SS 1034348 New Cascadia Unintended 4-way Flashers Activation

As of 8/24/2020 SSAMs received an internal software change that cannot be updated in the field. The software change eliminates the unintended 4-way flasher activation issue documented in this solution. For P4 vehicles built before 8/24/2020 this solutions still applies.

Applicable Vehicles:

This solution applies to all New Cascadia (P4) vehicles.

Symptom:

Hazard activation on New Cascadia vehicles is complex. This solution is targeting vehicles where activation of 4-ways is not associate with an active exterior lighting or primary slave code. Low battery voltage at the Single SAM (SSAM), typically below 12.3 volts, appear to attribute to the condition. It is the low voltage at the SSAM in conjunction with one of the wakeup conditions below that results in the 4-way flasher activation. No active MSF or turn signal / 4-way codes are active. If codes related to either are active the troubleshoot the codes prior to using this solution.

Wakeup conditions associated with the complaint.

- 4-ways randomly come on ignition switch off.
- 4-ways activate when either the driver or passenger door is opened.
- 4-ways activate if all modules are asleep and ignition switch turned on.
- Left tail lamp randomly starts flashing key off CLDS switch off. If the CLDS switch is turned on then the 4-way come on.

In all of the above listed cases, just pressing on the 4-way (Hazard) button in the dash will turn off the 4-ways.

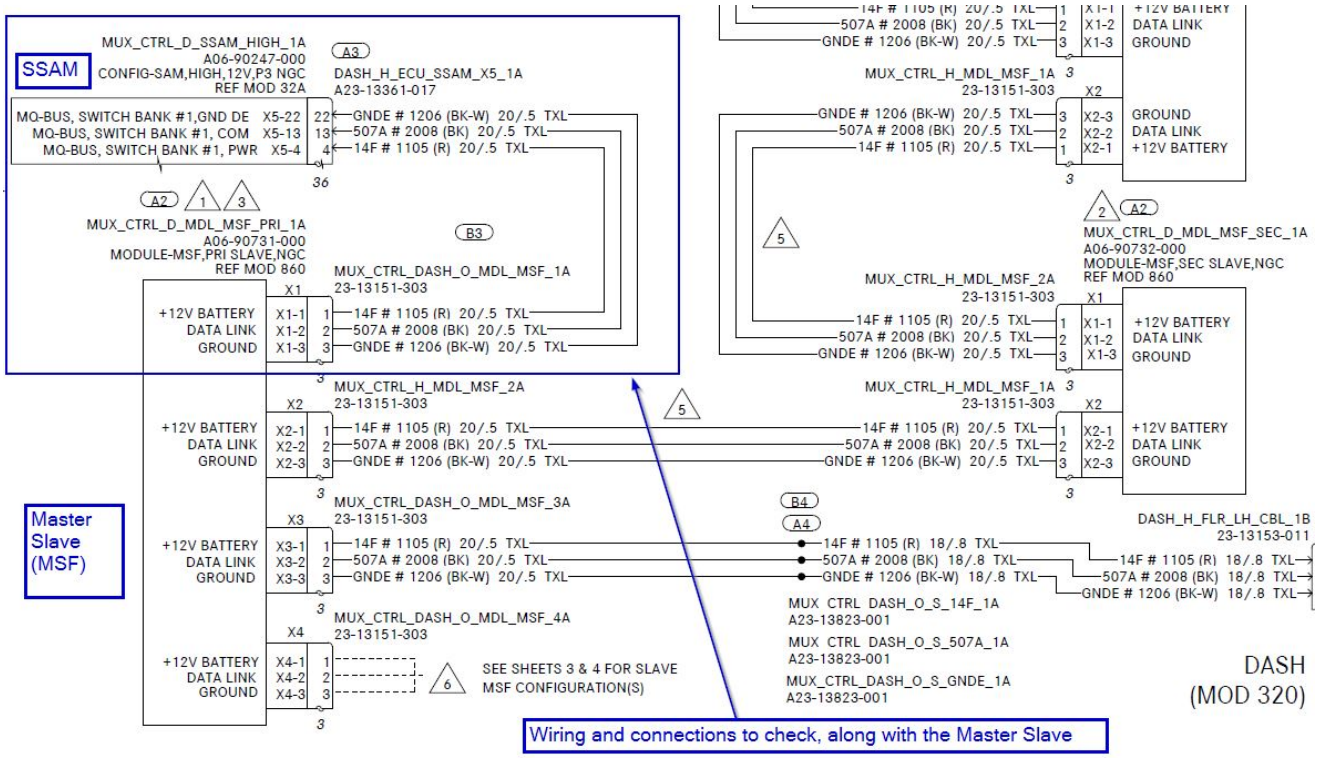
Issue:

If battery voltage is maintained the random 4-way flasher activation does not seem to occur. Because the symptoms are random and in most cases hard to reproduce, root cause has still not been determined (as of 5/22/2019).

