LevelVIEW ™

Tank Level Gauging System

User Instructions for
LevelVIEW Operating System
(version 3.X)

KR KING ENGINEERING CORPORATION

| SCREEN | MODE | PRINT F6 | HELP F7 | ABOUT | EXIT |

Page 1

No.	Tank	% Full	Amount	Unit	Product	Density	Alarm	
1	Tank# 1100	92.2	27740	Gallons	Preload	1.002	H	5
2	Tank# 1200	1.9	583R	Gallons	Pure Water	1.001		
3	Tank# 1300	1.8	4591R	Pounds	Fresh Water	1.000		
4								
5	Tank# 1400	1.3	628R	Gallons	Std Mix	1.015		
6	Tank# 1500	0.7	365R	Gallons	Lite Mix	1.007		
7	Tank# 1600	1.4	696R	Gallons	Skim	1.066		
8	Tank# 1700	1.5	731R	Gallons	Discharge Water	1.003	75	L
9								
10	Tank# 1700	1.5	731R	Gallons	Discharge Water	1.003	75	L
11	Tank# 1800	3.1	200R	Gallon		.002	90	
12								
13								
14								
15								
16								
17								
18								
19								
20								

Tank# 1100

92.2%

H

09-30-1999   CALIBRATION MODE   5:47:29 PM | High | Low |

KING-GAGE ®
KING ENGINEERING CORPORATION

The information contained in this manual was accurate at the time of release.
Specifications are subject to change without notice.

WARRANTY

All King Engineering products are guaranteed to be free from defects in material and workmanship for one year from the date of purchase. Any product or part found to be defective under normal use within one year of purchase will be repaired or replaced at no charge if returned to the company at Ann Arbor, Michigan within ten days of discovery of the defect. No other warranties, whether expressed, implied or statutory, including the warranties of fitness for a particular purpose or merchantability, are given by this agreement. The exclusive remedy for nonconformity of these goods shall be repair and/or replacement of the nonconforming goods or parts.

Seller will not be liable for consequential damages resulting from breach of this agreement. The term "consequential damages" shall include but shall not be limited to damage to all machines, equipment and goods other than the goods sold hereby, interruption of production, loss of profits, delays of any kind, administrative expense and overhead.

Revisions:

(A) June , 1998 - Original Release
(B) Nov, 1998 - Revised to Version 2.00b
(C) October, 1999 - Revised to Version 3.00
(D) December, 2000 - New illustration Version 3.1

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Key	Function
F1	Go to page 1 (Tank 1 to 20)
F2	Go to page 2 (Tank 21 to 40)
F3	Go to page 3 (Tank 41 to 60)
F4	Go to page 4 (Tank 61 to 80)
F5	Edit Mode
F6	Print
F7	Help (list of Function Keys)
F8	Graphical Display (Tank view)
F9	Single Tank Viewer
BS	Back Space
Up arrow	Move cursor up one line
Left arrow	Move cursor left
Right Arrow	Move cursor right
Down Arrow	Move cursor down one line
Alt	Go to Upper Menu Selections
Esc	Escape (end function)

```
Home    ↑      PgUp
←      BS      →
End    ↓      PgDn
7      8       9
4      5       6
1      2       3
.      0      − +
Tab    Shift   Ins
Ctrl   Alt     Del
Esc         Enter
```
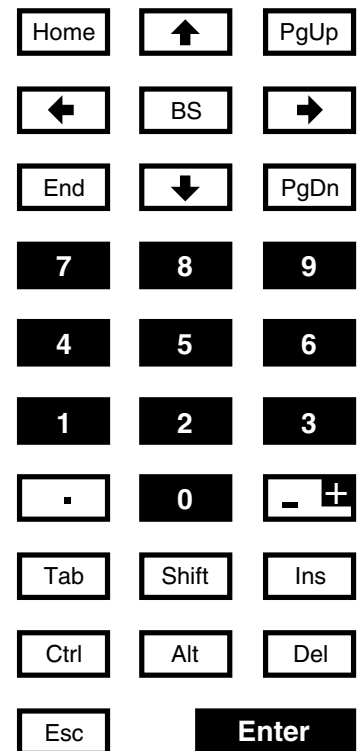
Available LevelVIEW System NEMA workstation hardware has Keypad layout as it appears here.

