PE10-015

GM

6/30/2010

ATTACHMENT 1

Q8

GM Investigation

This test is run while the engine is running.
The car can be started hot or cold but must be;
- running longer than 1000 secs (16 min 40 secs)
- must be warmed up (coolant > 70 C)
- must be idling or moving at less than 5 mph
- tank level between 15 and 85%
- Barometer > 74 kPa (altitude < 8500 ft)

The purge solenoid will close. The vent solenoid will close. The tank pressure is monitored and if stable, the purge solenoid (CPS) will reopen and draw a vaccum on the tank for as long as 35 secs. The CPS pulls the tank down to 1.25 kPa below the stabilized starting point. The CPS closes again and the tank pressure is monitored again. As the pressure rises to 1.1 kPa below the starting point, monitoring conditions are met and further pressure increase is used to determine any leak rate. This rise is compared to a model and an orifice diameter is estimated. If the estimated orifice is greater than .090" a large leak is determined and the test is flagged "failed" and P0455 is set.

Chris
(with thanks to C.P. Liu for help in this explanation)

Terry M. Stone
10/01/2004 12:06 PM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: Effect of Condition - Another Update

John and Dave,

The 2004 C5 did set the large leak code this morning (P0455). It did leak fuel to the ground again (about 1.5' dia.) during a fill.

The fuel tank was removed from the XLR and a non-leaking tank built with suspect material has been installed. TI is evaluating this to determine if a leak will develop. They are to send me the data of all of the leak rate testing and let me know the plan for the XLR.

Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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Regards,
Terry

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09/24/2004 09:16 AM

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Regards,
Terry

John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

Terry,
Under what conditions did the TI vehicle have fuel on the ground?

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Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone

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09/23/2004 10:51 AM

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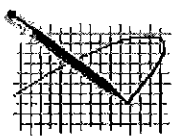

Terry M. Stone
09/20/2004 11:00 AM

To: "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>
cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
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Thanks,
Terry

Terry M. Stone
09/29/2004 03:40 PM

To: Stanley Chelsea/US/GM/GMC@GM
Subject: Re: Effect of Condition - Another Update

Stan,

Here's a quick update on who has what cars:

I have 14Y43677 - 2004 C5.

George Nagrant has 12Y5104 - 2002 C5.

TI Automotive has 64Y00589 - 2004 XLR.

They should all be returned to Milford sometime next week. Please contact me if you have any questions. My Nextel number is 28.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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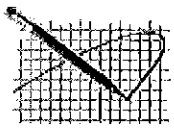

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Terry M. Stone
09/17/2004 01:15 PM

To: John D Tursell/US/GM/GMC@GM
Subject: Re: 2004 MY Evap Diagnostics

John,

I spoke with Carl on this issue and he reminded me that you should have the info on the XLR diagnostics. Please read the attached and reply.

He mentioned that the Corvette PCM should detect a small leak (>.020" effective diameter) in about 7 cold starts on average. A large leak (>.120") should be detected after 2 consecutive cold starts. Is it the same for the XLR?

Carl could not access the links below to review the eSI files. The eSI documents for the codes are the same for Corvette and XLR and are in the Word doc.

2004 C5-XLR P0455 P0422.dc

The link to eSI is on the SPO website:
http://spo.gm.com/

Thanks,
Terry

Terry M. Stone

Terry M. Stone
09/17/2004 08:16 AM

To: Carl Smith/US/GM/GMC
cc: Gary J Halligan/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: 2004 MY Evap Diagnostics

Carl,

We are investigating an issue on certain 2004 MY Corvette and XLR fuel tanks. I need to verify that the Evap. leak detection diagnostics (large and small) function properly on both vehicles. I also need to understand that the conditions to set and clear the codes are correct in eSI. Please forward this on to the proper engineers to verify the conditions in the links below are correct. If possible, please provide leak detection capabilities for both controllers/vehicles for comparison.

I will be testing tanks that leak in both vehicles soon. I am trying to locate vehicles for this testing. Do you have any? If I use a 2002 C5, and we reflash or replace the PCM with the 2004 cals/software, will this work? I will be using a Tech2 and performing the purge/seal test in the Tech2. Do you know what the effective diameter threshold is that it uses to determine pass/fail? Has there been any development of a Service Bay Test (SBT) for small leak?

2004 Corvette P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218704&psdid=477&evc=sm

2004 Corvette P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218689&psdid=477&evc=sm

2004 XLR P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1197444&psdid=423&evc=sm

2004 XLR P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=951732&psdid=423&evc=sm

Thanks,
Terry

Terry M. Stone
10/18/2004 10:17 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

----- Forwarded by Terry M. Stone/US/GM/GMC on 10/18/2004 10:17 AM -----

Terry M. Stone
10/18/2004 10:17 AM

To: Chris Giles/US/GM/GMC@GM
cc:
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

Chris,

Thanks for the information. We tested three cars with leaking fuel systems for about two weeks. The only car to set a small leak code (P0442) was the 2002 C5. The 2004 C5 and 2004 XLR did not set the small leak code. The leaks grew to the point that allowed the large leak code (P0455) to set.

Terry

Chris Giles

Chris Giles
10/14/2004 06:20 PM

To: Terry M. Stone/US/GM/GMC
cc: John D Tursell/US/GM/GMC, Kevin Hier/US/GM/GMC, Chingpo Liu/US/GM/GMC, Barbara J. Holland/US/GM/GMC, Gary P White/US/GM/GMC@GM
Subject: XLR LH2 P0442 and P0455 Diagnostics

Terry,

The conditions that are required to set the Evap Leak Diagnostics on a GMX215 are as follows;

P0442 (small leak down to .020") otherwise known as "EONV"

The engine must be "cold started"; that is ambient temp (TIA) must be within 4.5 C of coolant (TCO)
and the coolant temp must be between 4 C and 30 C at start
Engine must be running longer than ten (10) minutes
Vehicle must have traveled at least 5 kilometers after start
Coolant temp > 70 C
Intake air temp must be between 2 C and 32 C
Fuel tank level must be between 15 and 85 % full
Barometer must be > 74Kpa (or altitude less than 8,500 ft)

Approximately 10 secs after shutdown the vent solenoid will close and the ECM will monitor tank pressure. The pressure signature is tracked for up to 40 minutes. If it rises too fast, as in the case of no leak and high volatility fuel, the test will abort. If it rises more modestly the pressure rise rate is assigned a value based on how fast it rises over the 40 minute interval. The number is filtered using an Exponentially Weighted Moving Average (EWMA) filter. It may take several tests to cause the target value to rise above the 0.4 threshold (0 is a perfect pass and 1 is a perfect fail) required to trigger a test "fail" and set p0442.

The other test that is run is the large leak test;

P0455 (large leak)

This test is run while the engine is running.
The car can be started hot or cold but must be;
- running longer than 1000 secs (16 min 40 secs)
- must be warmed up (coolant > 70 C)
- must be idling or moving at less than 5 mph
- tank level between 15 and 85%
- Barometer > 74 kPa (altitude < 8500 ft)

The purge solenoid will close. The vent solenoid will close. The tank pressure is monitored and if stable, the purge solenoid (CPS) will reopen and draw a vaccum on the tank for as long as 35 secs. The CPS pulls the tank down to 1.25 kPa below the stabilized starting point. The CPS closes again and the tank pressure is monitored again. As the pressure rises to 1.1 kPa below the starting point, monitoring conditions are met and further pressure increase is used to determine any leak rate. This rise is compared to a model and an orifice diameter is estimated. If the estimated orifice is greater than .090" a large leak is determined and the test is flagged "failed" and P0455 is set.

Chris
(with thanks to C.P. Liu for help in this explanation)

Terry M. Stone
10/01/2004 12:06 PM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: Effect of Condition - Another Update

John and Dave,

The 2004 C5 did set the large leak code this morning (P0455). It did leak fuel to the ground again (about 1.5' dia.) during a fill.

The fuel tank was removed from the XLR and a non-leaking tank built with suspect material has been installed. TI is evaluating this to determine if a leak will develop. They are to send me the data of all of the leak rate testing and let me know the plan for the XLR.

Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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Is there anything else you would like done with this car or should I return it to MIlford?

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Regards,
Terry

Terry M. Stone

Terry M. Stone
09/24/2004 09:16 AM

To: John Murawa/US/GM/GMC
cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM, Daniel R. Stec, John D Tursell/US/GM/GMC@GM
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Regards,
Terry

John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

Terry,
Under what conditions did the TI vehicle have fuel on the ground?

John Murawa
Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone

Terry M. Stone
09/23/2004 10:51 AM

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Regards,
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Terry M. Stone

Terry M. Stone
09/20/2004 11:00 AM

To: "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>
cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
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Thanks,
Terry

Terry M. Stone
09/29/2004 03:40 PM

To: Stanley Chelsea/US/GM/GMC@GM
Subject: Re: Effect of Condition - Another Update

Stan,

Here's a quick update on who has what cars:

I have 14Y43677 - 2004 C5.

George Nagrant has 12Y5104 - 2002 C5.

TI Automotive has 64Y00589 - 2004 XLR.

They should all be returned to Milford sometime next week. Please contact me if you have any questions. My Nextel number is 28.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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09/24/2004 09:16 AM

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cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM,

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09/23/2004 11:43 AM

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09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

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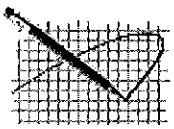
John Murawa
Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone



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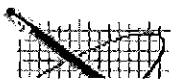

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Thanks,
Terry

Terry M. Stone
09/17/2004 01:15 PM

To: John D Tursell/US/GM/GMC@GM
Subject: Re: 2004 MY Evap Diagnostics

John,

I spoke with Carl on this issue and he reminded me that you should have the info on the XLR diagnostics. Please read the attached and reply.

He mentioned that the Corvette PCM should detect a small leak (>.020" effective diameter) in about 7 cold starts on average. A large leak (>.120") should be detected after 2 consecutive cold starts. Is it the same for the XLR?

Carl could not access the links below to review the eSI files. The eSI documents for the codes are the same for Corvette and XLR and are in the Word doc.

2004 C5-XLR P0455 P0422.dc

The link to eSI is on the SPO website:
http://spo.gm.com/

Thanks,
Terry

Terry M. Stone

Terry M. Stone
09/17/2004 08:16 AM

To: Carl Smith/US/GM/GMC
cc: Gary J Halligan/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: 2004 MY Evap Diagnostics

Carl,

We are investigating an issue on certain 2004 MY Corvette and XLR fuel tanks. I need to verify that the Evap. leak detection diagnostics (large and small) function properly on both vehicles. I also need to understand that the conditions to set and clear the codes are correct in eSI. Please forward this on to the proper engineers to verify the conditions in the links below are correct. If possible, please provide leak detection capabilities for both controllers/vehicles for comparison.

I will be testing tanks that leak in both vehicles soon. I am trying to locate vehicles for this testing. Do you have any? If I use a 2002 C5, and we reflash or replace the PCM with the 2004 cals/software, will this work? I will be using a Tech2 and performing the purge/seal test in the Tech2. Do you know what the effective diameter threshold is that it uses to determine pass/fail? Has there been any development of a Service Bay Test (SBT) for small leak?

2004 Corvette P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218704&psdid=477&evc=sm

2004 Corvette P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218689&psdid=477&evc=sm

2004 XLR P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1197444&psdid=423&evc=sm

2004 XLR P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=951732&psdid=423&evc=sm

Thanks,
Terry

Terry M. Stone
10/18/2004 10:17 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

----- Forwarded by Terry M. Stone/US/GM/GMC on 10/18/2004 10:17 AM -----

Terry M. Stone
10/18/2004 10:17 AM

To: Chris Giles/US/GM/GMC@GM
cc:
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

Chris,

Thanks for the information. We tested three cars with leaking fuel systems for about two weeks. The only car to set a small leak code (P0442) was the 2002 C5. The 2004 C5 and 2004 XLR did not set the small leak code. The leaks grew to the point that allowed the large leak code (P0455) to set.

Terry

Chris Giles

Chris Giles
10/14/2004 06:20 PM

To: Terry M. Stone/US/GM/GMC
cc: John D Tursell/US/GM/GMC, Kevin Hier/US/GM/GMC, Chingpo Liu/US/GM/GMC, Barbara J. Holland/US/GM/GMC, Gary P White/US/GM/GMC@GM
Subject: XLR LH2 P0442 and P0455 Diagnostics

Terry,

The conditions that are required to set the Evap Leak Diagnostics on a GMX215 are as follows;

P0442 (small leak down to .020") otherwise known as "EONV"

The engine must be "cold started"; that is ambient temp (TIA) must be within 4.5 C of coolant (TCO)
and the coolant temp must be between 4 C and 30 C at start
Engine must be running longer than ten (10) minutes
Vehicle must have traveled at least 5 kilometers after start
Coolant temp > 70 C
Intake air temp must be between 2 C and 32 C
Fuel tank level must be between 15 and 85 % full
Barometer must be > 74Kpa (or altitude less than 8,500 ft)

Approximately 10 secs after shutdown the vent solenoid will close and the ECM will monitor tank pressure. The pressure signature is tracked for up to 40 minutes. If it rises too fast, as in the case of no leak and high volatility fuel, the test will abort. If it rises more modestly the pressure rise rate is assigned a value based on how fast it rises over the 40 minute interval. The number is filtered using an Exponentially Weighted Moving Average (EWMA) filter. It may take several tests to cause the target value to rise above the 0.4 threshold (0 is a perfect pass and 1 is a perfect fail) required to trigger a test "fail" and set p0442.

The other test that is run is the large leak test;

P0455 (large leak)

This test is run while the engine is running.
The car can be started hot or cold but must be;
- running longer than 1000 secs (16 min 40 secs)
- must be warmed up (coolant > 70 C)
- must be idling or moving at less than 5 mph
- tank level between 15 and 85%
- Barometer > 74 kPa (altitude < 8500 ft)

The purge solenoid will close. The vent solenoid will close. The tank pressure is monitored and if stable, the purge solenoid (CPS) will reopen and draw a vaccum on the tank for as long as 35 secs. The CPS pulls the tank down to 1.25 kPa below the stabilized starting point. The CPS closes again and the tank pressure is monitored again. As the pressure rises to 1.1 kPa below the starting point, monitoring conditions are met and further pressure increase is used to determine any leak rate. This rise is compared to a model and an orifice diameter is estimated. If the estimated orifice is greater than .090" a large leak is determined and the test is flagged "failed" and P0455 is set.

Chris
(with thanks to C.P. Liu for help in this explanation)

Terry M. Stone
10/01/2004 12:06 PM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: Effect of Condition - Another Update

John and Dave,

The 2004 C5 did set the large leak code this morning (P0455). It did leak fuel to the ground again (about 1.5' dia.) during a fill.

The fuel tank was removed from the XLR and a non-leaking tank built with suspect material has been installed. TI is evaluating this to determine if a leak will develop. They are to send me the data of all of the leak rate testing and let me know the plan for the XLR.

Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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Is there anything else you would like done with this car or should I return it to MIlford?

MPG Development has provided a 2004 C5 for further evaluation. The car should be at TI this morning to have a small leak tank installed. We will see if the EONV diagnostic detects the leak.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/24/2004 09:16 AM

To: John Murawa/US/GM/GMC
cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM, Daniel R. Stec, John D Tursell/US/GM/GMC@GM
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Regards,
Terry

John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

Terry,
Under what conditions did the TI vehicle have fuel on the ground?

John Murawa
Product Investigations
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john.murawa@gm.com
Terry M. Stone

Terry M. Stone
09/23/2004 10:51 AM

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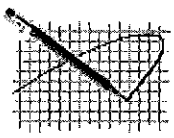

Terry M. Stone
09/20/2004 11:00 AM

To: "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>
cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
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Thanks,
Terry

Terry M. Stone
09/29/2004 03:40 PM

To: Stanley Chelsea/US/GM/GMC@GM
Subject: Re: Effect of Condition - Another Update

Stan,

Here's a quick update on who has what cars:

I have 14Y43677 - 2004 C5.

George Nagrant has 12Y5104 - 2002 C5.

TI Automotive has 64Y00589 - 2004 XLR.

They should all be returned to Milford sometime next week. Please contact me if you have any questions. My Nextel number is 28.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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09/23/2004 11:43 AM

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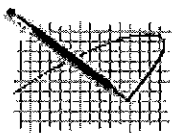

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Terry

Terry M. Stone
09/17/2004 01:15 PM

To: John D Tursell/US/GM/GMC@GM
Subject: Re: 2004 MY Evap Diagnostics

John,

I spoke with Carl on this issue and he reminded me that you should have the info on the XLR diagnostics. Please read the attached and reply.

He mentioned that the Corvette PCM should detect a small leak (>.020" effective diameter) in about 7 cold starts on average. A large leak (>.120") should be detected after 2 consecutive cold starts. Is it the same for the XLR?

Carl could not access the links below to review the eSI files. The eSI documents for the codes are the same for Corvette and XLR and are in the Word doc.

2004 C5-XLR P0455 P0422.dc

The link to eSI is on the SPO website:
http://spo.gm.com/

Thanks,
Terry

Terry M. Stone

Terry M. Stone
09/17/2004 08:16 AM

To: Carl Smith/US/GM/GMC
cc: Gary J Halligan/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: 2004 MY Evap Diagnostics

Carl,

We are investigating an issue on certain 2004 MY Corvette and XLR fuel tanks. I need to verify that the Evap. leak detection diagnostics (large and small) function properly on both vehicles. I also need to understand that the conditions to set and clear the codes are correct in eSI. Please forward this on to the proper engineers to verify the conditions in the links below are correct. If possible, please provide leak detection capabilities for both controllers/vehicles for comparison.

I will be testing tanks that leak in both vehicles soon. I am trying to locate vehicles for this testing. Do you have any? If I use a 2002 C5, and we reflash or replace the PCM with the 2004 cals/software, will this work? I will be using a Tech2 and performing the purge/seal test in the Tech2. Do you know what the effective diameter threshold is that it uses to determine pass/fail? Has there been any development of a Service Bay Test (SBT) for small leak?

