Communications Tab

The **Communications** tab displays the plug-in ports (locations) on the laptop required for communication to the mobile transceiver and/or receiver and the GPS. Before reading meters for the first time, it is important to ensure the correct communication (Com/COM) ports have been set for the mobile transceiver and/or receiver to establish communication with the ORS software application.

NOTE: The settings on the **Communications** tab are configured during system setup and, in most cases, do not need to be changed. Changes to the COM port fields should be made under the direction of Badger Meter Technical Support.

When finished making changes to the settings on this screen, select **OK** and return to the reading cycle. Select **Cancel** to disregard any changes and return to the main menu.

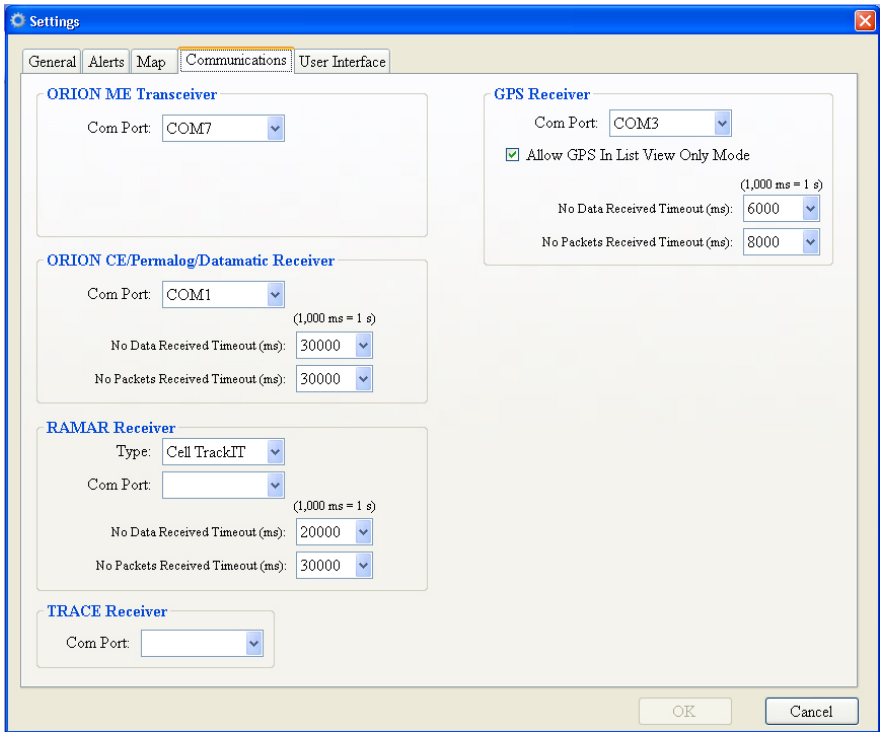

Figure 45: Settings screen – Communications tab

A typical ORION mobile reading system configuration (as shown in *Figure 45*) consists of an ORION mobile transceiver and/or ORION mobile receiver and a built-in GPS receiver.

ORION ME Transceiver

- **Com Port** — The COM port for the ORION FHSS mobile transceiver is assigned automatically by Windows based on the USB port it is connected to during initial system configuration.

ORION CE/Permalog/Datamatic Receiver

- **Com Port** — The COM port for the receiver is configured and assigned to the serial port. The default is **COM1**.
- **No Data Received Timeout** — The time (in milliseconds) before notification is given indicating the receiver is not receiving endpoint data. This field is filled with the default setting.
- **No Packets Received Timeout** — The time (in milliseconds) before notification is given indicating the receiver is not functioning correctly. This field is filled with the default setting.

GPS Receiver

- **Com Port** — The GPS is built into the Panasonic Toughbook laptop, and is always assigned to **COM3**.

  If you are running ORS on a non-Badger Meter supplied computer, assign the appropriate COM port per the manufacturer's instructions.
- **Allow GPS to List View Only Mode** — Display GPS readings in a List View format without displaying a map.
- **No Data Received Timeout** — The time (in milliseconds) before notification is given indicating the receiver is not receiving satellite data. This field is filled with the default setting.
- **No Packets Received** — The time (in milliseconds) before notification is given indicating the receiver is not functioning correctly. This field is filled with the default setting.

ORS may also be configured as an ORION/RAMAR multi-lingual RF reading system. Refer to the ORION Multi-Lingual Radio Frequency Reading System (ORI-I-47) installation data sheet for system setup information.

RAMAR Receiver

- **Type** — Choose **Cell Track IT, Fast Track IT** or **Hard Track IT** from the drop-down menu, depending on the receiver.
- **Com Port** — Refer to the ORION Multi-Lingual Radio Frequency Reading System (ORI-I-47) installation data sheet.
- **No Data Received Timeout** — The time (in milliseconds) before notification is given indicating the receiver is not receiving transmitter data. This field is filled with the default setting.
- **No Packets Received Timeout** — The time (in milliseconds) before notification is given indicating the receiver is not functioning correctly. This field is filled with the default setting.

TRACE Receiver

To configure ORS with a TRACE receiver, you must set the COM port. Contact Badger Meter Technical Support for configuration information.

User Interface Tab

The User Interface tab shows the default frequency settings for the Panasonic Toughbook laptop computer. The settings on this screen do not typically require modification.

If you make changes to the settings on this screen, select **OK** and return to the reading cycle. Select **Cancel** to disregard changes and return to the main menu.

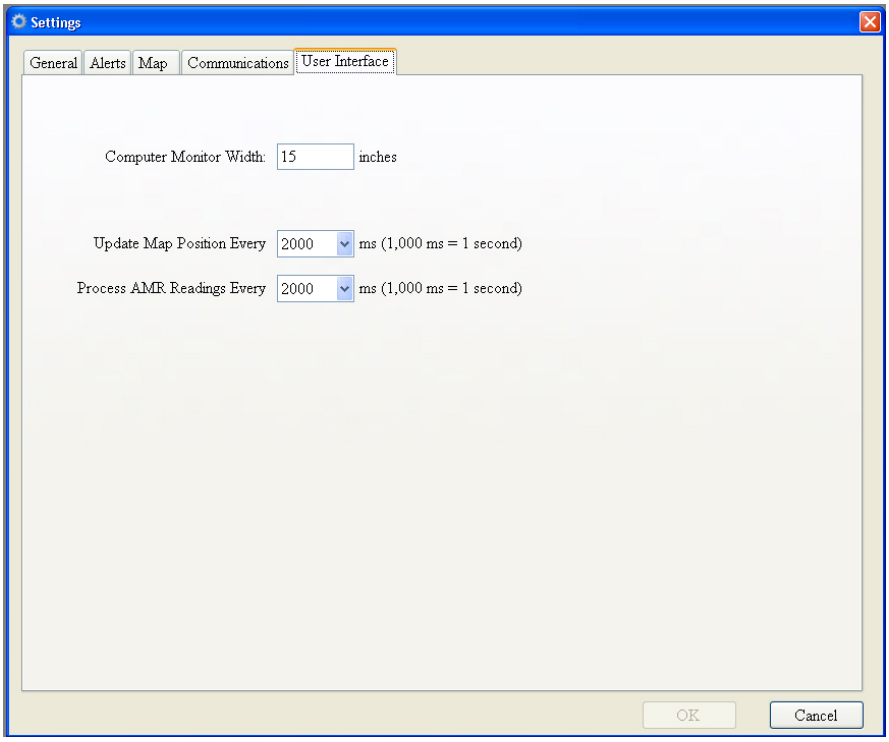

Figure 46: Settings screen – User Interface tab

Computer Monitor Width For all Panasonic Toughbook computers, this field is set at the factory. If you are running ORS on a different computer, or you have recently updated the software, measure the width of the screen and enter it in this field.

Update Map Position This value (in milliseconds) specifies how often the map is updated for position. This field is filled with the default setting.

Process AMR Readings This value (in milliseconds) specifies how often the acquired readings are processed. This field is filled with the default setting.

OUT-OF-ROUTE READS

There are times when it is convenient to view readings of ***all*** meters in an area, not just those included in the route. For these occasions, ORS provides the **Out-of-Route** reading option. When enabled, the **Out-of-Route** option logs the readings of all meters it encounters as if they were on the route. The software creates a report which can be viewed.

To set up the **Out-of-Route** option, follow these steps.

1. On the Settings screen, select the **General** tab to access the **Out-of-Route** option.

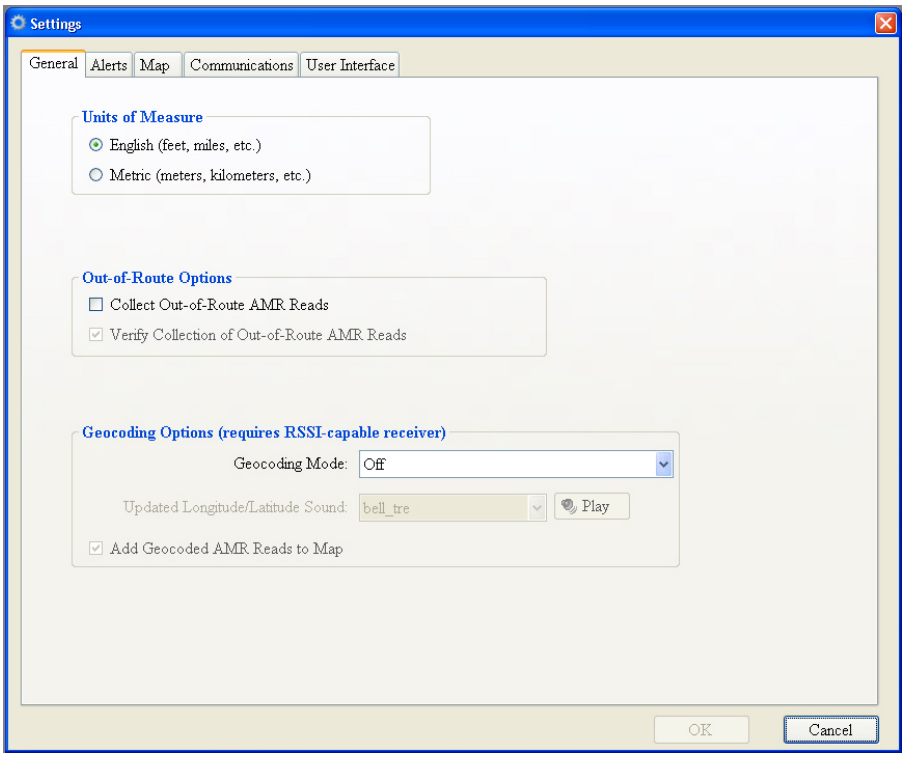

Figure 47: Settings screen - General tab

2. Check the box marked **Collect Out-of-Route AMR Reads**.
3. Check the box marked **Verify Collection of Out-of-Route AMR Reads**.