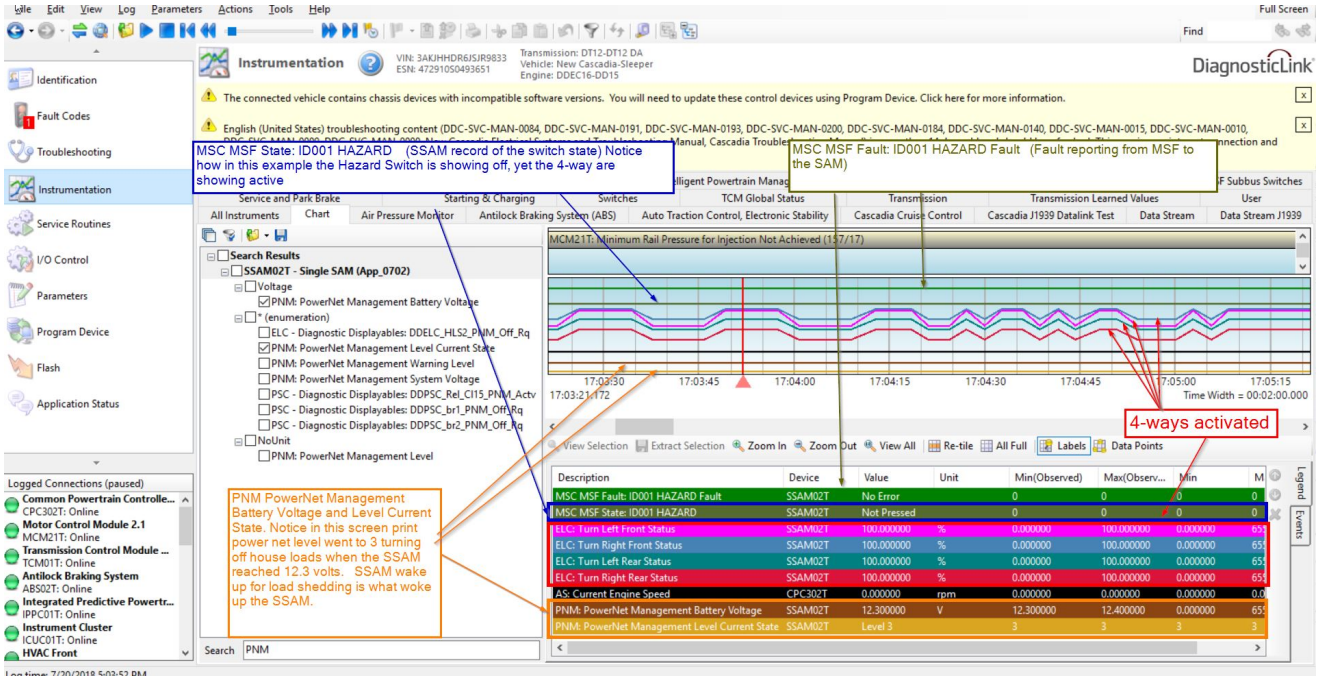
Solution:

In hopes of providing guidance to the field, the following recommendations are being supplied.