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10

Start Up Screen (Loading LevelVIEW Operating System)

START UP SCREEN

When the LevelVIEW program is first started, the KING-GAGE logo is displayed. There will be brief delay as the various system and data files are loaded into memory. During this initialization, the serial communications are established with the external LevelPRO Tank Processor(s).

While the LevelVIEW system can display tanks in either tabular or graphical forms, the standard display shows a table listing up to 20 individual tanks per page. Tank data is presented in percent-full, calculated amount in specified unit (volume or weight), product designation and density (specific gravity).

Unassigned tank channels are listed as "Not Used" and do not include Unit or Product field entries.

Tank Listing Table (Page 1 showing Tanks 1 to 20)

At the upper portion of the display window, you will see a menu bar listing SCREEN, MODE, PRINT F6, HELP F7, ABOUT, EXIT. These selections can be accessed by doing one of the following:

• Pressing the Alt key and release. Using the cursor keys to move across the menu bar, highlight the selection and press Enter.

• Press Alt-S (for SCREEN), Alt-M (for MODE) or any initial letter in the selection word.

• Click on the menu bar selection.

Screen Menu Selections
(Menu to Alternative Function Keys)

SCREEN
This menu displays the function key associated with the screen view options. Tanks are displayed 20 to a page with additional pages for 21-40, 41-60 and 61-80. There is also a graphical display view that can be selected. To go to any view, either press the function key listed (F1, F2, etc.) or:

• Use the cursor keys to move up or down the menu to hightlight the selection and press Enter.
• Click on the desired screen selection.

NOTE: Single Tank Viewer (F9) works only when a tank has been selected in the Edit Mode.

Mode Menu Selections

MODE
SETPOINT MODE actives the Screen Alarm display that can be used in conjunction with high and/or low setpoints you enter for individual tanks.

CALIBRATION MODE puts the LevelPRO Tank Processor(s) into a diagnostic mode that displays actual A/D counts being read by the microcontroller.

EDIT MODE (or F5 key) initiates the editing sequence to permit product selection, specific gravity entry, high or low setpoint entry, units selection or single tank graphic viewer.

To select the desired function, do one of the following:

• Use the cursor keys to hightlight the selection and press Enter.

• Click on the desired screen selection.

NOTE: Each time you select the Mode, you are alternately toggling that Mode on or off. If that Mode is currently on, selecting it again will turn it off.

Tank Listing - Calibration Mode

CALIBRATION MODE SCREEN

The "Calibration Mode" selection instructs the remote LevelPRO processors to display actual A/D counts of resolution (0-4096) being read by their internal microcontrollers. This diagnostic can be used to reference the non-linearized 4-20 mA signal output of the level transmitters. Each A/D (analog-to-digital) count is equal to 0.0039 mA change in signal level.

To exit Calibration Mode, do one of the following:

• Press Alt-M, use the cursor to highlight CALIBRATION MODE and Press Enter.

• Press Alt key and move the cursor to MENU and press Enter... highlight CALIBRATION MODE and Press Enter.

• Click on MENU and then click on CALIBRATION MODE.

Help Screen Function Keys List

HELP SCREEN (F7)

The Help screen lists the keyboard "function keys" (F1 to F9) supported by the LevelVIEW system. It also lists a brief description of the Edit Mode.

NOTE: F9 Key (View Single Tank Graphical Display) is used in conjunction with the F5 key (Edit Mode) to select an individual tank.

Tank Listing Normal (Tabular) Screen

NORMAL SCREEN (TABULAR)

