Site Operations Manual

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SITE OPERATIONS MANUAL
2500 Systems Operations

Proprietary Information

Version 7.5x FM-11

Preface

The FUELMASTER® **Site Operations Manual** is provided with each FUELMASTER® Fuels Management System. It should be used as a guideline when training the end users on the FUELMASTER® systems operations. In addition, it is recommended that the users be given explanations regarding options to expect at the fuel island (timeouts, FMU messages, etc.).

Some FUELMASTER® features have certain requirements of firmware, software, or hardware, and may not be available to every customer without modifications to their custom manufactured FUELMASTER® system. Other features require activation by STS Product Support personnel using modem communications. Still others may be determined by the Central Controller PC at the time the keys are encoded. In this manual, each of these options will be identified with the description of the feature.

Introduction

SITE OPERATIONS MANUAL
2500 Systems Operations

The Site Operations Manual is divided into eight sections as follows:

Section I This section covers the basic and most common type of FUELMASTER® system using a vehicle key and the prompts the user will follow.

Section II This section covers the basic and most common type of FUELMASTER® system using a user key and the prompts the user will follow.

Sections III-IV These sections cover the Commercial Systems options of operating the FUELMASTER® using user and/or vehicle keys.

Section V This section covers the use of the (**M**) **Manual Issue** key and its operation.

Section VI This section covers the use of the (**T**) **Lube Truck** key and its operation by the lube truck operator.

Section VII This section covers the (**S**) **Supervisor's** key and its many menus on the FUELMASTER® unit. It is used for configuration of the FMU, displaying odometer readings from a vehicle key, updating odometer readings, and performing various diagnostic testing.

Section VIII This section is a trouble shooting guide used to identify FMU generated error messages and with an explanation of each, and a step-by-step guide to solve minor problems at the fuel island. **Trouble shooting should be done in conjunction with Syn-Tech Systems Product Support.**

GENERAL INFORMATION

The following sections describe each of the prompts which will be displayed on the 2500 series FMU. Some of these prompts are system option dependent while others are key option dependent. In other words, if a particular system option is not active on the system and/or on the key being used, the display related to that option will not appear. Each of the option and key dependent displays is so noted in this manual.

Each entry made on the FMU keypad is required to be numeric and the ENTER/YES key must be pressed to complete the entry. Once each entry is completed, the prompt with the next required action appears. An operation may be canceled by pressing the CLEAR/NO key on the FMU keypad followed by user confirmation of the cancellation.

SECTION I - Vehicle Key Operations

VEHICLE KEY FMU

The system types which utilize vehicle keys are the COM (Commercial) systems which have one of the following key configurations: VKO (**V**ehicle **K**ey **O**nly), Either Key or Two Key and the VMN (**V**erified **M**iscellaneous **N**umber) systems. (Prompts specific to Either-Key and Two-Key Systems are detailed in Sections III & IV of this manual.)

Vehicle Key systems are designed to provide accurate fueling records as they relate to the activities of a particular vehicle. These records may also contain User information depending on the configuration of the unit and the key options selected.

Display Prompts

If the Odometer/Chronometer feature is enabled, note the current odometer/chronometer reading before getting out of the vehicle.

- The FMU screen displays the following prompt:

**	**FuelMaster FUELS ACCOUNTING SYSTEM** **
**	**INSERT KEY, HOLD 1 SECOND TO BEGIN** **

This message means that the FMU is available for use. Insert the PROKEE® into the PROKEE® receptacle. Press it in and hold it there until the display screen on the FMU changes to the next prompt (approximately one second).

NOTE:

If your system is equipped with a credit card reader, the following display replaces the above as the FMU's default display:

**	**FuelMaster FUELS ACCOUNTING SYSTEM** **
**	**INSERT KEY OR CARD TO BEGIN** **

- If the FMU's PIN option is active and the vehicle key's PIN option is set to Y, the following prompt will appear:

***** FUELMASTER *****
ENTER P.I.N. ---->

Enter the PIN (Personal Identification Number) of the Vehicle Key on the FMU keypad. This number is assigned to the key when it is encoded and is a 4-digit number that is unique to the key. If the entry is incorrect, an error message appears, the error is logged on the on-site printer and process begins again. Once the vehicle's PIN is entered correctly, the next prompt appears.

NOTE:

The PIN entry is the only user entry which does not require that the ENTER/YES key be pressed in order to complete the entry.

IMPORTANT NOTE:

If the 'Odometer First' option is enabled in the FMU's configuration, the next two prompts (User ID and Odometer) will appear in reverse order). (This option is 'disabled' by default but may be changed by contacting Syn-Tech's Product Support personnel.)

- If the USER ID option is active on the system, the following prompt will appear:

***** FUELMASTER ****
ENTER USER ID --->

This prompt requires entry of a USER ID. This must be numeric and may be up to nine digits in length. This prompt may be customized to read other than USER ID by contacting Syn-Tech Systems Product Support Department. Once the USER ID is entered on the FMU keypad, press the ENTER/YES key to receive the next prompt.

NOTE:

2500 series FMUs with either COMM (Commercial) or VMN system types have the option of requiring the entry of a USER ID only on selected Vehicle Keys. Each of these options are described below:

• COMMERCIAL SYSTEMS: The entry is not verified, which means that no matter the entry, it is accepted and recorded without regard to accuracy. In addition, since any number is accepted, this entry cannot be locked-out (deauthorized). [DEFAULT]

• VMN SYSTEMS: The entry is verified against an authorization list stored in the unit. If the entry is invalid, 5 attempts to enter a valid USER ID are afforded the user. Upon failure to enter a valid USER ID, an error message is sent to the on-site printer and the process begins again. This method requires entry of an authorized number and allows these numbers to be locked out (deauthorized).

➢ If the ODOMETER/CHRONOMETER option is active for this Vehicle Key, the following prompt will appear:

** FUELMASTER	**
ENTER CHRONO/ODOMETER --->	**

Enter the miles or hours (without tenths) on the FMU keypad. Once entered, press ENTER/YES on the keypad.

➢ **What occurs next is very important and causes the most user confusion**. When the Vehicle Key is first inserted, the FMU looks at the MILES/HOURS range that was encoded on the key. The FMU then looks at the miles/hours that were entered and written back to the key with the previous fueling transaction. The FMU then calculates the miles/hours elapsed and compares it to the value just entered and sends the appropriate prompt to the FMU display screen.

One of the following three messages will appear:

***** FUELMASTER	****
* ODOMETER TOO LOW ! PLEASE TRY AGAIN.	*

This error message indicates that the entry made is lower than the entry that was written to the key with the previous fueling transaction on this vehicle.

***** FUELMASTER ****
* ODOMETER TOO HIGH ! PLEASE TRY AGAIN. *

This error message indicates that the entry has an elapsed miles or hours which is greater than the MILES/HOURS range encoded on the key. One of the following may have occurred:

- the miles/hours range on the key was too low to begin with,
- tenths of miles are being entered when only whole miles should be entered,
- the last time the key was used, the miles/hours did not get written back to the key,
- the entry was incorrect and not confirmed before pressing the ENTER/YES key on the keypad,
- the entry is correct but the vehicle's last fueling was off-site causing the miles/hours range to be exceeded.

The above error messages requires re-entry of the miles or hours. The standard FMU accepts the user's second mile/hour entry, regardless of accuracy. The following screen will be displayed:

** REINSERT YOUR VEHICLE KEY **
** TO CONTINUE **

This message means that the miles/hours entered was accepted and the FMU wishes to write the entry back to the key. Insert the Vehicle Key and hold it in. The following display is quickly displayed notifying the user that the entry is being written to the key:

** FUELMASTER **
** WRITING ODOMETER TO KEY **

- If the 'Bad Odom Termination' option is enabled on the FMU, the following display appears upon entry of two consecutive odometer entries which are out of range of the odometer read from the key.

```
**   TRANSACTION CANCELLED BECAUSE OF   **
**     OUT-OF-RANGE ODOMETER ENTRIES    **
```

- If the Preventive Maintenance option is active, the following prompt may appear:

```
**     VEHICLE IS DUE FOR PREVENTATIVE    **
**     MAINTENANCE -- INFORM SUPERVISOR!  **
```

This message serves as notification that the PM MILEAGE encoded on the key has been reached, and preventive maintenance is due. This message continues to be given to this vehicle until the Vehicle Key is updated (PM MILEAGE is reset) by the supervisor. (This message is displayed for the time period specified in the Configuration Setting, 'Message Read Duration'. The default for this setting is 4 seconds.)

