASSIGNMENT

COMM	LOCATION	IP ASSIGNMENT
1	OFFICE	STATIC

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i88GPPYYMMDDHHmmPPf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. f - IP Assignment  
0=Static  
1=Dynamic
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88H  
**Function Type:** Get IP Address

Version 1

**Command Format:**  
**Display:** <SOH>I88HPP  
**Computer:** <SOH>i88HPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88H00
JAN 22, 2007  3:16 PM

IP ADDRESS

COMM  LOCATION      IP ADDRESS
  1   OFFICE         000.000.000.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88HPPYYMMDDHHmmPPxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxx - IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88I  
**Function Type:** Set Static IP Address

Version 1

**Command Format:**  
**Display:** <SOH>S88IPPxxxxxxxxxxxxxxxxxx  
**Computer:** <SOH>s88IPPxxxxxxxxxxxxxxxxxx

**Inquire:**  
<SOH>I88IPP  
<SOH>i88IPP

#### Notes:

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

#### Typical Response Message, Display Format:

```
<SOH>
I88I00
JAN 22, 2007  3:16 PM

STATIC IP ADDRESS

COMM  LOCATION      STATIC IP ADDRESS
  1    OFFICE        000.000.000.000
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i88IPPYYMMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88J  
**Function Type:** Set Serial Command Port

Version 1

**Command Format:**  
**Display:** <SOH>S88JPPxxxxxx  
**Computer:** <SOH>s88JPPxxxxxx

**Inquire:**  
<SOH>I88JPP  
<SOH>i88JPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88J00
JAN 22, 2007  3:16 PM

SERIAL COMMAND PORT

COMM  LOCATION      PORT
  1    OFFICE        10001
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88JPPYYMMDDHHmmPPxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxx - Port (Decimal, 0-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88K  
**Function Type:** Set Static Subnet Mask

Version 1

**Command Format:**  
**Display:** <SOH>S88KPPxxxxxxxxxxxxxxxxxx  
**Computer:** <SOH>s88KPPxxxxxxxxxxxxxxxxxx

**Inquire:**  
<SOH>I88KPP  
<SOH>i88KPP

#### Notes:

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

#### Typical Response Message, Display Format:

```
<SOH>
I88K00
JAN 22, 2007  3:16 PM

STATIC SUBNET MASK

COMM  LOCATION      STATIC SUBNET MASK
  1    OFFICE        000.000.000.000
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i88KPPYYMMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static Subnet Mask (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 88L**

Version 1

**Function Type:** Set Static Gateway IP

**Command Format:**

**Display:** <SOH>S88LPPxxxxxxxxxxxxxxxxxx

**Computer:** <SOH>s88LPPxxxxxxxxxxxxxxxxxx

**Inquire:**

<SOH>I88LPP

<SOH>i88LPP

**Notes:**

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

**Typical Response Message, Display Format:**

<SOH>  
I88L00  
JAN 22, 2007 3:16 PM

STATIC GATEWAY IP

COMM	LOCATION	STATIC GATEWAY IP
1	OFFICE	000.000.000.000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i88LPPYYMMDDHHmmPPxxxxxxxxxxxxx&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static Gateway IP (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88M  
**Function Type:** Set SSH Port

Version 1

**Command Format:**  
**Display:** <SOH>S88MPPxxxxxx  
**Computer:** <SOH>s88MPPxxxxxx

**Inquire:**  
<SOH>I88MPP  
<SOH>i88MPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88M00
JAN 22, 2007  3:16 PM

SSH PORT

COMM  LOCATION      PORT
  1    OFFICE        10001
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88MPPYYMMDDHHmmPPxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxx - Port (Decimal, 0-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88N  
**Function Type:** Set HTTP Port

Version 1

**Command Format:**  
**Display:** <SOH>S88NPPxxxxxx  
**Computer:** <SOH>s88NPPxxxxxx

**Inquire:**  
<SOH>I88NPP  
<SOH>i88NPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88N00
JAN 22, 2007  3:16 PM

HTTP PORT

COMM  LOCATION      PORT
  1      OFFICE      10001
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88NPPYYMMDDHHmmPPxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxx - Port (Decimal, 0-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 880  
**Function Type:** Set HTTPS Port

Version 1

**Command Format:**  
**Display:** <SOH>S880PPxxxxxx  
**Computer:** <SOH>s880PPxxxxxx

**Inquire:**  
<SOH>I880PP  
<SOH>i880PP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88000
JAN 22, 2007  3:16 PM

HTTPS PORT

COMM  LOCATION      PORT
  1    OFFICE        10001
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i880PPYYMMDDHHmmPPxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxx - Port (Decimal, 0-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88P  
**Function Type:** Set Host Name

Version 1

**Command Format:**  
**Display:** <SOH>S88Pppxxxxxxxxxxxxxxxxxx  
**Computer:** <SOH>s88Pppxxxxxxxxxxxxxxxxxx

**Inquire:**  
<SOH>I88Ppp  
<SOH>i88Ppp

#### Notes:

1. pp - Communication Port Number
2. xxxxxxxxxxxxxxxx - Host Name (30 Chars Max). The Host Name is not a Fully Qualified Domain Name. (i.e. The display of the Host Name does not include the display of the domain name)

#### Typical Response Message, Display Format:

<SOH>  
I88P00  
JAN 22, 2007 3:16 PM

HOST NAME

COMM	LOCATION	HOST NAME
1	OFFICE	Tls450

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i88PppYYMMDDHHmmppxxxxxxxxxxxxxxxxxx&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Host Name (30 Chars Max)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88Q

Version 1

**Function Type:** Set Static Primary DNS Server

**Command Format:**

**Display:** <SOH>S88QPPxxxxxxxxxxxxxxxxxx

**Computer:** <SOH>s88QPPxxxxxxxxxxxxxxxxxx

**Inquire:**

<SOH>I88QPP

<SOH>i88QPP

**Notes:**

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

**Typical Response Message, Display Format:**

```
<SOH>
I88Q00
JAN 22, 2007  3:16 PM

STATIC PRIMARY DNS SERVER

COMM  LOCATION      STATIC PRIMARY DNS SERVER
  1    OFFICE        000.000.000.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88QPPYYMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static Primary DNS Server IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 88R**

Version 1

**Function Type:** Set Static Secondary DNS Server

**Command Format:**

**Display:** <SOH>S88RPPxxxxxxxxxxxxxxxxxx

**Computer:** <SOH>s88RPPxxxxxxxxxxxxxxxxxx

**Inquire:**

<SOH>I88RPP

<SOH>i88RPP

**Notes:**

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

**Typical Response Message, Display Format:**

```
<SOH>
I88R00
JAN 22, 2007  3:16 PM

STATIC SECONDARY DNS SERVER

COMM  LOCATION      STATIC SECONDARY DNS SERVER
  1    OFFICE        000.000.000.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88RPPYYMMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static Secondary DNS Server IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88S  
**Function Type:** Get MAC Address

Version 1

**Command Format:**  
**Display:** <SOH>I88SPP  
**Computer:** <SOH>i88SPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88S00
JAN 22, 2007  3:16 PM
```

MAC ADDRESS

COMM	LOCATION	MAC ADDRESS
1	OFFICE	00:18:8B:C0:25:77

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i88SPPYYMMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxxx - MAC Address (17 characters [0-F, :] the Format of six groups of two hexadecimal digits, separated by colons)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88T  
**Function Type:** Set Default Gateway

Version 1

**Command Format:**  
**Display:** <SOH>S88TPPf  
**Computer:** <SOH>s88TPPf

**Inquire:**  
<SOH>I88TPP  
<SOH>i88TPP

#### Notes:

1. PP - Communication Port Number
2. f - Default Gateway  
0=No  
1=Yes
3. - For Setup Changes to take effect, this command must be followed by 88Y

#### Typical Response Message, Display Format:

<SOH>  
I88T00  
JAN 22, 2007 3:16 PM

DEFAULT GATEWAY

COMM	LOCATION	DEFAULT GATEWAY
1	OFFICE	YES

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i88TPPYMMDDHHmmPPf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. f - Default Gateway  
0=No  
1=Yes
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88U  
**Function Type:** Get Subnet Mask

Version 1

**Command Format:**  
**Display:** <SOH>I88UPP  
**Computer:** <SOH>i88UPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88U00
JAN 22, 2007  3:16 PM
```

SUBNET MASK

COMM	LOCATION	SUBNET MASK
1	OFFICE	000.000.000.000

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i88UPPYMMDDHHmmPPxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Subnet Mask (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88V  
**Function Type:** Get Gateway IP

Version 1

**Command Format:**  
**Display:** <SOH>I88VPP  
**Computer:** <SOH>i88VPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88V00
JAN 22, 2007  3:16 PM

GATEWAY IP

COMM  LOCATION      GATEWAY IP
  1   OFFICE        000.000.000.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88VPPYYMMDDHHmmPPxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Gateway IP (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88W  
**Function Type:** Get Primary DNS Server

Version 1

**Command Format:**  
**Display:** <SOH>I88WPP  
**Computer:** <SOH>i88WPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88W00
JAN 22, 2007  3:16 PM

PRIMARY DNS SERVER

COMM  LOCATION      PRIMARY DNS SERVER
  1    OFFICE        000.000.000.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88WPPYYMMDDHHmmPPxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Primary DNS Server IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88X  
**Function Type:** Get Secondary DNS Server

Version 1

**Command Format:**  
**Display:** <SOH>I88XPP  
**Computer:** <SOH>i88XPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88X00
JAN 22, 2007  3:16 PM

SECONDARY DNS SERVER

COMM  LOCATION      SECONDARY DNS SERVER
  1    OFFICE        000.000.000.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88XPPYYMMDDHHmmPPxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Secondary DNS Server IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** 88Y  
**Function Type:** TCP/IP Commit Setup

Version 1

**Command Format:**  
**Display:** <SOH>S88YPP149  
**Computer:** <SOH>S88YPP149

**Notes:**

1. PP - Communication Port Number
2. 149 - code must be sent to confirm the command

**Typical Response Message, Display Format:**

```
<SOH>
S88Y00
JAN 22, 2007  3:16 PM

Co  1: Ethernet 1 Label      TCP/IP SETUP COMMITTED SUCCESSFULLY
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s88YPPYYMMDDHHmmPPf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. f - Status Flag  
0=TCP/IP Setup not committed  
1=TCP/IP Setup committed successfully
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 891**

Version 2

**Function Type:** Set Accuchart Calibration Restart

**Command Format:**

**Display:** <SOH>S891TT149

**Computer:** <SOH>s891TT149

**Inquire:**

<SOH>I891TT

<SOH>i891TT

**Notes:**

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

**Typical Response Message, Display Format:**

<SOH>  
S89100  
MAR 29, 1996 6:27 PM

T 1:REGULAR UNLEADED ACCU\_CHART RESTART  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>s891TTYMMDDHHmmTTSS&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. SS - Status  
00=AccuChart stopped  
01=AccuChart restarted
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 894**

Version 2

**Function Type:** Set Accuchart Calibration Stop

**Command Format:**

**Display:** <SOH>S894TT149

**Computer:** <SOH>s894TT149

**Inquire:**

<SOH>I894TT

<SOH>i894TT

**Notes:**

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

**Typical Response Message, Display Format:**

```
<SOH>
S89400
MAR 29, 1996  6:27 PM

T 1:REGULAR UNLEADED ACCU_CHART STOP
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s894TTYMMDDHHmmTTSS&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. SS - Status  
00=AccuChart stopped  
01=AccuChart running
4. && - Data Termination Flag
5. CCCC - Message Checksum

## 7.4 DIAGNOSTIC REPORTS

### 7.4.1 SYSTEM DIAGNOSTIC REPORTS

**Function Code: 902**

Version 1

**Function Type:** System Revision Level Report

**Command Format:**

**Display:** <SOH>I90200 (Obsolete for Display Format)

**Computer:** <SOH>i90200 (CONTAINS HARDCODED STRING FOR INFORM)

**Typical Response Message, Display Format:**

```
<SOH>
I90200
JAN 22, 1996  3:24 PM
SOFTWARE REVISION LEVEL
VERSION 110.01
SOFTWARE# 346110-101-B
CREATED - 95.11.20.13.28

S-MODULE# 330160-115-A
SYSTEM FEATURES:
  PERIODIC IN-TANK TESTS
  ANNUAL IN-TANK TESTS
  CSLD
  BIR
  FUEL MANAGER
PLLD
  0.10 REPETITIV
  0.20 REPETITIV
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i90200YYMMDDHHmmSOFTWARE# nnnnnn-vvv-rrrCREATED - YY.MM.DD.HH.mm&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nnnnnn-vvv - Software version number (ASCII text string)
3. rrr - Software revision level (ASCII text string)
4. YY.MM.DD.HH.mm - Date and time of software creation
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: 905**

Version 1

**Function Type:** System Revision Level Report II

**Command Format:**

**Display:** <SOH>I90500 (Obsolete for Display Format)

**Computer:** <SOH>i90500 (CONTAINS HARDCODED STRING FOR INFORM)

**Typical Response Message, Display Format:**

```
<SOH>
I90500
JUL 29, 1997  9:08 AM
SOFTWARE REVISION LEVEL
VERSION 115.00 TEST #05
SOFTWARE# 346115-199-AX5
CREATED - 97.07.10.20.21

S-MODULE# 330160-115-A
SYSTEM FEATURES:
  PERIODIC IN-TANK TESTS
  ANNUAL IN-TANK TESTS
  CSLD
  BIR
  FUEL MANAGER
  PLLD
  0.10 REPETITIV
  0.20 REPETITIV
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i90500YYMMDDHHmmSOFTWARE# 346abb-Tvv-rrrCREATED - YY.MM.DD.HH.mm
nnAABBCCDDEEFFGGHHIIJJJS-MODULE# nnnnnn-vvv-r&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. 346 - Software Base number (fixed)
3. a - Platform
  - 0=Standard CPU, PLLD only
  - 1=Enhanced CPU
  - 2=(Unused)
  - 3=Enhanced CPU 16 Tank
  - 4=Standard CPU without PLLD & WPLLD
  - 5=Standard CPU, WPLLD only
4. bb - Version level (eg version "15")
5. T - Software Type
  - 1="Real"
  - 2="Demo"
  - 3="IFS"

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 905 Notes: (Continued)

- 6.                   vv - Language
  - 00=English/Spanish
  - 01=English/French
  - 02=English/German
  - 03=English/Swedish
  - 04=English/Portuguese
  - 05=English/Polish
  - 06=English/Finnish
  - 07=English/Japanese
  - 08=English/Greek
  - 09=English/Russian
  - 10=English/Turkish
  - 11=English/Dutch
  - 12=English/Italian
  - 99=English only
- 7.                   rrr - Revision level (eg revision "AX1")
- 8. YY.MM.DD.HH.mm - Date and time of software creation
- 9.                   nn - number of 2 byte values to follow (Hex)
- 10.                  AA - PERIODIC IN-TANK TESTS (00=DISABLE, 01=ENABLE)
- 11.                  BB - ANNUAL IN-TANK TESTS (00=DISABLE, 01=ENABLE)
- 12.                  CC - CSLD (00=DISABLE, 01=ENABLE)
- 13.                  DD - BIR (00=DISABLE, 01=ENABLE)
- 14.                  EE - FUEL MANAGER (00=DISABLE, 01=ENABLE)
- 15.                  FF - PRECISION PLLD (00=DISABLE, 01=ENABLE)
- 16.                  GG - TANKER LOAD (00=DISABLE, 01=ENABLE)
- 17.                  HH - 0.2 GPH PLLD (00=DISABLE, 01=ENABLE)
- 18.                  II - PRECISION PLLD ON DEMAND (00=DISABLE, 01=ENABLE)
- 19.                  JJ - SPECIAL 3-TANK/LINE CONSOLE (00=DISABLE, 01=ENABLE)
- 20.                  KK - ISD (00=DISABLE, 01=ENABLE)
- 21.                  LL - PMC (00=DISABLE, 01=ENABLE)
  
- 22.       nnnnnn-vvv-r - SEM Info 3 parts, if none "NO SOFTWARE MODULE"
- 23.               nnnnnn - SEM number (ASCII text string)
- 24.               vvv - SEM Software version number (ASCII text string)
- 25.               r - SEM Software revision level (ASCII text string)
  
- 26.               && - Data Termination Flag
- 27.               CCCC - Message Checksum



# Serial Interface Manual

## TLS-450 Monitoring Systems

Function Code: 907

Version 1

**Function Type:** Get "About Screen" Information

**Command Format:**

**Display:** <SOH>I90700

Computer: <SOH>i90700

Typical Response Message, Display Format:

<SOH>

I90700

JAN 22, 2007 3:24 PM

Software: Part# 342002.A.121.2    CREATED: Feb 21 2010 15:58:17

Hardware Description	Serial Numbers
CPU	08320252
iButton	000000f4099b0b
UNIVERSAL SENS MODULE (B1.S1)	9071013
INPUT/OUTPUT MODULE (B1.S3)	9071012
INPUT/OUTPUT MODULE (B8.S5)	4278190081

## Installed Features

Total Control

- \* Email Notification
- \* Custom On-Board Help
- \* Custom Alarms
- \* Custom Dashboard

TLS-450 Direct Access™ Software/Web Browser

Extended Storage L2

Business Inventory Reconciliation

## AccuChart II

## Continuous Statistical Leak Detection

<ETX>

Typical Response Message, Computer Format:

[illegible]

**Notes:**

- ```

1.      YYMMDDHHmm - Time and Date
2.      PP - Number of Software Part # characters to follow (ASCII hex)
3.      pp.pp - Software Part # (String)
4.      CC - Number of Created Date characters to follow (ASCII hex)
5.      cc.cc - Created Date Text
6.      nn - Number of hardware components (ASCII hex)
7. Component type - cc (ASCII Hex char)
                    01=CPU
                    02=iButton
                    80=USM card
                    81=IOM card
                    82=MUX card
8.      LL - length of serial number string (ASCII hex)
9.      ss...ss - Component serial number string
10.     MM - Number of installed features (ASCII Hex char)
11.     ff - feature identification number (ASCII Hex char)
                    0=TotalAccessBundle,          //!< Do not use for now
                    1=BIRAccuchartIIv
                    2=TotalControl,
                    3=DirectAccessOrWebBrowser,
                    4=EmailNotification,
                    5=CustomOnBoardHelp,
                    6=CustomAlarms,

```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code 907 Notes: (Continued)

7=CustomDashboard,  
8=ContinuousStatisticalLeakDetection,  
9=UltimateTestingLeakDetectionForDPLLD,  
10=RiskManagementLeakDetectionForDPLLD,  
11=BaseComplianceLineLeakDetectionForDPLLD,  
12=Business Inventory Reconciliation  
13=AccuChartII,  
14=ExtendedStorageL1,  
15=ExtendedStorageL2,  
12.           && - Data Termination Flag  
13.           CCCC - Message Checksum

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, 2009  3:25 PM

TANK  1  REGULAR UNLEADED      TYPE  CODE  LENGTH  SERIAL NO.  D/CODE
TANK  2  SUPER UNLEADED       MAG6   D003   96.00   000418     091A
TANK  3  PREMIUM UNLEADED     MAG1   C000   96.00   278147     082B
TANK  3  PREMIUM UNLEADED     CAP0   0001   96.00   200100     0000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>ia01TTYMMDDHHmmTTpPPKKKKFFFFFFFFSSSSSScccc...
TTpPPKKKKFFFFFFFFSSSSSScccc&&CCCC<ETX>
```

- Notes:
- 1. YMMDDHHmm - Current Date and Time
  - 2. TT - Tank Number (Decimal, 00=all)
  - 3. p - Product Code (one ASCII character [20h-7Eh])
  - 4. PP - Probe Type: (TLS450- only MAG supported)
    - 01=CAP0
    - 02=CAP1
    - 03=MAG1
  - 5. KKKK - Circuit Code (Hex)
  - 6. FFFFFFFF - Probe Length (ASCII Hex IEEE float)
  - 7. SSSSSS - Probe Serial Number (Decimal)
  - 8. cccc - Probe Date Code (Hex)
  - 9. && - Data Termination Flag
  - 10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: A02**

Version 1

**Function Type:** Probe Factory Dry Calibration Values

**Command Format:**

**Display:** <SOH>IA02TT

**Computer:** <SOH>ia02TT

**Typical Response Message, Display Format:**

```
<SOH>
IA02TT
JAN 22, 1996  3:25 PM

TANK  1  REGULAR UNLEADED      MAG    GRADIENT= 178.1400
TANK  2  SUPER UNLEADED        CAP1    FACTORY DRY5
1573.000 1871.000 5020.000 4977.000 4961.000 5006.000 4967.000 5019.000
5033.000 4972.000 5045.000
265.000  311.000  836.000   834.000   827.000   827.000   833.000   834.000
839.000  827.000  837.000
TANK  3  PREMIUM UNLEADED      CAP0    FACTORY DRY5
97.000   180.000  649.000  657.000  652.000  655.000  647.000  657.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia02TTYMMDDHHmmTTpPPNNFFFFFFFF...
TTpPPNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (Probe types 01=CAP0 and 02=CAP1 are not supported by this command)  
03=MAG1
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - Original Ref distance reading (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A03