   By choosing this option, a software prompt asking whether or not you want to read out-of-route meters displays when you select **Start Reading** on the main menu. This is handy in the event you are reading out-of-route meters one day and performing normal meter reading the next day. If you forget to turn off the **Out-of-Route** reading option, you will be reminded to do so before you begin normal meter reading.
4. Click **OK**.
5. Click **Start Reading** on the main menu to start reading meters.

   Result: The software prompts you to confirm your intention to collect out-of-route meter readings. If you confirm, your readings will include out-of-route meter readings.

Reporting Out-of-Route Reads

If you wish to view the out-of-route meters that have been heard, you can display the Out-of-Route report from the Reports screen. See *"Reports" on page 51* for information on how to create an Out-of-Route report.

GEOCODING METER LOCATIONS

To capture the approximate location of meters automatically, the location coordinates (latitude and longitude) can be gathered automatically. The geocoding feature of the ORS assigns the current location of the vehicle to the meter when the meter reading transmission is received. Furthermore, to capture the closest location to the meter, the software also stores the location of the meter reading that had the strongest signal strength. This is possible through the use of the updated ORION receiver, which reports the meter reading transmission information as well as the strength of the transmission that was received.

NOTE: You must have an ORION mobile transceiver or receiver that has signal strength capabilities built in. To determine if your receiver has these capabilities, contact Badger Meter Technical Support.

Geocoding Scenario

Assume you are driving down a street with meters that require locations and the geocoding mode is on. When the first meter reading is received from a meter that requires a location, the software stores the reading, places the green dot on the map at the current location of the vehicle to show that the meter has been read, and makes a sound indicating the location is stored.

As you drive further, you may receive more meter readings from that meter. If the signal strength from one of the meter readings is greater than the one that was stored, the location of the meter is updated but no changes are made to the screen and no other sounds are heard.

Because the locations are updated whenever a meter reading with a stronger signal is received, the initial location of the meter as it is placed on the map may not be the location that is stored once the route is completed. For example, you might receive a meter reading from 52nd street while you are driving on 51st street. The icon will be added to the map on 51st street when the first meter reading is received. However, when driving on 52nd street, stronger meter readings will be received and the location information will be updated in the database, resulting in a stored location on 52nd street.

IMPORTANT

Because the location information is updated whenever a stronger meter signal is received, it is important when using this method to assign locations and that every street, alley and access way be driven at the slowest possible speed. These techniques maximize the number of meter readings received for each meter, yielding better location assignments.

Setting Meter Coordinates

To set the meter coordinates based on the signal strength, follow these steps.

1. Set up the equipment, start the ORS program and begin reading meters as usual.
2. When you arrive at the area where the latitude and longitude values are to be assigned, stop the vehicle.
3. To begin geocoding, click **Settings** on the main tool bar, then click the **General** tab and change the **Geocoding Mode** to one of these options:
    - **On - Add Only**: Meters that do not have location data will be added to the map.
    - **On - Update Only**: Meters that already have location data are updated but no new meters will be added.
    - **On - Add and Update All**: New meters and meters that already have location data will be added to the map.

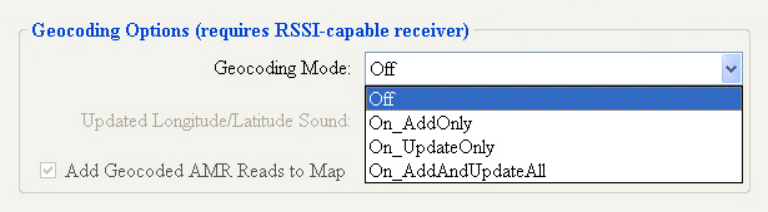

Figure 48: Geocoding options

When geocoding is on, the fields labeled *Updated Longitude/Latitude Sound* and *Add Reads to Map* become active.

4. Select **OK**.

   *Result: In Map View, the map control display on the left side of the screen changes to show "**GPS OK**" and the vehicle speed (Figure 49).*

5. Drive the route slowly (between 5 and 10 mph). As meter readings are received, the software logs the latitude and longitude values of each meter reading. The location values for the strongest reading received for each meter are stored.

   NOTE: If you drive faster than 15 mph, the speed display turns red and you will hear the siren. Slow down.

   As you slowly drive the route and a meter reading comes in that requires a location, you will hear a sound and the map display will show a new green circle for the meter that was just read. Each time you receive a meter reading from a meter that requires a location, you will hear the sound and see another green circle. In the background, the software is fine tuning the location information for meters that require locations when a stronger meter reading transmission is received. However, you will not hear or see anything while that is happening.

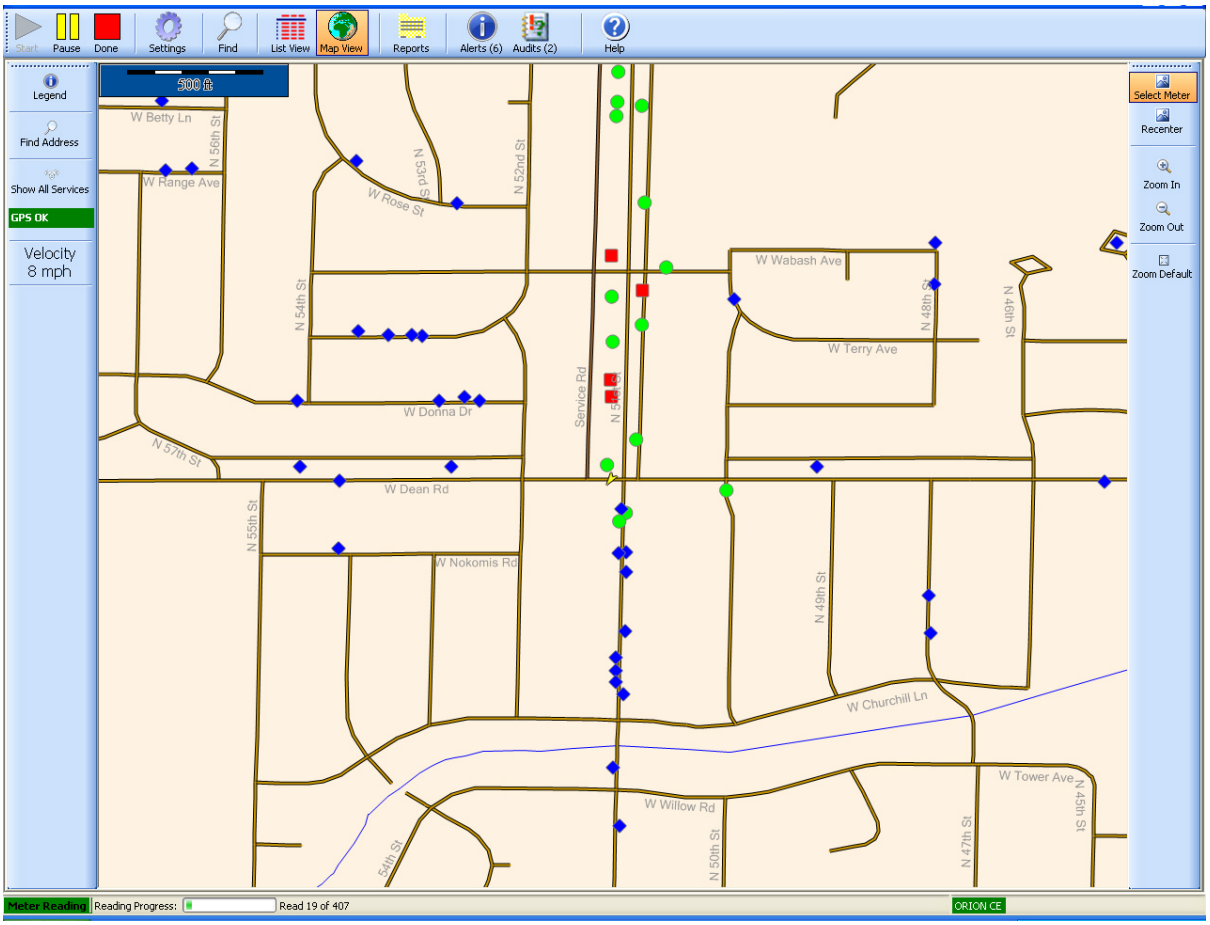

Figure 49: Meter reading in geocoding mode

6. When you have completed storing locations, select **Settings**, select the **General** tab and change the **Geocoding Mode** to **OFF**.

   Result: The display returns to normal operation.

7. When you unload the readings into the reading data management software, the latitude and longitude values are unloaded as well.

Changing a Geocoded Entry

As meter readings are received, the software logs the latitude and longitude values of each meter reading. The latitude and longitude values can be changed, if needed, on the Service Details screen.

