GM UPFITTER INTEGRATION

Follow Up from Measurement Session 9/24/09

FST FULL SIZE TRUCK GM

•What is the maximum amp draw for the heated DEF lines on the G Van cutaway?
1 DEF Pump and Heater Near Pump (Located in the pump), 12 amps max.
1 DEF Heated Pressure Line (located along the hose), 12 amps max.
1 RESERVOIR HTR AND DLS: DEF (Located Inside the Tank), 12 amps max.

•Can GM provide best practice guidelines for upfitters who have to move the DEF tank F/A on the frame recognizing they are responsible to validate/certify the modifications
Slides 2-4

•Can the upfitters shorten or lengthen the DEF supply lines?
Slides 2-4

•What are the implications if upfitters provide their own DEF heated supply lines and unique lengths?
Slides 2-4

•We need to understand if our hardware and messaging to alert drivers for water in diesel fuel and fuel filter water is effective on alerting drivers that DEF fluid has inadvertently been added to the fuel tank. We also need to determine what we will communicate to customers in the event DEF fluid is added to the fuel tank (i.e drain the water in the fuel filter, replace the fuel filter element, return the van to the dealer for service etc.). Slides #5

•Can GM provide a hang tag for diesel cargo van to over communicate to the customer that the van is equipped with a DEF system and be sure to only add DEF fluid to the DEF fill pipe with the blue cap. G Van utilized a similar (over communication) approach for the 2006 MY when the diesel was introduced to remind the customers this was a van equipped with diesel engine and required diesel fuel to help the fleet and van operators inadvertently add gasoline to the tank. Slide #6

DIESEL EXHAUST FLUID GUIDELINES FOR UPFITTERS

FLUID DELIVERY LINE

•This line is heated, do not cut or adjust length. There is a wire coil along the entire length including the connectors to maintain DEF fluid delivery at all temperatures.
•There are vehicle calibrations that are specific to the line length in your vehicle as delivered (e.g. line purge at ignition off, heater performance diagnostics)
•In the case where the tank is moved closer to the dosing module, carefully coil any extra line and secure to maintain the “as shipped” heated line length.

Use GM clip part #25952656, Available through Service after SORP

WIRE HARNESS

•Do not change the wire harnesses on the DEF tank. It has a specific wire coating that prevents urea from “wicking” through the harness in the event of a urea spill.
•Carefully coil any extra line and secure.

DIESEL EXHAUST FLUID GUIDELINES FOR UPFITTERS

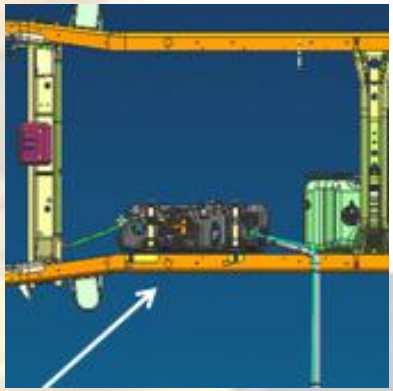
TANK PLACEMENT – GM has validated the system durability only in the positions as purchased (Supply line and harness lengths cannot be altered)

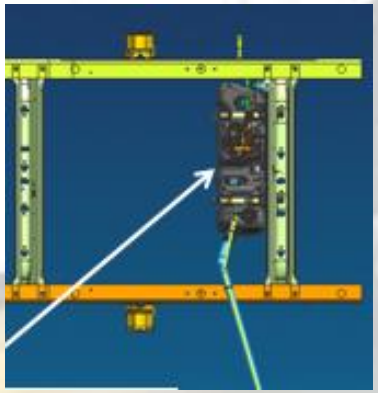
Side Tank Placement / Rear Tank Placement

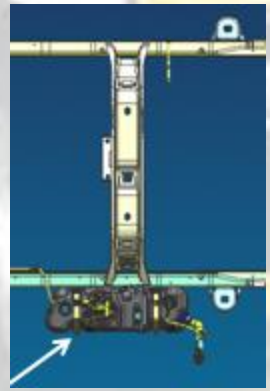
•If the Upfitter needs to move the DEF Tank, the existing hardware must be utilized as well as the Tank to Bracket relationship.

•Adapter bracket to frame torque, (22Nm nominal)
•Strap to adapter bracket bolt torque, (22Nm nominal)

•Up/Down movement of the existing tank/bracket assembly is not recommended in order to maintain it's structural integrity and QRD for the life of the vehicle.