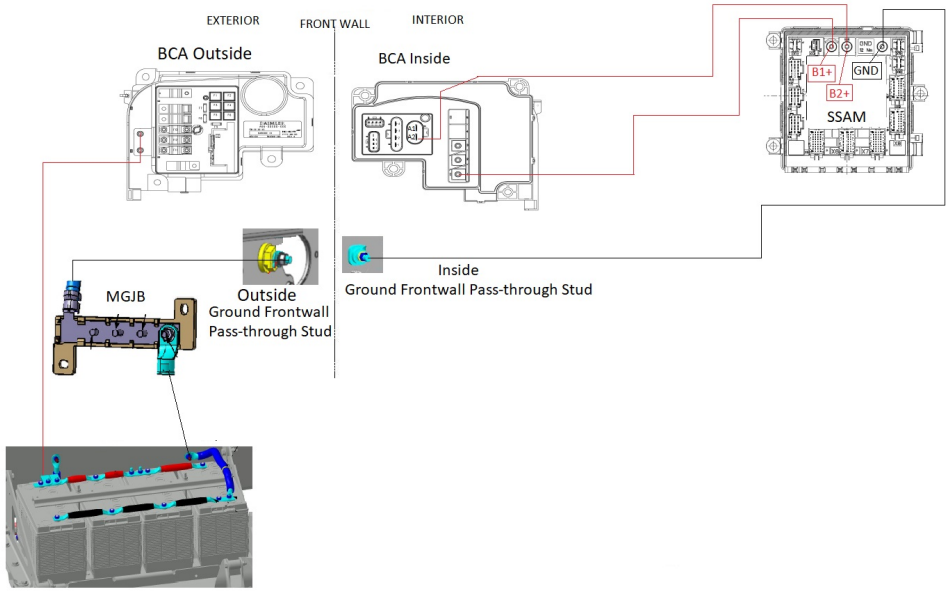
If the condition can be duplicated, then once the 4-ways are activated, connect DiagnosticLink to the vehicle and monitor the four way switch to see if the switch is depressed. If the switch is showing depressed, then check the wiring to the Master Slave from the SSAM for any connection issues or switch problems, reference the print below.



If the 4-way (hazard) switch is not activated and the 4-way flashers are showing activated as pictured in the screen print below, then proceed to the next step in this solution for voltage drop tests to the SSAM.



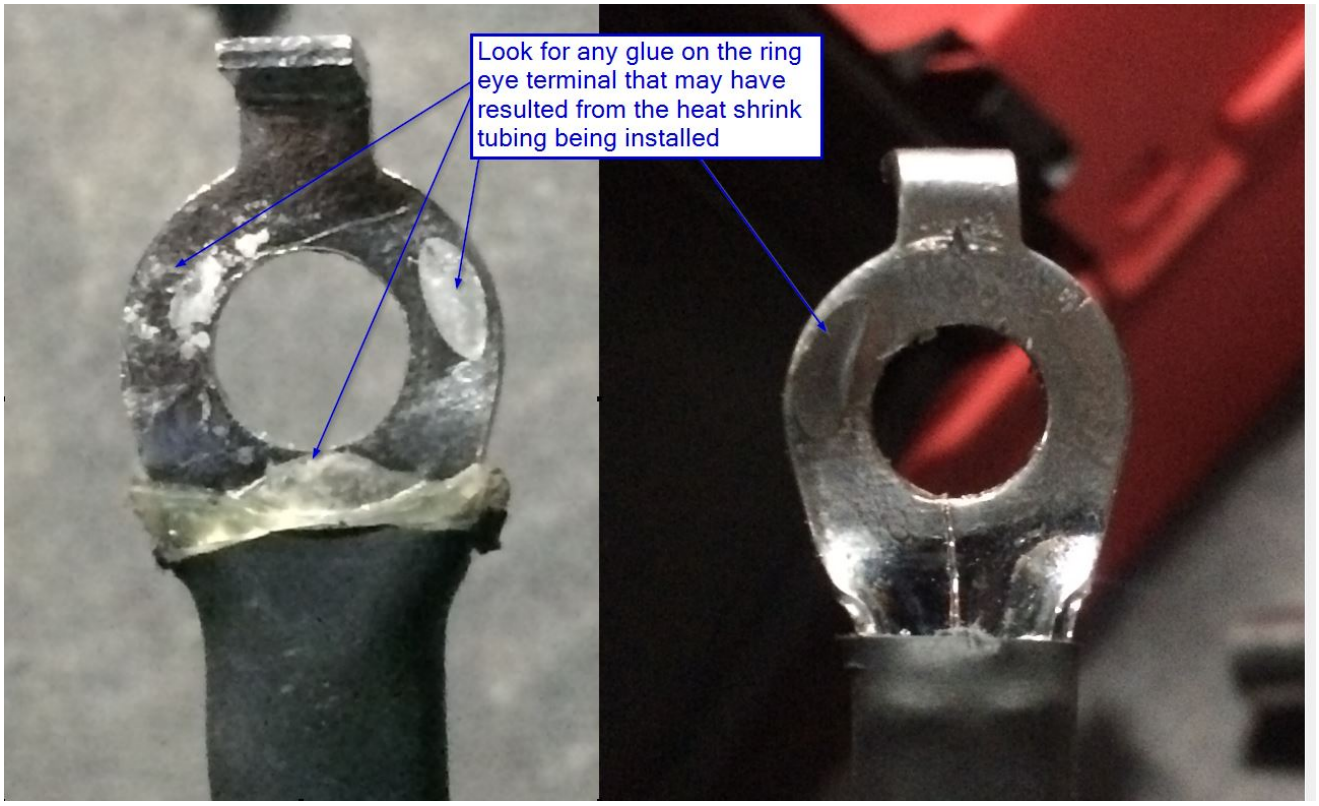
The figure below of the power supply path to the SSAM is being supplied as a reference. The figure can be referenced when tracing out voltage drops if needed.

