OPW
FUEL MANAGEMENT SYSTEMS

# System2®

## CFN Host Version

*Operator's Manual*

FSC Version S041385.1H

 **Manual M041-38.51H**

# OPW Fuel Management Systems -
# System and Replacement Parts Warranty Statement

*Effective September 1, 2002*

## System and Replacement Parts Warranty

OPW Fuel Management Systems warrants that all OPW Tank Gauge and Petro Vend Fuel Control systems supplied by OPW Fuel Management Systems to the Original Purchaser will be free from defects in material and/or workmanship under normal use and service for a period of 12 months from the date of installation or 15 months from the date of shipment. Additionally, OPW Fuel Management Systems warrants that all upgrades and replacement parts (new and remanufactured) supplied by OPW Fuel Management Systems will be free from defects in material and workmanship under normal use and service for a period of 90 days from the date of installation or for the remainder of the system's original warranty, whichever is greater, as set forth in the first sentence of this statement. The foregoing warranties will not extend to goods subjected to misuse, neglect, accident, or improper installation or maintenance or which have been altered or repaired by anyone other than OPW Fuel Management Systems or its authorized representative.

The buyer's acceptance of delivery of the goods constitutes acceptance of the foregoing warranties and remedies, and all conditions and limitations thereof.

If a claim is made within the warranted time period that any equipment and/or remanufactured part is defective in material or workmanship under normal use and service, such equipment and/or remanufactured part shall be returned to OPW Fuel Management Systems, freight prepaid. If such equipment or remanufactured part is found by OPW Fuel Management Systems in its sole judgment, to be defective in material or workmanship under normal use and service, OPW Fuel Management Systems, shall, at its sole option, repair or replace such equipment and/or remanufactured part (excluding, in all instances, fuses, ink cartridges, batteries, other consumable items, etc.)

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# Table Of Contents

Introduction . . . . . 1
HOW TO USE THIS MANUAL . . . . . 1
Notation . . . . . 1
Introduction . . . . . 1
Configuration . . . . . 1
Operation . . . . . 1
Appendices . . . . . 1
SYSTEM SPECIFICATIONS . . . . . 2
SYSTEM DESCRIPTION . . . . . 3
Overview . . . . . 3
Benefits . . . . . 4
Data Base . . . . . 4
Communications . . . . . 5
Operational Modes . . . . . 5
Pump Control . . . . . 6
Cards . . . . . 6
Reports . . . . . 7

Configuration . . . . . 9
Quick-Start . . . . . 11
BASIC CONCEPTS . . . . . 18
Types of Commands . . . . . 18
Syntax . . . . . 19
Default Values . . . . . 19
Terminal Operation . . . . . 19
Modem Operation . . . . . 19
Computer Operation . . . . . 19
Normal Mode . . . . . 20
Privileged Mode . . . . . 20
Downloading Data . . . . . 20
TIME MEASUREMENT . . . . . 21
SET TIME . . . . . 21
SHOW TIME . . . . . 21
SET DATE . . . . . 21
SHOW DATE . . . . . 21
SYSTEM MEMORY (RAM) . . . . . 22
SET RAM . . . . . 22

SHOW RAM . . . . . 22
PROGRAMMABLE DATABASE . . . . . 23
Types of Data . . . . . 23
Overview . . . . . 23
SET SECURITY . . . . . 23
SHOW SECURITY . . . . . 23
FUELING UNITS, TYPES AND TANKS . . . . . 24
SET FUELING UNITS . . . . . 24
SHOW FUELING UNITS . . . . . 24
SET FUELTYPE # . . . . . 24
SET PRODUCT CODE (#) . . . . . 26
SET TANK # . . . . . 27
SHOW TANK . . . . . 27
PUMP CONTROL TERMINAL . . . . . 28
CONFIGURE PCT # . . . . . 28
CONFIGURE PCT # POSITION # . . . . . 28
INSTALL PCT # POSITION # . . . . . 30
INSTALL PCT # . . . . . 31
REMOVE PCT # POSITION # . . . . . 31
REMOVE PCT # . . . . . 31
SHOW PCT # POSITION # and SHOW PCT # . . . . . 31
CONFIGURE PUMP # . . . . . 32
REMOVE PUMP # . . . . . 32
SHOW PUMP # . . . . . 32
FUEL ISLAND TERMINAL (FIT) . . . . . 33
CONFIGURE FIT # . . . . . 33
INSTALL FIT # . . . . . 34
REMOVE FIT # . . . . . 34
SHOW FIT # . . . . . 34
FIT DISPLAY PROMPTS/KEYBOARD RESPONSES . . . . . 35
Description . . . . . 35
FORMAT DISPLAY # . . . . . 35
Standard FIT Display . . . . . 36
Optional FIT Display . . . . . 36
SHOW DISPLAY # . . . . . 37
SHOW DISPLAY . . . . . 37
FORMAT KEYBOARD # . . . . . 37
SHOW KEYBOARD # . . . . . 38
RECEIPT FORMATTING . . . . . 38
Description . . . . . 38
FORMAT RECEIPT HEADER . . . . . 38

SHOW RECEIPT HEADER . . . . . 38
FORMAT RECEIPT TRAILER . . . . . 39
SHOW RECEIPT TRAILER . . . . . 39
FORMAT RECEIPT BODY . . . . . 39
SHOW RECEIPT BODY . . . . . 41
SET BONUS POINTS . . . . . 41
SHOW BONUS POINTS . . . . . 41
FORMAT RECEIPT BONUS POINTS . . . . . 42
SHOW RECEIPT BONUS POINTS . . . . . 42
TRANSACTION BUFFER . . . . . 43
SET TRANSACTION . . . . . 43
JOURNAL PRINTER . . . . . 45
SET JOURNAL . . . . . 45
SHOW JOURNAL . . . . . 45
RESTRICTIONS . . . . . 46
SET QUANTITY RESTRICTION . . . . . 46
SHOW QUANTITY RESTRICTION . . . . . 46
SITE IDENTIFICATION . . . . . 47
SET SITE ID . . . . . 47
SHOW SITE ID . . . . . 47
TIME AND DATE SETTINGS . . . . . 48
SET TIME CHANGE . . . . . 48
SHOW TIME CHANGE . . . . . 48
SET SYSTEM TIMES . . . . . 48
SHOW SYSTEM TIMES . . . . . 49
PASSWORD . . . . . 51
SET PASSWORD . . . . . 51
DUAL LANGUAGE . . . . . 52
Description . . . . . 52
SET LANGUAGE . . . . . 52

Operation . . . . . 56
OVERVIEW . . . . . 56
Description . . . . . 56
PHOENIX Backup and Restore PC Utility Program . . . . . 56
Modem Operation . . . . . 56
Computer Operations . . . . . 56
SYSTEM REPORT . . . . . 57
SYSTEM . . . . . 57
PUMP/FUEL REPORTS . . . . . 58
FUELTYPE # TOTALS . . . . . 58

PUMP # TOTALS . . . . . 58
CLEAR PUMP # TOTALS . . . . . 58
PCT # TOTALS . . . . . 59
CLEAR PCT # TOTALS . . . . . 59
TANK . . . . . 59
TRANSACTION REPORTS . . . . . 60
TRANSACTION ### . . . . . 60
TRANSACTIONS . . . . . 61
TRANSACTION SUMMARY . . . . . 61
DAY mmm dd,yyyy . . . . . 61
CLEAR TRANSACTIONS . . . . . 61
TRANSACTION SEARCHES . . . . . 62
SHIFTS . . . . . 64
SHOW SHIFT . . . . . 64
JOURNAL PRINTER LOCKOUT . . . . . 65
LOCK PRINTER . . . . . 65
IMMEDIATE OPENING AND CLOSING . . . . . 66
OPEN . . . . . 66
CLOSE . . . . . 66
ARITHMETIC . . . . . 67

Appendix A - Command Summary . . . . . 70

Appendix B - Configuration Worksheet . . . . . 78

Appendix C - FIT Prompts and Responses . . . . . 97

Appendix D - Memory Allocation . . . . . 99

Appendix E - Sample Receipt . . . . . 101

Appendix F - Modem Operation . . . . . 103
Passwords . . . . . 103
Calling a System2 Site . . . . . 103
Using System2 Modem to Dial Out . . . . . 105

Appendix G - Computer Interface . . . . . 107
Introduction . . . . . 107
Computer Format for Transaction Data . . . . . 107
Checksum . . . . . 112
COMPUTER Prefix . . . . . 115

Card/Account Records: Backup and Restore . . . . . 116
BACKUP and BACKUP card# . . . . . 116
RESTORE site id (/fields) (/checksum) . . . . . 117
Restoring Fields . . . . . 118
UPDATE site id (/fields) (/checksum) . . . . . 119
Configuration Data:Backup and Restore . . . . . 121
SYSBACKUP. . . . . 121
SYSRESTORE ####(#) . . . . . 121

Index . . . . . 123

Notes:

# Introduction

## HOW TO USE THIS MANUAL

### Notation

This manual is divided into four sections: Introduction, Configuration, Operation and Appendices.

### Introduction

This first section contains technical information about the system. This section should be read by installers and operators.

### Configuration

The Configuration section contains a Quick-Start guide, and also describes setting up the system for your needs: how many pumps, what type of products, how many cards, etc. This section should be read by operators.

### Operation

The Operation section details how to generate reports and poll transaction data. This section should be read by operators.

### Appendices

The Appendices contain specialized information about operation, including modem and external computer operation. This section should be read as needed.

*TO CONNECT THE CFN EARTH STATION TO THE FSC, SEE PAGE 7. FOR ALL OTHER FSC AND SYSTEM2 CONNECTIONS, SEE YOUR **SYSTEM2 INSTALLATION MANUAL**.*

# SYSTEM SPECIFICATIONS

**Power Requirements**
Standard: 120 VAC @ 50/60 HZ; 200 watts max
Optional: 240 VAC @ 50/60 HZ; 200 watts max

**Keyboard**
12-key weather-resistant

**Display**
alphanumeric backlit LCD
Standard: 1 line with 24 characters
Optional: 2 lines with 40 characters each (80 characters total)

**Pump Control**
3/4 HP; 120/240 VAC max.

**Terminal Port**
ASCII compatible; 7 data bits, even parity, 1 stop bit

**Card Reader**
Standard: magnetic, ABA track II
Optional: model KR-10, optical
Optional: model KR-16, optical (K-3000 compatible)

**Pulser Compatibility**
1 to 9999 pulses per units

**Receipt Printer** (*optional*)
22 column with plain paper and cutter

**Internal Modem**
(*both optional)*224A; up to 2400 baud; for remote programming
202T; 1200 baud; for Remote Slave units

**Office Journal Printer** (*optional*)
80-column desktop model

**Maximum Wiring Extension**All Slave units and peripherals (i.e., external printer, ASCII terminal, etc.) must be located within 2500' of the **System2** FSC

# SYSTEM DESCRIPTION

## Overview

After 30 years of researching, developing and manufacturing electronic fuel control systems, **Petro Vend, Inc.** is proud to present its latest achievement: **System2**. This all new system combines the cost-effective convenience and rugged durability of our earlier systems with the latest in multiprocessor computer technology. The result is a more flexible, more powerful tool for fuel management that is also easier to program and simpler to use.

**System2** is a card-activated system that requires a person to insert a valid card to pump fuel. For added security, the fueler can be required to enter a personal identification number, or "PIN," before pumping. For proprietary card users, prompts can be displayed in either of two languages and messages can be programmed for specific individuals.

**System2** records information for each transaction, including card, sequential transaction and pump and hose numbers; product type, quantity and price; and keyboard entries (for odometer readings and miscellaneous data). This information is formatted into reports that can be generated on demand. Because the price is recorded for each transaction, reports reflect exact dollar amounts.

**System2** requires only an ASCII terminal for programming and information retrieval. An IBM®-compatible personal computer or mainframe computer capable of ASCII communications can also be used to configure and operate the system. Data streams are available from the **System2** for incorporation into data processing programs.

**System2** is also capable of controlling dispensers of other products, such as oil and antifreeze. **System2** can also activate devices which can be electronically turned on and off, such as a gate opener and a car wash.

**System2** offers a wide variety of operational configurations, providing the maximum in versatility without requiring special programming or engineering changes. The system is also easy and economical to expand.

## Benefits

**System2** greatly increases the efficient management of fuel, vehicles and drivers. No attendant is necessary for pumping, supervision or recording. With the data gathered by the system, fleet supervisors can easily monitor vehicle performance accurately. Because no fueling slips are required, they can never be lost. And the odometer reasonability feature ensures reliable mileage data for tracking maintenance functions and wear parts replacements. The dual language and messaging features provide the maximum in communication with fuelers.

The increasing community acceptance of 24-hour unattended fueling sites allows oil marketers to capture a larger segment of their market with a **System2.** Service station owners can reduce their costs and turnover their receivables more quickly. They can also expand their clientele by accepting a larger variety of credit, debit and proprietary cards.

## Data Base

A data base is a collection of information. **System2** data base is composed of six types of information: operating system, configuration, transaction, card, account and messaging.

The operating system defines general system functions and is preprogrammed at the factory. The configuration data is the specific information programmed by the manager for an individual system, such as the number of pumps and the types of fuel dispensed.

The information recorded for each transaction includes card, sequential, transaction and pump and hose numbers; product type, quantity and price; and keyboard entries (for odometer readings and miscellaneous data). A "fixed length" format is used for all transaction records.

Each card that is used has its own individual record stored in the system. These records are collected into the card file.

The size of the card file is determined by the amount of data selected by the manager to be stored. The card records stored in the file can include account and PIN numbers, allocation and reasonability levels, product and quantity restrictions, etc. Once the file is defined, each card record is in a "fixed length" format. Note that because memory space is limited, the more options that are selected for the card file, the fewer records that can be stored.

Card records can also be grouped as accounts. An expiration date, name, monthly and daily allocations can be specified for each account. The lowest allocation applicable to a fueler is given precedence. For example, if an account allocation is exceeded, *all* cards for the account are prevented from fueling no matter what their individual allocation values are.

The operating system and configuration data require about 24 kilobytes of memory. The remaining memory is divided for the transaction, card/account and, optionally, the messaging data.

The manager enters the maximum number of transactions for **System2** to store. If the messaging feature is enabled, the maximum number of messages to be displayed is also entered. The remaining memory is allocated for the card/account records. See Page 99 for a memory allocation table.

The data base is electronically stored on Random Access Memory (RAM) chips located on the Fuel Site Controller board. An optional Expansion Memory board can also be included to increase the amount of memory in the system (see Figure 1:5b). Expansion boards are available in three sizes. The expanded memory is allocated for card records and transactions in the same manner as standard memory.

The details of using the **System2** data base are explained on Page 23.

## Communications

The Controller Access Port, or "CAP", links the **System2** unit with an ASCII terminal or computer. If a computer is connected, it must be either an IBM®-compatible personal computer or a mainframe computer which is capable of performing ASCII communication. In addition, the computer must run a "terminal emulation" program (to simulate the operations of an ASCII terminal). The terminal or computer can be located up to 2500 feet (760 m) away from the FSC unit using the standard RS-422 communication lines.

For off-site operation, the optional internal 224A modem allows complete control from a remote terminal or computer over standard telephone lines.

Petro-Net is the communication network that links the **System2** FSC to the FITs. Petro-Net uses RS-485 (2-wire twisted pair) communication lines.

## Operational Modes

**System2** has three modes of operation: "normal", "restricted" and "privileged." In the normal mode, the system can be interrogated for reports on card and transaction data and for operating features. However, no configuration data can be changed in this mode.

To safeguard the system, card, account and transaction data from unauthorized viewing, you may enable the restricted mode. In this mode, a password must be entered correctly before any information can be displayed or printed.

The privileged mode also requires a password to be accessed. In this mode, the manager is able to check or change the following configuration data:

(1) Current time and date
(2) Operational times (active, inactive, receipts only)
(3) Site identification number
(4) Fuel types
(5) Odometer reasonability
(6) Pump parameters (number, fuel type, time-outs, etc.)
(7) Quantity restrictions
(8) Display and keyboard prompts
(9) Receipt labels
(10) Card data (account number, expiration date, etc.)
(11) Messages

In this mode, a manager is also able to open and close the system immediately (allowing and disallowing fueling). In all three modes, commands can be abbreviated to speed entry. For example, the command `**SHOW TRANSACTIONS**' can be abbreviated as `**SH TRANS**'.

## Pump Control

A single FSC can simultaneously control up to 32 electronic or mechanical pumps.

Each pump can be programmed with its own set of operational features, including:

(1) Pump number
(2) Fuel type
(3) Pulses per fueling unit
(4) Maximum fueling quantity per transaction
(5) Pump state (active or inactive)
(6) Pump sentry
(7) Tank number
(8) Maximum fueling time
(9) Maximum time to activate pump handle
(10) Maximum time to detect the first pulse
(11) Maximum time between pulses ("missing pulse detector")

This information is explained in more detail beginning on Page 28.