1. With GPS on, drive slowly and stop as close as possible to the meter location.
2. Click the **Details** button for the meter you want to change.
   Result: The Service Details screen opens.
3. Select the **Current Reading** tab if it is not already selected.
4. Click the **Store Current Position** button.
   Result: The latitude/longitude is stored for the meter location.

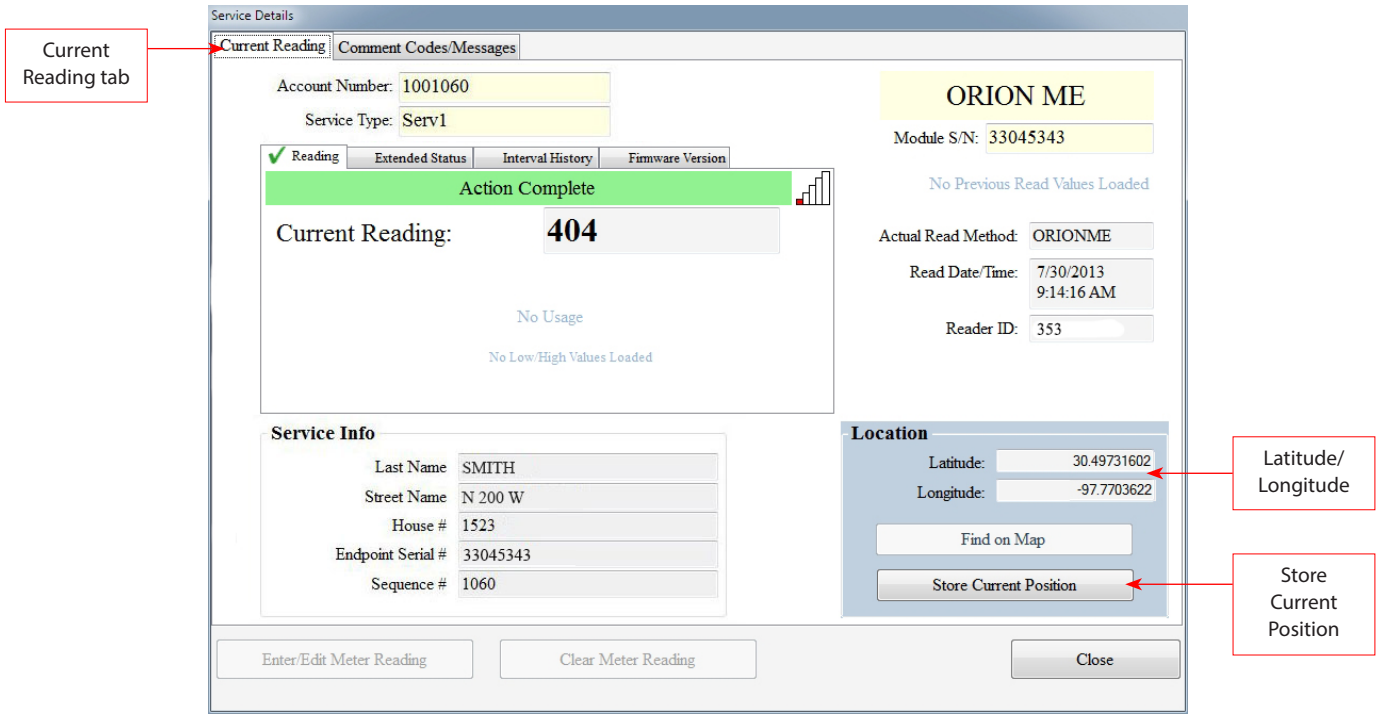

Figure 50: Store Current Position

REPORTS

The **Reports** feature organizes meter reading information in a number of different ways to facilitate easy information gathering. The screen is organized to accommodate report types, filters and exceptional status filters.

- Reports can be maximized to the full screen to see all details.
- Reading-status rows are color-coded: gray background for tampers and leaks; color background for high and low readings; white background for all other meters.
- Column order can be changed by clicking on a column heading and dragging it, right or left, to a new position. Columns can be sorted in ascending or descending order by selecting a column header (similar to a spreadsheet).
- Reports are designed for viewing in the field but you may connect a printer to the laptop and print a report by selecting the **Print Results** button. An example is shown in *Figure 53*.

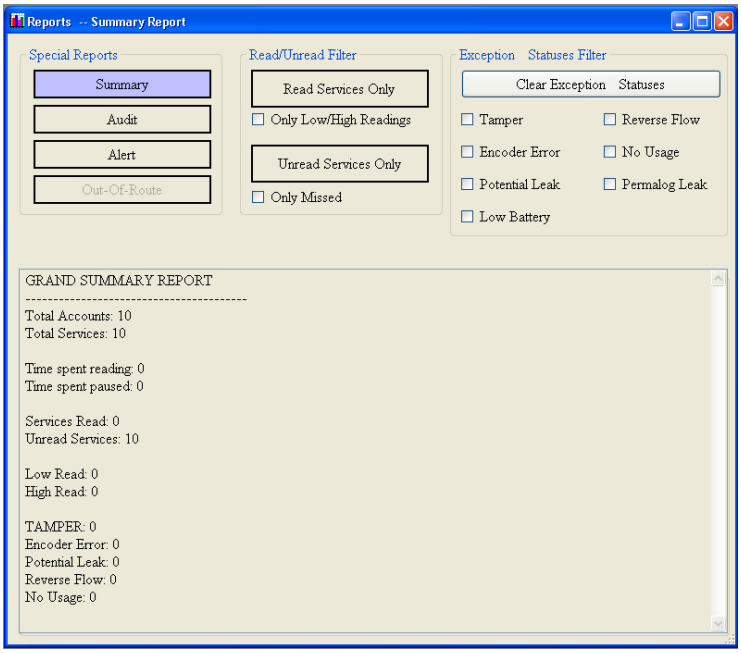

Figure 51: Reports screen - Summary report

Special Reports

- **Summary** The current status of in-progress meter reading. This report displays as the default (*Figure 49*).
- **Audit** Shows all error conditions encountered in ORS according to time and date.
- **Alert** Allows you to view each of the alert messages displayed during meter reading.
- **Out-of-Route** Records endpoint transmissions received that are not included in the loaded route.

Read/Unread Filter

- **Read Services Only** Displays all meters in the loaded route that were successfully read.
- **Only Low/High Readings** Modifies the **Read Services Only** list to display only meters with a low or high reading.
- **Unread Services Only** Displays all meters in the loaded route that were not successfully read.
- **Only Missed** Modifies the **Unread Services Only** list to display only meters that were missed.

Exception Statuses Filter

Select one or more check boxes and the screen displays a report for the status option(s) selected. This reporting feature updates with live information. Click the **Clear Exception Statuses** button to clear all selected statuses, refresh the screen and run an updated status report the next time a box is checked.

- **Tamper** The list of endpoints that have reported a tamper condition.
- **Reverse Flow** The list of endpoints that have reported a reverse flow condition.
- **Encoder Error** The list of endpoints that have reported an encoder error condition.
- **No Usage** The list of endpoints that have reported a no usage condition.
- **Potential Leak** The list of endpoints that have reported a potential water leak condition.
- **Permalog Leak** The list of Permalog endpoints that have reported a potential leak condition.
- **Low Battery** The list of endpoints that have reported a low battery.

Running a Report

1. Click the **Reports** button on the main tool bar to display the Reports menu.

Figure 52: Reports button- main tool bar

2. Click the **Read Services Only** button to see a report of the meters that have been read.
   Result: Meters on the route that have been read display in a list view format.

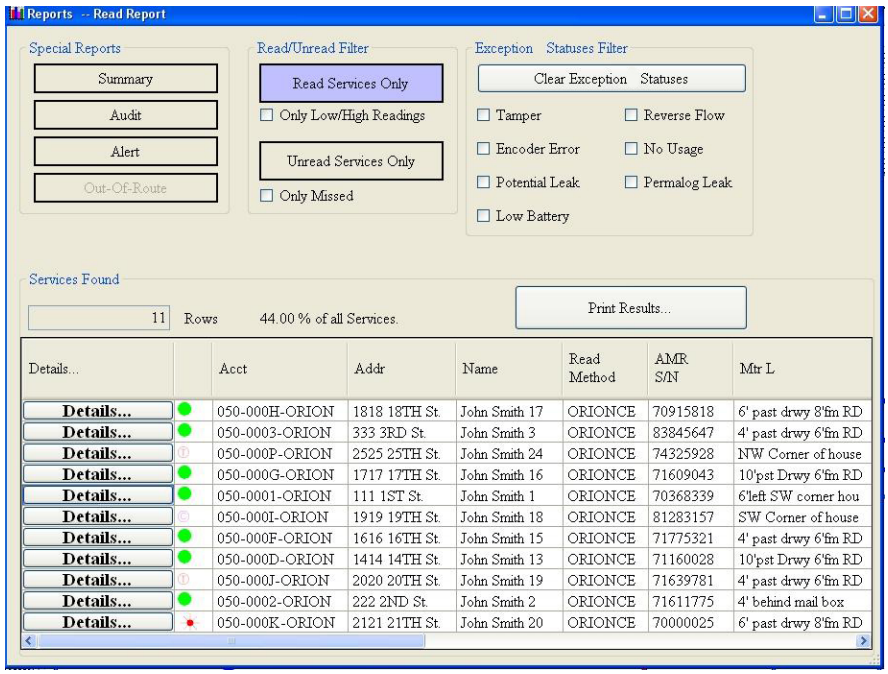

Figure 53: Reports - Read Services Only

3. To modify or "filter" the report, check **Only Low/High Readings** to display a report limited to low and high readings only.