- If the Oil Check option is active on the system, the following prompt will appear:

```
*****          FUELMASTER          ****
DID YOU CHECK YOUR OIL? (Y/N)  --->
```

This prompt requires that the 'YES' or 'NO' key on the FMU keypad based on whether the oil has been checked at the time of this fueling transaction. Pressing 'YES' prompts the following display:

```
*****          FUELMASTER          ****
ENTER OIL QTY ADDED (QUARTS)  --->
```

This prompt requires entry of a single digit between 0 and 9 on the FMU keypad. Enter the number of quarts of oil added at the time of this transaction and press <ENTER>.

NOTE:

The oil check transaction will appear as a separate transaction on the FMU's on-site printer and in the Central Controller's transaction listing and will appear at the bottom of the fuel transaction receipt. This feature is added as an additional record keeping capability of FuelMaster systems.

- After all of the required entries have been made, the following hose selection display appears:

REMOVE KEY, SELECT HOSE, PRESS <ENTER> **1,2,3,4 --->**

The choices presented on this display are limited to the hoses that have the same product code(s) authorized for the Vehicle Key. Select the hose and press ENTER/YES.

NOTE:

An '*' next to a hose number means that this hose is already in use. A message to this effect will be displayed if this hose is selected.

- Once a hose is selected, one of two messages appears on the FMU display. These messages depend upon the type of dispenser in use and how it was wired during installation of the Fuelmaster hardware:

***	**DISPENSER ENABLED**	***
***	**DISPENSE PRODUCT**	***

This authorization prompt appears if the FMU configuration is set not to detect the pump handle. It does not matter when the pump handle is turned on. When this message appears, the FMU is ready to keep track of fueling.

<<< TURN ON PUMP HANDLE TO DISPENSE >>>
<<< THE SELECTED PRODUCT >>>

This authorization prompt appears if the FMU configuration is set to detect the pump handle. It means that the FMU is ready to watch for the pump handle to be turned on. The prompt then indicates the dispenser hose status.

>>> DISPENSER HAS BEEN ACTIVATED <<<
>>> RETURN HOSE AFTER USER <<<

When the FMU sees the pump handle turned on, it responds with the above message and is ready to keep track of fueling.

**** PUMP HANDLE NOT TURNED OFF ! ****
**** PLEASE TURN PUMP HANDLE OFF. ****

If the above display appears, the pump handle selected was already in the 'ON' position at the time this handle was selected. To begin fueling with this pump, first reset the pump handle to the 'OFF' position and wait for the prompt to turn it on to begin fueling.

SECTION II - User Key Operations

USER KEY FMU

The system types which utilize user keys are COM (Commercial) systems which have one of the following key configurations: User-Key, Either Key or Two-Key and the VVID (**V**erified **V**ehicle **ID**) systems.

User Key systems are designed to provide accounting information directly associated with a User's fuel activities which may involve more than one vehicle.

Display Prompts

If the odometer/chronometer feature is enabled, note the current odometer/ chronometer reading before getting out of the vehicle.

- The FMU display screen will have the following display:

** FuelMaster FUELS ACCOUNTING SYSTEM **
** INSERT KEY, HOLD 1 SECOND TO BEGIN **

This message means that the FMU is available for use. Insert the PROKEE® into the PROKEE® receptacle. Press it in and hold it there until the display screen on the FMU changes to the next prompt (approximately one second).

NOTE:

If your system is equipped with a credit card reader, the following display replaces the above as the FMU's default display:

** FuelMaster FUELS ACCOUNTING SYSTEM **
** INSERT KEY OR CARD TO BEGIN **

- If the PIN option is active on the system, the following prompt appears:

***** FUELMASTER *****
ENTER P.I.N. --->

Enter the PIN (Personal Identification Number) of the User Key on the FMU keypad. This number is assigned to the key when it is encoded and is a 4-digit number that is unique to the key. If the entry is incorrect, an error message appears, the error is logged on the on-site printer and the process begins again. Once the PIN is entered correctly, the next prompt appears.

NOTE:

The PIN entry is the only user entry which does not require that the ENTER/YES key be pressed in order to complete the entry.

IMPORTANT NOTE:

If the 'Odometer First' option is enabled on your FMU, the next two prompts will appear in reverse order. This option is disabled by default but may be enabled by contacting Syn-Tech's Product Support personnel.

- If the VEHICLE ID option is enabled, the following prompt appears:

***** FUELMASTER *****
ENTER VEHICLE ID --->

On the FMU keypad, enter the VEHICLE ID of the vehicle being fueled. No verification occurs on the VEHICLE ID entered.

- If the ODOMETER/CHRONOMETER option is active for this User Key, the following prompt appears:

***** FUELMASTER *****
ENTER CHRONO/ODOMETER --->

Enter the miles or hours (without tenths) on the FMU keypad. Once entered, press the ENTER/YES on the keypad. Unlike the Vehicle Key system, no check is made on this miles/hour entry; it is recorded with the transaction.

- If the Oil Check option is enabled, the following prompt displays:

```
*****          FUELMASTER          *****
DID YOU CHECK YOUR OIL? (Y/N)  --->
```

This prompt requests that the 'YES' or 'NO' key on the FMU keypad be pressed based on whether the oil has been checked at the time of this fueling transaction. Press 'YES' or 'NO' and the following prompt will display:

```
*****          FUELMASTER          *****
ENTER OIL QTY ADDED (QUARTS)  --->
```

This prompt requires entry of a single digit between 0 and 9 on the FMU keypad. Enter the number of quarts of oil added at the time of this transaction and press <ENTER>.

NOTE:

The oil check transaction will appear as a separate transaction on the FMU's on-site printer and in the Central Controller's transaction listing but will appear at the bottom of the fuel transaction receipt on the FMU's receipt printer. This feature is added as an additional record keeping capability of FuelMaster systems.

- Once all of the entries have been completed, the following hose selection display appears:

```
REMOVE KEY, SELECT HOSE, PRESS <ENTER>
1,2,3,4  --->
```

This selection is limited to those hoses with the same product code(s) authorized for the User Key. Select the hose of choice and press ENTER/YES.

NOTE:

An '*' next to a hose number means that this hose is already in use. A message to this effect will be displayed if this hose is selected.

- Once a hose has been selected, one of two messages appears on the FMU display. These messages depend upon the type of dispenser installed and how it was wired during installation of the Fuelmaster hardware.

***	**DISPENSER ENABLED**	***
***	**DISPENSE PRODUCT**	***

This authorization prompt appears if the FMU configuration is set not to detect the pump handle. It does not matter when the pump handle is turned on. When this message appears, the FMU is ready to keep track of fueling.

<<	**TURN ON PUMP HANDLE TO DISPENSE**	>>
<<	**THE SELECTED PRODUCT**	>>

This authorization prompt if the FMU configuration is set to detect the pump handle. It means that the FMU is ready to watch for the pump handle to be turned on.

The following prompt indicates of the dispenser hose status.

>>>	**DISPENSER HAS BEEN ACTIVATED**	<<<
>>>	**RETURN HOSE AFTER USER**	<<<

When the FMU sees the pump handle is turned on, it responds with the above message and is ready to keep track of fueling.

**	**PUMP HANDLE NOT TURNED OFF.**	**
**	**PLEASE TURN PUMP HANDLE OFF !**	**

If the above message appears, the pump handle selected was already in the 'ON' position at the time this handle was selected. To begin fueling with this pump handle, first reset the pump handle to the 'OFF' position and wait for the prompt to turn it on to begin fueling.

SECTION III- Either Key Operations

EITHER KEY FMU

The system type which supports insertion of either a Vehicle Key or a User Key is the COM (Commercial) system which has been set to the Either Key configuration.

Either Key systems are designed to provide the flexibility of Vehicle Key or User Key fueling. Fueling transactions accounting in this type of system is dependent on the type of key inserted. Although both User Keys and Vehicle Keys are utilized by this type of system, only one is required at the time of fueling.

Display Prompts

If the odometer/chronometer feature is active, note the current odometer/ chronometer reading before getting out of the vehicle.

- The FMU display screen will have the following display:

**	**FuelMaster FUELS ACCOUNTING SYSTEM**	**
**	**INSERT KEY, HOLD 1 SECOND TO BEGIN**	**

This message means that the FMU is available for use. Insert the PROKEE® being used into the PROKEE® receptacle. Press it in and hold it there until the display screen on the FMU changes to the next prompt (approximately one second).