## Cards

**System2** is activated through the use of ABA standard track II magnetic stripe cards. **System2** is capable of single and dual card operation and recognizes three distinct types of cards: single, driver and vehicle.

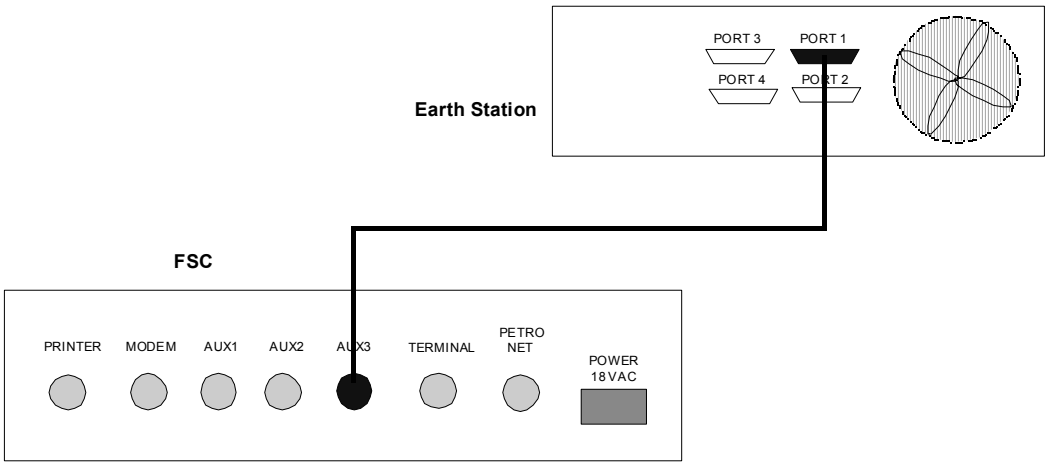
## Reports

**System2** can generate reports on its operational status, the pump totals, the fuel totals, the card totals, account totals and the transaction totals. Plus, searches for individual transactions (or groups of transactions) can be specified by the following items or any combination thereof:

(1) Date - on, before or after a specific date
(2) Time - at, before or after a specific time
(3) Card - specified by card number
(4) Vehicle - specified by vehicle card number
(5) Transaction - specified by number
(6) Account - specified by account number

## Earth Station Connection

**For satellite communication, connect the System2 FSC's AUX 3 port to the Earth Station's PORT 1 as shown below.**




**Use a DB-9 (Earth Station end) to BNC (FSC end) cable.**

**NOTE:** ***For all other FSC connections, please see your System2 Installation Manual.***

Notes:

# PART 2
## Configuration

Notes:

# Quick-Start

See the referenced pages for more information if needed.

1. **Enter the privileged mode** *(Passwords explained on Page 51)*

```
>hello
     ENTER MAIN PASSWORD: (default password is 'hello')
     HELLO!
```

2. **Set the date and time**: *(See Page 21)*

```
P>set date
     ENTER DATE (MMM DD, YYYY): oct 11,1996
     OCT 11,1996 12:05 AM
P>set time
     ENTER TIME (XX:XX AM/PM): 8:34 am
     OCT 11,1996 08:34 AM
```

3. **Set the batch parameters**:

```
P>set batch
     ENTER MAX # of TRANSACTIONS PER BATCH: 10
     ENTER TIME TO OPEN NEW BATCH: 12:00 am
     FORCE A BATCH TO 'CLOSED'(Y/N) Y
     RECO DATE:  JAN 01,1999          RECO INDICATOR: 1
     NUMBER OF TRANSACTIONS: 0      BATCH TOTAL: 0.000
    ** BATCH NOT CLOSED **

    --CLOSE THIS BATCH (Y/N)? Y
```

4. **Set up the host:**

```
P>set hst
     CONFIGURE HOST LINK (Y/N)? Y
     SATELLITE LINK (Y/N) Y
     CHANGE HOST DOWN AUTHs (Y/N)? Y
       ALLOW AUTHORIZATIONS IF HOST DOWN (Y/N)? Y
     PHONE #1: 9,950-5829
     PHONE #2: 9,950-5829
     PHONE #3: 9,1-800-589-1474
     CFN CARD ACCEPTOR NAME: PV-CFN
     CFN SITE #: 9999
     SET CARD EXPIRATION OPTION (Y/N)? Y
       CHECK CARD EXPIRATION DATE (Y/N)? N
```

```
     PROGRAM HOST TIME-OUT VALUES (Y/N)? N

     MAX CUSTOMER AUTH TIME (greater than 30 secs): 90
       MAX TIME BEFORE SENDING SALE TO HOST (mins): 60
       MESSAGE RESPONSE FROM HOST TIME-OUT (secs): 10
       MODEM RESPONSE TIME-OUT (secs): 25
       TIME DELAY AFTER CONNECT FAILURE (secs): 5
          # of FAILED DIAL-OUTS BEFORE CONNECT FAIL: 2

     ENABLE HOST PROCESSING / START BATCH (Y/N)?
```

*The host attempts to dial out and open a batch at this point. If an authorization attempt fails, system will locally authorize even if "Host Authorization Timeout" has NOT expired.*

5. **Do a Show Batch command** (displays information for last 8 batches):

```
P>show batch
     -MAX # of TRANSACTIONS PER BATCH: 10
     -TIME TO OPEN NEW BATCH: 12:00 AM
     RECO DATE: JAN 01,1997 RECO INDICATOR: 1
     NUMBER OF TRANSACTIONS: 0 BATCH TOTAL: 0.000
     ** BATCH NOT CLOSED **
     |
     |
     RECO DATE: JAN 02,1997 RECO INDICATOR: 1
     NUMBER OF TRANSACTIONS: 0 BATCH TOTAL: 0.000
     ** BATCH NOT CLOSED **
     |
     |
     RECO DATE: APR 2,1997 RECO INDICATOR: 3
     NUMBER OF TRANSACTIONS: 5 BATCH TOTAL: 24.995
     ** BATCH CLOSE ERROR: OUT OF BALANCE -NO MORE
     TRANSACTIONS TO SEND **
     ** HOST'S TRANS COUNT: 5 HOST'S BATCH TOTAL: 25.000 **
```

6. **Domestic card records? Set up as follows**:

```
P>set crd
     1 - SPECIFY CARD/ACCOUNT BUFFER SIZE
     2 - DELETE CARD/ACCOUNT BUFFER
     X - EXIT
     ENTER CHOICE: 1
     NOTE: TRANSACTION BUFFER WILL BE CLEARED !! (Y/N)? y
     ENTER SIZE CODE: 4
```

```
# OF CARDS : 1286
# OF TRANSACTIONS : 100
--SAVE THIS CONFIGURATION (Y/N)? y
1 - SPECIFY CARD/ACCOUNT BUFFER SIZE
2 - DELETE CARD/ACCOUNT BUFFER
X - EXIT
ENTER CHOICE: X
```

7. **Insert each domestic card # into database**:

```
P>insert card
     ENTER CARD #: 1161002001
     PIN #: 1234
     ENTER CARD #: 1161002002
     PIN #: 6789
     ENTER CARD #:
     SORT DONE
```

*This card will now be recognized as a domestic card.*

8. **Do a Show Transactions command to display host and domestic transactions:**
(See Page 43)

```
P>sh trans
     -SAVE UNAUTHZ'D USERS ALSO
     -TRANSACTION BUFFER SIZE: 100
     SEQUENCE #.............. 1
     REASON FOR TERMINATION.. NORMAL
     ACCOUNT................. 007759
     CARD#PID................ 161002001
     VEHICLE................. 0000
     DATE.................... OCT 11,1996
     TIME.................... 09:06 AM
     TRANSACTION #........... 1
     CARD #1................. 1161002001
     VEHICLE................. 0000
     FUELTYPE................ DIESEL
     PUMP #.................. 1
     QUANTITY................ 10.000 GALLON
     PRICE................... $0.000
     TOTAL................... $0.00
     ODOMETER................ 123456
     DISTANCE PER UNIT....... NOT AVAILABLE
     MANUAL ENTRY............ 987654
     RECEIPT................. NOT ISSUED
     NA...................... 0000
     HOST TRANSACTION DATA:
     HOST TRANSACTION...... APPROVED - CAPTURED BY HOST
     RECO DATE.............. OCT 11,1996
     RECO INDICATOR........ 1
     APPROVAL CODE......... 4194
     ACTION CODE........... 000
     SEQUENCE #.............. 2
```

```
REASON FOR TERMINATION.. NORMAL
ACCOUNT................. 007759
CARD#PID................ 161002001
VEHICLE................. 0000
DATE.................... OCT 11,1996
TIME.................... 09:09 AM
TRANSACTION #........... 2
CARD #1................. 1161002001
VEHICLE................. 0000
FUELTYPE................ DIESEL
PUMP #.................. 1
QUANTITY................ 10.000 GALLON
PRICE................... $0.000
TOTAL................... $0.00
ODOMETER................ 12321
DISTANCE PER UNIT....... NOT AVAILABLE
MANUAL ENTRY............ 1
RECEIPT................. NOT ISSUED
NA...................... 0000
HOST TRANSACTION DATA:
HOST TRANSACTION...... APPROVED - NOT CAPTURED BY HOST
RECO DATE.............. OCT 11,1998
RECO INDICATOR........ 1
APPROVAL CODE......... 4195
ACTION CODE........... 000
SEQUENCE #.............. 3
REASON FOR TERMINATION.. NORMAL
ACCOUNT................. 007759
CARD#PID................ 161002001
VEHICLE................. 0000
DATE.................... OCT 11,1996
TIME.................... 09:10 AM
TRANSACTION #........... 3
CARD #1................. 1161002001
VEHICLE................. 0000
FUELTYPE................ DIESEL
PUMP #.................. 1
QUANTITY................ 10.000 GALLON
PRICE................... $0.000
TOTAL................... $0.00
ODOMETER................ 123321
DISTANCE PER UNIT....... NOT AVAILABLE
MANUAL ENTRY............ 777777
RECEIPT................. NOT ISSUED
NA...................... 0000
```

```
     SELECT DOMESTIC CARD
     *** PRODUCT TOTALS ***
     DIESEL : QTY: 30.000 GALLON TOT: $0.00
     TRANSACTIONS: 3 GRAND TOTAL: $0.00
     AVERAGE: $0.00
```

**Additional *optional* SHOW TRANS commands:**

```
P>show trans reco=oct 11,1996 indicator
 (for batch transactions)
P>show trans domestic (for domestic card transactions)
```

**Additional *optional* CLEAR TRANS commands:**

```
P>clear trans domestic (clear out domestic transactions)
     --SURE (Y/N)? y
     CLEARED
P>clear trans host (clear out host transactions)
     --SURE (Y/N)? y
     --UNCAPTURED TRANSACTION, CLEAR IT (Y/N)? N
     CLEARED
P>SET TRANS
     SET WRAP AROUND OPTIONS ?
     -ENABLE WRAP AROUND ?
     RE-DEFINE TRANSACTION ?
     -TRANS = UNAUTHZ'D USERS ALSO ?
     SET ZERO QUANTITY OPTION ?
     -SAVE ZERO QUANTITY TRANSACTIONS ?
     SPECIFY DISPLAYED FIELDS ?
```

**Your system should now be up and running.**

# BASIC CONCEPTS

For your **System2** to operate the way you want it to, you first must tell it certain information.

The next several parts of this Configuration section describe how to enter data for the current time and date, the size of the system memory (RAM), cards, fueling units, fuel types and fuel tanks. Also described are how to configure and "install" (make operational) the PCT and FIT. These directions are mandatory for any kind of **System2** site.

The latter parts of the Configuration section explain the more advanced features, such as pump and quantity restrictions, and changing the password. These directions are optional and you need to follow only those directions that apply to your particular system.

A worksheet is provided as an appendix as a guideline for entering both mandatory and optional configuration data.

**It is strongly recommended that you read this section and record your choices on the worksheet before trying to configure the system.**

## Types of Commands

The **`SET', `FORMAT', `CONFIGURE', `INSTALL', `REMOVE'** and **`CLEAR'** commands are used to enter (and change) system information.

**`SHOW'** and **`PRINT'** commands are used to display information on the terminal monitor and printer, respectively. These commands are prefixes that are placed before the type of information to be displayed. For example, **`SHOW SYSTEM'** displays the current operational status of the system on the monitor. The command **`PRINT SITE ID'** prints the system identification number using the optional internal or external printer.

*Note that* **System2** *must be told what type of printer is connected before data can be printed.*

*The* `**DOWNLOAD**' command is used to install any new or changed data into the system. The `**HELP**' command displays a list of all commands. An Appendix on Page 70 also summarizes the commands.

## Syntax

The commands for each feature are listed in the left margin in capital letters. The `**#**' symbol indicates a number must be specified.

Commands can be abbreviated by eliminating vowels and shortening longer words. For example, `**SHOW SYSTEM**' can be abbreviated as `**SH SYS**'.

The **[ENTER]** or **[RETURN]** key must be pressed to send a command to **System2**.

Pressing the **[X]** key terminates a programming procedure in progress (such as displaying a large report). Pressing the **[Ctrl]** ("control") and **[X]** keys simultaneously aborts any command in progress and displays the system prompt.

## Default Values

Several features, such as fueltypes and system messages, have default values that are initialized on power-up and do *not* need to be entered. All default values are "factory-programmed," but you can reprogram them as you require.

## Terminal Operation

**System2** is operated from a standard ASCII terminal which usually consists of a keyboard for entering data and a monitor for displaying information. When first activating your terminal, press the **[ENTER]** key several times to display the normal system prompt `>'.

## Modem Operation

See Page 103 for information on operating your **System2** using modems.

## Computer Operation

To communicate with a PC, refer to Page 107 To: (1) to retrieve transaction data from **System2** in a concise, computer format; (2) to suppress responses from **System2** (which is necessary when transmitting configuration and operational commands from a computer program) and (3) to backup and restore card data.

## Normal Mode

There are two modes of programming operation for **System2**: normal and privileged. The normal mode is the default mode. This mode does *not* have to be enabled and no password is required. In the normal mode, all system, card, account and transaction data can be displayed and printed; all `**SHOW**' and `**PRINT**' commands are functional. The prompt for the normal mode is `>'. This prompt is displayed whenever the system is first powered up.

## Privileged Mode

To configure **System2**, the system must be in the "privileged" mode. To prevent unauthorized tampering with the system, a password is required.

To access the privileged mode, enter the command `**HELLO**' at the prompt. (If the restricted mode is enabled, you must first enter its password.) **System2** then prompts you to enter the privileged password. The initial password is also `**HELLO**'. For security, the password characters are *not* displayed when you type them. When the system is in the privileged mode, the `**P>**' prompt is displayed. All commands are functional in this mode.

To exit the privileged mode, enter the command `**BYE**'. Note that the system automatically exits from this mode if no keyboard entry is made for 10 minutes.

## Downloading Data

The `**DOWNLOAD**' command must be entered after all `**CONFIGURE**' and `**FORMAT**' commands (these are marked with a [D] in Appendices A and C). Until the `**DOWNLOAD**' command is entered, **System2** does *not* recognize these changes. When entering several downloadable commands, you do *not* have to enter the `**DOWNLOAD**' command until after the last command.

# TIME MEASUREMENT

## SET TIME

Enter the `**SET TIME**' command and you are prompted to enter the current time. Use the format: `**hh:mm am/pm**'. For example, 12:57 PM. If PM is *not* specified, AM is assumed by **System2**. When you press the **[ENTER]** key to complete the data entry, you also set the seconds to zero. The new time and current (or default) date are then displayed.

*Pressing the* **[ENTER]** *key without making a time entry leaves the current time unchanged.*

## SHOW TIME

This command displays the current time (and date) on the monitor and verifies your entry.

## SET DATE

When you enter this *privileged* command you are prompted to enter the current date. Use the format: `**mmm dd, yyyy**'. For example, `**JAN 21, 1998**'. Be sure to enter 4 digits for the year and to press the **[ENTER]** key afterward. The new date (and current time) are then displayed.

*Pressing the* **[ENTER]** *key without making a date entry keeps the current date.*

## SHOW DATE

This command displays the current date (and time) on the monitor.

# SYSTEM MEMORY (RAM)

## SET RAM

The next item to set when initially configuring your **System2** system is the size of the system memory.

The card file and transaction records are stored in Random Access Memory (RAM) chips. The standard memory chips are stored on the FSC board. An additional board with one of 3 grades of Expanded Memory (EM) can also be included with your system (see the Data Sheet packed with the system). Because you enter a code number for the memory grade, the memory for the system can be upgraded without any additional software changes.

