FIELD SERVICE UNIT USER'S MANUAL

1.0 GENERAL

The Field Service Unit (FSU) is a 900MHz, spread spectrum transceiver used to communicate with Independent Metering Unit (IMU) radios which are mounted on gas, water or electric utility meters. Service personnel use the FSU to communicate configuration settings to an IMU and to read an IMU's status (e.g. meter count, alarms settings and number of transmissions sent). An external computer controls the FSU via an RS-232 (DB-9) interface and 9Vdc power is supplied from a separate wall transformer.

The external computer runs the proprietary Network Communication Test Tool (NCTT) software which controls the FSU. NCTT has a pull-down menu listing the available commands that can be sent to the FSU. When a command is selected, NCTT displays a window with blank fields prompting the user to enter the appropriate parameters. Once the parameters are entered, the user selects the Transmit soft button to command the FSU.

2.0 HARDWARE CONFIGURATION

Configure the FSU as follows:

1. Connect the "rubber duck" antenna (provided) to the TNC connector in the rear of the FSU.

2. Plug the power supply into 110VAC and insert the small connector into the DC receptacle in the rear of the FSU.

   The green Power LED should be illuminated. The yellow Transmit and green Receive LEDs should be flashing.

3. Connect a DB-9 cable from the FSU to the computer's serial communications port (RS-232).

4. Launch NCTT. The Transmit and Receive LEDs should stop flashing.

3.0 NETWORK COMMUNICATIONS TEST TOOL –GETTING STARTED

When NCTT is launched, the Incoming Data window will display a message indicating the FSU is communicating with NCTT. This indicates that the FSU is properly configured.

To send commands to a particular IMU or to read the status of an IMU the target IMU's serial number must be entered into NCTT. This can be done two ways. If the serial number is known, enter it into the SN filed in the Outgoing Data window. If the serial number is not known beforehand –for instance, if an IMU's serial number is not visible- an IMU can be queried for its serial number. NCTT automatically enters the serial number when an IMU responds to the query.

To query an IMU for its serial number:

1. In the Device window, select the appropriate IMU type.
2. In the Message Type pull-down menu, select **Query Serial Numbers**. See figure 1.
3. In the Transmit window, select **Wakeup/IMU** and the appropriate channel number.
4. In the Transmit window, select **Transmit** to broadcast a request for a listening IMU's serial number. It may be necessary to select Transmit a second time in the event an interfering radio signal was present.

NOTE: *Any IMU of the same device type and on the same channel as the target IMU can reply to the request. To ensure the serial number of only the target IMU is returned, other IMU's of the same device type as the target should be set to a channel different from the target's.*

5. The IMU's serial number will appear in the Incoming Data window. Now, any commands from NCTT will be directed specifically to the traget IMU even if other IMUs are on the same channel.