NOTE:

If your system is equipped with a credit card reader, the following display replaces the above as the FMU's default display:

**	**FuelMaster FUELS ACCOUNTING SYSTEM**	**
**	**INSERT KEY OR CARD TO BEGIN**	**

- If the PIN option is active on the system, the following prompt appears:

*****	**FUELMASTER**	*****
	ENTER P.I.N. --->	

Enter the PIN (Personal Identification Number) of the key on the FMU keypad. This number is assigned to the key when it is encoded and is a 4-digit number that is unique to the key. If your entry is incorrect, an error message appears, the error is logged on the on-site printer and the process begins again. Once the PIN is entered correctly, the next prompt appears.

VEHICLE KEY SPECIFIC DISPLAY PROMPTS

- If the 'Verify Veh. Key ID Entry' option is enabled in the FMU's configuration, the following prompt appears:

*****	**FUELMASTER**	*****
	ENTER VEHICLE ID --->	

Enter the Vehicle ID on the FMU keypad. This must match the Vehicle ID which is stored on the key. If the entry is invalid, the process begins again. If accepted, the next applicable prompt appears. (This system option is disabled by default but can be enabled by contacting Syn-Tech's Product Support personnel.)

IMPORTANT NOTE:

If the 'Odometer First' option is enabled in the FMU's configuration, the next two prompts (User ID and Odometer) will appear in reverse order). (This option is 'disabled' by default but may be changed by contacting Syn-Tech's Product Support personnel.)

- If the USER option is enabled, the following prompt appears:

*****	**FUELMASTER**	*****
	ENTER USER ID --->	

Enter the USER ID on the FMU keypad. Remember that this must be numeric and may be up to nine characters in length. (The USER ID prompt may be customized to request other than USER ID by contacting Syn-Tech Systems Product Support.) Once the USER ID is entered on the FMU keypad, press the ENTER/YES key to receive the next prompt.

NOTE:

The Central Controller is capable of encoding selected Vehicle Keys to require the entry of a user or misc. number at the time of fueling. This entry is not verified. This means that entries are accepted and recorded without regard to accuracy. In addition, since any number is accepted, locking out (deauthorizing) the user is not possible.

- If the ODOMETER/CHRONOMETER option is active for the key, the following prompt is displayed:

```
*****          FUELMASTER          *****
      ENTER CHRONO/ODOMETER --->
```

Enter the miles or hours (without tenths) on the FMU keypad. Once entered, press the ENTER/YES on the keypad.

- **What occurs next is very important and causes the most confusion**. When the Vehicle Key is first inserted, the FMU looks at the MILES/HOURS range that was encoded to the key. The FMU then looks at the miles/hours that were entered and written back to the key with the last fueling transaction. The FMU then calculates the miles/hours elapsed and sends the appropriate prompt to the FMU display screen.

  One of the following three messages will appear:

```
*****          FUELMASTER          *****
*   ODOMETER TOO LOW!  PLEASE TRY AGAIN.   *
```

This error message indicates that the entry made is lower than the entry that was written to the key with the previous fueling transaction on this vehicle.

```
*****          FUELMASTER          *****
*   ODOMETER TOO HIGH!  PLEASE TRY AGAIN.   *
```

This error message indicates that the entry has an elapsed miles or hours which is greater than the MILES/HOURS range encoded on the key. One of the following may have occurred:

- the miles/hours range on the key was too low to begin with,
- tenths of miles may have been entered when the entry should consist of whole miles only,
- the last time the key was used the miles/hours did not get written back to the key,
- an incorrect entry was made and the ENTER/YES key was pressed,
- the entry is correct but the vehicle's last fueling was off-site causing the mile/hour range to be exceeded.

The above error messages requires re-entry of miles or hours. The standard FMU will accept the user's second mile/hour entry, regardless of accuracy.

```
**        REINSERT YOUR VEHICLE KEY        **
 **             TO CONTINUE              **
```

This message indicates that the miles/hours entry was accepted and the FMU wishes to write the entry back to the key. Insert the Vehicle Key and hold it in. The entry is then written back to the key and the next prompt appears.

- If the 'Bad Odom Termination' option is enabled on the FMU, the following display appears upon entry of two consecutive odometer entries which are out of range of the odometer written to the key.

**	TRANSACTION CANCELLED BECAUSE OF **
**	OUT-OF-RANGE ODOMETER ENTRIES **

- If the preventive maintenance option is active, the following prompt appears:

**	VEHICLE IS DUE FOR PREVENTATIVE **
**	MAINTENANCE -- INFORM SUPERVISOR **

This message indicates that the PM MILEAGE encoded on the key has been reached, and preventive maintenance is due. This message continues to be given to this vehicle until the Vehicle Key is updated (PM MILEAGE is reset) by the supervisor. (This message is displayed for the time period specified in the Configuration Setting, 'Message Read Duration'. The default for this setting is 4 seconds.)

USER KEY SPECIFIC DISPLAY PROMPTS

- If the VEHICLE ID option is active for the key, the following prompt appears:

*****	FUELMASTER	*****
	ENTER VEHICLE ID --->	

This prompt requires entry of an eight-digit Vehicle ID and the ENTER/YES key to complete the entry. The Vehicle ID entry is accepted without validation.

- If the ODOMETER/CHRONOMETER option is active for this User Key, the following prompt is displayed:

***** FUELMASTER *****
ENTER CHRONO/ODOMETER --->

Enter the miles or hours of the vehicle entered on the FMU keypad. Once entered, press the ENTER/YES on the keypad. Unlike when using the Vehicle Key, no checking is done on the miles/hours entry; it is recorded with the transaction.

- If the Oil Check option is active on the unit, the following prompt appears:

***** FUELMASTER *****
DID YOU CHECK YOUR OIL? (Y/N) --->

This prompt requests that the 'YES' or 'NO' key on the FMU keypad be pressed based on whether the oil has been checked at the time of this fueling transaction. Press 'YES' or 'NO' and the following prompt will display:

***** FUELMASTER *****
ENTER OIL QTY ADDED (QUARTS) --->

This prompt requires entry of a single digit between 0 and 9 on the FMU keypad. Enter the number of quarts of oil added at the time of this transaction and press <ENTER>.

NOTE:

The oil check transaction will appear as a separate transaction on the FMU's on-site printer and in the Central Controller's transaction listing but will appear at the bottom of the fuel transaction receipt on the FMU's receipt printer. This feature is added as an additional record keeping capability of FuelMaster systems.

BOTH KEYS' DISPLAY PROMPTS

- After entries have been made and validated, the following hose selection display appears:

```
REMOVE KEY, SELECT HOSE, PRESS <ENTER>
1,2,3,4  --->
```

The selection is limited to those hoses with the same product code(s) of the authorized vehicle or User Key. Select the hose of choice and press ENTER/YES.

NOTE:

An '*' next to a hose number means that this hose is already in use. A message to this effect will be displayed if this hose is selected.

- Once a hose is selected, one of two messages appears on the FMU display. These messages depend upon the type of dispenser installed and how it was wired during installation of the FuelMaster® hardware:

```
***      DISPENSER ENABLED      ***
***      DISPENSE PRODUCT       ***
```

This authorization prompt appears if the FMU configuration is set at pump handle detect - NO. It does not matter when the pump handle is turned on. When this message appears, the FMU is ready to keep track of fueling.

```
<<<  TURN ON PUMP HANDLE TO DISPENSE  >>>
<<<       THE SELECTED PRODUCT        >>>
```

This authorization prompt appears if the FMU configuration is set to detect the pump handle. It means that the FMU is ready to watch for the pump handle to be turned on.

The following prompt indicates the status of the dispenser hose:

>>>	**DISPENSER HAS BEEN ACTIVATED**	**<<<**
>>>	**RETURN HOSE AFTER USE**	**<<<**

When the FMU sees the pump handle turned on, it responds with the above message and is ready to keep track of fueling.

******	**PUMP HANDLE NOT TURNED OFF**	******
******	**PLEASE TURN PUMP HANDLE OFF!**	******

If the above message appears, the pump handle selected was already in the 'ON' position at the time this handle was selected. To begin fueling with this pump handle, first reset the pump handle to the 'OFF' position and wait for the prompt to turn it on to begin fueling.

SECTION IV- Two Key Operations

TWO-KEY FMU

The system type which requires both a Vehicle Key and a User Key in order to obtain fuel is the COM (Commercial) system which has been set to the Two Key configuration.