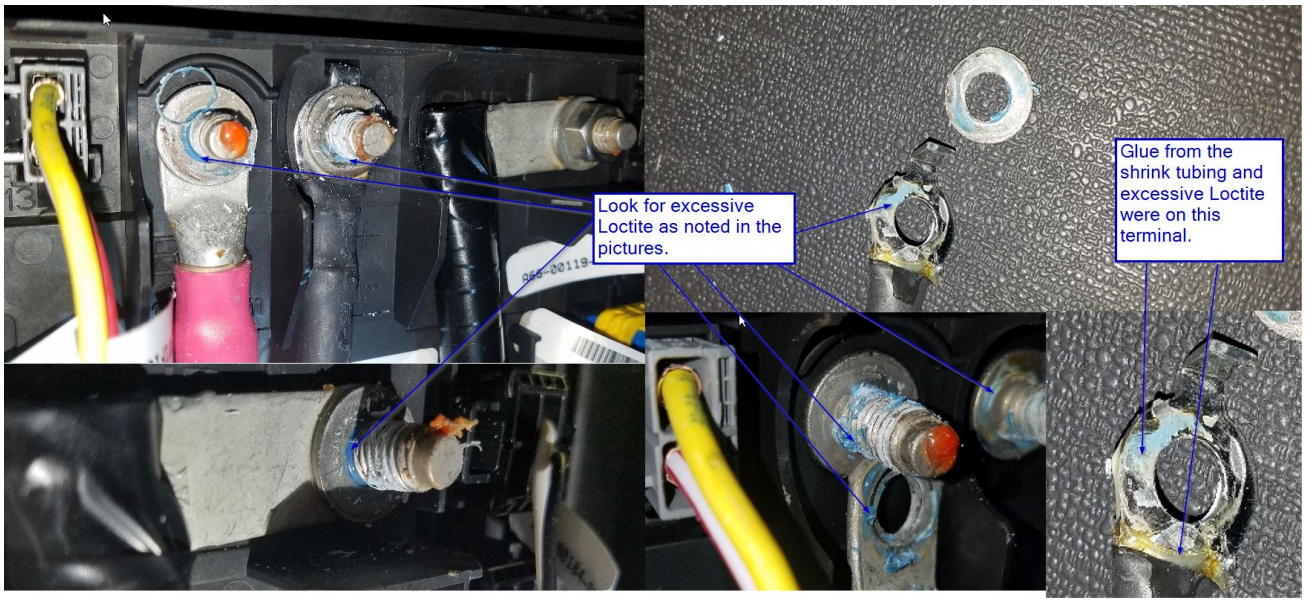


Prior to running voltage drop tests, inspect the power and ground cables to the SSAM:

Prior to inspecting the power and ground cables to the SSAM, make sure to unhook the ground cable to the Batteries, eliminating any power to the vehicle.

- Remove the Bat 1, Bat 2 and the ground cable from the SSAM. When removing the cables from the SSAM studs, make sure to inspect the cables for any excessive Loctite or glue that may be present on the ring eye terminals (See photos below). Make sure to document any material that is found on these connections.
- Clean the SSAM studs, cable ring eye connections and all of the mounting hardware, so that all connection surfaces are clean and free of foreign material.
- The reason for this inspection and cleaning of the connections, is to ensure that no voltage drop occurs between the cable ring eyes and the studs located on the SSAM. Note: Locking nuts for the power and ground connections were installed starting 5/20/2019, eliminating the need for any Loctite. The new locking nut P/N is 23-14592-008 - NUT-HEX,SST,8M,W/ PATCH LOCK.