Enter the *privileged* command `**SET RAM**'. You are prompted to enter the code appropriate for your system:

(0) 64 kilobytes [standard memory only]
(1) 320 kilobytes [Expanded Memory 1]
(2) 576 kilobytes [Expanded Memory 2]
(3) 832 kilobytes [Expanded Memory 3]

*These values represent the total system memory. For example, the EM1 board adds 256 kilobytes to the standard 64 kilobytes for a total of 320 kilobytes.*

Press the **[ENTER]** *key to keep the current code.* **System2** *does not allow you to enter a memory code unless there is sufficient RAM in the system.*

*The privileged prompt is lost if the system rejects a RAM entry; the password must be re-entered.*

*If the RAM size for your system is not known, the size can be determined by trial and error. Start by entering (3) and continue on down until* **System2** *accepts an entry.*

## SHOW RAM

This command displays the programmed memory configuration. This is *not* necessarily the actual system memory, but only what has been entered by the programmer.

# PROGRAMMABLE DATABASE

## Types of Data

A data base is a collection of information. The database is stored in a programmable "buffer," a kind of electronic storage space.

## Overview

PIN numbers for the cards are automatically generated by an algorithm in **System2**, using a "key" or code number. The default value of the key is 0203. To change this key, use the `**SET SECURITY**' command.

The next step is to divide the buffer into 2 sections: (1) transaction data and (2) card data (see Figure in the previous section). This is done using option #1 of the `**SET CARD BUFFER**' command.

Option #2 is used to program the keyboard entry options. Option #3 selects the keyboard access type.

## SET SECURITY

When you enter this *privileged* command, you are prompted with the message:

```
Present PIN generation key: 0203
Enter a new 4 digit key or press [RETURN] to exit:
```

At the prompt, enter a new key number or exit.

*If you are reconfiguring your system, or want to generate PIN numbers to match another* **System2***, the key numbers must match exactly.*

*PIN numbers are not stored in* **System2**. *Any changes in the security table immediately affect the PIN numbers and fueling access.*

## SHOW SECURITY

This command displays the current key number.

# FUELING UNITS, TYPES AND TANKS

## SET FUELING UNITS

Up to 3 different labels can be specified for the product-measuring units. Note that these are simply labels and no actual conversion is done. The default values are:

(1) gallon (2) liter (3) quart

The code numbers (1, 2 and 3) are used when setting the fuel types (see below).

To change the default values, enter the *privileged* command **`SET FUELING UNITS'**. You are then prompted for each of the 3 labels. Enter a label of up to 10 characters, or press the **[ENTER]** key for the default label.

## SHOW FUELING UNITS

This command displays the current fueling units.

## SET FUELTYPE #

You can specify the fuel units, prices and names for up to 16 different fuel types. These 16 types of fuel can also be assigned a new "product" number from 1 to 99. The product number can be used when setting the product code number (see below) or when configuring a PCT position. For example, if fueltype 1 has been renumbered as product 99, you can use either of the following commands: (1) **`SET FUELTYPE 1'** or (2) **`SET PRODUCT 99'**. Initially (and after a cold start), the fueltype numbers match the product numbers.

The default value for the units is code #1. The default value for the price is $1.000. The default names are:

| | |
|---|---|
| (1) DIESEL | (9) OIL BK |
| (2) REGULAR | (10) C-STORE 1 |
| (3) PREM LEAD | (11) C-STORE 2 |
| (4) UNLEAD | (12) C-STORE 3 |
| (5) MED-UNLEAD | (13) SOLVENT |
| (6) PREM-UNLEAD | (14) KEROSENE |
| (7) OIL QT | (15) PROPANE |
| (8) OIL GAS | (16) METHANE |

To change the default value(s) of a fuel type, enter the *privileged* command **`SET FUELTYPE #'**, where **`#'** is a number from 1 to 16. The current name and price per unit are displayed, along with the current fueling unit labels.

A fueling unit must be specified by the code defined above (1, 2 or 3). Each price can be specified to a tenth of a cent; for example, **`$1.059'**. A price of **`$0.000'** can be specified for non-retail sites. Each name can be up to 10 characters (numbers or letters) in length; for example, **`GASOLINE01'**.

For example, to change the name and price of fueltype 1, you would enter the following:

```
Display                                      Keyboard Entry
-------------------------------------------------------------
>                                            HELLO [ENTER]
>ENTER MAIN PASSWORD                         HELLO [ENTER]
P>                                    SET FUELTYPE 1 [ENTER]
P>SET FUELTYPE 1

1: DIESEL --PRICE PER GALLON 1.000
FUELING UNIT CODES
  1: GALLON
  2: LITER
  3: QUART

ENTER FUELING UNIT CODE (1-3)                1 [ENTER]
ENTER FUELING UNIT CODE (1-3) 1
CHANGE PRICE (Y/N)?                   Y [ENTER]
CHANGE PRICE (Y/N)? Y
ENTER PRICE PER GALLON:                      1.259 [ENTER]
ENTER PRICE PER GALLON: 1.259
CHANGE PRODUCT NAME (Y/N)?            Y [ENTER]
CHANGE PRODUCT NAME (Y/N)? Y
ENTER FUELTYPE 1:                     UNLED PREM [ENTER]
ENTER FUELTYPE 1: UNLED PREM
```

**!!! IMPORTANT !!!The current fuel price is recorded for every transaction. Changing the fuel price does *not* affect completed transactions.**

**SHOW FUELTYPE**This command displays the current fueltypes.

## SET PRODUCT CODE (#)

This *privileged* command is used to change the product authorization for each of the CFN code numbers (0-99). These codes are listed below.

Specify a number and the associated product code is displayed. When you finish defining a product authorization, you are prompted for the next product code number. For example,

```
SET PRODUCT CODE 1

Authorization combination code 1
Authorized product: 1,2,3,4,5,6
Change products (Y/N/X)? Y
Enter new products (1,2,...,16):1,2
Any more products for code 1 (Y/N)? N
Authorization combination code 2 (etc.)
```

*If you press `* **[ENTER]** *without an entry at the `* **ENTER NEW PRODUCTS'** *prompt, no products will be authorized for that code.*

### SHOW PRODUCT CODE (#)

This command shows the products for the CFN authorization codes. This data can also be printed. The table below lists the *default* (or initial) values.

```
AUTHORIZATION COMBINATIONS TABLE
-----------------------------------------------------------------
                    1111111111222222222233333333334444444444599999999
 # Name        012345678901234567890123456789012345678901234567890123456789012345678
-----------------------------------------------------------------
 1 Diesel      xxx    xx xx    xx xx   xx   xx   xxxxx   x  xx x x
 2 Regular     xx x x x xx x x x xx x  x x  x x  xxxx x  xxx
 3 Prem Lead   xx   x    x   x    x    x    x    xxxx    xxx
 4 Unlead      xx  x x xxx  x x xxx  xxx  xxx  xxxxxx    xxxx xxxx
 5 Mid-Unlead  xx    x   x    x   x   xx   xx   xxxxx    xxxxxxxxx      xx
 6 Prem-Unlead xx    x   x    x   x   xx   xx   xxxxx   xxxxxx         x

 7 Oil Qt      x         xxxxxxxxxxxxxxxxxxxxxxxxx   x     x     xx
 8 Oil Gal     x         xxxxxxxxxxxxxxxxxxxxxxxxx   x     x     xx
 9 Oil Bk      x         xxxxxxxxxxxxxxxxxxxxxxxxx   x     x     xx

10 C-Store 1   x                 xxxxxxxxxxxxxxx  xx
11 C-Store 2   x                      xxxxxxxxxx  x
12 C-Store 3   x                           xxxxx xx

13 Solvent     x                                              x
14 Kerosene    xxx    xx xx    xx xx   xx   xx   xxxxx   x  xx x x  x
15 Propane     x                                                x
16 Methane     x                                                  x
               -----------------------------------------------------------
                    1111111111222222222233333333334444444444599999999
               012345678901234567890123456789012345678901234567890123456789012345678
```

## SET TANK #

This *privileged* command is used to identify the fuel tanks and specify their initial quantities and fueltypes (using the code numbers listed above). When fuel is pumped, the amount is subtracted from the dispensing tank, providing a running inventory of the product.

A low level quantity can also be entered for each tank. When fuel drops below this level, the tank is "flagged" (or indicated) on the System Report.

***)))) NOTE ((((****The tank number will be specified for each pump when its PCT is configured.*

## SHOW TANK

This command displays the current fueltypes, product totals and low level quantities for all tanks.

# PUMP CONTROL TERMINAL

## CONFIGURE PCT #

Each **System2** FIT has a Pump Control Terminal (PCT) board to control pump operations. Each board must be uniquely numbered (#1 - #4). This number is determined by the setting of switch #1 on each PV-268 board (see Installation Manual.)

PCT operations can be emulated by a Universal Pump Controller (UPC). The ***UPC*** can connect up to four **System2** units to a self-service console.

This *privileged* command asks you whether the specified PCT is a ***UPC***. Answer `**Y**' (for yes) or `**N**' (for no) as appropriate. You are also prompted if you want to use hose restriction with the ***UPC.*** Answer `**Y**' (for yes) or `**N**' (for no) as appropriate. When configuring the PCT as a ***UPC***, be sure to refer to the ***UPC*** manual *before* proceeding with this section.

*If you want to reconfigure an installed PCT as a* ***UPC****, you must first remove the PCT using the command* `**REMOVE PCT #**'.

*When* **System2** *is "cold started," PCT #1 is automatically installed as not a* ***UPC****. A cold start is required: (1) when* **System2** *is first installed or (2) if both the power and battery fail, causing a complete data loss.*

## CONFIGURE PCT # POSITION #

Each PCT can control up to 8 pumps, located at positions #1 - #8. Use this *privileged* command to configure each PCT position.

The following "mandatory" items *must* be specified for each fuel pump. The "optional" items have default values that should be appropriate for most systems. Press the **[ENTER]** key at a prompt to enter a default value. To change a default value, simply enter the appropriate value at the prompt.

(Mandatory) **Pump #** • specifies the reference number for this PCT position (e.g. `**USE PUMP #12**'); note that this number is only a label and does *not* have to be the same as the PCT position number (default value = position number)

*You may assign the same pump number to more than one position on the same PCT. When that pump number is selected by a customer, all the associated positions are activated. For example, the number 22 could be assigned to both positions #1 and #2. A customer who wanted to fill the saddle tanks of a large truck could speed the process by using both pumps simultaneously. Because each PCT position records its own transaction, fuel accounting is always complete. In this example, 2 transactions would be recorded (one for each pump).*

(Mandatory)**Pulses per "unit"** • specifies the number of pulses per "unit" of fuel (usually gallons, liters or quarts); the unit that is prompted is the one associated with the fueltype just entered; for more detail about fueling units, refer to Page 24 (default value=100)

(Optional)**Max fuel per transaction** • limits the maximum fuel amount to be dispensed for any transaction; note that this is *not* the same as the quantity restriction feature (Page 46) or the daily or monthly allocations (default value = 10 units)

(Optional)**Enable/disable pump sentry feature** • specifies whether or not to de-activate the pump if there are 3 "zero quantity" transactions in a row; such an occurrence indicates a probable pump or pulser malfunction (default = *disabled*)

(Optional)**Max time for fueling** • specifies the maximum amount of time (in minutes) allowed for the user to fuel; time is measured from when the pump is first activated; power is automatically removed from the pump when the specified time is exceeded (default = 5 minutes)

(Optional)**Max time for pump handle** • specifies the maximum amount of time (in seconds) between pump activation and pump handle retrieval; the maximum value for this time is 180 seconds (default = 60 seconds)

(Optional)**Max time for first pulse** • specifies the maximum amount of time (in seconds) allowed to detect the first fueling pulse; the time is measured from when the pump handle is first retrieved; power is automatically removed from the pump when the specified time is exceeded (default = 60 seconds)

(Optional)**Max time between pulses** • specifies the maximum amount of time (in seconds) allowed between fueling pulses; this feature is also known as the `missing pulse detector;' power is automatically removed from the pump when the specified maximum time is exceeded (default = 60 seconds)

(Mandatory)**Fueltype Code #** • specifies the code number (1-16) of the fueltype to be dispensed (default value = position number)

(Optional)**Tank #** • specifies the tank number from which product will be pumped; a PCT position must be set up or the same fueltype as the tank from which product is drawn for the tank inventory data to be meaningful (default value = position number)

(Optional) **Clear hose totals** • specifies whether or not to clear the running pump totals (default = *no*)

(Optional) **Totalizer value** • specifies a number to match the totalizer counter on the pump face; this feature helps to track the amount of fuel dispensed by the pump and **System2** (default = 0)

When a PCT is configured as a ***UPC****, the last 4 prompts are repeated for up to 4 hoses*.

*You must enter the* **`DOWNLOAD'** *command after configuring a PCT*.

## INSTALL PCT # POSITION #

Each pump that was configured in the previous section must also have its position installed for the pump to operate as part of **System2**.

On a cold start (or initial power-up), positions #1 and #2 on PCT #1 are automatically installed.

Note that individual pump positions can be configured and kept nonoperative by *not* installing them.

*To clear the pump sentry alarm, re-install the pump position with the* **`INSTALL PCT # POSITION #'** *command.*

## INSTALL PCT #

This *privileged* command activates the specified PCT, establishing a communication link between the installed PCT and the FSC. There is a PCT for each **System2** FIT.

*After installing each pump position, the PCT(s) themselves must be installed in order for the pumps to operate as part of* **System2**. *(This command does not install all positions for a PCT.)*

*A PCT can be configured and kept nonoperative by not installing it.*

*On initial powerup, PCT #1 is automatically installed.*

## REMOVE PCT # POSITION #

This *privileged* command is used to remove a pump from the **System2** so that the pump can no longer be activated.

Note that all the programmed parameters for the pump remain intact; the position can be re-installed without needing reconfiguration.

## REMOVE PCT #

This *privileged* command stops the FSC from communicating with the specified PCT. All positions for the specified PCT are deactivated. Note that all the programmed parameters remain intact; the PCT can be reinstalled without needing reconfiguration.

## SHOW PCT # POSITION # and SHOW PCT #

These commands display the current PCT configuration.

## CONFIGURE PUMP #

This *privileged* command can be used to reconfigure a PCT position, using the assigned pump number as a reference. The same items are prompted as with the **`CONFIGURE PCT # POSITION #'** command.

## REMOVE PUMP #

This *privileged* command removes from operation *all* PCT positions associated with the specified pump number.

## SHOW PUMP #

This command is similar to the **`SHOW PCT # POSITION #'** command.

*The 3 pump commands listed above can only be used with PCT positions that have already been configured.*

# FUEL ISLAND TERMINAL (FIT)

## CONFIGURE FIT #

The FIT controls the card reader, keyboard, display and optional receipt printer. There is a FIT for each Master and Slave unit. The number of each FIT is determined by the switch settings on the PV-205 board. This *privileged* command defines how each FIT operates.

The first prompt is:

**ENTER PROMPT TIME-OUT CODE (1..9)**

You can enter a code for the time which all keyboard entry prompts will display. The prompt time-out codes are:

| Code | Time-Out | Code | Time-Out |
|---|---|---|---|
| 1 | 15 seconds | 6 | 40 seconds |
| 2 | 20 seconds | 7 | 45 seconds |
| 3 | 25 seconds | 8 | 50 seconds |
| 4 | 30 seconds | 9 | 55 seconds |
| 5 | 35 seconds | | |

The second prompt is:

**ISSUE RECEIPTS (Y/N)?**

Enter `**Y**' (for yes) to provide transaction receipts via the optional receipt printer or `**N**' for no. If you enter `**Y**', you will be prompted with a limit for a receipt to be printed. The limit is the number of days after a transaction, a fueler can receive a receipt. (Note `**0**' designates *no* limit).

**ENTER LIMIT TO RECEIVE RECEIPT IN DAYS (0..99):**

Also, you must also indicate whether or not to clear the receipt counter. This counter keeps a running total of all receipts issued to date. It can be used to keep track of the receipt paper and to indicate when the paper is running low.

The third prompt is:

**SPECIFY PCTs TO SHUT OFF ON E-STOP (Y/N)?**

Enter `**Y**' to select which PCTs will be turned off on when an Emergency Stop button is pressed. The default value is *all* PCTs. Enter `**N**' to display the next prompt without changing the specification.

The fourth prompt is:

**CLEAR CARD READER ERROR COUNTER (Y/N)?**

*This prompt is only displayed if the error counter is greater than zero.*

Enter `**Y**' to clear the counter. Enter `**N**' to keep the counter the same and to display the next prompt. This counter keeps a running total of the bad reads by the card reader. The system defines a bad read as one where the card reader cannot read a card correctly in three sequential attempts. Such a failure could indicate that the card reader needs cleaning.

The last prompt is:

**CHANGE FIT ACCESS TO PUMPS (Y/N)?**

Enter `**Y**' to change which pumps can be activated by the specified FIT. Enter `**N**' to leave the access unchanged and exit this command. If you enter `**Y**', you are prompted to enter the numbers of the valid pumps. The default value is *all* pumps valid.