The standard default screen displays the tank level data in a listing table. Date and time displays are included at the lower left and right corners of the LevelVIEW window. When in normal mode, the CALIBRATION MODE message appears faded out along the lower window border. (This message appears in bold type when the mode is active.)
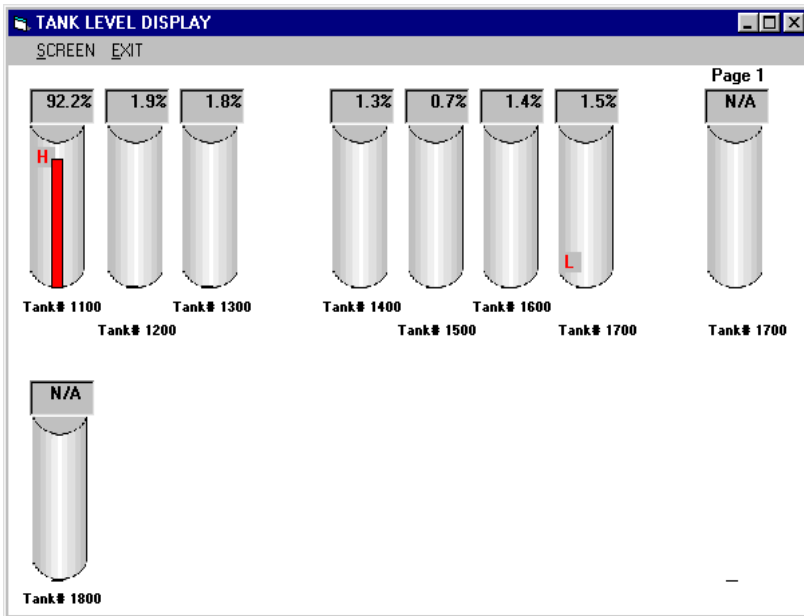
Tank Listing Graphical Screen

GRAPHICAL DISPLAY SCREEN (F8)

Pressing the F8 key will switch the display to the graphical view of tank levels. A percent full reading appears at the top of each tank representation. If SETPOINT Mode is active, the level graphic will appear in red when either the low or high setpoint has been triggered and an "H" or "L" designation will be visible.

To display tank levels in this graphic mode, do one of the following:

- Press F8.

- On the upper menu bar, click SCREEN and click GRAPHICAL DISPLAY.

To exit the graphic mode and return to the standard default screen display:

- Press Esc.

- Press Alt-E (for EXIT) or click on EXIT on the upper menu bar.

Tank Listing Screen:
F5 Edit Mode Selections

Edit Mode: Selected Product Edit

EDIT MODE SELECTIONS
The edit mode allows you to change certain values or selections for a given tank listing in the table. You can only edit the tank you selected in the previous step. In edit mode, the following selection menu appears on the screen.
    PRODUCT
    SPECIFIC GRAVITY
    HIGH SETPOINT
    LOW SETPOINT
    DISPLAY UNITS
    CHANGE COMM PORT
    SINGLE TANK VIEW

To activate edit mode, do one of the following:

• Press the F5 function key and use the cursor to move up or down the list until the desired tank is highlighted, then press Enter.

• Double click on a tank listing.

EDIT TO SELECT PRODUCT
After activating the edit mode, the selection menu is displayed with PRODUCT highlighted. To change the current product selection, do one of the following:

• Press Enter.

• Double click on PRODUCT.

PRODUCT SELECTION MENU
A menu appears with a list of available product selections. When a selection is highlighted and the Enter key is pressed, the product designation is added to the display screen and the preprogrammed specific gravity is downloaded to the LevelPRO Tank Processor. (The LevelPRO processor stores this value within its internal memory.)

To select a different product to update the tank listing, do one of the following:

• Use the cursor to move up or down the list until selection is highlighted, then press Enter.

• Double click on your selection.

Edit Mode: Specific Gravity Selected

EDIT TO CHANGE SPECIFIC GRAVITY
After activating the edit mode, the selection menu is displayed. The SPECIFIC GRAVITY function lets you enter a new specific gravity directly that can be downloaded to the external LevelPRO Tank Processor(s)

To change the current specific gravity, do one of the following:

• Use the cursor to move up or down the list until SPECIFIC GRAVITY is highlighted, then press Enter.

• Double click on SPECIFIC GRAVITY.

Edit Mode: Specific Gravity Input Box

INPUT BOX (Enter Specific Gravity)
This Input Box prompts you to enter a Specific Gravity in the form X.XXX (such as 1.020). The specific gravity value you enter will be downloaded to the external LevelPRO Tank Processor. (The LevelPRO processor stores this value within its own internal memory.)

To program a new specific gravity, do one of the following:

Use the numeric keys (plus decimal point) to write a value and press Enter.
Use the numeric keys (plus decimal point) to write a value and click OK button.

If you make a mistake while writing a value, use the Back Space (or BS) key to erase the previous value.

Edit Mode: Change Setpoint

EDIT TO ADD/CHANGE SETPOINT
After activating the edit mode, the selection menu is displayed. The HIGH SETPOINT or LOW SETPOINT function lets you enter a new percent full value that will activate the Screen Alarm field. (These setpoints are not downloaded to the external LevelPRO Tank Processor.)