2004 Corvette P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218704&psdid=477&evc=sm

2004 Corvette P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218689&psdid=477&evc=sm

2004 XLR P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1197444&psdid=423&evc=sm

2004 XLR P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=951732&psdid=423&evc=sm

Thanks,
Terry

Terry M. Stone
10/18/2004 10:17 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

----- Forwarded by Terry M. Stone/US/GM/GMC on 10/18/2004 10:17 AM -----

Terry M. Stone
10/18/2004 10:17 AM

To: Chris Giles/US/GM/GMC@GM
cc:
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

Chris,

Thanks for the information. We tested three cars with leaking fuel systems for about two weeks. The only car to set a small leak code (P0442) was the 2002 C5. The 2004 C5 and 2004 XLR did not set the small leak code. The leaks grew to the point that allowed the large leak code (P0455) to set.

Terry

Chris Giles

Chris Giles
10/14/2004 06:20 PM

To: Terry M. Stone/US/GM/GMC
cc: John D Tursell/US/GM/GMC, Kevin Hier/US/GM/GMC, Chingpo Liu/US/GM/GMC, Barbara J. Holland/US/GM/GMC, Gary P White/US/GM/GMC@GM
Subject: XLR LH2 P0442 and P0455 Diagnostics

Terry,

The conditions that are required to set the Evap Leak Diagnostics on a GMX215 are as follows;

P0442 (small leak down to .020") otherwise known as "EONV"

The engine must be "cold started"; that is ambient temp (TIA) must be within 4.5 C of coolant (TCO)
and the coolant temp must be between 4 C and 30 C at start
Engine must be running longer than ten (10) minutes
Vehicle must have traveled at least 5 kilometers after start
Coolant temp > 70 C
Intake air temp must be between 2 C and 32 C
Fuel tank level must be between 15 and 85 % full
Barometer must be > 74Kpa (or altitude less than 8,500 ft)

Approximately 10 secs after shutdown the vent solenoid will close and the ECM will monitor tank pressure. The pressure signature is tracked for up to 40 minutes. If it rises too fast, as in the case of no leak and high volatility fuel, the test will abort. If it rises more modestly the pressure rise rate is assigned a value based on how fast it rises over the 40 minute interval. The number is filtered using an Exponentially Weighted Moving Average (EWMA) filter. It may take several tests to cause the target value to rise above the 0.4 threshold (0 is a perfect pass and 1 is a perfect fail) required to trigger a test "fail" and set p0442.

The other test that is run is the large leak test;

P0455 (large leak)

This test is run while the engine is running.
The car can be started hot or cold but must be;
- running longer than 1000 secs (16 min 40 secs)
- must be warmed up (coolant > 70 C)
- must be idling or moving at less than 5 mph
- tank level between 15 and 85%
- Barometer > 74 kPa (altitude < 8500 ft)

The purge solenoid will close. The vent solenoid will close. The tank pressure is monitored and if stable, the purge solenoid (CPS) will reopen and draw a vaccum on the tank for as long as 35 secs. The CPS pulls the tank down to 1.25 kPa below the stabilized starting point. The CPS closes again and the tank pressure is monitored again. As the pressure rises to 1.1 kPa below the starting point, monitoring conditions are met and further pressure increase is used to determine any leak rate. This rise is compared to a model and an orifice diameter is estimated. If the estimated orifice is greater than .090" a large leak is determined and the test is flagged "failed" and P0455 is set.

Chris
(with thanks to C.P. Liu for help in this explanation)

Terry M. Stone
10/01/2004 12:06 PM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: Effect of Condition - Another Update

John and Dave,

The 2004 C5 did set the large leak code this morning (P0455). It did leak fuel to the ground again (about 1.5' dia.) during a fill.

The fuel tank was removed from the XLR and a non-leaking tank built with suspect material has been installed. TI is evaluating this to determine if a leak will develop. They are to send me the data of all of the leak rate testing and let me know the plan for the XLR.

Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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Is there anything else you would like done with this car or should I return it to MIlford?

MPG Development has provided a 2004 C5 for further evaluation. The car should be at TI this morning to have a small leak tank installed. We will see if the EONV diagnostic detects the leak.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/24/2004 09:16 AM

To: John Murawa/US/GM/GMC
cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM, Daniel R. Stec, John D Tursell/US/GM/GMC@GM
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Regards,
Terry

John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

Terry,
Under what conditions did the TI vehicle have fuel on the ground?

John Murawa
Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone

Terry M. Stone
09/23/2004 10:51 AM

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cc: DAVE REEK/US/GM/GMC, George Nagrant/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM
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Regards,
Terry

Terry M. Stone

Terry M. Stone
09/20/2004 11:00 AM

To: "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>
cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: Request for Tanks and Retrofit

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If possible, I would like to help with the retrofitting at TI this afternoon. If this is not possible, please send the tanks (with the test data) with Jamie to the Service Car garage ASAP. We will retrofit them there.

Thanks,
Terry

Terry M. Stone
09/29/2004 03:40 PM

To: Stanley Chelsea/US/GM/GMC@GM
Subject: Re: Effect of Condition - Another Update

Stan,

Here's a quick update on who has what cars:

I have 14Y43677 - 2004 C5.

George Nagrant has 12Y5104 - 2002 C5.

TI Automotive has 64Y00589 - 2004 XLR.

They should all be returned to Milford sometime next week. Please contact me if you have any questions. My Nextel number is 28.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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Is there anything else you would like done with this car or should I return it to Milford?

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Regards,
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Terry M. Stone

Terry M. Stone
09/24/2004 09:16 AM

To: John Murawa/US/GM/GMC
cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM,

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Terry

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09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
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(586)492-6275
john.murawa@gm.com
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09/20/2004 11:00 AM

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John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

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John Murawa
Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone

Terry M. Stone
09/23/2004 10:51 AM

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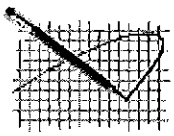
Terry M. Stone



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Thanks,
Terry

Terry M. Stone
09/17/2004 01:15 PM

To: John D Tursell/US/GM/GMC@GM
Subject: Re: 2004 MY Evap Diagnostics

John,

I spoke with Carl on this issue and he reminded me that you should have the info on the XLR diagnostics. Please read the attached and reply.

He mentioned that the Corvette PCM should detect a small leak (>.020" effective diameter) in about 7 cold starts on average. A large leak (>.120") should be detected after 2 consecutive cold starts. Is it the same for the XLR?

Carl could not access the links below to review the eSI files. The eSI documents for the codes are the same for Corvette and XLR and are in the Word doc.

2004 C5-XLR P0455 P0422.dc

The link to eSI is on the SPO website:
http://spo.gm.com/

Thanks,
Terry

Terry M. Stone

Terry M. Stone
09/17/2004 08:16 AM

To: Carl Smith/US/GM/GMC
cc: Gary J Halligan/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: 2004 MY Evap Diagnostics

Carl,

We are investigating an issue on certain 2004 MY Corvette and XLR fuel tanks. I need to verify that the Evap. leak detection diagnostics (large and small) function properly on both vehicles. I also need to understand that the conditions to set and clear the codes are correct in eSI. Please forward this on to the proper engineers to verify the conditions in the links below are correct. If possible, please provide leak detection capabilities for both controllers/vehicles for comparison.

I will be testing tanks that leak in both vehicles soon. I am trying to locate vehicles for this testing. Do you have any? If I use a 2002 C5, and we reflash or replace the PCM with the 2004 cals/software, will this work? I will be using a Tech2 and performing the purge/seal test in the Tech2. Do you know what the effective diameter threshold is that it uses to determine pass/fail? Has there been any development of a Service Bay Test (SBT) for small leak?

2004 Corvette P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218704&psdid=477&evc=sm

2004 Corvette P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218689&psdid=477&evc=sm

2004 XLR P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1197444&psdid=423&evc=sm

2004 XLR P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=951732&psdid=423&evc=sm

Thanks,
Terry

Terry M. Stone
10/18/2004 10:17 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

----- Forwarded by Terry M. Stone/US/GM/GMC on 10/18/2004 10:17 AM -----

Terry M. Stone
10/18/2004 10:17 AM

To: Chris Giles/US/GM/GMC@GM
cc:
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

Chris,

Thanks for the information. We tested three cars with leaking fuel systems for about two weeks. The only car to set a small leak code (P0442) was the 2002 C5. The 2004 C5 and 2004 XLR did not set the small leak code. The leaks grew to the point that allowed the large leak code (P0455) to set.

Terry

Chris Giles

Chris Giles
10/14/2004 06:20 PM

To: Terry M. Stone/US/GM/GMC
cc: John D Tursell/US/GM/GMC, Kevin Hier/US/GM/GMC, Chingpo Liu/US/GM/GMC, Barbara J. Holland/US/GM/GMC, Gary P White/US/GM/GMC@GM
Subject: XLR LH2 P0442 and P0455 Diagnostics

Terry,

The conditions that are required to set the Evap Leak Diagnostics on a GMX215 are as follows;

P0442 (small leak down to .020") otherwise known as "EONV"

The engine must be "cold started"; that is ambient temp (TIA) must be within 4.5 C of coolant (TCO)
and the coolant temp must be between 4 C and 30 C at start
Engine must be running longer than ten (10) minutes
Vehicle must have traveled at least 5 kilometers after start
Coolant temp > 70 C
Intake air temp must be between 2 C and 32 C
Fuel tank level must be between 15 and 85 % full
Barometer must be > 74Kpa (or altitude less than 8,500 ft)

Approximately 10 secs after shutdown the vent solenoid will close and the ECM will monitor tank pressure. The pressure signature is tracked for up to 40 minutes. If it rises too fast, as in the case of no leak and high volatility fuel, the test will abort. If it rises more modestly the pressure rise rate is assigned a value based on how fast it rises over the 40 minute interval. The number is filtered using an Exponentially Weighted Moving Average (EWMA) filter. It may take several tests to cause the target value to rise above the 0.4 threshold (0 is a perfect pass and 1 is a perfect fail) required to trigger a test "fail" and set p0442.

The other test that is run is the large leak test;

P0455 (large leak)

This test is run while the engine is running.
The car can be started hot or cold but must be;
- running longer than 1000 secs (16 min 40 secs)
- must be warmed up (coolant > 70 C)
- must be idling or moving at less than 5 mph
- tank level between 15 and 85%
- Barometer > 74 kPa (altitude < 8500 ft)

The purge solenoid will close. The vent solenoid will close. The tank pressure is monitored and if stable, the purge solenoid (CPS) will reopen and draw a vaccum on the tank for as long as 35 secs. The CPS pulls the tank down to 1.25 kPa below the stabilized starting point. The CPS closes again and the tank pressure is monitored again. As the pressure rises to 1.1 kPa below the starting point, monitoring conditions are met and further pressure increase is used to determine any leak rate. This rise is compared to a model and an orifice diameter is estimated. If the estimated orifice is greater than .090" a large leak is determined and the test is flagged "failed" and P0455 is set.

Chris
(with thanks to C.P. Liu for help in this explanation)

Terry M. Stone
10/01/2004 12:06 PM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: Effect of Condition - Another Update

John and Dave,

The 2004 C5 did set the large leak code this morning (P0455). It did leak fuel to the ground again (about 1.5' dia.) during a fill.

The fuel tank was removed from the XLR and a non-leaking tank built with suspect material has been installed. TI is evaluating this to determine if a leak will develop. They are to send me the data of all of the leak rate testing and let me know the plan for the XLR.

Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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Is there anything else you would like done with this car or should I return it to Millford?

MPG Development has provided a 2004 C5 for further evaluation. The car should be at TI this morning to have a small leak tank installed. We will see if the EONV diagnostic detects the leak.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/24/2004 09:16 AM

To: John Murawa/US/GM/GMC
cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM, Daniel R. Stec, John D Tursell/US/GM/GMC@GM
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Regards,
Terry

John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

Terry,
Under what conditions did the TI vehicle have fuel on the ground?

John Murawa
Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone

Terry M. Stone
09/23/2004 10:51 AM

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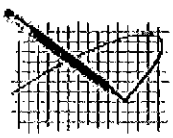

Terry M. Stone
09/20/2004 11:00 AM

To: "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>
cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
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Thanks,
Terry

Terry M. Stone
09/29/2004 03:40 PM

To: Stanley Chelsea/US/GM/GMC@GM
Subject: Re: Effect of Condition - Another Update

Stan,

Here's a quick update on who has what cars:

I have 14Y43677 - 2004 C5.

George Nagrant has 12Y5104 - 2002 C5.

TI Automotive has 64Y00589 - 2004 XLR.

They should all be returned to Milford sometime next week. Please contact me if you have any questions. My Nextel number is 28.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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09/24/2004 09:16 AM

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09/23/2004 11:43 AM

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09/23/2004 11:43 AM

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09/23/2004 10:51 AM

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cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
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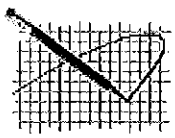

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Terry

Terry M. Stone
09/17/2004 01:15 PM

To: John D Tursell/US/GM/GMC@GM
Subject: Re: 2004 MY Evap Diagnostics

John,

I spoke with Carl on this issue and he reminded me that you should have the info on the XLR diagnostics. Please read the attached and reply.

He mentioned that the Corvette PCM should detect a small leak (>.020" effective diameter) in about 7 cold starts on average. A large leak (>.120") should be detected after 2 consecutive cold starts. Is it the same for the XLR?

Carl could not access the links below to review the eSI files. The eSI documents for the codes are the same for Corvette and XLR and are in the Word doc.

2004 C5-XLR P0455 P0422.dc

The link to eSI is on the SPO website:
http://spo.gm.com/

Thanks,
Terry

Terry M. Stone

Terry M. Stone
09/17/2004 08:16 AM

To: Carl Smith/US/GM/GMC
cc: Gary J Halligan/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: 2004 MY Evap Diagnostics

Carl,

We are investigating an issue on certain 2004 MY Corvette and XLR fuel tanks. I need to verify that the Evap. leak detection diagnostics (large and small) function properly on both vehicles. I also need to understand that the conditions to set and clear the codes are correct in eSI. Please forward this on to the proper engineers to verify the conditions in the links below are correct. If possible, please provide leak detection capabilities for both controllers/vehicles for comparison.

I will be testing tanks that leak in both vehicles soon. I am trying to locate vehicles for this testing. Do you have any? If I use a 2002 C5, and we reflash or replace the PCM with the 2004 cals/software, will this work? I will be using a Tech2 and performing the purge/seal test in the Tech2. Do you know what the effective diameter threshold is that it uses to determine pass/fail? Has there been any development of a Service Bay Test (SBT) for small leak?

2004 Corvette P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218704&psdid=477&evc=sm

2004 Corvette P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218689&psdid=477&evc=sm

2004 XLR P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1197444&psdid=423&evc=sm

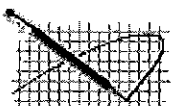
2004 XLR P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=951732&psdid=423&evc=sm

Thanks,
Terry

Terry M. Stone
10/18/2004 10:17 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

----- Forwarded by Terry M. Stone/US/GM/GMC on 10/18/2004 10:17 AM -----



Terry M. Stone
10/18/2004 10:17 AM

To: Chris Giles/US/GM/GMC@GM
cc:
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

Chris,

Thanks for the information. We tested three cars with leaking fuel systems for about two weeks. The only car to set a small leak code (P0442) was the 2002 C5. The 2004 C5 and 2004 XLR did not set the small leak code. The leaks grew to the point that allowed the large leak code (P0455) to set.

Terry

Chris Giles

Chris Giles
10/14/2004 06:20 PM

To: Terry M. Stone/US/GM/GMC
cc: John D Tursell/US/GM/GMC, Kevin Hier/US/GM/GMC, Chingpo Liu/US/GM/GMC, Barbara J. Holland/US/GM/GMC, Gary P White/US/GM/GMC@GM
Subject: XLR LH2 P0442 and P0455 Diagnostics

Terry,

The conditions that are required to set the Evap Leak Diagnostics on a GMX215 are as follows;

P0442 (small leak down to .020") otherwise known as "EONV"

The engine must be "cold started"; that is ambient temp (TIA) must be within 4.5 C of coolant (TCO)
and the coolant temp must be between 4 C and 30 C at start
Engine must be running longer than ten (10) minutes
Vehicle must have traveled at least 5 kilometers after start
Coolant temp > 70 C
Intake air temp must be between 2 C and 32 C
Fuel tank level must be between 15 and 85 % full
Barometer must be > 74Kpa (or altitude less than 8,500 ft)

Approximately 10 secs after shutdown the vent solenoid will close and the ECM will monitor tank pressure. The pressure signature is tracked for up to 40 minutes. If it rises too fast, as in the case of no leak and high volatility fuel, the test will abort. If it rises more modestly the pressure rise rate is assigned a value based on how fast it rises over the 40 minute interval. The number is filtered using an Exponentially Weighted Moving Average (EWMA) filter. It may take several tests to cause the target value to rise above the 0.4 threshold (0 is a perfect pass and 1 is a perfect fail) required to trigger a test "fail" and set p0442.

The other test that is run is the large leak test;

P0455 (large leak)

This test is run while the engine is running.
The car can be started hot or cold but must be;
- running longer than 1000 secs (16 min 40 secs)
- must be warmed up (coolant > 70 C)
- must be idling or moving at less than 5 mph
- tank level between 15 and 85%
- Barometer > 74 kPa (altitude < 8500 ft)

The purge solenoid will close. The vent solenoid will close. The tank pressure is monitored and if stable, the purge solenoid (CPS) will reopen and draw a vaccum on the tank for as long as 35 secs. The CPS pulls the tank down to 1.25 kPa below the stabilized starting point. The CPS closes again and the tank pressure is monitored again. As the pressure rises to 1.1 kPa below the starting point, monitoring conditions are met and further pressure increase is used to determine any leak rate. This rise is compared to a model and an orifice diameter is estimated. If the estimated orifice is greater than .090" a large leak is determined and the test is flagged "failed" and P0455 is set.