***)))) NOTE ((((****You must enter the* `**DOWNLOAD**' *command after configuring a FIT.*

## INSTALL FIT #

This *privileged* command activates the specified FIT, establishing a communication link between the installed FIT and the FSC. Note that there is a FIT for each **System2** FIT.

On initial power-up, FIT #1 is automatically installed.

## REMOVE FIT #

This *privileged* command stops the FSC from communicating with the specified FIT.

## SHOW FIT #

This command shows how the specified FIT is currently configured.

This is the end of the mandatory directions.

The following parts of the Configuration Section describe the advanced features of the ***System2.*** You are *not* required to use these functions for normal system operation.

**Do *not* try to configure any of the advanced features until you have successfully completed the basic configuration.**

# FIT DISPLAY PROMPTS/KEYBOARD RESPONSES

**The current CFN card format does *not* support the Dual Language feature of System2.**

## Description

The FIT display prompts (see Page 97) are shown on the **System2** unit(s) at various times to guide a customer through the fueling process. These prompts can be changed with the **`FORMAT DISPLAY #'** command. With the dual language feature enabled, additional prompts can be added for proprietary customers.

There are two types of FIT display hardware:
(1) Standard: one line with 24 characters;
(2) Optional: two lines with 40 characters each (80 characters total).

*The type of FIT display is listed in the Status Report.*

*Only the text of a prompt is changed, not its function. For example,* **`INSERT CARD'** *can be effectively changed to* **`PUT IN CARD'** *but not* **`ENTER CURRENT TIME'**.

## FORMAT DISPLAY #

Specify the number of the FIT display prompt to edit with this *privileged* command. When the dual language feature is enabled, the system asks you to edit a display prompt for each language.

The entry for a display prompt is "case-sensitive;" that is, upper and lower case letters are distinguished. In addition to numbers and letters, you may also enter most printable characters, such as **`!'**, **`?'** and **`$'**. You may also add the **'}'** character to any **System2** message. This will cause an audible tone to sound when the message is displayed.

The details for this command are explained in the following 2 sections, one for each type of hardware. Follow the section appropriate for your system.

*Prompts #6 and #7 alternately display when prompting for a receipt.*

*Prompts #8 and #9 alternately display while* **System2** *is waiting for a customer. If prompts #8 and #9 are short enough, (6 characters less than the display length), the current time is also shown.*

*You must enter the* **`DOWNLOAD'** *command after formatting a display prompt. When formatting more than one prompt, you need to enter the* **`DOWNLOAD'** *command only once after editing the last prompt.*

## Standard FIT Display

After specifying the display number, you are shown the current prompt and 2 vertical lines. These lines represent the width of the FIT display (24 characters). The new prompt must fit within the space under the 2 vertical lines. Enter the new prompt and press **[ENTER]** to complete the entry. (You may also press **[ENTER]** *without* an entry to retain the current prompt.) When the dual language feature is enabled, you are then requested to enter a prompt for the second language. You may enter a second prompt or press **[ENTER]** to end the command. To format another prompt, you must re-enter the command.

*The* **System2** *unit shows the display prompt in the second language only after a card has been correctly read (the language type is part of the card record). Because prompts #2 - #9, #24 - #26 and #35 are displayed before a card has been correctly read, these prompts should not be programmed for a second language.*

## Optional FIT Display

When you specify the display number with the dual language feature *disabled*, you are shown the current prompt and 2 vertical lines. These lines represent the width of the FIT display (40 characters). One line of the new prompt must fit within the space under the 2 vertical lines. Enter the new prompt and press **[ENTER]** to complete the entry for the first line. (You may also press **[ENTER]** *without* an entry to retain the current prompt.) You may then enter a second line for the prompt; or press **[ENTER]** *without* an entry to end the command. To format another prompt, you must re-enter the command.

When you specify the display number with the dual language feature *enabled*, you are shown the display prompts for both languages (the second language prompt is initially blank). With the dual language feature *enabled*, **System2** has the capacity for up to 10 two-line prompts; the remaining prompts are limited to one line each. When the prompts are single line, the message **`Insert a 2 line display message (Y/N)?'** is then shown. (Both language prompts are initially single line.) When the prompts have 2 lines, the message **`Current display is 2 lines, change to 1 line display (Y/N)?'** is shown instead. Enter **`Y'** (for

yes) or `**N**' (for no) as appropriate. Two vertical lines are then displayed. These lines represent the width of the FIT display (40 characters). One line of the new prompt must fit within the space under the 2 vertical lines. Enter the new prompt and press **[ENTER]** to complete the entry for the first line. (You may also press **[ENTER]** *without* an entry to retain the current prompt.) When entering a two-line prompt, you are then asked to enter the second line. To format another prompt, you must re-enter the command.

*The* **System2** *unit shows the display prompt only in the second language after a card has been correctly read (the language type is part of the card record). Because prompts #2 - #9, #24 - #26 and #35 are displayed before a card has been correctly read, the optional display shows prompts for both languages (when the dual language feature is enabled). Therefore, these prompts should be single line only.*

## SHOW DISPLAY #

This command shows the current specified FIT display prompt. When the dual language feature is enabled, both prompts are shown.

## SHOW DISPLAY

This command shows all current FIT display prompts. When the dual language feature is enabled, prompts for both languages are shown. Press any key (except the **[X]** key) to stop and start the scrolling. Press the **[X]** key to exit this command.

## FORMAT KEYBOARD #

When the **[YES]** and **[NO]** keys are pressed (in answer to a prompt on the **System2** display), the corresponding response (`**YES**' or `**NO**') is displayed.

This *privileged* command can be used to change the response that is displayed when one of these keys is pressed. The response can be up to 8 characters. To format the `**NO**' response, specify `**1**' for the keyboard number; to format the `**YES**' response, specify `**2**' for the keyboard number. For example, the response for the **[YES]** key can be changed to `**OKAY**'. Note that the function of the keys can *not* be changed.

*If the dual language feature is enabled, each keyboard response has 2 parts. The first part is Language 1; the second part is Language 2. You are requested to enter a keyboard prompt for each language.*

*The* `**DOWNLOAD**' *command must be entered to activate a keyboard response.*

## SHOW KEYBOARD #

This command displays the specified keyboard response.

# RECEIPT FORMATTING

**The current CFN card format does *not* support the Dual Language feature of System2.**

## Description

The current time and date are automatically included on every receipt. The header and trailer (or bonus points) messages are automatically printed in expanded format. The receipt body can be set up with the fields in any order. The receipt size is *not* fixed in length and can have as many or as few lines as necessary.

The following commands are used to add or change the information included on each receipt. If the dual language feature is enabled, receipts can be issued in either language.

## FORMAT RECEIPT HEADER

A message can be programmed to print at the beginning of each receipt. It is automatically printed in the expanded mode. When you enter this *privileged* command, you are prompted for the receipt you wish to format. Enter `**1**' for language 1, `**2**' for language 2 or `**N**' for network.

You are then prompted for up to 4 lines of up to 11 characters each. Red or black print can be specified for each line. If less than 4 lines is desired, press the **[ENTER]** key at the first prompt after the last line was entered.

*To format proprietary receipt headers for both languages, you must enter this command twice.*

## SHOW RECEIPT HEADER

This command shows the current receipt headers.

## FORMAT RECEIPT TRAILER

This *privileged* command programs a message to print at the end of each receipt. The format is the same as for the header.

## SHOW RECEIPT TRAILER

This command shows the current receipt trailers.

## FORMAT RECEIPT BODY

For proprietary transactions, you can define what transaction data are to be printed on the receipt and in what order. The first 10 character positions of a line (the field entry) are filled by you. You can then specify a receipt code to print data from the transaction or card file on the same line. (These codes are listed below.)

When you enter this *privileged* command, you are prompted:

**ENTER (Show, Delete, Insert, eXit, Line #):**

You may select one of these functions by entering the capitalized letter of its name. For example, to exit this command, you would press the **[X]** key, then press the **[ENTER]** key. If the dual language feature is enabled, *both* sets of field entries are affected by the functions. The functions are described below:

### Show

The show command allows you to display the current data of the receipt body.

### Delete

The delete command allows you to remove a line in the receipt body.

### Insert

Insert another line into the body.

### eXit

The exit command ends this function.

### Line #

This is a prompt for a valid line number to edit. The label and code items can be modified.

The following is a list of the receipt codes:

| Transaction Data | Receipt Code |
|---|---|
| Number of card 1 | 1 |
| Number of card 2 | 2 |
| Transaction number | 3 |
| Product name | 4 |
| Quantity dispensed | 5 |
| Price per unit | 6 |
| Total price | 7 |
| Card #PID | 8 |
| Vehicle name | 9 |
| Company/Account name | 10 |
| Site ID | 11 |
| Miscellaneous | 12 |
| Current odometer reading | 13 |
| Miles per gallon | 14 |
| Liters per 100 kilometers | 15 |
| Pump number | 16 |
| Account # | 17 |
| Batch Information | 18 |

## SHOW RECEIPT BODY

This command displays the current receipt body. If the dual language feature is enabled, both sets of messages are shown. The initial receipt body is shown below. (Initially, the messages for language 2 are blank.)

| Line # | Language 1 | | Code |
|---|---|---|---|
| 1 | >CARD # | < | > 1< |
| 2 | >VEHICLE # | < | > 2< |
| 3 | >TRANS # | < | > 3< |
| 4 | >PRODUCT: | < | > 4< |
| 5 | >QUANTITY: | < | > 5< |
| 6 | >PR/UNIT:$ | < | > 6< |
| 7 | >TOTAL: $ | < | > 7< |
| 8 | >CARD#PID | < | > 8< |
| 9 | >VEHICLE: | < | > 9< |
| 10 | >ACCT.NAME | < | >10< |
| 11 | >SITE I.D. | < | >11< |
| 12 | >MAN ENTRY: | < | >12< |
| 13 | >ODOM: | < | >13< |
| 14 | >M.P.G. | < | >14< |
| 15 | >LPHKM | < | >15< |
| 16 | >PUMP #: | < | >16< |
| 17 | >NA: | < | >17< |

*Lines #10, #14, #15 and #17 are <u>not</u> functional in the CFN* **System2**.

## SET BONUS POINTS

This *privileged* command allows you to specify a "coupon" value (based on the amount of fuel dispensed) to be printed on each receipt. A Bonus Points message can also be specified (see below).

## SHOW BONUS POINTS

This command displays the current bonus points.

## FORMAT RECEIPT BONUS POINTS

With this *privileged* command, you can program an alternate message to print instead of the receipt trailer when the bonus points feature is enabled. The format is the same except that the `#' character can be inserted into the bonus points message. The `#' character causes the number of bonus points for a transaction to be printed at that position.

## SHOW RECEIPT BONUS POINTS

This command shows the current bonus points message.

# TRANSACTION BUFFER

## SET TRANSACTION

The transaction buffer is a kind of electronic storage space where the data from each transaction is recorded. The "wrap around" feature of this command allows you to select whether or not you want **System2** to overwrite old data. The size of this buffer is set when the card buffer size is defined (Page ?).

This *privileged* command specifies how the transaction buffer is to be configured. The first option is:

**CHANGE WRAP AROUND SPECS (Y/N) ?**

Entering `N' (for no) prompts the next option. Entering `Y' (for yes) prompts one of the following messages (depending on its current configuration):

**ENABLE WRAP AROUND**
***or***
**DISABLE WRAP AROUND**

Enter `Y' (for yes) or `N' (for no) as appropriate.

When the wrap around feature is enabled, **System2** overwrites (and destroys) the oldest transactions when the buffer is full. When this feature is disabled, transactions can *not* be overwritten; *no* fueling is allowed while the buffer is full .

***Do <u>not</u> enable the wrap around feature unless you are certain that transaction data will not be accidentally destroyed.***

The next option is:

**RE-DEFINE TRANSACTION (Y/N) ?**

Entering `N' prompts the next option. Entering `Y' prompts:

**TRANSACTION = UNAUTHORIZED USERS ALSO(Y/N)?**

Entering **`Y'** causes the system to process an unauthorized attempt to use the system as a transaction and log the event in the transaction buffer; this can help you to determine the reason for a denial of network access. Entering **`N'** causes the system to ignore any unauthorized users and events; only instances where a pump was actually activated by **System2** are recorded. The third option prompted is:

**SPECIFY DISPLAY FIELDS (Y/N) ?**

This allows you to specify which transaction data fields are to be displayed with the **`SHOW TRANSACTIONS'** and **`PRINT TRANSACTIONS'** command. Entering **`Y'** causes the system to prompt for the fields one at a time. Entering **`N'** exits the command. These prompted fields are:

ACCOUNT, CARD#PID, VEHICLE
DATE & TIME
CARD #
VEHICLE #
FUELTYPE
PUMP
QUANTITY
PRICE
TOTAL
ODOMETER
DISTANCE PER UNIT
MANUAL ENTRY
RECEIPT STATUS
NA

Those fields that are chosen to be displayed are also those that are used by the computer format (see Page 107). Note that *all* of the fields are saved in a transaction record.

*The* **`ACCOUNT, CARD# PID, VEHICLE'** *field contains three parts of 9 characters each.*

*If access was denied to a fueler, only the first 4 fields and the transaction number are recorded for that transaction.*

*There must be at least one transaction recorded in your system in order to show all the data fields.*

*The CFN* **System2** *reserves space in the transaction record for* **`DISTANCE PER UNIT'** *and* **`NA'**, *but these fields are always padded with zeros.*

# JOURNAL PRINTER

## SET JOURNAL

A journal printer can be connected to **System2** to make a hard copy of all transaction data. This copy provides added protection against data loss.

For each transaction, the journal printer records the transaction, pump and product numbers, the date and time, the first card number, the product quantity and dollar total.

**System2** can be configured with this *privileged* command to operate with an external ("office") journal printer or with no journal printer. Note that you can *not* have *both* an internal *and* an external journal printer.

You can also specify which (if any) of the following items are to be logged on the journal: (1) the number of the vehicle card, (2) the account, card#pid and vehicle numbers, and (3) the odometer entry and the manual entry.

You can also specify if **System2** should allow fueling if the journal printer is *not* functioning.

*Printer communication is "blocked" if an error, such as running out of paper, occurs. After correcting the error, you must unblock the communication with this command. When printer communication is blocked, this command prompts you to unblock it.*

## SHOW JOURNAL

This command shows how the printer (if any) is configured.

# RESTRICTIONS

## SET QUANTITY RESTRICTION

For *proprietary* transactions, you can specify up to 15 different levels of quantity restriction with this *privileged* command.

The quantity restrictions can be either dollar amounts or volume (gallons, liters or quarts). The restriction codes (0 - 9) are used when configuring the card/account files to indicate the maximum amount of product a user/account is allowed per transaction. This value is often set to match a vehicle's tank size. The default values are:

| | |
|---|---|
| 0: $999 | 5: $50 |
| 1: $10 | 6: $75 |
| 2: $20 | 7: $100 |
| 3: $30 | 8: $250 |
| 4: $40 | 9: $500 |

When you enter this command, you are prompted for each of the code numbers. Press **[ENTER]** (*without* an entry) to select the default value; or enter a different value. After the last entry, you are prompted with one of the following messages (depending on the current configuration):

**-USE VALUES AS QUANTITIES (Y/N)?**
***or***
**-USE VALUES AS $ (Y/N)?**

Enter `**Y**' to use the values as indicated in the message; enter `**N**' to use the values as the opposite.

*The quantity values represent gallons, liters or quarts, depending on the product configuration.*

## SHOW QUANTITY RESTRICTION

This command displays the restrictions and the type of values (dollar or quantity).

# SITE IDENTIFICATION

## SET SITE ID

With this *privileged* command, you can enter a 12-character alphanumeric code to distinguish each site in a multi-site system. This code can be printed on receipts (see Page 38). The code is also used to identify the site during backup and restore operations with an external computer (see Page 107).

The code must be exactly 12 characters long; for example, `**STATION12345**'. The code can include spaces *except* for the first position.

## SHOW SITE ID

This command displays the current site ID.

# TIME AND DATE SETTINGS

## SET TIME CHANGE

This *privileged* command allows you to compensate for daylight savings time, you can specify dates for moving the internal clock forward and backward an hour (at 2:00 AM). Once the time change has occurred, the specified date becomes inactive. Note that the system must be powered up at the time for this feature to work.

The format for entry is: **`mmm dd, yyyy'**; for example, **`FEB 15, 1998'**.

## SHOW TIME CHANGE

This command displays the current dates for the time change.

## SET SYSTEM TIMES

This *privileged* command prompts for the 3 system times and the time adjust feature. You can select any or all of them.

Three operational times can be set for **System2**. The entry format is: **`hh:mm am/pm'**; for example, **`1:59 AM'**. If **`PM'** is *not* specified, **`AM'** is assumed by the system.

The **`SYSTEM ON TIME'** specifies when **System2** goes active. When the system is on, it displays messages, accepts card insertions and keypad entries.