To change the add or change current setpoint, do one of the following:

- Use the cursor to move up or down the list until HIGH SETPOINT or LOW SETPOINT is highlighted, then press Enter.

- Double click on HIGH SETPOINT or LOW SETPOINT.

Edit Mode: High Setpoint Input Box

INPUT BOX (Enter Setpoint Value)
This Input Box prompts you to enter a setpoint value as percent full. This should be written in the form X, XX or XX.X (such as 5, 30 or 88.5; the percent symbol is not required as part of the entry).

To program a new setpoint value, do one of the following:

- Use the numeric keys (plus decimal point, if applicable) to write a value and press Enter.

- Use the numeric keys (plus decimal point, if applicable) to write a value and click OK button.

If you make a mistake while writing a value, use the Back Space (or BS) key to erase the previous value.

Edit Mode: Change Display Units

DISPLAY UNITS (Change Measurement Units)

Within the edit mode, the unit of measurement for a given tank can be changed between mass (weight) and volume. If the LevelPRO is programmed for depth measurement, the edit mode permits changing between English/metric (FEET, INCHES, METERS) only.

After activating the edit mode, the selection menu is displayed with PRODUCT highlighted. To change the current units selection, do one of the following:

•   Use the cursor to move up or down the list until DISPLAY UNITS is high lighted, then press Enter.

•   Double click on DISPLAY UNITS.

Edit Mode: Display Units Menu

DISPLAY UNITS MENU

A menu appears with a list of available display unit selections. When a selection is highlighted and the Enter key is pressed, the screen display is updated with the chosen unit.

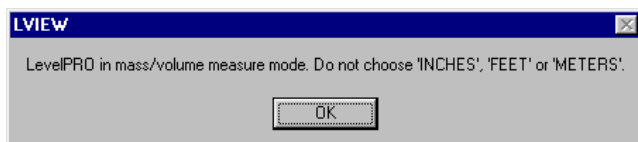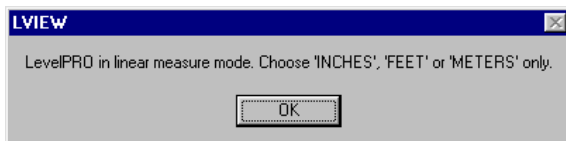To select a different unit to update the tank listing, do one of the following:

•   Use the cursor to move up or down the list until selection is highlighted, then press Enter.

•   Double click on the desired unit.

ERROR MESSAGE

When the LevelPRO is set for linear depth, volume or weight display units selection is not supported. An error message will appear. Conversely, you cannot select linear depth units when set in mass/volume measurement.

To clear this message and return to the display units menu, do one of the following:

•   Press Enter.

•   Click the OK button.

Error Message: Single Tank Viewer

SINGLE TANK VIEWER (Edit Mode)
An optional single tank graphic display can be used under the LevelVIEW edit mode. This can be used to provide special monitoring of a critical tank in the system. The single tank graphic window can only be opened after entering the edit mode. F9 opens the tank graphic window for the selected tank.

If you press F9 or click on SINGLE TANK VIEWER from the Screen Menu bar when not in the edit mode, a message window appears that prompts you to select a tank. To select a tank, you must initiate the edit mode.

To select a tank, do one of the following:

• Press the F5 function key and use the cursor to move up or down the list until the desired tank is highlighted, then press Enter.

• Double click on a tank name and press Enter.

Edit Mode: Single Tank Viewer

SINGLE TANK VIEWER (F9)
With a tank highlighted in the edit mode, you can open the single tank graphic viewer window.

To open the window, do one of the following:

• Press the F9 function key.

• On the upper menu bar, click SCREEN and SINGLE TANK VIEWER.

Edit Mode: Single Tank Viewer

To move the window location, do one of the following:

- Press the F9 function key again (repeat to move up/down, left/right)

- Drag the window to the desired position on the screen.

To exit the graphic viewer window, do one of the following:

- Press the Esc key.

- Click the close window button.

Edit Mode: Select Other Unit

DISPLAY UNITS - OTHER (User Defined)
The LevelVIEW system also supports one (1) user-defined unit of measurement. This will require the user to enter a conversion factor that is based on US gallons. (Do not attempt this procedure if you are not familiar with volumetric and/or gravimetric conversions since this could result in inaccurate measurements.)

To define a new unit of measurement, do one of the following:

- Highlight the OTHER selection and press Enter.