Version 1

**Function Type:** Probe Factory Wet Calibration Values

**Command Format:**

**Display:** <SOH>IA03TT

**Computer:** <SOH>ia03TT

**Typical Response Message, Display Format:**

```
<SOH>
IA03TT
JAN 22, 2009  3:25 PM

TANK  1  REGULAR UNLEADED      MAG    GRADIENT= 178.1400
TANK  2  SUPER UNLEADED        CAP1    FACTORY WETS
3066.000 3197.000 8321.000 8213.000 8230.000 8189.000 8251.000 8296.000
8335.000 8205.000 8332.000
569.000  576.000 1485.000 1486.000 1471.000 1477.000 1479.000 1476.000
1479.000 1472.000 1474.000
TANK  3  PREMIUM UNLEADED      CAP0    FACTORY WETS
130.000  335.000 1214.000 1214.000 1204.000 1217.000 1200.000 1222.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia03TTYMMDDHHmmTTpPPNNFFFFFFFFF...
TTpPPNNFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (Probe types 01=CAP0 and 02=CAP1 are not supported by this command)  
03=MAG1
5. YYMMDD - Date of reading
6. FFFFFFFF - Original Ref distance reading (ASCII Hex IEEE float)
7. YYMMDD - Date of reading
8. FFFFFFFF - Current Reference distance reading (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A07

Version 1

**Function Type:** Probe Reference Distance Diagnostic

**Command Format:**

**Display:** <SOH>IA07TT

**Computer:** <SOH>iA07TT

**Typical Response Message, Display Format:**

```
<SOH>
IA07TT
JAN 22, 1996  3:25 PM

PROBE 1  REGULAR
TANK  1  REGULAR UNLEADED      MAG7
PROBE SERIAL NUMBER  0000123456
ORIG REF DISTANCE    JUN 29, 2007  XXXXX.XX
CURR REF DISTANCE    JUL  2, 2007  XXXXX.XX
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA07TTYMMDDHHmmTTpPPYYMMDDFFFFFFFFYYMMDDFFFFFFFF...
TTpPPYYMMDDFFFFFFFFYYMMDDFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (Probe types 01=CAP0 and 02=CAP1 are not supported by this command)  
03=MAG1
5. YMMDD - Date of reading
6. FFFFFFFF - Original Ref distance reading (ASCII Hex IEEE float)
7. YMMDD - 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-450 Monitoring Systems

---

**Function Code:** A0X  
**Function Type:** Probe Diagnostics - General

Version 1

**Command Format:**  
**Display:** <SOH>IA0XPP  
**Computer:** <SOH>ia0XPP

#### Typical Response Message, Display Format:

```
<SOH>
IA0XTT
JAN 22, 2007  3:25 PM

PROBE 1:                - TANK      1
                        Serial      Date
Type  Code   Length    No         Yr/Wk   Rev   Gradient
MAG3  C000    96.00    107611    x2/07    1    178.1400
MAG3  C000    96.00    107611    x2/07    1    178.1400
MAG3  C000    96.00    107611    x2/07    1    178.1400
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>ia0XTTYMMDDHHmmPPTTrrCCCCyyml11111111ggggggggssssssssnn....
                        PPTTrrCCCCyyml11111111ggggggggssssssssnn....&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Deciamal - 00=all)
3. TT - Tank Number
4. rr - Revision (hex)
5. CCCC - Probe Code (hex)
6. YYMM - Year and Month Built (decimal)
7. 11111111 - Probe Length (ASCII Hex IEEE float)
8. gggggggg - Gradient (ASCII Hex IEEE float)
9. ssssssss - Serial Number (ASCII Hex IEEE long)
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 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      CAP0      NUMBER OF SAMPLES= 1082
 234.000  439.000  1317.000  1319.000  1307.000  1321.000  1104.000  761.000
 104.000  1686.000
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iA10TTYMMDDHHmmTTpPPSSSSNNFFFFFFFF...
TTpPPSSSSNNFFFFFFFF&&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: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. SSSS - Sample Number (Hex)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A14  
**Function Type:** MAG Probe Option Table

Version 1

**Command Format:**  
**Display:** <SOH>IA14PP  
**Computer:** <SOH>iA14PP

#### Typical Response Message, Display Format:

```
<SOH>
IA14PP
JUN  1, 2000  8:15 AM

MAG PROBE OPTIONS TABLE

TNK    LOW      LEAK    LEAK    LEAK
NUM    TEMP     WATER   0.1     0.2     3.0
-----
  1     YES      YES      YES      YES      YES
  2     YES      YES      NO       NO       NO
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iA14PPYYMMDDHHmmPPNNL...
PPNNL&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe 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-450 Monitoring Systems

---

**Function Code:** A15

Version 1

**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-450 Monitoring Systems

---

#### Function Code A15 Notes: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>iA15TTYMMDDHHmmTTppppsssssslllllllllddddYYMMDDHHmm
ggggggggzzzzzoonnnnNNcccccccc...ccccccc
rrrrrrrruuuuuuueeeeeeeeYYMMDDHHmm
AAAAAAAA...aaaaaaa
YYMMDDhhhhhhhhYYMMDDkkkkkkkk...
TTppppsssssslllllllllddddYYMMDDHHmm
ggggggggzzzzzoonnnnNNcccccccc...ccccccc
rrrrrrrruuuuuuueeeeeeeeYYMMDDHHmm
AAAAAAAA...aaaaaaa
YYMMDDhhhhhhhhYYMMDDkkkkkkkk&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. pppp - Probe Type (Hex)
4. ssssss - Serial Number (Decimal)
5. llllllll - 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-450 Monitoring Systems

---

**Function Code:** A17  
**Function Type:** Probe Communication

Version 1

**Command Format:**  
**Display:** <SOH>IA17PP  
**Computer:** <SOH>iA17PP

#### Typical Response Message, Display Format:

<SOH>  
IA17PP  
MAR 26, 2007 1:50 PM

PROBE DIAGNOSTIC - COMMUNICATION REPORT

```
-----
PROBE  1   Probe Label (PROBE 1)      TANK  1
Type      Status      Samples Read    Samples Used    Parity    Partial    Comm
MAG 1     OK          1450532    1450305         0          1       Errors
                                           72

PROBE  2                               TANK  2
Type      Status      Samples Read    Samples Used    Parity    Partial    Comm
MAG 12    FAIL          1450532    1450305         0          1       Errors
72
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iA17PPYYMDDHHmmPPTTTTssNNFFFFFFFFGGGGGGGGHHHHHHHHIIIIIIII
JJJJJJJJ...
PPTTTTssNNFFFFFFFFGGGGGGGGHHHHHHHHIIIIIIII
JJJJJJJJ&&CCCC<ETX>
```

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. TTTT - Circuit Code (Hex)
4. ss - Status Flag (Hex)  
00=OK  
01=FAIL
5. NN - Number of 8-byte fields to follow (hex)
6. FFFFFFFF - Samples Read (Hex)
7. GGGGGGGG - Samples Used (Hex)
8. HHHHHHHH - Parity Errors (Hex)
9. IIIIIIII - Partial Errors (Hex)
10. JJJJJJJJ - Comm Errors (Hex)
11. && - Data Termination Flag
12. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A20

Version 1

**Function Type:** Probe Leak Test Flags - Present Test

**Command Format:**

**Display:** <SOH>IA20TT

**Computer:** <SOH>ia20TT

#### Typical Response Message, Display Format:

```
<SOH>
IA20TT
JAN 28, 1995 10:15 AM
TANK 1 REGULAR UNLEADED      MAG    PRESENT LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 2 SUPER UNLEADED        CAP1    PRESENT LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 3 PREMIUM UNLEADED      CAP0    PRESENT LEAK TEST ANALYSIS REPORT
0.2 GAL/HR FLAGS:
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>ia20TTYMMDDHHmmTTpPPNNFFFF...
                        TTpPPNNFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A21

Version 1

**Function Type:** Probe Leak Test Flags - Stored Test

**Command Format:**

**Display:** <SOH>IA21TT

**Computer:** <SOH>iA21TT

#### Typical Response Message, Display Format:

```
<SOH>
IA21TT
JAN 28, 1995 10:15 AM
TANK 1  REGULAR UNLEADED      MAG      STORED LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 2  SUPER UNLEADED      CAP1     STORED LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 3  PREMIUM UNLEADED     CAP0    STORED LEAK TEST ANALYSIS REPORT
0.2 GAL/HR FLAGS:
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iA21TTYMMDDHHmmTTpPPNNFFFF...
      TTpPPNNFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A22

Version 1

**Function Type:** Probe Leak Test Flags - Gross Test

**Command Format:**

**Display:** <SOH>IA22TT

**Computer:** <SOH>iA22TT

**Typical Response Message, Display Format:**

```
<SOH>
IA22TT
APR 14, 1995 9:05 AM
TANK 1 REGULAR UNLEADED      MAG      GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
TANK 2 SUPER UNLEADED        CAP1     GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
TANK 3 PREMIUM UNLEADED      CAP0     GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA22TTYMMDDHHmmTTpPPNNFFFF...
                        TTpPPNNFFFF&&CCCC<ETX>
```

**Notes:**

1. 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: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A51

Version 1

**Function Type:** CSLD Diagnostics: Rate Table

**Command Format:**

**Display:** <SOH>IA51TT

**Computer:** <SOH>ia51TT

**Typical Response Message, Display Format:**

```
<SOH>
IA51TT
JAN 22, 1996  3:26 PM

CSLD DIAGNOSTICS: RATE TABLE
T 1:REGULAR UNLEADED
      TIME ST      LRT AVTMP TPTMP BDTMP  TMRT DSPNS   VOL INTVL      DEL ULLG EVAP
9601210514  2 -0.194  35.9  35.6  33.1  0.06   853  9324  53.5    1.4  188  7.8
9601220056  3 -0.028  36.9  35.7  33.3  0.02  1528  6829 134.0    21.1  320  7.8
9601220417  1 -0.007  37.0  35.8  33.3  0.02  1470  6825  25.0    24.5  320  7.8
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia51TTYMMDDHHmmTTRRssNNtttttttttFFFFFFFFF...
                        TTRRssNNtttttttttFFFFFFFFF&&ACF7<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. RR - Number of records to follow
4. ss - Test acceptability:
  - 00=Acceptable
  - 01=Rejected - less than minimum duration requirement
  - 02=Rejected - within delivery threshold
  - 03=Rejected - excessive dispensing
  - 04=Rejected - excessive temperature change
  - 06=Rejected - outside weighted STD
5. NN - Number of eight character Data Fields to follow (decimal)
6. tttttttt - Test starting time (seconds since 1/1/70, unsigned long)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Leak rate
  2. Accept
  3. 0.0 (obsolete)
  4. Rate of change of temperature
  5. Dispense factor
  6. Volume
  7. Test interval (minutes)
  8. Hours since last delivery
  9. Average temperature
  10. Top temperature
  11. Board temperature
  12. Ullage area
  13. Throughput
  14. Evaporation rate
8. && - Data Termination Flag
9. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: A52**

Version 1

**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>ia52TTYMMDDHHmmTTYMMDDHHmmSSCCccNNFFFFFFFFF...
TTYMMDDHHmmSSCCccNNFFFFFFFFF&&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-450 Monitoring Systems

---

**Function Code:** A53

Version 1

**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>ia53TTYMMDDHHmmTTNNhhhhhhhhFFFFFFF...
                                TTNNhhhhhhhhhhFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - 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-450 Monitoring Systems

---

**Function Code:** A54  
**Function Type:** 30-Second Inventory Samples

Version 1

**Command Format:**  
**Display:** <SOH>IA54TT  
**Computer:** <SOH>ia54TT

#### Typical Response Message, Display Format:

```
<SOH>
IA54TT
MAR 26, 1996  1:48 PM

30-SECOND INVENTORY SAMPLES

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
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>A5401YYMMDDHHmmTTSSRRssNNNNNNNNNN...FFFFFFFF
                        ssNNNNNNNNNN...FFFFFFFF
                        TTSSRRssNNNNNNNNNN...FFFFFFFF
                        ssNNNNNNNNNN...FFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. SS - Current Test State:
  - 0=No test
  - 1=Test pre-start
  - 2=Test in-progress
  - 3=Test complete
  - 4=Abort test
  - 5=Pre-delay
  - 6=End delay
4. RR - Number of records to follow
5. ss - Number of samples averaged into this record
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats (except where noted):
  1. Time (seconds since 1/1/70, unsigned long)
  2. Temperature compensated volume
  3. Height
  4. Fuel temperature
  5. 0.0
  6. 0.0
  7. Top temperature
  8. Board temperature
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A55

Version 1

**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   LABEL      TEST STATUS  DURATION
  1     Regular    NO TEST      0.0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia55TTYMMDDhhmmTTSSFFFFFFFF...
                                TTSSFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. SS - Status:
  - 00=NO TEST
  - 01=TEST PRE-START
  - 02=TEST IN PROGRESS
  - 03=TEST COMPLETE
  - 04=TEST ABORT
  - 05=TEST PRE-DELAY
  - 06=TEST END DELAY
4. FFFFFFFF - Elapsed time in minutes (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A56  
**Function Type:** CSLD Monthly Report

Version 1

**Command Format:**  
**Display:** <SOH>IA56TTt  
**Computer:** <SOH>iA56TTt

**NOTE:** The most current record from the previous month (if available) will be returned if a record doesn't exist for the current month.

#### 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 Available
OCT 24, 2000 3:22 PM   RESULT: Pass
OCT 23, 2000 6:26 AM   RESULT: Fail
OCT 20, 2000 12:44 PM  RESULT: Increase
OCT 20, 2000 5:23 AM   RESULT: Warning
OCT 19, 2000 8:23 AM   RESULT: Invalid
OCT 18, 2000 9:53 PM   STATUS: No Idle Data
OCT 16, 2000 6:14 AM   STATUS: Active
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iA56TTYMMDDHHmmtTTNNYYMMDDHHmmrr...
                                TTNNYYMMDDHHmmrr&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. t - Report Type  
0=Current Month  
1=Previous Month
3. TT - Tank Number (Decimal, 00=all)
4. NN - Number of CSLD State Changes (12 char) to follow (Hex)
5. YYMMDDHHmm - Date and Time of CSLD State Change
6. rr - CSLD State Change:  
01=RESULT: Pass  
02=RESULT: Fail  
03=RESULT: No Results Available  
04=RESULT: Invalid  
08=RESULT: Increase  
09=RESULT: Warning  
98=STATUS: No Idle Data  
99=STATUS: Active
7. && - Data Termination Flag
8. CCCC - Message Checksum

**Function Code: A57**

Version 1

**Function Type:** Tank Test Diagnostics - CSLD Monthly Report

**Command Format:**

**Display:** <SOH>IA57TTRRyymmddhhmmYYMMDDHHMMnnn

**Computer:** <SOH>iA57TTRRyymmddhhmmYYMMDDHHMMnnn

**Notes:**

1. TT - Device Number (Decimal, 00=all)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
00=CSLD Monthly Report (for CSLD information for specified time period)
3. nnn - Maximum Records [000-999 Absolute Maximum] (Decimal). (If no Maximum Records is given or it is zeroes and no End Date/Time is given, limited by the Maximum Records, Default of 100)
4. yymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records and is limited by the Maximum records below. Ranges are as follows:  
yy=Year (01-99, for Years 2001-2099)  
mm=Month (01-12, for Months January to December)  
dd=Day (01-31, however, validity depends on Month)  
hh=Hour (00-23)  
mm=Minute (00-59)
5. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (above)).

**Valid Combinations:**

If Max Records = 000, and Starting Date/Time = 0's or blank, (End Date/Time not used for this combination).

Returns up to 100 of the most recent records.

If Max Records = 000, and Starting Date/Time is valid, and End Date/Time = 0's or blank.

Returns up to 100 records starting from the Start Date/Time.

If Max Records = 000, and Starting Date/Time is valid, and End Date/Time is valid

Returns all records between the Start Date/Time and the End Date/Time.

If Max Records = 1 - 999, and Starting Date/Time = 0's or blank, (End Date/Time not used for this combination).

Returns up to the Max Records starting with the most recent records.

If Max Records = 1 - 999, and Starting Date/Time is valid, and End Date/Time = 0's or blank.

Returns up to the Max Records starting from the Start Date/Time.

If Max Records = 1 - 999, and Starting Date/Time is valid and End Date/Time is valid.

Returns up to the Max Records starting with the Start Date/Time and ending with the End Date/Time.

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code A57: (Continued)

**NOTE:** The most current record from a previous date (if available) will be returned if a record doesn't exist for the selected date range.

#### Typical Response Message, Display Format:

```
<SOH>
IA57TT
OCT 25, 2000 10:00 AM

Selected Range:
  Date Range: 10/15/2000 04:00 PM - 10/26/2000 04:00 PM

Tank Test Diagnostics - CSLD Monthly Report

Tank 1: Regular Unleaded
Probe Serial Number: 627020

Date/Time          CSLD State Change
Oct 25, 2000  7:15 AM  No Results Available
Oct 24, 2000  3:22 PM  Pass
Oct 23, 2000  6:26 AM  Fail
Oct 20, 2000 12:44 PM  Increase
Oct 20, 2000  5:23 AM  Warning
Oct 19, 2000  8:23 AM  Invalid
Oct 18, 2000  9:53 PM  No Idle Data
Oct 16, 2000  6:14 AM  Active
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iA57TTYMMDDHHmmTTNNNYYMMDDHHmmrr...
TTNNNYYMMDDHHmmrr&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NNN - Number of CSLD State Changes to follow (Hex)
4. YYMMDDHHmm - Date and Time of CSLD State Change
5. rr - CSLD State Change:
  - 01=Pass
  - 02=Fail
  - 03=No Results Available
  - 04=Invalid
  - 08=Increase
  - 09=Warning
  - 98=No Idle Data
  - 99=Active
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code: A58**

Version 1

**Function Type:** CSLD Diagnostics: Moving Average Table

**Command Format:**

**Display:** <SOH>IA58TT

**Computer:** <SOH>ia58TT

#### Typical Response Message, Display Format:

<SOH>  
IA58TT  
MAR 26, 1996 1:48 PM

CSLD DIAGNOSTICS: AGGREGATE ATG DATA QUEUE

T 1:REGULAR UNLEADED

DATE/TIME	SMPL CNT	AGGREG TCVOL	MOVING AVERAGE	VARIANCE	IDLE	STATE	ERROR FLAGS
960326132554	31	3074.65	3074.65	45.86	NO	NO TEST	0000
960326132624	30	3072.62	3072.62	45.86	NO	PRE START	0000
960326132654	31	3072.46	3072.46	45.86	YES	IN PROGRESS	0000
960326132724	30	3072.54	3072.54	45.86	YES	COMPLETE	0000
960326132754	31	3073.13	3073.13	45.86	YES	ABORT TEST	0000
960326132824	31	3072.97	3072.97	45.86	YES	PRE DELAY	0000
960326132854	31	3072.97	3072.97	45.86	YES	END DELAY	0000

<ETX>

#### Typical Response Message, Computer Format:

<SOH>ia5801YYMMDDHHmmTTNNssssssssnnccccccmmmmmmmmvvvvvvvvIseeee  
ssssssssnnccccccmmmmmmmmvvvvvvvvIseeee  
TTNNssssssssnnccccccmmmmmmmmvvvvvvvvIseeee&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. NN - Number of samples in queue (hex)
4. ssssssss - time stamp in seconds since 1970 (ascii hex long)
5. nn - number of probe readings (ascii hex)
6. cccccccc - tc volume in gallons/liters (ascii hex float)
7. mmmmmmmm - moving average in gallons/liters (ascii hex float)
8. vvvvvvvv - variance (ascii hex float)
9. I - 1=idle, 0=busy
10. S - state  
0=No test  
1=Test pre-start  
2=Test in-progress  
3=Test complete  
4=Abort test  
5=Pre-delay  
6=End delay
11. EEEE - Error flags (ascii hex short)
12. && - Data Termination Flag
13. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A71  
**Function Type:** Accuchart Data Sufficiency

Version 2

**Command Format:**  
**Display:** <SOH>IA71TT  
**Computer:** <SOH>ia71TT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)

**Typical Response Message, Display Format:**

```
<SOH>
IA71TT
JAN 24, 2009  2:52 PM

ACCUCHART DATA SUFFICIENCY

  TANK  |--SUFFICIENCY--|  DAYS
  -----|-----|  -----
    1    45.0      60.0      10  POSTPONE UNTIL TANK VOLUME LOWERED TO 1234567
    2    45.0      60.0      20  START DISPENSING
    3    45.0      60.0      30  STOP DISPENSING
   16    45.0      60.0     101  SCHEDULE NOW TO FILL TO 1234567
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia71TTYMMDDHHmmTTssssssssSSSSSSSSddaa...
                                TTssssssssSSSSSSSSddaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. ssssssss - Current Sufficiency (ASCII Hex IEEE float)
4. SSSSSSSS - Required Sufficiency (ASCII Hex IEEE float)
5. dd - Days Left (Hex)
6. aa - Sufficiency improvement action  
0=No change  
1=Schedule delivery now to fill tank  
2=Postpone delivery until tank volume lowered  
3=Start dispensing  
4=Stop dispensing  
5=Continue dispensing
7. && - Data Termination Flag
8. CCCC - Message Checksum

**Serial Interface Manual**  
**TLS-450 Monitoring Systems**

**Function Code:** A72  
**Function Type:** Accuchart Data Sufficiency Histogram

Version 2

**Command Format:**  
**Display:** <SOH>IA72TT  
**Computer:** <SOH>iA72TT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)

