SMARTank

Alerts and Alarms

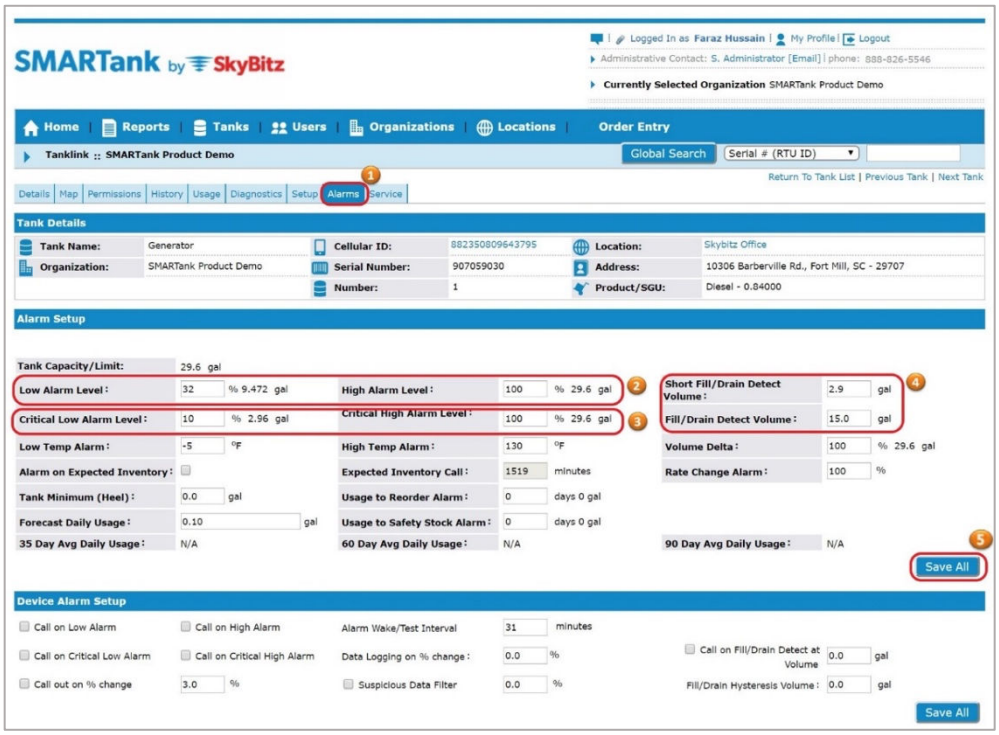
SMARTank also gives maintenance alarms that trigger based on different parameters pertaining to the Tank monitor.

Maintenance Alarms include:

- CNR – Client Not Responding
- CNA – Client Not Assigned
- ID – Invalid Data
- NSI – No Sensor Input
- SOR – Sensor Over Range
- SUR – Sensor Under Range
- ECA – Expected Call Alarm
- NRU – No Recent Update
- NP – No Power (AC Power Failure)
- CF – Internal Communications Failure
- LB – Low Battery Alarm
- LT – Low Temperature Alarm
- HT – High Temperature Alarm

Defining Tank Alarm Parameters

To set up a tank, perform the following steps:



1. Click the **Alarms** tab to display the *Tank Alarms* screen.

2. In the Alarm Setup pane, enter your desired **Low Alarm Level** and **High Alarm Level** for the selected tank. Enter the number as a percentage of volume.