The **`SYSTEM OFF TIME'** specifies when the system goes inactive. No new transactions are allowed to begin, but any transactions in progress are allowed to finish.

The **`RECEIPTS ONLY TIME'** specifies when the system allows no new transactions to begin, but does allow "just completed" customers to get their receipts. This time would typically precede the **`SYSTEM OFF TIME'** by several minutes.

For example, a gas station that dispenses fuel from 9:00 AM until 7:00 PM would have the **`SYSTEM ON TIME'** set to 9:00 AM, the **`SYSTEM OFF TIME'** set to 7:10 PM and the **`RECEIPTS ONLY TIME'** set to 7:00 PM.

The `**TIME ADJUST**' feature allows a software adjustment to the internal time clock. In the rare event of a noticeable time drift, a number of seconds can be added to or subtracted from each day, until a proper hardware adjustment can be made.

## SHOW SYSTEM TIMES

This *privileged* command displays the current system times.

**Date Formatting**

The date appears on the monitor and on receipts from the optional printer. The date format has three features.

1)**Label:** With the dual language feature activated, you may enter a 3-character label for each month in each language. The default values for the labels are listed below:

| Month | Language 1 | Language 2 |
|---|---|---|
| 1 | JAN | 01 |
| 2 | FEB | 02 |
| 3 | MAR | 03 |
| 4 | APR | 04 |
| 5 | MAY | 05 |
| 6 | JUN | 06 |
| 7 | JUL | 07 |
| 8 | AUG | 08 |
| 9 | SEP | 09 |
| 10 | OCT | 10 |
| 11 | NOV | 11 |
| 12 | DEC | 12 |

2)**Order:** You may also choose between day first or month first for the date order. The default order for language 1 is month first; the default order for language 2 is day first.

3)**Separators:** The field separators distinguish the parts of the date. You may use any printable ASCII character. The default value for language 1 is a space and a comma. For example, `**DEC 30,1990**'. The default value for language 2 is 2 dashes. For example, `**30-12-1990**'.

**FORMAT DATE**When you enter this *privileged* command you are prompted with the following:

**ENTER (Show, Order, sEparator, eXit, Month #):**

Press one of the capitalized letters to select a function; then press the **[ENTER]** key.

**Show**
This function shows the current data.

**Order**
This function toggles between the 2 order formats (month first or day first).

**sEparator**
This function is used to select the 2 separator characters for the fields.

**eXit**
This function ends the command.

**month #**
This function changes the label(s) for the selected month (enter the month number).

# PASSWORD

## SET PASSWORD

This *privileged* command changes the privileged mode password and modem password.

Initially, both passwords are `**HELLO**'. Note that the passwords do *not* have to be changed.

To change any or all passwords, enter `**SET PASSWORD**'. The system prompts first for the main (or privileged mode) password. Enter up to 6 numbers and/or letters for the new password (or press the **[ENTER]** key to retain the old password).

The system then prompts for the modem password. Enter up to 6 numbers and/or letters for each. The passwords are *not* "case-sensitive;" that is, the system does *not* distinguish between upper and lower case letters.

***Be sure to record and safely store the new passwords. They can be recalled from the system only with factory authorization.***

# DUAL LANGUAGE

***The current CFN card format does not support the Dual Language feature of System2.***

## Description

The dual language feature enables **System2** to communicate with *proprietary* customers in either of 2 languages.

When a proprietary card is inserted (and properly read), the display prompts and receipt messages (from the optional printer) are in the language appropriate for the customer.

*For details about programming cards, refer to the* **`INSERT CARD'** *command.*

## SET LANGUAGE

This *privileged* command turns the dual language feature ON (enabled) or OFF (disabled). If this feature is *disabled*, only Language 1 is used.

Notes:

# Part 3
# Operation

Notes:

# Operation

## OVERVIEW

### Description

This section describes the 4 types of reports available from the **System2** Fuel/Pump, Card and Transaction. Also described are the commands for Transaction Searches, Shift, Journal Printer Lockout, Immediate Opening and Closing, and Arithmetic.

**Syntax**The commands are printed below in the left margin in capital letters. To send information to a printer, use the `**PRINT**' prefix. To send the information to a monitor, use the `**SHOW**' prefix.

When a large report is sent to the monitor, the information scrolls across the screen. The scrolling can be stopped at any point by pressing any key (except the **[X]** key). The scrolling can be started again by pressing any key. Pressing the **[X]** key terminates the current procedure. Pressing the **[Ctrl]** ("control") and **[X]** keys simultaneously aborts any command.

### PHOENIX Backup and Restore PC Utility Program

This optional software package for IBM®-compatible PCs is designed to minimize the loss of card record data (and system downtime) due to the accidental corruption or destruction of the memory **System2**.

### Modem Operation

See Page 103 for modem operation.

### Computer Operations

See Page 107.

# SYSTEM REPORT

## SYSTEM

This command displays the current operational condition of the system. Be sure to use the **`PRINT'** or **`SHOW'** prefix when executing this command. This command is *not* privileged.

**FSC Software Version Number**

**Checksums**
-Lists the result of the calculation that is done on the FSC EPROMs to ensure the integrity of the program

**Display Type**
- 1 X 24 1 line with 24 characters
- 2 X 40 2 lines with 40 characters each

**Date and Time**

**State of the System** (ON, OFF or RECEIPTS ONLY)
Installed FITs
-Status of each FIT (running or down)
-Number of receipts issued to date per FIT
-Receipt printer errors (paper jam, etc.) per FIT

**Installed PCTs**
-Installed positions
-Pump sentry alarm: a position number in parentheses indicates a pump that has automatically been put out of service by System2

**Low Tanks**
-Lists the numbers of the tanks that have gone below their programmed low levels

**Power Failures**
-Lists the dates and times of the last four power failures

*When you warm start the system after changing EPROMs, you may be prompted with the message:* **`BAD CHECK SUM, CLEAR ERROR (Y/N)?'**. *This usually is not an indication of a problem and can simply be cleared.*

# PUMP/FUEL REPORTS

Use the commands listed below (with either the `**PRINT**' or `**SHOW**' prefix) to display information. These commands are *not* privileged.

Also listed are the `**CLEAR**' commands which erase data from the **System2** data base. These commands are privileged.

## FUELTYPE # TOTALS

This command totals all pumps with the same fueltype and displays the results. For example,

```
>PRINT    FUELTYPE    1
TOTALS

UNLEADED      QTY:  89.6
GALLON
```

## PUMP # TOTALS

This command displays the totals for the specified pump and the totalizer value. For example,

```
>SHOW PUMP 1 TOTALS

TOTALS:       89.6
TOTALIZER: 24239.6
```

## CLEAR PUMP # TOTALS

This command clears the pump totals.

## PCT # TOTALS

This command displays the totals and totalizer values for *all* the pumps connected to the specified PCT. For example,

```
>SHOW PCT 1 TOTALS

PUMP #1
  TOTALS: 309.3
  TOTALIZER: 23434.6

PUMP #2
  TOTALS: 432.2
  TOTALIZER: 16942.2
```

## CLEAR PCT # TOTALS

This command clears the PCT totals.

## TANK

This command displays the tank numbers, the fueltypes, current quantities and low level alarm quantities for each tank. For example,

```
>PRINT TANK

TANK #1  UNLEADED  QUANTITY:  8769.0  LOW LEVEL:  500.0
TANK #2  PREMIUM   QUANTITY:  2345.6  LOW LEVEL:  500.0
TANK #3  REGULAR   QUANTITY:  4435.0  LOW LEVEL:  500.0
TANK #4  SUPER     QUANTITY:  3452.2  LOW LEVEL:  250.0
TANK #5  REGULAR   QUANTITY:  1234.5  LOW LEVEL:  250.0
TANK #6  PREMIUM   QUANTITY:  2323.4  LOW LEVEL:  250.0
TANK #7  LUBEOIL   QUANTITY:    45.6  LOW LEVEL:   25.0
TANK #8  UNLEADED  QUANTITY:     0.0  LOW LEVEL:    0.0
```

# TRANSACTION REPORTS

**Commands**Use the commands listed below (with either the `**PRINT'** or `**SHOW'** prefix) to display information. These commands are *not* privileged.

Also listed are the commands to clear data from the **System2** data base. These commands are privileged.

## TRANSACTION ###

This command shows the specified transaction information. The type of information displayed depends on which items were selected when the `**SET TRANSACTION'** command was entered. For example,

```
>PRINT TRANSACTION 123
   -ALLOW WRAP AROUND
   -SAVE UNAUTHZ'D USERS ALSO
   -TRANSACTION BUFFER SIZE: 25

 SEQUENCE #: 123
 REASON FOR TERMINATION: NORMAL
 ACCOUNT 011111
 CARD#PID: 000100001
 VEHICLE: 1111
  FEB 22, 1998   07:11 PM
 TRANSACTION #: 123
 CARD #:000100
 VEHICLE: 1111
 FUELTYPE: UNLEADED
 PUMP #: 3
 QUANTITY: 25.000 GALLON
 PRICE: $1.000
 TOTAL: $25.00
 ODOMETER: 66555
 DISTANCE PER UNIT: NOT AVAILABLE
 MANUAL ENTRY: 1234567890
 --RECEIPT ISSUED
 NA: 0000
```

*The Reason for Termination codes appear on Page 111.*

## TRANSACTIONS

This command displays all the transactions in the buffer. The data are shown in the same format as the previous command. Pressing any key (except the **[X]** key) stops and starts the scrolling. Press the **[X]** key to abort this command.

## TRANSACTION SUMMARY

This command displays only the product totals without listing all the transactions. For example,

## DAY mmm dd,yyyy

**DAY**The first command displays the amount of each product dispensed, the number of transactions, the grand total of product dispensed, the total dollar amount and the cost of the average transaction for the specified day. The second command shows the same information for the current day.

For both commands, you are also prompted to change the shift. Enter `**N**' (for no) at the prompt if you only wanted to check the data listed above. Enter `**Y**' (for yes) if you want to begin a new shift.

### CLEAR TRANSACTIONS mmm dd, yyyy SEQUENCE #

This command clears all transactions that occurred up to and including the specified transaction on the specified date.

## CLEAR TRANSACTIONS

This command clears all transactions. To ensure that you do *not* clear transactions accidentally, the system prompts you a second time before clearing the transactions.

*You can not clear transactions in the middle of the buffer.*

# TRANSACTION SEARCHES

**Commands.** Use the display commands below (with either the `**PRINT**' or `**SHOW**' prefix) to display information. These commands are *not* privileged.

The search commands are used to find and display specific transactions. These commands can be combined using the word `**AND**'. For example, the combined commands `**SHOW TRANS WHERE DATE=JUN 1,1988 AND TIME<5:00PM**' find and display all the transactions on the specified date before the specified time.

**TRANSACTIONS WHERE DATE = mmm dd, yyyy [on]**
**TRANSACTIONS WHERE DATE < mmm dd, yyyy [before]**
**TRANSACTIONS WHERE DATE > mmm dd, yyyy [after]**

These commands find and display transactions (if any) that occurred on, before and after the specified date.

**TRANSACTIONS WHERE TIME = hh:mm am/pm [at]**
**TRANSACTIONS WHERE TIME < hh:mm am/pm [before]**
**TRANSACTIONS WHERE TIME > hh:mm am/pm [after]**

These commands find and display transactions (if any) that occurred at, before and after the specified time.

**TRANSACTIONS WHERE CARD = #**

This command displays all transactions for the card(s) beginning with the specified digits. To display transactions for a particular card, specify all the digits; for example, `**SHOW TRANSACTIONS WHERE CARD = 12345678**'.

You may specify as many of the beginning digits of the card number as you desire. This allows you to show transactions for groups of cards. For example, you assign cards 1000-1999 to account #1, cards 2000-2999 to account #2 and cards 3000-3999 to account #3. To show all transactions for account #1, enter the command `**SHOW TRANSACTIONS WHERE CARD = 1**'.

## TRANSACTIONS WHERE VEHICLE = #

This command displays all transactions for the vehicle(s) beginning with the specified digits. You may specify as many of the beginning digits of the vehicle number as you desire.

# SHIFTS

## SHOW SHIFT

**PRINT SHIFTSystem2** can keep track of transactions on a "per shift" basis. This allows you to match transaction data to employee times.

The `**SHIFT'** commands display the following information for the current shift: the starting time, the amount of each product dispensed, the number of transactions, the grand total of product dispensed, the total dollar value and the cost of the average transaction.

You are also prompted to change the shift. Enter `**N'** (for no) at the prompt if you only wanted to check the data listed above. Enter `**Y'** (for yes) if you want to begin a new shift.

# JOURNAL PRINTER LOCKOUT

## LOCK PRINTER

**UNLOCK PRINTER**The **`LOCK'** command enables the programmer to temporarily block the logging function for the printer. This is useful when multiple **`PRINT'** commands are executed. The various printouts are kept contiguous (next to each other) and journal transactions are not interspersed throughout the report.

The **`UNLOCK'** command returns the printer to its journal logging function. Any transactions that were locked out are printed when the printer is unlocked.

*Both of these commands are privileged; if no command is generated for 10 minutes while the printer is locked, the system exits the privileged mode and unlocks the printer.*

# IMMEDIATE OPENING AND CLOSING

## OPEN
## CLOSE

These commands allow and restrict the immediate access to the pump(s). Both commands are privileged and require the main password to operate.

If the system is closed immediately, all activities (pumping, printing a receipt, etc.) in progress are allowed to complete normally. *No* new activities are allowed to begin. For example, if the system is closed while a fueler is pumping, he is allowed normal access to the fuel. He can *not*, however, get a receipt.

*)))) **NOTE** ((((Closing the system with the* **`CLOSE'** *command is not the same as pressing the Emergency Stop button. The stop button removes power from the pumps and interrupts the pumping process.*

# ARITHMETIC

**Procedure**. Numbers can be added and subtracted in the command line. For example:

```
>1.11 + 3.33 - 2.22                    (You type this line and press [ENTER].)
     = 2.22                            (Result is shown on this line.)
```

# Appendices

*Notes:*

# Appendix A - Command Summary

Privileged commands are marked with **[P].**

Commands that must be **`DOWNLOADed'** are marked with **[D].** Optional commands (*not* supplied with every system) are indicated by **[O].** The **`#'** character indicates a number *must* be specified.

The **DOWNLOAD** command must be entered after using the commands marked with **[D]** for **System2** to recognize these changes. When entering several **[D]** commands, you have to enter the **DOWNLOAD** command only once after the last **[D]** command.

To display information on the terminal, enter the command prefix **`SHOW'.** To send the data to an optional journal printer, enter the prefix **`PRINT'.** The printer must be configured in order to print.