**Typical Response Message, Display Format:**

<SOH>  
IA72TT  
JAN 24, 2009 2:52 PM

TANK nn ACCUCHART DATA SUFFICIENCY HISTOGRAM

HEIGHT%	COUNTS
95 - 100	AAAA
90 - 95	AAAA
85 - 90	AAAA
80 - 85	AAAA
75 - 80	AAAA
70 - 75	AAAA
65 - 70	AAAA
60 - 65	AAAA
55 - 60	AAAA
50 - 55	AAAA
45 - 50	AAAA
40 - 45	AAAA
35 - 40	AAAA
30 - 35	AAAA
25 - 30	AAAA
20 - 25	AAAA
15 - 20	AAAA
10 - 15	AAAA
5 - 10	AAAA
0 - 5	AAAA

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iA72TTYMMDDHHmmTTNNaaaaaaaaabbbbbbbAAAA...aaaaaaaaabbbbbbbAAAA  
TTNNaaaaaaaaabbbbbbbAAAA...aaaaaaaaabbbbbbbAAAA&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal)
3. NN - Number of histogram bins to follow (Decimal)
4. aaaaaaaaa - min height of bin in Percent (ASCII Hex IEEE float)
5. bbbbbbbb - max height of bin in Percent (ASCII Hex IEEE float)
6. AAAA - Number of counts in bin (ASCII Hex short)
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A73  
**Function Type:** Force Accuchart Calibration

Version 2

**Command Format:**  
**Display:** <SOH>SA73TT149  
**Computer:** <SOH>sA73TT149

**Inquire:**  
<SOH>IA73TT  
<SOH>iA73TT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. Set command forces Accuchart to attempt to calibrate

**Typical Response Message, Display Format:**

```
<SOH>
IA73TT
JAN 24, 2009  2:52 PM

ACCUCHART CALIBRATION STATUS

TANK      STATUS
-----
  1  CALCULATING
  2  SUSPENDED
  3  COLLECTING
 16  STOPPED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA73TTYMMDDHHmmTTs...
                      TTs&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. s - Current Status (Decimal)  
    1=Calculating  
    2=Suspended  
    3=Collecting  
    4=Stopped
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A74

Version 2

**Function Type:** Accuchart Calibration Feedback Report

**Command Format:**

**Display:** <SOH>IA74TT

**Computer:** <SOH>ia74TT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)

**Typical Response Message, Display Format:**

```
<SOH>
IA74TT
JAN 24, 2009  2:52 PM
```

ACCUCHART FEEDBACK REPORT

TANK	DATE	STATUS
1	yyyy-mm-dd	INSUFFICIENT DATA COLLECTION RATE
2	yyyy-mm-dd	NOISY DATA
3	yyyy-mm-dd	DATA TOO REGIONALLY CONCENTRATED
	yyyy-mm-dd	INITIAL TANK PARAMETERS SUSPICIOUS
	yyyy-mm-dd	STATION TOO BUSY
10	yyyy-mm-dd	STATION TOO BUSY
	yyyy-mm-dd	DATA TOO REGIONALLY CONCENTRATED
12	yyyy-mm-dd	INSUFFICIENT DATA COLLECTION RATE

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>ia74TTYMMDDHHmmTTNNNNyymmddS...yymmddS
TTNNNNyymmddS...yymmddS&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NNNN - Number of Records to follow (Decimal)
4. yymmdd - Time Stamp
5. S - Status Code (Decimal)
  - 1=Insufficient Data Collection Rate
  - 2=Noisy Data
  - 3=Data Too Regionally Concentrated
  - 4=Initial Tank Parameters Suspicious
  - 5=Station Too Busy
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** A75

Version 2

**Function Type:** Accuchart Delivery Instructions

**Command Format:**

**Display:** <SOH>IA75TT

**Computer:** <SOH>iA75TT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)

**Typical Response Message, Display Format:**

```
<SOH>
IA75TT
JAN 24, 2009  2:52 PM

ACCUCHART DELIVERY INSTRUCTIONS

TANK      DATE      DELIVERY INSTRUCTIONS
-----
  1  yyyy-mm-dd  SCHEDULE NOW TO FILL TANK TO XXXXX (GALLONS/LITERS)
  2  yyyy-mm-dd  POSTPONE UNTIL TANK VOLUME LOWERED TO XXXXX (GALLONS/LITERS)
 16  yyyy-mm-dd  SCHEDULE NOW TO FILL TANK TO XXXXX (GALLONS/LITERS)
<ETX>
```

*(Note: Only show tanks with actionable delivery instructions)*

**Typical Response Message, Computer Format:**

```
<SOH>iA75TTYMMDDHHmmTTyymmddsvvvvvvvv...
                        TTyymmddsvvvvvvvv&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. yymmdd - Time Stamp
4. s - Status Code (Decimal)  
1=Schedule Delivery Now  
2=Postpone Delivery
5. vvvvvvvv - Final Volume in Gallons/Liters (ASCII Hex IEEE float)
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: A76**

Version 2

**Function Type:** Get Application Log Information

**Command Format:**

**Display:** <SOH>IA76TTYMMDDyyymmdd

**Computer:** <SOH>iA76TTYMMDDyyymmdd

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. YYMMDD - Start Date (optional)
3. yyymmdd - End date (optional)

**Typical Response Message, Display Format:**

```
<SOH>
IA76TT
JAN 22, 2007  3:24 PM
```

ACCUCHART APPLICATION LOG

DATE/TIME	TANK	MESSAGE
09-01-02 12:34:56	1	NEW CHART CREATED
09-01-03 12:34:56	2	CALIBRATION STARTED
09-01-04 12:34:56	1	CHART ACTIVATED ID=5
09-01-05 12:34:56	11	CALIBRATION STOPPED
09-01-03 12:34:56	12	CALIBRATION SUSPENDED

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iA76TTYMMDDHHmmTTSSSSSSSScc...
TTSSSSSSSScc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. SSSSSSSS - Time stamp of log entry (ASCII Hex Long)
4. cc - Message Code (Decimal)
  - 01=New Chart Created
  - 02=Chart Activated
  - 03=Calibration Started
  - 04=Calibration Stopped
  - 05=Calibration Suspended
5. && - Data Termination Flag
6. CCCC - Message Checksum

### 7.4.3 SENSOR DIAGNOSTIC REPORTS

**Function Code:** B01

Version 1

**Function Type:** Liquid Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB01SS

**Computer:** <SOH>iB01SS

**Typical Response Message, Display Format:**

<SOH>  
IB01SS

JAN 24, 1996 2:56 PM

SENSOR DIAGNOSTIC - LIQUID SENSOR INFORMATION REPORT

SINGLE SENSOR

SENSOR	CATEGORY	SAMPLE COUNTER	VALUE	STATUS
1	NO_CATEGORY	5	145727	Out Alarm

<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-450 Monitoring Systems

---

**Function Code:** B06

Version 1

**Function Type:** Vapor Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB06SS

**Computer:** <SOH>iB06SS

#### Typical Response Message, Display Format:

<SOH>  
IB06SS

JAN 24, 1996 2:56 PM

SENSOR DIAGNOSTIC - VAPOR SENSOR INFORMATION REPORT

SINGLE SENSOR

SENSOR	SAMPLE COUNTER	VALUE 1	VALUE 2	VAPOR CONCENTRATION	STATUS
1	5	322	175355	322	Out Alarm

<ETX>

#### Typical Response Message, Computer Format:

<SOH>iB06SSYYMMDDHHmmSSNNFFFFFFFF...  
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. 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-450 Monitoring Systems

---

**Function Code: B07**

Version 1

**Function Type:** Vapor Sensor Concentration (PPM) Report

**Command Format:**

**Display:** <SOH>IB07SS

**Computer:** <SOH>iB07SS

**Typical Response Message, Display Format:**

```
<SOH>
IB07SS
JAN 24, 1996  2:56 PM

VAPOR DIAGNOSTIC REPORT - VAPOR CONCENTRATION

SENSOR      PPM
  1          0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>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-450 Monitoring Systems

---

**Function Code:** B11

Version 1

**Function Type:** Groundwater Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB11SS

**Computer:** <SOH>iB11SS

#### Typical Response Message, Display Format:

<SOH>  
IB11SS

JAN 28, 1995 10:16 AM

SENSOR DIAGNOSTIC - GROUNDWATER SENSOR INFORMATION REPORT

SINGLE SENSOR

SENSOR	SAMPLE COUNTER	VALUE 1	VALUE 2	STATUS
1	5	49875	90972	OUT ALARM

<ETX>

#### Typical Response Message, Computer Format:

<SOH>iB11SSYYMMDDHHmmSSNNFFFFFFFF...  
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. 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-450 Monitoring Systems

---

**Function Code: B21**

Version 1

**Function Type:** Ground Temperature Sensor Diagnostic Report

**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>iB21SSYYMMDDHHmmSSNNFFFFFFFF...  
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. Temperature Channel Last Reading
  5. Temperature Channel Average Reading
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B33**

Version 1

**Function Type:** MAG Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB33SS

**Computer:** <SOH>iB33SS

#### Typical Response Message, Display Format:

```
<SOH>
IB33SS
JAN 22, 2003  3:06 PM

MAG SENSOR DIAGNOSTIC REPORT

Sensor 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. Board Temperature
  6. Fuel Temperature(-99.9 indicates a value is not enabled for display)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** B3A  
**Function Type:** MAG Sensor Comm Data

Version 1

**Command Format:**  
**Display:** <SOH>IB3AQQ  
**Computer:** <SOH>iB3AQQ

#### Typical Response Message, Display Format:

<SOH>  
IB3AQQ  
MAR 26, 1996 1:47 PM

MAG Sensor Diagnostic Report - Communication

Samples Read	Samples Used	Parity Errors	Partial Read	Comm Errors	Restarts
Sensor 1: sensor1label					
100	96	1	2	0	0
Sensor 2: sensor2label					
100	96	1	2	0	0
Sensor 3: sensor3label					
100	96	1	2	0	0
<ETX>					

#### Notes:

##### Display Format:

1. All Communication Data - (Decimal Format)

#### Typical Response Message, Computer Format:

<SOH>iB3AQQYYMMDDHHmmQQaaaabbbbccccddddeeeeffff...  
QQaaaabbbbccccddddeeeeffff...&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - MAG Sensor number (Decimal, 00=All)
3. aaaa - sample read (ASCII Hex IEEE format)
4. bbbb - sample used (ASCII Hex IEEE format)
5. cccc - Parity errors (ASCII Hex IEEE format)
6. dddd - Partial Sensor Response (ASCII Hex IEEE format)
7. eeee - comm errors (ASCII Hex IEEE format)
8. ffff - restarts (ASCII Hex IEEE format)
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**B3B

Version 1

**Function Type:** MAG Sensor Type and Serial Number

**Command Format:**

**Display:** <SOH>IB3BSS

**Computer:** <SOH>iB3BSS

**Typical Response Message, Display Format:**

<SOH>  
IB3B01  
MAY 11, 2007 5:36 PM

MAG SENSOR TYPE AND SERIAL NUMBER

SENSOR	LABEL	TYPE	SERIAL NUMBER	DATE	CODE
1	MAG Sensor 1 Label	MAG Sensor	5617		9951

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB3BSSYYMMDDHHmmSSnnMMMMMMMMNNNNNNNNNDDDDDDDDPPPPPPPP...  
SSnnMMMMMMMMNNNNNNNNNDDDDDDDDPPPPPPPP&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor Number (Decimal, 00=all)
3. nn - Number of 8-byte values to follow.
4. MMMMMMMM - MAG Sensor Model (Hex)
5. NNNNNNNN - MAG Sensor Serial Number (Hex)
6. DDDDDDDD - MAG Sensor Date Code (Hex)
7. PPPPPPPP - MAG Sensor firmware version (Hex)
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** B3C  
**Function Type:** MAG Sensor Constant Data

Version 1

**Command Format:**  
**Display:** <SOH>IB3CSS  
**Computer:** <SOH>IB3CSS

#### Typical Response Message, Display Format:

```
<SOH>
IB3CSS
JUN  1, 2000  8:15 AM

MAG SENSOR DIAGNOSTIC REPORT - CONSTANTS

Sensor 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>
```

#### Typical Response Message, Computer Format:

```
<SOH>IB3CYMMDDHHmmSSNNVVVVVVVVvvvvvvvv...
VVVVVVVVvvvvvvvv&&CCCC<ETX>
```

#### Notes:

1. YMMDDHHmm - Current Date and Time
2. SS - MAG 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)
12. && - Data Termination Flag
13. CCCC - Message Checksum

**Function Code:** B3D

Version 1

**Function Type:** MAG Sensor Last Sample Diagnostic (Hex Format)

**Command Format:**

**Display:** <SOH>IB3DSS

**Computer:** <SOH>IB3DSS

**Typical Response Message, Display Format:**

```
<SOH>
IB3DSS
JAN 22, 2003  3:25 PM

MAG Sensor Diagnostic Report - Channel Data

Sensor 1:
Serial Number: 3534
Time: DEC 30, 2007  4:40 PM
```

	0	1	2	3	4	5	6	7	8	9
00	B610	067F	0856	108C	18E3	0857	0DCE	0000	0008	8851
10	0001	50DC	B40A	4B53	4AB3	B40F	00A1	80C4	0081	80C4
20	83A4	83B2	0000	0030	735F	4187	63E3	0258	01F4	02BC
30	0228	18B1	03E8	00AA	07FC	00DD	04B0	0004	0924	3FCC
40	CCCD	0D45	3FD9	999A	0946	4040	0000	016D	4080	0000
50	52EF									

<ETX>

**Notes:**

1: Values are in ASCII Hex IEEE float format.

**Typical Response Message, Computer Format:**

<SOH>iB3DSSYYMMDDHHmmSSnnVVVV...VVVV&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor Number (Decimal, 00=all)
3. nn - Number of channels to follow (Hex)
4. VVVV - Channel Value (Hex)
5. && - Data Termination Flag
6. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B3E**

Version 1

**Function Type:** MAG Sensor Last Sample Diagnostic (Decimal Format)

**Command Format:**

**Display:** <SOH>IB3ESS

**Computer:** <SOH>IB3ESS

**Typical Response Message, Display Format:**

<SOH>  
IB3ESS  
JAN 22, 2003 3:25 PM

MAG Sensor Diagnostic Report - Channel Data

Sensor 1:  
Serial Number: 3534  
Time: DEC 30, 2007 4:40 PM

	0	1	2	3	4	5	6	7	8	9
00	46608	1662	2134	4237	6370	2134	3534	0	8	34897
10	1	20700	46090	19283	19123	46095	161	32964	129	32964
20	33700	33714	0	48	29535	16775	25571	600	500	700
30	552	6321	1000	170	2044	221	1200	4	2340	16332
40	52429	3397	16345	39322	2374	16448	0	365	16512	0
50	21231									

<ETX>

**Function Code: B41**

Version 1

**Function Type:** Type A Sensor (2 Wire CL) Diagnostic Report

**Command Format:**

**Display:** <SOH>IB41SS

**Computer:** <SOH>iB41SS

**Typical Response Message, Display Format:**

<SOH>  
IB41SS

MAR 26, 1996 1:45 PM

SENSOR DIAGNOSTIC - 2-WIRE CL SENSOR INFORMATION REPORT

SINGLE SENSOR

SENSOR	CATEGORY	COUNTER	SAMPLE VALUE	STATUS
1	NO_CATEGORY	5	4193	Out Alarm
<ETX>				

**Typical Response Message, Computer Format:**

<SOH>iB41SSYYMMDDHHmmSSNNFFFFFFFF...  
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 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-450 Monitoring Systems

---

**Function Code: B46**

Version 1

**Function Type:** Type B Sensor (3 Wire CL) Diagnostic Report

**Command Format:**

**Display:** <SOH>IB46SS

**Computer:** <SOH>iB46SS

#### Typical Response Message, Display Format:

<SOH>  
IB46SS

JAN 28, 1995 10:16 AM

SENSOR DIAGNOSTIC - 3-WIRE CL SENSOR INFORMATION REPORT

SINGLE SENSOR

#### SAMPLE

SENSOR	CATEGORY	COUNTER	VALUE 1	VALUE 2	STATUS
1	PAN/SUMP:STANDARD	5	5200	100000	Normal

<ETX>

#### Typical Response Message, Computer Format:

<SOH>iB46SSYYMMDDHHmmSSNNFFFFFFFF...  
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 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

7.4.4 LINE LEAK DIAGNOSTIC REPORTS

Function Code: B61  
Function Type: LPR Sensor General Report

Version 1

Command Format:  
Display: <SOH>IB61QQ  
Computer: <SOH>iB61QQ

Typical Response Message, Display Format:

<SOH>  
IB61QQ  
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - General

Type	Status	Serial Number	Date	Pressure
Sensor 1: Line P Sensor 1 063-LINE P SENSOR	Normal	0000900014	00/02	10.062
<ETX>				

Typical Response Message, Computer Format:

<SOH>iB61QQYYMMDDHHmmQQaaabccccccccddddeeeeeeee...  
QQaaabccccccccddddeeeeeeee&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. aaa - LPR Sensor type (Decimal)
4. b - LPR Sensor status  
0=Inactive  
1=Normal
5. cccccccc - LPR Sensor serial number (ASCII Hex IEEE Long)
6. dddd - LPR Sensor Date Code (ASCII Hex IEEE Short)
7. eeeeeeee - LPR Sensor pressure (ASCII Hex IEEE Float)
8. && - Data Termination Flag

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B62**

Version 1

**Function Type:** LPR Sensor Constants Report

**Command Format:**

**Display:** <SOH>IB62QQ

**Computer:** <SOH>iB62QQ

**Typical Response Message, Display Format:**

<SOH>  
IB62QQ  
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - Constants

Serial Number	Model	Firmware Version	Slope	Offset	Date Code
Sensor 1: Line P Sensor 1					
0000900015	1	1	500	10000	1103

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB62QQYYMDDHHmmQQaaaaaaaaabbbbccccdddddffff...  
QQaaaaaaaaabbbbccccdddddffff&&CCCC<ETX>

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. aaaaaaaaa - Serial Number (ASCII Hex IEEE format)
4. bbbb - Model Number (ASCII Hex IEEE format)
5. cccc - Firmware version (ASCII Hex IEEE format)
6. dddd - Offset (ASCII Hex IEEE format)
7. eeee - Slope (ASCII Hex IEEE format)
8. ffff - Date Code (ASCII Hex IEEE format)
9. && - Data Termination Flag
10. CCCC - Message Checksum

**Function Code:** B63  
**Function Type:** LPR Sensor Comm Data

Version 1

**Command Format:**  
**Display:** <SOH>IB63QQ  
**Computer:** <SOH>iB63QQ

**Typical Response Message, Display Format:**

<SOH>  
IB63QQ  
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - Communication

	Samples Read	Samples Used	Parity Errors	Partial Read	Comm Errors	Restart
Sensor 1: sensor1label	47	46	0	0	0	0
Sensor 2: sensor2label	47	46	0	0	0	0

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB63QQYYMDDHHmmQQaaaabbbbccccddddeeeeffff...  
QQaaaabbbbccccddddeeeeffff&&CCCC<ETX>

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. aaaa - Samples Read (ASCII Hex IEEE format)
4. bbbb - Samples Used (ASCII Hex IEEE format)
5. cccc - Parity Errors (ASCII Hex IEEE format)
6. dddd - Partial Read (ASCII Hex IEEE format)
7. eeee - Comm Errors (ASCII Hex IEEE format)
8. ffff - Restarts (ASCII Hex IEEE format)
9. && - Data Termination Flag
10. CCCC - Message Checksum

**Function Code: B64**

Version 1

**Function Type:** LPR Sensor Channel Data

**Command Format:**

**Display:** <SOH>IB64QQ

**Computer:** <SOH>iB64QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB64QQ
MAR 26, 1996  1:47 PM
```

LPR Sensor Diagnostic Report - Channel Data

```
Sensor 1: Line P Sensor 1
Serial Number: 000114
Time: Jun 24, 2008 12:20 PM
```

```

      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>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB64QQYYMMDDHHmmQQnnVVVV...VVVV&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. nn - Number of channels to follow (Hex)
4. VVVV - Channel Value (Hex)
5. && - Data Termination Flag
6. CCCC - Message Checksum

**Function Code: B65**

Version 1

**Function Type:** LPR Sensor Channel Data (Decimal Format)

**Command Format:**

**Display:** <SOH>IB65QQ

**Computer:** <SOH>iB65QQ

**Typical Response Message, Display Format:**

<SOH>  
IB64QQ  
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - Channel Data

Sensor 1: Line P Sensor 1  
Serial Number: 000114  
Time: Jun 24, 2008 12:20 PM

	0	1	2	3	4	5	6	7	8	9
00	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
10	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
20	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
30	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX				

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB65QQYYMMDDHHmmQQnnVVVV...VVVV&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. nn - Number of channels to follow (Hex)
4. VVVV - Channel Value (Hex)
5. && - Data Termination Flag
6. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** B7B

Version 1

**Function Type:** Pressure Line Leak Profile Line Test

**Command Format:**

**Display:** <SOH>IB7BQQ

**Computer:** <SOH>iB7BQQ

**Typical Response Message, Display Format:**

<SOH>

IB7BQQ

JUL 15, 2001 1:27 PM

PRESSURE LINE LEAK PROFILE LINE TEST

Q 1:REGULAR UNLEADED

LAST PROFILE LINE TEST: NOV 15, 2001 10:15 AM

BULK MODULUS: 12000 PSI

TEST LEAK RATE: 1.50 GPH

REF PRESSURE: 30.00 PSI

TYP:USER DEFINED

1ST LINE LEN :100 FEET

2ND LINE LEN :200 FEET

1ST LINE DIAM: 1.50 IN.

2ND LINE DIAM: 2.50 IN.