Two Key systems are designed to provide added accounting information and the extra security by requiring that both a Vehicle Key and a User Key be used to obtain fuel.

Display Prompts

If the Odometer/Chronometer feature is active, note the current odometer/ chronometer reading before getting out of the vehicle.

- The FMU screen displays the following prompt:

**	**FuelMaster FUELS ACCOUNTING SYSTEM**	**
**	**INSERT KEY, HOLD 1 SECOND TO BEGIN**	**

This message means that the FMU is available for use.

NOTE:

Although either key can be inserted first, for certain types of message transactions, it is preferable that the User Key be inserted first into the PROKEE® receptacle since more complete transaction data is obtained through this method.

Insert a PROKEE® and hold it there until the display screen on the FMU changes to the next prompt (approximately one second).

NOTE:

If the PIN option has been enabled in the FMU's system configuration, each key inserted which has the PIN key option enabled will require that the user enter the PIN on the FMU keypad for verification. When the user key is inserted, the user must enter the PIN associated with the user key. Likewise, when the vehicle key is inserted, the PIN associated with that key must be entered on the FMU keypad for verification.

NOTE:

If your system is equipped with a credit card reader, the following display replaces the above as the FMU's default display:

**	FuelMaster FUELS ACCOUNTING SYSTEM	**
**	INSERT KEY OR CARD TO BEGIN	**

USER KEY

- If the PIN option is active, regardless of which key is inserted first, the following prompt appears:

*****	FUELMASTER	*****
	ENTER P.I.N. --->	

Enter the PIN (Personal Identification Number) of the key on the FMU keypad. This number is assigned to the key when it is encoded and is a 4-digit number that is unique to the key. If the entry is incorrect, an error message appears, the error is logged on the on-site printer and the process begins again. Once the PIN is entered correctly, the next prompt appears.

- If the first key inserted was the User Key, the following prompt appears:

**	USER KEY HAS BEEN READ	**
**	SUCCESSFULLY !	**

This prompt indicates that the User Key has been successfully read. In a moment, another prompt appears.

**	INSERT YOUR VEHICLE KEY	**
**	TO CONTINUE	**

As soon as this prompt appears on the FMU display, the Vehicle Key is ready to be inserted. Insert the Vehicle Key and press it in until the next prompt appears.

NOTE:

Two errors commonly occur here:

1. Continuing to hold the User Key in long after it has been read

   The FMU looks for the Vehicle Key but sees the User Key instead. This results in an error message.

2. Inserting the User Key and then quickly inserting the Vehicle Key before the FMU prompt appears.

   This creates confusion for the user.

- If the PIN option is enabled on this key, the following prompt appears:

***** FUELMASTER *****
ENTER P.I.N. --->

Enter the PIN (Personal Identification Number) of the key on the FMU keypad. This number is assigned to the key when it is encoded and is a 4-digit number that is unique to the key. If the entry is incorrect, an error message appears, the error is logged on the on-site printer and the process begins again. Once the PIN is entered correctly, the next prompt appears.

- If the ODOMETER/CHRONOMETER option is active for this Vehicle Key, the following prompt appears:

***** FUELMASTER *****
ENTER CHRONO/ODOMETER --->

Enter miles or hours (without tenths) on the FMU keypad. Once entered, press the ENTER/YES on the keypad.

- **What occurs next is very important and causes the most confusion.** When the Vehicle Key is first inserted, the FMU looks at the MILES/HOURS range that was encoded to the key. The FMU then looks at the miles/hours that were entered and written back to the key with the previous fueling transaction. The FMU then calculates the miles/hours elapsed and compares it to the value just entered and sends the appropriate prompt to the FMU display screen. One of the following three messages will be displayed:

```
*****          FUELMASTER          *****
*  ODOMETER TOO LOW!  PLEASE TRY AGAIN.  *
```

This error message indicates that the entry is lower than the entry the was written to the key with the previous fueling transaction on this vehicle.

```
*****          FUELMASTER          *****
*  ODOMETER TOO HIGH!  PLEASE TRY AGAIN.  *
```

This error message indicates that the entry has an elapsed miles or hours which is greater than the MILES/HOURS range encoded on the key. One of the following may have occurred:

- the miles/hours range on the key was too low to begin with,
- tenths of miles may have been entered when the entry should consist of whole miles only,
- the last time the key was used the miles/hours did not get written back to the key,
- the entry was incorrect and the ENTER/YES key was pressed,
- the entry is correct but the vehicle's last fueling was off-site causing the mile/hour range to be exceeded.

Both of these error messages require re-entry of miles or hours. The standard FMU will accept the user's second mile/hour entry, regardless of accuracy.

**	**REINSERT YOUR VEHICLE KEY** **
**	**TO CONTINUE** **

This message indicates that the miles/hours entry was accepted and the FMU wishes to write the entry back to the key. Insert the Vehicle Key and hold it in. The entry is written back to the key and the next prompt appears.

- If the 'Bad Odom Termination' option is enabled on the FMU, the following display appears upon entry of two consecutive odometer entries which are out of range of the odometer written to the key.

**	**TRANSACTION CANCELLED BECAUSE OF** **
**	**OUT-OF RANGE ODOMETER ENTRIES** **

- If the key inserted is not the Vehicle Key (as instructed by the prompt to "REINSERT YOUR VEHICLE KEY"), a prompt with the following error message appears:

**	**ERROR: KEY INSERTED IS NOT** **
**	**A VEHICLE KEY** **

Insert the Vehicle Key so the miles/hours are written back to the Vehicle Key.

- If the preventive maintenance option is active, the following prompt may appear:

**	**VEHICLE IS DUE FOR PREVENTATIVE** **
**	**MAINTENANCE -- INFORM SUPERVISOR** **

This message indicates that the PM MILEAGE that was encoded on the key has been reached and preventive maintenance is due. This message continues to be given to this vehicle until the Vehicle Key is

updated (PM MILEAGE is reset) by the supervisor. (This message is displayed for the time period specified in the Configuration Setting, 'Message Read Duration'. The default for this setting is 4 seconds.)

- Once all entries have been completed, the following hose selection screen appears:

REMOVE KEY, SELECT HOSE, PRESS <ENTER>
1,2,3,4 --- >

This selection is limited to those hoses with the same product code(s) authorized for the Vehicle Key and the User Key. Make the hose selection and press ENTER/YES.

- Once a hose has been selected, one of two messages appears on the FMU display. These depend upon the type of dispenser installed and how the control wiring was done during installation of the FuelMaster® hardware:

***	**DISPENSER ENABLED**	***
***	**DISPENSE PRODUCT**	***

This authorization prompt appears if the FMU configuration is set at pump handle detect - NO. It does not matter when the pump handle is turned on. When this message appears, the FMU is ready to keep track of fueling.

<<<	**TURN ON PUMP HANDLE TO DISPENSE**	**>>>**
<<<	**THE SELECTED PRODUCT**	**>>>**

This authorization prompt appears if the FMU configuration is set at pump handle - YES. It means that the FMU is ready to watch for the pump handle to be turned on. The prompt indicates the dispenser hose status.

>>>	**DISPENSER HAS BEEN**	**<<<**
>>>	**RETURN HOSE AFTER USER**	**<<<**

When the FMU sees the pump handle turned, on it responds with the above message and is ready to keep track of fueling.

**	**PUMP HANDLE NOT TURNED OFF**	**
**	**TURN PUMP HANDLE OFF**	**

The FMU could not detect when the pump handle was turned on because it was already on. Flip the pump handle off and the hose selection re-appears. Select the hose and the prompt on the FMU display indicates when it is ready to look for the pump handle to be turned on. When prompted, turn the handle back on.

SECTION V- Manual Key Operations

Display Prompts

While not the standard method of obtaining fuel from the FuelMaster system, the Manual Issue Key can be useful in allowing fueling at an automated fueling site for vehicles, equipment, or visiting users that either do not have an assigned key or have no real need for an assigned key. The FMU prompts that are displayed when using this type of key are broken down into two different groups: those for the VMN system type and others. Each of the entries on the FMU keypad, regardless of system type, are numeric.

VMN SYSTEM TYPE:

When the MANUAL ISSUE KEY is inserted, the following prompt appears:

*****	**FUELMASTER**	*****
	ENTER USER ID --->	

The USER ID entry is checked against an authorization list stored in the FMU. Five opportunities are given to enter a valid USER ID. If, after five attempts, the entry is not authorized, a message is sent to the on-site printer and the process begins again. If the entry is a valid USER ID, the next prompt appears.