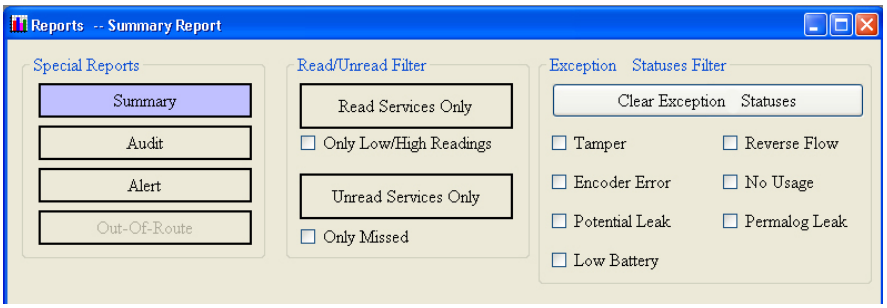

Figure 54: Report filters

4. To further "filter" the report, check one or more boxes under **Exception Statuses Filter**.

   For example, to see a report including those meters that have been successfully read but are reporting a potential leak status, click the **Potential Leak** box.

5. Check **Unread Services Only.**

   Result: A new report opens showing meters on the route that were not read.

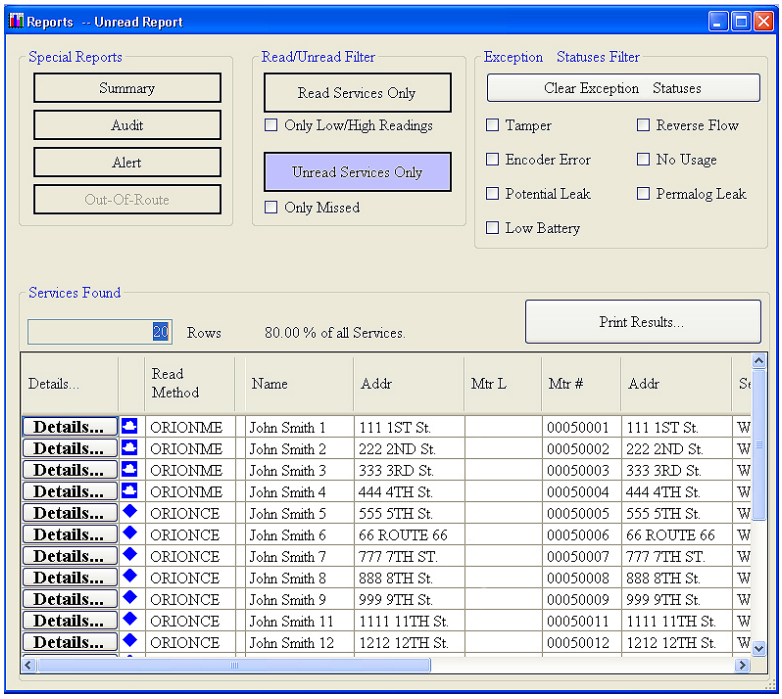

Figure 55: Reports - Read Services

6. To further "filter" the report, check **Only Missed** to display a report limited to missed meters.
7. For any of the reports, click the **Details** button in the left column to display the **Service Details** screen for the meter.
8. If a printer is connected, click the **Print Results** button to print a report.

Special Reports

Special Reports for the ORS application are described below. Each report is automatically updated as the meter reader views the report and ORS gathers data.

Summary Report

The **Summary** report of the current status of in-progress meter readings is displayed in the lower half of the screen as shown in *Figure 56*.

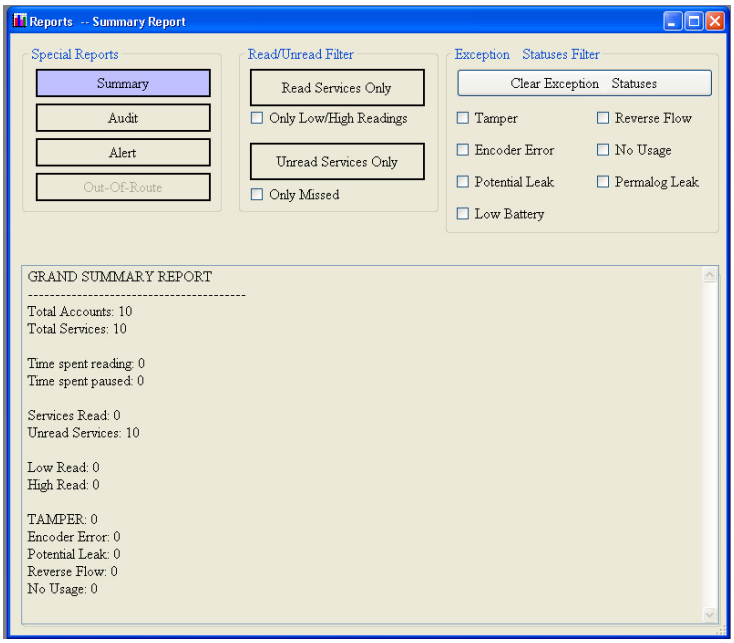

Figure 56: Summary report

Total Accounts	The number of accounts loaded in the route file.
Total Services	The total number of services included in those accounts.
Time Spent Reading	The total amount of time (in minutes) ORS was in active reading mode.
Time Spent Paused	The total amount of time ORS was paused.
Service Read	The number of services/endpoints that were read.
Unread Services	The number of services/endpoints that were not read.
Out-of-Route Services	The number of out of route services that were read.
Low Read	Exceptionally low meter readings.
High Read	Exceptionally high meter readings.
Tamper	The number of ORION endpoints reporting a tamper condition.
Encoder Error	The number of ORION endpoints connected to encoders reporting an error condition.
Potential Leak	The number of ORION water endpoints reporting a potential leak condition.
Reverse Flow	The number of endpoints connected to encoders which have reported a reverse flow condition.
No Usage	The number of ORION endpoints reporting no usage.

Audit Report

The **Audit** report lists all exception conditions encountered in the ORS software according to time and date.

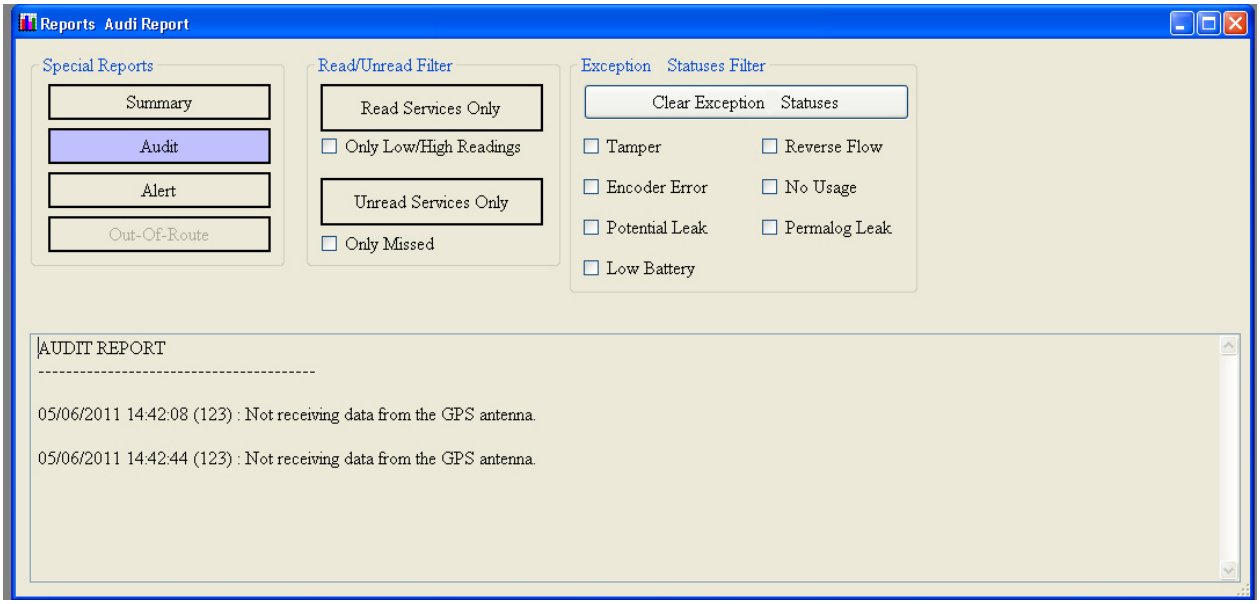

Figure 57: Audit report

The audit report displays the following error alerts:

- GPS errors
- ORION FHSS mobile transceiver and/or receiver errors

Alert Report

An **Alert** report displays exception conditions in the meters that are reporting their readings.