Chris
(with thanks to C.P. Liu for help in this explanation)

Terry M. Stone
10/01/2004 12:06 PM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: Effect of Condition - Another Update

John and Dave,

The 2004 C5 did set the large leak code this morning (P0455). It did leak fuel to the ground again (about 1.5' dia.) during a fill.

The fuel tank was removed from the XLR and a non-leaking tank built with suspect material has been installed. TI is evaluating this to determine if a leak will develop. They are to send me the data of all of the leak rate testing and let me know the plan for the XLR.

Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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Is there anything else you would like done with this car or should I return it to Milford?

MPG Development has provided a 2004 C5 for further evaluation. The car should be at TI this morning to have a small leak tank installed. We will see if the EONV diagnostic detects the leak.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/24/2004 09:16 AM

To: John Murawa/US/GM/GMC
cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM, Daniel R. Stec, John D Tursell/US/GM/GMC@GM
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Regards,
Terry

John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

Terry,
Under what conditions did the TI vehicle have fuel on the ground?

John Murawa
Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone

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09/23/2004 10:51 AM

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Regards,
Terry

Terry M. Stone

Terry M. Stone
09/20/2004 11:00 AM

To: "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>
cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: Request for Tanks and Retrofit

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Thanks,
Terry

Terry M. Stone
09/29/2004 03:40 PM

To: Stanley Chelsea/US/GM/GMC@GM
Subject: Re: Effect of Condition - Another Update

Stan,

Here's a quick update on who has what cars:

I have 14Y43677 - 2004 C5.

George Nagrant has 12Y5104 - 2002 C5.

TI Automotive has 64Y00589 - 2004 XLR.

They should all be returned to Milford sometime next week. Please contact me if you have any questions. My Nextel number is 28.

Regards,
Terry

Terry M. Stone

Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
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Terry M. Stone

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09/24/2004 09:16 AM

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cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM,

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Regards,
Terry

John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

Terry,
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John Murawa
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(586)492-6275
john.murawa@gm.com
Terry M. Stone

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09/23/2004 10:51 AM

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09/28/2004 10:34 AM

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09/24/2004 09:16 AM

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Regards,
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John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

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John Murawa
Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone

Terry M. Stone
09/23/2004 10:51 AM

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cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
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John,

Prior to installing the fuel tank with the large leak, TI's Lab Manager, Jeff Yeager, mentioned that they ran

Terry M. Stone
11/04/2004 06:03 PM

To: DAVE REEK/US/GM/GMC
Subject: Tank Data

Dave,

Here is the data from Murray (thanks Murray!). His files are for 2004-5 Corvette and XLR for L1281. There are about 17 cases L1281 cases in the suspect window that are not the crossover QC issue (according to Jamie).

Vin1	MY	Plant	Vin2
1G6YV34AX	4	5	600982
1G1YY32G4	4	5	112566
1G6YV34A5	4	5	601022
1G1YY32G1	4	5	112847
1G1YY22G5	4	5	113056
1G1YY22G5	4	5	113042
1G6YV34A1	4	5	601115
1G1YY22G3	4	5	114108
1G1YY22G5	4	5	114319
1G1YY22G8	4	5	114833
1G1YY22G7	4	5	114936
1G1YY32G6	4	5	117543
1G6YV34A5	4	5	601697
1G1YY22G9	4	5	119183
1G6YV34A7	4	5	601975
1G1YY22G1	4	5	120358
1G6YV34A9	4	5	602027

I took the data from Murray's files and compiled them into one to create the charts. I also removed the 2005 MY data.

Y Car tanks by week of build.x

Here is the other file from Murray with the detail for 2004-5 Corvette and XLR (all tank labor codes - L1280,1,2). I added a chart to show the relationship between the Production date, the Sale date, and the Repair date. There is also a chart which shows Days in Service vs. Mileage.

Y Car tanks - L1280,1,2.xl

Regards,
Terry

----- Forwarded by Terry M. Stone/US/GM/GMC on 11/04/2004 05:30 PM -----

Murray J. Pyle
11/04/2004 04:02 PM

To: Terry M. Stone/US/GM/GMC
cc:
Subject: Tank Data (a complete set)


Y Car tanks 0-150 days.xl

Y Car tanks 0-180 days.xl

Y Car tanks 0-240 days.xl

Y Car tanks 0-270 days.xl

Y Car tanks 0-30 days.xl

Y Car tanks 0-300 days.xl

Y Car tanks 0-330 days.xl

Y Car tanks 0-360 days.xl

Y Car tanks 0-60 days.xl

Y Car tanks 0-90 days.xl

Y Car tanks 0-120 days.xl

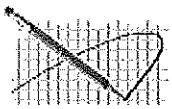
Y Car tanks 0-210 days.xl

Murray James Pyle
GM NA Engineering
586 492-9801 (Phone including Voice Mail)

Terry M. Stone
10/18/2004 10:17 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
Subject: Re: XLR LH2 P0442 and P0455 Diagnostics

----- Forwarded by Terry M. Stone/US/GM/GMC on 10/18/2004 10:17 AM -----



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10/14/2004 06:20 PM

To: Terry M. Stone/US/GM/GMC
cc: John D Tursell/US/GM/GMC, Kevin Hier/US/GM/GMC, Chingpo Liu/US/GM/GMC, Barbara J. Holland/US/GM/GMC, Gary P White/US/GM/GMC@GM
Subject: XLR LH2 P0442 and P0455 Diagnostics

Terry,

The conditions that are required to set the Evap Leak Diagnostics on a GMX215 are as follows;

P0442 (small leak down to .020") otherwise known as "EONV"

The engine must be "cold started"; that is ambient temp (TIA) must be within 4.5 C of coolant (TCO)
and the coolant temp must be between 4 C and 30 C at start
Engine must be running longer than ten (10) minutes
Vehicle must have traveled at least 5 kilometers after start
Coolant temp > 70 C
Intake air temp must be between 2 C and 32 C
Fuel tank level must be between 15 and 85 % full
Barometer must be > 74Kpa (or altitude less than 8,500 ft)

Approximately 10 secs after shutdown the vent solenoid will close and the ECM will monitor tank pressure. The pressure signature is tracked for up to 40 minutes. If it rises too fast, as in the case of no leak and high volatility fuel, the test will abort. If it rises more modestly the pressure rise rate is assigned a value based on how fast it rises over the 40 minute interval. The number is filtered using an Exponentially Weighted Moving Average (EWMA) filter. It may take several tests to cause the target value to rise above the 0.4 threshold (0 is a perfect pass and 1 is a perfect fail) required to trigger a test "fail" and set p0442.

The other test that is run is the large leak test;

P0455 (large leak)

This test is run while the engine is running.
The car can be started hot or cold but must be;
- running longer than 1000 secs (16 min 40 secs)
- must be warmed up (coolant > 70 C)
- must be idling or moving at less than 5 mph
- tank level between 15 and 85%
- Barometer > 74 kPa (altitude < 8500 ft)

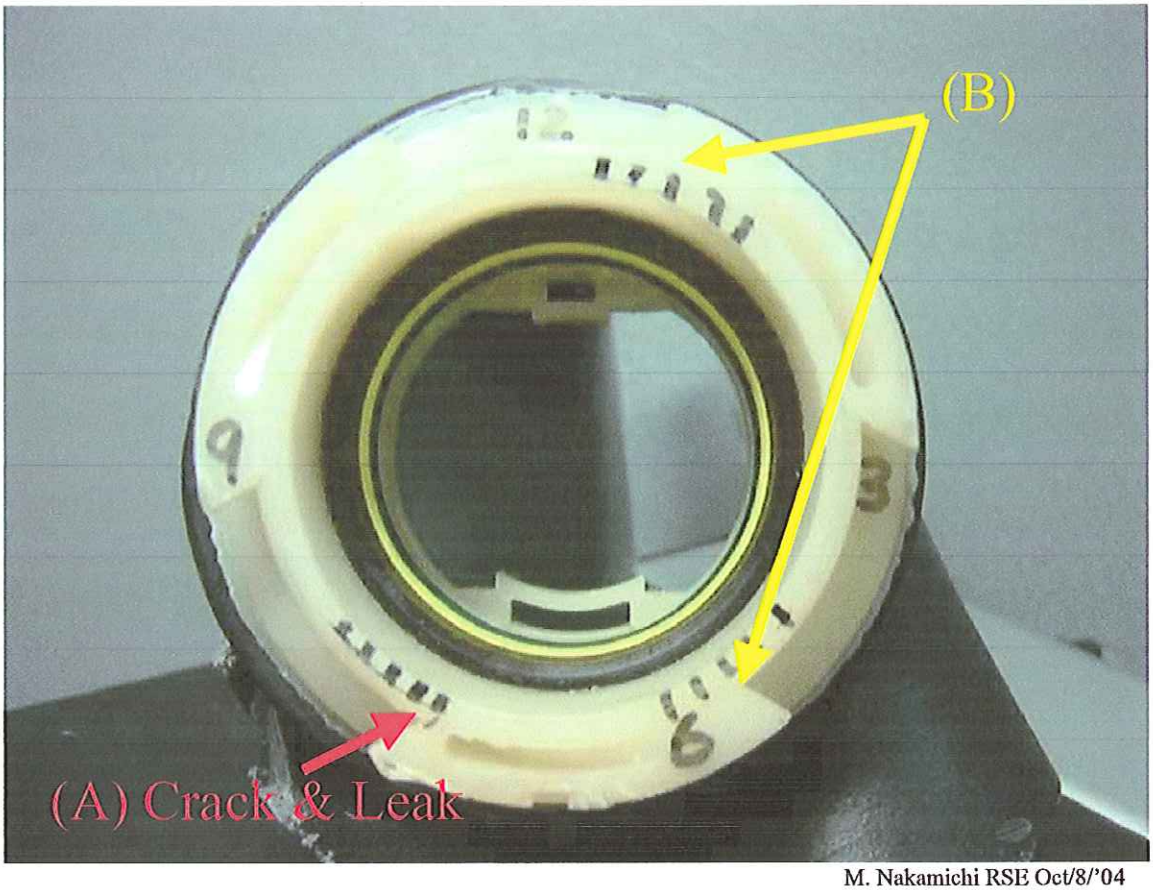
The purge solenoid will close. The vent solenoid will close. The tank pressure is monitored and if stable, the purge solenoid (CPS) will reopen and draw a vaccum on the tank for as long as 35 secs. The CPS pulls the tank down to 1.25 kPa below the stabilized starting point. The CPS closes again and the tank pressure is monitored again. As the pressure rises to 1.1 kPa below the starting point, monitoring conditions are met and further pressure increase is used to determine any leak rate. This rise is compared to a model and an orifice diameter is estimated. If the estimated orifice is greater than .090" a large leak is determined and the test is flagged "failed" and P0455 is set.

Chris
(with thanks to C.P. Liu for help in this explanation)

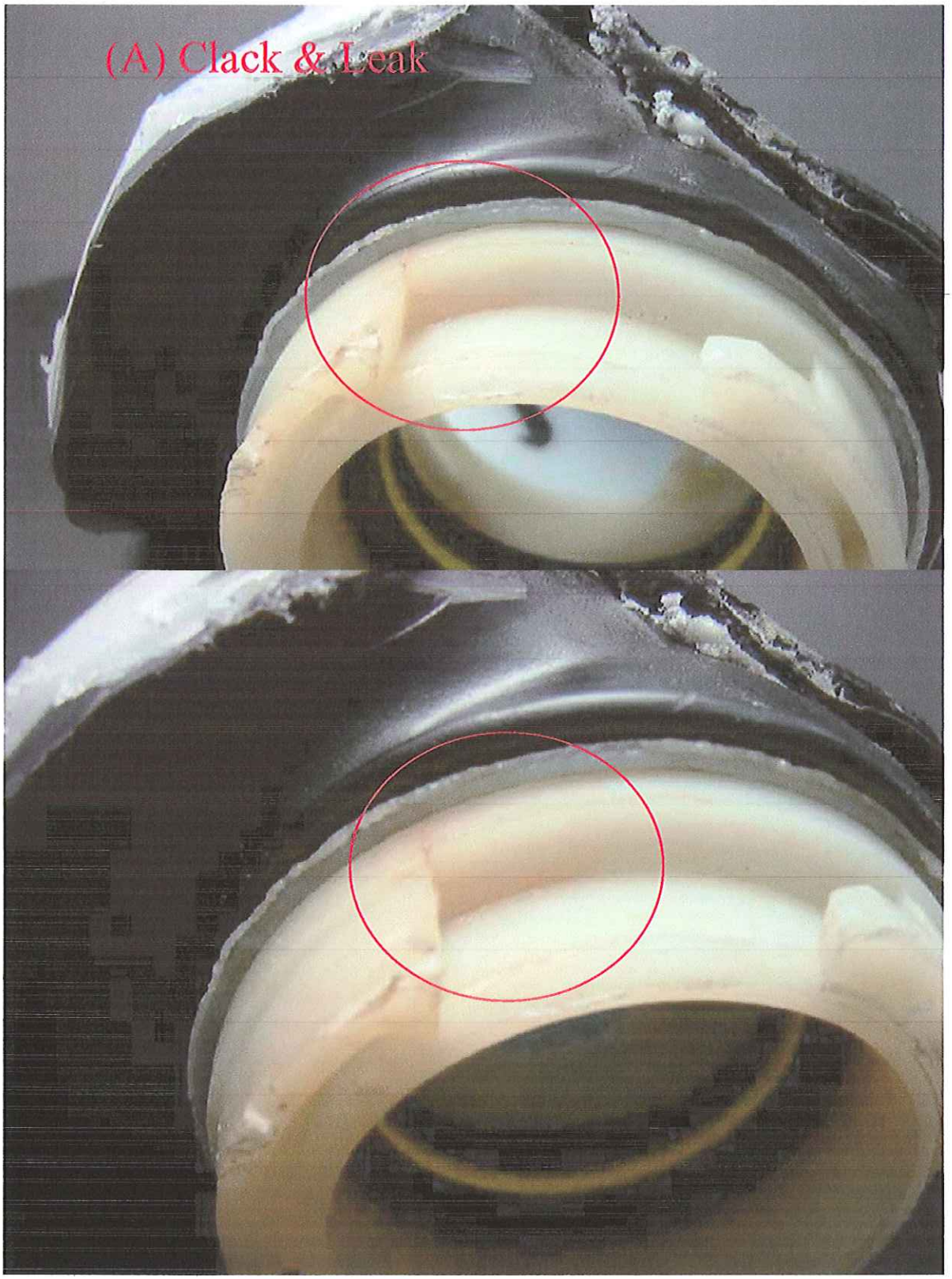
Observation of the failed part – '04 XLR Left Tank

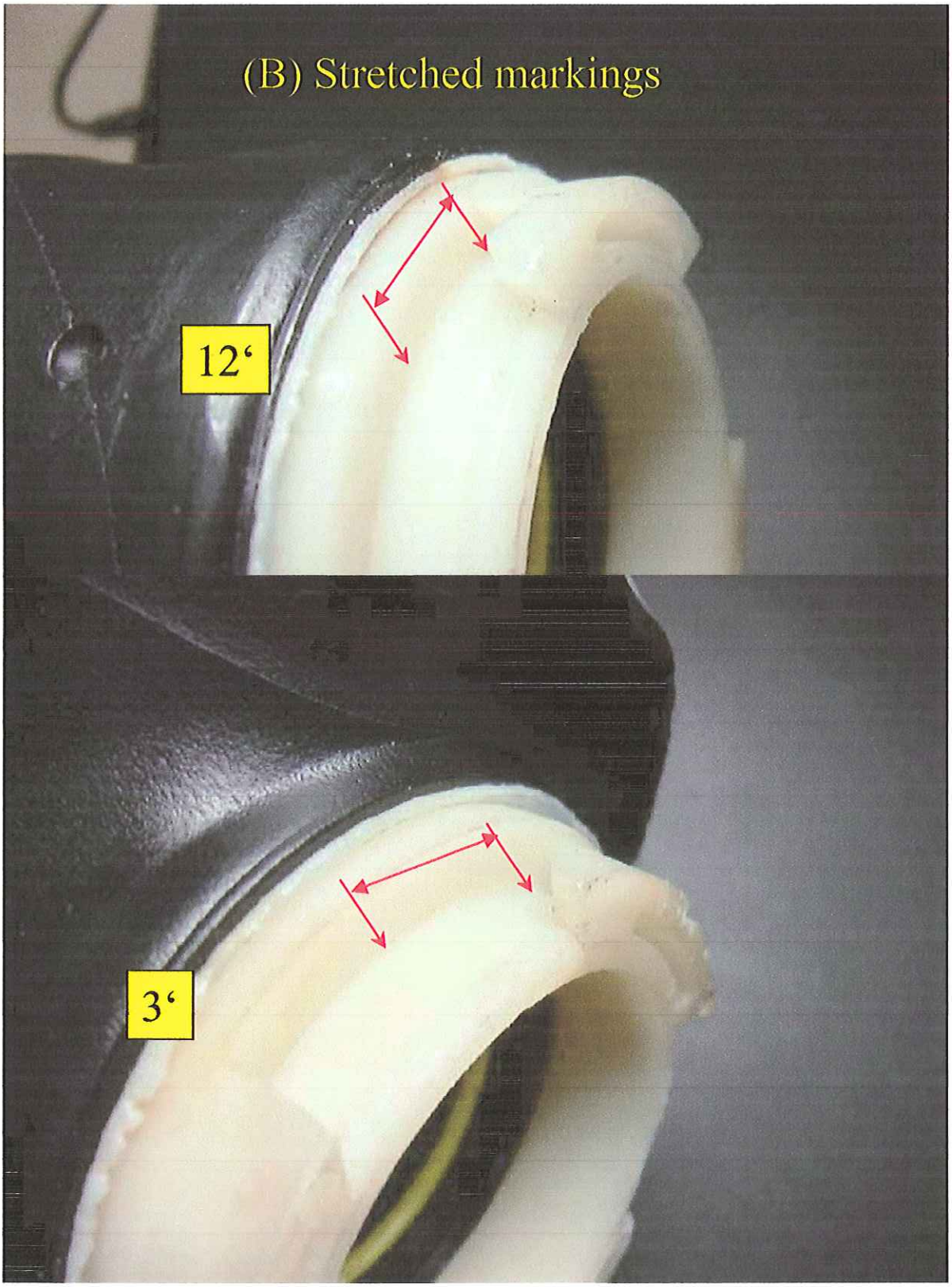
VIN: 1G6YV34A845601502
D/D: Apr/08/'04
R/D: Aug/21/'04
Mileage: 2,026 km
Cust concern: Gas fume in the car/Drip gas at front of left-rear tire.
Cause: Dlr discovered crack on the plastic coupler where connecting tanks via hose left to right..
Correction: Dlr replaced with new service tanks.