ALL SYSTEM TYPES:

*****	**FUELMASTER**	*****
	ENTER VEHICLE ID --->	

The VEHICLE ID entry is accepted without validation.

NOTE FOR VVID SYSTEMS:

The new 2500 Series FMU has an additional system configuration option for VVID systems which validates the vehicle ID entry made on the FMU keypad. This option is disabled by default and must be enabled via modem by SYN-TECH Product Support personnel.

With this feature enabled, the VEHICLE ID is then validated against the stored list of authorized vehicles. If the entry is invalid, a message is sent to the on-site printer and the process begins again. If the entry is a valid VEHICLE ID, the next prompt appears on the unit.

COMMERCIAL & VVID SYSTEM TYPES ONLY:

*****	**FUELMASTER**	*****
	ENTER CHRONO/ODOMETER --->	

The CHRONO/ODOMETER reading is recorded without being checked.

- A new 2500 Series FMU feature allows for disabling the Agency ID entry requirement for Commercial systems. This must be set before shipping or through modem communications with a member of the SYN-TECH Product Support Department.

  If this feature has not been implemented or you do not have a Commercial System type, the following AGENCY ID entry prompt appears:

*****	**FUELMASTER**	*****
	ENTER AGENCY ID --->	

This entry is accepted without being checked.

ALL SYSTEM TYPES:

Once responses to all prompts are entered, hose selection is made and fueling allowed.

REMOVE KEY, SELECT HOSE, PRESS <ENTER> **1,2,3,4 --->**

NOTE:

Using Manual Issue Keys on all system types provides for selection of all hoses configured on the unit since no product limitations are encoded on the key.

NOTE:

An '*' next to a hose number means that this hose is already in use. A message to this effect will be displayed if this hose is selected.

- Once a hose is selected, one of two messages appears on the FMU display. These messages depend upon the type of dispenser in use and how it was wired during installation of the FuelMaster® hardware:

***	**DISPENSER ENABLED**	***
***	**DISPENSE PRODUCT**	***

This authorization prompt appears if the FMU configuration is set not to detect the pump handle. It does not matter when the pump handle is turned on. When this message appears, the FMU is ready to keep track of fueling.

<<<	**TURN ON PUMP HANDLE TO DISPENSE**	>>>
<<<	**THE SELECTED PRODUCT**	>>>

This authorization prompt appears if the FMU configuration is set to detect the pump handle. It means that the FMU is ready to watch for the pump handle to be turned on. The prompt then indicates the dispenser hose status.

>>>	**DISPENSER HAS BEEN ACTIVATED**	**<<<**
>>>	**RETURN HOSE AFTER USER**	**<<<**

When the FMU sees the pump handle turned on, it responds with the above message and is ready to keep track of fueling.

**	**PUMP HANDLE NOT TURNED OFF !**	**
**	**PLEASE TURN PUMP HANDLE OFF.**	**

If the above display appears, the pump handle selected was already in the 'ON' position at the time this handle was selected. To begin fueling with this pump handle, first reset the pump handle to the 'OFF' position and wait for the prompt to turn it on to begin fueling.

SECTION VI - Tanker Truck Operations

Display Prompts

The Tanker Truck Key was created to account for inventory transfer of fuel from an automated FuelMaster® site into the tanker truck's storage tank. After fuel transfer, the fuel becomes accountable to the tanker truck. If the tanker truck is fitted with a 2500 Mobile FMU, fueling transactions can be uploaded to a fixed site 2500 FMU or downloaded directly from the Central Controller PC through a standard telephone line.

If the tanker truck is not fitted with a 2500 Mobile FMU, more detailed fuel accounting may be obtained by logging and manually entering all tanker truck fueling transactions into the Central Controller PC. (See Section 10 of the Central Controller Manual for Manual Entry of Transactions.)

- The FMU screen displays the following default prompt:

```
**    FuelMaster FUELS ACCOUNTING SYSTEM    **
**    INSERT KEY, HOLD 1 SECOND TO BEGIN    **
```

- If your system is equipped with a credit card reader, the following display replaces the above as the FMU's default display:

```
**    FuelMaster FUELS ACCOUNTING SYSTEM    **
**    INSERT KEY OR CARD TO BEGIN           **
```

This message means that the FMU is available for use. Insert the tanker truck PROKEE® into the PROKEE® receptacle. Press it in and hold it there until the display screen on the FMU changes to the next prompt (approximately one second).

```
***    FUELMASTER TANKER TRUCK ISSUE    ***
```

- If the PIN option is active, the following prompt appears:

```
*****              FUELMASTER              *****
ENTER P.I.N. --->
```

Enter the PIN (Personal Identification Number) of the Tanker Key on the FMU keypad. This number is assigned to the key when it is encoded and is a 4-digit number that is unique to the key. If the PIN entry is incorrect, an error message is displayed and the process begins again. Upon entry of a valid PIN entry, the next prompt appears.

```
REMOVE KEY, SELECT HOSE, PRESS <ENTER>
1,2,3,4  --->
```

The hose selection is limited to the hoses that have the same product code(s) authorized for the Tanker Key. Select the hose and press ENTER/YES.

Once a hose is selected, one of two messages appears on the FMU display. These messages depend upon the type of dispenser installed how it was wired during installation of the FuelMaster® hardware:

```
***          DISPENSER ACTIVATED          ***
***          DISPENSE PRODUCT             ***
```

This prompts appears if the FMU configuration is set at pump handle detect - NO. It does not matter when the pump handle is turned on. When this message appears, the FMU is ready to keep track of fueling.

```
<<<  TURN ON PUMP HANDLE TO DISPENSE  >>>
<<<        THE SELECTED PRODUCT       >>>
```

This prompt appears if the FMU configuration is set at pump handle - YES. It means that the FMU is ready to watch for the pump handle to be turned on.

The prompt then indicates the dispenser hose status.

>>>	DISPENSER HAS BEEN ACTIVATED <<<
>>>	RETURN HOSE AFTER USER <<<

When the FMU sees the pump handle turned on, it responds with the above message and is ready to keep track of fueling.

**	PUMP HANDLE NOT TURNED OFF **
**	PLEASE TURN PUMP HANDLE OFF! **

The FMU could not detect when the pump handle was turned on because it was already on. Flip the pump handle off and the hose selection re-appears. Select a hose and the prompt on the FMU display indicates when it is ready to look for the pump handle to be turned on. When prompted, turn the handle back on.

IMPORTANT NOTE:

The operation of a tanker truck key on a Mobile 2500 FMU will be different from that stated in this section. The tanker truck key is a form of supervisor key for mobile operations with a limited ability to configure the Mobile Unit as well as to initiate communications with the fixed site FMU. In addition, the prompts on the Mobile FMU will coincide with the tanker truck key's added supervisor role with respect to the tanker truck operations.

SECTION VII - Supervisor Key Access

The Supervisor Key, once encoded, should remain with the person responsible for the system or in a safe location. Although it is a very useful key, since it allows access to the system's configuration areas, it can also be a dangerous key in the wrong hands.

Display Prompts

```
**    FuelMaster FUELS ACCOUNTING SYSTEM    **
**    INSERT KEY, HOLD 1 SECOND TO BEGIN    **
```

The above default FUELMASTER® message displays continually when the FUELMASTER® (FMU) is available for use.

If your system is equipped with a credit card reader, the following display replaces the above as the FMU's default display:

```
**    FuelMaster FUELS ACCOUNTING SYSTEM    **
**         INSERT KEY OR CARD TO BEGIN      **
```

Once a supervisor key is inserted, the following choice of menus is displayed:

```
*    SUPV. MENU:  1=SYSTEM, 2=PM, 3=ODOM    *
*    A=CONFIG, B=ISSUES, C=DROPS, D=EXIT    *
```

Options 1-3 and A-B represent a set of submenus which in turn may have additional submenus. From the Main Menu, pressing 'D' will exit supervisor key operations while pressing the 'D' key while in a submenu will simply back up to the previous menu.

NOTE:

If the FuelMaster® Unit has been configured to operate as any other system than the FuelMaster® System, such as a GateMaster®, DoorMaster®, etc., the default screen and menus may be slightly different.