   Note: The default low alarm level is 32%

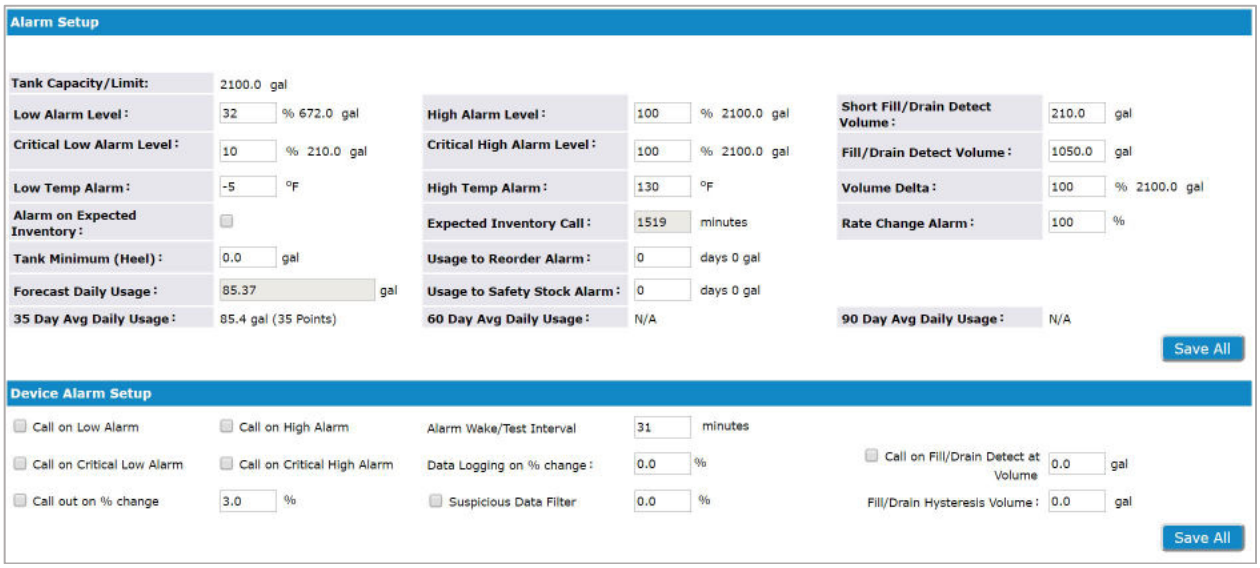
3. Enter the Critical **Low Alarm Level** and **Critical High Alarm Level** for the selected tank. Enter the number as a percentage of volume.

4. Enter the Fill/Drain Detect Volume and Short Fill/Drain Detect Volume for the selected tank.

5. Click the **Save All** button.

Choosing Device Alarm Triggers

In the Device Alarm Setup pane of the *Tank Alarms* screen, you can select when you want the monitor to send out an additional inventory beyond the call schedule, such as on low product levels, high product levels, or other conditions.
Selecting any of the check boxes in the Device Alarm Setup pane tells the monitor, if applicable, to detect when the product volume has exceeded thresholds set in the Alarm Setup Pane and send a transmission to the application indicating the specific alarm.



Tank Alarms – Device Alarm Setup

To specify which alarms will be used with this tank, perform the following steps:

1. Select one or more of the following check boxes:
    - Call on Low Alarm
    - Call on High Alarm
    - Call on Critical Alarm
    - Call on Critical Low
    - Call on Critical High

    Note: These checkboxes may or may not be available depending on your software configuration, user rights, and monitor model.

2. Select Call Out on % Change if you want the unit to transmit a reading if the level in the tank has changed by the percentage of the tank volume specified within a certain amount of time.

Note: This field works in conjunction with the **Call Out Alarm** Interval. By selecting this check box, additional calls will be generated.

3. Enter a Call Out Alarm Interval to specify how often the monitor will check the tank levels to see if an alarm condition has been met.

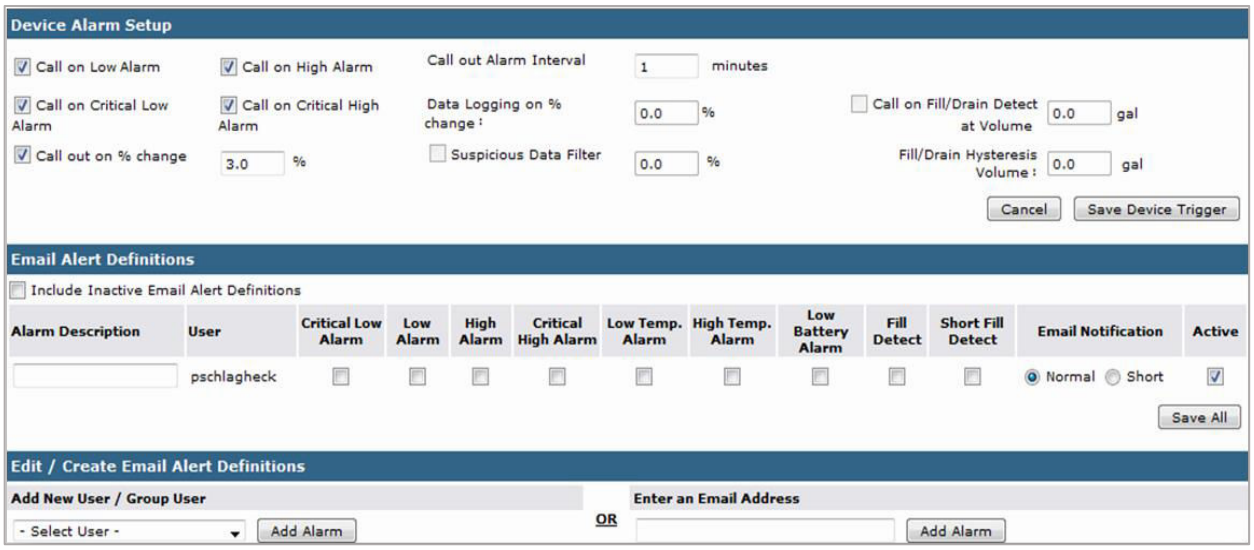
   Note: Limiting the number of times the monitor checks for alarm conditions will extend battery life on battery-operated units.