### Section II: CONFIGURATION

#### Introduction

enter, exit privileged mode; install data to System2; display list of commands

HELLO
BYE [P]
DOWNLOAD [P]
HELP

#### Time Measurement

enter, display current time and date

SET TIME [P]
PRINT/SHOW TIME
SET DATE [P]
PRINT/SHOW DATE
FORMAT DATE

#### System Memory

enter, display size of system memory

SET RAM [P]
PRINT/SHOW RAM

**Programmable Data Base**

enter, display card/account data

SET CARD BUFFER [P]
SET SECURITY TABLE [P]
PRINT/SHOW SECURITY TABLE
INSERT CARD [P]
COPY CARD # [P]
EDIT CARD [P]
DELETE CARD [P]
PRINT/SHOW CARD
PRINT/SHOW CARD #

**Fuel/Tanks**

enter, display fuel and tank data

SET FUELING UNITS [P]
PRINT/SHOW FUELING UNITS
SET FUELTYPE # [P]
PRINT/SHOW FUELTYPE
SET TANK # [P]
PRINT/SHOW TANK

**Pump Control Terminal**

enter data, turn on/off, display PCT

CONFIGURE PCT # [P,D]
CONFIGURE PCT # POSITION # [P,D]
INSTALL PCT # [P]
INSTALL PCT # POSITION # [P]
REMOVE PCT # [P]
REMOVE PCT # POSITION # [P]
PRINT/SHOW PCT #
CONFIGURE PUMP #
PRINT/SHOW PUMP #

**Fuel Island Terminal**

enter data, turn on/off, display FIT

CONFIGURE FIT # [P,D]
INSTALL FIT # [P]
REMOVE FIT # [P]
PRINT/SHOW FIT #

## Section II: CONFIGURATION

**Messages**

enter, display data

FORMAT DISPLAY # [P,D]
PRINT/SHOW DISPLAY
PRINT/SHOW DISPLAY #
FORMAT KEYBOARD # [P,D]
PRINT/SHOW KEYBOARD
PRINT/SHOW KEYBOARD #

**Receipt Printer**

enter, display data

FORMAT RECEIPT HEADER [P,D]
PRINT/SHOW RECEIPT HEADER
FORMAT RECEIPT TRAILER [P,D]
PRINT/SHOW RECEIPT TRAILER
FORMAT RECEIPT BODY [P,D]
PRINT/SHOW RECEIPT BODY
SET BONUS POINTS [P,D]
PRINT/SHOW BONUS POINTS
FORMAT RECEIPT BONUS POINTS[P,D]
PRINT/SHOW RECEIPT BONUS POINTS

**Transaction Buffer**

enter, display data

SET TRANSACTION [P]
PRINT/SHOW TRANSACTION
PRINT/SHOW TRANSACTION #

**Journal Printer**

enter, display data

SET JOURNAL PRINTER [P]
PRINT/SHOW JOURNAL PRINTER

**Restrictions**

enter, display data

SET PUMP RESTRICTION [P]
PRINT/SHOW PUMP RESTRICTION
SET QUANTITY [P]
PRINT/SHOW QUANTITY

**Odometer Reasonability**

enter, display data

SET REASONABILITY [P]
PRINT/SHOW REASONABILITY

**Site ID**

enter, display data

SET SITE ID [P]
PRINT/SHOW SITE ID

**Time and Date**

Format - enter, display data

SET TIME CHANGE [P]
PRINT/SHOW TIME CHANGE
SET SYSTEM TIMES [P]
PRINT/SHOW SYSTEM TIMES
FORMAT DATE [P]

**Password**

enter data

SET PASSWORD [P]

**Dual Language**

enter, display data

SET LANGUAGE [P]
PRINT/SHOW LANGUAGE

**Messaging**

enter, display data

FORMAT MESSAGES [P]
PRINT/SHOW MESSAGES

## Section III: Operations

**System Report**

display system operational status

PRINT/SHOW SYSTEM

**Pump/Fuel Reports**

display, clear data

PRINT/SHOW FUELTYPE # TOTALS
PRINT/SHOW PUMP # TOTALS
CLEAR PUMP # TOTALS [P]
PRINT/SHOW PCT # TOTALS
CLEAR PCT # TOTALS [P]
PRINT/SHOW TANK

**Card/Account Reports**

display, clear data

PRINT/SHOW CARD
PRINT/SHOW CARD #

**Transaction Reports**

display, clear data

PRINT/SHOW TRANSACTION
PRINT/SHOW TRANSACTION #
PRINT/SHOW TRANSACTION SUMMARY PRINT/SHOW DAY
PRINT/SHOW DAY mmm dd, yyyy
CLEAR TRANSACTIONS mmm dd, yyyy
SEQUENCE # [P]

## Section IV: Appendices

**Modem**

call remote site

CALL [P]

## Computer Operations

backup, restore, display data

BACKUP (#) [P]
RESTORE [P]
UPDATE site-id (/fields)(/checksum) [P]
SYSBACKUP [P]
SYSRESTORE #### (#) [P]

CLEAR TRANSACTIONS [P]
SHOW TRANSACTIONS CF

## Transaction Searches

display, data

PRINT/SHOW TRANSACTIONS WHERE
DATE = mmm dd, yyyy ["on"]
PRINT/SHOW TRANSACTIONS WHERE
DATE < mmm dd, yyyy ["before"]
PRINT/SHOW TRANSACTIONS WHERE
DATE > mmm dd, yyyy ["after"]
PRINT/SHOW TRANSACTIONS WHERE
TIME = hh:mm am/pm ["at"]
PRINT/SHOW TRANSACTIONS WHERE
TIME < hh:mm am/pm ["before"]
PRINT/SHOW TRANSACTIONS WHERE
TIME > hh:mm am/pm ["after"]
PRINT/SHOW TRANSACTIONS WHERE
CARD = #
PRINT/SHOW TRANSACTIONS WHERE
VEHICLE = #
PRINT/SHOW TRANSACTIONS WHERE
ACCOUNT = #

## Shift

enter, display data

SHIFT
PRINT/SHOW SHIFT

**Punchcode**

show card codes

PUNCHCODE [P,O]

**Trouble-Shooting**

test FIT operations

TEST [P]

**Part K: Report Package**

activate package

REPORT [P,O]

Notes:

# Appendix B - Configuration Worksheet

(A) Basic Concepts

Access privileged mode: **HELLO**
Exit privileged mode: **BYE**
Display commands: **HELP**
Install data: **DOWNLOAD**

(B) Time Measurement: **SET TIME, SET DATE**

Time format: hh:mm am/pm
Date format: mmm dd,yyyy

(C) System Memory (RAM): **SET RAM**

(0) 64 K (1) 320 K (2) 576 K (3) 832 K

(D) Programmable Data Base: **SET CARD BUFFER**

Option #1: Configure Buffer

# of Cards/Accts (Min): _____
# of Cards/Accts (Max): _____
# of Cards/Accts (Crnt): _____
Size Code: _____ Number of Transactions: _____
Size Code: _____ Number of Messages: _____

Option #2: Card/Account Record Configuration

| | | |
|---|---|---|
| (1) Company code | yes | no |
| (2) Expiration date | yes | no |
| (3) Month allocation | yes | no |
| (4) Daily allocation | yes | no |
| (5a) PIN # | yes | no |
| (5b) Card invalidation | yes | no |
| (6a) Save odometer entries | yes | no |
| (6b) Odometer reasonability | yes | no |
| (7) Pump restriction | yes | no |
| (8) Quantity restriction | yes | no |
| (9) Driver/vehicle/account name | yes | no |

Option #7: Clear quantity totals at end of month yes no

Option #8: Card invalidation after 3 bad PIN numbers yes no

(D) Programmable Data Base (continued)

**INSERT CARD / EDIT CARD / COPY CARD #**

Copy this page as necessary.

Card # : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Card Type : single driver vehicle

(1) Account # : _ _ _ _ _

Card # : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Card Type : single driver vehicle

(E) Fueling Units: **SET FUELING UNITS**

| Number | Label |
|---|---|
| 1 | __ __ __ __ __ __ __ __ __ __ |
| 2 | __ __ __ __ __ __ __ __ __ __ |
| 3 | __ __ __ __ __ __ __ __ __ __ |

Fueltypes: **SET FUELTYPE #**

| Number | Unit | Price | Name |
|---|---|---|---|
| 1 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 2 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 3 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 4 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 5 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 6 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 7 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 8 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 9 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 10 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 11 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 12 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 13 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 14 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 15 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |
| 16 | ____ | $__._____ | __ __ __ __ __ __ __ __ __ __ |

Tanks: **SET TANK #**

| Number | Fueltype | Current Quantity | Low Level |
|---|---|---|---|
| 1 | _____ | _____.____ | _____.__ |
| 2 | _____ | _____.____ | _____.__ |
| 3 | _____ | _____.____ | _____.__ |
| 4 | _____ | _____.____ | _____.__ |
| 5 | _____ | _____.____ | _____.__ |
| 6 | _____ | _____.____ | _____.__ |
| 7 | _____ | _____.____ | _____.__ |
| 8 | _____ | _____.____ | _____.__ |

(F) Pump Control Terminal: **CONFIGURE PCT # [D]**
**CONFIGURE PCT # POSITION # [D]**

The first command asks if the PCT is a U.P.C. The second command prompts for the additional information listed below (and on the next page).

There are up to 4 PCTs in a System2, each PCT controlling 8 positions. Copy this page and the next as needed. Circle the appropriate PCT and position numbers.

Note that most PCT configurations do *not* require *all* of this information.

| PCT Number | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| U.P.C. | YES | NO | | |
| POSITION NUMBER | 1 | 2 | 3 | 4 |
| Pump Number | | | | |
| Pulses / Unit | | | | |
| Max Fuel/Transaction | | | | |
| Sentry Feature | | | | |
| Max Time Fuel | | | | |
| Max Time Handle | | | | |
| Max Time 1st Pulse | | | | |
| Max Time Btwn Pulses | | | | |
| POSITION NUMBER | 5 | 6 | 7 | 8 |
| Pump Number | | | | |
| Pulse / Unit | | | | |
| Max Fuel/Transaction | | | | |
| Sentry Feature | | | | |
| Max Time Fuel | | | | |
| Max Time Handle | | | | |
| Max Time 1st Pulse | | | | |
| Max Time btwn Pulses | | | | |

| PCT Number | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| POSITION NUMBER | 1 / 5 | 2 / 6 | 3 / 7 | 4 / 8 |
| ** Hose #1 ** | | | | |
| Fueltype Code # | | | | |
| Fueling Tank | | | | |
| Clear Pump Totals | | | | |
| Totalizer Value | | | | |
| ** Hose #2 ** | | | | |
| Fueltype Code # | | | | |
| Fueling Tank | | | | |
| Clear Pump Totals | | | | |
| ** Hose #3 ** | | | | |
| Fueltype Code # | | | | |
| Fueling Tank | | | | |
| Clear Pump Totals | | | | |
| ** Hose #4 ** | | | | |
| Fueltype Code # | | | | |
| Fueling Tank | | | | |
| Clear Pump Totals | | | | |

(F) Install PCT: **INSTALL PCT # POSITION #**

PCT #1: POSITION # - 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8

PCT #2: POSITION # - 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8

PCT #3: POSITION # - 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8

PCT #4: POSITION # - 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8

**INSTALL PCT #**

PCT #1 PCT #2 PCT #3 PCT #4

(G) Fuel Island Terminal: **CONFIGURE FIT # [D]**

FIT #1:
- (1a) Issue receipts yesno
- (1b) Limit for receiving a receipt (0..99) _____
- (2) Enable keyboard access yes no
- (3) PCTs to shut off on E-stop 1, 2, 3, 4
- (4) Valid pump numbers:

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

FIT #2:
- (1a) Issue receipts yesno
- (1b) Limit for receiving a receipt (0..99) _____
- (2) Enable keyboard access yes no
- (3) PCTs to shut off on E-stop 1, 2, 3, 4
- (4) Valid pump numbers:

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

FIT #3:
(1a) Issue receipts yesno
(1b) Limit for receiving a receipt (0..99) _____
(2) Enable keyboard access yes no
(3) PCTs to shut off on E-stop 1, 2, 3, 4
(4) Valid pump numbers:

— — — — — — — — — — — — — — — —
— — — — — — — — — — — — — — — —

FIT #4:
(1a) Issue receipts yesno
(1b) Limit for receiving a receipt (0..99) _____
(2) Enable keyboard access yes no
(3) PCTs to shut off on E-stop 1, 2, 3, 4
(4) Valid pump numbers:

— — — — — — — — — — — — — — — —
— — — — — — — — — — — — — — — —

Install FIT: **INSTALL FIT #**

FIT #1 FIT #2 FIT #3 FIT #4

(H) Display Prompts: **FORMAT DISPLAY # [D]**

| Number | Display Prompts (Language 1) |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 | |
| 17 | |
| 18 | |
| 19 | |
| 20 | |
| 21 | |
| 22 | |
| 23 | |
| 24 | |

| Number | Display Prompts (Language 1) |
|---|---|
| 25 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 26 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 27 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 28 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 29 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 30 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 31 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 32 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 33 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 34 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 35 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 36 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 37 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 38 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 39 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 40 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 41 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 42 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 43 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 44 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 45 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 46 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 47 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 48 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 49 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |

| Number | Display Prompts (Language 2) |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 | |
| 17 | |
| 18 | |
| 19 | |
| 20 | |
| 21 | |
| 22 | |
| 23 | |
| 24 | |

| Number | Display Prompts (Language 2) |
|---|---|
| 25 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 26 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 27 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 28 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 29 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 30 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 31 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 32 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 33 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 34 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 35 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 36 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 37 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 38 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 39 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 40 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 41 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 42 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 43 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 44 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 45 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 46 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 47 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 48 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |
| 49 | _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ |

(H) Keyboard Messages: **FORMAT KEYBOARD # [D]**

Language 1

| Number | Message | Default |
|---|---|---|
| 1 | __ __ __ __ __ __ | `NO' |
| 2 | __ __ __ __ __ __ | `YES' |

Language 2

| Number | Message | Default |
|---|---|---|
| 1 | __ __ __ __ __ __ | (*none*) |
| 2 | __ __ __ __ __ __ | (*none*) |

(I) Receipt Printer

Receipt Header: **FORMAT RECEIPT HEADER [D]**

| | Field Entry (Language 1) | Print Color |
|---|---|---|
| Line 1: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 2: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 3: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 4: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |

| | Field Entry (Language 2) | Print Color |
|---|---|---|
| Line 1: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 2: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 3: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 4: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |

Receipt Trailer: **FORMAT RECEIPT TRAILER [D]**

| | Field Entry (Language 1) | Print Color |
|---|---|---|
| Line 1: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 2: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 3: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 4: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |

| | Field Entry (Language 2) | Print Color |
|---|---|---|
| Line 1: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 2: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 3: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 4: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |

Receipt Body: **FORMAT RECEIPT BODY [D]**

| | Field Entry (Language 1) | Field Entry (Language 2) | Receipt Code |
|---|---|---|---|
| Line 1: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 2: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 3: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 4: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 5: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 6: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 7: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 8: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 9: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 10: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 11: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 12: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 13: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 14: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |
| Line 15: | __ __ __ __ __ __ __ __ __ __ | __ __ __ __ __ __ __ __ __ __ | ____ |

Bonus Points: **SET BONUS POINTS [D]**

one point per _____ cents

Receipt Bonus Points: **FORMAT RECEIPT BONUS POINTS**

| | Field Entry (Language 1) | Print Color |
|---|---|---|
| Line 1: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 2: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 3: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 4: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |

| | Field Entry (Language 2) | Print Color |
|---|---|---|
| Line 1: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 2: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 3: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |
| Line 4: | __ __ __ __ __ __ __ __ __ __ __ __ | red or black |

(J) Transaction Buffer: **SET TRANSACTION**

| | | |
|---|---|---|
| (1) Enable Wrap around | yes | no |
| (2) Log unauthorized xactions | yes | no |
| (3) Display fields: | | |
| Account, Driver, Vehicle | yes | no |
| Date & Time | yes | no |
| Card #1 | yes | no |
| Card #2 | yes | no |
| Fueltype | yes | no |
| Pump | yes | no |
| Quantity | yes | no |
| Price | yes | no |
| Total | yes | no |
| Odometer | yes | no |
| Distance per unit | yes | no |
| Miscellaneous | yes | no |
| Account # | yes | no |

(K) Journal Printer: **SET JOURNAL**

| | | |
|---|---|---|
| (1) Fuel Island Journal | yes | no |
| (2) Office Journal | yes | no |
| (3) Print card 2 number | yes | no |
| (4) Print card name (account, driver, vehicle) | yes | no |
| (5) Print odometer, miscellaneous | yes | no |
| (6) Allow fueling on journal error | yes | no |

(L) Restrictions:

Pump Restriction: **SET PUMP RESTRICTION**

| Number | Valid Pumps Numbers |
|---|---|
| 1 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |
| 2 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |
| 3 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |
| 4 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |
| 5 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |
| 6 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |
| 7 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |
| 8 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |
| 9 | — — — — — — — — — — — — — — — — |
| | — — — — — — — — — — — — — — — — |

| Number | Valid Pumps Numbers |
|---|---|
| 10 | __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __<br>__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ |
| 11 | __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __<br>__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ |
| 12 | __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __<br>__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ |
| 13 | __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __<br>__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ |
| 14 | __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __<br>__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ |
| 15 | __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __<br>__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ |

Quantity Restriction: **SET QUANTITY RESTRICTION**

| Number | Max Quantity | Number | Max Quantity |
|---|---|---|---|
| 1 | _____.__ | 9 | _____.__ |
| 2 | _____.__ | 10 | _____.__ |
| 3 | _____.__ | 11 | _____.__ |
| 4 | _____.__ | 12 | _____.__ |
| 5 | _____.__ | 13 | _____.__ |
| 6 | _____.__ | 14 | _____.__ |
| 7 | _____.__ | 15 | _____.__ |
| 8 | _____.__ | | |

(M) Odometer Reasonability: **SET REASONABILITY**

| Number | Minimum | Maximum | Number | Minimum | Maximum |
|---|---|---|---|---|---|
| 1 | _____ | _____ | 9 | _____ | _____ |
| 2 | _____ | _____ | 10 | _____ | _____ |
| 3 | _____ | _____ | 11 | _____ | _____ |
| 4 | _____ | _____ | 12 | _____ | _____ |
| 5 | _____ | _____ | 13 | _____ | _____ |
| 6 | _____ | _____ | 14 | _____ | _____ |
| 7 | _____ | _____ | 15 | _____ | _____ |
| 8 | _____ | _____ | | | |

(N) Site Identification: **SET SITE ID**

__ __ __ __ __ __ __ __ __ __ __ __

(up to 12 characters; spaces allowed *except* for 1st position)

(O) Time change and System Times: **SET TIME, SET SYSTEM TIMES**

Forward: _____ Backward: _____
System On: _____ System Off: _____
Receipts Only: _____ Time Adjust: _____