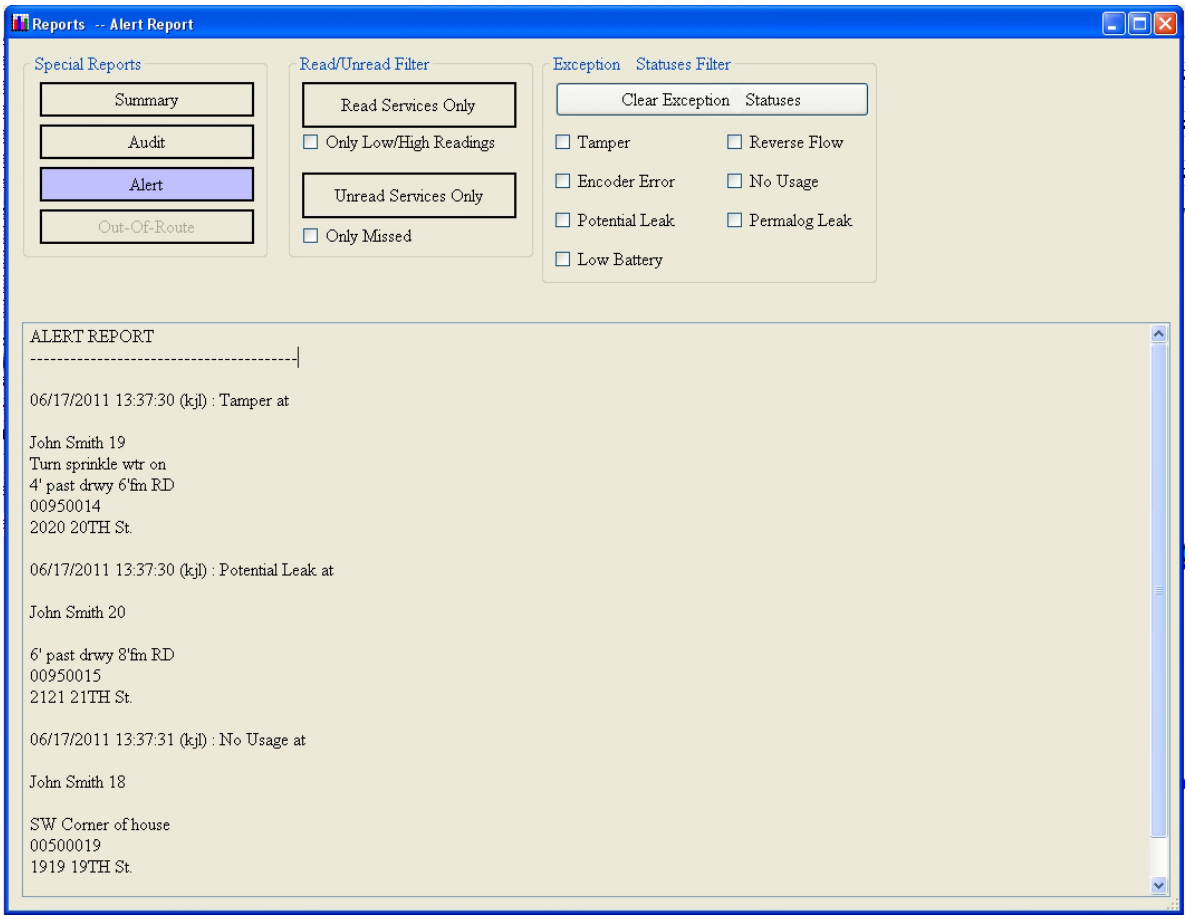

Figure 58: Alert report

An Alert report allows you to view each of the alert messages that have been displayed during meter readings. The report indicates potential leaks that were sited and provides the addresses associated with those potential leaks. It also includes the time and date when the reading occurred.

TWO-WAY COMMUNICATIONS

ORION Migratable endpoints and ORION Fixed Network endpoints operating in mobile mode are capable of two-way communication with the ORION USB-powered mobile transceiver. Using the two-way functionality, extended status, historical interval data and firmware information can be extracted from the endpoint.

The Service Details screen for an ORION Migratable endpoint provides access to the two-way communication functionality. *Figure 59* shows the **Extended Status**, **Interval History** and **Firmware Version** tabs in addition to the **Reading** tab on the Service Details screen. Service Details can be accessed from the accounts in List View during a route read, or during Quick Read. See *"Service Details" on page 27* for more information.

NOTE: ORION Fixed Network endpoints operating in mobile mode display in ORS as "ORION ME".

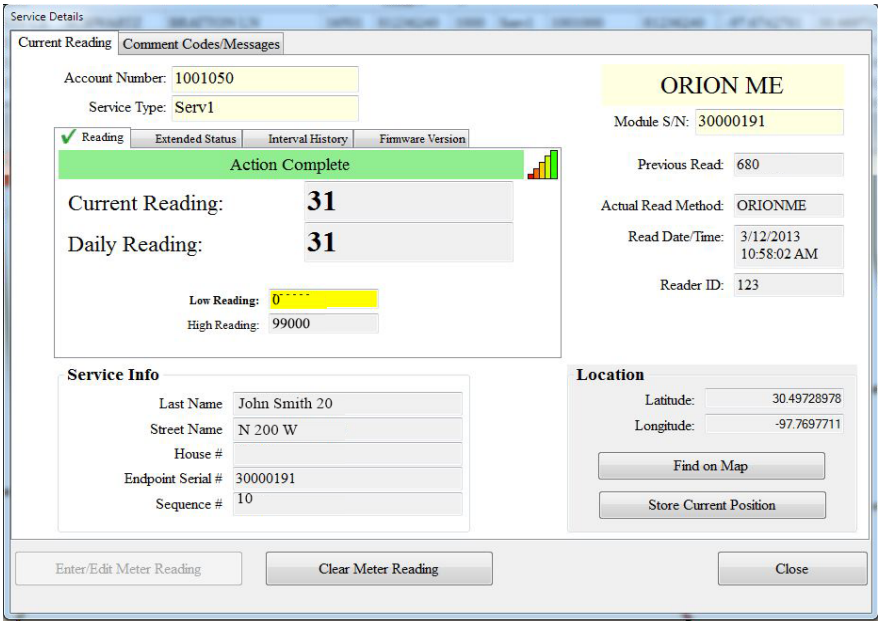

Figure 59: Service Details – ORION ME

Signal Strength Indicator

On the Service Details screen, the icon displayed above the current reading field indicates the relative strength of the communication signal between the ORION Migratable and ORION Fixed Network (in mobile mode) endpoints and the ORION mobile transceiver. See *Figure 60*.

Figure 60: Signal strength icon

Figure 61: No signal

As readings come in, the icon bars fill and flash to report changing communication conditions: 1-2 bars filled = weak signal; 3-4 bars filled = good signal; 5 bars filled = excellent signal.

If the mobile transceiver is not receiving a communication signal from the endpoint, the bars are covered by a red circle with a line through it as shown in *Figure 61*.

NOTE: Two-way radio frequency communication operates best when there is additional distance between the reading equipment and the endpoint. When attempting to use two-way communication, it may be necessary to *increase* the distance between the reading equipment and the endpoint.

Work Items

When ORS is used with ReadCenter Analytics or Analytics Mobile software, the reading data management software operator can request work items to collect extended status, historical interval data and/or the endpoint firmware version using the two-way communication functionality of the ORION Migratable endpoints. Work items can be set up for automatic collection or they can be performed manually by the meter reader.

In List View , the meter icons indicate if any automatic work items are pending. Depending on the status and type of meter, one of the following meter icons displays. See *"Meter Icons" on page 25* for complete details.

Water: Reading and work items pending

Water: Reading received, work items pending

Gas: Reading and work items pending

Work items can be collected or viewed on the Service Details screen for an ORION ME account. With the Current Reading tab selected on the Service Details screen, four tabs are displayed: **Reading**, **Extended Status**, **Interval History** and **Firmware Version**. An example is shown in *Figure 62*. To access the Service Details screen, click the **Details** button on the List View screen.

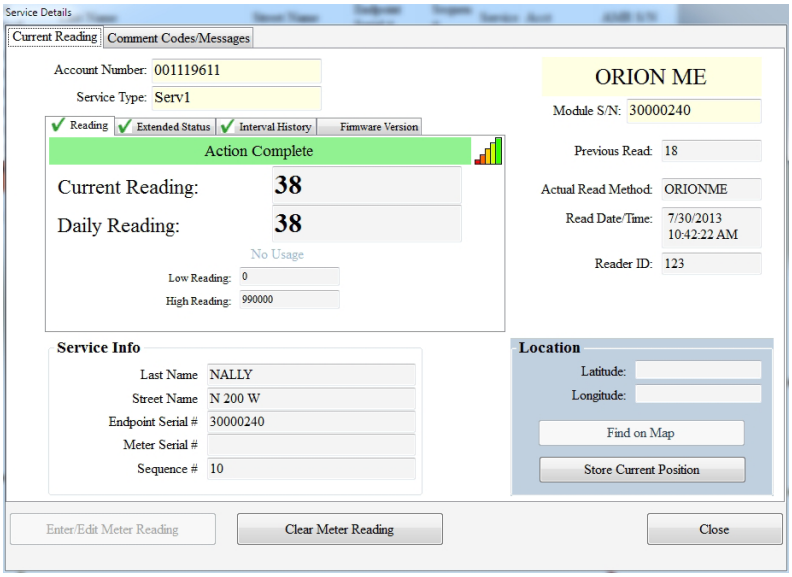

Figure 62: Service Details screen with work items

When a tab is selected, the message on the screen indicates the status.

"Required"	Displays at the top of the screen if an automatic work item has been requested. The buttons are not active and the information is viewable but cannot be changed.
"Not Required/Optional"	Displays if an automatic work item was not requested. The buttons are active and the work item can be requested manually.
"Action Complete"	Displays when the work item (automatic or manual) is complete.
	A green check mark on a tab indicates a work item was performed and the information has been received. On the Reading tab, a green check mark indicates a reading has been received.

File Type

Data collected via work items, automatically or manually, is saved as an .xml file and sent back to ReadCenter Analytics or Analytics Mobile with the route file. For additional information, refer to *"Historical Interval File Type" on page 60*.

Requesting Extended Status Manually

The **Extended Status** tab provides access to additional information which has been programmed into an endpoint, including meter type and size, unit of measure, encoder type, as well as exception statuses such as tamper and no usage.

If a work item was not assigned by the reading data management operator, you can manually initiate a request for extended status data from an ORION Migratable or ORION Fixed Network (in mobile mode) endpoint by performing the following steps.

1. With the **Current Reading** tab selected on the Service Details screen, select the **Extended Status** tab.
   Result: The Extended Status screen displays as shown in Figure 61.