SYSTEM:

```
 *   SUPV. MENU:  1=SYSTEM, 2=PM, 3=ODOM       *
*    A=CONFIG, B=ISSUES, C=DROPS, D=EXIT       *
```

By selecting option #1 on the Supervisor Menu, the following System submenu appears:

```
 *  SUPERVISOR SYSTEM MENU:    1 = REPORTS    *
*  2 = CREDIT CARD,                 D=EXIT      *
```

1=REPORTS:

```
 *   SUPERVISOR SYSTEM MENU:    1 = REPORTS    *
*   2 = CREDIT CARD,                 D=EXIT      *
```

The Reports Menu (Option #1 on the Supervisor System submenu) offers many new report options, all of which are sent promptly to the on-site printer attached to the unit.

```
 *      REPORTS:  1=ERR LOG, 2=LCD PRMPT LOG    *
*      3=ERR DUMP, A=CFG, B=EIU CFG, D=EXIT      *
```

1=ERR LOG:
Selecting the ERR LOG prompts the FMU to print the log containing the last 64 errors which fall into the 'System Error' category.

2=LCD PRMPT LOG:
By choosing the LCD PRMPT LOG, the FMU prints the last 199 LCD displays which were present on the system.

3=ERR DUMP:
Printing this report results in what may appear as random data but can be useful information to SYN-TECH Systems' support staff when attempting to troubleshoot the unit should a problem arise.

A=CFG:
Selecting this report sends the FMU's current configuration to the on-site printer. This configuration report is a useful report to keep close at hand. If a problem arises, this report is an invaluable tool when having to rebuild the system's configuration. This report is also a handy reference when setting up the site configuration in the FuelMaster® software.

B=EIU CFG:
If the unit is equipped with EIU satellite units, selecting this report prints the current configuration for each of these units. Again, this is a handy reference should a problem arise.

2=CREDIT CARD:

NOTE:

For detailed credit card operations, please refer to the Card Reader Supplement provided with your card reader system.

```
 *  SUPERVISOR SYSTEM MENU:    1 = REPORTS    *
*   2 = CREDIT CARD,                D=EXIT     *
```

The Credit Card Menu (Option #2 on the Supervisor System submenu) offers options for initializing credit card operations.

```
 *SUPERVISOR CREDIT CARD MENU: 1=MISC          *
*A=END OF SHIFT,  B=END OF DAY,  D=EXIT        *
```

Selecting Option 1-MISC from the Supervisor Credit Card submenu offers the supervisor abilities to: enter a dialing prefix that may be necessary to obtain an outside line before dialing for credit card authorizations; obtain the credit card system's PDL (Parameter Data Load); and, obtain and print End-of-Shift and End-of-Day reconciled credit card transactions.

```
 *MISC CREDIT CARD MENU:          1=DIAL PFIX   *
* A=OBTAIN PDL                    D=EXIT        *
```

Option #1 from the Misc Credit Card submenu provides the capability

of adding any dialing prefixes that may be necessary for your telephone system. For instance, if a '9' is required to obtain an outside line before dialing a number, selecting this option adds this requirement to the FMU prior to dialing for credit card authorizations. Enter the new dialing prefix when the prompt appears.

NOTE:

Clearing the dialing prefix from the FMU is done by pressing the "A" key on the FMU keypad.

***MISC CREDIT CARD MENU: 1=DIAL PFIX ***
*** *A=OBTAIN PDL* D=EXIT ***

Option A from the Misc Credit Card submenu prompts the supervisor for the complete telephone number to dial in order to obtain the PDL (Parameter Data Load) for the credit card system. Enter the number to dial including any dialing prefixes which may be necessary to first obtain an outside line. Enter the number without dashes. Once the <ENTER> key is pressed, the display signals that the number is accepted and the FMU begins to dial the number entered for the credit card system's PDL. The displays will change several times to notify the supervisor of the actions being taken resulting in the last message that the "PDL has been applied!"

NOTE:

If the Term Unit Number and the Term ID has not been initialized by Syn-Tech Systems, Inc., selecting A from the Misc Credit Card submenu will yield no response from the FMU.

***SUPERVISOR CREDIT CARD MENU: 1=MISC ***
*** *A=END OF SHIFT, B=END OF DAY*, D=EXIT ***

Options A and B from the Supervisor Credit Card submenu provide the ability to obtain and print End-of Shift and End-of Day credit card transaction reconciliation records. These reports are sent directly to the on-site printer connected to the FMU.

2=PM:

```
 * SUPV. MENU:  1=SYSTEM, 2=PM, 3=ODOM      *
*  A=CONFIG, B=ISSUES, C=DROPS, D=EXIT       *
```

By Selecting Option #2 off of the Supervisor Key Menu, the following Supervisor Preventative Maintenance Menu appears:

```
 *SUPERVISOR PREVENTATIVE MAINT. MENU:      *
*A = DISPLAY,   B = UPDATE,           D=EXIT  *
```

This submenu offers the options to display a key's current preventative maintenance information and to update this preventative maintenance information.

DISPLAY: A prompt will request insertion of the PROKEE® for which Preventative Maintenance information should be displayed.

UPDATE: Enter the new Preventative Maintenance information on the FMU keypad. A prompt will then request insertion of the PROKEE® to be updated. This entry is not checked for accuracy.

3=ODOM:

```
 * SUPV. MENU:   1=SYSTEM, 2=PM, 3=ODOM      *
* A=CONFIG, B=ISSUES, C=DROPS,     D=EXIT     *
```

When Option #3 on the Supervisor Key Menu is selected, the following submenu appears:

```
 * SUPERVISOR CHRONO/ODOMETER MENU           *
* A = DISPLAY,  B = UPDATE,           D = EXIT *
```

This submenu offers the options of viewing a key's Odometer/Chronometer information as well as the opportunity to

update this information if needed.

DISPLAY: A prompt will request insertion of the PROKEE® for which Odometer/Chronometer information should be displayed.

UPDATE: Enter the new Odometer/Chronometer information on the FMU keypad. A prompt will then request insertion of the PROKEE® to be updated. This entry is not checked for accuracy.

A=CONFIG:

```
 * SUPV. MENU: 1=SYSTEM,  2=PM,  3=ODOM      *
*  A=CONFIG,  B=ISSUES,  C=DROPS,   D=EXIT     *
```

By selecting Option A on the Supervisor Key Menu, the following Configuration submenu appears:

```
CONFIGURATION:  <TIME>  <DATE>  <DAY OF WK>
 A=MODIFY,  B=TESTS,  C=TIME/DATE,        D=EXIT
```

A=MODIFY (CONFIGURATION)

```
CONFIGURATION:  <TIME>  <DATE>  <DAY OF WK>
 A=MODIFY,  B=TESTS,  C=TIME/DATE,        D=EXIT
```

By selecting Option A, Modify from the Configuration submenu, the following menu appears:

```
CONFIG MENU:  1=BAUD RATES,  2=TOTALIZERS
 A=HOSES, B=SYSTEM, C=SHOW OPTIONS,  D=EXIT
```

1=BAUD RATES:

```
CONFIG MENU:  1=BAUD RATES,  2=TOTALIZERS
 A=HOSES, B=SYSTEM, C=SHOW OPTIONS,  D=EXIT
```

Selecting Option #1 Baud Rates from the Modify Configuration

submenu, the following submenu appears:

BAUD RATE MENU:
***1 = TANK MONITOR UNIT*,** **D=EXIT**

The Tank Monitor Unit's baud rate may be changed by selecting #1 Tank Monitor Unit from this submenu. The baud rate is changed by pressing the 'A' key on the keypad to scroll through the baud rate selections. Once a baud rate is selected and this screen exited, the new baud rate setting is checked for accuracy. An error message appears if an invalid baud rate is selected and the baud rate is reset to the previous valid setting.

2=TOTALIZERS:

CONFIG MENU: 1=BAUD RATES, *2=TOTALIZERS*
A=HOSES, B=SYSTEM, C=SHOW OPTIONS, D=EXIT

Option #2 from the Configuration submenu yields the following display:

SET TOTALIZER:A=NEXT PUMP,B=CHANGE, D=END
PUMP #A CUM. TOTALIZER =

Option A from this screen provides the opportunity to scroll through the pumps which have been configured on the system while Option B allows for the cumulative totalizers to be edited. To change a pump's totalizer, press Option B and a prompt requests the new cumulative totalizer for the selected pump. This value is not checked for accuracy.

A=HOSES:

CONFIG MENU: 1=BAUD RATES, 2=TOTALIZERS
***A=HOSES*, B=SYSTEM, C=SHOW OPTIONS, D=EXIT**

By selecting Option A to configure the system's hoses, the following display appears:

CONFIGURE: A=SELECT, B=UP, C=DOWN, D=EXIT
<HOSE OPTIONS>

This menu provides the opportunity to configure the system. Each FUELMASTER® unit can control up to eight hoses (A-H).