(P) Passwords: **SET PASSWORDS**

Main: _____ Show: _____ Modem: _____

(Q) Dual Language: **SET LANGUAGE [D]**

ENABLED DISABLED

(R) Messaging: **FORMAT MESSAGES**

Card/Account #: __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
Message: _____
_____
Duration/Exp. Date:_____
Auto-Delete: on off
Receipt: on off

Card/Account #: __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
Message: _____
_____
Duration/Exp. Date: _____
Auto-Delete: on off
Receipt: on off

Card/Account #: __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
Message: _____
_____
Duration/Exp. Date: _____
Auto-Delete: on off
Receipt: on off

Card/Account #: __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
Message: _____
_____
Duration/Exp. Date: _____
Auto-Delete: on off
Receipt: on off

*)))) NOTE ((((* *The length of the message is limited by the type of display. The standard display (1x24) can show messages up to 24 characters in length. The optional display (2x40) can show messages up to 80 characters in length.*

# Appendix C - FIT Prompts and Responses

The FIT Display Prompts and Keyboard Responses listed below are the default values for language 1; for language 2, the default values are all blank.

| Number | FIT Display Prompt | Number | FIT Display Prompt |
|---|---|---|---|
| 1 | SYSTEM OUT OF SERVICE | 26 | ENTER CARD#: |
| 2 | READING CARD | 27 | ENTER PIN: |
| 3 | REMOVE CARD | 28 | ENTER ODOM: |
| 4 | INCORRECT READING | 29 | ENTER MISC: |
| 5 | CHECK CARD ORIENTATION | 30 | ENTER VEH #: |
| 6 | INSERT CARD FOR RECEIPT | 31 | RE-ENTER PIN: |
| 7 | INSERT CARD FOR RECEIPT | 32 | RE-ENTER ODOM: |
| 8 | PETRO VEND SYSTEM2 | 33 | (*blank*) |
| 9 | INSERT CARD | 34 | (*blank*) |
| 10 | SYSTEM CLOSED | 35 | NOT IN CARD FILE |
| 11 | PLEASE WAIT | 36 | CARD EXPIRED |
| 12 | PRINTING RECEIPT | 37 | CARD RECORD EXPIRED |
| 13 | TAKE RECEIPT | 38 | CARD INVALIDATED |
| 14 | PRINTER ERROR | 39 | 3 BAD PIN ENTRIES |
| 15 | ISSUE RECEIPT? | 40 | ALLOCATION EXCEEDED |
| 16 | ENTER PUMP # | 41 | (*blank*) |
| 17 | IN USE, RE-ENTER: | 42 | (*blank*) |
| 18 | INVALID, RE-ENTER: | 43 | ACCOUNT EXPIRED |
| 19 | PUMP HANDLE? RE-ENTER | 44 | ACCOUNT INVALIDATED |
| 20 | FAULTY PUMP, RE-ENTER | 45 | ACCOUNT # S DO NOT MATCH |
| 21 | UNAUTH ZED, RE-ENTER | 46 | ACCOUNT REC NOT FOUND |
| 22 | RESTRICTED, RE-ENTER | 47 | (*blank*) |
| 23 | USE PUMP | 48 | JOURNAL ERR -GET MANAGER |
| 24 | INSERT 2nd CARD | 49 | SYSTEM BUSY -BUFFER FULL |
| 25 | INCORRECT CARD | | |

| Number | Keypad |
|---|---|
| 1 | NO |
| 2 | YES |

*Prompts #6 and #7 alternately display when prompting for a receipt. Messages #8 and #9 alternately display while waiting for a fueler.*

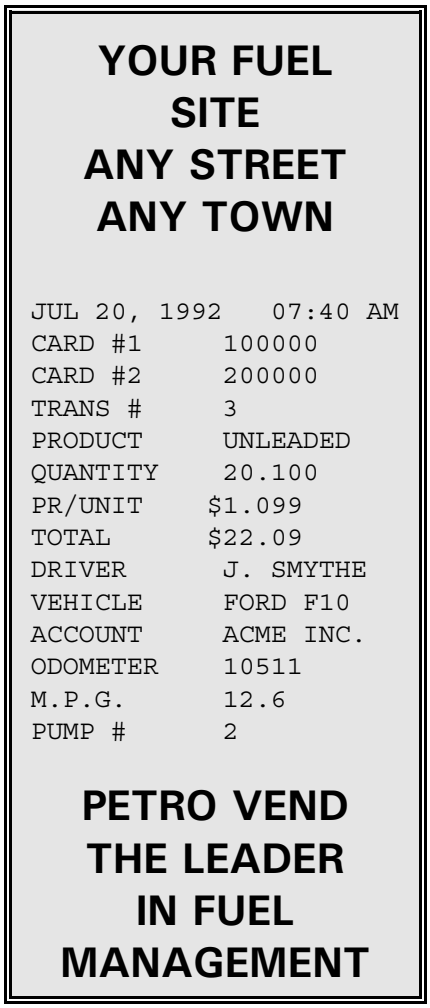
*Motes:*

# Appendix D - Memory Allocation

| Memory Size | With This Many Transactions: | ...This is the Maximum Number of Cards: |
|---|---|---|
| **64K** | 25 | 1,750 |
| | 50 | 1,500 |
| | 100 | 900 |
| **320K** | 100 | 19,000 |
| | 500 | 12,500 |
| | 1,000 | 7,000 |
| | 1,500 | 1,400 |
| **576K** | 100 | 33,500 |
| | 1,000 | 23,000 |
| | 2,000 | 12,000 |
| | 3,000 | 700 |
| **832K** | 100 | 50,000 |
| | 1,000 | 39,000 |
| | 2,000 | 28,000 |
| | 3,000 | 17,000 |
| | 4,000 | 5,600 |

Notes:

# Appendix E - Sample Receipt



**YOUR FUEL**
**SITE**
**ANY STREET**
**ANY TOWN**

```
JUL 20, 1992   07:40 AM
CARD #1      100000
CARD #2      200000
TRANS #      3
PRODUCT      UNLEADED
QUANTITY     20.100
PR/UNIT     $1.099
TOTAL       $22.09
DRIVER       J. SMYTHE
VEHICLE      FORD F10
ACCOUNT      ACME INC.
ODOMETER     10511
M.P.G.       12.6
PUMP #       2
```

**PETRO VEND**
**THE LEADER**
**IN FUEL**
**MANAGEMENT**

***NOTE:*** *The length of the receipt is limiited to 24 lines; this includes two blank lines which are inserted automatically to separate the body text from the header and from the trailer. The example above has the maximum number of lines.*

*Notes:*

# Appendix F - Modem Operation

## Passwords

**System2** can be programmed to have 3 different passwords, one for access to the privileged mode, one for modem operation and one for the restricted mode.

## Calling a System2 Site

**System2** can be interrogated and programmed remotely over conventional (voice-grade) telephone lines. A modem is required at the **System2** site; another modem is required for the remote terminal or computer. The remote modem must be compatible with the 224A **System2** modem.

The baud rate for the factory-installed internal modem is set by switch 3 on the FSC board (PV-204). See the Installation Manual to change this rate (the rate must be the same for the CAP port). The other parameters are preset at the factory.

*An external modem must be connected to the CAP port using an RS-422 to RS-232 converter box and an adapter cable. This port does not have any handshaking control lines. As a result,* **System2** *can not acknowledge a connection or force a hang-up. Because of this limitation,* ***Petro Vend*** *does not recommend use of external modems. The information in this appendix assumes the use of an internal modem.*

*If* **System2** *that you are calling is in the privileged mode, the system does not respond to the call. If* **System2** *is executing a command in the normal mode, the command will be allowed to complete before responding to the call. This can occur if 2 terminals or computers are used for programming your* **System2.**

When the call is successfully completed to **System2**, it responds by displaying the following:

```
System2 Site Id:  ############
ENTER MODEM PASSWORD:
r>
```

The `###########' indicates the number previously specified by the programmer.

At the prompt, enter the modem password. For security, the password characters are *not* echoed back to the display. Note that an incorrect password entry causes **System2** to hang up.

When the password is entered correctly, the system responds with the prompt:

```
HELLO!
r>
```

The `>' prompt indicates the "remote" normal mode. All `SHOW' and `PRINT' commands are now functional. If the restricted mode is *enabled*, the `$' prompt is displayed and you must correctly enter the show password before proceeding.

To access the privileged mode, enter:

```
r>HELLO
ENTER MAIN PASSWORD:
```

After entering the correct password, the system responds:

```
R>
```

The `R>' prompt indicates the "remote" privileged mode. All commands are now functional. (The Configuration section describes the commands for changing the system parameters.)

Enter the command `BYE' to cause the remote site to hang up.

# Using System2 Modem to Dial Out

**System2** also has the capacity to call out from a site. For example, in an arrangement with multiple **System2** sites, programming for the entire system can be done from any of the sites.

To call out from a local site, enter the main password and then enter the command `**CALL**'. This connects your terminal or computer directly to the system's modem. The modem now has control over the CRT and displays the following:

**TO CALL OUT, ENTER (in upper case:)**

**ATDT####### (for tone dialing)**
**or**
**ATDP####### (for pulse dialing)**

**NOTE**: *A "modem response timeout" setting stops a dial-out attempt if the CFN host doesn't "answer" within a defined time. Default timeout is 25 seconds. Adjust the timeout with the SET HOST command (see page ?).*

Enter the command `**BYE**' to exit the modem operation and return to **System2**. The privileged prompt is displayed.

Notes:

# Appendix G - Computer Interface

## Introduction

This appendix describes: (1) how to retrieve transaction data from **System2** in a concise, computer format; (2) how to suppress responses from **System2** (which is necessary when transmitting configuration and operational commands from a computer program) and (3) how to backup and restore card/account and configuration data for **System2**.

To interface with **System2**, you must run a terminal emulation program on your computer. Typical emulation programs do *not* have features for retrieving, backing up and restorin **System2** data. Software programs that utilize the **System2** formats and commands must be written. This usually requires the services of a professional software engineer.

## Computer Format for Transaction Data

The display format for transaction data is designed to be read by people. This format includes a header with configuration data and labels for each data field that is included. In the display format, the transmission of transaction records can be cued from the keyboard. (See the Configuration section for more details about the display format.)

The computer format eliminates the configuration data and field labels, substituting data checks, field codes and field separators. This format is appropriate for transferring the transaction information to a computer data base. To pace the data stream, the transmission of each transaction record must be cued by a specific computer response.

To retrieve transaction data in the computer format, append the prefix **`SHOW'** and the suffix **`CF'** to one of the following commands:

```
TRANSACTIONS
TRANSACTION ###
TRANSACTIONS WHERE DATE = mmm dd, yyyy
TRANSACTIONS WHERE DATE < mmm dd, yyyy
TRANSACTIONS WHERE DATE > mmm dd, yyyy
TRANSACTIONS WHERE TIME = hh:mm am/pm
TRANSACTIONS WHERE TIME < hh:mm am/pm
TRANSACTIONS WHERE TIME > hh:mm am/pm
TRANSACTIONS WHERE CARD = #
TRANSACTIONS WHERE VEHICLE = #
TRANSACTIONS WHERE ACCOUNT = #
```

For example, `**SHOW TRANSACTIONS 123 CF**'. These commands, like all **System2** commands, can be abbreviated. For example, `**SH TRANS 123 CF**'. The transaction search commands can be combined with `**AND**' in the computer format. For example,

**SH TRANS WH DAT = JAN 1,1998 AND WH TIM > 5:00 PM CF**

When transaction data are requested from **System2** in the computer format, **System2** first transmits the transaction header and the first transaction. The header *always* includes: (1) codes to indicate which transaction fields will be included in the transmitted record(s), (2) a 2-digit checksum and a carriage return and (3) a line feed (`|**CR**|**LF**|').

An optional data check can be prefixed to the transaction header to provide greater data integrity. The data check includes the following data for the transaction records that will be transmitted: (1) the number of records and (2) the sum of the quantities for records.

*The transaction header and field codes are detailed in Tables G:1 and G:2 below. The formula and the ASCII codes to calculate the checksum are also described below.*

Each transaction record always includes the sequence number and reason for termination code(s). The fields are included as specified by the transaction field codes listed in the header. All items are separated by a slash (`/').

Each transaction record is terminated with `|**CR**|**LF**|'. The external computer must then respond with `|**CR**|**LF**|' to initiate the transmission of the next record. **System2** continues sending records each time it receives `|**CR**|**LF**|' until it has transmitted the last record, at which time it sends `//|**CR**|**LF**|'.

*The reason for termination codes are listed in Tables G:3 and G:4 below.*

*If access was denied to a fueler, only the first four data fields are recorded (and can be transmitted) for that transaction.*

The following is an example of a transaction data retrieval in the computer format Note that a data check was *not* included in the header.

```
External Computer Output       System2 Response
-------------------------------------------------------------
SH TRANS 123CF|CR|LF|          abcdefghijklmno/07|CR|LF|
                        123/I/TRUXCO---/SMITH----/VAN1-----/

02221998/0711/0123/20001-------------/
                                     60001--------------
/03/03/0025000/00100/

000002500/0066555/105/1234567890/1/1234/
                         11/|CR|LF|
|CR|LF|                         //|CR|LF|
```

*The* **`SHOW TRANSACTION'** *command has been abbreviated to* **`SH TRANS'**. *The* **`|CR|LF|'** *indicates a carriage return and a line feed. The* **`-'** *indicates a "space pad." A transaction record is sent as one string. For clarity, the example above shows line breaks between fields.*

## TABLE G:1 TRANSACTION HEADER

| Item | Format | Pad | Inclusion |
|---|---|---|---|
| number of transactions | 4 digits, left justified | zero | optional |
| sum of quantities | 9 digits, left justified | zero | optional |
| transaction field codes | 0 - 15 characters | none | always |
| checksum | 2 digits | none | always |

## TABLE G:2 TRANSACTION FIELD CODES

| Code | Field | Format | Pad |
|---|---|---|---|
| a | account/driver/vehicle | 9 characters each | space |
| b | date/time | 8/4 digits: mmddyyy/hhmm | zero |
| c | transaction number | 4 digits | zero |
| d | card #1 | 19 digits, left justified | space |
| e | card #2 | 19 digits, left justified | space |
| f | fueltype | 2 digits: 1 - 16 | zero |
| g | pump number | 2 digits: 1 - 99 | zero |
| h | quantity | 7 digits: ####.###, implied decimal | zero |
| i | price | 5 digits: ##.###, implied decimal | zero |
| j | total | 9 digits: #######.##, implied decimal | zero |
| k | odometer | 1 char, 6 digits: X######; `?' in 1st location indicates *un*reasonable entry, `0' indicates reasonable entry; all blanks if odometer entry *not* prompted | zero |
| l | mpg (or l/km) | 3 digits: ##.#, implied decimal; all spaces if it can *not* be calculated | zero |
| m | miscellaneous | 10 digits | space |
| n | receipt | 1 digit: 1=issued; 0=*not* issued | none |
| o | account number | 4 digits | zero |

## TABLE G:3 REASON FOR TERMINATION (AUTHORIZATION *GRANTED*)

| Code | Reason |
|---|---|
| C | pump error --premature busy |
| D | pump error --reset quantity exceed |
| E | no `**PUMP HANDLE BUSY**' signal |
| F | no fueling pulses |
| G | pump currently active |
| I | normal |
| J | quantity limit exceeded |
| K | total transaction time exceeded |
| L | pulser error |
| M | emergency stop |
| N | missing pulse detected |
| O | communication error |
| 01 | communication error |

**TABLE G:3 REASON FOR TERMINATION (AUTHORIZATION *DENIED*)**

| Code | Reason |
|---|---|
| b | bad PIN entry |
| c | bad odometer entry |
| d | bad miscellaneous entry |
| e | user entry timeout |
| f | card number not in positive file |
| g | card expired |
| h | card record expired |
| i | card invalidated |
| j | 3 bad PIN entries |
| k | no allocation |
| n | account expired |
| o | account invalidated |
| p | account numbers do not match |
| q | account record not found |

## Checksum

The checksum is a number included with a data transmission to insure the integrity of the data. The checksum used by **System2** is a 2-digit number that is calculated by adding the decimal values of the ASCII characters in a string and truncating the sum. (The next page lists these decimal values.)

For example, in the string `**/ABC**', the decimal values for each character are: `/' = 47, `**A**' = 65, `**B**' = 66 and `**C**' = 67. The sum is 245. Truncating the number means removing all but the last two digits. In this case, the truncated number is 45.

The checksum is included with transaction records and card/account records sent by **System2**. You also have the option of including a checksum with each record when using the `**RESTORE**' and `**UPDATE**' commands. For example, the following transaction record has a checksum of 08.

**123/I/123089/1130/000001234/08|CR|LF|**

Note that when calculating the checksum for a record, you *must* include the slashes (`/') in the calculation.