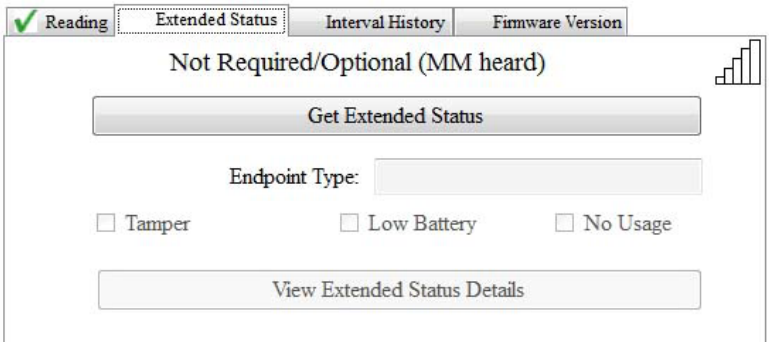

Figure 63: Extended Status without work item

NOTE: "Not Required/Optional" displays at the top of the screen to indicate an automatic work item was not requested.

2. Click the **Get Extended Status** button.
   *Result: When the data is received from the endpoint, the Endpoint Type fills in the field, the message changes to "Action Complete" and the **View Extended Status Details** button becomes active.*

3. Click the **View Extended Status Details** button.
   Result: The Extended Status Details window opens with data received from the endpoint.

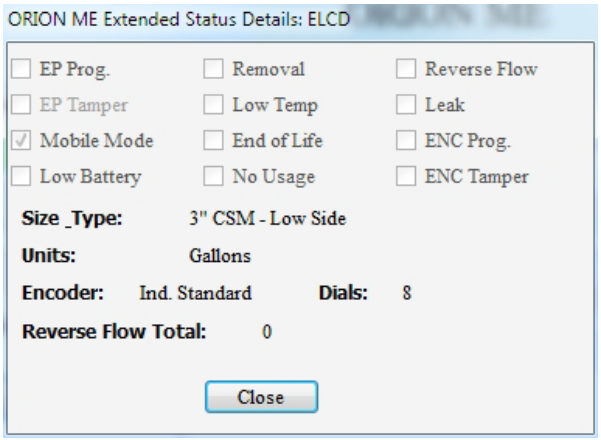

Figure 64: Extended Status Details window

Title Bar: The encoder type is displayed.

Status Details: Boxes are checked for any alerts or exception status indicators. These fields vary, depending on the encoder type.

Size_Type: The meter size and type.

Units: The measurement used by the meter is shown.

Encoder: The encoder model.

Dials: The number of dials on the encoder.

Reverse Flow Total: The amount of reverse flow, if any.

4. Click **Close** to return to the Extended Status screen.

NOTE: If the route was created with ReadCenter Data, Extended Status information is view only.

Interval History

The **Interval History** tab gives you the ability to collect an historical interval profile from the endpoint. The data collected becomes part of the route unload file and provides a water usage profile useful in discovering potential leaks, addressing customer questions and/or resolving billing disputes.

When ORS is used with ReadCenter Analytics or Analytics Mobile software, the reading data management software operator has the option to create a work item to request and collect interval profile data from all ORION Migratable or Fixed Network (in mobile mode) endpoints. The work item initiates the interval profile collection automatically and does not require manual intervention by the meter reader.

As an alternative, the meter reader can initiate the interval profile extraction manually when a work item is not requested by ReadCenter Analytics or Analytics Mobile, or when ORS is used with ReadCenter Data software. See *"Requesting Interval History Manually" on page 61*.

Whether the information is collected manually or as an automatic work item, it is transferred back to the reading data management software operator as part of the route unload file.

Historical Interval Data

ORS is capable of extracting historical data at the following intervals:

7 days/Week **14 days**/ Two weeks **30 days**/ Month (Shorter months include extra days of readings, up to 30.) **60 days**/Two months **All** readings stored in the endpoint (Up to 90 days of hourly readings or 2160 reads)

This chart shows the number of readings collected for meters set for hourly and fifteen minute readings:

Available Profile Data Extraction Intervals	Hourly Reads: 1 Read per Hour 24 Reads per Day	15 Minute Reads: 4 Reads per Hour 96 Reads per Day
7 days	168 reads (24 x 7)	672 (96 x 7)
14 days	336 reads (24 x 14)	1344 (96 x 14)
30 days	720 reads (24 x 30)	2160 (96 x 22.5)
60 days	1440 reads (24 x 60)	2160 (96 x 22.5)
All/ 90 days	2160 reads (24 x 90)	2160 reads (96 x 22.5)

NOTE: ORION Migratable or ORION Fixed Network (in mobile mode) endpoints are capable of holding up to 90 days of readings, or 2160 hourly reads. If the account is set up to read every 15 minutes—4 readings per hour—the data extracted reflects four (4) readings per hour and reaches the maximum 2160 reads in 22.5 days (90 days / 4 = 22.5 days).

Historical Interval File Type

- When work items are selected in ReadCenter Analytics or Analytics Mobile, historical interval data is saved as an .xml file when collected automatically or manually as part of route reading process, or during Quick Read on an account that is part of the route file. Historical interval data collected via Quick Read for an account that is not part of the route file is saved as an endpoint-specific .csv file.
- When work items are not selected in ReadCenter Analytics or Analytics Mobile, all interval data collected as part of the route reading or during Quick Read is saved as endpoint-specific .csv files.
- When ORS is used with ReadCenter Data, interval data collected is always saved as an endpoint-specific .csv file.

In all cases, the interval data files (.xml or .csv) are included in the folder with the route unload files. Historical interval data that is returned to ReadCenter Analytics or Analytics Mobile is applied to an account's history and viewable via the ReadCenter Analytics or Analytics Mobile reports. Interval data saved as a .csv file can be viewed using the ORION Data Profile Viewer software.

Requesting Interval History Manually

If it was not requested as an automatic work item, you can manually initiate a request for historical data from an ORION Migratable or ORION Fixed Network (in mobile mode) endpoint by performing the following steps.

1. With the **Current Reading** tab selected on the Service Details screen, click the **Interval History** tab.

   NOTE: "Not Required/Optional" displays at the top of the screen to indicate that an automatic work item was not requested.

   The "Days" option buttons become active when the mobile transceiver receives the mobile message from the endpoint.

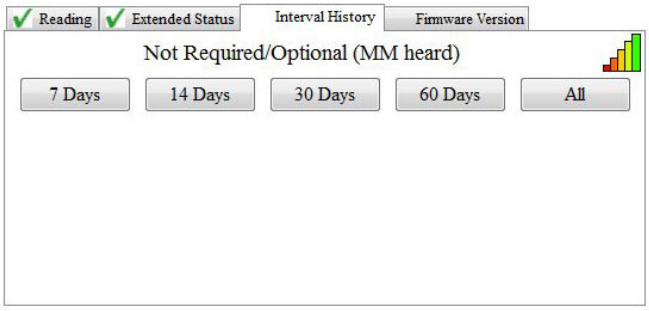

Figure 65: Interval History tab without work items

2. Select the button for the number of days: **7 Days**, **14 Days**, **30 Days**, **60 Days**, or **All**. For additional information, see *"Interval History" on page 60*.

   Result: The Test Circle Selection screen displays with the Meter Type selected.

   NOTE: This screen does not display for Permalog meters since they have only one test circle.

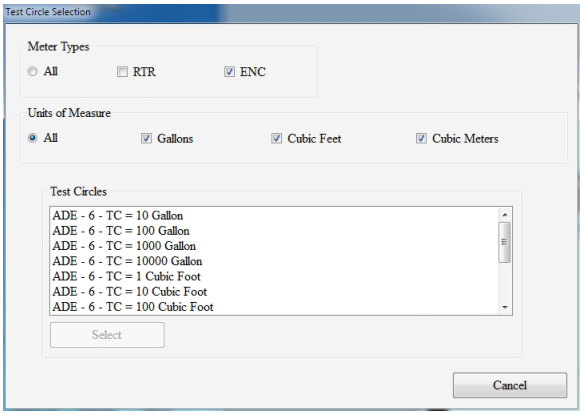

Figure 66: Test Circle Selection screen

3. Select the *Units of Measure* and *Test Circle*. Then click the **Select** button.

   Result: The Test Circle Selection screen closes, the message at the top of the screen changes to "Requested" and the interval data is extracted. This may take a few seconds.

   The message changes to "Action Complete" and the data is extracted and displayed in the fields. Any exception status information, such as tamper or potential leak, also displays.

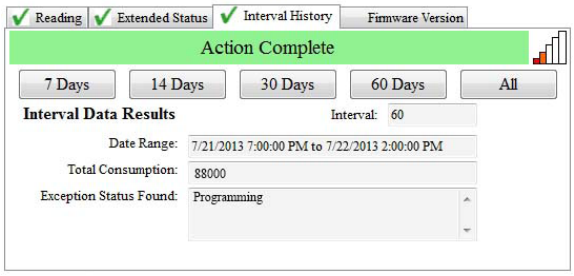

Figure 67: Interval History results

   Interval: The number of minutes, 60 or 15, between readings.

   Date Range: The start and end date and time of the profile data extracted, based on the selection.

   NOTE: ORS uses universal time (UTC) which is converted to local time in the reading data management software.

   Total Consumption: Usage for the selected time period fills in this field.

   Exception Status Found: Any alerts or exception status indicators are listed in this field. In *Figure 67*, "Programming" means the endpoint settings were changed via IR.

The data collected is saved and transferred back to the reading data management software operator as part of the route unload file. For more information, refer to *"Historical Interval Data" on page 60*.

Requesting Firmware Manually

If it was not set up to be done as an automatic work item, you can manually initiate a request for the firmware version from an ORION Migratable or Fixed Network (in mobile mode) endpoint by performing the following steps.

1. With the **Current Reading** tab selected on the Service Details screen, click the **Firmware Version** tab.

   NOTE: "Not Required/Optional" displays at the top of the screen to indicate that an automatic work item was not requested.