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code B7B Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iB7BQQYYMMDDHHmmQQaYYMMDDHHmmttNNFFFFFFFF...FFFFFFFF...
                                QQaYYMMDDHHmmttNNFFFFFFFF...FFFFFFFF&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. a - Valid profile line test flag
  - 0=profile line test invalid
  - 1=profile line test valid
4. YYMMDDHHmm - Date and Time of Last Profile Line Test
5. tt - Pipe Type:
  - 01=2/3 inch Fiberglass
  - 02=2 inch Steel
  - 03=White Enviroflex PP1501 (Obsolete)
  - 04=1.5 inch Environ Geoflex II (Added in V11)
  - 05=Omniflex CP1501 (Added in V15)
  - 06=Yellow Enviroflex PP1500 (Obsolete)
  - 07=1.5"/2.5" Enviroflex PP1502/2502 (Obsolete)
  - 08=OPW Pisces SP-15 (Added in V18)
  - 09=OPW Pisces CP-15 (Added in V18)
  - 10=WFG Coflex 2000 Ribbed (Added in V19)
  - 11=Enviroflex PP1503/2503 (Added in V19)
  - 12=Omniflex CP1503 (Added in V19)
  - 13=1.5/2.0 inch Environ Geoflex D (Added in V19)
  - 14=APT P175SC (Added in V121)
  - 15=OPW Pisces CP15DW (Added in V19)
  - 16=OPW Pisces CP20 (Added in V19)
  - 17=OPW PISCES SP20 (Added in V26)
  - 18=User Defined (Added in V22)
  - 19=PETROTECHNIK UPP EXTRA 63MM (Added in V26)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE float:
  1. Bulk Modulus
  2. Test Leak Rate (GPH)
  3. Test Reference Pressure (PSI)
  4. 1<sup>st</sup> Line Length (FEET)
  5. 1<sup>st</sup> Line Diameter (INCHES)
  6. 2<sup>nd</sup> Line Length (FEET)
  7. 2<sup>nd</sup> Line Diameter (INCHES)
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** B7C

Version 1

**Function Type:** Pressure Line Leak Pressure Offset Test

**Command Format:**

**Display:** <SOH>IB7CQQ

**Computer:** <SOH>iB7CQQ

**Typical Response Message, Display Format:**

```
<SOH>
IB7CQQ
JAN  1, 2000  6:27 PM

PRESSURE LINE LEAK PRESSURE OFFSET TEST

Q 1:REGULAR UNLEADED
LAST PRESSURE OFFSET TEST: +2.5 PSI   DEC  1, 1999  5:20 PM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB7CQQYYMMDDHHmmQQaFFFFFFFFYYMMDDHHmm...
                                QQaFFFFFFFFYYMMDDHHmm&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. a - Valid pressure flag  
0=pressure invalid  
1=pressure valid
4. FFFFFFFF - Last Pressure Offset Test Pressure in PSI (ASCII Hex IEEE float)
5. YYMMDDHHmm - Date and Time of last Pressure Offset Test
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B7E**

Version 1

**Function Type:** Pressure Line Leak Pressure Offset Monitor Report

**Command Format:**

**Display:** <SOH>IB7EQQ

**Computer:** <SOH>iB7EQQ

**Typical Response Message, Display Format:**

```
<SOH>
IB7EQQ
JAN  1, 2000  2:56 PM

PRESSURE LINE LEAK PRESSURE OFFSET MONITORS REPORT

Q 1:REGULAR UNLEADED
P0: PASS
  LAST UPDATE:  21 DAYS
Pd: FAIL
  LAST UPDATE:  44 DAYS
  Pd=      40.1 PSI
  Pd Ref=32.3 PSI
Pv: PASS
  Pv =28.1 PSI
  Pon=44.1 PSI
  Pd =40.1 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB7EQQYYMMDDHHmmQQAABBBBCCDDDDDEEEEEEEEEEEEEEEEEFFFFF
                                GGGGGGGGGHHHHHHHHHHIIIIIIIIJJJJJJJJ...
                                QQAABBBBCCDDDDDEEEEEEEEEEEEEEEEEFFFFF
                                GGGGGGGGGHHHHHHHHHHIIIIIIIIJJJJJJJJ&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. AA - P0 pass/fail status  
00=fail  
01=pass
4. BBBB - P0 last update in days
5. CC - Pd pass/fail status  
00=fail  
01=pass
6. DDDD - Pd last update in days
7. EEEEEEEE - Pd in PSI (ASCII Hex IEEE float)
8. FFFFFFFF - Pd Ref in PSI (ASCII Hex IEEE float)
9. GG - Pd pass/fail status  
00=fail  
01=pass
10. HHHHHHHH - Pv in PSI (ASCII Hex IEEE float)
11. IIIIIIII - Pon in PSI (ASCII Hex IEEE float)
12. JJJJJJJJ - Pd in PSI (ASCII Hex IEEE float)
13. && - Data Termination Flag
14. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B81**

Version 1

**Function Type:** Pressure Line Leak Diagnostic Report

**Command Format:**

**Display:** <SOH>IB81QQ

**Computer:** <SOH>iB81QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB81QQ
JAN 24, 1996  2:56 PM
```

PRESSURE LINE LEAK DIAGNOSTIC REPORT

LINE	DISPENSING	TEST STATUS	PUMP	HANDLE
Ln 1:REGULAR UNLEADED	ENABLED	TESTING 0.10 GAL/HR	OFF	OFF
14.397 PSI				
<ETX>				

**Typical Response Message, Computer Format:**

```
<SOH>iB81QQYYMMDDHHmmQQSSSttNNFFFFFFFFF...
QQSSSttNNFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. SSSS - Status Bits:
  - Bit 1 - (LSB) Dispensing enabled flag  
(0=Disabled, 1=Enabled)
  - Bit 2 - Pump power  
(0=Pump Off, 1=Pump On)
  - Bit 3 - Dispenser Handle  
(0=Handle Off, 1=Handle On)
  - Bit 4-16 - Unused
4. tt - Test status
  - 00=test complete
  - 01=dispensing
  - 02=testing at 3.00 gal/hr
  - 03=testing at 0.10 gal/hr
  - 04=test aborted
  - 05=running pump (manual test starting)
  - 06=line lockout
  - 07=disable alarm
  - 08=test pending
  - 09=test delay
  - 0A=pressure check
  - 0B=testing at 0.20 gal/hr
5. NN - Number of eight character Data Fields to follow (Hex)  
(always returns 01)
6. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Pressure sensor reading
  - 2. A/D low reference counts (obsolete)
  - 3. A/D high reference counts (obsolete)
  - 4. A/D sensor counts (obsolete)
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B87**

Version 1

**Function Type:** Pressure Line Leak 3.00 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB87QQ

**Computer:** <SOH>iB87QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB87QQ
OCT 15, 1996 4:29 PM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Ln 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
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB87QQYYMMDDHHmmQQRRLLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
                                RRLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
                                RRLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
                                QQRRLLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
                                RRLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
                                RRLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. RR - Test result type  
00=Pass  
01=Fail  
02=Hi-pressure events
4. LL - Total Events to follow (Max=5 each)
5. YYMMDDHHmm - Date/Time Test Passed
6. aaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - First pressure read (ASCII Hex IEEE float)
8. cccccccc - Second pressure read (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B88**

Version 1

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

**Command Format:**

**Display:** <SOH>IB88QQ

**Computer:** <SOH>iB88QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB88QQ
JAN  1, 1996   8:24 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1

MID TEST PASSES
DATE/TIME          PUMP ON          FIRST READ          SECOND READ
JAN  1, 1970 12:00 AM      0.0 PSI      0.0 PSI      0.0 PSI

MID TEST FAILS
DATE/TIME          PUMP ON          FIRST READ          SECOND READ
JAN  1, 1970 12:00 AM      0.0 PSI      0.0 PSI      0.0 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB88QQYYMMDDHHmmQQRLLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
      RRLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
      QQRLLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
      RRLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. RR - Test result type  
00=Pass  
01=Fail
4. LL - Total Events to follow (Max=5 each)
5. YYMMDDHHmm - Date/Time Test Passed
6. aaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - First pressure read (ASCII Hex IEEE float)
8. cccccccc - Second pressure read (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B89**

Version 1

**Function Type:** Pressure Line Leak 0.20 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB89QQ

**Computer:** <SOH>iB89QQ

**Notes:**

1. For User Defined Pipe Types PUMP ON will be PMID

**Typical Response Message, Display Format:**

```
<SOH>
IB89QQ
JAN  1, 1996  8:26 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1
0.20 TEST RESULTS
DATE/TIME          PUMP ON    RATIO      DURATION  RESULTS
APR  9, 2008    9:57 AM   37.6 PSI   0.71         5    PASSED
APR  9, 2008    9:22 AM   40.0 PSI   0.00         5    PASSED
APR  9, 2008    9:02 AM   39.0 PSI   0.29         5    PASSED
APR  9, 2008    8:36 AM   38.5 PSI   0.43         5    PASSED
APR  9, 2008    8:17 AM   39.0 PSI   0.28         5    PASSED

APR  9, 2008    9:36 AM   40.0 PSI   0.00         6    FAILED
APR  9, 2008    7:43 AM   36.3 PSI   1.11         7    FAILED
APR  9, 2008    6:34 AM   40.0 PSI   0.00         6    FAILED
APR  9, 2008    5:59 AM   40.0 PSI   0.00         6    FAILED
APR  9, 2008    4:06 AM   36.3 PSI   1.10         7    FAILED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB89QQYYMMDDHHmmQQLLYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
                                   QQLLYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. LL - Total Tests to follow (Max=20; Max 10 Passed & 10 Failed)
4. YYMMDDHHmm - Date/Time Test
5. RR - Test Result  
00=Pass  
01=Fail
6. aaaaaaaaa - Pump on pressure read, PSI (ASCII Hex IEEE float)
7. bbbbbbbbb - Fail ratio (ASCII Hex IEEE float)
8. cccccccc - Duration (in minutes) (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: B8A**

Version 1

**Function Type:** Pressure Line Leak 0.10 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB8AQQ

**Computer:** <SOH>iB8AQQ

**Notes:**

1. For User Defined Pipe Types PUMP ON will be PMID (Version 23)

**Typical Response Message, Display Format:**

```
<SOH>
IB8AQQ
JAN  1, 1996  8:30 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1
0.10 TEST RESULTS
DATE/TIME          PUMP ON    RATIO      DURATION  RESULTS
APR  9, 2008  10:05 AM  39.0 PSI   0.72        3    PASSED
APR  9, 2008   9:21 AM  39.0 PSI   0.72        3    PASSED
APR  9, 2008   6:29 AM  39.0 PSI   0.72        3    PASSED
APR  9, 2008   5:44 AM  39.2 PSI   0.72        3    PASSED
APR  9, 2008   2:51 AM  39.0 PSI   0.72        3    PASSED

APR  9, 2008   9:41 AM  38.5 PSI   1.10        5    FAILED
APR  9, 2008   6:05 AM  38.5 PSI   1.10        5    FAILED
APR  9, 2008   2:28 AM  38.5 PSI   1.09        5    FAILED
APR  8, 2008  10:50 PM  38.5 PSI   1.10        5    FAILED
APR  8, 2008   7:15 PM  38.5 PSI   1.10        5    FAILED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB8AQQYYMMDDHHmmQQLLYYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
QQLLYYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. LL - Total Tests to follow (Max=20; Max 10 Passed & 10 Failed)
4. YYMMDDHHmm - Date/Time Test
5. RR - Test Result  
00=Pass  
01=Fail
6. aaaaaaaaa - Pump on pressure read, PSI (ASCII Hex IEEE float)
7. bbbbbbbbbb - 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-450 Monitoring Systems

---

**Function Code: B8F**

Version 1

**Function Type:** No-Vent (No\_Spike) Test Reports

**Command Format:**

**Display:** <SOH>IB8FQQ

**Computer:** <SOH>iB8FQQ

**Typical Response Message, Display Format:**

<SOH>  
IB8FQQ  
JAN 24, 1996 2:52 PM

PRESSURE LINE NO-VENT TEST REPORT

LINE	TEST ABORTS	TOTAL TESTS
Q 1:REGULAR UNLEADED	4	10

<ETX>

**Typical Response Message, Computer Format:**

<SOH>IB8FQQYYMMDDHHmmQQLLRR...  
QQLLRR&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. LL - No Spike Tests aborts
4. RR - Total Tests
5. && - Data Termination Flag
6. CCCC - Message Checksum

**Function Code:** B8I  
**Function Type:** PLLD Last Test Result

Version 1

**Command Format:**  
**Display:** <SOH>IB8IQQ  
**Computer:** <SOH>iB8IQQ

**Typical Response Message, Display Format:**

```
<SOH>
IB8IQQ
JAN  1, 2007  8:26 AM

PRESSURE LINE LEAK DIAGNOSTIC LAST TEST RESULT

Q 1:PLLD NUMBER 1
0.20 GAL/HR RESULT : JUL 10, 2007  9:33 AM      PASSED

Q 2:PLLD NUMBER 2
0.20 GAL/HR RESULT : JUL 09, 2007  9:55 AM      PASSED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB8IQQYYMMDDHHmmQQYYMMDDHHmmTRR...
                                QQYYMMDDHHmmTRR&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. YYMMDDHHmm - Date/Time Test
4. T - Test Type  
0=0.2  
1=0.1  
9=No Test Result
5. RR - Test Result  
00=Pass  
01=Fail  
99=No Test Result
6. && - Data Termination Flag

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** B8J

Version 2

**Function Type:** PLLD Diagnostic - Manual Test

**Command Format:**

**Display:** <SOH>IB8JQQ

**Computer:** <SOH>iB8JQQ

#### Typical Response Message, Display Format:

```
<SOH>
IB8JQQ
JAN  1, 2007  8:26 AM

PLLD DIAGNOSTIC - MANUAL TEST

LINE:LINE LABEL          TEST STATUS
 1:PRESSURE LLD #1        test aborted
 2:PRESSURE LLD #2        test aborted
 3:PRESSURE LLD #3        test aborted
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iB8JQQYYMDDHHmmQQtt&&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

## 7.4.5 RECONCILIATION DIAGNOSTIC REPORTS

Function Code: **BA0**  
Function Type: MDIM Totalizer Report

Version 2

Command Format:  
Display: <SOH>IBA000  
Computer: <SOH>iBA000

### Typical Response Message, Display Format:

```
<SOH>
IBA000
FEB  4, 1995  6:25 AM

MDIM  TOTALIZER
  1    0.000
  2    0.000
  3    0.000
  4    0.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iBA000YYMMDDHHmmddddFFFFFFFFF...
                      ddddFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. dddd - Dim identifier
3. FFFFFFFF - Totalizer value (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** CA1  
**Function Type:** Get Reconciliation Status

Version 2

**Command Format:**  
**Display:** <SOH>ICA100  
**Computer:** <SOH>ICA100

#### Typical Response Message, Display Format:

```
<SOH>
ICA100
JAN  1, 2009  8:26 AM

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

RECONCILIATION STATUS

REASONS
xxxxxxxxxxxxxxxxxxx
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iCA100YYMMDDHHmmNNRR...
RR&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - User Number of decimal Data Fields to follow (Hex)
3. RR - Reasons (Decimal)
  - 00 - DIM Out
  - 01 - DIM missing starts or stops
  - 02 - DIM missing meter events
  - 03 - DIM data from phantom meters
  - 04 - Meter map not complete
  - 05 - Meter map unstable
  - 06 - Invalid fuel height
  - 07 - Probe out
  - 08 - Water removed
  - 09 - Tank siphon setup error
  - 10 - Power outage
  - 11 - Tank chart changed
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** CA2

Version 2

**Function Type:** Reconciliation Diagnostics Report

**Command Format:**

**Display:** <SOH>ICA2PPyymmddYYMMDD

**Computer:** <SOH>ICA2PPyymmddYYMMDD

**Notes:**

1. PP - Product Number (Decimal, 00=all)
2. yymmdd - Starting Date (000000 = no starting date=first of the month)
3. YYMMDD - Ending Date (000000 = no ending date=current date)

**Typical Response Message, Display Format:**

<SOH>  
ICA2PP  
MAY 16, 2009 8:26 AM

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

RECONCILIATION DIAGNOSTICS REPORT

F 1:REGULAR  
T 1:REGULAR  
T 3:REGULAR EAST

DATE/TIME	METER SALES	VARIANCE	REASONS
MAY 15, 2009 6:20 AM	2	3	Meter Map Not Complete Meter Map Unstable DIM Missing Starts/Stops

F 2:SUPER

DATE/TIME	METER SALES	VARIANCE	REASONS
MAY 15, 2009 6:20 AM	8	9	Power Outage Tank Chart Changed DIM Missing Starts/Stops

F 5:DIESEL

DATE/TIME	METER SALES	VARIANCE	REASONS
MAY 15, 2009 6:20 AM	14	15	DIM Data From Phantom Meters Meter Map Not Complete DIM Missing Meter Events DIM Missing Starts/Stops

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code CA2 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iCA2PPYYMMDDHHmmPPYYMMDDHHmmMMMMMMMMVVVVVVVVVNNRR...  
PPYYMMDDHHmmMMMMMMMMVVVVVVVVVNNRR&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All)
3. YYMMDDHHmm - Date and Time
4. MMMMMMMM - Meter Sales (ASCII Hex IEEE float)
5. VVVVVVVV - Variance (ASCII Hex IEEE float)
6. NN - Number of decimal Data Fields to follow (Hex)
7. RR - Reasons (Decimal)
  - 00 - DIM Out
  - 01 = DIM missing starts or stops
  - 02 - DIM missing meter events
  - 03 = DIM data from phantom meters
  - 04 - Meter map not complete
  - 05 = Meter map unstable
  - 06 - Invalid fuel height
  - 07 = Probe out
  - 08 - Water removed
  - 09 = Tank siphon setup error
  - 10 - Power outage
  - 11 - Tank chart changed
8. && - Data Termination Flag
9. CCCC - Message Checksum



## 7.5 RECONCILIATION REPORTS

Function Code: C01

Version 2

Function Type: Basic Inventory Reconciliation Daily "Row" Report

Command Format:

Display: <SOH>IC01PPMMDD

Computer: <SOH>iC01PPMMDD

**Notes:**

1. MMDD - Month and Day for Daily Report

**Typical Response Message, Display Format:**

```
<SOH>
IC01PP
MAR 26, 2009  1:43 PM

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

MAR 26, 2009  1:43 PM

DAILY RECONCILIATION REPORT

F 1:REGULAR
T 1:REGULAR UNLEADED
T 3:REGULAR UNLEAD EAST

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>iC01PPYYMMDDHHmmPPnnTTYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTTYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. YYMMDDHHmm - Opening Date and Time
6. YYMMDDHHmm - Closing Date and Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** C02

Version 2

**Function Type:** Basic Inventory Reconciliation Daily "Column" Report

**Command Format:**

**Display:** <SOH>IC0200MMDD

**Computer:** <SOH>iC0200MMDD

#### Notes:

1. MMDD - Month and Day for Daily Report

#### Typical Response Message, Display Format:

```
<SOH>
IC0200
MAR 26, 2009  1:43 PM

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

MAR 26, 2009  1:43 PM

DAILY RECONCILIATION REPORT

PRODUCT                UNLEADED

OPENING DATE    MAR 25, 2009
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, 2009
CLOSING TIME      2:00 AM

SIGNATURE _____
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code C02:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC02PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** C03

Version 2

**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, 2009 1:44 PM

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

MAR 26, 2009 1:44 PM

CURRENT SHIFT RECONCILIATION REPORT

F 1:REGULAR

T 1:REGULAR UNLEADED

DATE	TIME	OPENING	METERED	MANUAL	CALC'D	PHYSICAL	WATER		
MAR 26	6:00 AM	VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
MAR 26	1:42 PM	4114	0	1083	0	3031	3026	0.00	-5

SIGNATURE \_\_\_\_\_  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iC03PPYYMMDDHHmmPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. YYMMDDHHmm - Opening Date and Time
6. YYMMDDHHmm - Closing Date and Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** C04

Version 2

**Function Type:** Basic Inventory Reconciliation Shift "Column" Report

**Command Format:**

**Display:** <SOH>IC0400tt

**Computer:** <SOH>iC0400tt

**Notes:**

1. tt - Shift Type (01=Current, 02=Previous)

**Typical Response Message, Display Format:**

<SOH>  
IC0400  
MAR 26, 2009 1:44 PM

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

MAR 26, 2009 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, 2009  
CLOSING TIME 1:42 PM

SIGNATURE \_\_\_\_\_  
<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code C04:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC04PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

Function Code: C05

Version 2

Function Type: Basic Inventory Reconciliation Periodic "Row" Report

Command Format:

Display: <SOH>IC05PP

Computer: <SOH>iC05PP

#### Typical Response Message, Display Format:

<SOH>  
IC05PP  
MAR 26, 2009 1:42 PM

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

MAR 26, 2009 1:42 PM

#### CURRENT PERIODIC RECONCILIATION REPORT

F 1:REGULAR

T 1:REGULAR UNLEADED

DATE	TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER	
		VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
MAR 1	2:00 AM	5429	0	3341	0	2088	2092	0.00	4
MAR 2	2:00 AM	2092	5409	1876	0	5625	5625	0.00	0
MAR 3	2:00 AM	5625	3336	3065	0	5896	5862	0.00	-34
MAR 4	2:00 AM	5874	2009	2207	0	5676	5672	0.00	-4
MAR 5	2:00 AM	5672	0	1568	0	4104	4108	0.00	4
MAR 6	2:00 AM	4108	6503	2170	0	8441	8443	0.00	2
MAR 7	2:00 AM	8444	0	1574	0	6870	6872	0.00	2
MAR 8	2:00 AM	6872	0	2295	0	4577	4581	0.00	4
MAR 9	2:00 AM	4581	5405	2881	0	7105	7099	0.00	-6
MAR 10	2:00 AM	7099	0	3312	0	3787	3793	0.00	6
MAR 11	2:00 AM	3793	3898	2436	0	5255	5253	0.00	-2
MAR 12	2:00 AM	5253	0	1745	0	3508	3497	0.00	-11
MAR 13	2:00 AM	3497	4811	1599	0	6709	6718	0.00	9
MAR 13	2:21 AM	6718	0	2111	0	4607	4612	0.00	5
MAR 14	2:00 AM	4612	6213	3896	0	6929	6931	0.00	2
MAR 15	2:00 AM	6896	0	2807	0	4089	4096	0.00	7
MAR 16	2:00 AM	4096	3302	3440	0	3958	3969	0.00	11
MAR 17	2:00 AM	3969	4802	1930	0	6841	6839	0.00	-2
MAR 18	2:00 AM	6839	0	2079	0	4760	4775	0.00	15
MAR 19	2:00 AM	4775	5407	2242	0	7940	7947	0.00	7
MAR 20	2:00 AM	7947	0	2552	0	5395	5398	0.00	3
MAR 21	2:00 AM	5398	5410	3309	0	7499	7510	0.00	11
MAR 22	2:00 AM	7510	0	3055	0	4455	4465	0.00	10
MAR 23	2:00 AM	4465	4812	3200	0	6077	6081	0.00	4
MAR 24	2:00 AM	6081	0	1888	0	4193	4199	0.00	6
TOTALS		5407	61317	62578	0	4146	4199	0.00	53

THRESHOLD:

755

SIGNATURE \_\_\_\_\_  
<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

Function Code C05: (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC05PPYYMMDDHHmmPPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. dd - Number of reconciliation days to follow (Hex)
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** C06

Version 2

**Function Type:** Basic Inventory Reconciliation Periodic "Column" Report

**Command Format:**

**Display:** <SOH>IC0600

**Computer:** <SOH>iC0600

#### Typical Response Message, Display Format:

```
<SOH>
IC0600
MAR 26, 2009  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, 2009
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, 2009
CLOSING TIME      2:00 AM

SIGNATURE _____
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code C06:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC06PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

Function Code: C07

Version 2

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

F 1:REGULAR

T 1:REGULAR UNLEADED

DATE	TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER	
		VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
MAR 1	2:00 AM	5429	0	3341	0	2088	2092	0.00	4
MAR 2	2:00 AM	2092	5409	1876	0	5625	5625	0.00	0
MAR 3	2:00 AM	5625	3336	3065	0	5896	5862	0.00	-34
MAR 4	2:00 AM	5874	2009	2207	0	5676	5672	0.00	-4
MAR 5	2:00 AM	5672	0	1568	0	4104	4108	0.00	4
MAR 6	2:00 AM	4108	6503	2170	0	8441	8443	0.00	2
MAR 7	2:00 AM	8444	0	1574	0	6870	6872	0.00	2
MAR 8	2:00 AM	6872	0	2295	0	4577	4581	0.00	4
MAR 9	2:00 AM	4581	5405	2881	0	7105	7099	0.00	-6
MAR 10	2:00 AM	7099	0	3312	0	3787	3793	0.00	6
MAR 11	2:00 AM	3793	3898	2436	0	5255	5253	0.00	-2
MAR 12	2:00 AM	5253	0	1745	0	3508	3497	0.00	-11
MAR 13	2:00 AM	3497	4811	1599	0	6709	6718	0.00	9
MAR 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								
TOTALS		5407	45688	46332	0	4763	4775	0.00	12

THRESHOLD:

755

SIGNATURE \_\_\_\_\_

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code C07:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC07PPYYMMDDHHmmPPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. dd - Number of reconciliation days to follow (Hex)
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** C08

Version 2

**Function Type:** Basic Inventory Reconciliation Periodic "Column" Report  
(Current/Previous)

**Command Format:**

**Display:** <SOH>IC0800tt

**Computer:** <SOH>iC0800tt

**Notes:**

1. tt - Report type  
00=Current Period  
01=Previous Period

**Typical Response Message, Display Format:**

```
<SOH>
IC0800
MAR 26, 2009  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, 2009
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, 2009
CLOSING TIME    2:00 AM

SIGNATURE _____
<ETX>
```

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code C08:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC08PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code:** C09

Version 2

**Function Type:** Individual Basic Reconciliation Daily History Diagnostic

**Command Format:**

**Display:** <SOH>IC09TTD

**Computer:** <SOH>iC09TTD

#### Notes:

1. TT - Tank Number (Decimal; 00=all)
2. D - If 1, will use ticketed delivery else if not entered, default will use gauged delivery

#### Typical Response Message, Display Format:

```
<SOH>
IC09TT1
JAN  1, 2009  3:30 PM

INDIVIDUAL BASIC RECONCILIATION HISTORY DIAGNOSTIC

F 1:REGULAR
T 1:REGULAR
STRT TIME  END TIME  STRT HT  END HT  STRT VL  END_VL  SALES  DELIV OFFSET VARIN
9310310200 9311010200    0.0    0.0 10592.0  9323.0 1268.0    0.0    0.0  -1.0

9311010200 9311020200    0.0    0.0  9323.0  8101.0 1220.0    0.0    0.0  -2.0

9311020200 9311030200    0.0    0.0  8101.0  6759.0 1338.0    0.0    0.0  -4.0

F 2:MIDGRADE
T 2:MIDGRADE
STRT TIME  END TIME  STRT HT  END HT  STRT VL  END_VL  SALES  DELIV OFFSET VARIN
9310310200 9311010200    0.0    0.0 10592.0  9323.0 1268.0    0.0    0.0  -1.0

9311010200 9311020200    0.0    0.0  9323.0  8101.0 1220.0    0.0    0.0  -2.0

9311020200 9311030200    0.0    0.0  8101.0  6759.0 1338.0    0.0    0.0  -4.0
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iC0900YYMMDDHHmmTTrYMMDDHHmmYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
TTrYMMDDHHmmYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Time of Day.
2. TT - Tank Number (Decimal, 00=all)
3. rr - Number of records to follow (Hex)
4. YYMMDDHHmm - Requested start time
5. YYMMDDHHmm - Actual start time
6. YYMMDDHHmm - End time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Start height
  2. End height
  3. Start Volume
  4. End Volume
  5. Metered sales (dispensed volume)
  6. Ticket Delivery
  7. Gauged Delivery
  8. Offset volume
  9. Variance (calculated with ticketed volume)
  10. Variance (calculated with gauged volume)
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

Function Code: C10  
Function Type: Periodic Book Variance

Version 2

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, 2009 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 6	12:00 AM	6128	3069	0	0	3059	3063	-4=	0.13%
MAR 7	12:00 AM	3063	2775	5901	0	6189	6196	-7=	0.25%
MAR 8	12:00 AM	6196	2674	0	0	3522	3526	-4=	0.15%
MAR 9	12:00 AM	3526	2427	5901	0	7000	7007	-7=	0.29%
MAR 10	12:00 AM	7007	2763	4099	0	8343	8344	-1=	0.04%
MAR 11	12:00 AM	8344	3091	0	0	5253	5256	-3=	0.10%
MAR 12	12:00 AM	5256	3085	3800	0	5971	5972	-1=	0.03%
MAR 13	12:00 AM	5972	2818	0	0	3154	3160	-6=	0.21%
MAR 14	12:00 AM	3160	3041	5900	0	6019	6023	-4=	0.13%
MAR 15	12:00 AM	6023	2986	0	0	3037	3030	7=	0.23%
MAR 16	12:00 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%
MAR 19	12:00 AM	6179	2565	0	0	3614	3617	-3=	0.12%
MAR 20	12:00 AM								
TOTALS		6279	40114	37404	0	3569	3617	-48=	0.12%

THRESHOLD:

531

SIGNATURE \_\_\_\_\_  
<ETX>



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code C10:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC10PPYYMMDDHHmmPPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNFFFFFFF...  
PPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) (Decimal)
5. rr - Number of records to follow (decimal) if 0, no more data for this tank will follow
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** C11  
**Function Type:** Weekly Book Variance

Version 2

**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, 2009 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-450 Monitoring Systems

---

**Function Code C11 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC11PPYYMMDDHHmmPPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal), 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) mapped to product (Decimal)
5. rr - Number of records to follow
6. YYMMDDHHmm - Open date and time
7. YYMMDDHHmm - Close date and time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** C12  
**Function Type:** Daily Book Variance

Version 2

**Command Format:**  
**Display:** <SOH>IC12PPMMDD  
**Computer:** <SOH>iC12PPMMDD

#### Notes:

1. PP - Product Number (Decimal, 00=all)
2. MMDD - Month and day for report (if not entered, will default to current day)

#### Typical Response Message, Display Format:

<SOH>  
IC12PP  
MAR 20, 2009 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...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) (Decimal)
5. YYMMDDHHmm - Open date and time
6. YYMMDDHHmm - Close date and time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

Version 2

**Function Code: C15**

**Function Type:** Book Variance Daily Report

**Command Format:**

**Display:** <SOH>IC15PPSyymmddYYMMDDnnn

**Computer:** <SOH>IC15PPSyymmddYYMMDDnnn

**Notes:**

1. PP - Product
2. S - Show Records by Type  
0=Records and Summaries (default)  
1=Records Only  
2=Summaries Only
3. yyymmdd - Starting Date (000000=no starting date = first of the month)
4. YYMMDD - Ending Date (000000=no ending date = current date)
5. nnn - Maximum Records [001...366] (100=default) (decimal)

**Typical Response Message, Display Format:**

<SOH>  
IC15PP  
JAN 1, 2009 8:26 AM

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

BOOK VARIANCE DAILY REPORT

F 1:REGULAR UNLEADED  
T 1:REGULAR UNLEADED  
T 3:REGULAR UNLEAD EAST

CLOSE DATE-TIME	OPENING	METERED	TICKET	MAN	CLS BOOK	GAUGED	DAILY
MON DD YY HH:MM	VOLUME	SALES	DLVY	ADJ	INVNTY	INVNTY	VARIANCE
MAR 19 10 2:00	3346	3069	5901	0	6178	6179	-1= 0.03%
MAR 18 10 2:00	4205	3020	2000	0	3215	3220	-5= 0.02%
MAR 17 10 2:00	3388	1234	1890	5	3990	4000	15= 0.05%
MAR 16 10 2:00	4411	2345	1700	6	3997	4111	-13= 0.05%
MAR 15 10 2:00	3210	3456	1600	0	2167	2467	4= 0.05%
MAR 14 10 2:00	1267	3210	0	0	3890	3999	-10= 0.05%
MAR 13 10 2:00	7893	1569	1440	0	4567	4566	6= 0.05%
MAR 12 10 2:00	2345	2468	0	0	5432	5433	-19= 0.05%
MAR 11 10 2:00	5678	3690	1531	0	6789	6780	16= 0.05%
MAR 10 10 2:00	4560	2378	2345	1	7890	7899	-11= 0.05%
MAR 9 10 2:00	3456	1000	1800	9	3990	4000	-7= 0.05%

TOTALS	3456	61317	62578	21	6178	6179	-16= 1.23%
--------	------	-------	-------	----	------	------	------------

THRESHOLD: 148

SIGNATURE \_\_\_\_\_  
<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code C15 Notes: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>iC15PPYYMMDDHHmmPPnnTT...TTRRRRYYMMHHmmYYMMHHmmNNFFFFFFF...  
PPnnTT...TTRRRRYYMMHHmmYYMMHHmmNNFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Numbers mapped to product
5. RRRR - Number of Records to Follow (Decimal - based on TT above)
6. SS - Shift Number (Decimal)
7. YYMMDDHHmm - Opening Date and Time
8. YYMMDDHHmm - Closing Date and Time
9. NN - Number of eight character Data Fields to follow (Hex)
10. 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
11. && - Data Termination Flag
12. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: C0G**

Version 2

**Function Type:** Reconciliation Daily Report

**Command Format:**

**Display:** <SOH>IC0GPPSyymmddYYMMDDnnn

**Computer:** <SOH>IC0GPPSyymmddYYMMDDnnn

**Notes:**

1. PP - Product
2. S - Show Records by Type  
0=Records and Summaries (default)  
1=Records Only  
2=Summaries Only
3. yyymmdd - Starting Date (000000=no starting date = first of the month)
4. YYMMDD - Ending Date (000000=no ending date = current date)
5. nnn - Maximum Records [001...366] (100=default) (decimal)

**Typical Response Message, Display Format:**

<SOH>  
IC0GPP  
JAN 1, 2009 8:26 AM

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

RECONCILIATION DAILY REPORT

F 1:REGULAR UNLEADED  
T 1:REGULAR UNLEADED

CLOSE DATE-TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER	
MON DD YY HH:MM	VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
AUG 7 09 2:00	6081	0	1888	0	4193	4199	1.00	6
AUG 8 09 2:00	4465	4812	3200	0	6077	6081	0.00	4
AUG 5 09 2:00	7510	0	3055	0	4455	4465	0.00	10
AUG 4 09 2:00	5398	5410	3309	0	7499	7510	0.00	11
AUG 3 09 2:00	7947	0	2552	3	5395	5398	0.00	3
AUG 2 09 2:00	4775	5407	2242	2	7940	7947	0.00	7
AUG 1 09 2:00	6839	0	2079	1	4760	4775	1.50	15
JUL 31 09 2:00	3969	4802	1930	0	6841	6839	0.00	-2
JUL 30 09 2:00	4096	3302	3440	0	3958	3969	0.00	11
JUL 29 09 2:00	1234	3210	2345	0	4567	4560	0.00	-7
TOTALS	1234	61317	62578	6	4193	4199	1.00	53

THRESHOLD: 216

SIGNATURE \_\_\_\_\_  
<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code C0G Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC0GPPYYMMDDHHmmPPnnTT...TTRRRRYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...TTRRRRYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Numbers mapped to product
5. RRRR - Number of Records to Follow (Decimal)
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats
  - 1=Probe measured inventory at previous period close
  - 2=Sum total of adjusted deliveries during period
  - 3=Sum total of all metered sales during period
  - 4=Manually entered adjustments for period
  - 5=Calculated Inventory Volume at period close
  - 6=Probe measured inventory at period close
  - 7=Water Height at period close
  - 8=Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code:** C0J  
**Function Type:** Reconciliation Shift Report

Version 2

**Command Format:**

**Display:** <SOH>IC0JPPSSyymmddYYMMDDnnn  
**Computer:** <SOH>IC0JPPSSyymmddYYMMDDnnn

**Notes:**

1. PP - Product
2. S - Shift Number (00=All, Decimal)
3. yyymmdd - Starting Date (000000=no starting date = first of the month)
4. YYMMDD - Ending Date (000000=no ending date = current date)
5. nnn - Maximum Records [001...366] (100=default) (decimal)

**Typical Response Message, Display Format:**

<SOH>  
IC0JPP  
JAN 1, 2009 8:26 AM

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

RECONCILIATION SHIFT REPORT

F 1:REGULAR UNLEADED  
T 1:REGULAR UNLEADED

SHIFT 1:

CLOSE DATE-TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER		
MON DD YY HH:MM	VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE	
MAR 03 10 8:00	6081	0	1888	0	4193	4199	0.00	6	
MAR 03 10 16:00	3000	0	1000	0	2000	2000	0.00	0	

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iC0JPPYYMMDDHHmmPPnnTT...TTRRRRSSYYMMHHmmYYMMHHmmNNFFFFFFFF...  
PPnnTT...TTRRRRSSYYMMHHmmYYMMHHmmNNFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Numbers mapped to product
5. RRRR - Number of Records to Follow (Decimal - based on TT above)
6. SS - Shift Number (Decimal)
7. YYMMDDHHmm - Opening Date and Time
8. YYMMDDHHmm - Closing Date and Time
9. NN - Number of eight character Data Fields to follow (Hex)
10. 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
11. && - Data Termination Flag
12. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:**CA3

Version 2

**Function Type:** Reconciliation Test Result Report

**Command Format:**

**Display:** <SOH>ICA3PPyymmddYYMMDDnnn

**Computer:** <SOH>ICA3PPyymmddYYMMDDnnn

**Notes:**

1. PP - Product
2. yymmdd - Starting Date (000000=no starting date = first of the month)
3. YYMMDD - Ending Date (000000=no ending date = current date)
4. nnn - Maximum Records [001...366] (100=default) (decimal)

**Typical Response Message, Display Format:**

<SOH>  
ICA3PP

JAN 1, 2009 8:26 AM

RECONCILIATION TEST RESULT REPORT

F 1:REGULAR UNLEADED

T 1:REGULAR UNLEADED

T 3:REGULAR UNLEADED EAST

END	START	TEST	THRES	THRES	TEST			
DATE	DATE	#/TYPE	SALES	DELIV	VARIAN	LIMIT	TYPE	RESULT
01/31/09	01/01/09	1 - Monthly	xxxxxxx	xxxxxxx	xxxxxx	xxxxxx	Throughput	Pass
01/31/09	01/22/09	1 - Roll 10	xxxxxxx	xxxxxxx	xxxxxx	xxxxxx	Capacity	Pass
01/31/09	01/31/09	1 - RollC 7	xxxxxxx	xxxxxxx	xxxxxx	xxxxxx	Delivery	Pass
01/31/09	01/31/09	1 - Daily	xxxxxxx	xxxxxxx	xxxxxx	xxxxxx	Fixed	Pass

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

Function Code CA3: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>iCA3PPYYMMDDHHmmPPnnnnYYMMDDyymmDDssttRRvvNNFFFFFFF...  
                                YYMMDDyymmddssttRRvvNNFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nnnn - Number of Records to follow (Decimal)
4. YYMMDD - End Date
5. yymmdd - Start Date
6. SS - Test Number (Decimal)
7. tt - Test Type
  - 01-Monthly
  - 02-Rolling Days
  - 03-Daily
  - 04-Rolling Consecutive Days
8. RR - Test Result
  - 00=Fail
  - 01=Pass
9. vv - Threshold Type (Decimal)
  - 01-Percent of Throughput
  - 02-Percent of Capacity
  - 03-Percent of Deliveries
  - 04-Fixed Value
10. NN - Number of eight character Data Fields to follow (Hex)
11. FFFFFFFF - ASCII Hex IEEE floats:
  - 1=Total Sales
  - 2=Total Deliveries
  - 3=Total Variance
  - 4=Threshold Limit
12. && - Data Termination Flag
13. CCCC - Message Checksum

## 7.6 GUI DISPLAY SETUP

**Function Code:** G01

Version 1

**Function Type:** Set Display Setup - System Status Configuration

**Command Format:**

**Display:** <SOH>SG0100TTc

**Computer:** <SOH>sG0100TTc

**Inquire:**

<SOH>IG0100TT

<SOH>iG0100TT

**Notes:**

1. TT - Tab, 00=all Tabs  
01=All Tanks Tab  
02=All Sensors Tab  
03='User Defined 1' Tab  
04='User Defined 2' Tab  
05='User Defined 3' Tab
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG010000
JAN 22, 1996  3:06 PM

Display Setup - System Status

Tab Name                Configuration
All Tanks                : Enabled
All Sensors              : Disabled
'Sump Devices' Tab      : Enabled
'Prem Tank&Sens' Tab    : Disabled
'User Defined 3' Tab    : Disabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0100YYMMDDHHmmNNTTc...TTc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. TT - Tab
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: G02**

Version 1

**Function Type:** Set Display Setup - All Tanks Configuration

**Command Format:**

**Display:** <SOH>SG0200FFc

**Computer:** <SOH>sG0200FFc

**Inquire:**

<SOH>IG0200FF

<SOH>iG0200FF

**Notes:**

1. FF - Field, 00=all Fields, but only valid for Inquiry
  - 01=Icon Shape
  - 02=Product Label
  - 03=Fuel Volume
  - 04=Ullage 100%
  - 05=Ullage 90%
  - 06=Fuel Volume TC
  - 07=Temperature
  - 08=Fuel Height
  - 09=Water Height
  - 10=Alarm Condition Icon
  - 11=Delivery Indicator
  - 12=Water Volume (on icon)
  - 13=Tank Ribbon Label
  - 14=Density
2. c - Configuration (see entry based on field below)

**Typical Response Message, Display Format:**

<SOH>

IG020000

JAN 22, 1996 3:06 PM

Display Setup - All Tanks

Field Name	Configuration
Icon Shape	: Circle
Product Label	: Disabled
Fuel Volume	: Bottom Text
Ullage 100%	: Disabled
Ullage 90%	: Disabled
Fuel Volume TC	: Disabled
Temperature	: Disabled
Fuel Height	: Disabled
Water Height	: Disabled
Alarm Condition Icon	: Disabled
Delivery Indicator	: Disabled
Water Volume ( on icon )	: Disabled
Tank Ribbon Label	: Tank Number
Density	: Disabled

<ETX>

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code G02 Notes:** (Continued)