Inspected the portion returned from dlr (asked to cut the area only):
(A) Actual leak was seems from the crack located between 9' and 6'.
(B) There also stretched markings (white in color) at two additional locations between 12' & 3' and 3' & 6'.



M. Nakamichi RSE Oct/8/'04


(A) Clack & Leak


(B) Stretched markings
12‘
3‘

Terry M. Stone
10/08/2004 04:07 PM

To: Minoru Nakamichi/JP/GM/GMC@GM
Subject: Re: Is failed tank return from JPN required?

Mike,

Thank you for the report. The repair order from the other e-mail did not come through. Can you fax it? My fax number is 586-947-7366.

Regards,
Terry

Minoru Nakamichi

Minoru Nakamichi
10/08/2004 07:12 AM

To: Terry M. Stone/US/GM/GMC@GM
cc: Len Tillard/US/GM/GMC@GM, Maurice K Williams/US/GM/GMC@GM, Susumu Tokida/JP/GM/GMC@GM
Subject: Re: Is failed tank return from JPN required?

Terry,

Finally I got a failed tank (portion) from dlr today and observed by my eyes closely, here attached the brief summary.

Observation on 601502.pdf

Thanks and regards,
Mike Nakamichi
NAIPC-RSE AsiaPacific Region
c/o GMJ, Tokyo

To: Len Tillard/US/GM/GMC
cc: Maurice K Williams/US/GM/GMC@GM
From: Terry M. Stone/US/GM/GMC
Date: 09/09/2004 02:31:50 AM
Subject: Re: Is failed tank return from JPN required?

Len and Maurice,

Regarding the questions below:

(1) Two case of JPN have been added. Replacement tanks are on order now. If failed tank(s) return is required, please let Tokida-san/me know.
- There is no need to return those tanks. If possible, provide pictures or descriptions of the leak area and copies of the repair orders.

Press here to open the original memo =>

Terry M. Stone
10/08/2004 01:52 PM

To: DAVE REEK/US/GM/GMC
Subject: PRTS N164909 - Fuel leaks - Root Cause

Dave,

This is what we will put into the RC in the PRTS. It will then be assigned to Supplier Quality (Mike Parrow) at Bowling Green.

From your report:

The crossover quick connect is an injection molded component molded at Viking Plastics using a material provided by PolyOne Corporation. During the compounding process at PolyOne Corporation on September 30, 2003, PolyOne Corporation mis-procesed a 3,000 pound batch of the crossover quick connect material which significantly degraded the molecular weight of the glass-filled olefin material and ultimately the fracture toughness of the quick connect.

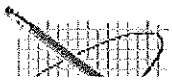
Additional root cause information:

PolyOne/Solvay
The mis-processing of the material at PolyOne was due to poor quality processes. PolyOne moved the manufacturing of this material to another (different design) screw machine without PPAP'ing or evaluating the effect of the move. The twin screw machine overworked the material, resulting in the degraded material properties. PolyOne did not monitor the processing of the material properly and used equipment that was out of calibration. PolyOne accepted and used incoming material from Solvay that did not meet GM Material Specifications (GMP.PE.050) for melt flow rate. PolyOne claimed on their material certs to Viking that the material did meet GMP.PE.050. PolyOne claims to have a process that evaluates material certs for trends in key measurements. This process would have discovered this issue but was not followed at PolyOne's Tennessee facility. PolyOne also knowingly reported incorrect pellet size on the material certs.

Viking Plastics
Viking Plastics also did not evaluate the material certs for trends and did not have PPAP requirements for their supplier, PolyOne.

TI Automotive
TI Automotive - Meriden first discovered the issue when they had difficulty welding the component to the fuel tank. This was after most of the suspect components had been used. TI did not report the "internal" quality spill to GM. TI did report it to Viking Plastics, who then quarantined and scrapped all stock from that lot. TI did not quarantine or scrap it's stock (quick connects or tanks). TI suspects that components that should have been scrapped, were re-introduced into production on at least two other occasions. TI did not have traceability of their components and did not use first in, first out (FIFO). This extended the suspect window of material to Bowling Green significantly.

Regards,
Terry



Terry M. Stone
09/29/2004 03:40 PM

To: Stanley Chelsea/US/GM/GMC@GM
Subject: Re: Effect of Condition - Another Update

Stan,

Here's a quick update on who has what cars:

I have 14Y43677 - 2004 C5.

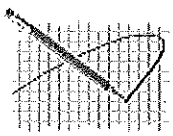
George Nagrant has 12Y5104 - 2002 C5.

TI Automotive has 64Y00589 - 2004 XLR.

They should all be returned to Milford sometime next week. Please contact me if you have any questions. My Nextel number is 28.

Regards,
Terry

Terry M. Stone



Terry M. Stone
09/28/2004 10:34 AM

To: John Murawa/US/GM/GMC@GM, DAVE REEK/US/GM/GMC
cc: Daniel R. Stec, Gary E. Pritchard/US/GM/GMC@GM, George Nagrant/US/GM/GMC, John D Tursell/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Cynthia M. Cipolla/US/GM/GMC@GM, James L. Davis/US/GM/GMC@GM, David A. Wickman/US/GM/GMC@GM, Chris Giles/US/GM/GMC@GM
Subject: Re: Effect of Condition - Another Update

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Is there anything else you would like done with this car or should I return it to Millford?

MPG Development has provided a 2004 C5 for further evaluation. The car should be at TI this morning to have a small leak tank installed. We will see if the EONV diagnostic detects the leak.

Regards,
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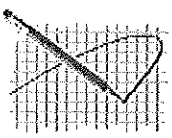
Terry M. Stone



Terry M. Stone
09/24/2004 09:16 AM

To: John Murawa/US/GM/GMC
cc: DAVE REEK/US/GM/GMC, Paul S. Chapman/US/GM/GMC@GM, George Nagrant/US/GM/GMC, Gary E. Pritchard/US/GM/GMC@GM,

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Regards,
Terry

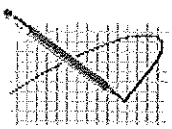
John Murawa

John Murawa
09/23/2004 11:43 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Effect of Condition - Update

Terry,
Under what conditions did the TI vehicle have fuel on the ground?

John Murawa
Product Investigations
(586)492-6275
john.murawa@gm.com
Terry M. Stone



Terry M. Stone
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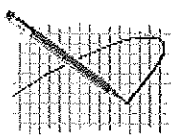

Terry M. Stone
09/20/2004 11:00 AM

To: "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>
cc: Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, "Hawley, Dean" <DHawley@US.TIAuto.com>, "Reginek, Jamie" <jreginek@US.TIAuto.com>, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: Request for Tanks and Retrofit

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09/23/2004 11:43 AM

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Subject: Re: Effect of Condition - Update

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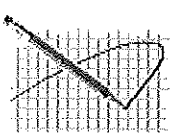

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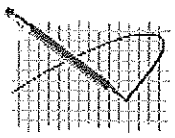

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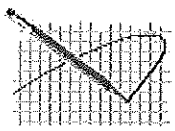

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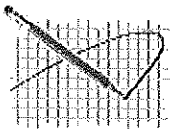

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Thanks,
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Terry M. Stone
09/17/2004 01:18 PM

To: Murray J. Pyle/US/GM/GMC@GM
Subject: Re: More Data Please

Murray,

Please run L1280,1,2 again for Dave to get the latest info available.

Thanks,
Terry

Murray J. Pyle

Murray J. Pyle
09/09/2004 12:02 PM

To: DAVE REEK/US/GM/GMC@GM
cc: John Murawa/US/GM/GMC@GM, Terry M. Stone/US/GM/GMC@GM
Subject: Re: More Data Please

Dave,

For the past few months Gary (Pritchard) has been focusing on the problems we think to be new (or at least unsolved). Hence, a focus on the vehicles built since January.

Regarding the information in the first file I sent: you will find two trend charts in that file, one is for the entire year, the other (and all other tabs) contain information for vehicles built in the Jan-now time frame.

If you think there is value in having the information for the entire MY knock yourself out. Here is an attachment for 2004 Model Year, it contains the same info as the original version of the file I sent, but this one is based on the entire model year (and this one is named correctly.)

C5 and XLR L1280,1,2.xl

Murray James Pyle
GM NA Engineering
586 492-9801 (Phone only - NO Voice Mail)
248 874-9581 (Voice Mail)
DAVE REEK

DAVE REEK
09-09-04 11:47 AM

To: Murray J. Pyle/US/GM/GMC@GM
cc: John Murawa/US/GM/GMC@GM, Terry M. Stone/US/GM/GMC@GM
Subject: Re: More Data Please

Murray, What does it mean when the file is labelled Jan-Sept? Though the trend charts are for the model year, I would think we want to see all of the detail for the entire model year, not just Jan-Sept. Unless of course, I simply misunderstood what it means.

Thanks

Dave Reek
GM Supplier Quality

248-753-8226
Murray J. Pyle

Murray J. Pyle
09/09/2004 10:54 AM

To: Terry M. Stone/US/GM/GMC@GM
cc: DAVE REEK/US/GM/GMC@GM, John Murawa/US/GM/GMC@GM
Subject: Re: More Data Please

As requested.

C6 and XLR L1280,1,2 (Jan-Sept).

Murray James Pyle
GM NA Engineering
586 492-9801 (Phone only - NO Voice Mail)
248 874-9581 (Voice Mail)
Terry M. Stone

Terry M. Stone
09-09-04 09:06 AM

To: Murray J. Pyle/US/GM/GMC@GM
cc: DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: More Data Please

Please run L1280,1,2 for 2004 C5, XLR (combined) again.

Thanks,
Terry

Terry M. Stone
09/17/2004 01:15 PM

To: John D Tursell/US/GM/GMC@GM
Subject: Re: 2004 MY Evap Diagnostics

John,

I spoke with Carl on this issue and he reminded me that you should have the info on the XLR diagnostics. Please read the attached and reply.

He mentioned that the Corvette PCM should detect a small leak (>.020" effective diameter) in about 7 cold starts on average. A large leak (>.120") should be detected after 2 consecutive cold starts. Is it the same for the XLR?

Carl could not access the links below to review the eSI files. The eSI documents for the codes are the same for Corvette and XLR and are in the Word doc.

2004 C5-XLR P0455 P0422.dc

The link to eSI is on the SPO website:
http://spo.gm.com/

Thanks,
Terry

Terry M. Stone

Terry M. Stone
09/17/2004 08:16 AM

To: Carl Smith/US/GM/GMC
cc: Gary J Halligan/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: 2004 MY Evap Diagnostics

Carl,

We are investigating an issue on certain 2004 MY Corvette and XLR fuel tanks. I need to verify that the Evap. leak detection diagnostics (large and small) function properly on both vehicles. I also need to understand that the conditions to set and clear the codes are correct in eSI. Please forward this on to the proper engineers to verify the conditions in the links below are correct. If possible, please provide leak detection capabilities for both controllers/vehicles for comparison.

I will be testing tanks that leak in both vehicles soon. I am trying to locate vehicles for this testing. Do you have any? If I use a 2002 C5, and we reflash or replace the PCM with the 2004 cals/software, will this work? I will be using a Tech2 and performing the purge/seal test in the Tech2. Do you know what the effective diameter threshold is that it uses to determine pass/fail? Has there been any development of a Service Bay Test (SBT) for small leak?

2004 Corvette P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218704&psdid=477&evc=sm

2004 Corvette P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1218689&psdid=477&evc=sm

2004 XLR P0455
http://service.gm.com/servlets/BlobShtml?ShtmlFile=1197444&psdid=423&evc=sm

2004 XLR P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=951732&psdid=423&evc=sm

Thanks,
Terry

DTC P0455

System Description

The control module tests the Evaporative Emission (EVAP) System for a large leak. The control module monitors the fuel tank pressure (FTP) sensor signal to determine the EVAP system vacuum level. When the conditions for running are met, the control module commands the EVAP canister purge solenoid valve OPEN and the EVAP canister vent solenoid valve CLOSED . This allows engine vacuum to enter the EVAP system. At a calibrated time, or vacuum level, the control module commands the EVAP canister purge solenoid valve closed, sealing the system, and monitors the FTP sensor input in order to determine the EVAP system vacuum level. If the system is unable to achieve the calibrated vacuum level, or the vacuum level decreases too rapidly, this DTC sets.
The following table illustrates the relationship between the ON and OFF states, and the OPEN or CLOSED states of the EVAP canister purge and vent solenoid valves.

Control Module Command	EVAP Canister Purge Solenoid Valve	EVAP Canister Vent Solenoid Valve
ON	Open	Closed
OFF	Closed	Open

Conditions for Running the DTC

- DTCs P0107, P0108, P0112, P0113, P0116, P0117, P0118, P0125, P0442, P0443, P0449, P0452, P0453, P1112, P1114, P1115, P1120, P1133, P1134, P1153, P1154, P1220, P1221 are not set.
- The engine is running.
- The ignition voltage is between 10-18 volts.
- The barometric pressure (BARO) is more than 75 kPa.
- The fuel level is between 15-85 percent.
- The engine coolant temperature (ECT) is between 4-30°C (39-86°F).
- The intake air temperature (IAT) is between 4-30°C (39-86°F).
- The start-up ECT and IAT are within 9°C (16°F) of each other.
- The vehicle speed sensor (VSS) is less than 121 km/h (75 mph).

Conditions For Setting the DTC

The EVAP system is not able to achieve or maintain vacuum during the diagnostic test.

Action Taken When the DTC Sets

- The control module illuminates the malfunction indicator lamp (MIL) on the second consecutive ignition cycle that the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The first time the diagnostic fails, the control module stores this information in the Failure Records. If the diagnostic reports a failure on the second consecutive ignition cycle, the control module records the operating conditions at the time of the failure. The control module writes the operating conditions to the Freeze Frame and updates the Failure Records.

Conditions for Clearing the MIL/DTC

- The control module turns OFF the malfunction indicator lamp (MIL) after 3 consecutive ignition cycles that the diagnostic runs and does not fail.
- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

Diagnostic Aids

- To help locate intermittent leaks, use the J 41413-200 Evaporative Emissions System Tester (EEST) to introduce smoke into the EVAP system. Move all EVAP components while observing smoke with the J 41413-SPT High Intensity White Light. Introducing smoke in 15 second intervals will allow less pressure into the EVAP System. When the system is less pressurized, the smoke will sometimes escape in a more condensed manner.
- A temporary blockage in the EVAP canister purge solenoid valve, purge pipe or EVAP canister could cause an intermittent condition. Inspect and repair any restriction in the EVAP system.
- To improve the visibility of the smoke exiting the EVAP System, observe the suspected leak area from different angles with the J 41413-SPT .
- Reviewing the Failure Records vehicle mileage since the diagnostic test last failed may help determine how often the condition that caused the DTC to be set occurs. This may assist in diagnosing the condition.
- A condition may exist where a leak in the EVAP System only exists under a vacuum condition. By using the scan tool PURGE/SEAL function to create a vacuum, seal the system and observe the FTP parameter for vacuum decay, this type of leak may be detected.
- For intermittent conditions, refer to Intermittent Conditions .

DTC P0442

System Description

This diagnostic tests the Evaporative Emission (EVAP) System for a small leak when the key is turned OFF and the correct conditions are met.
Heat is transferred into a vehicle fuel tank while the vehicle is operating. When the vehicle is turned OFF, a change in the fuel tank vapor temperature occurs, which results in corresponding pressure changes in the fuel tank vapor space. This change is monitored by the control module using the fuel tank pressure sensor input. The control module then makes a judgement on the integrity of the system. With a 0.51 mm (0.020 inches) leak in the system, the amount of pressure change observed is significantly less than that of a sealed system.
If the control module detects a pressure change less than a calibrated amount, DTC P0442 sets.

Conditions for Running the DTC

- DTCs P0101, P0102, P0103, P0106, P0107, P0108, P0112, P0113, P0116, P0117, P0118, P0125, P0335, P0336, P0443, P0446, P0449, P0452, P0453, P0455, P0496, P0500, P0502, P0503, P1683 are not set.
- The diagnostic runs once with a 10 hour minimum between tests after a fail.
- DTC P0455 must run and pass.
- The start up intake air temperature (IAT) is between 4-30°C (39-86°F).
- The start up engine coolant temperature (ECT) is less than 30°C (86°F).
- The start up IAT and ECT are within 8°C (15°F).
- The barometric pressure (BARO) is more than 74 kPa.
- The ambient air temperature is between 2-32°C (36-90°F).
- The engine run time minimum is 10 minutes.
- The odometer displays more than 10 miles.
- The vehicle has traveled more than 3 miles this trip.
- The ECT is more than 70°C (158°F).
- The fuel level is between 15-85 percent.
- The ignition is OFF.

Conditions for Setting the DTC

The control module detects a pressure change that is less than a calibrated amount.

Action Taken When the DTC Sets

- The control module illuminates the malfunction indicator lamp (MIL) when the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Freeze Frame/Failure Records.