The HOSE OPTIONS for each hose are displayed in the following order for each of the eight hoses supported:

HOSE A - H:	Assign numbers to the hoses (no duplicates). Accepts hoses 1-63.
PRODUCT CODE:	Assign the product code to each hose. Accepts product hoses 1-63.
PULSER DIVIDE RATE:	Assign the start timeout. Accepts 1:1 to 1:1000:1.
NO-PULSE TIMEOUT:	Assign the start timeout. Accepts 5-255 seconds.
USE PUMP HANDLE:	Assign pump handle detect (Y or N).

B=SYSTEM:

CONFIG MENU: 1=BAUD RATES, 2=TOTALIZERS
A=HOSES, *B=SYSTEM*, C=SHOW OPTIONS, D=EXIT

When Option B is selected from the Configuration submenu, the following display appears:

CONFIGURE: A=SELECT, B=UP, C=DOWN, D=EXIT
<SYSTEM OPTIONS>

This menu allows the supervisor to assign information pertaining the FUELMASTER® system. These SYSTEM OPTIONS include:

SYSTEM: VALID KEY TIMER = _____ (5-255 seconds)
SYSTEM: PUMP FINISH TIMER = _____ (5-255 seconds)
SYSTEM: MESSAGE DURATION = _____ (1-10 seconds)
SYSTEM: MODEM ANSWER BEGIN TIME = _____ (0-24 hours)
SYSTEM: MODEM ANSWER END TIME = _____ (1-24 hours)
SYSTEM: ZERO QUANTITY SHUTDOWN = _____ (1-50)

C=SHOW OPTIONS:

CONFIG MENU: 1=BAUD RATES, 2=TOTALIZERS
A=HOSES, B=SYSTEM, *C=SHOW OPTIONS,* D=EXIT

Selecting Option C from the Configuration submenu provides the opportunity to view the System Options as they are currently configured on the system while positioned at the FMU.

SYSTEM OPTIONS: A=NEXT, D=EXIT
<SYSTEM OPTIONS>

The SYSTEM OPTIONS are displayed in the following order:

System Key Type:(such as VMN-Vehicle Key, Commercial-Two Key, etc.)

Prev. Maint.: enabled/disabled

Lube Truck Oper.: enabled/disabled

Semi Manual Mode: enabled/disabled

On-Site Reports: enabled/disabled

P.I.N. Checking: enabled/disabled

Bad Odom. Term.: enabled/disabled

Tank Monitor Interface: enabled/disabled

Receipt Printer: enabled/disabled

Odom. First: enabled/disabled

Oil Check: enabled/disabled

TMU Interface Type: (7,E,1; 8,N,1, etc.)

Power Fail Check: enabled/disabled

Rcpts Print on Pwr Up: enabled/disabled

Odom. Write Term.: enabled/disabled

Verify Man. Issue Veh. ID: enabled/disabled/not available

No Agency for Manual Issue: enabled/disabled/not available

Verify Vehicle Key ID Entry: enabled/disabled/not available

NOTE:

System Options are set by SYN-TECH Systems, Inc., before shipping the FuelMaster® Unit. Subsequent changes in the System Options may be made by calling SYN-TECH's Product Support Department.

TESTS:

CONFIGURATION: [hr:min:sec][mm/dd/yy][day of wk]
A=MODIFY, *B=TESTS*, C=TIME/DATE, D=EXIT

From the 'Config' menu, Option B prompts the following display:

TESTS: 1=SWITCH, 2=OUTPUTS, 3=LCD, 4=KEYPAD
A=PROKEE, B=COUNT, C=RESET, D=EXIT

1=SWITCH:

The switch test, when performed, affirms that the FUELMASTER® unit is detecting when the pump handle is turned on and when the manual mode switches are in auto or manual.

PH: The 8-1 line corresponds with PUMPS H-A. A **1** in the

hose position indicates that the pump handle is on. At the same time, the LEDs marked pump handle on the pedestal I/O board blink as the pump handles are turned on.

MM: The 8-1 line corresponds with PUMP H-A. A **0** below the pump number means the switch is in AUTO. When toggled to manual, the **0** changes to a **1**.

2=OUTPUTS:

When selected, the LEDs on the relay board blink starting with location K1. The relay board is located in the FMU pedestal above the manual mode switches. Only LEDs corresponding to an existing relay blink.

3=LCD:

The LCD test checks the integrity of the display board. When selected, black boxes appear in the first row and strobe to the second. If any of the LCD pixels are bad, the black box appears lighter than the rest.

4=KEYPAD:

The prompt requests keypad key presses for verification. The keypad should display the number or letter selected. If a number or letter is repeated, the selected number or letter will appear as repeated characters on the lcd until the row is full or until a different number or letter is pressed. The CLEAR/NO and ENTER/YES keys should respond with an 'N' and 'Y' respectively.

A=PROKEE:

This test prompts for insertion of a PROKEE® to be read. When read, only part of the key contents appears on the screen. The prompts request that the **A** key be pressed to see more of the key.

A:Displays the contents of a PROKEE® in ASCII, both byte position and value are displayed.

B:Dispays the contents of a PROKEE® in HEX, both byte position and value are displayed.

C:Displays the PIN of a PROKEE®.

B=COUNT:

The count test provides a way to both determine the pulser divide rate and trouble shoot for pulser failure.

The **0** indicators correspond with the location on the pedestal I/O board where the pulsers are wired. To perform the count test follow these steps:

Before switching to the count screen, note that the manual mode switches are in auto.

1) Once at the count test screen, place the manual mode switches in manual.

2) Turn on the pump handle and dispense product. The **0** indicator counts right along with the dispenser meter. By pumping one gallon on the dispenser, the counter on the FMU screen shows how many pulses equal one gallon. (The count may show one pulse either way and is still considered accurate.)

C=RESET:

Opting to perform this test will prompt the FMU to power fail and immediately power up thereby testing the integrity of the FMU's internal hardware and recognition of any peripheral devices connected to the FMU.

C=TIME/DATE:

CONFIGURATION:[hr:min:sec][mm/dd/yy][day of wk]
A=MODIFY, B=TESTS, C=TIME/DATE, D=EXIT

Option C on the Configuration menu provides the opportunity to set the time, date and day of the week settings stored in the FMU.

NOTE:

Time and Date - If the site has satellites, only the master FMU's time/date needs to be set. Daylight savings time adjustments require time resets using this menu option.

B=ISSUES:

```
*  SUPV. MENU:  1=SYSTEM,  2=PM,  3=ODOM       *
* A=CONFIG,  B=ISSUES,  C=DROPS,  D=EXIT       *
```

With the **Issues** menu is selected, the supervisor may dispense fuel (similar to manual issue key), instruct hose or hoses into or out of **semi-manual** mode (factory set option has wiring requirement), or take hoses out of service or return them to service. (Hose has been shutdown. Contact Supervisor.)

By selecting Option B on the Supervisor Key Main Menu, the following Supervisor Issues submenu appears:

```
*          SUPERVISOR ISSUES MENU                *
* A=MANUAL,  B=SEMI-MAN,  C=HOSES,  D=EXIT  *
```

A=MANUAL:

By selecting Option A on the Supervisor Issues submenu, the holder of the supervisor key has the ability to start a Manual Issue fueling transaction at the FMU by entering a User ID and Vehicle ID on the keypad. Five attempts to enter an authorized User ID are provided. The Vehicle Id is not validated.

B=SEMI-MAN:

Semi-Manual mode is an operational setting in which hoses may be placed¾one or more at a time. This option requires control wiring for "pump handle yes" and a configuration setting to be made by STS personnel.

When semi-manual mode is enabled, the Auto/Manual mode switch

must be left in the auto position. Users may fuel **without** the use of PROKEEs® by simply turning on the pump handle and dispensing fuel. At the end of fueling the transactions are charged to the Supervisor Key which placed the hose into Semi-manual mode and will have a transactions code (TC) of '03'.

C=HOSES:

```
*          SUPERVISOR ISSUES MENU          *
* A=MANUAL, B=SEMI-MAN, C=HOSES,  D=EXIT *
```

Selecting Option C from the Supervisor Issues Menu will display the following HOSES submenu:

```
* SUPERVISOR HOSES MENU: 1=SET PRICING   *
* A=SHUTDOWN HOSE, B=REENABLE,  D=EXIT   *
```

1=SET PRICING: Selecting this option enables the supervisor to set hose prices appropriate for the product being dispensed from each hose.