- Double click on OTHER.

Follow the screen prompts requesting:

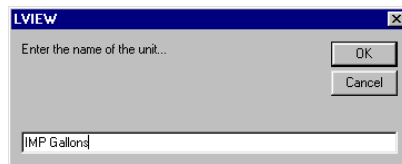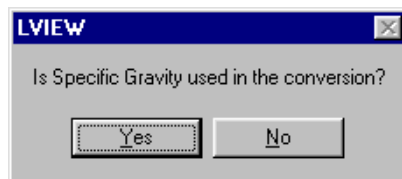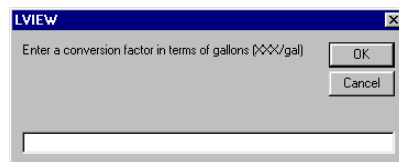
1. 4-character definition stored in LevelPRO

2. Name of the unit

3. Is Specific Gravity used?

4. Conversion factor entry

Edit Mode: Change Comm Port

CHANGE COMM PORT
This operation is used to specify the serial communications port the LevelVIEW program addresses for data from the LevelPRO Tank Processor(s). This would typically only be needed during initial set up if COM 1 port was not available.

To change the serial port number, press F5 (edit mode) and one of the following:

- Use the cursor to move up or down the list until CHANGE COMM PORT is highlighted, then press Enter.

- Double click on CHANGE COMM PORT.

Edit Mode: Select Comm Port

INPUT BOX (Comm Port Number)
This Input Box prompts you to select the serial communications port (Comm) for the interface with the remote LevelPRO processor(s).

To set the Comm port, do one of the following:

- Use the cursor to move up or down the list. Press tab key to highlight the OK button and press Enter.

- Click on 1, 2 or 3 and click OK.
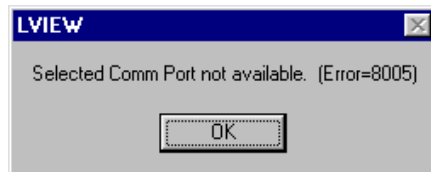
If the COMM port number you assign does not correspond to the serial port connected to the LeveLPRO communications network, an error message will indicate that the COMM port is not available.
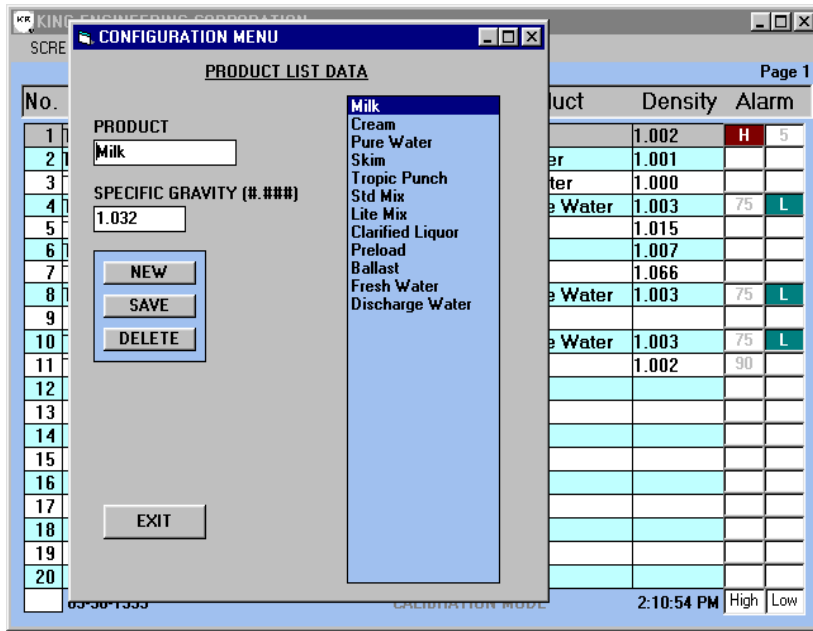
Edit Mode: Configuation Menu

PRODUCT LIST DATA (Configuration Menu)

The list of product selections that appear under the PRODUCT menu in the edit mode can be reviewed and updated using this configuration window. You can check the assigned default specific gravity values for each product designation, add new product designations and gravities or delete existing entries.

To access this upper level configuration menu:

• Press F5 function key and then press Ctrl-K (hold down the Ctrl key while pressing K key).