Conditions for Clearing the MIL/DTC

- The control module turns OFF the malfunction indicator lamp (MIL) after 3 consecutive ignition cycles that the diagnostic runs and does not fail.
- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

Diagnostic Aids

- To help locate intermittent leaks, use the J 41413-200 Evaporative Emissions System Tester (EEST) to introduce smoke into the EVAP system. Move all EVAP components while observing smoke with the J 41413-SPT High Intensity White Light.
- To improve the visibility of the smoke exiting the EVAP system, observe the suspected leak area from different angles with the J 41413-SPT .
- For intermittent conditions, refer to Intermittent Conditions .

"Reed, Bryan"
<BReed@US.TIAuto.com>

To: "'dave.reek@gm.com'" <dave.reek@gm.com>
Subject: Corvette Rates

08/06/2004 04:39 PM

Dave,
Here is the 5 week release schedule that Ossian is seeing from Bowling Green.

8/2	720
8/9	636
8/16	1044
8/23	1224
8/30	1884

(Please note all numbers are individual tanks, not sets.)

TI can produce 2300 total tanks per week. For SPO, take 2300 and subtract the weekly release.

At this time, these numbers are for discussion only. TI needs to discuss any increases for SPO prior to release. TI requires a GM contact that will interface between SPO and Bowling Green. TI's is concerned that SPO and Bowling Green do not interact and any increase in total tank volume above 2300 per week is not acceptable.

Further discussion is needed prior to any increased order from SPO.

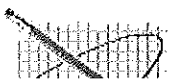
Please call me if you have any questions.

Regards,

Bryan D. Reed

Sr. Program Manager
Fuel Systems

TI Group Automotive Systems LLC
1227 Centre Road
Auburn Hills, MI 48326
Office: (248) 209-3403
Fax: (248) 377-1808
Mobile: (248) 895-5999
email: breed@us.tiauto.com



Terry M. Stone
09/17/2004 08:16 AM

To: Carl Smith/US/GM/GMC@GM
Subject: 2004 MY Evap Diagnostics

Carl,

We are investigating an issue on certain 2004 MY Corvette and XLR fuel tanks. I need to verify that the Evap. leak detection diagnostics (large and small) function properly on both vehicles. I also need to understand that the conditions to set and clear the codes are correct in eSI. Please forward this on to the proper engineers to verify the conditions in the links below are correct. If possible, please provide leak detection capabilities for both controllers/vehicles for comparison.

I will be testing tanks that leak in both vehicles soon. I am trying to locate vehicles for this testing. Do you have any? If I use a 2002 C5, and we reflash or replace the PCM with the 2004 cals/software, will this work? I will be using a Tech2 and performing the purge/seal test in the Tech2. Do you know what the effective diameter threshold is that it uses to determine pass/fail? Has there been any development of a Service Bay Test (SBT) for small leak?

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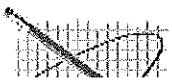
2004 XLR P0442
http://service.gm.com/servlets/BlobShtml?ShtmlFile=951732&psdid=423&evc=sm

Thanks,
Terry



Terry M. Stone
09/15/2004 05:49 PM

To: DAVE REEK/US/GM/GMC, John Murawa/US/GM/GMC@GM
Subject: More Verbatims

More verbatims from TI's Dealer Call file that Dean just sent.

Gas leak when filling	Seam leaking on left tank
Fuel smell from under vehicle	Pressure tested, replaced LH tank by crossover
Service engine soon light is on	Code P0455 large evap leak found left fuel tank has [illegible] leak where [illegible] into tank
Can Smell Fuel at a stop	Left tank leak [illegible] crossover to tank leak
[illegible]	[illegible]
Left fuel tank leaking fuel	
Bad gas smell	[illegible]
Fuel pouring out the bottom of the car	Replaced left asm per TAC
Fuel Smell from under of the vehicle	[illegible]
Strong smell of gas	[illegible]
Veh smells like fuel and saw fuel dripping from drivers side	Fuel leaking from Left tank, Replace
Odor of fuel	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
When putting gas in vehicle it leaks on the ground and smells	Fuel leaking by crossover pipe, replace
[illegible]	[illegible]

Terry M. Stone
09/15/2004 12:49 PM

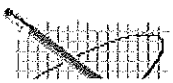
To: DAVE REEK/US/GM/GMC@GM
Subject: Verbatims

Dave,

Here is the list of the verbatims with some highlighted (bold) for the meeting tomorrow. The verbatims that show there was an EVAP code set are marked in red text.


Verbatims.xls

Regards,
Terry



Terry M. Stone
09/14/2004 11:30 AM

To: "Hawley, Dean" <DHawley@US.TIAuto.com>
Subject: Request for Update

Dean,

Please send the latest list of dealer calls.

Please provide leak flow data of the tanks TI has received and tested.

Please provide updates on the investigation around the bank and other issues at Meriden which may explain the repeated use of the suspect material.

Please update and send the Open Issues List.

Please ensure that TI Engineering provides the latest BOM to address the lessons learned for part and tier supplier tracking.

I also need an update of the non-tank warranty issues prior to the Executive Review this Thursday. This needs to include an update on the FLVV issue, seized pumps due to fuel runout, tank sender opening too small, and open senders. I have a sender from a C6 with bent wiper fingers and I should have another one today from another C6 that goes open when the LH tank is full. The bent wiper issue should have been fixed last fall and it should have been caught in the end-of-line test that includes the sender sweep with side loading.

Regards,
Terry

"Ceh, David" <DCeh@US.TIAuto.com>

08/02/2004 04:48 PM

To: michael.j.french@gm.com
Subject: FW: Corvette rates

Mike -

Here is the Corvette production schedule from Ossian for the month of August. The column labeled Service available is the qty of tanks that Ossian can produce for service each week. Please note that this number must be divided by 2 for complete sets.

David J Ceh

Quality Director - TI NA Fuel Systems

Office - (248)-209-3372

Cell - (586)-243-8632

From: Stumph, Tim
Sent: Monday, August 02, 2004 4:26 PM
To: Ceh, David
Cc: Hulen, Donald; Walker, Rick; Gorman, Bill
Subject: Corvette rates

Week	OE Demand	Service available	Total
8/2	720	1280	2000
8/9	636	1364	2000
8/16	1044	956	2000
8/23	1224	776	2000
8/30	1884	116	2000

Please note all numbers are individual tanks not sets.

Tim

Michael J. French
08/02/2004 08:55 AM

To: "Reed, Bryan" <BReed@US.TIAuto.com>
Subject: Re: Updated: Corvette 2" QC Update

Bryan

Please include Dave Reek on this report in the future.

"Reed, Bryan" <BReed@US.TIAuto.com>

"Reed, Bryan" <BReed@US.TIAuto.com>
07/30/2004 03:53 PM

To: "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>, "Ceh, David" <DCeh@US.TIAuto.com>, "Stange, Marshall" <MStange@US.TIAuto.com>, "Quick, Chris" <ChrisQuick@US.TIAuto.com>, "Blanco, Elco" <EBlanco@US.TIAuto.com>, "Bridgeman, Sherri" <SBridgeman@US.TIAuto.com>, "Ruggles, Mark" <MRuggles@US.TIAuto.com>, "Erwin, John" <JErwin@US.TIAuto.com>, "Kambakhsh, Manouchehr" <MKambakhsh@US.TIAuto.com>, "Terry Stone (E-mail)" <terry.m.stone@gm.com>, "Minoo Daroga (E-mail)" <minoo.daroga@gm.com>, "'michael.j.french@gm.com'" <michael.j.french@gm.com>, "'gary.e.pritchard@gm.com'" <gary.e.pritchard@gm.com>, "Gunter, John" <jgunter@US.TIAuto.com>, conrad.t.schmidt@gm.com, art.spong@gm.com, len.tillard@gm.com, lisa.a.jesme@gm.com, david.zimmerman@gm.com, michael.parrow@gm.com, joseph.paglialunga@gm.com, daniel.r.stec@gm.com, paul.s.chapman@gm.com, george.nagrant@gm.com, "'anilkumar.pitta@gm.com'" <anilkumar.pitta@gm.com>, "Stumph, Tim" <TStumph@US.TIAuto.com>, "Maxwell, Cindy" <CMaxwell@US.TIAuto.com>, "'charles.gossel@gm.com'" <charles.gossel@gm.com>
cc:
Subject: Updated: Corvette 2" QC Update

When: Monday, August 02, 2004 9:00 AM-10:00 AM (GMT-05:00) Eastern Time (US & Canada).

~~*~*~*~*~*~*~*~*

All,
This is a updated notice for our daily reviews of the Corvette 2" QC status. The open issues matrix is attached. I have also attached the meeting actions items and a preliminary agenda for next weeks visit to Viking & PolyOne.

<<GM Meeting Action Items 073004.pdf>> <<Corvette 2 Inch QC Open Issues List 073004.pdf>> <<Viking_PolyOne Visit agenda.ppt>>

Conference Access:
Toll Free: 1-888-566-8440
Toll: 1-719-785-4400
Passcode: 336263

Please call me if you have any questions.

Regards,

Bryan D. Reed

Sr. Program Manager
Fuel Systems

TI Group Automotive Systems LLC
1227 Centre Road
Auburn Hills, MI 48326
Office: (248) 209-3403
Fax: (248) 377-1808
Mobile: (248) 895-5999
email: breed@us.tiauto.com


GM Meeting Action Items 073004.p


Corvette 2 Inch QC Open Issues List 073004


Viking_PolyOne Visit agenda.p

GM Meeting Action Items:

(7/30/04)

Crack Analysis: To Do

Item Number	Task	Method of Analysis	Material / LOT	Quantity of Parts Required	Responsibility	Target Due Date
A.	Define crack initiation site	Optical / SEM examination	2637	2	GM	8/5/04 – 12:00 noon
B.	Characterize crack propagation	See Item A.	2637	NA	GM	8/5/04 – 12:00 noon
C.	Cross section field failure for glass orientation at the following bayonet locations: A 4 O' clock – B 1-2 O'clock – C 8-9 O'clock	See Item A.	2637	1 of each	GM	8/5/04 – 12:00 noon
C.1	Cross section field failure for glass orientation at the following bayonet locations: A 4 O' clock – B 1-2 O'clock – C 8-9 O'clock	See Item A.	2337, 2540, 2697, 2735, 2740	TBD Samples to be used from lab testing.	TI-Rastatt	TBD – Long Term
D.	Same as previous request but on current production component.	See Item A.	Current Production	1	GM	8/5/04 – 12:00 noon
D1	Same as D.	See Item A.	2337, 2540, 2697, 2735, 2740	TBD Samples to be used from lab testing.	TI-Rastatt	TBD – Long Term
E.	Re-do mold flow with high & low melt flow index				TI	8/5/04 – 12:00 noon
F.	Add lot #'s to MFI/OIT presentation. Highlight on part dated Dec, 03.	NA	NA	NA	TI-Rastatt	8/5/04 – 12:00 noon
G.	Test bad parts using bending moment	Bar Test	2637	TBD	TI-Auburn Hills	TBD
H.	Perform tensile testing and melt flow on all parts. Perform both high and low load melt flow analysis.	High and Low Load.	2697	7	TI-Ossian	8/5/04 – 12:00 noon
I.	Attempt to extract tensile bars from molded parts	Tensile	Current production	12	GM	8/5/04 – 12:00 noon
I1	TI or VP to mold ASTM bars from current production pellets. Bars to be delivered to GM by Tuesday. GM to deliver data by 8/5/04	Tensile	Current Production	12	TI-AH	8/5/2004
K.	Complete melt index using 190 deg C and 230 deg C on tensile bars obtained from Lot #2697.	MFI	2697	7	TI-Ossian	8/3/2004
L.						
M.						
N.						
O.						

Michael J. French
08/02/2004 08:31 AM

To: Christine Sitek/US/GM/GMC@GM
Subject: Re: Fuel tanks

This is what I know at this point:

1. Supplier - TI Automotive
2. 2004 Chevrolet Corvette and Cadillac XLR
3. Population - 10,000 to 16,000 vehicles
4. Cost - $9.6M (Very rough estimate)
5. Failure mode - We have a number of vehicles that have experienced seepage of fuel during fuel fill. The customer has noticed fuel odor and in some cases the SES light was set due to the vapor leak on the tank.
6. Root Cause - Not known at this time. It appears that we may have a tiered supplier that may have used a plastic resin with a melt flow index that was much higher than recommended by the specification and by the GM Materials Group.
7. Action Plan - There is daily conference calls on this with both Dave Reek and Dan Stec engaged. We are in the process of returning 18 fuel tanks from the field to assist in the determination of root cause.
8. RED X (Tom Freeman) is participating in the review of the 18 tank returns to aid in the development of the root cause.

Dave

Pull together a listing of the tank issues that had a recall in 2004. Include the following:

1. Supplier name
2. Vehicle line / model year
3. Cost
4. Number of vehicles
5. Root cause / failure mode
6. Include this issue and show the root cause is still under investigation

Reed, Bryan

From: terry.m.stone@gm.com
Sent: Thursday, August 05, 2004 9:12 AM
To: Reed, Bryan
Cc: gary.e.pritchard@gm.com; paul.s.chapman@gm.com; dave.reek@gm.com; thomas.freeman@gm.com; michael.j.french@gm.com
Subject: BVH Plant Meeting - Action Items


BMAP Checklist Concept Card.do...


PPAP3Rollout Presentation Fina...


Rollout QA Documentation.doc

----- Forwarded by Terry M. Stone/US/GM/GMC on 08/05/2004 09:07 AM -----

"Frankish, Jeff" <Jeff.Frankish@PolyOne.com>
08/05/2004 07:12 AM

To: Anil Pitta <anilkumar.pita@gm.com>, Beryl Prusinoski <Beryl.Prusinoski@PolyOne.com>, Calvin Lee <Calvin.Lee@PolyOne.com>, Daniel Stec <daniel.r.stec@gm.com>, David Ceh <dceh@us.tiauto.com>, Jim Moore <jmoore@vikingplastics.com>, Joe Smith <Joe.Smith@PolyOne.com>, Kurt Walker <Kurt.Walker@PolyOne.com>, Mark Ruggles <mruggles@us.tiauto.com>, Minoo Daroga <minoo.daroga@gm.com>, Pierre Delbarre <pdelbarre@de.tiauto.com>, Ramesh Saligrama <rsaligrama@us.tiauto.com>, Sally Kline <Sally.Kline@PolyOne.com>, Scott Taylor <staylor@vikingplastics.com>, Susan Addley <saddley@vikingplastics.com>, Terry Stone <terry.m.stone@gm.com>, William Schon <schonw@polymerdiagnostics.com>
cc:
Subject: BVH Plant Meeting - Action Items

Following are the consolidated action items from our discussion during the BVH plant visit on 8/4/04:
1) GMP Certification Package - Complete remaining items on Test Sampling Plan & resubmit to include Special Characteristics identified: (PolyOne - asap)
* Additional data needed: minus 40 C & 23 C Notched Izod data from Feb '04 BVH production lot (#2665852).
2) Forward copy of Solvay response on MFR reporting & lot selection issues sent to Calvin Lee - resolve GMP.PE.050 MFR listing issue (PolyOne-asap)
3) Complete Flow, FEMA & Control Plan for DP-9052-3-1000 compound (PolyOne - prepare to present at mtg on 8/16 at T I Automotive)
* Use latest AIAG format - correlate to process stages.
* Include: Test Sampling Plan (process, procedure & frequency), designate production on BVH Line D (SSE) with specified screw design, use of rare earth magnets and defined min/max temperature profile values.
* Provide Viking with any special notifications regarding Cert

Values
and/or base resin MFR.
* Review in-plant testing procedures and confirm how any
out-of-spec
issues will be handled and communicated.
* Special Characteristics identified - PolyOne to report on COA
to
Viking:
* HLMFI range = 6-9 - test & report per each gaylord using
3-chamber
thief (1 reading/box).
* Ash Content range = 14-16 (15+/- 1%).
* Flex Mod = 2,100 MPA (min) per ISO.
* Pellet Count = 25 min to 50 max.
* Confirm Solvay COA specific lot MFR value.
4) Document volume discrepancy from DYER Jan lot (PolyOne #2626334) - 3,600
lbs produced vs 2,292 lbs shipped. (PolyOne - asap)
5) PPAP process driven by customer request to PolyOne to require
notification of change in plant, line, process, etc. (PolyOne/Viking).
6) Copy of AIAG documentation from Detroit public session on 1/12/00 -
interpretation of PPAP for Bulk Material requirements (PolyOne - details
attached per J.Smith).

<<BMAP Checklist Concept Card.doc>> <<PPAP3Rollout Presentation Final -
print version.ppt>> <<Rollout QA Documentation.doc>>
Regards,

Jeff Frankish
PolyOne Corporation
Engineered Materials - GP
Phone: (770) 271-5922
Cell: (770) 634-8602
E-mail: jeff.frankish@polyone.com

(See attached file: BMAP Checklist Concept Card.doc)(See attached file:
PPAP3Rollout Presentation Final - print version.ppt)(See attached file:
Rollout QA Documentation.doc)

APPLICABILITY OF PPAP TO BULK MATERIALS

- For Bulk Materials, PPAP is **not** required unless requested by your customer.
- OEM PPAP approval of a bulk material eliminates the need to complete PPAP for that material at other levels in the supply chain.
- Suppliers are responsible for applying PPAP to their subcontractors of ingredients which have supplier-designated special characteristics.
- When PPAP is requested, section II specific requirements may also apply.