A=SHUT DOWN HOSE: This option enables the supervisor to remove a hose from service. Anyone attempting to fuel with a hose which has been shut down will see the message "Hose has been shut down. Please alert supervisor."

B=REENABLE: By selecting this option, the supervisor is able to reenable previously shutdown hoses.

C=DROPS:

```
* SUPV. MENU: 1=SYSTEM, 2=PM, 3=ODOM      *
* A=CONFIG,  B=ISSUES,  C=DROPS,  D=EXIT   *
```

Option C from the Supervisor Key Main Menu will prompt the following submenu to appear:

```
**  SUPV. MENU:  1=SYSTEM,  2=PM,  3=ODOM     **
**  A=DROP,  B=(+) ADJ,  C=(-) ADJ,  D=EXIT   **
```

A=DROP: Selecting Option A from the Supervisor Fuel Drop Menu will display prompts to enter the tank number into which the drop is being made, the drop quantity and the unit price for the product being added to the tank.

B=(+)ADJ: Selecting to make a positive adjustment (addition) to a tank will display prompts to enter the tank number as well as the adjustment quantity.

C=(-)ADJ: Choosing to make a negative adjustment (removal) of product quantity from a tank will prompt for the tank number and adjustment quantity.

SECTION VIII - Error Messages & Trouble Shooting

Display Prompts

**	**UNABLE TO CORRECTLY READ KEY**	**
**	**REINSERT TO RE-TRY OPERATION.**	**

FMU WAS NOT ABLE TO READ KEY CONTENTS

- PROKEE was inserted into reader too fast
- Pin stuck in reader guides
- A loose ribbon cable

**	**UNAUTHORIZED KEY SIGNATURE**	**
**	**PLEASE ALERT SUPERVISOR**	**

FMU WAS NOT ABLE TO READ KEY CONTENTS

- Key has different site signature than FMU

**	**UNAUTHORIZED KEY INSERTED**	**
**	**PLEASE ALERT SUPERVISOR**	**

FMU WAS ABLE TO READ KEY CONTENTS

- Key has been locked out by Supervisor

**	**KEY NOT AUTHORIZED FOR**	**
**	**ANY AVAILABLE PRODUCTS !**	**

FMU WAS ABLE TO READ KEY CONTENTS

- PROKEE not encoded for any product available at the FMU
- Over ride switches for manual mode
- FMU configuration has been altered

**	**INVALID HOSE NUMBER ENTERED!**	**
**	**PLEASE TRY AGAIN**	**

- Hose number selected not configured in FMU

** ERROR WRITING ODOMETER TO PROKEE **
** PLEASE TRY AGAIN **

FMU COULD NOT WRITE ODOMETER/CHRONOMETER BACK TO KEY

- The key was inserted to quickly. **It should be inserted and pressed in for 1 second**.

** ERROR WRITING P.M. TO PROKEE! **
** PLEASE TRY AGAIN! **

FMU COULD NOT WRITE P.M. BACK TO KEY

- The key was removed to quickly. **It should be inserted and pressed in for 1 second**.

* ODOMETER TOO HIGH ! PLEASE TRY AGAIN. *

OR

* ODOMETER TOO LOW ! PLEASE TRY AGAIN. *

ODOMETER/CHRONOMETER ENTERED ON THE FMU KEYPAD IS LOWER OR HIGHER THAN THE PREVIOUS VALUE AND RANGE CALCULATION

- User entry is incorrect
- Last fueling vehicle key was not re-inserted when prompted
- A WRITE ERROR occurred during the last attempt to update the PROKEE's odometer reading
- Improper RANGE encoded on key

** TRANSACTION CANCELLED BECAUSE OF **
** OUT-OF-RANGE ODOMETER ENTRIES **

TWO CONSECUTIVE INVALID ODOMETER ENTRIES CAUSED TRANSACTION CANCELLATION

- The BAD ODOM TERMINATION system option is enabled on the system and the two consecutive odometer entries for this transaction are out of range of the odometer read from the key and range calculation.

- For each odom. too high/ too low message which appears on the lcd, a message transaction is created, stored and sent to the Central Controller when transactions are downloaded. If transaction storage space becomes an issue, this system option may be disabled. If this option is disabled however, please be aware that the second odometer entry made on the keypad is accepted and written to the key without question.

**	**VEHICLE IS DUE FOR PREVENTATIVE**	**
**	**MAINTENANCE -- INFORM SUPERVISOR !**	**

- Preventative Maintenance (PM) due mileage encoded on key has been reached. User is being notified that PM is due for this vehicle.

**	**HOSE HAS BEEN SHUT DOWN.**	**
**	**PLEASE ALERT SUPERVISOR !**	**

HOSE IS UNAVAILABLE FOR USE

- Pulser has failed
- Hose was activated equal to number of zero quantity setting in configuration consecutively and no fuel dispenses.
- Hose has been disabled by supervisor

**	**HOSE IS CURRENTLY IN USE !**	**
**	**PLEASE SELECT ANOTHER.**	**

- Hose number selected by user is being used or was in use and finish timer has not expired.

**	**ALL AVAILABLE HOSES ARE IN USE !**	**

- All available hoses are being used or finish timers have not expired.

**	**PUMP HANDLE NOT TURNED OFF.**	**
**	**PLEASE TURN PUMP HANDLE OFF !**	**

- With the pump handle set to YES, the user is prompted that the pump handle was turned on before the hose was selected and the user was prompted to turn on the pump handle.

**	**ERROR: PUMP HANDLE NOT TURNED ON**	**
**	**TRANSACTION HAS BEEN CANCELLED**	**

- When using "Pump handle **YES**" in the configuration, the user must select the hose number before turning the handle on. In some cases, selection of "**Pump handle NO**" may be needed solve this message.

**	**TIME LIMIT EXCEEDED OR**	**
**	**TRANSACTION WAS CANCELLED !**	**

- VALID KEY TIMEOUT was reached or CLEAR/NO was pressed on the keypad and confirmed to cancel transaction.

CONFIGURATION ERROR . . . SYSTEM SHUTDOWN !
ENTER 3 - DIGIT AUTH. CODE TO EDIT CONFIG.

WHILE DOING SELF-TEST DURING POWER-UP, FMU MISREAD SITE CONFIGURATION STORED IN EEPROM

- Enter the code of 3A3 to have FMU try again. The prompt responds with the following:

RESET CONFIGURATION DATA?
YES = INITIALIZE, NO = USE OLD

INITIALIZE USING OLD OR NEW? YES/NEW, NO/OLD

- Press NO to instruct FMU to look for and use old configuration (site configuration stored in EEPROM).

- Press YES to have FMU use default factory configuration. WARNING! Any previous configuration data is reset. See NOTE below.

NOTE:

Always select NO to use old configuration. If FMU returns to config error, contact STS.

**** TESTING NOT ALLOWED WHILE HOSES ARE ****
**** IN USE! PLEASE TRY AGAIN LATER ! ****

TEST SELECTED CANNOT GAIN ACCESS TO HOSES

- Wait a few seconds and try selected test again.

**** POWER RESET TEST ****
UNABLE TO RESTART - PLEASE POWER FAIL UNIT

POWER FAIL TEST FAILED

- Manually power fail the FMU.

**** SELECTED OPERATION IS NOT ****
**** PERMITTED WHILE SYSTEM IS ON-LINE ! ****

SELECTED OPERATION CANNOT GAIN ACCESS TO RESOURCES CURRENTLY PERFORMING COMMUNICATIONS

- Wait until the 'ON-LINE' message on the lcd disappears and retry operation.

**** RECEIVING NEW AUTHORIZATION LISTS ! ****
**** UNABLE TO VERIFY - PLEASE TRY AGAIN ! ****

USER ID/VEHICLE ID CANNOT BE VERIFIED

- The FMU is currently receiving a new authorization list and is unable to verify the entry. Wait a few seconds and retry transaction.

**	**FMU TRANSACTION MEMORY FULL !**	**
**	**PLEASE ALERT SUPERVISOR !**	**

- Transactions memory is full. FMU must be downloaded by Central Controller before allowing any further transactions.

**	**ERROR - ERROR - ERROR - ERROR**	**
*	**RAM BATTERY DEAD OR RAM MALFUNCTIONED!**	*

FMU HARDWARE FAILURE!!

- Call SYN-TECH's Product Support Department immediately.