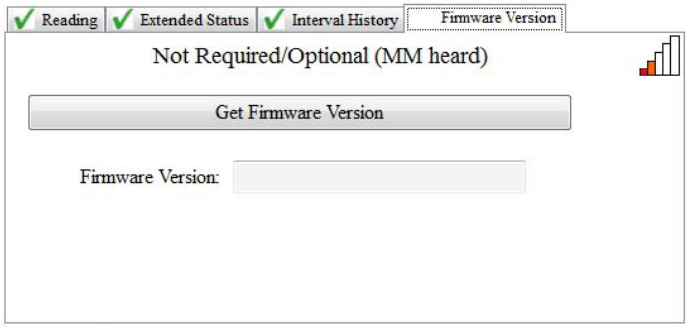

Figure 68: Firmware Version tab without work items

2. Tap the **Get Firmware Version** button.

   Result: The Firmware version of the endpoint displays as shown in Figure 69.

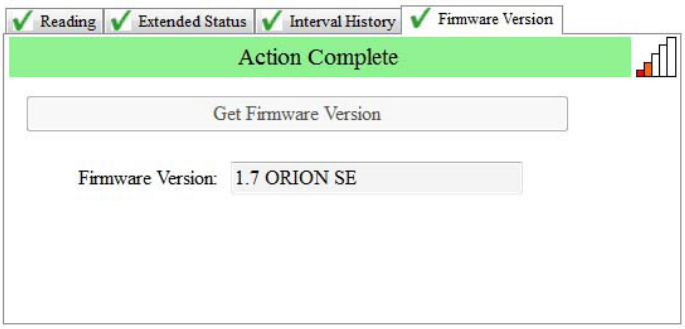

Figure 69: Firmware Version received

NOTE: If the route was created with ReadCenter Data, Firmware Version is view only.

FIND

Search functionality is accessible during an active reading session. The **Find** option on the main tool bar allows you to search for meters based on specific criteria. Click the **Find** button on the main tool bar to display the following screen.

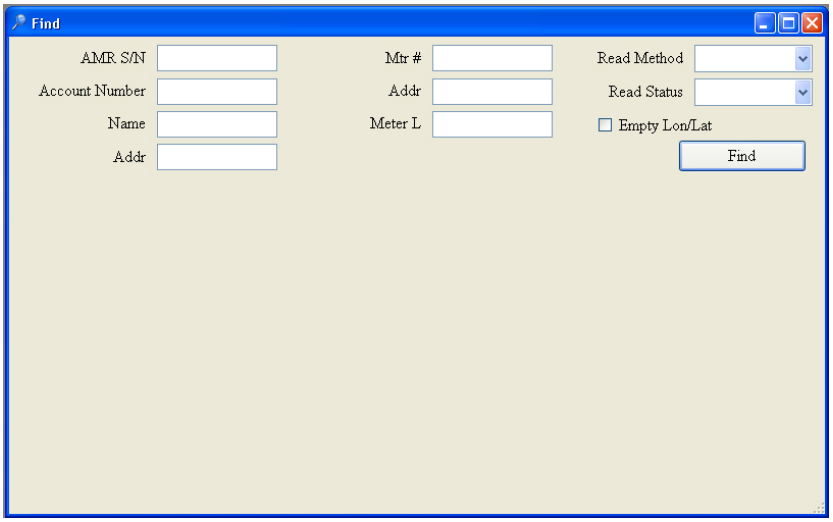

Figure 70: Find screen

Example 1 (*Figure 71*)

To search for a meter, enter information about the particular meter into one of the search fields. For example, if you enter the letter "**J**" in the **Name** field, account names with the letter "**J**" in the name field are displayed as in *Figure 71*.

Names with the letter "**J**" anywhere in the name will display. The "**J**" does not need to be the first initial of the customer's first or last name.

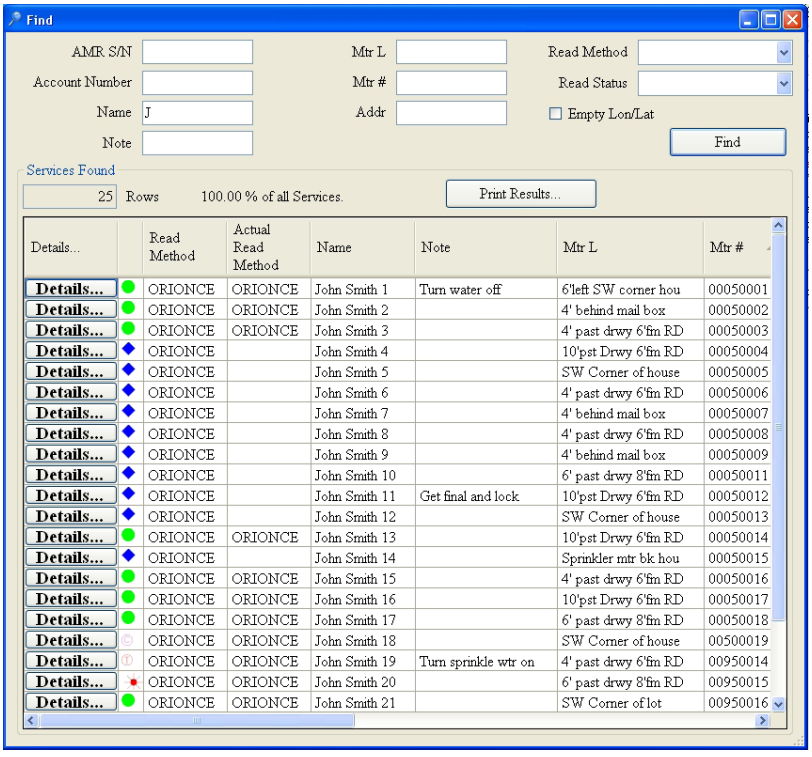

Figure 71: Find Screen - Search Results

Example 2 (*Figure 72*)

In example 2, in addition to the letter "**J**" in the **Name** field, the number "**4**" was entered in the **Addr** field to narrow the search. There is are three meters in the route with "**4**" in the **Addr** field and a "**J**" in the **Name** field. As *Figure 72* shows, the search includes addresses with the number "**4**" anywhere in the address.

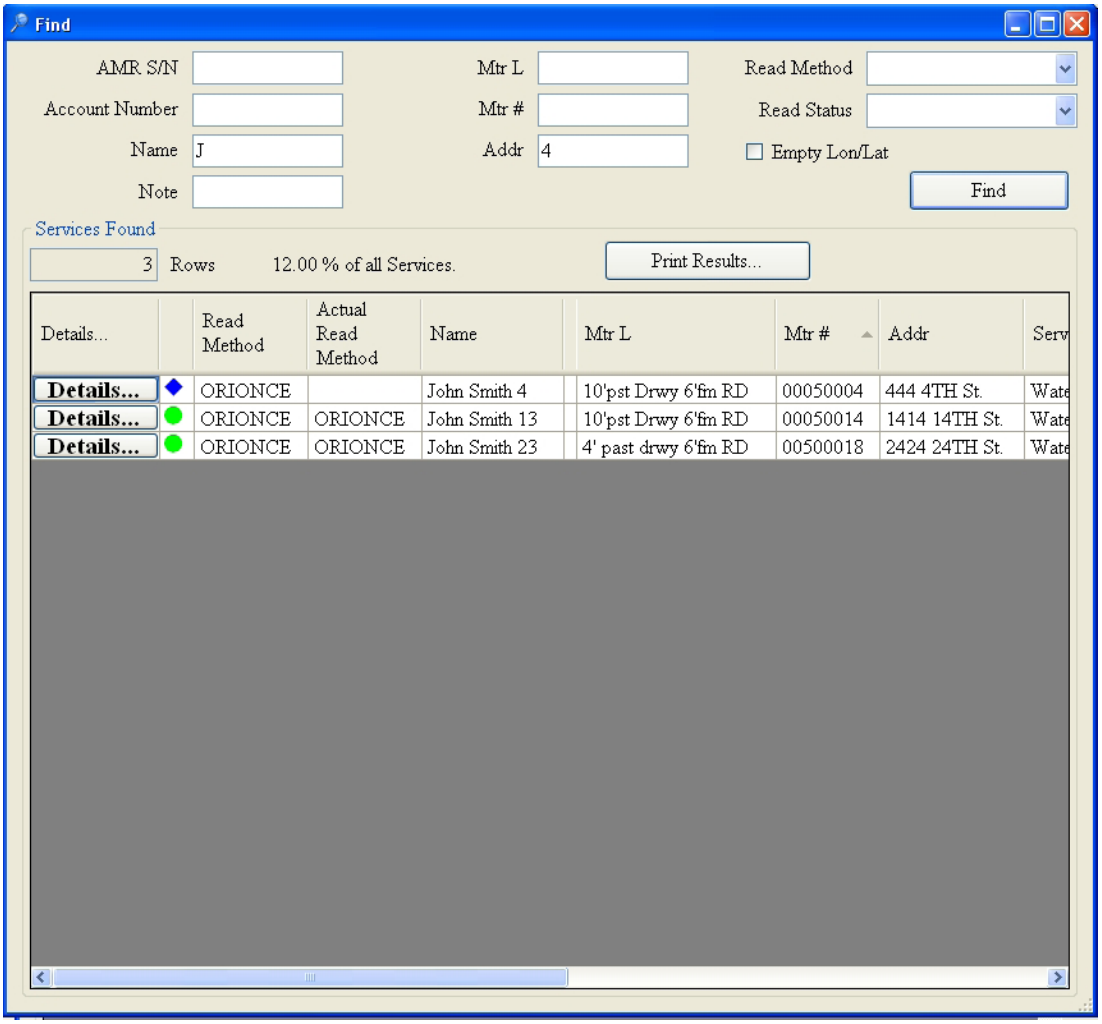

Figure 72: Example 2 - Find Results Narrowed

NOTE: Column heading order can be changed by clicking on a column heading and dragging it, right or left, to a new position.