The checksum can be included in the `**RESTORE**' and `**UPDATE**' command lines. For example,

**UPDATE STATION12345/abcdef/75|CR|LF|**

The checksum is 75. Note that you *must* include the slash and the blank space (between `**UPDATE**' and `**STATION12345**' in the example above) in the checksum calculation.

**Checksum Calculation**

The following IBM® BASIC program can be used to determine the checksum for a line of data:

```
10 CHKSUM% = 0
20 TRANSACTION$ = "LINE OF DATA 0123456789"
30 NUMCHARS% = LEN(TRANSACTION$)
40 FOR INDEX% = 1 TO NUMCHARS%
50 SINGLECHAR$ =MID$(TRANSACTION$,INDEX%,1)
60 CHKSUM% = CHKSUM% + ASC(SINGLECHAR$)
70 NEXT INDEX%
80 TEMP$ = STR$(CHKSUM%)
90 TEMP$ = RIGHT$(TEMP$,2)
100 PRINT TEMP$
110 END
```

## TABLE G:4 DECIMAL VALUES OF ASCII CHARACTERS

| Decimal Value | ASCII Character | Decimal Value | ASCII Character | Decimal Value | ASCII Character | Decimal Value | ASCII Character |
|---|---|---|---|---|---|---|---|
| 032 | (space) | 056 | 8 | 080 | P | 104 | h |
| 033 | ! | 057 | 9 | 081 | Q | 105 | i |
| 034 | " | 058 | : | 082 | R | 106 | j |
| 035 | # | 059 | ; | 083 | S | 107 | k |
| 036 | $ | 060 | < | 084 | T | 108 | l |
| 037 | % | 061 | = | 085 | U | 109 | m |
| 038 | & | 062 | > | 086 | V | 110 | n |
| 039 | ' | 063 | ? | 087 | W | 111 | o |
| 040 | ( | 064 | @ | 088 | X | 112 | p |
| 041 | ) | 065 | A | 089 | Y | 113 | q |
| 042 | * | 066 | B | 090 | Z | 114 | r |
| 043 | + | 067 | C | 091 | [ | 115 | s |
| 044 | , | 068 | D | 092 | \ | 116 | t |
| 045 | - | 069 | E | 093 | ] | 117 | u |
| 046 | . | 070 | F | 094 | ^ | 118 | v |
| 047 | / | 071 | G | 095 | _ | 119 | w |
| 048 | 0 | 072 | H | 096 | ' | 120 | x |
| 049 | 1 | 073 | I | 097 | a | 121 | y |
| 050 | 2 | 074 | J | 098 | b | 122 | z |
| 051 | 3 | 075 | K | 099 | c | 123 | { |
| 052 | 4 | 076 | L | 100 | d | 124 | \| |
| 053 | 5 | 077 | M | 101 | e | 125 | } |
| 054 | 6 | 078 | N | 102 | f | 126 | ~ |
| 055 | 7 | 079 | O | 103 | g | | |

# COMPUTER Prefix

The prefix `**COMPUTER**' can be placed before any command, *except* the `**PRINT**' and `**SHOW**' commands, to suppress the usual **System2** prompts. Only a carriage return and a line feed (`|**CR**|**LF**|') are returned. The `**P>**' prompt is returned after each command sequence has been *successfully* completed.

For example, to change the name and price of fueltype 1, you would program the external computer for the following output and responses:

```
External Computer Output          System2 Response
-------------------------------------------------
|CR|LF|                             >
COMPUTER HELLO|CR|LF|              |CR|LF|
HELLO|CR|LF|                       P>
COMPUTER SET FUELTYPE 1|CR|LF|     |CR|LF|
1|CR|LF                           |CR|LF|
Y|CR|LF|                  |CR|LF|
1|CR|LF|                  |CR|LF|
UNLED PREM|CR|LF|          P>
```

If the prompt is *not* returned when expected, an error in the command sequence has occurred. To abort a command sequence, send a `**^C**' (ASCII 03). You may then re-issue the command.

## Card/Account Records: Backup and Restore

Backing up the card and account records allows you to safeguard this information and to minimize system downtime when modifying or repairing a **System2**. You can also backup o **System2** and restore the data to another for systems that are to have the same data base.

The `**BACKUP**', `**RESTORE**' and `**UPDATE**' commands must be included as part of a computer program that can format, store and transmit the raw computer data produced by th **System2**.

## BACKUP and BACKUP card#

These *privileged* commands transmit card and account data from the **System2** data base to an external computer.

When initiated from an external computer, the `**BACKUP**' commands first cause **System2** to transmit the site id, the card/account field code(s), a checksum, a carriage return and a line feed (`|**CR**|**LF**|'). These items are separated by a slash (`/').

The records themselves are then sent following each `|**CR**|**LF**|' sent by the external computer. After the last record, **System2** sends `//|**CR**|**LF**|'.

The checksum is explained previously in this appendix. The card/account field codes are listed in Table G:5.

When no card number is specified, the `**BACKUP**' command starts the transmission at the first card/account record. When a card number is specified, the transmission starts at the specified record. Because the records are sorted by number, this command allows you to backup a latter portion of the file.

*Card and account records are sorted only by number; that is, account 2222 would be between card 1111 and card 3333. The* `**BACKUP**' *commands back up both record types. There is no command to specify only card or only account records.*

The following is an example of the information exchanged with the `**BACKUP**' command.

```
Computer Output              System2 Response
-------------------------------------------------------------------
|CR|LF|                      P>
BACKUP|CR|LF|                STATION12345/abcdefghijklmn/44|CR|LF|
|CR|LF|                      1000400000000000000/00100001/1234/
                      02021990/00000809/001000/000100/--5903/
                      0014060/02/00/01/RIKARD---/54|CR|LF|
|CR|LF|                      //|CR|LF|
```

In this example, `**STATION12345**' is the site ID and `**44**' is the checksum. The `-' indicates a "space pad." Card and account records are sent as single strings. For clarity, the example above shows line breaks between fields.

## RESTORE site id (/fields) (/checksum)

This *privileged* command loads card and account information from an external computer to the **System2** data base.

The site id, card/account numbers (field "a") and record types (field "b") must be specified. You may specify any additional field codes you wish to restore (see Restoring Fields below). You may also include a checksum for the command line and/or the data records. The field codes are listed in Table G:5. Checksum calculations are explained previously in this appendix.

***)))) NOTE ((((*** *Field codes must be specified with lower case letters. The command* `**RESTORE**' *and any letters in the site ID must be specified with upper case letters.*

Figure G:2 illustrates a typical `**RESTORE**' communication sequence. The following is an example of the information exchanged with the `**RESTORE**' command.

```
Computer Output                                  System2 Response
-------------------------------------------------------------------
|CR|LF|                                          P>
RESTORE STATION12345/abcdefghijklmn/44|CR|LF|    |CR|LF|
1000400000000000000/00100001/1234/
02021990/00000809/001000/000100/--5903/
0014060/02/00/01/RIKARD---/54|CR|LF|            |CR|LF|
//|CR|LF|                                  P>
```

*The `|**CR**|**LF**|' indicates a carriage return and a line feed. The `**-**' indicates a "space pad." A card/account record must be sent as one string. For clarity, the example above shows line breaks between fields.*

## Restoring Fields

**System2** automatically allocates the necessary space in its data base when it receives the field codes. You may restore more or less fields than were in the data base when it was backed up.

For example, if a field was accidentally omitted during configuration, you may add that field (or fields) without losing any card/account data. First backup the current card/account data. Then use the `**SET CARD BUFFER**' command to include all the old and new fields. Note that this destroys the old data. Finally restore the card/account data, specifying the original fields *plus* the new field(s). The new fields can be filled with blanks or actual data.

You may also restore less fields in a similar manner to increase the number of transactions or card/account records to be retained by **System2**.

*Backing up **System2** is like taking a snapshot of the data base. When the data is restored, **System2** is returned to exactly the same state as when backed up. By frequently backing up the data base, you minimize the need to update any fields (e.g. mileage) in the data base when you use the `**RESTORE**' command.*

# UPDATE site id (/fields) (/checksum)

This *privileged* command is used to modify an existing card or account record in **System2**.

The site id must be specified for this command. You must also specify the Card Number (field "a"). You may specify only those additional field(s) that you wish to change and leave the unspecified fields unchanged. A field *must* be present in the original record to be updated. You also have the option of sending the checksum for this command line. Checksum calculation is described previously in this appendix.

The communication sequence for the `**UPDATE**' command is similar to that of the `**RESTORE**' command. The following is an example of changing the PIN number (field "i") for card 1000400000000000000 with the `**UPDATE**' command.

| Computer Output | **System2** Response |
|---|---|
| UPDATE STATION12345/ai/80\|CR\|LF\| | \|CR\|LF\| |
| 1000400000000000000/--6666/91\|CR\|LF\| | \|CR\|LF\| |
| //\|CR\|LF\| | P> |

*The `|**CR**|**LF**|' indicates a carriage return and a line feed. The `**-**' indicates a "space pad." A card/account record must be sent as one string.*

## RECORD TYPES

| Position(s) | Definition |
|---|---|
| 1 | 0 : valid<br>1 : invalidated by manager |
| 2 | 0 : valid<br>1 : invalidated by **System2**<br>(3 bad PIN entries) |
| 3 | 0 : misc. entry disabled<br>1 : misc. entry enabled |
| 4 | 1 : odom. entry enabled<br>0 : odom. entry disabled |
| 5 - 8 | 0001 : single, language 1<br>1001 : single, language 2<br>0010 : driver, language 1<br>1010 : driver, language 2<br>0011 : vehicle<br>0100 : account |

*For example, record type 00110100 is a valid account record with miscellaneous and odometer entries enabled.*

## Configuration Data:Backup and Restore

Backing up configuration data (pump parameters, programmable messages, etc.) allows you to safeguard this information and to minimize system downtime when modifying or repairing **System2**. You can also backup one **System2** and restore the data to another to expedite the configuration of similar sites.

## SYSBACKUP

When this command is executed, **System2** transmits the configuration data and the version number of the system.

**The message `COMMUNICATIONS DOWN' is shown on the Fuel Island Terminal display while the backup or restore operation is in progress. Normal fueling access is *not* allowed while this message is displayed.**

## SYSRESTORE ####(#)

When this command is invoked, **System2** does the following:

- tests the restored FSC software version for compatibility
- clears the card buffer
- clears all transactions
- restores configuration data
- restarts all tasks
- optionally changes the size of the system memory (RAM)

This command requires that the FSC software version number (`####') be specified. This version number must be the same for *both* the system that was backed up and the system that will be restored. (The FSC version number is printed on the cover of the Owner's Manual; it can also be displayed using the `SHOW SYSTEM' command.)

*The decimal point is not included and a leading zero must be added when entering the FSC version number. The letter suffix for the version number should not be entered.*

For example, if **System2** with FSC version 1.08A and standard RAM memory is backed up, the command `SYSRESTORE 0108' can be used to reconfigure the same system or another system with the same FSC version number and the same size memory.

This command also provides the option of restoring a different size system memory (RAM) by specifying the size code (#) for the restored **System2**.

It is essential that the memory size specified with the `**SYSRESTORE'** command match the actual memory size of the **System2** being restored. If the specified memory is larger than the system's memory, **System2** locks up and must be cold started (the power and battery turned *off* and then *on*). If the specified memory is smaller than the system's memory, **System2** will *not* be able to access the additional memory.

*The* `**SYSBACKUP'** *command takes a "snapshot" of* **System2** *data. Any configuration data that may have been changed since the backup - time, date, tank levels, etc. - must be re-entered after the executing the* `**SYSRESTORE'** *command.*

*No pumps may be active at the time of a* `**SYSBACKUP'** *or* `**SYSRESTORE'** *command.*

# Index


Arithmetic . . . . . 67

Backup/restore . . . . . 116
Batch commands . . . . . 11
    Show batch . . . . . 12
Bonus points . . . . . 41

Card definitions . . . . . 12
Card reader errors . . . . . 34
Card types . . . . . 6
CLEAR PCT TOTALS commands . . . . . 59
CLEAR PUMP TOTALS commands . . . . . 58
CLEAR TRANS command . . . . . 16
CLEAR TRANSACTION commands . . . . . 61
CLOSE command . . . . . 66
Command summary . . . . . 70
Commands, types . . . . . 18
COMPUTER commands . . . . . 115
Computer, external . . . . . 19, 107
Configuration . . . . . 9
Configuration worksheet . . . . . 78
CONFIGURE FIT command . . . . . 33
CONFIGURE PCT command . . . . . 28
CONFIGURE PUMP command . . . . . 32

Database . . . . . 23
Date formatting . . . . . 49
Defaults . . . . . 19
Display prompts . . . . . 35
    Defaults . . . . . 97
Downloading data . . . . . 20
Dual language (not all versions) . . . . . 52

Earth station . . . . . 123
Emergency stop . . . . . 34

FORMAT DATE command . . . . . 49
FORMAT DISPLAY command . . . . . 35
FORMAT KEYBOARD command . . . . . 37
FORMAT RECEIPT BONUS POINTS command . . . . . 42
FORMAT RECEIPT command . . . . . 38
Fuel Island Terminal . . . . . 33
Fueling Units . . . . . 24
FUELTYPE commands . . . . . 58
Fueltypes . . . . . 24

Host setup . . . . . 11

INSERT CARD command . . . . . 13
INSTALL FIT command . . . . . 34
INSTALL PCT command . . . . . 30

Journal printer . . . . . 45

LOCK PRINTER command . . . . . 65

Modem . . . . . 2, 19, 103

OPEN command . . . . . 66
Operating modes
    Normal . . . . . 20
    Privileged . . . . . 20
Operation . . . . . 56

Passwords . . . . . 51
PCT TOTALS commands . . . . . 59
Phoenix backup/restore . . . . . 56
PIN numbers . . . . . 23
Power requirements . . . . . 2
Printer, journal . . . . . 2, 45
Product codes . . . . . 26
Prompt timeouts . . . . . 33
Pump and Fuel Report . . . . . 58
Pump control . . . . . 6
Pump Control Terminal . . . . . 28
PUMP TOTALS commands . . . . . 58

Quick start guide . . . . . 11

RAM memory levels . . . . . 22, 99
Receipts . . . . . 101
    Codes . . . . . 40
    Days to issue . . . . . 33
    Formatting . . . . . 38
    Headers . . . . . 38
REMOVE FIT command . . . . . 34
REMOVE PCT command . . . . . 31
REMOVE PUMP command . . . . . 32
Reports . . . . . 7
    Pump/Fuel . . . . . 58
    System . . . . . 57
    Transactions . . . . . 60
Restrictions
    Quantity . . . . . 46

SET TIME command . . . . . 21
SET BONUS POINTS command . . . . . 41
SET DATE command . . . . . 21
SET FUELING UNITS command . . . . . 24
SET FUELTYPE command . . . . . 24
SET JOURNAL command . . . . . 45
SET PASSWORD command . . . . . 51
SET PRODUCT CODE command . . . . . 26

SET QUANTITY RESTRICTION command
Quantity . . . . . 46
SET RAM command . . . . . 22
SET SECURITY command . . . . . 23
SET SITE ID command . . . . . 47
SET SYSTEM TIME command . . . . . 48
SET TANK NUMBER command . . . . . 27
SET TIME command . . . . . 48
SET TRANSACTION command . . . . . 43
Shifts . . . . . 64
SHOW BONUS POINTS command . . . . 41
SHOW DATE command . . . . . 21
SHOW DISPLAY command . . . . . 37
SHOW FIT command . . . . . 34
SHOW FUELING UNITS command
. . . . . 24
SHOW JOURNAL command . . . . . 45
SHOW KEYBOARD command . . . . . 38
SHOW PRODUCT CODE command
. . . . . 26
SHOW PUMP command . . . . . 32
SHOW QUANTITY RESTRICTION command
. . . . . 46
SHOW RAM command . . . . . 22
SHOW RECEIPT BONUS POINTS command
. . . . . 42
SHOW RECEIPT command . . . . . 38
SHOW SECURITY command . . . . . 23
SHOW SHIFT command . . . . . 64
SHOW SITE ID command . . . . . 47
SHOW SYSTEM TIME command . . . . . 48
SHOW TANK command . . . . . 27
SHOW TIME command . . . . . 21, 48
SHOW TRANS command . . . . . 16
SHOW TRANSACTION command . . . . . 13
Site ID . . . . . 47
Specifications . . . . . 2
SYSTEM command . . . . . 57

Tank # . . . . . 27
TANK commands . . . . . 59
Terminal use . . . . . 19
Time/Date setup . . . . . 11, 21, 48
TRANSACTION # command . . . . . 60
Transactions
Clear . . . . . 16
Clearing . . . . . 61
Definition . . . . . 13
Reports . . . . . 60
Searches . . . . . 62
Setting . . . . . 43
Show . . . . . 16
Summary . . . . . 61

Unit of Measure setup . . . . . 24

Version number . . . . . 57

Wrap-around ON/OFF . . . . . 43

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