   Note: A transmission is sent to the SMARTank Data Center only when an alarm condition is met, and not every time the monitor monitors the tank.

4. Click the Save All button to save your tank alarms.

Selecting Tank Alarm Email Recipients

Scroll down to the Edit / Create Email Alert Definitions pane of the *Tank Alarms* screen to define who will receive email alerts. Depending on the type of alarm, you may want to notify different departments. For instance, if the battery is low, the main office departments. For instance, if the battery is low, the main office may need to be notified to order new batteries. If the tank level is low, the distribution company may need to be notified.



Tank Alarms – Email Alert Definitions

1. Either choose a user from the **Add New User / Group User** drop-down list or **Enter an Email Address** of the person to receive the alarm notification.
   Note: By entering an email address, a user will be created as a part of this organization and can be selected from the drop-down list for any subsequent alarm setups. The user details can be edited later to include website-viewing permissions.

2. Click the **Add Alarm** button.
   The email recipient will appear in the Email Alert Definitions pane above.

3. Repeat steps 1 – 2 to add as many email recipients as needed.

4. In the Email Alert Definitions pane, enter an **Alarm Description** for reference, such as “Low Level Alarm.”

5. Select the check boxes corresponding to each type of alarm that you want this user to receive.

6. Select the email size, either **Normal** or **Short**. Short messages contain only a subject line and are recommended for mobile phone email.

➲ **Note:** An Alarm entity cannot be deleted. If you no longer need to send an alarm to a user, inactivate the email notification by clearing the **Active** check box.

Location and Organization Alarms

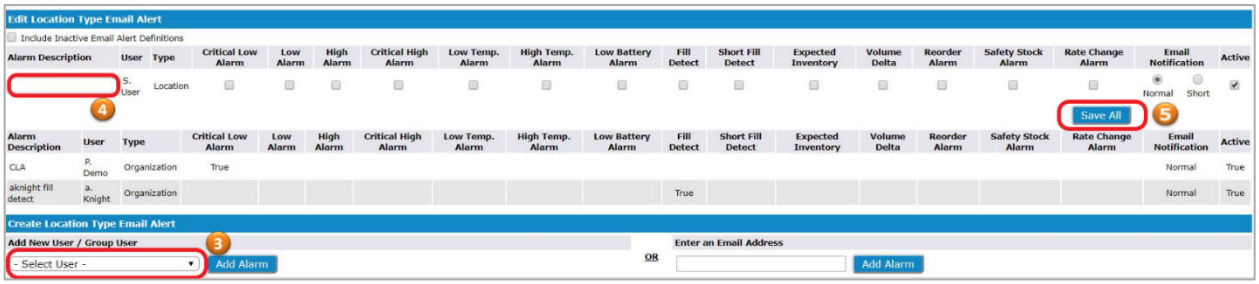
Location based & organization-based alarms are a new functionality available to SMARTank users and allows alarms to be preset for any tank added to that location or organization. This will allow users to receive an alarm message when any tank in that particular location or organization meets the alarm conditions specified in its setup.

1. To add a location or organization-based alarm select the location you wish to set the alarm for to open its details page.

2. For both locations and organizations, scroll down to the section for “Edit Organization Type Email Alert” or “Edit Location Type Email Alert”.

3. Select the user for which the alarm message is to be sent.

Note: the interface and process for both location-based and organization-based alarms is the same



4. Select the types of alarms and provide a description of the alarm message.
5. Select “save all” to create the alarm

Alarm Definitions

This provides information about the Alarms tab in TankDataOnline.