BULK MATERIALS REQUIREMENTS CHECKLIST / PPAP 3RD EDITION CROSS REFERENCE

Checklist Element	PPAP 3rd Edition Cross Reference
Product Design &Development Verification	
Design Matrix	Pg. 4, Paragraph I.2.2.4 Pg. 69, Appendix F, Paragraph F.5.1
Design FMEA	Pg. 4, Paragraph 1.2.2.4 Pg. 72, Appendix F, Paragraph F.7
Special Product Characteristics	Pg. 71, Appendix F, Paragraph F.6
Design Records	Pg. 3, Paragraph 1.2.2.1 Note 2
Prototype Control Plan	Pg. 8, Paragraph 1.2.2.12 Pg. 76, Appendix F, Paragraph F.9
Appearance Approval Report	Pg.9, Paragraph 1.2.2.14 (Not Bulk Specific)
Master Samples	Pg. 10, Paragraph 1.2.2.17 Pg. 79, Appendix F, Paragraph F.13
Test Results	Pg. 5, Paragraph 1.2.2.8 (Not Bulk Specific)
Dimensional Results	Pg. 5, Paragraph 1.2.2.7 Note 2
Checking Aids	Pg. 10, Paragraph 1.2.2.18 Note
Engineering Approval	Pg. 3, Paragraph 1.2.2.3
Process Design & Development Verification	
Process Flow Diagrams	Pg. 4, Paragraph 1.2.2.5
Process FMEA	Pg. 4, Paragraph 1.2.2.6 Note Pg. 75, Appendix F, Paragraph F.8
Special Process Characteristics	Pg. 71, Appendix F, Paragraph F.6
Pre-launch Control Plan	Pg. 8, Paragraph 1.2.2.12 Pg. 76, Appendix F, Paragraph F.9
Production Control Plan	Pg. 8, Paragraph 1.2.2.12 Pg. 76, Appendix F, Paragraph F.9
Measurement Systems Studies	Pg. 8, Paragraph 1.2.2.10 Pg. 77, Appendix F, Paragraph F.11
Interim Approval	Pg. 17, Paragraph 1.5.2.2 Pg. 82, Appendix F, Paragraph F.14
Product & Process Validation	
Initial Process Studies	Pg. 6, Paragraph 1.2.2.9 (Entire Section) Pg. 77, Appendix F, Paragraph F.10
Part Submission Warrant(CFG-1001)	Pg. 9, Paragraph 1.2.2.13
Elements to be completed as needed	
Customer Plant Connection	Pg. 67, Appendix F, Paragraph F.3
Change Documentation	Pg. 11, Paragraph 1.3 (Entire Section)
Subcontractor Considerations	Pg. 67, Appendix F, Paragraph F.2 Applicability
Plan agreed to by:	

DFMEA SEVERITY RATING TABLE FOR BULK MATERIALS

Stakeholder	Effects of Failure	Severity
Consumer	Owner Safety Problem	10
(Vehicle Buyer)	Major Owner Dissatisfaction (Loss of Owner Loyalty)	8
	Moderate Owner Dissatisfaction (Inconvenience)	6
	Minor Owner Dissatisfaction (Annoyance)	4
Customer	Plant Safety Problem	10
(Vehicle Mfg'r)	Possible Recall	9
	Line Stoppage	8
	Warranty Costs	7
	Scrap	7
	Regulatory Penalty	7
	Moderate Rework (<20% or moderate repair)	5
	Plant Dissatisfaction	4
	Minor Rework (<10% or simple repair)	3

DFMEA OCCURENCE RATING TABLE FOR BULK MATERIALS

Formulation Occurrence Rating	FREQUENCY		
TYPE OF EVIDENCE	LOW	MODERATE	HIGH
Actual Experience	1	4	7
Similar Experience	2	5	8
Assumption	3	6	9
No Background			10

Notes: Actual Experience: Obtained from appropriate experimentation on the specific final product and the potential failure mode.
Similar Experience: Based upon similar products or processes and the potential failure mode.
Assumption: Based upon a clear understanding of the chemical impact of the material and the potential failure mode.

Frequency Definitions:
- High is defined as Repeated Failures
- Moderate is defined as Occasional Failures
- Low is defined as Relatively Few Failures

DFMEA DETECTION RATING TABLE FOR BULK MATERIALS

Detection by Design Control	TEST METHOD R&R%		
QUALITY OF EVIDENCE	<30%	30% - 100%	>100%
DOE (Response Surface Analysis)	1	2	7
Screening Experiments	3	4	8
Assumption/Experience	5	6	9
No Evidence			10

Notes: DOE (Response Surface Analysis): Symmetric design space analyzed with appropriate statistical tools.
Screening Experiments: Screening design or ladder evaluation strategically set to develop DOE.
Assumption/Experience: Information/data based upon similar products or processes.

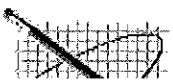
BULK MATERIALS WORK GROUP
PPAP3rd EDITION ROLLOUT QUESTIONS AND ANSWERS (1/12/2000Sessions)

Question	Answer
Applicability:	
• Please clarify: " for Bulk Materials, PPAP is not required unless requested. i.e. a submission is not required or a package is not required.	The default condition for bulk materials is that PPAP is not required unless requested by the customer. There is no change in the QS-9000 requirements under 4.2 and 4.4 elements for APQP work in managing change.
• For a QS audit are waivers needed from the customer for a PPAP that is not needed?	With the default condition being that PPAP is not required unless requested, there is no need for waivers from the customer.
• To what level along the supply chain will documented evidence of compliance to this standard be required? i.e. a material that is used in another suppliers product to the customer.	Below tier 1 (tier 2 or Subcontractors) evidence of PPAP is only required if the product is designated as a special characteristic in the tier 1 company's product.
• Are annual re-validations of PPAPs required?	The PPAP approval is generally valid for the life of that product. If the product undergoes a change or modification, the management of change criteria come into play and a new PPAP may be required dependent on the level of change. The customer may have a process of review requiring some test or performance evaluation on a periodic basis.
• Who passes judgement on the grouping of a supplier's family of products for PPAP activity and what course of action should suppliers take?	The supplier should present the case for grouping families to the customer, but the customer will make the final decision. The customer must feel comfortable that their risk is minimized.
• Are aesthetic materials in roll-good form considered bulk material or parts? i.e. cloth, vinyl, etc.	Materials such as those described are considered bulk materials. Refer to page 67 in the PPAP manual for more definition on bulk materials.
• What types of bulk materials were considered during BMAP work other than paint and sealers?	The entire bulk industry and it's associations were invited to participate in the process, Most of the industries participated in portions of the process. Paints, sealers, polymers, fabrics, chemicals, solvents, fuels and lubricants, plastics, Chemical Manufactures Association, adhesives and rubber were also represented.
• What is the definition of a bulk material?	Refer to page 67 F.2 Applicability, for more information on defining bulk materials. A definition is also included on page 87 in the glossary.
• Does a bulk material supplied from a tier 2 supplier to a tier 1 supplier need OEM customer approval?	Below tier 1 (tier 2 or Subcontractors) PPAP is only required if the product is designated as a special characteristic in the tier 1 company's product.
• What was the industry intent of use of qualified Labs for testing? *Scenario:* Paint supplier provides performance testing services for tier 1 supplier on parts using their paint.	In the scenario described, the paint supplier providing test service to their tier 1 customer, is in fact providing outside testing services, and will have to abide by the QS-9000 requirements to become certified to continue that service.
• For COA's, can ISO registered facilities test results be used for bulk material commodities?	***? Kristi please get the response.???***

• If a product doesn't meet requirements but the customer is happy, doesn't that mean that the requirements are wrong?	The customer requirements must always be met or re-negotiated on the basis of new data.
• Should we expect to see or receive PPAP documents from plastics and resin suppliers on request?	If these suppliers meet the criteria for performing PPAP, and the requirements are spelled out in the Bulk Materials Requirements Checklist, then you can expect to see PPAP documents.
• Does QS-9000 4.2.4.2 (suppliers should utilize a part approval process for subcontractors) apply only for designated special characteristics?	For Bulk Materials, the answer is yes. It is however in your best interests to use the tools in PPAP .
• What can you do when the OEM requires a specific subcontractor and that subcontractor refuses to provide a PPAP, or COA's, or to respond to complaints?	You can negotiate with the customer for relief to an alternate sub contractor.
• What should a supplier do when a subcontractor does not want to do PPAP work, particularly early in the process when volumes are low and do not support the effort?	Your alternatives are to negotiate with the sub contractor and/or search for an alternate sub contractor. Focus on the value added for both the subcontractor and the supplier should be emphasized. The work effort can be negotiated through the Bulk Materials Requirements Checklist application.
• Is the inclusion in an OEM Approved Source List considered "OEM PPAP"?	No, the inclusion on an OEM Approved Source List, means the material has engineering approval. PPA may still be required to assure the customer of your ability to consistently produce that product.
• Is there any clarification planned for Tier 1 parts suppliers (customers), so they understand bulk material requirements are different than parts?	***????? Kristi please obtain a response????***
• When a bulk material supplier (fabric) has an OEM customer approval, what will my requirements be? Will I have to re-certify every year?	The PPAP approval is generally valid for the life of that product. If the product undergoes a change or modification, the management of change criteria come into play and a new PPAP may be required dependent on the level of change. The customer may have a process of review requiring some test or performance evaluation on a periodic basis.
• If an OEM approval works through the supply chain, does an OEM waiver work for all who use the bulk material?	No, with the introduction of PPAP 3rd edition, the default is PPAP is not required unless requested, therefore waivers are not needed.
Design Development and Validation:	
• On the Design Matrix if unknown is checked, may we continue with the process or do we stop and address that issue?	You may continue the process as it will be addressed in the DFMEA, but it may be more efficient to address the unknown as quickly as possible to determine if unknown is a high impact item requiring inclusion in the DFMEA..
• What does "Robust Threshold Range" mean? i.e. Over and under what?	The units are specified in column 5 of the Design Matrix on page 70.
• Do you get the RPN by multiplying the failure (consumer) X the failure (customer) X the occurrence X the detection?	No, just one severity rating is used and it would be the most severe of the ratings.
• At what RPN value are you required to implement improvements on a DFMEA or PFMEA?	No specific RPN is required. The intent is to utilize the entire range of 1 – 1000, and then select the upper 20 to 25% as action items.

• Do you have to provide documented evidence of the "similar experience" basis used for rating DFMEA occurrence?	This evidence would normally be listed or referred in the current controls column of the DFMEA. A customer may want to review the basis of your decisions as well.
• Why is "non compliance to a Government regulation" a "10" for a PFMEA severity ranking, but only a "7" for "Regulatory penalty" in the DFMEA severity scale?	The intent of the 10 in the severity for Government Regulations is tied to FMVSS requirements. I.e Safety rates the 10.
• Is a submission required for a reduced RPN on a Design DFMEA with no change in the finished product?	No submission or notification ism required for a reduced RPN. However, this assumes that no major change to the Design Matrix is made to accomplish the improvement.
• For the application of family groupings for DFMEA's, would the grouping be by performance or by technologies?	The groupings would be accomplished by Technologies.
• How can we meet the design record requirements for bulk materials, when they are proprietary representing millions of dollars in investment?	The default submission level for Bulk materials is Level 1, and records are maintained at the suppliers location. The customer reviews but does not take a copy of the documents.
• Would a batch card be acceptable as a PFD, assuming it contains order of addition, processing information, etc.?	Although this is customer specific, it is generally acceptable. This can be agreed to in the Bulk Materials Requirements Checklist.
Control Plans:	
• Would a change in a control chart type specified in a control plan for a special characteristic require customer notification and possible resubmission?	Since the control plan would deal with special characteristics, the change would be considered moderate and would require customer notification.
• How does the Prototype Control Plan apply to shelf or commodity items from a bulk supplier?	The Prototype Control Plan, when required, is used for the completion of the development process and would generally not apply to off the shelf commercial commodity items. If it were a special characteristic for a supplier, it may be required.
Measurement Systems Analysis:	
• I thought the MSA for standardized test methods were needed to quantify the effects of aging / wear of the test and variation due to sample preparation. Is that no longer important?	Measurement systems analysis is important and required in QS-9000 4.11 element. It is important to know the level of variation due to measurement, as it comes into play in many of the Bulk Material PPAP requirements.
Process Capability Studies:	
• What are CpK minimum requirements for bulk materials?	With the introduction of PPAP 3rd edition, the minimum requirements are negotiable with the customer.
• What is a definition of "Statistical Control"	A definition of Statistical Control is a process with normal distribution contained within upper and lower control limits, determined through the voice of the process.
• Can we avoid supplying PpK or CpK in bulk PPAP's?	Requirements for Process studies are negotiable through the Bulk Materials Requirements Checklist. For the reasons stated in the manual, PpK and CpK are usually not meaningful.

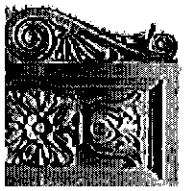
General Questions:	
• Is training being provided to registrars?	The PPAP training provided through the AIAG is being upgraded to include the changes in the 3rd edition.
• How did the changes in PPAP 3rd edition alter the requirements of QS-9000 section 4.2 APQP requirements?	PPAP 3rd edition does not alter the requirements of QS-9000 section 4.2 APQP.
• To what extent have registrars / RAB's been made aware of the bulk materials changes?	Registrars were invited to participate in the Bulk materials work group process. There was some review from this group. AIAG provides all registrars with the manual on its release.
• If you are formulating to a dictated OEM material specification, who is design responsible?	If you consider the design or formulation to be proprietary, you are design responsible.
• Will a Bulk Materials Requirements Checklist be required for currently approved and active materials?	The Bulk Materials Requirements Checklist would come into play for currently approved and active products at such time that the product undergoes at least a reportable (moderate) change.
• If a supplier has waivers or is determined not to be design responsible, than can the "Product Design and Development Verification" section of the Bulk Materials Checklist Requirements be omitted?	The entire Bulk Materials Requirements Checklist would be reviewed for applicability. For a non design responsible supplier, it is likely that there would be minimal requirements from the "Product Design and Development Verification" section. The requirements are negotiated with the customer.
• Are any of the forms available in spreadsheet format?	***???? Kristi please provide this response????***
• How do I learn about committees to develop upgrades to QS-9000 standards, and how can I get involved?	***???? Kristi please provide this response????***
• Is the PowerPoint presentation available for purchase, and use in our organization for training?	The presentation is available at no cost by Emailing Charles.L.Hickson@USA.Dupont .com



Terry M. Stone
07/28/2004 04:51 PM

To: Thomas Freeman/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM
Subject: Questions for meeting 9/29/04

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/28/2004 04:50 PM -----



Anilkumar Pitta
07/28/2004 04:36 PM

To: rsaligrama@us.tiauto.com
cc: Terry Stone, George.nagrant@gm.com, minoo.daroga@gm.com, Gary D. Veghts/US/GM/GMC@GM, "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>, "Ceh, David" <DCeh@US.TIAuto.com>, ChrisQuick@US.TIAuto.com
Subject: Questions for meeting 9/29/04

Ramesh,

Could you please have most, if not all of these questions answered in regards to Viking's molding process:

1. Does the mold have cold/warm spots?
2. Can we see a temperature profile in the mold flow or mold cool analysis?
3. For the trip we would like to get a temp. profile of the mold - Ramesh does TI have a IR pyrometer or some other tool to accomplish this during our visit with Viking?
4. Skin/core condition - is there a resin rich surface?
5. Are we seeing glass orientation?
6. TI's conclusion reports glass concentration in the crack location - can we run an ash content in the crack region to quantify?
7. What is the gate size and type used? Is it an edge gate?
8. Can we run a GC/mass spec to get a M.W. distribution?
9. Is the cross-over pipe location considered part of the interior, meaning is it well protected? How about the tanks?
10. GM Materials would like to get a couple samples for our lab - glass dist. and orientation (if possible).
11. TI - we need to see a copy of the actual failure analysis report!

Best Regards,

Anil Pitta

Product Development

Materials Engineering - Chassis & U/H Plastics
☎ tel: 586.575.7963 fax: 586.575.8163 ✉ mail: anilkumar.pitta@gm.com Pager: 866.287.3405

Mailcode: 480-210-3B1
30001 Van Dyke Avenue

Terry M. Stone
07/28/2004 01:49 PM

To: "Bridgeman, Sherri" <SBridgeman@US.TIAuto.com>, "Reed, Bryan" <BReed@US.TIAuto.com>
Subject: Re: Updated: Corvette 2" QC Update

Sherri,

The following will be going to Viking and Polyone on Aug 3-4:

1. Terry Stone - Lead DE
2. Minoo Daroga - Materials Engineer
3. Anil Pitta - Materials Engineer (pending GM Management approval)
4. Dave Reek - SQE FPE
5. Red-X Engineer (per Dave Reek)
6. Dan Stec - SQE ?
7. Another SQE (from Mike Parrow's group) per Conrad Schmidt ?

Please provide an itinerary.

Regards,
Terry

Terry M. Stone
07/28/2004 08:56 AM

To: Joan M. Stone/US/GM/GMC@GM
Subject: Re: Parts Restriction

Joan,

Please work with Marshall on this. The 10337582 should be checked for the date. Marshall can provide the breakpoint. The 10362744 is a newer PN, designed for C6 but serviceable to C5 and XLR. It should have a recent date and should be OK. Confirm with Marshall.

Thanks,
Terry

Joan M. Stone

Joan M. Stone
07/27/2004 06:39 PM

To: Terry M. Stone/US/GM/GMC@GM
cc: Art Spong/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, Dave Libby/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM, Len Tillard/US/GM/GMC@GM, Michael J. French/US/GM/GMC@GM, mstange@us.tiauto.com, Patrick C Antus/C/US/GM/GMC@GM, Christine M. Witt/US/GM/GMC@GM
Subject: Re: Parts Restriction

The SPO buyer has set up a new contract for the new 'source code' for the TI Automotive location in Indiana. All system updates shold be completed by Wed. - Thurs at the latest. New schedules will be loaded against the new source code at that time.

When you say 'pull all remaining stock' - do we ship back to TI Automotive? Scrap? I can resolve this with Marshall Strange if you prefer. The one piece of 10362744 is still intransit - the intransit piece of 10337582 was not located. We are talking about 3 pieces to 'pull'. I can place them on order writing control and not sell until I hear your direction.