Body Builder Manuals and Best Practices can be referenced at: GMUPFITTER.COM

DIESEL EXHAUST FLUID GUIDELINES FOR UPFITTERS

DEF FILL HOSE ASSEMBLY

•Increasing length not recommended due to potential for tank overfill and internal component damage during cold temperatures.

•Shorten from tank end preferred. ID is the same along the entire length

ADDITIONAL CONSIDERATIONS:

•Care must be taken to provide adequate thermal shielding if components are moved closer to the vehicles exhaust system (including Tank, DEF lines and wiring).

•DEF tank does not have a drain. Service procedure must be followed if contaminated. (remove and drain).

•DEF fill location to always be above tank, with minimal bends.

•DEF Tank cannot be moved on full body vehicles (FMVSS301).

•**Effect of DEF in fuel tank :**

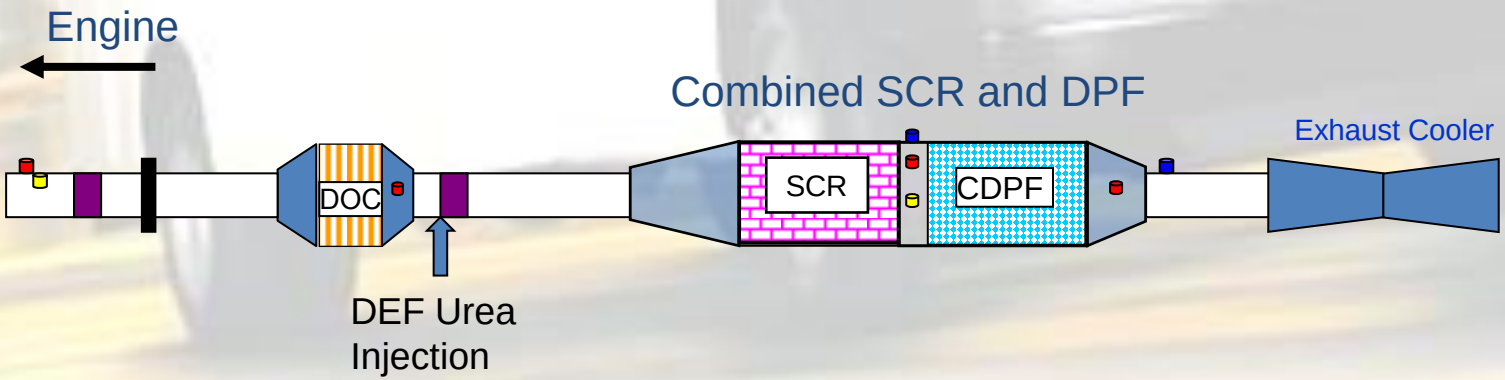
If a customer accidentally adds DEF into the fuel tank by mistake, the WIF sensor/algorithm will respond, and a WIF message will trigger (Similar to having water in the tank). In this case, the Owner's Manual info for WIF also applies to DEF:

The owner's manual covers this topic very thoroughly, and at most, the only addition we might consider would be to expand the above verbiage to "water or DEF fluid".

2010 OM, Water in Fuel

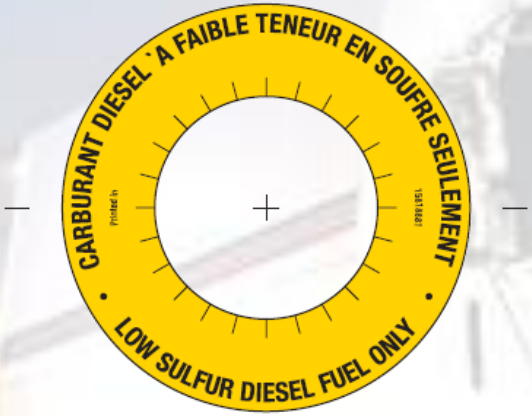
•**Effect of Diesel in DEF tank:**

•NOx sensors in the exhaust calculate the on/off time of the dosing module and pump pressure. This is how we determine the amount of urea to be injected into exhaust to reduce emissions. With diesel in the mix, the sensor readings would be in error, messing up conversion calculation, resulting in poor dosing, ultimately shutting the system down with error codes (Check Engine). The dealer would have to change the complete system, cleaning would not eliminate the diesel residue.



•**Hang Tag on DEF fill (Full Body Applications) as additional communication.** (first year of production only.)

Low Sulfur Diesel Fuel Only Tag: (reference)



Update tag verbiage to:
“Diesel Exhaust Fluid Only”