UNARCHIVE

ORS stores all route files that have been unloaded. The **Unarchive** option on the main menu provides access to any previously unloaded route file. The file is "read only" and cannot be changed but the user can unload the data to a memory stick. This is helpful if the previously unloaded file was lost.

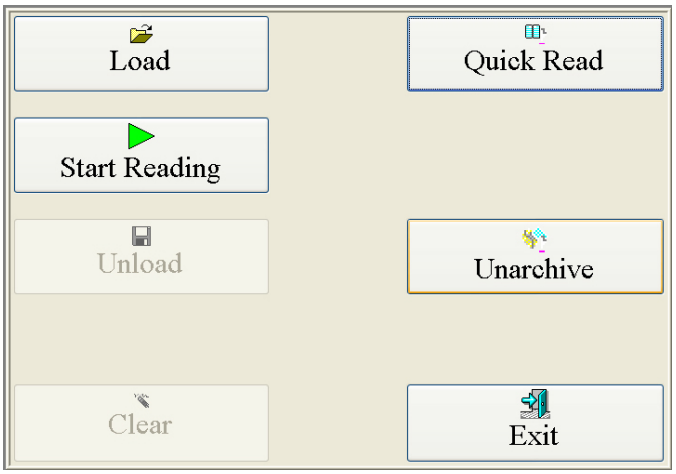

Figure 73: Main menu - Unarchive

1. Click **Unarchive** on the main menu.
   Result: A list of the previous route files displays.

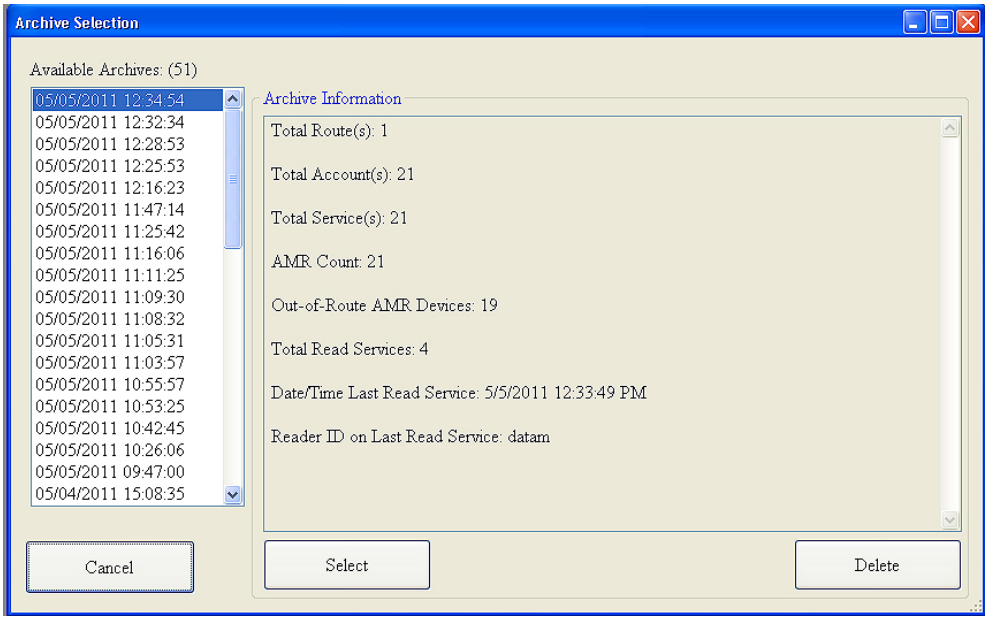

Figure 74: Archived readings

2. Click to highlight the route file to be restored, based on the date and time, and then click the **Select** button**.**
3. Click **Unload** on the main menu to unload the readings. For additional information about unloading a route, refer to *"Unloading a Route" on page 35*.

APPENDIX

GLOSSARY

ADE®	The Absolute Digital Encoder (ADE) is a position-based encoder that senses the position of each number wheel to determine the reading for touch and AMR/AMI systems. The ADE encoder displays as "ENC" on the software screens.
AMI	Advanced metering infrastructure (AMI).
AMR	An automated meter reading (AMR) system that uses radio frequency technology to transmit meter readings between an endpoint and a data collection device.
ENC	Used in the software to refer to a three-wire encoder, including the Absolute Digital Encoder.
endpoint	The term used to describe a transmitter which is an electronic device that produces radio waves.
HR-E	High resolution absolute encoder with eight-wheel mechanical display. The HR-E encoder displays as "HRE" on the software screens.
HR-E LCD	High resolution electronic encoder with digital display. The HR-E LCD encoder displays as "ELCD" on the software screens.
IR	Infrared light. Wireless transmission that requires a clear line of sight between the transmitter and receiver. An IR programming cable connected to a collection device (laptop or handheld computer) is used to read and program ORION endpoints.
lat/long	Abbreviation for latitude/longitude.
MM heard	Mobile message heard (**MM heard**) displays on the Service Details screen only when reading ORION Migratable or Fixed Network (in mobile mode) endpoints. The message displays when the transceiver receives the signal from the ORION endpoint. Also see **waiting for MM**.
ORION CE	The **ORION Classic** endpoint is a one-way local automated meter reading (AMR) system which communicates with a mobile *receiver* designed to read ORION water and gas endpoints. The receiver has Frequency Hopping Spread Spectrum (FHSS) technology to minimize interference and eliminate FCC licensing.
ORION ME and ORION SE	**ORION Migratable** endpoints and **ORION Fixed Network** endpoints are two-way utility management solutions. ORION Migratable and ORION Fixed Network (in mobile mode) endpoints communicate with a mobile *transceiver* designed to receive signals from and send signals to ORION Migratable and Fixed Network water and gas endpoints. The transceiver has Frequency Hopping Spread Spectrum (FHSS) technology to minimize interference and eliminate FCC licensing.
ORS	Acronym for the ORION Mobile Reading System.
reading data management software	Refers to Badger Meter reading data management software which acts as an interface between the Utility's billing software and the meter reading devices. ORS will load route information *from* the reading data management software and unload meter information *to* the reading data management software.
RF	Radio frequency.
RSSI receiver	Received Signal Strength Indicator (RSSI) is a receiver designed to pick up radio frequency (RF) signals and generate an output equivalent to the signal strength.
RTR®	The Badger Meter Recordall® Transmitter Register (RTR) is used in conjunction with Recordall disc, turbo, compound and fire series water meters to measure totalized flow through the meter and output a signal to Badger Meter meter reading products.
transceiver	A device that has the ability to both transmit and receive.

UTC ORS uses Coordinated Universal Time or UTC which is converted to local time in the reading data management software.

waiting for MM **Waiting for MM** (mobile message) displays only when reading ORION Migratable or Fixed Network (in mobile mode) endpoints. The message displays on the Service Details screen and indicates the meter reading vehicle is not yet close enough to the endpoint for the FHSS mobile transceiver to receive the signal or mobile message, or reading has been paused or stopped.

Windows Start Refers to the Windows Start button, typically found in the laptop task bar at the bottom left. Click the button to access the Start menu for the Windows operating system.

work item An optional task request set up in ReadCenter for collecting data from ORION Migratable and Fixed Network (in mobile mode) endpoints. Work items are completed and sent to ReadCenter with the route. See *"Two-Way Communications" on page 57*.

TROUBLESHOOTING

Use the guidelines in this section if you encounter the situations described below during normal ORS operations.

COM Port Errors

The correct communication (COM) port for the transceiver and/or receiver(s) should be verified prior to reading meters for the first time. For more information, refer to *"Communications Tab" on page 44*.

Starting the Software

- To ensure the software recognizes the attached device(s), always power on the laptop and switch on the mobile transceiver (and/or receiver) *before* you start the ORS software.
- If you reboot the laptop, switch off the mobile transceiver (or receiver) and then reboot the laptop. After the laptop reboots, switch on the mobile transceiver or receiver *before* you start the ORS software.

Route File Questions

The meter reading route file is created by the reading data management software operator. If the route files are not found in the selected folder or drive, or if the route file appears to be missing accounts, follow these steps.

1. Verify and correct the data in the ReadCenter Analytics or Analytics Mobile reading data management software (i.e., confirm correct account group settings) and/or the billing system.

   Corrections to the account and/or services information (i.e., address, meter or endpoint serial number) should be made in the Utility billing system and a new billing interface file created. Refer to the reading data management installation and operation manual for more information.
2. Create a new load file with the changes.
3. Attempt to load and read the route again.
4. If you experience further problems reading the route, contact Badger Meter Technical Support.

For all other situations, please contact Technical Support. See *"Technical Support" on page 71* for details.

TECHNICAL SUPPORT

Errors do not normally occur, so it is important to report all occurrences of error windows to Badger Meter Technical Support.

NOTE: Trouble Codes and/or information from any notes you created in Comments Codes/Messages can be useful when contacting Technical Support.

What to Report

When you contact Technical Support, provide the following information if possible:

- The steps being performed at the time
- Any entries that were made on the screen
- The error message, including any error code and explanation that is shown
- The current condition of the laptop

Your Technical Support Specialist may ask you to fax notes or other information to assist in the investigation.

Contact Badger Meter Technical Support by phone, email or fax*

Phone: 800-456-5023
E-mail: TechSupport@BadgerMeter.com
Fax: 888-371-5982

Webex:

NOTE: Requires an Internet connection.

If a Technical Support Specialist directs you to connect by Webex, click **Help> Support** on the ORS main tool bar. A support information window opens displaying contact information.

Click the Webex link.

* If you need Technical Support, check with your local distributor first.
Your distributor may have a Badger Meter authorized and trained technical support representative on staff. If not, they will direct you to contact Badger Meter Technical Support.

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