Terry M. Stone

Terry M. Stone
07/27/2004 03:13 PM

To: Joan M. Stone/US/GM/GMC@GM
cc: Art Spong/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, Dave Libby/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM, Len Tillard/US/GM/GMC@GM, Michael J. French/US/GM/GMC@GM, mstange@us.tiauto.com, Patrick C Antus/C/US/GM/GMC@GM
Subject: Re: Parts Restriction

Joan,

From your reply (7-8-04):

SPO Inventory -
10337582 - 4 pieces- date on tank is 2/23/04. One more part is intransit from one SPO facility to another - will reply when part is received
10339514 - 0 inventory
10362744 - One piece is intransit from one SPO facility to another - will reply when part is received

At that time, 2/23/04 was not a concern and I was waiting for the update on the other two tanks. Now I

would suggest we pull all of the current stock as soon as we are sure that TI has orders for more tanks. Until then, TI can drop-ship tanks to dealers. They have done this recently on a limited basis.

Please update the distribution on the status of the tank orders.

Thanks for your help,
Terry Stone

Joan M. Stone

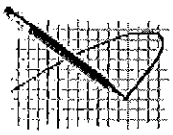
Joan M. Stone
07/27/2004 02:45 PM

To: Terry M. Stone/US/GM/GMC@GM
cc: Art Spong/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, Dave Libby/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM, Len Tillard/US/GM/GMC@GM, Michael J. French/US/GM/GMC@GM, mstange@us.tiauto.com, Patrick C Antus/C/US/GM/GMC@GM
Subject: Re: Parts Restriction

Terry - I responded to you with our date codes on the tanks on 7/8/04 (per your request of 7/2/04) - we only had 4 tanks and the date on the tanks was 2/23/04. There was no instruction for what to do with those tanks based on that date. I had no reply to the information - two tanks have sold - two of 10337582 are in inventory - can they be sold?

Based on direction from Mike French - WWP - I ordered (on 7/23) 330 pieces per part (10362744, 10337582) per week from TI Automotive beginning this week. I found out today that TI Automotive has changed plants from CT to IN and they are not seeing the orders nor are they shipping. I am trying to clarify with SPO buyer if the contract was requested to be changed (and also if PPAP was done with that tool move).

Terry M. Stone



Terry M. Stone
07/27/2004 01:40 PM

To: Patrick C Antus/C/US/GM/GMC@GM, Joan M. Stone/US/GM/GMC@GM, Dave Libby/US/GM/GMC@GM
cc: Michael J. French/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM, Len Tillard/US/GM/GMC, Art Spong/US/GM/GMC@GM, mstange@us.tiauto.com, "Reed, Bryan" <BReed@US.TIAuto.com>
Subject: Re: Parts Restriction

Pat,

From Marshall Stange at TI:

```
Terry,
          There is an AEC00521 number for a full sheet of pads. This is how
our plant orders the pads. Can we pull a GM number for this sheet ? It
would
be easier that ordering separate pads.
                                        Marshall
```

Are we going to require one full sheet of pads to be shipped with the tank or will TI install them prior to shipping?

Joan,

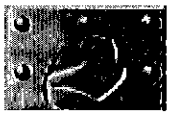
Have you checked or pulled these 5 tanks to ensure that they have a recent mold date on the front of the tank? Has there been a new orders for more tanks? 10362744 will be used for all previous LH tank P/Ns. 10337582 will be used for all RH tanks.

Dave,

Should we have TI install the pads to ensure positioning or should we specify to the tech to copy the old tank?

Regards,
Terry

Patrick C Antus



Patrick C Antus
07/27/2004 12:55 PM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Parts Restriction

To answer your first question Len Tillard has the answer. It seams the person I asked was overwhelmed with the same question.

10310054 and 10312858 have been added to tank assembly 10362744 with the proper quantities specified by Terry Stone.

10337585 has a quantity of 3 in the warehouse.
10363245 has a quantity of -3 in the warehouse.
10339514 has a quantity of 0 in the warehouse.
10362744 has a quantity of 0 in the warehouse.
10337582 has a quantity of 2 in the warehouse.

Patrick Antus
SPO Service Parts Engineer - Chassis
586-947-4818

Terry M. Stone

Terry M. Stone
07/27/2004 09:12 AM

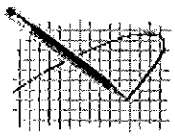
To: Patrick C Antus/C/US/GM/GMC@GM
cc: Art Spong/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, George Nagrant/US/GM/GMC, Len Tillard/US/GM/GMC, Michael J. French/US/GM/GMC@GM, mstange@us.tiauto.com, DAVE REEK/US/GM/GMC@GM
Subject: Re: Parts Restriction

Another question for you: Can you create a fuel tank service kit part number for the LH tank for 2003 (RPO FFS)and 2004 C5, all XLR, and all C6 to include the welded shell asm (10362744), 8 full isolator pads (10310054) and 3 half isolator pads (10312858)? or is there a pad kit number for the full sheet of pads for the LH tank.

Currently, the dealership technician has to pull 11 isolators from the old tank and put them on the new tank. This should help ensure that all of the pads are positioned correctly.

Thanks,
Terry

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/27/2004 08:57 AM -----



Terry M. Stone
07/26/2004 03:55 PM

To: Patrick C Antus/C/US/GM/GMC@GM
cc: Art Spong/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, George Nagrant/US/GM/GMC, Len Tillard/US/GM/GMC, Michael J. French/US/GM/GMC@GM, mstange@us.tiauto.com, DAVE REEK/US/GM/GMC@GM
Subject: Re: Parts Restriction

Pat,

After speaking with Art regarding Parts Restriction, that would be difficult and wouldn't take effect until about 90 days. Would it be possible for you or someone at SPO to notify us if any fuel tank is ordered and where it is being shipped?

Thanks,
Terry

Terry M. Stone

Terry M. Stone
07/26/2004 09:21 AM

To: Len Tillard/US/GM/GMC
cc: Art Spong/US/GM/GMC@GM, Michael J. French/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, mstange@us.tiauto.com, George Nagrant/US/GM/GMC, Patrick C Antus/C/US/GM/GMC@GM
Subject: Parts Restriction

Len,

Please place the following parts on restriction:

	C5	XLR	C6
	2003 (FFS) - 2004	2004-2005	2005
Tank Asm - Fuel LH - Welded Shell	10337585, 10363245, 10339514, or 10362744	10339514, 10362744	10362744
Tank Asm Fuel - Welded Shell	10337582	10337582	10337582

All LH tank shells can be replaced with P/N 10362744. This and 10337582 are what TI will be making and what SPO will be (or has) ordered in large quantity.

Thanks,
Terry

Terry M. Stone
07/27/2004 03:13 PM

To: Joan M. Stone/US/GM/GMC@GM
Subject: Re: Parts Restriction

Joan,

From your reply (7-8-04):

SPO Inventory -
10337582 - 4 pieces- date on tank is 2/23/04. One more part is intransit from one SPO facility to another - will reply when part is received
10339514 - 0 inventory
10362744 - One piece is intransit from one SPO facility to another - will reply when part is received

At that time, 2/23/04 was not a concern and I was waiting for the update on the other two tanks. Now I would suggest we pull all of the current stock as soon as we are sure that TI has orders for more tanks. Until then, TI can drop-ship tanks to dealers. They have done this recently on a limited basis.

Please update the distribution on the status of the tank orders.

Thanks for your help,
Terry Stone

Joan M. Stone

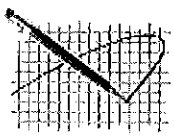
Joan M. Stone
07/27/2004 02:45 PM

To: Terry M. Stone/US/GM/GMC@GM
cc: Art Spong/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, Dave Libby/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM, Len Tillard/US/GM/GMC@GM, Michael J. French/US/GM/GMC@GM, mstange@us.tiauto.com, Patrick C Antus/C/US/GM/GMC@GM
Subject: Re: Parts Restriction

Terry - I responded to you with our date codes on the tanks on 7/8/04 (per your request of 7/2/04) - we only had 4 tanks and the date on the tanks was 2/23/04. There was no instruction for what to do with those tanks based on that date. I had no reply to the information - two tanks have sold - two of 10337582 are in inventory - can they be sold?

Based on direction from Mike French - WWP - I ordered (on 7/23) 330 pieces per part (10362744, 10337582) per week from TI Automotive beginning this week. I found out today that TI Automotive has changed plants from CT to IN and they are not seeing the orders nor are they shipping. I am trying to clarify with SPO buyer if the contract was requested to be changed (and also if PPAP was done with that tool move).

Terry M. Stone



Terry M. Stone
07/27/2004 01:40 PM

To: Patrick C Antus/C/US/GM/GMC@GM, Joan M. Stone/US/GM/GMC@GM, Dave Libby/US/GM/GMC@GM
cc: Michael J. French/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM, Len Tillard/US/GM/GMC, Art Spong/US/GM/GMC@GM, mstange@us.tiauto.com, "Reed, Bryan" <BReed@US.TIAuto.com>
Subject: Re: Parts Restriction

Pat,

From Marshall Stange at TI:

```
Terry,
          There is an AEC00521 number for a full sheet of pads. This is how
our plant orders the pads. Can we pull a GM number for this sheet ? It
would
be easier that ordering separate pads.
                                        Marshall
```

Are we going to require one full sheet of pads to be shipped with the tank or will TI install them prior to shipping?

Joan,

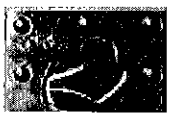
Have you checked or pulled these 5 tanks to ensure that they have a recent mold date on the front of the tank? Has there been a new orders for more tanks? 10362744 will be used for all previous LH tank P/Ns. 10337582 will be used for all RH tanks.

Dave,

Should we have TI install the pads to ensure positioning or should we specify to the tech to copy the old tank?

Regards,
Terry

Patrick C Antus



Patrick C Antus
07/27/2004 12:55 PM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Parts Restriction

To answer your first question Len Tillard has the answer. It seams the person I asked was overwhelmed with the same question.

10310054 and 10312858 have been added to tank assembly 10362744 with the proper quantities specified by Terry Stone.

10337585 has a quantity of 3 in the warehouse.
10363245 has a quantity of -3 in the warehouse.
10339514 has a quantity of 0 in the warehouse.
10362744 has a quantity of 0 in the warehouse.
10337582 has a quantity of 2 in the warehouse.

Patrick Antus
SPO Service Parts Engineer - Chassis
586-947-4818

Terry M. Stone
07/27/2004 02:15 PM

To: "Ceh, David" <DCeh@US.TIAuto.com>
Subject: SREA's and Meriden Issue

Dave,

I just faxed 2 SREA's related to the Viking component.

- We still need breakpoints for the radius change.
- We should discuss the increased rib change again.
- Was molding this part now difficult for Viking because the now had lower HLMI?
- There should be records at Viking for these changes.
- Were there any process changes around these tooling changes?
- Include these changes on the history timeline.

Please provide details on the new information from Meriden regarding the 3/1/04 (build date) car. Here's some questions/comments. Some of these were asked on the call today. Sorry for repeats:

- You have the tank, correct?
- You will test the part for HLMI to try to determine which lot it was made from. This doesn't help us on defining which cars are suspect.
- There are 128 parts in a box. How many parts were left when they discovered it?
- What happened to those parts?
- Were they running LH or RH when they discovered it?
- Did they quarantine the stock in the pipeline when they found the issue?

Please add to the open issues list:

- FPE paperwork needs to be completed. This is pending TI's testing/investigation.
- Provide digital pics of each returned part as received including the two tanks from the same car (VIN 45114833).

Regards,
Terry

Terry M. Stone
07/27/2004 12:29 PM

To: mstange@us.tiauto.com
Subject: Re: Warranty Data for Fuel Tanks

Marshall,

Here is the latest data. Please check for new cases.

Thanks,
Terry

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/27/2004 12:26 PM -----

Murray J. Pyle
07/27/2004 09:55 AM

To: Terry M. Stone/US/GM/GMC@GM
cc:
Subject: Re: Warranty Data for Fuel Tanks

as requested.

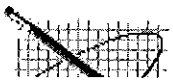
XLR and Corvette tank July 27.x

Murray James Pyle
GM NA Engineering
586 492-9801 (Phone only - NO Voice Mail)
248 874-9581 (Voice Mail)