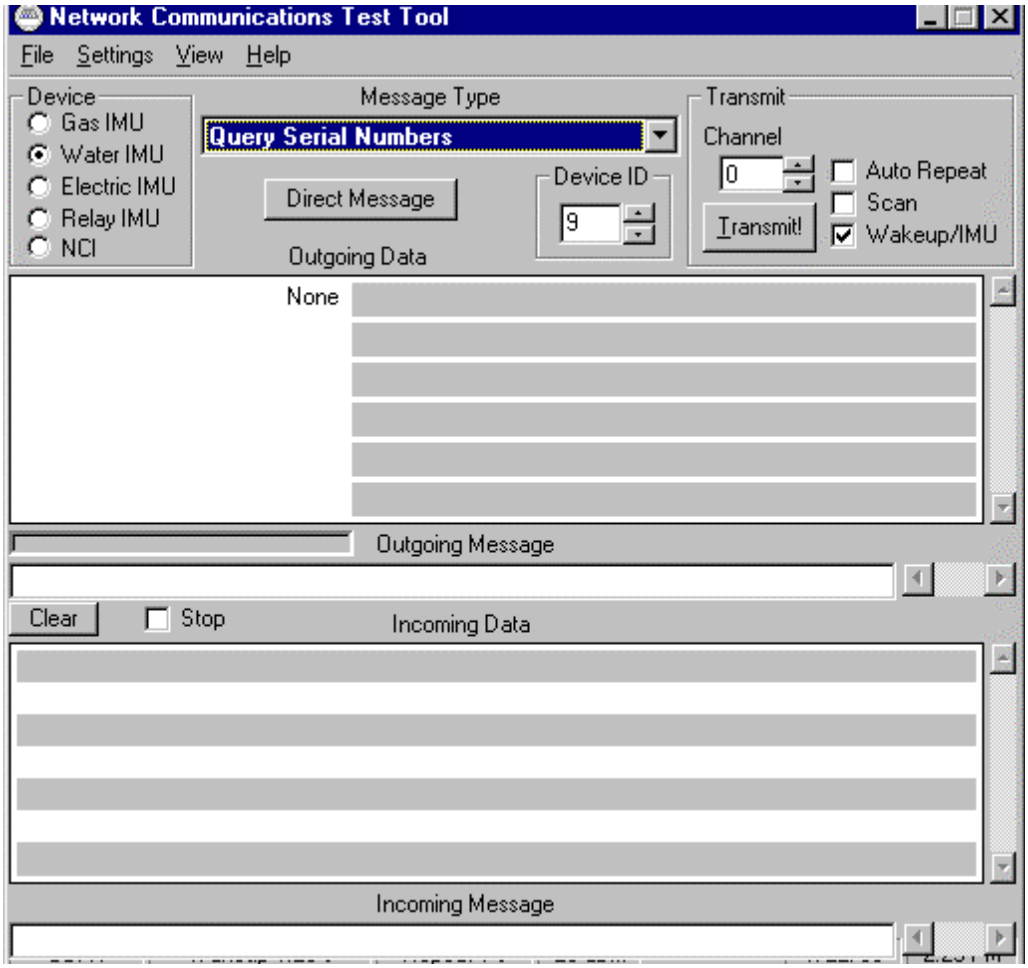

Figure 1. NCTT Query Serial Numbers Screen.

To command an IMU:

1. In the Message Type window select a command from the pull-down menu. See figure 2.
2. Enter the appropriate information in the Outgoing Data window. Notice that the target IMU's serial number is displayed at the top of the window. If this serial number is not correct, the command will go to the wrong IMU. Re-select the desired IMU.
3. In the Transmit window, select **Transmit**.
4. In the Incoming Data window, an acknowledgement that the command was executed will be displayed. If an acknowledgement is not displayed, the IMU may not have received the command. Re-send the command by selecting **Transmit** again.

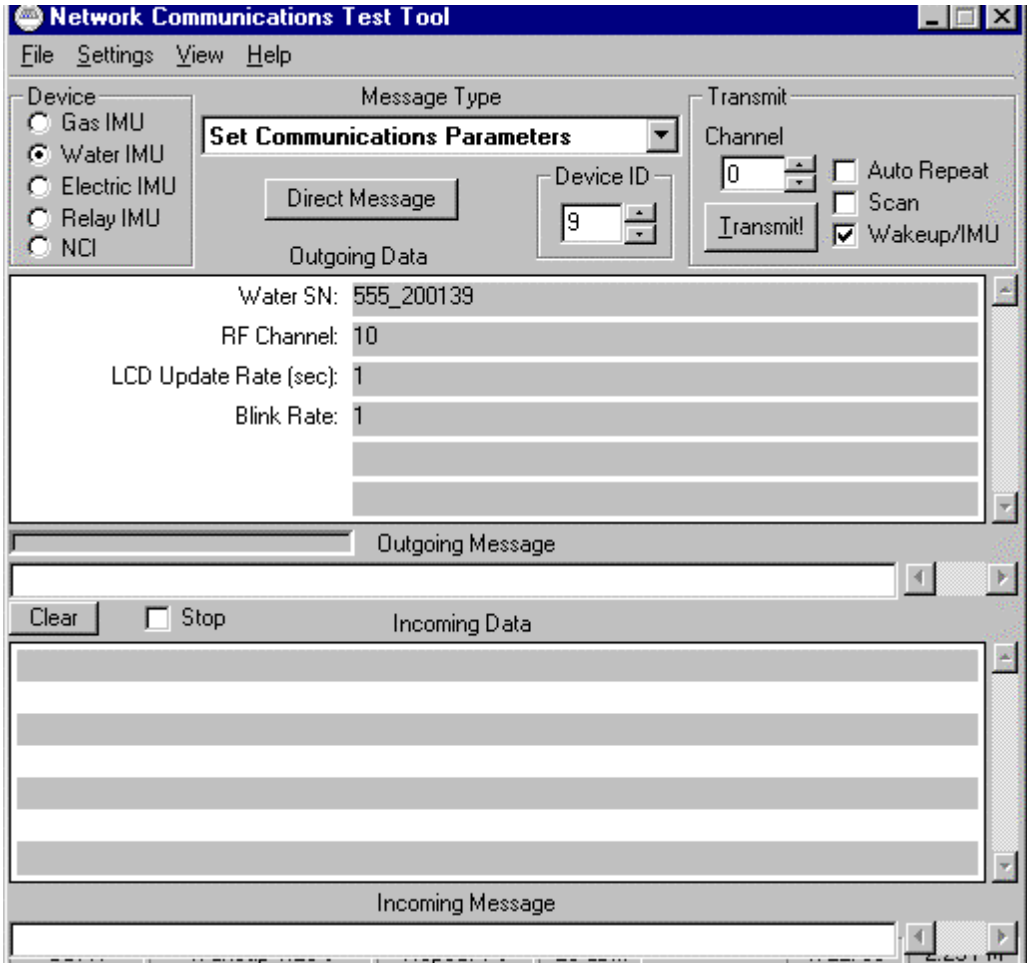

Figure 2. Example of an NCTT Command Screen.