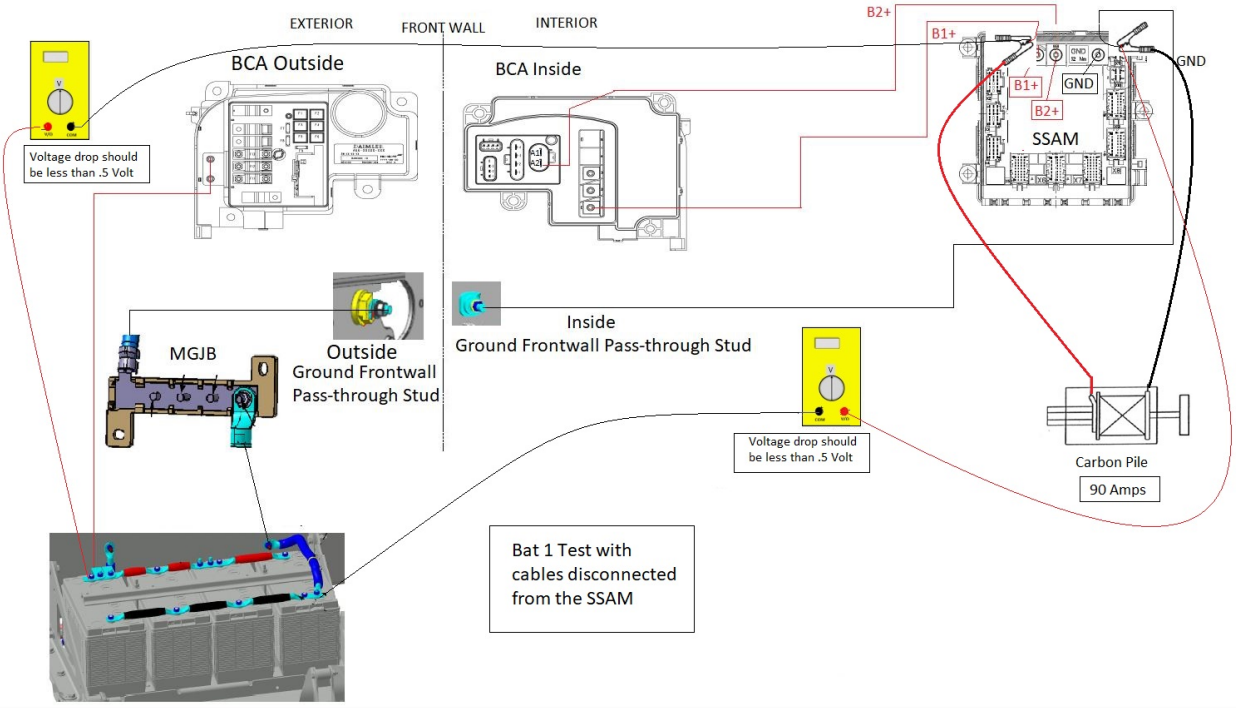


Once the cables have been cleaned, to ensure that no voltage drops are occurring on the supply cables we want to run voltage drop tests on the cables.

<u>Running voltage drop tests on the two power and ground cables going to the SSAM.</u>

Bat1 voltage drop test. For this test, the load will be placed between the ground terminal and Bat 1.

- Bat1 test can be run by loading the GND and BAT1 cables to 90 amps and checking for voltage drops on the cables (should be less than .5 volt). Bat 2 cable should be removed from the SSAM and taped up so not to come in any contact with ground during the test. Also make sure the Bat1 and Ground are not contacting any conductive surfaces prior to reconnecting the battery ground cable to run the test.
- Reference the figure below when hooking up the connections to the SSAM. Again, for this test, the Bat 1 and GND are not connected to the SSAM when running the test. Once all of the connections are secure and in place you will need to connect the ground cable back to the batteries in order to apply the 90 amp load to the cables.