**Typical Response Message, Computer Format:**

<SOH>iG0200YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration
  - If FF=01 (Icon Shape)
    - 0=Circle
    - 1=Rectangle
  - If FF=02 (Product Label)
    - 0=Disabled
    - 1=Enabled
  - If FF=03 (Fuel Volume)
    - 0=Disabled
    - 1=Bottom Text
    - 2=On Tank
  - If FF=04 (Ullage 100%)
    - 0=Disabled
    - 1=Enabled
  - If FF=05 (Ullage 90%)
    - 0=Disabled
    - 1=Enabled
  - If FF=06 (Fuel Volume TC)
    - 0=Disabled
    - 1=Enabled
  - If FF=07 (Temperature)
    - 0=Disabled
    - 1=Bottom Text
    - 2=On Tank
  - If FF=08 (Fuel Height)
    - 0=Disabled
    - 1=Enabled
  - If FF=09 (Water Height)
    - 0=Disabled
    - 1=Enabled
  - If FF=10 (Alarm Condition Icon)
    - 0=Disabled
    - 1=Enabled
  - If FF=11 (Delivery Indicator)
    - 0=Disabled
    - 1=Enabled
  - If FF=12 (Water Volume)
    - 0=Disabled
    - 1=Bottom Text
    - 2=On Tank
  - If FF=13 (Tank Ribbon Label)
    - 0=Tank Number
    - 1=Product Label
  - If FF=14 (Density)
    - 0=Disabled
    - 1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: G03**

Version 1

**Function Type:** Set Display Setup - Tank Fuel Fill Configuration

**Command Format:**

**Display:** <SOH>SG03TTff

**Computer:** <SOH>sG03TTff

**Inquire:**

<SOH>IG03TT

<SOH>iG03TT

**Notes:**

1. TT - Tank Number
2. ff - Fuel Fill Configuration (see available entries below)

**Typical Response Message, Display Format:**

<SOH>  
IG03TT  
JAN 22, 1996 3:06 PM

Display Setup - Fuel Fill Selection

Tank	Label	Fuel Fill Selection
1	Regular Unleaded	Horizontal Crosshatch

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG03TTYMMDDHHmmTTff...TTff&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. ff - Fuel Fill Configuration
  - 01=Horizontal Crosshatch (Standard Grid)
  - 02=Horizontal Stripe
  - 03=Vertical Stripe
  - 04=Diagonal Crosshatch
  - 05=Diagonal Stripe
  - 06=Reverse Diagonal Stripe
  - 07=12.5 % gray
  - 08=25 % gray
  - 09=37.5 % gray
  - 10=50 % gray
  - 11=62.5 % gray
  - 12=75 % gray
  - 13=87.5 % gray
  - 14=Black
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: G04**

Version 1

**Function Type:** Set Display Setup - All Liquid Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0400FFc

**Computer:** <SOH>sG0400FFc

**Inquire:**

<SOH>IG0400FF

<SOH>iG0400FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Model  
04=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG040000
JAN 22, 1996  3:06 PM

Display Setup - All Sensors - Liquid

Field Name           Configuration

Sensor Label         : Enabled
Alarm Condition Icon : Disabled
Model                : Enabled
Category             : Disabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0400YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** G05

Version 1

**Function Type:** Set Display Setup - All Type-A (2-Wire CL) Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0500FFc

**Computer:** <SOH>SG0500FFc

**Inquire:**

<SOH>IG0500FF

<SOH>iG0500FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Model  
04=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG050000
JAN 22, 1996  3:06 PM

Display Setup - All Sensors - Type-A (2-Wire CL)

Field Name           Configuration

Sensor Label         : Enabled
Alarm Condition Icon : Disabled
Model                 : Enabled
Category              : Disabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0500YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** G06

Version 1

**Function Type:** Set Display Setup - All Type-B (3-Wire CL) Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0600FFc

**Computer:** <SOH>SG0600FFc

**Inquire:**

<SOH>IG0600FF

<SOH>iG0600FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Model  
04=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG060000
JAN 22, 1996  3:06 PM

Display Setup - All Sensors - Type-B (3-Wire CL)

Field Name           Configuration

Sensor Label         : Enabled
Alarm Condition Icon : Disabled
Model                : Enabled
Category             : Disabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0600YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: G07**

Version 1

**Function Type:** Set Display Setup - All MAG Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0700FFc

**Computer:** <SOH>sG0700FFc

**Inquire:**

<SOH>IG0700FF

<SOH>iG0700FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Fuel Height  
04=Water Height  
05=Temperature
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

<SOH>

IG070000

JAN 22, 1996 3:06 PM

Display Setup - All Sensors - MAG

Field Name	Configuration
------------	---------------

Sensor Label	: Enabled
Alarm Condition Icon	: Disabled
Fuel Height	: Enabled
Water Height	: Disabled
Temperature	: Enabled

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG0700YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: G08**

Version 1

**Function Type:** Set Display Setup - All Ground Water Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0800FFc

**Computer:** <SOH>sG0800FFc

**Inquire:**

<SOH>IG0800FF

<SOH>iG0800FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG080000
JAN 22, 1996  3:06 PM

Display Setup - All Sensors - Ground Water

Field Name           Configuration

Sensor Label         : Enabled
Alarm Condition Icon : Disabled
Category              : Enabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0800YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** G09

Version 1

**Function Type:** Set Display Setup - All Vapor Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0900FFc

**Computer:** <SOH>sG0900FFc

**Inquire:**

<SOH>IG0900FF

<SOH>iG0900FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

<SOH>

IG090000

JAN 22, 1996 3:06 PM

Display Setup - All Sensors - Vapor

Field Name	Configuration
------------	---------------

Sensor Label	: Enabled
--------------	-----------

Alarm Condition Icon	: Disabled
----------------------	------------

Category	: Enabled
----------	-----------

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG0900YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: G0A**

Version 1

**Function Type:** Set Display Setup - All Line Pressure Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0A00FFc

**Computer:** <SOH>sG0A00FFc

**Inquire:**

<SOH>IG0A00FF

<SOH>iG0A00FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Pressure
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

<SOH>

IG0A0000

JAN 22, 1996 3:06 PM

Display Setup - All Sensors - Line Pressure

Field Name	Configuration
------------	---------------

Sensor Label	: Enabled
--------------	-----------

Alarm Condition Icon	: Disabled
----------------------	------------

Pressure	: Enabled
----------	-----------

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG0A00YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** G0B

Version 1

**Function Type:** Set Display Setup - User Defined Tab Label

**Command Format:**

**Display:** <SOH>SG0B00TTaaaaaaaaaaaaaaaa

**Computer:** <SOH>sG0B00TTaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>IG0B00TT

<SOH>iG0B00TT

**Notes:**

1. TT - User Defined Tab Number (01 - 03)
2. a - 15 ASCII characters [20h-7Eh]

**Typical Response Message, Display Format:**

<SOH>

IG0B0001

JAN 22, 1996 3:06 PM

Display Setup - User Defined Tab Label

# Tab Label

1 User Defined 1

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG0B00YYMMDDHHmmTTaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - User Defined Tab Number
3. a - 15 ASCII characters [20h-7Eh]
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code: G0C**

Version 1

**Function Type:** Set Display Setup - User Defined Tab Configuration

**Command Format:**

**Display:** <SOH>SG0C00TTpiDDdd

**Computer:** <SOH>sG0C00TTpiDDdd

**Inquire:**

<SOH>IG0C00TT

<SOH>iG0C00TT

**Notes:**

1. TT - User Defined Tab Number (01 - 03)
2. p - Page Number (from 1 - 3, following the specified fill rules for User Defined Tabs)
3. i - Index Position of Widget on Page (1 - 6 (7.4 LCD) or 8 (10.4 LCD)). Position on a Page is calculated from Left-to-Right and then Top-to-Bottom.
4. DD - Device Type (decimal), from the following list:
  - 00=No Device (cell de-assignment)
  - 02=Tank
  - 03=Liquid Sensor
  - 04=Vapor Sensor
  - 07=Ground Water Sensor
  - 08=Type-A (2-Wire CL) Sensor
  - 12=Type-B (3-Wire CL) Sensor
  - 59=MAG Sensor
  - 63=Line Pressure Sensor
5. dd - Device Number (decimal, 00 is 'no device' (cell de-assignment))

**Typical Response Message, Display Format:**

<SOH>  
IG0C0001  
JAN 22, 1996 3:06 PM

Display Setup - User Defined Tab Configuration

User Defined Tab 1: User Defined 1

Page 1

Index	#	Device Type	Device Label
1	T 1	Tank	Premium
2		No Device	
3	T 2	Tank	Regular Unleaded
4	L 1	Liquid Sensor	Liq Sens 1 Lbl
5	Ms 1	MAG Sensor	MAG Sensor 1
6		No Device	

<ETX>

**Notes:**

1. Index - Index Position of Widget on Page (defined above)



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code G0C Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iG0C00YYMMDDHHmmTTPpWiDDdd...iDDdd  
pWiDDdd...iDDdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - User Defined Tab Number (01 - 03)
3. P - Number of Pages to Follow
4. p - Page Number (from 1 - 3)
5. W - Number of Widget Definitions to Follow (6 (7.4 LCD) or 8 (10.4 LCD))
6. i - Index Position of Widget on Page (1 - 6 (7.4 LCD) or 8 (10.4 LCD)).
7. DD - Device Type (decimal), from the following list:
  - 00=No Device (empty or de-assigned cell)
  - 02=Tank
  - 03=Liquid Sensor
  - 04=Vapor Sensor
  - 07=Ground Water Sensor
  - 08=Type-A (2-Wire CL) Sensor
  - 12=Type-B (3-Wire CL) Sensor
  - 59=MAG Sensor
  - 63=Line Pressure Sensor
8. dd - Device Number (decimal, 00 is 'no device' (empty or de-assigned cell))
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** G0D

Version 1

**Function Type:** Set System Status - User Defined Tab Status Report

**Command Format:**

**Display:** <SOH>SG0D00TT

**Computer:** <SOH>sG0D00TT

**Notes:**

1. TT - User Defined Tab Number (01 - 03)

**Typical Response Message, Display Format:**

<SOH>

IG0D0001

JAN 22, 1996 3:06 PM

Display Setup - User Defined Tab Configuration

User Defined Tab 1: User Defined 1

Current Inventory Report - Configured Tanks:

Fuel Volume	Fuel TC Volume	Ullage 100%	Ullage xx%	Fuel Height	Water Height	Water Volume	Fuel Temp
Index 11 - Tank 2: Regular Unleaded							
5329	5413	4699	3699	48.97	0.00	0.00	37.39
Index 13 - Tank 12: Supreme Unleaded							
11375	5413	11413	2697	52.36	0.00	0.00	43.39

Sensor Status Report - Configured Sensors:

Index	#	Device	Type	Status
2	Ms	1	Mag	Normal
4	Ms	3	Mag	Water Alarm
8	L	2	Liquid	Setup Data Warning
16	L	1	Liquid	Normal

<ETX>

**Notes:**

1. Index - Index Position of Widget on Page (defined above)

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code G0D Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iG0D00TTYMMDDHHmmPpWiDDdd...iDDdd  
pWiDDdd...iDDdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - User Defined Tab Number (01 - 03)
3. P - Number of Pages to Follow
4. p - Page Number (from 1 - 3)
5. W - Number of Widget Definitions to Follow (6 (7.4 LCD) or 8 (10.4 LCD))
6. i - Index Position of Widget on Page (1 - 6 (7.4 LCD) or 8 (10.4 LCD)).
7. DD - Device Type (decimal), from the following list:
  - 00=No Device (empty or de-assigned cell)
  - 02=Tank
  - 03=Liquid Sensor
  - 04=Vapor Sensor
  - 07=Ground Water Sensor
  - 08=Type-A (2-Wire CL) Sensor
  - 12=Type-B (3-Wire CL) Sensor
  - 59=MAG Sensor
  - 63=Line Pressure Sensor
8. dd - Device Number (decimal, 00 is 'no device' (empty or de-assigned cell))
9. && - Data Termination Flag
10. CCCC - Message Checksum

## 7.7 DEVICE VR-BUS CONFIGURATION

**Function Code: N01**

Version 1

**Function Type:** Set Device VR-BUS Address

**Command Format:**

**Display:** <SOH>SN01TTDDaaaaaaaaaaaaaaaaaaaa...

**Computer:** <SOH>sN01TTDDaaaaaaaaaaaaaaaaaaaa...

**Inquire:**

<SOH>IN01TTDD

<SOH>iN01TTDD

**Notes:**

1. TT - Device Number (Decimal)  
 Set command 00=clear all devices  
 Inquire command 00=read all devices
2. DD - Device Type (Decimal)  
 Set command valid for single device type only  
 Inquire command 00= all device types (see table below)
3. TTDD - Not supported - TTDD=0000 (Decimal)  
 For all devices (TT=00), a device type must be given  
 For all device types (DD=00), a device number must be given.
4. aaa...aaa - Device Address (All ASCII 20h-7Eh) ("0" clears the address)

**Typical Response Messages, Display Format:**

```
<SOH>
IN0100
JAN 22, 2009  3:16 PM
```

GRND\_H2O\_DEVICE\_TYPE ADDRESSES

DEVICE	PRIMARY ADDRESS	SECONDARY ADDRESS
1	B2.S1.1	B2.S1.2
2	B2.S1.3	B2.S1.4
3	B2.S1.5	B2.S1.6
4	(not assigned)	

MAG PROBE DEVICE TYPE ADDRESSES

DEVICE	PRIMARY ADDRESS
1	B1.S1.1
2	B1.S1.2
3	B1.S1.3
4	(not assigned)

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iN01TTYMMDDHHmmDDTTMMaaaaaaaaaaaaaNNbbbbbbbbb...
DDTTMMaaaaaaaaaaaaaNNbbbbbbbbb&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Device Number (hex, 00=all)
3. DD - Device Type (hex)
4. MM - Number of characters in primary address (hex)
5. aaa...aaa - VR-BUS primary Address (All ASCII 20h-7Eh)
6. NN - Number of characters in secondary address (hex)
7. bbb...bbb - VR-BUS secondary address (All ASCII 20h-7Eh)
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

#### Function Code N01 Notes: (Continued)

Device Type	Secondary Address	Description
00		All Device Types
03		LIQUID_DEV_TYPE, Legacy Liquid Sensor
04	Yes	VAPOR_DEV_TYPE, Legacy Vapor Sensor
05		INPUT_DEV_TYPE, Power Side Input - External
07	Yes	GRND_H2O_DEV_TYPE, 3 WIRE RESISTANCE
08		COSENS_DEV_TYPE, 2 WIRE CURRENT LOOP
11		RELAY_DEV_TYPE, RELAY
12	Yes	CL3_DEV_TYPE, 3 WIRE CURRENT LOOP and RESISTANCE
56		MAG_PROBE_DEV_TYPE, Magnetostrictive Probe
57		AIR_FLOWMETER_DEV_TYPE, ISD Air/Vapor Flow Meter
58		ULLAGE_PRESSURE_DEV_TYPE, ISD Ullage Pressure Sensor
59		MAG_SENSOR_DEV_TYPE, MAG Sensor
60		VAC_SENSOR_DEV_TYPE, INTERSTITIAL VACUUM SENSOR
61		ATMP_SENSOR_DEV_TYPE, ATMOSPHERIC PRESSURE SENSOR
62		HC_SENSOR_DEV_TYPE, ISD HYDROCARBON SENSOR
63		LINE_PRESSURE_SENSOR_DEV_TYPE, Line Pressure Sensor for PLLD
78		MDIM_DEV_TYPE, MDIM

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** N02

Version 1

**Function Type:** Get Available VR-BUS Addresses

**Command Format:**

**Display:** <SOH>IN02TTDD

**Computer:** <SOH>iN02TTDD

**Notes:**

1. TT - Device Number (00=all devices)
2. DD - Device Type (decimal - Must enter Device Type)

**Typical Response Messages, Display Format:**

```
<SOH>
IN0201
JAN 22, 2007  3:16 PM

MAG_PROBE_DEV_TYPE DEVICE TYPE ADDRESSES

AVAILABLE ADDRESSES
B1.S1.1
B1.S1.5
B1.S1.6
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iN02TTYMMDDHHmmDDNNmmaaaaaaaaaaaaaaaaaaaaa...
mmaaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Device Type (hex)
4. mm - Number of characters in Device Address (hex)
5. a - VR-BUS Address (All ASCII 20h-7Eh)
6. && - Data Termination Flag
7. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: N03**

Version 1

**Function Type:** Get All Device Directory

**Command Format:**

**Display:** <SOH>IN0300

**Computer:** <SOH>iN0300

#### Typical Response Messages, Display Format:

<SOH>  
IN0300  
SEP 26, 2008 09:45 AM

All Device Directory

ADDRESS	DEVICE TYPE	SN	ENABLED
B1.S1	INPUT/OUTPUT MODULE - 14	0000485758	YES
B1.S1.2	EXTERNAL INPUT - Low Voltage	0000000005	YES
B1.S2	UNIVERSAL SENS MODULE - 16	0000462153	YES
B1.S2.1	MAG PROBE	0000176011	NO
B8.S5	INPUT/OUTPUT MODULE - 0	4278190081	YES
B8.S5.1	RELAY	3435973836	NO
<ETX>			

#### Typical Response Message, Computer Format:

<SOH>iN0300YYMMDDHHmmNNDDccccSSSSSSSSSSennaaaaaaaaaaaaaaaaaaaaa...  
DDccccSSSSSSSSSSennaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Device Type (hex)
4. cccc - Circuit Code (hex)
5. SSSSSSSSSS - 10 character serial number string
6. e - Enabled/Disabled (1/0)
7. nn - Number of characters in Device Address (hex)
8. aaaaa... - VR-BUS Address (All ASCII [20h-7Eh])
9. && - Data Termination Flag
10. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

**Function Code: N04**

**Function Type:** Get Hardware Configuration

Version 2

**Command Format:**

**Display:** <SOH>IN0400

**Computer:** <SOH>iN0400

#### Typical Response Messages, Display Format:

<SOH>  
IN0400  
SEP 26, 2008 09:45 AM

#### HARDWARE CONFIGURATION

ADDRESS	MODULE TYPE	BOARD PART NUMBER	SERIAL NUMBER	HW BUILD DATE	FIRMWARE VERSION	SW BUILD DATE
B1.S1	USC - 16	332812-001	0000656641	2006/05/12	001-AYC	2006/01/01
B1.S2	USC - 16	332812-001	0000656642	2006/05/12	001-AYC	2006/01/01
B1.S3	USC - 16	332812-001	0000656643	2006/05/12	001-AYC	2006/01/01
B1.S4	I/O - 8	332813-001	0000656804	2006/05/12	001-AYC	2006/01/01
B1.S5	I/O - 4	332813-001	0000656805	2006/05/12	001-AYC	2006/01/01
B8.S5	I/O - 1	332813-001	4278190081	2006/01/01		
Slot 1	Dual RS-232	0332913-001	0007121234	2012/07/01		
Slot 2	Fax Modem-alt	0332913-001	0007121234	2012/07/01		
Slot 5	USB Ethernet	0332913-001	0009140197	2004/09/01		

<ETX>

#### Typical Response Message, Computer Format:

<SOH>iN0400YYMMDDHHmmNNDDSSSSSSSSjjjaa...aakkbb...bbnncc...cc  
DDSSSSSSSSjjjaa...aakkbb...bbnncc...cc  
&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Module Type (ASCII hex)
4. SSSSSSSS - Serial Number (ASCII hex long)
5. jj - Number of character in firmware version string (hex)
6. aa...aa - Firmware version (All ASCII [20h-7Eh])
7. kk - Number of characters in HW Build Date string (hex)
8. bb...bb - Hardware Build Date string (All ASCII [20h-7Eh])
9. nn - Number of characters in Device Address (hex)
10. cc...cc - VR-BUS Address (All ASCII [20h-7Eh])
11. && - Data Termination Flag
12. CCCC - Message Checksum



## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code: N05**

Version 2

**Function Type:** Get Extended Device Directory

**Command Format:**

**Display:** <SOH>IN0500

**Computer:** <SOH>iN0500

#### Typical Response Messages, Display Format:

```
<SOH>
IN0500
SEP 26, 2008 09:45 AM
```

EXTENDED DEVICE DIRECTORY

ADDRESS	MODULE/DEVICE TYPE	SERIAL NUMBER	DATE CODE	STATE
B1.S1	UNIVERSAL SENS MODULE	0011111111		IN SERVICE
B1.S2	INPUT/OUTPUT MODULE	0022222222		IN SERVICE
B1.S3	UNIVERSAL SENS CMUX	0033333333		IN SERVICE
B1.S1.1	MAG PROBE	0011110001	09/34-01	IN SERVICE
B1.S1.2	MAG PROBE	0011110002	09/34-01	IN SERVICE
B1.S1.3	MAG PROBE	0011110003	09/34-01	IN SERVICE
B1.S2.1	EXTERNAL INPUT	0022220001	09/34-01	OUT OF SERVICE
B1.S2.2	EXTERNAL INPUT	0022220002	09/34-01	OUT OF SERVICE
B1.S2.3	EXTERNAL INPUT	0022220003	09/34-01	OUT OF SERVICE

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>iN0500YYMMDDHHmmNNDDccccSSSSSSSSSSyywwrrrennaa...aa
DDccccSSSSSSSSSSyywwrrrennaa...aa
&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Module/Device Type (hex)
3. cccc - Circuit Code (hex)
4. SSSSSSSSSS - 10 character Serial Number (string)
5. yywwrr - Date Code (decimal)  
yy = year  
ww = week  
rr = revision
6. e - Module Device State  
0=Out of Service  
1=In Service
7. nn - Number of characters in Device Address (hex)
8. aa...aa - VR-BUS Address (All ASCII [20h-7Eh])
9. ee...ee - VR-BUS Address (All ASCII [20h-7Eh])
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** N06  
**Function Type:** Get Device Assignments

Version 2

**Command Format:**  
**Display:** <SOH>IN0600  
**Computer:** <SOH>iN0600

#### Typical Response Messages, Display Format:

<SOH>  
IN0600  
SEP 26, 2008 09:45 AM

#### DEVICE ASSIGNMENTS

M/ER	ADDRESS	MOD/DEV TYPE	PRIMARY ASSIGNMENT	SECONDARY ASSIGNMENT
M	B0.S1	USM		
	B0.S1.1	Probe	Pb 1:Probe 1 Label	T 1:Regular
! 2	B0.S1.2	Probe	Pb 2:Probe 2 Label	!

<ETX>

#### Typical Response Message, Computer Format:

<SOH>iN0600YYMMDDHHmmNNDDccccPPSSnnaa...aa  
DDccccPPSSnnaa...aa&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Module/Device Type (hex)
4. cccc - Circuit Code (hex)
5. ee - Error Code
6. PP - Primary Assignment Device Type
7. SS - Secondary Assignment Device Type
8. nn - Number of characters in Device Address (hex)
9. aa...aa - VR-BUS Address (All ASCII [20h-7Eh])
10. && - Data Termination Flag
11. CCCC - Message Checksum

## Serial Interface Manual

### TLS-450 Monitoring Systems

---

**Function Code:** N07  
**Function Type:** Comm Diagnostics Counters

Version 2

**Command Format:**  
**Display:** <SOH>SN07PP149  
**Computer:** <SOH>sN07PP149

**Inquire:**  
<SOH>IN07PP  
<SOH>iN07PP

#### Notes:

1. The Inquiry portion of the command returns all counter information. The Set portion will reset the counters.
2. PP - Comm Port Number (Decimal, 00=all)

#### Typical Response Messages, Display Format:

```
<SOH>
IN0700
SEP 26, 2008 09:45 AM

COMM DIAGNOSTICS

COMM      BYTES      BYTES      PARITY      OVERRUN      FRAMING      BREAK      RESET
TYPE  RECEIVED      SENT      ERRORS      ERRORS      ERRORS      INTS      DATE AND TIME

Co 1: RS232 Card: DIM 1 Label
      123456      123456      123456      123456      123456      123456      12/18/08 09:45

Co 2: CDIM Card: DIM 2 Label
      123456      123456      123456      123456      123456      123456      12/18/08 13:50
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iN07PPYYMMDDHHmmPPDDNNFFFFFFFF...FFFFFFFFyyymmddhhmm
      DDNNFFFFFFFF...FFFFFFFFyyymmddhhmm&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Port Number (Decimal, 00=All)
3. DD - Comm Device Type (hex)
4. NN - Number of eight character Data Fields to follow (hex)
5. FFFFFFFF - ASCII Hex Long
  1. Bytes Received
  2. Bytes Sent
  3. Parity Errors
  4. Overrrun Errors
  5. Framing Errors
  6. Break Interrupts
6. yyymmddhhmm - Reset Date and Time
7. && - Data Termination Flag
8. CCCC - Message Checksum

## 8.0 FUNCTION CODE SUMMARY

### CONTROL FUNCTIONS (7.1)

Code	Ver	Function
002	N/A	Clear Power Reset Flag (obsolete)
003	1	Remote Alarm Reset
010	1	Cancel Autodial Computer Mode Session
031	N/A	Confirm Clear Function (obsolete)
051	N/A	Clear In-Tank Delivery Reports (obsolete)
052	1	Start In-Tank Leak Detect Test
053	1	Stop In-Tank Leak Detect Test
054	1	Delete CSLD Rate Table
081	1	Start Pressure Line Leak Test (3.00 GPH)
082	1	Stop Pressure Line Leak Test
087	1	Start Pressure Line Leak Test by Type
089	1	Pressure Line Leak Pressure Offset Reset
091	1	Close Current Shift
092	1	Start Pressure Line Leak Profile Line Test
093	1	Stop Pressure Line Leak Profile Line Test
094	1	Recalculate Pressure Line Leak Profile Bulk Modulus

### OPERATIONAL REPORTS (7.2)

#### SYSTEM REPORTS (7.2.1)

Code	Ver	Function
101	1	System Status Report
102	N/A	System Configuration Report (obsolete use <b>N03</b> )
110	1	Combined Alarm History Report
111	1	Priority Alarm History Report
112	1	Non-Priority Alarm History Report
113	1	Active Alarm Report
114	1	Cleared Alarm Report
11C	1	Extended Alarm Reports – Date Based
11D	1	Extended Alarm Reports – Date/Time Based
11E	1	Extended Alarm Reports II – Date/Time Based
11F	1	Extended Sensor Status Report – Date/Time Based

## 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	1	In-Tank Leak Test History Report
208	1	In-Tank Leak Test Results Report
209	1	Enhanced n-Tank Leak Detect Report
20B	2	BIR Adjusted Delivery Report
20C	1	In-Tank Most Recent Delivery Report
20F	1	Extended Delivery Report – Date/Time Based
20G	1	Static Leak Test Passed Report
20H	1	Static Leak Test History
20I	1	Enhanced In-Tank Inventory Report
20L	2	BIR Adjusted Delivery Report – Date/Time Based
20M	2	In-Tank Shift Inventory History Report – Date/Time Based
20N	3	In-Tank Mass/Density Shift Inventory Report
211	1	Tank Chart Report
212	1	In-Tank Leak Test History Report 2
213	1	In-Tank Extended Standard Delivery Report
214	3	In-Tank Mass/Density Inventory Report
215	3	In-Tank Mass/Density Delivery Report
217	1	Tank Profile
21A	1	In-Tank Inventory Report With 90/95% Ullage
21B	2	BIR Extended Adjusted Delivery Report
21C	1	In-Tank Most Recent Delivery Report with Manifolded Results
21D	1	In-Tank Current Siphon Manifolded Total Volumes
21E	2	Hourly Inventory Volume
21F	2	Manual Shift Inventory Snapshot Volume
21G	2	Tank Height Status
21H	2	Time Ordered Chart Sales Comparison
21I	2	Time Ordered Chart Delivery Comparison
21J	2	Histogram Comparison of Tank Charts
21K	2	Error Plot Comparison of Tank Charts
21L	2	Manual Delivery Report

### IN-TANK REPORTS (7.2.2) (Continued)

Code	Ver	Function
221	2	Ticketed Delivery Report
222	2	Bill of Lading Report
225	2	Periodic Delivery Variance Report
226	2	Weekly Delivery Variance Report
227	2	Daily Delivery Variance Report
22I	2	Ticketed Delivery Daily Report
22J	2	Delivery Ticket History Report
234	3	In-Tank Mass/Density Inventory Report 2
235	3	In-Tank Mass/Density Delivery Report 2
251	1	CSLD Results Report
2E3	1	In-Tank Inventory History Report
2E4	1	Extended In-Tank Inventory Report – Date/Time Based

### 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	N/A	Smart Sensor Status Report (obsolete use <b>31B</b> )
316	N/A	Smart Sensor Alarm History Report (obsolete <b>31C</b> )
31B	1	MAG Sensor Status Report
31C	1	MAG Sensor Alarm History
322	N/A	Pump Relay Monitor Status Report (obsolete)
323	N/A	Pump Relay Monitor Alarm History Report (obsolete)
333	N/A	Smart Sensor Install Log (obsolete)
341	1	Type A (2 Wire CL) Sensor Status Report
342	1	Type A (2 Wire CL) Sensor Alarm History Report
346	1	Type B (3 Wire CL) Sensor Status Report
347	1	Type B (3 Wire CL) Sensor Alarm History Report
34B	N/A	Universal Sensor Status Report (obsolete)
34C	N/A	Universal Sensor Alarm History Report (obsolete)

### LINE LEAK REPORTS (7.2.4)

Code	Ver	Function
373	1	Pressure Line Leak Test Results (with 0.20 test data)
374	1	Pressure Line Leak Test History (with 0.20 test data)
375	1	Pressure Line Leak Test Results II (with 0.20 test data)
376	1	Pressure Line Leak Passed Test Results
377	1	Enhanced Pressure Line Leak Test History (with 0.20 test data)
381	1	Pressure Line Leak Status
382	1	Pressure Line Leak Alarm History Report
383	1	Pressure Line Leak Test Results (0.10 test data only)
384	1	Pressure Line Leak Test History (0.10 test data only)
385	1	Pressure Line Leak Test Results (0.20 test data listed before 0.10 test data)

### I/O DEVICE REPORTS (7.2.5)

Code	Ver	Function
401	1	Input Status Report
402	1	Input Alarm History Report
403	1	Input/Generator Alarm History Report
406	1	Relay Status Report
407	1	Input Diagnostics
408	1	Relay Diagnostics

## SETUP FUNCTIONS & REPORTS (7.3)

### SYSTEM SETUP (7.3.1)

Code	Ver	Function
501	1	Set Time of day
502	1	Set Shift Close Time 1, 2, 3, 4, 5, 6, 7, 8
503	1	Set Print Header Line 1, 2, 3, 4
504	N/A	Set System RS-232 Security Code (obsolete use <b>536</b> )
505	N/A	Set System Type & Language Flags (obsolete use <b>517</b> )
506	N/A	Set Periodic Test Needed Warning (obsolete use <b>546</b> )
507	N/A	Set Days Before Periodic Test Needed Warning (obsolete use <b>547</b> )
508	N/A	Set Days Before Periodic Test Needed Alarm (obsolete use <b>548</b> )
509	N/A	Set Annual Test Needed Warning (obsolete use <b>549</b> )
50A	N/A	Set Days Before Annual Test Needed Warning (obsolete use <b>54A</b> )
50B	N/A	Set Days Before Annual Test Needed Alarm (obsolete use <b>54B</b> )
50D	1	Set Print Temperature Compensation Flag
50E	1	Set Temperature Compensation Value
50F	N/A	Set System Date/Time Display Format (obsolete use <b>50J</b> )
50G	1	Set Header – Fax Sender Name
50H	1	Set Header – Fax Number
50I	1	Set Display Setup - Number Format
50J	1	Set Display Setup – Date & Time Format

### SYSTEM SETUP (7.3.1) (Continued)

Code	Ver	Function
<b>50K</b>	2	Set Inventory Maximum Number of Shifts per Day
<b>50L</b>	2	Inventory Shift Close Setup Report
<b>50M</b>	2	Delivery Setup Report
<b>50N</b>	2	Reconciliation Setup Report
<b>511</b>	2	Set BIR Shift Close Warning
<b>512</b>	2	Set BIR Daily Close Warning
<b>514</b>	1	Set H-Protocol Height/Volume Format
<b>517</b>	1	Set System Type & Language Flags
<b>519</b>	1	Set PLLD & WPLLD Duration Before Precision Retest
<b>51A</b>	1	Set Enable/Disable Auto Daylight Saving Time
<b>51B</b>	1	Set Start/End Daylight Saving Date and Time
<b>51C</b>	2	Set Ticketed Delivery Flag Enabled
<b>51D</b>	2	Set Ticketed Delivery Temperature Compensation Flag
<b>51E</b>	2	Set Ticketed Delivery Close Day of Week
<b>51F</b>	1	Set Euro Protocol Prefix
<b>51G</b>	1	Set Enable/Disable System Setup Custom Help Flag
<b>51H</b>	1	Set Front Panel Security
<b>51M</b>	2	Set Delivery Method
<b>571</b>	1	Set Enable/Disable User Ullage
<b>572</b>	1	Set User Ullage Percentage

### COMMUNICATIONS SETUP (7.3.2)

Code	Ver	Function
<b>520</b>	N/A	Set Receiver Auto Dial Type and Start Time II (obsolete use <b>5P1 – 5P7</b> )
<b>521</b>	1	Set Receiver Configuration Flag (obsolete with V2 use <b>872</b> )
<b>522</b>	1	Set Receiver Location Label (obsolete with V2 use <b>874</b> )
<b>523</b>	N/A	Set Receiver Telephone Number (obsolete use <b>5G1 &amp; 5G3</b> or <b>5H3</b> )
<b>524</b>	N/A	Set Receiver Dialing Destination Type (obsolete)
<b>525</b>	N/A	Set Receiver Port Number to Dial (obsolete use <b>5G5, 5H5, 5I5, or 5J5</b> )
<b>526</b>	N/A	Set Receiver Retry Number (obsolete use <b>5G6, 5H6, 5I6, 5J6, or 5K6</b> )
<b>527</b>	N/A	Set Receiver Retry Delay Time (obsolete use <b>5G7, 5H7, 5I7, 5J7, or 5K7</b> )
<b>528</b>	N/A	Set Receiver Confirmation Report Flag (obsolete)
<b>529</b>	N/A	Set Fax Auto Dial Method (obsolete)
<b>52A</b>	N/A	Set Receiver Report List (obsolete)
<b>52B</b>	N/A	Set Receiver Auto Dial Type and Start Time (obsolete)
<b>52C</b>	N/A	Set Receiver Auto Dial On Alarms (obsolete)
<b>52D</b>	1	Autodial Alarm Status
<b>52E</b>	N/A	Set Delay for Autodial on Alarm Clear (obsolete)



## COMMUNICATIONS SETUP (7.3.2) (Continued)

Code	Ver	Function
<b>52G</b>	2	COMM DIM Setup Report
<b>52H</b>	2	Set COMM DIM Protocol
<b>530</b>	1	Beeper Enable/Disable
<b>531</b>	1	Set RS-232 End of Message

## WARNING, ALARM, & AUTO-PRINT SETUP (7.3.3)

Code	Ver	Function
<b>536</b>	1	Set RS-232 Security Code per Port
<b>537</b>	1	Set Display Format RS-232 ETX per Port
<b>538</b>	1	Set Computer Format RS-232 ETX per Port
<b>53A</b>	2	Set Shift Close Method
<b>545</b>	3	Set TC Density Enable
<b>546</b>	1	Set Tank Periodic Test Needed Warning
<b>547</b>	1	Set Days Before Tank Periodic Test Needed Warning
<b>548</b>	1	Set Days Before Tank Periodic Test Needed Alarm
<b>549</b>	1	Set Tank Annual Test Needed Warning
<b>54A</b>	1	Set Days Before Tank Annual Test Needed Warning
<b>54B</b>	1	Set Days Before Tank Annual Test Needed Alarm
<b>54C</b>	1	Set CSLD Evaporation Reid Vapor Pressure Chart
<b>553</b>	1	Set Line Re-Enable Method
<b>554</b>	1	Set Periodic Line Leak Test Auto-Confirm
<b>555</b>	1	Set Annual Line Leak Test Auto-Confirm
<b>556</b>	1	Set Line Periodic Test Needed Warning
<b>557</b>	1	Set Days Before Line Periodic Test Needed Warning
<b>558</b>	1	Set Days Before Line Periodic Test Needed Alarm
<b>559</b>	1	Set Line Annual Test Needed Warning
<b>55A</b>	1	Set Days Before Line Annual Test Needed Warning
<b>55B</b>	1	Set Days Before Line Annual Test Needed Alarm
<b>564</b>	1	Set Ullage
<b>56E</b>	2	Set Manual Close Timeout in Minutes
<b>573</b>	1	Set Inventory Report Close Type & Time
<b>577</b>	2	Set Inventory Close Start Time
<b>578</b>	2	Set Inventory Reporting Interval
<b>579</b>	2	Get Inventory Storage Length

### WARNING, ALARM, & AUTO-PRINT SETUP (7.3.3) (Continued)

Code	Ver	Function
<b>5BC</b>	N/A	Set Receiver Auto Dial on Alarm II (obsolete use <b>5P1</b> , <b>5P4</b> , & <b>5P7</b> )
<b>5BD</b>	1	Set Enable/Disable Custom Alarms
<b>5BE</b>	N/A	Set Custom Alarm Labels (obsolete use <b>5BF</b> )
<b>5BF</b>	1	Set Custom Alarm Label, device number, and indications
<b>5E2</b>	N/A	Set Inventory Record Time 1, 2, 3, 4 (obsolete)

### ADDRESS BOOK SETUP (7.3.4)

Code	Ver	Function
<b>5G1</b>	1	Add Contact
<b>5G2</b>	1	Delete Contact
<b>5G3</b>	1	Set Contact Modem Number
<b>5G4</b>	1	Set Contact Modem Dial-Out String
<b>5G5</b>	1	Set Contact Modem Communication Device Number
<b>5G6</b>	1	Set Contact Modem Retry Count
<b>5G7</b>	1	Set Contact Modem Retry Delay Time
<b>5G8</b>	1	View Full Contact Info
<b>5H3</b>	1	Set Contact FAX Modem Number
<b>5H4</b>	1	Set Contact FAX Dial-Out String
<b>5H5</b>	1	Set Contact FAX Communication Device Number
<b>5H6</b>	1	Set Contact FAX Retry Count
<b>5H7</b>	1	Set Contact Modem Retry Delay Time
<b>5I3</b>	1	Set Contact Remote TCP/IP Address
<b>5I4</b>	1	Set Contact Remote TCP/IP Port Number
<b>5I5</b>	1	Set Contact Local TCP/IP Communication Device Number
<b>5I6</b>	1	Set Contact TCP/IP Retry Count
<b>5I7</b>	1	Set Contact TCP/IP Retry Delay Time
<b>5J4</b>	1	Set Contact Satellite Connection String
<b>5J5</b>	1	Set Contact Satellite Communication Device Number
<b>5J6</b>	1	Set Contact Satellite Mode Retry Count
<b>5J7</b>	1	Set Contact Satellite Retry Delay Time
<b>5K3</b>	1	Set Contact E-Mail Address
<b>5K6</b>	1	Set Contact E-Mail Mode Retry Count
<b>5K7</b>	1	Set Contact E-Mail Retry Delay Time

### AUTOMATIC EVENTS SETUP (7.3.5)

Code	Ver	Function
5P1	1	Add/Delete AutoEvent
5P2	1	Get Number of Auto Events
5P3	1	Set Auto Event Trigger: Time Based
5P4	1	Set Auto Event Trigger: Event Based
5P5	1	Set Auto Event Action: Device Task
5P6	1	Set Auto Event Action: Print Task
5P7	1	Set Auto Event Action: Auto Connect Task

5Q1 1 Automatic Events : Task Log

### IN-TANK SETUP (7.3.6)

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	1	Set Tank Linear Calculated Full Volume
60E	1	Set Tank Programmable Float Parameters
60F	1	Set Tank Probe Offset
60G	1	Set Manual Tank Leak Test
60K	1	Set Probe Number Installed in Tank
60L	1	Get Tank Setup Warning Messages
60M	2	Set Product Label
60N	2	Product Setup
60O	2	Set Product Available in Tank
610	1	Set Tank Delivery Delay
611	1	Set Tank Leak Test Type & Start Time
612	1	Set Tank SIPHON Manifolded Partners
613	1	Set CSLD Probability of Detection
614	1	Set CSLD Climate Factor
615	2	Set BIR Meter Data Present
616	2	Set Accuchart Update Scheduling
618	1	Set Tank CSLD Evaporation Compensation
619	1	Set Tank Stage II Vapor Recovery
61A	1	Set In-Tank Leak Test Early Stop
61B	1	Set In-Tank Static Gross Test Auto-Confirm

### IN-TANK SETUP (7.3.6) (Continued)

Code	Ver	Function
61C	N/A	Set CSLD Report Only Mode (obsolete)
61D	N/A	Set Tank LINE Manifoldded Partners (obsolete)
61H	2	Set Update Apply Accuchart Chart Dates
61I	2	Set Maximum Accuchart Calibration Period Days
61J	2	Set Exclude Calibration Dates
61K	2	Set Enable Accuchart Warnings
61L	2	Set Accuchart Chart Management
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	1	Set Tank High Water Warning Limit
628	1	Set Tank Maximum Volume Limit
629	1	Set Tank Delivery Required Limit
62A	1	Set Tank Annual Leak Test Minimum Volume
62B	N/A	Set Tank Last Annual Test (obsolete)
62C	1	Set Tank Periodic Test Type
62D	1	Set Enable/Disable Tank Leak Test Fail Alarms
62F	1	Set MAG Probe Float Size
62G	2	Set Accuchart Create Chart
630	1	Set Tank Leak Test Notify
631	N/A	Set Tank Leak Test Averaging (obsolete)
632	1	Set Tank Test Siphon Break
633	N/A	Set Leak Test Report Type (obsolete)
636	1	Set Tank Periodic Leak Test Minimum Volume
63A	1	Set Tank Low Level Threshold for Sequential Line Manifold
63H	2	Set Accuchart Delete Chart
641	3	Set Density Code
671	3	Set Tank Density High Limit
672	3	Set Tank Density Low Limit
6A4	1	Set Tank 1 Point Full Height Volume for Tall Tank
6A5	1	Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes for Tall Tank
6A6	1	Set Tank 20 Point Full, 95%, 90%,...Volumes for Tall Tank
6A7	1	Set Tank Diameter for Tall Tank
6AA	1	Set Tank Linear Calculated Full Volume for Tall Tank
6AF	1	Set Tank Probe Offset for Tall Tank

### IN-TANK SETUP (7.3.6) (Continued)

Code	Ver	Function
<b>6C1</b>	1	Set Tank Low Level Limit for Tall Tank
<b>6C2</b>	1	Set Tank High Level Limit for Tall Tank
<b>6C3</b>	1	Set Tank Overfill Level Limit for Tall Tank
<b>6C5</b>	1	Set Tank Sudden Loss Limit for Tall Tank
<b>6C8</b>	1	Set Tank Maximum Volume Limit for Tall Tank
<b>6C9</b>	1	Set Tank Delivery Required Limit for Tall Tank
<b>6SU</b>	2	Printout Tank Setup Tabs