Alarms that are used to send email alerts and flag status icons on the website are set-up under the **Email Alert Definitions** and **Alarm Setup** portion in the Alarms tab in TankDataOnline:

All emails are triggered by a new inventory received that meets a criteria. The Low, Critical Low, or High and Critical High alarms make the first call below (for Low/Critical Low) or above (for High/Critical High) the value entered.

Expected Call is an exception since it will be sent when ## (Expected Call Minutes) minutes have passed since the last received update from the monitor. The minimum number of minutes is controlled by the longest time between scheduled calls plus a 79-minute buffer. For instance, a call schedule is set to 1XADay Mondays through Fridays will not let this number be less than 4399 minutes (4399 minutes is 3 days and 79 minutes).

The **Short Fill** emails are sent when the inventory received is at least ## (Short Fill/Drain Detect Volume) Gallons is greater than the previous inventory but not greater than the Fill/Drain Detect Volume. This is usually set to at least five (5) inches worth of inventory to avoid counting small fluctuations as short fills. The Fill emails ae sent when the inventory received is at least ## (Fill/Drain Detect Volume) Gallons greater than the previous inventory which is set to less than the standard expected inventory.

The **Volume Delta** email goes out on every received inventory that is ## (Volume Change) Gallons greater than the inventory level when the previous Volume Change email was sent. This is set to 25 percent by default; it can be changed to zero (0) for an email for every update to the website.

The **Rate Change Alarm** activates when the seven (7)-day average compared to the 35-day average is different by the % you have on the website.

The **Reorder** and **Safety Stock** alarm emails will be sent when it is first determined by a received inventory that, based on the "Forecast Daily Usage" (set by the 35 Day average when there is a valid 35 day average), the number of days of inventory left in the tank is less than the days set for each.

Device Alarm Setup defines alarms that can cause the local device to call outside of the standard call schedule:

Any box checked (except the "Suspicious data Filter") in this area or a non-zero value in the Data Logging on % change box will cause the device to wake at the interval in the Alarm Wake/Test Interval minutes box and power on the sensor to check for device alarms. Please note that this will use battery power so 31 minutes is the suggested lowest interval.

On the **Wake Interval** outside of the scheduled call times the Call on High/Low (and/or Critical High/Low) alarms are the first interval where the level read is below a low or above a high alarm volume triggers the device to report to the website the current inventory.

The Call Out on % change will trigger the device to report to the website the current inventory if it detects a level that is that percent above or below the last transmitted volume. On older models this is a percentage of the sensors total range, on newer model it is based on the percent of the tank capacity limit.

Data Logging on % change will check on each alarm interval for a percent change greater than the percent set and record the time and reading if there is a change by at least that amount. The recorded readings will populate the history page on the next received call from the monitor with the timestamp of when they were recorded.

The **Call on Fill Detect** is when there is an increase in volume noted in the tank at one of the call intervals. The unit will flag the previous interval amount as the low point for the event and what time that occurred (low point (LP)). If that interval or subsequent intervals of increased volume exceed the amount in the Hysteresis Volume we consider a fill is beginning, once the amount of increase between intervals is no longer greater than the "HYSTERESIS VOLUME" we consider the fill has ended and this is then the high point (HP) of the event. The unit only considers that an actual tank fill has occurred if the (HP) minus the (LP) is greater than the FILL DETECT VOLUME; if it is not, a true fill has not occurred and the unit goes back to normal operation awaiting another increase in volume noted in the tank at one of the call intervals. Alternatively, if the FILL

DETECT VOLUME is surpassed the unit will report to the website the following three inventory times and volumes:

- The LP
- The HP

The volume at the interval that was no longer greater than the “HYSTERESIS VOLUME” which is the current time and inventory which can be either higher or lower than the HP which allows us to show the top of the fill as best we can since the last interval may be higher than the HP but not by enough to exceed the “HYSTERESIS VOLUME”.

The Suspicious Data Filter does not use the call interval; this is used on each wake up of the device to make a call for any reason. The level detected is compared to the previous transmitted reading and if that is different by more than the percent set the unit will go back to sleep for a few minutes and try again. The device will then report the second level regardless of the level. This is intended to ignore erroneous readings experienced by Ultrasonic devices due to signal lost situations that can occur. It may also avoid an issue with pressure sensors in very specific applications.