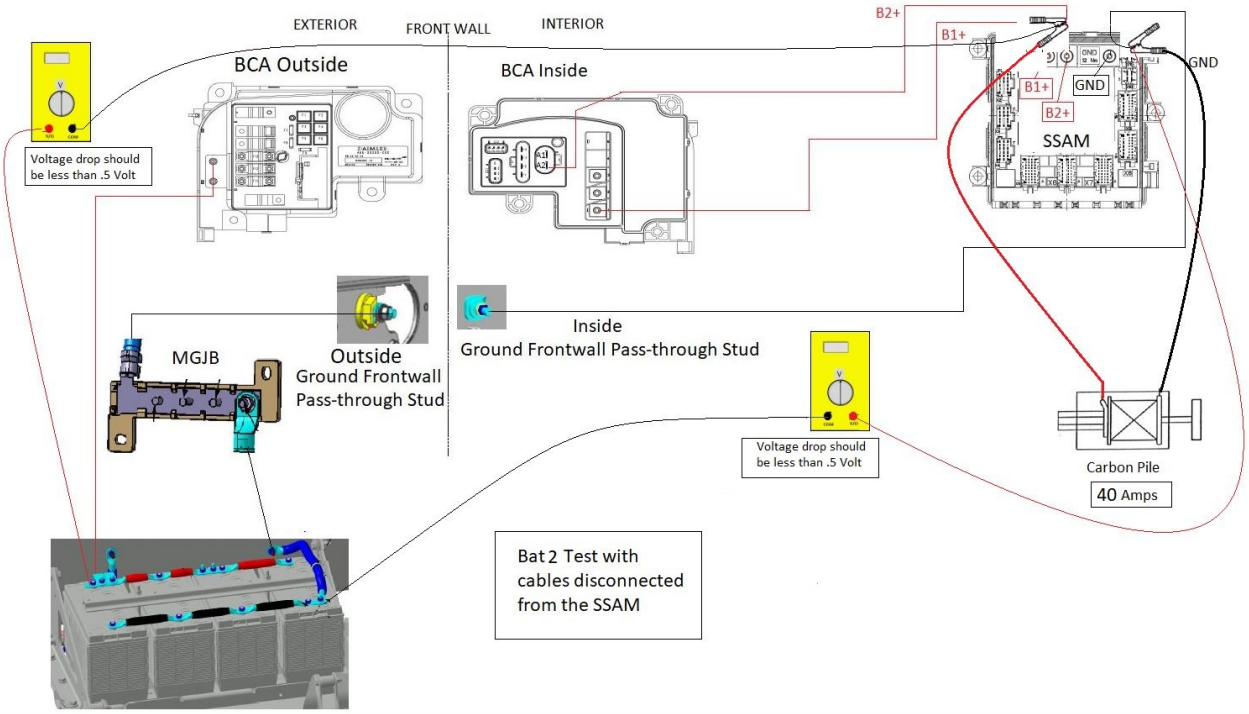
If a voltage drop of greater that .5 volts is recorded, then reference the figure above and locate where the voltage drop is occurring. Make sure to unhook the ground cable to the batteries prior to tracing out the voltage drop.

If the recorded voltage drops are less than .5 volts, then run the Bat 2 voltage drop test listed below.

Bat2 voltage drop test. For this test, the load will be placed between the ground terminal and Bat 2. Make sure the batteries are disconnected from the vehicle prior to hooking up testing connections.

- Bat2 test can be run by loading the GND and BAT2 cables to 40 amps and checking for voltage drops on the cables (should be less than .5 volt). Bat 1 cable should be removed from the SSAM and taped up, so not to come in any contact with ground during the test. Also make sure the Bat2 and Ground are not contacting any conductive surfaces prior to reconnecting the battery ground cable to run the test.

- Referencing the figure below when hooking up the connections to the SSAM. Again, for this test, the Bat 2 and GND are not connected to the SSAM when running the test. Once all of the connections are secure and in place you will need to connect the ground cable back to the batteries in order to apply the 40 amp load to the cables.



If a voltage drop of greater that .5 volts is recorded, then reference the figure above and locate where the voltage drop is occurring. Make sure to unhook the ground cable to the batteries prior to tracing out the voltage drop.

Once all of the voltage drops (if Present) have been addressed and the cables have less than a .5 volt drop when loaded, the reconnect the SSAM connections making sure to torque the fastening nuts to 12 NM. Make sure to properly attach the ground cable back to the battery. Since the complaint is hard to duplicate, testing to see if the problem reoccurs

may be hard to perform. Once all recommendations in this solution have been completed, then the vehicle can be released back to the customer.
  Engineering has determined recently (8/20/2019) that this issue can be related to a packet of information that is transmitted between MSF and SSAM. They have also noted that this issue is unique to a specific MSF being mated to a specific SSAM. Because the problem can be related to both components, engineering is now recommending changing the MSF first and if the problem reoccurs then to replace the SSAM. This is a change from when this solution was originally written where we were recommending replacing the SSAM after all of these checks has been made. We still want to make the checks described in this solution, but replace MSF if the problem reoccurs. If the problem still exists, then replace the SSAM. .