### SENSOR SETUP (7.3.7)

Code	Ver	Function
<b>701</b>	1	Set Liquid Sensor Configuration
<b>702</b>	1	Set Liquid Sensor Location Label
<b>703</b>	1	Set Liquid Sensor Type
<b>704</b>	1	Set Liquid Sensor Category
<b>706</b>	1	Set Vapor Sensor Configuration
<b>707</b>	1	Set Vapor Sensor Location Label
<b>708</b>	1	Set Vapor Sensor Alarm Threshold
<b>709</b>	1	Set Vapor Sensor Category
<b>711</b>	1	Set Groundwater Sensor Configuration
<b>712</b>	1	Set Groundwater Sensor Location Label
<b>713</b>	1	Set Groundwater Sensor Category
<b>721</b>	N/A	Set Smart Sensor Configuration (obsolete use <b>72F</b> or <b>S51</b> )
<b>722</b>	N/A	Set Smart Sensor Label (obsolete use <b>72E</b> or <b>S53</b> )
<b>723</b>	N/A	Set Smart Sensor Category (obsolete)
<b>727</b>	1	Set MAG Sensor Alarm Upgrade Delay
<b>728</b>	1	Set MAG Sensor Alarm Threshold
<b>72E</b>	1	Set MAG Sensor Label
<b>72F</b>	1	Set MAG Sensor Configuration
<b>741</b>	1	Set Type A (2 Wire CL) Sensor Configuration
<b>742</b>	1	Set Type A (2 Wire CL) Sensor Location Label
<b>743</b>	1	Set Type A (2 Wire CL) Sensor Type
<b>744</b>	1	Set Type A (2 Wire CL) Sensor Category
<b>746</b>	1	Set Type B (3 Wire CL) Sensor Configuration
<b>747</b>	1	Set Type B (3 Wire CL) Sensor Location Label
<b>748</b>	1	Set Type B (3 Wire CL) Sensor Type
<b>749</b>	1	Set Type B (3 Wire CL) Sensor Category

### SENSOR SETUP (7.3.7) (Continued)

Code	Ver	Function
<b>74B</b>	N/A	Set Universal Sensor Configuration (obsolete)
<b>74C</b>	N/A	Set Universal Sensor Location Label (obsolete)
<b>74D</b>	N/A	Set Universal Sensor Type (obsolete)
<b>74E</b>	N/A	Set Universal Sensor Category (obsolete)

### PUMP SENSOR SETUP (7.3.8)

Code	Ver	Function
<b>771</b>	N/A	Set Pump Sensor Configuration (obsolete use <b>P06</b> )
<b>772</b>	N/A	Set Pump Sensor Tank Number (obsolete use <b>P04</b> )
<b>773</b>	N/A	Set Pump Sensor Dispense Mode (obsolete use <b>L06</b> )
<b>P01</b>	1	Set Pump Configured
<b>P02</b>	1	Set Pump Label
<b>P03</b>	1	Set Pump Mode
<b>P04</b>	1	Set Pump Associated Tank
<b>P05</b>	1	Set Pump Control
<b>P06</b>	1	Set Pump Sense

### PRESSURE LINE LEAK SETUP (7.3.9)

Code	Ver	Function
<b>75A</b>	1	Set Line Leak Lockout Schedule (All Types)
<b>75B</b>	N/A	Set Line Disable Alarm Assignments (obsolete)
<b>774</b>	1	Set Pressure Line Leak Continuous Handle Alarm Timeout
<b>775</b>	1	Set Pressure Line Leak Profile Line Test Leak Rate
<b>776</b>	1	Set Pressure Line Leak Profile Line Test Reference Pressure
<b>777</b>	1	Set Pressure Line Leak Primary Pipe Diameter
<b>778</b>	1	Set Pressure Line Leak Secondary Pipe Diameter
<b>779</b>	1	Set Pressure Line Leak Primary Pipe Bulk Modulus
<b>77A</b>	1	Set Pressure Line Leak Secondary Pipe Bulk Modulus
<b>77B</b>	1	Set Pressure Line Leak Thermal Expansion Coefficient
<b>77C</b>	1	Set Pressure Line Leak Low Pressure Shutoff
<b>77D</b>	1	Set Pressure Line Leak Altitude Pressure Offset
<b>77E</b>	1	Set Pressure Line Leak Passive 0.10 GPH Test Enable Flag
<b>77F</b>	1	Set Pressure Line Leak Secondary Pipe Length
<b>77G</b>	1	Set Pressure Line Leak Fuel Out Limit
<b>780</b>	1	Pressure Line Leak General Setup Inquiry
<b>781</b>	1	Set Pressure Line Leak Configuration
<b>782</b>	1	Set Pressure Line Leak Label
<b>783</b>	1	Set Pressure Line Leak 0.10 GPH Test Schedule
<b>784</b>	1	Set Pressure Line Leak Shutdown Rate
<b>785</b>	N/A	Set Pressure Line Leak Tank Number (obsolete use <b>P04</b> )
<b>786</b>	1	Set Pressure Line Leak Dispense Mode (use <b>L06</b> for pump sense)
<b>787</b>	N/A	Set Pressure Line Leak Disable Alarm Assignments (obsolete)
<b>788</b>	1	Set Pressure Line Leak Piping Material
<b>789</b>	1	Set Pressure Line Leak Primary Pipe Length
<b>78A</b>	N/A	Set Pressure Line Leak Sensor Type (obsolete use <b>L04</b> )
<b>78B</b>	N/A	Set Pressure Line Leak 0.10 GPH Test Schedule (obsolete use <b>78E</b> )

### PRESSURE LINE LEAK SETUP (7.3.9) (Continued)

Code	Ver	Function
78C	1	Set Pressure Line Leak 0.20 GPH Test Schedule
78E	1	Set Pressure Line Leak 0.10 GPH Auto Test Enable
78F	1	Set Pressure Line Leak Low Pressure Shutoff Value
78G	1	Set Controlling Pump
L01	1	Set Line Configured
L03	1	Set Line Leak Monitoring
L04	1	Set Line Pressure Sensor
L05	1	Set Line Manifolding
L06	1	Set Line Dispense Mode
L07	1	Set Line Associated Pumps
S51	1	Set LPR Sensor Configured
S53	1	Set LPR Sensor Label
S54	1	Set LPR Sensor Serial Number
S55	1	Line Pressure Sensor Alarm History Report
S56	1	LPR Sensor Samplings
SA1	1	Get Line Pressure Sensor Status

### RECONCILIATION SETUP (7.3.10)

Code	Ver	Function
51N	2	Set LV/MDIM Configuration
51P	2	Set LV/MDIM Setup Configuration
51Q	2	Set LV/MDIM Label
790	2	DIM Software Revision
791	N/A	Set Mechanical Dispenser Interface String
792	2	Set Electronic Dispenser Interface String
793	2	Set Reconciliation Auto Daily Closing Time
794	2	Set Auto Shift Closing Time 1, 2, 3, 4
795	2	Set Periodic Reconciliation Mode
796	2	Set Periodic Reconciliation Report Length
797	2	Set Periodic Reconciliation Alarm Flag
798	2	Set Periodic Reconciliation Alarm Threshold
799	2	Set Periodic Reconciliation Alarm Offset
79A	N/A	Set Remote Printer Reconciliation Report Format
79B	2	Set Shift Manual Adjustment Value
79C	2	Set Daily Manual Adjustment Value
79D	2	Close Current Reconciliation Shift
79E	2	Clear Tank Map Table
79F	2	Set BIR Temperature Compensation Flag
79G	2	Set Tank Meter Map
79H	2	Set Meter Map Lock/Unlock by Position

### RECONCILIATION SETUP (7.3.10) (Continued)

Code	Ver	Function
<b>79I</b>	2	Set Meter Map Lock/Unlock All Positions
<b>79J</b>	2	Set Daily Manual Adjustmetn Value Date Range
<b>79K</b>	2	Set BIR Status Warning Enable
<b>79L</b>	2	Set Reconciliation Report Close Day
<b>79M</b>	2	Set Alarm Thrshold Delivery Type
<b>79N</b>	2	Set Shift Manual Adjustment Value Date Range/Shift Number
<b>79Q</b>	2	Set User Fueling Position
<b>79S</b>	2	Get Tank Map
<b>7B1</b>	2	Set BIR Meter/Tank Mapping
<b>7B2</b>	2	Set Meter Calibration Offset
<b>7B4</b>	2	Set Individual Meter Offset
<b>7B5</b>	2	Set Ticketed Delivery
<b>7B6</b>	2	Set BOL number
<b>7BG</b>	2	Set Ticketed Delivery Information
<b>7C1</b>	2	Set Tank Periodic Reconcilaiton Alarm Threshold Enable
<b>7C2</b>	2	Set Tank Periodic Reconcilaiton Alamr Threshold
<b>7D6</b>	3	Accuchart Operating Volume Span
<b>7H0</b>	2	BIR Multiple Threshold Setup Report
<b>7H1</b>	2	Set BIR Multiple Threshold Test Type
<b>7H2</b>	2	Set BIR Multiple Threshold Rolling Days
<b>7H3</b>	2	Set BIR Multiple Threshold Type Enable
<b>7H4</b>	2	Set BIR Multiple Threshold Percentage
<b>7H5</b>	2	Set BIR Multiple Threshold Offset Value

### I/O DEVICE SETUP (7.3.11)

Code	Ver	Function
<b>7C4</b>	N/A	Set Pump Relay Monitor Configuration (obsolete)
<b>7C5</b>	N/A	Set Pump Relay Monitor Label (obsolete)
<b>7C6</b>	N/A	Set Pump Relay Monitor Pump Relay (obsolete)
<b>7C7</b>	N/A	Set Pump Relay Monitor Stuck Relay (obsolete)
<b>7C8</b>	N/A	Set Pump Relay Monitor Max Run Time (obsolete)
<b>801</b>	1	Set Input Configuration
<b>802</b>	1	Set Input Location Label
<b>803</b>	N/A	Set Input Type (obsolete use <b>80F</b> )
<b>804</b>	N/A	Set Input Dispense Mode (obsolete)
<b>806</b>	1	Set Relay Configuration
<b>807</b>	1	Set Relay Location Label
<b>808</b>	N/A	Set Relay Alarm Assignments (obsolete use <b>5P1</b> , <b>5P4</b> & <b>5P5</b> )
<b>809</b>	1	Set Relay Orientation
<b>80A</b>	1	Set Relay Type



### I/O DEVICE SETUP (7.3.11) (Continued)

Code	Ver	Function
<b>80B</b>	N/A	Set Relay Tank Assignment (obsolete use <b>P04</b> )
<b>80C</b>	N/A	Set External Input Type (obsolete use <b>80F</b> )
<b>80D</b>	1	Set External Input Orientation
<b>80E</b>	N/A	Set External Input Tank Number (obsolete use <b>P04</b> )
<b>80F</b>	1	Set Input Type
<b>821</b>	1	Set Probe Configuration
<b>822</b>	1	Set Probe Label

### MISCELLANEOUS SETUP (7.3.12)

Code	Ver	Function
<b>871</b>	1	Setup Communication Card
<b>872</b>	2	Setup Communication Card Configuration Flag
<b>873</b>	1	Set Communication Port Data
<b>874</b>	2	Setup Communication Card Location Label
<b>87B</b>	1	Set Modem Dial Type
<b>87D</b>	1	Set Modem Answer-On Interval
<b>87E</b>	1	Set Modem Dial-In String
<b>87F</b>	1	Set Modem Dial-Out String
<b>87J</b>	2	Set DIM Units Reported
<b>87Q</b>	2	Suppress DIM COMM Alarms
<b>881</b>	N/A	Set Communication Port Data (obsolete use <b>873</b> )
<b>882</b>	N/A	Initialize Communication Port Data (obsolete )
<b>885</b>	N/A	Set SiteLink Modem Type (obsolete)
<b>886</b>	N/A	Set Modem Setup String (obsolete use <b>87F</b> )
<b>887</b>	1	Set Dial Tone Validation Interval
<b>889</b>	1	DTR Normal State for Serial Satellite Boards
<b>88D</b>	N/A	Communication Diagnostic for SiteLink (obsolete)
<b>88E</b>	1	Set Satellite Connection String
<b>88G</b>	1	Set IP Assignment
<b>88H</b>	1	Get IP Address
<b>88I</b>	1	Set Static IP Address
<b>88J</b>	1	Set Serial Command Port
<b>88K</b>	1	Set Static Subnet Mask
<b>88L</b>	1	Set Static Gateway IP
<b>88M</b>	1	Set SSH Port
<b>88N</b>	1	Set HTTP Port
<b>88O</b>	1	Set HTTPS Port
<b>88P</b>	1	Set Host Name
<b>88Q</b>	1	Set Static Primary DNS Server
<b>88R</b>	1	Set Static Secondary DNS Server
<b>88S</b>	1	Get MAC Address
<b>88T</b>	1	Set Default Gateway

### MISCELLANEOUS SETUP (7.3.12) (Continued)

Code	Ver	Function
88U	1	Get Subnet Mask
88V	1	Get Gateway IP
88W	1	Get Primary DNS Server
88X	1	Get Secondary DNS Server
88Y	1	TCP/IP Commit Setup
891	2	Set Accuchart Calibration Restart
894	2	Set Accuchart Calibration Stop
8BC	N/A	Set Relay Alarm Assignments II (obsolete use <b>5P1</b> , <b>5P4</b> & <b>5P5</b> )

### DIAGNOSTIC REPORTS (7.4)

#### SYSTEM DIAGNOSTIC REPORTS (7.4.1)

Code	Ver	Function
901	N/A	Self Test Results Report (obsolete)
902	1	System Revision Level Report (obsolete)
903	N/A	PC Diagnostic Report (obsolete)
905	1	System Revision Level Report II (obsolete)
907	1	Get "About" screen information

#### IN-TANK DIAGNOSTIC REPORTS (7.4.2)

Code	Ver	Function
A01	1	Probe Type and Serial Number
A02	1	Probe Factory Dry Calibration Value
A03	1	Probe Factory Wet Calibration Value
A07	1	Probe Reference Distance Diagnostic
A0X	1	Probe Diagnostics General
A10	1	Probe Last Sample Buffers
A14	1	MAG Probe Option Table
A15	1	In-Tank Diagnostic Printout
A17	1	Probe Communication
A20	1	Probe Leak Test Flags - Present Test
A21	1	Probe Leak Test Flags - Stored Test
A22	1	Probe Leak Test Flags - Gross Test
A51	1	CSLD Diagnostics: Rate Table
A52	1	CSLD Diagnostics: Rate Test
A53	1	CSLD Diagnostics: Volume History Table
A54	1	30-Second Inventory Samples
A55	1	CSLD Diagnostics: Leak Test Status
A56	1	CSLD Monthly Report
A57	1	CSLD Monthly Report Time-Based

### IN-TANK DIAGNOSTIC REPORTS (7.4.2) (Continued)

Code	Ver	Function
A58	1	CSLD Moving Average Table
A71	2	Accuchart Data Sufficiency
A72	2	Accuchart Data Sufficiency Histogram
A73	2	Force Accuchart Calibration
A74	2	Accuchart Calibration Feedback Report
A75	2	Accuchart Delivery Instructions
A76	2	Accuchart Application Log

### SENSOR DIAGNOSTIC REPORTS (7.4.3)

Code	Ver	Function
B01	1	Liquid Sensor Diagnostic Report
B06	1	Vapor Sensor Diagnostic Report

### SENSOR DIAGNOSTIC REPORTS (7.4.3) (Continued)

Code	Ver	Function
B07	1	Vapor Sensor Concentration (PPM) Report
B11	1	Groundwater Sensor Diagnostic Report
B21	1	Ground Temperature Sensor Diagnostic Report
B33	1	MAG Sensor Diagnostic Report
B34	N/A	Smart Sensor Last Sample Diagnostic (obsolete use <b>B3D</b> or <b>B64</b> )
B35	N/A	Smart Sensor Type and Serial Number (obsolete use <b>B3B</b> or <b>B61</b> )
B36	N/A	Smart Sensor Constant Data (obsolete use <b>B3C</b> or <b>B62</b> )
B3A	1	MAG Sensor Comm Data
B3B	1	MAG Sensor Type and Serial Number
B3C	1	MAG Sensor Constants
B3D	1	MAG Sensor Channel Data Diagnostic (Hex Format)
B3E	1	MAG Sensor Channel Data Diagnostic (Decimal Format)
B41	1	Type A Sensor (2 Wire CL) Diagnostic Report
B46	1	Type B Sensor (3 Wire CL) Diagnostic Report
B4B	N/A	Universal Sensor Diagnostic Report (obsolete)

### LINE LEAK DIAGNOSTIC REPORTS (7.4.4)

Code	Ver	Function
B61	1	LPR Sensor General Report
B62	1	LPR Sensor Constants Report
B63	1	LPR Sensor Comm Data
B64	1	LPR Sensor Channel Data (Hex Format)
B65	1	LPR Sensor Channel Data (Decimal Format)
B71	N/A	Pump Sensor Diagnostic (obsolete)
B72	N/A	Pump Relay Monitor Diagnostic (obsolete)

#### LINE LEAK DIAGNOSTIC REPORTS (7.4.4) (Continued)

Code	Ver	Function
<b>B7B</b>	1	Pressure Line Leak Profile Line Test
<b>B7C</b>	1	Pressure Line Leak Pressure Offset Test
<b>B7E</b>	1	Pressure Line Leak Pressure Offset Monitor Report
<b>B81</b>	1	Pressure Line Leak Diagnostic Report
<b>B87</b>	1	Pressure Line Leak 3.00 GPH Test Diagnostic
<b>B88</b>	1	Pressure Line Leak Mid-range Test Diagnostic
<b>B89</b>	1	Pressure Line Leak 0.20 GPH Test Diagnostic
<b>B8A</b>	1	Pressure Line Leak 0.10 GPH Test Diagnostic
<b>B8F</b>	1	PLLD No-Vent report
<b>B8I</b>	1	PLLD Last Test Result
<b>B8J</b>	1	PLLD Diagnostic - Manual Test Report

#### RECONCILIATION DIAGNOSTIC REPORTS (7.4.4)

Code	Ver	Function
<b>B91</b>	N/A	AccuChart Diagnostics Report
<b>B93</b>	N/A	AccuChart Status Report
<b>B94</b>	N/A	AccuChart Calibration History Report
<b>BA0</b>	2	MDIM Totalizer Report
<b>CA1</b>	2	Get Reconciliation Status
<b>CA2</b>	2	Reconciliation Diagnostic Report

#### RECONCILIATION REPORTS (7.5)

Code	Ver	Function
<b>C01</b>	2	Basic Inventory Reconciliation Daily "Row" Report
<b>C02</b>	2	Basic Inventory Reconciliation Daily "Column" Report
<b>C03</b>	2	Basic Inventory Reconciliation Shift "Row" Report
<b>C04</b>	2	Basic Inventory Reconciliation Shift "Column" Report
<b>C05</b>	2	Basic Inventory Reconciliation Periodic "Row" Report
<b>C06</b>	2	Basic Inventory Reconciliation Periodic "Column" Report
<b>C07</b>	2	Basic Inventory Reconciliation Periodic "Row" Report
<b>C08</b>	2	Basic Inventory Reconciliation Periodic "Column" Report
<b>C09</b>	2	Individual Basic Reconciliation Daily History Diagnostic
<b>C10</b>	2	Periodic Book Variance
<b>C11</b>	2	Weekly Book Variance
<b>C12</b>	2	Daily Book Variance

## RECONCILIATION REPORTS (7.5) (Continued)

Code	Ver	Function
<b>C15</b>	2	Book Variance Daily Report Date Based
<b>C0G</b>	2	Reconciliation Daily Report
<b>C0J</b>	2	Reconciliation Shift Report
<b>CA3</b>	2	Reconciliation Test Result Report

## GUI DISPLAY SETUP (7.6)

Code	Ver	Function
<b>G01</b>	1	Set Display Setup - System Status Configuration
<b>G02</b>	1	Set Display Setup – All Tanks Configuration
<b>G03</b>	1	Set Display Setup – Tank Fuel Fill Configuration
<b>G04</b>	1	Set Display Setup – All Liquid Sensors Configuration
<b>G05</b>	1	Set Display Setup – All Type-A (2-Wire CL) Sensors Configuration
<b>G06</b>	1	Set Display Setup – All Type-B (3-Wire CL) Sensors Configuration
<b>G07</b>	1	Set Display Setup – All MAG Sensors Configuration
<b>G08</b>	1	Set Display Setup – All Ground Water Sensors Configuration
<b>G09</b>	1	Set Display Setup – All Vapor Sensors Configuration
<b>G0A</b>	1	Set Display Setup – All Line Pressure Sensors Configuration
<b>G0B</b>	1	Set Display Setup – User Defined Tab Labels
<b>G0C</b>	1	Set Display Setup – User Defined Tab Configuration
<b>G0D</b>	1	Set Display Setup – User Defined Tab Status Report

## DEVICE VR-BUS CONFIGURATION (7.7)

Code	Ver	Function
<b>N01</b>	1	Set Device VR-Bus Address
<b>N02</b>	1	Get Available VR-Bus Addresses
<b>N03</b>	1	Get All Device Directory
<b>N04</b>	2	Get Hardware Configuration
<b>N05</b>	2	Get Extended Device Directory
<b>N06</b>	2	Get Device Assignments
<b>N07</b>	2	Get COMM Diagnostics Counter