To check the current default specific gravity, highlight the product from the list on the right and press Enter (or double-click on the selection). Please note that merely highlighting the selection does not cause the values to appear in the "Product" and "Specific Gravity (#.##)" windows.
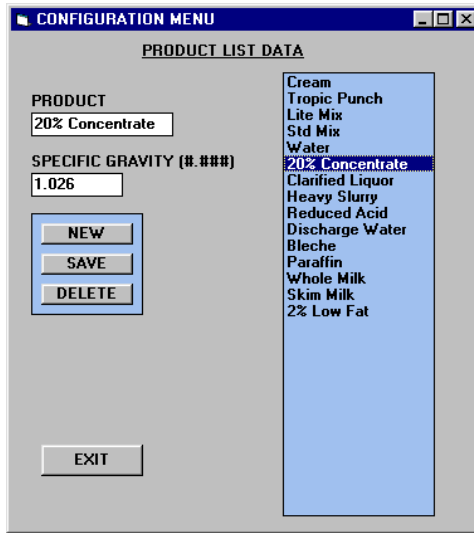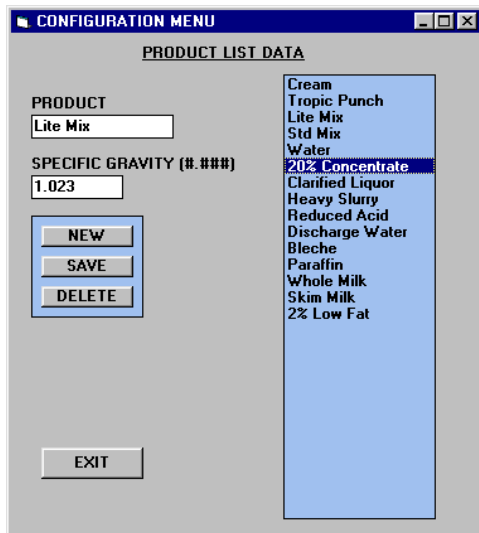
To add a product designation and associated default specific gravity, press NEW. Enter a product designation that total no more than 16 characters and spaces. Enter a specific gravity to be used for this product. Press SAVE.

To close the configuration menu, press EXIT.
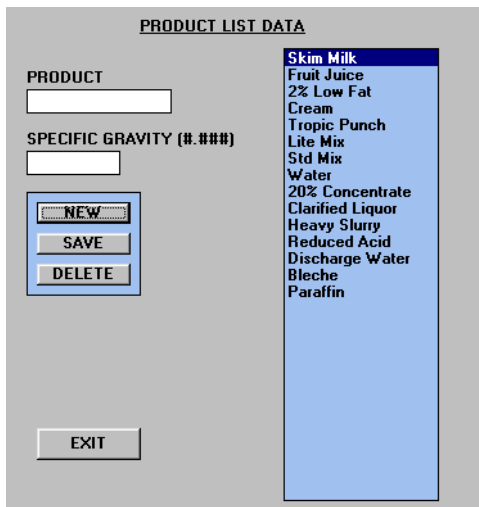
TROUBLESHOOTING CHECKLIST

SOME OR ALL TANK LISTINGS SHOW "NO RESPONSE".
The "No Response" indicates no response from the external LevelPRO Tank Processor(s). This loss of communications may be due to incorrect address of the COM port, not having the RS-485 network properly connected or a loss of power to the external LevelPRO processor(s).

• Verify that external LevelPRO processor(s) have power and are operational.

• Check that the communications cable is properly connected at the external LevelPRO processor.

• Check that the communications cable is properly connected at the RS-485 serial port (or converter).

• Try to enter another port # under CHANGE COMM PORT menu.

(If using a supplied RS-232/485 converter, check that the AC adapter is plugged in.)

ERROR MESSAGE: "PLEASE SELECT A TANK USING EDIT MODE"
You cannot use the Single Tank Graphic Viewer unless you have selected a tank name in edit mode.

• Press F5 and highlight a tank. Then press F9 for single tank viewer.

ERROR MESSAGE: "TANK CONFIGURATION FILE (WXYZ.XXX) IS CORRUPT"
If the datapack was changed in one or more LevelPRO processors while running the LevelVIEW system, you will need to exit and restart the program.
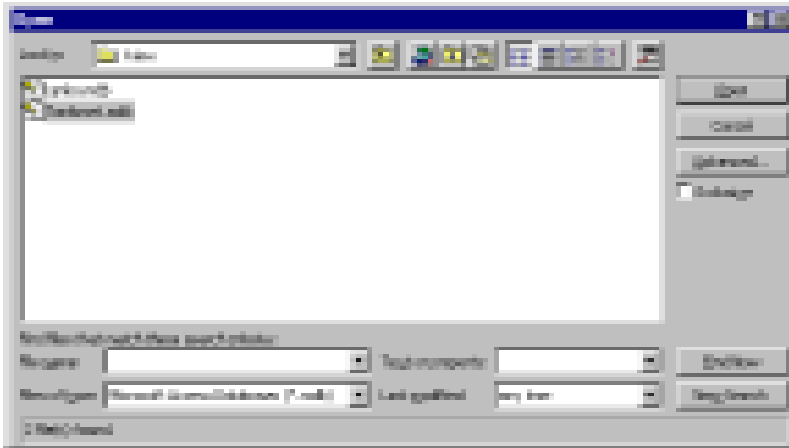

MENU OR WINDOW REMAINS ON SCREEN
You may have not completed the edit or entry sequence. You will generally use the Enter key to accept the selection or acknowledge the message (such as error messages).

• Press the Press key to clear the overlay from the screen.

LevelVIEW V 3.1 (Network Enabled)

LVIEW directory showing LevelVIEW databases

Network Sharing (Data Table)
This version of the LevelVIEW system offers a viewable Access database (**Tanksnet.mdb**) for data sharing in a networked environment. It requires the client to open this file in Microsoft® Access. The database file will be located within the **C:\LView** directory on the LevelVIEW host machine. (By default, the LevelVIEW installation program creates this directory on the hard drive of the host.)
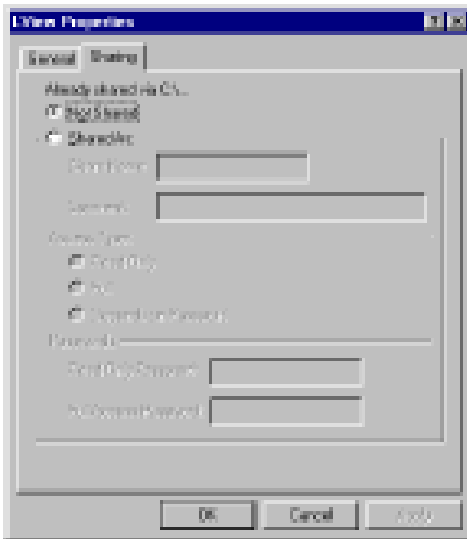

LVIEW Folder : Sharing Properties (Host computer)

Users may wish to restrict remote access to other files on the host drive. However, the **\LView** directory must be set up for shared "full" access. (Read only access will prohibit any client from opening the **Tanksnet.mdb** file while LevelVIEW is running on the host computer.)
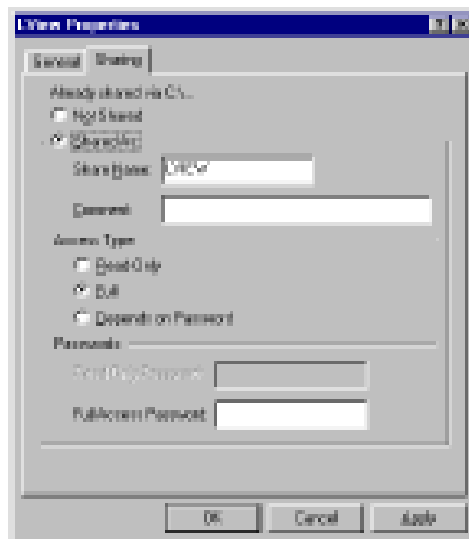

LVIEW Folder : Sharing Properties (Host computer)

On the host, check the settings for this directory under Sharing. For client access to the **Tanksnet.mdb** database, sharing must be set to **Access Type: Full** or **Depends on Password** (with full access password enabled).
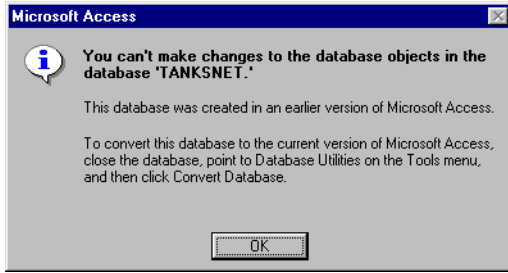
DO NOT CONVERT! The first time the client attempts to open the **Tanksnet.mdb** file for viewing, Access may display the following message. This prompts the client user regarding converting the file. Other window may appear prompting the client user to choose between converting or opening a copy of the file. *DO NOT CONVERT!* If prompted, select Open Copy to protect the underlying database.

REALTIME Table in Tanksnet.mdb (client)
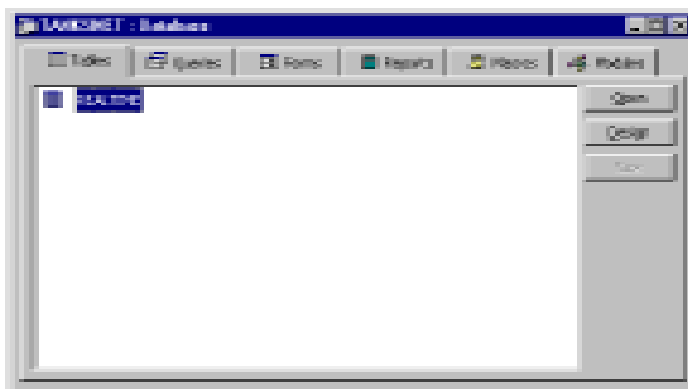
TANKSNET Database
Open the **Tanksnet.mdb** to view the REALTIME data table. The table will display the tank name, current amount, percent full, units of measurement, specific gravity and product designation. These values are written to the REALTIME table by the host LevelVIEW system on a periodic basis.
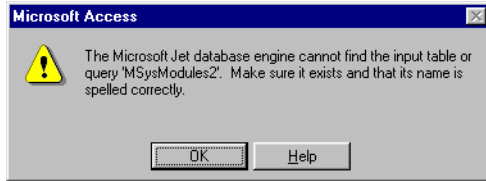

Records Menu : Refresh Command (client)
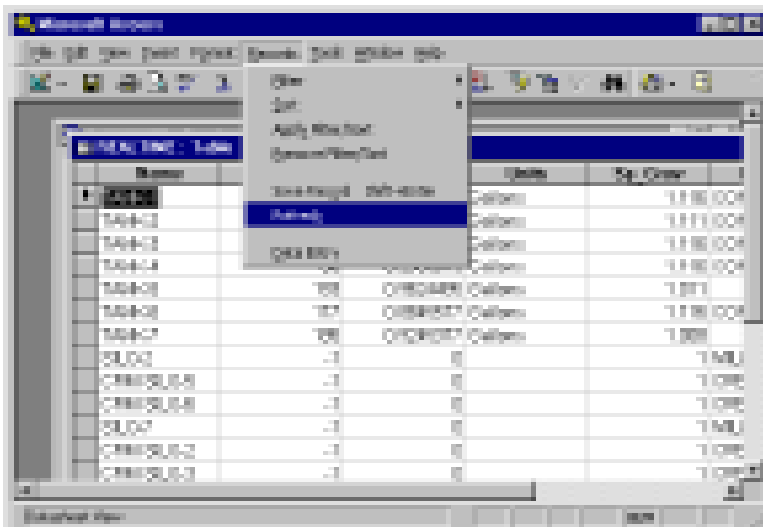
Use the "Refresh" command within Access to force update to the REALTIME table. (Automatic update cycle is typically 40-120 seconds.)
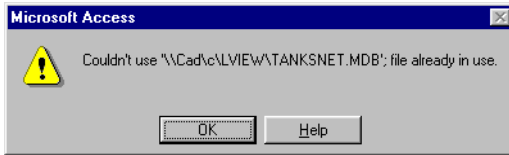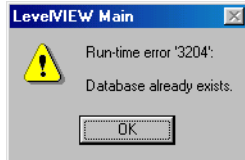
Client computer error message

Client computer error message

LevelVIEW host computer error

Network Access Error Messages
Please consult your system administrator for network access related issues. Use of the shared data resources assumes a working knowledge of Microsoft® Windows and Microsoft® Access.

The following error messages may occur when Sharing is set to "Read Only". The host computer must have the LVview directory set to **Access Type: Full** for multiple simultaneous use of the data table.

KING
E N G I N E E R I N G
C O R P O R A T I O N
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