Verbatim	Model Year	VIN	Production Date	Sale Date	Repair Date	Claim Process Date	Labor Operation		Customer Code	Trouble Code	Mileage at Repair	Repairing Dealer	State
	2004	1G1YY12S145106507	8/Sep/03	18/Sep/03	7/Nov/03	14/Nov/03	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	OB - OBDII Code used	1,908	VOSS CHEVROLET, INC.	OH
CUSTOMER STATES THAT WHEN PUTTING GAS IN VEHICLE IT LEAKS ONEVAP SMOKE TEST.CHECK FOR LEAKS.FOUND FUEL LEAKING FROM L-S FUEL TANK BY CROSSOVREPLACE LEAKY LEFT FUEL TANK AND CROSSOVER PIPE	2004	1G1YY12S245115054	24/Nov/03	27/Jan/04	5/Mar/04	9/Apr/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	1,224	JON HALL CHEVROLET, INC.	FL
	2004	1G1YY12S445101863	25/Jul/03	7/Oct/03	4/Nov/03	12/Dec/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	AV - VISUAL: UNUSUAL GAGE REA(	6G - COMPONENT-SHORTED	1,129	MARK ANTHONY CHEVROLET, INC.	NJ
	2004	1G1YY12S445125570	22/Mar/04	29/May/04	9/Jun/04	25/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2W - LOOSE	118	KELLEY CHEVROLET, INC.	FL
VEHICLE LEAKING FUEL GAS TANK (LH) CROSSOVER NECK TO TANK BODY LEAKING. DEFECTIVE. REPLACED LH FUEL TANK ASSEMBLY. TOOK TANK OUT OF NEW STOCK F	2004	1G1YY12S745121461	9/Feb/04	23/Jun/04	23/Jun/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	269	CARY AUTO MALL LIMITED PARTNERSHIP	NC
CUSTOM STATES UNABLE TO FILL TANK OK AND REPLACE TANK AND MODULE	2004	1G1YY12S945106852	10/Sep/03	11/Oct/03	20/Oct/03	24/Oct/03	L1280 - TANK, RIGHT FUEL-REPLACE		PT - PERFORMANCE: STALLCOLD(	1H - CLOGGED/RESTRICTED/BLOCI	177	LITHIA IC, INC.	WA
	2004	1G1YY12S945107291	12/Sep/03	22/Sep/03	29/Sep/03	10/Oct/03	L1280 - TANK, RIGHT FUEL-REPLACE		NO - NOISE: RATTLE(RUMBLE)	2W - LOOSE	77	JACK CAULEY CHEVROLET, INC.	MI
	2004	1G1YY12S945110105	5/Dec/03	13/Dec/03	24/Jun/04	20/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REA(	4X - WORN	4,691	KELLEY CHEVROLET, INC.	FL
	2004	1G1YY22G045101929	25/Jul/03	27/Jan/04	14/Jun/04	9/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		PN - PERFORMANCE: NO START(R	1D - BROKEN	9,220	SANTA MONICA GROUP, INC.	CA
PUMP INOP REPAIR PER TECH ASST CASE NUMBER 6995775 FOUND CLIP ON INTERNAL FEED PIPES BROKEN AND CLIPS THAT HOLD FEED PIPE SECURE INSIDE TANK BROKEN CLIPS NOT SOLD SEPERTLY NECESSARY TO REPLACE TANK AND LINES	2004	1G1YY22G045102109	29/Jul/03	6/Dec/03	11/Dec/03	23/Dec/03	L1280 - TANK, RIGHT FUEL-REPLACE		PN - PERFORMANCE: NO START(R	6G - COMPONENT-SHORTED	144	MAXIE PRICE CHEVROLET-OLDSMOBILE, I	GA
	2004	1G1YY22G045114258	17/Nov/03	25/Nov/03	8/Apr/04	21/May/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	4X - WORN	7,453	KELLEY CHEVROLET, INC.	FL
	2004	1G1YY22G045114972	21/Nov/03	31/Mar/04	3/May/04	1/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	1,184	WILLIAM H. PORTER, INC.	DE
	2004	1G1YY22G045115071	24/Nov/03	2/Mar/04	25/Jun/04	23/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	3Z - RUPTURED	4,784	HARDY CHEVROLET, INC.	GA
	2004	1G1YY22G045115166	25/Nov/03	13/Jan/04	24/Jun/04	23/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	4,390	SUNSET CHEVROLET, INC.	FL
	2004	1G1YY22G045115216	25/Nov/03	23/Jan/04	25/May/04	15/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2K - IMPROPERLY SEALED	3,777	PROGRESSIVE CHEVROLET COMPANY	OH
	2004	1G1YY22G045117192	15/Dec/03	7/Jun/04	14/Jun/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	6C - COMPONENT-INOPERATIVE	276	HOLIDAY CHEVROLET OLDSMOBILE, LLC.	FL
CUSTOMER STATES THAT THERE IS A STRONG SMELL OF GAS ADVISE CHECKED FOR LEAK - FUEL COMING FROM LH TAN TRANSFER PIPE CONNECT REMOVED LEFT FUEL TANK - REPLACED TRANSFER PIMP - INTERNAL FUEL	2004	1G1YY22G045120691	30/Jan/04	3/Mar/04	9/Jun/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		OI - OPERATION: FUMES(HARD SHI	OB - OBDII Code used	3,014	KEN WARE CHEVROLET, INC.	OR
	2004	1G1YY22G145120358	28/Jan/04	14/Feb/04	2/Mar/04	12/Mar/04	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	1L - CUT	805	KNIPPELMIER CHEVROLET, INC.	OK
	2004	1G1YY22G245102060	28/Jul/03	28/Aug/03	3/Sep/03	4/Nov/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	OJ - OPERATION: INOPERATIVE(HA	3A - MISADJUSTED/MISALIGNED	171	WOODWORTH CHEVROLET-CADILLAC-BUI	MA
	2004	1G1YY22G245103214	6/Aug/03	9/Jan/04	26/Feb/04	22/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REA(	6C - COMPONENT-INOPERATIVE	1,256	GUARANTY CHEVROLET MOTORS, INC	CA
	2004	1G1YY22G245106694	8/Sep/03	23/Sep/03	25/May/04	4/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		OL - OPERATION: INTERMNT(INSUF	2S - KINKED	2,176	MCCLUSKEY CHEVROLET, INC.	OH
	2004	1G1YY22G245106920	10/Sep/03	10/Oct/03	15/Jan/04	17/Feb/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2W - LOOSE	3,110	KARL CHEVROLET, INC.	IA
	2004	1G1YY22G245110812	15/Oct/03	1/Mar/04	9/Mar/04	23/Mar/04	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	1K - CRACKED	256	DON HEWLETT CHEVROLET-OLDSMOBILE-	TX
	2004	1G1YY22G245114438	18/Nov/03	7/Dec/03	20/Mar/04	9/Apr/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	6C - COMPONENT-INOPERATIVE	6,982	T. THOMAS CHEVROLET, INC.	FL
	2004	1G1YY22G245116156	5/Dec/03	12/Mar/04	21/May/04	8/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		OP - OPERATION: ODOR	2K - IMPROPERLY SEALED	820	LEO MARTIN CHEVROLET, INC.	TX
	2004	1G1YY22G345101455	22/Jul/03	18/Sep/03	30/Sep/03	4/Nov/03	L1280 - TANK, RIGHT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	93 - TECHNICAL SERVICE BULLETIN	107	BILL JACOBS JOLIET, L.L.C.	IL
	2004	1G1YY22G345101746	24/Jul/03	5/Sep/03	18/Sep/03	10/Oct/03	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2W - LOOSE	1,247	HOLIDAY CHEVROLET, INC.	MI
	2004	1G1YY22G345100993	17/Jul/03	8/Mar/04	17/Mar/04	30/Mar/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2K - IMPROPERLY SEALED	161	KRUM-HALLAM CHEVROLET, INC.	MI
	2004	1G1YY22G445106471	6/Sep/03	17/Sep/03	29/Dec/03	9/Jan/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	6C - COMPONENT-INOPERATIVE	2,073	COX CHEVROLET, INCORPORATED	FL
	2004	1G1YY22G445108317	22/Sep/03	27/May/04	3/Jun/04	25/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	4N - WARPED/WAVY/WRINKLED	252	RICHARD HIBBARD CHEVROLET, INC.	CA
	2004	1G1YY22G445115252	25/Nov/03	7/Dec/03	22/Apr/04	7/May/04	L1281 - TANK, LEFT FUEL-REPLACE		OI - OPERATION: FUMES(HARD SHI	2K - IMPROPERLY SEALED	4,741	V.T. MOTORS, INC.	AZ
	2004	1G1YY22G445116859	10/Dec/03	11/Mar/04	7/Jun/04	8/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	9R - POROSITY	5,319	OASIS CHEVROLET, L.L.C.	NJ
	2004	1G1YY22G445116773	10/Dec/03	19/Feb/04	3/Jun/04	22/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	3,071	STEVE MOORE CHEVROLET, LLC	FL
CHECK FOR GAS LEAK AT TOP OF TANK LEAKING AT CONNECTION BETWEEN LEFT FUEL TANKAND CROSSOVER PI	2004	1G1YY22G445116202	5/Jan/04	29/Jan/04	24/Apr/04	7/May/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	5,159	TOM JUMPER CHEVROLET, INC.	GA
TAC CASE #7428081 GAS LEAKING AT TOP OF LEFT TANK AREA-NEC TO RR TRANSAXLE DRIVELINE TO REMOVE LEFT SIDE GAS TANK TO REPALCE GAS TANK CROSSOVER POPE AND LEFT PUMP RETURN PIPE	2004	1G1YY22G445120614	29/Jan/04	22/Feb/04	8/Jun/04	25/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	2,585	GRAND PRIZE MOTORS, INC.	FL
3.7 OLH,EXTENDED DIAGNOSIS TO LOCATE REASON FOR FAILURE,FENDER LINE REMOVAL ON BOTH SIDES TO GAIN ACCESS...PER JON ZABLOSKY	2004	1G1YY22G545101280	21/Jul/03	30/Oct/03	22/Dec/03	9/Feb/04	L1282 - TANK,FUEL-BOTH-REPLACE	Y	PU - PERFORMANCE: STALLS-HOT	6Q - COMPONENT-SHORTED	193	RELIABLE CHEVROLET II, LP	TX
	2004	1G1YY22G545107239	12/Sep/03	21/Oct/03	22/Sep/03	26/Sep/03	L1281 - TANK, LEFT FUEL-REPLACE		PN - PERFORMANCE: NO START(R	7K - WIRE-CROSSED IN CONNECTI	6	RELIABLE CHEVROLET II, LP	TX
	2004	1G1YY22G545114319	17/Nov/03	22/Dec/03	2/Jun/04	18/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	14,136	DON RINGLER CHEVROLET CO., INC.	TX
	2004	1G1YY22G545115406	26/Nov/03	3/Dec/03	2/Apr/04	23/Apr/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED	9,781	REEDER CHEVROLET COMPANY, INC.	TN
	2004	1G1YY22G545124841	11/Mar/04	2/Jun/04	16/Jun/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		MC - MISC; FAILED EMISSIONS	7L - WIRE-CUT/BROKEN/OPEN	501	STOKES NORTH, INC.	SC
NEED AUTH FOR 2.0 OLH AND EXCESS PTS, PE. EXTENSIVE DIAG.TAN CASENEC TO REPL BOTH TANKS,BOTH MODULES,SEALS, 3 PIPES.WOULD NOT ACCEPT FUEL. COULD NOT FILL TANK. 1 OP, MANY REPAIRS.RR BOTH WHEEL WELLS INPS FUEL LINES FOR KINKS, NONE. FUEL SYS.DEF. THANKS.	2004	1G1YY22G645104141	15/Aug/03	29/Oct/03	31/Oct/03	8/Jan/04	L1282 - TANK,FUEL-BOTH-REPLACE	Y	OJ - OPERATION: INOPERATIVE(HA	6C - COMPONENT-INOPERATIVE	292	DELILLO CHEVROLET CO.	CA
	2004	1G1YY22G645115057	24/Nov/03	9/Dec/03	14/May/04	4/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	9R - POROSITY	2,636	BILL HEARD CHEVROLET, INC.-HUNTSVILLI	AL
	2004	1G1YY22G645119609	20/Jan/04	23/Feb/04	10/May/04	28/May/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	6C - COMPONENT-INOPERATIVE	2,102	BRADY-STANNARD CHEVROLET CADILLAC	NY
(WG) CUST. STATES OK. ENGINE LT. COMES ON- OK.REPORT TEST DRIVE, PERFORM SYSTEM TEST WITH TECH TWO, CODE P0455 EVAP SYSTEM, FOLLOW PROETERMINE SYSTEM WILL NOT HOLD VAC, RAISE AND INSPECT AND FO	2004	1G1YY22G745104309	18/Aug/03	25/Sep/03	12/Jul/04	16/Jul/04	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2K - IMPROPERLY SEALED	3,530	AUSTIN CHEVROLET, INC.	TX
	2004	1G1YY22G745121417	8/Feb/04	4/May/04	17/Jun/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		PN - PERFORMANCE: NO START(R	6C - COMPONENT-INOPERATIVE	1,341	RAY HUFFINES CHEVROLET, INC.	TX

CUST ST FUEL GUAGE READS INCORRECTLY,WHEN AT 2-3 TANKS IT AUSCAN CHECK P2066 RUGHT TANK FUEL LEVEL SENSOR ERA CHECK BULLITENS AND PI FOLLOW REPLACE RIGHT FUEL TANK JET PUMP. INSTALL LEFT FUEL TANK AND	2004	1G1YY22G845103665	12/Aug/03	12/Mar/04	22/Mar/04	2/Apr/04	L1261 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	6C - COMPONENT-INOPERATIVE		578	DICK GENTHE CHEVROLET, INC.	MI
FUEL GAGE READS INCORRECT. TAN CASE 7233539. DIAG P2066. HAD BOTH TANKS OUT. DID SEVERAL CHECKS. TAN HAD SIM CASE THAT JET PUMP SPRAY WAS FAULTY. REPLACED RT FUEL TANK JET PUMP. REASSEMBLE. OK. EXCESSIVE TIME SPENT ON VEHICLE.	2004	1G1YY22G845103665	12/Aug/03	12/Mar/04	22/Mar/04	6/Apr/04	L1260 - TANK, RIGHT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	3K - REGISTERS INCORRECTLY		578	DICK GENTHE CHEVROLET, INC.	MI
RIGHT FUEL TANK LEAKING AROUND NECK	2004	1G1YY22G845114833	20/Nov/03	26/Jan/04	16/May/04	8/Jun/04	L1260 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2L - INCORRECT PRESSURE		1,640	CLASSIC CHEVROLET, INC.	TX
PRESSURIZED-FOUND LEFT TANK LEAKIN AROUND NECK	2004	1G1YY22G845114833	20/Nov/03	26/Jan/04	16/May/04	8/Jun/04	L1261 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2L - INCORRECT PRESSURE		1,640	CLASSIC CHEVROLET, INC.	TX
	2004	1G1YY22G845115304	25/Nov/03	12/Jan/04	8/Mar/04	16/Mar/04	L1261 - TANK, LEFT FUEL-REPLACE		OP - OPERATION: ODOR	2K - IMPROPERLY SEALED		2,674	TROPICAL CHEVROLET, INC.	FL
NSED AUTH PE PLEASE. PTS BEYOND OUR LIMIT. WAS NEC TO REPLACE FUEL TANK AND MODULE DUE TO MODULE MISSING ALIGNMENT TABS ON FUEL PUMP BOW. . 9 ST TO SMOKE TEST FULE TANK SYS. TO ISOLATE LEAK. THANKS. LG	2004	1G1YY22G845115917	4/Dec/03	23/Apr/04	21/Jun/04	2/Jul/04	L1261 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	3D - MISSING		5,024	DELILLO CHEVROLET CO.	CA
	2004	1G1YY22G845101332	21/Jul/03	31/May/04	25/Nov/03	3/Feb/04	L1261 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	6D - COMPONENT-INTERMITTENT		1,367	GUARANTY CHEVROLET MOTORS, INC	CA
RT TANK SENDING UNIT NOT SENDING VOLTAGE TO COMPUTER TAN CASE 8660879 RAY STRONG. NEC TO REPLACE RT SIDE AFTER REPAIRS STILL FAULTY GAGE NEC TO REPL LFT SIDE AFTER REASSEMBLE OF RT. NEEDS YOUR E TO PAY PLEASE. THANKS	2004	1G1YY22G945103084	5/Aug/03	15/Nov/03	5/Dec/03	2/Jan/04	L1282 - TANK,FUEL-BOTH-REPLACE	Y	AV - VISUAL: UNUSUAL GAGE REAI	6C - COMPONENT-INOPERATIVE		468	BILL HEARD CHEVROLET CORP. - LAS VEG	NV
	2004	1G1YY22G845120172	28/Jan/04	5/Mar/04	16/Jun/04	2/Jul/04	L1251 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED		6,267	BOYD BUICK-CADILLAC-CHEVROLET-PONT	LA
AS PER YOUR REQUEST RESUBMITTING WITH 2.0 IN LABOR HOURS AND 4.5 IN OTHER LABOR HOURS	2004	1G1YY22GX45101257	21/Jul/03	13/Jan/04	15/Jan/04	9/Apr/04	L1280 - TANK, RIGHT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	6G - COMPONENT-SHORTED		68	LESON CHEVROLET COMPANY, INC.	LA
	2004	1G1YY22GX45101453	22/Jul/03	30/Jan/04	25/Feb/04	12/Mar/04	L1281 - TANK, LEFT FUEL-REPLACE		PN - PERFORMANCE: NO START(RI	6C - COMPONENT-INOPERATIVE		268	BUD'S CHEVROLET-OLDS-BUICK, INC.	OH
	2004	1G1YY22GX45102327	30/Jul/03	15/Feb/04	17/Mar/04	30/Mar/04	L1251 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	2K - IMPROPERLY SEALED		1,113	COURTESY CHEVROLET MOTORS	CA
	2004	1G1YY22GX45102659	4/Aug/03	28/Aug/03	29/Apr/04	14/May/04	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	0B - OBDII Code used		6,370	PERFORMANCE CHEVROLET, INC.	CA
	2004	1G1YY22GX45105390	27/Aug/03	9/Jan/04	19/May/04	4/Jun/04	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2K - IMPROPERLY SEALED		10,268	CRISWELL CHEVROLET, INC.	MD
	2004	1G1YY22GX45106586	5/Sep/03	17/Jan/04	23/Mar/04	2/Apr/04	L1280 - TANK, RIGHT FUEL-REPLACE		OD - OPERATION: BUMP	2J - IMPROPERLY PADDED		1,340	BEASLEY-CROSS CHEVROLET COMPANY	NC
	2004	1G1YY22GX45107649	18/Sep/03	25/Sep/03	16/Nov/03	19/Dec/03	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	0B - OBDII Code used		2,566	SCRANTON CHEVROLET, LLC	CT
	2004	1G1YY22GX45114042	12/Nov/03	14/Dec/03	20/Apr/04	4/May/04	L1281 - TANK, LEFT FUEL-REPLACE		O1 - OPERATION: WON'T MAINT AC	2K - IMPROPERLY SEALED		2,599	MAROONE CHEVROLET FT. LAUDERDALE,	FL
	2004	1G1YY22GX45119452	16/Jan/04	27/Feb/04	15/Jun/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	6C - COMPONENT-INOPERATIVE		6,698	FISHER CHEVROLET-PONTIAC, INC.	CO
	2004	1G1YY32G045106120	4/Sep/03	21/Nov/03	26/Nov/03	9/Dec/03	L1280 - TANK, RIGHT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	6G - COMPONENT-SHORTED		370	TENNYSON CHEVROLET, INC.	MI
	2004	1G1YY32G045106883	10/Sep/03	24/Apr/04	16/Oct/03	4/Nov/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	PN - PERFORMANCE: NO START(RI	6D - COMPONENT-INTERMITTENT		85	THE MERRICK CHEVROLET COMPANY	OH
REQUEST PER ART SPRONG VETTE BRAND QUALITY MGR--PART CHGS FOR MARKUP ONLY	2004	1G1YY32G045113150	4/Nov/03		1/Jul/04	23/Jul/04	L1280 - TANK, RIGHT FUEL-REPLACE		MJ - MISC: CUSTOMER SATISFACTI	8S - CUSTOMER SATISFACTION		18	JACK CAULEY CHEVROLET, INC.	MI
THIS IS THE CORVETTE THAT HAD THE FUEL GAUGE PROBLEM AND TAN 8854437 SAID TO INSTALL ALL THE PARTS WE PUT IN INCLUDING A NEW FUEL TANK	2004	1G1YY32G145101380	21/Jul/03	15/Aug/03	14/Oct/03	23/Dec/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	AV - VISUAL: UNUSUAL GAGE REAI	3L - OUT OF CALIBRATION		17,999	AIRPORT CHEVROLET, INC.	OR
	2004	1G1YY32G145111276	20/Oct/03	24/Jan/04	17/Mar/04	7/May/04	L1261 - TANK, LEFT FUEL-REPLACE		NU - NOISE: SQUEAK(WHISTLE)	2F - CLEARANCE-TOO TIGHT		1,301	TJH CHEVROLET CO.,LLC	NJ
	2004	1G1YY32G145111276	20/Oct/03	24/Jan/04	17/Mar/04	7/May/04	L1260 - TANK, RIGHT FUEL-REPLACE		NU - NOISE: SQUEAK(WHISTLE)	2F - CLEARANCE-TOO TIGHT		1,301	TJH CHEVROLET CO.,LLC	NJ
	2004	1G1YY32G145112647	31/Oct/03	30/Jan/04	1/Apr/04	20/Apr/04	L1260 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	4X - WORN		2,971	KELLEY CHEVROLET, INC.	FL
	2004	1G1YY32G145112647	31/Oct/03	30/Jan/04	21/May/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	1K - CRACKED		4,735	KELLEY CHEVROLET, INC.	FL
	2004	1G1YY32G245101579	23/Jul/03	16/Dec/03	15/Mar/04	16/Apr/04	L1281 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	6G - COMPONENT-SHORTED		5,729	CORMIER CHEVROLET COMPANY	CA
	2004	1G1YY32G245107432	15/Sep/03	13/Oct/03	1/Mar/04	30/Apr/04	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	6C - COMPONENT-INOPERATIVE		2,864	GRAHAM CHEVROLET COMPANY	OH
	2004	1G1YY32G245114634	29/Nov/03	8/Mar/04	5/Apr/04	16/Apr/04	L1261 - TANK, LEFT FUEL-REPLACE		OP - OPERATION: ODOR	1K - CRACKED		916	FAA POWAY G, INC.	CA
SAME SYSTEM REPAIR- LEFT OK ON LAST VISIT, THIS TIME RT TANK, LAST TIME LEFT TANK RT SENSOR WAS STUCK UNDER MODULE HOSES- INSTALLED IMPROPELY ATFACTORY. TAN CASE NUMBER 866875 JESSICA. VCI 565845, PROP FAILED UTILITY12224004	2004	1G1YY12G345100733	15/Jul/03	15/Aug/03	3/Sep/03	12/Sep/03	L1260 - TANK, RIGHT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	2H - IMPROPERLY INSTALLED		660	JOHN JOCHEM CHEVROLET, INC.	FL
SCANNED FOR CODES, FOUND P0442, SMALL LEAKDETECTED, CONNECTED EVAP LEAK DETECTOR AND ADDEDSMOKE TO EVAP SYSTEM, FOUND SMOKE COMING FROM TOPOF LEFT FUEL TANK. NECC TO RR FUEL TANK, FOUND	2004	1G1YY32G345103468	6/Aug/03	26/Dec/03	24/Feb/04	5/Mar/04	L1251 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2L - INCORRECT PRESSURE		1,004	STERLING CHEVROLET, INC.	VA
	2004	1G1YY32G345103504	6/Aug/03	28/Aug/03	7/Jan/04	30/Jan/04	L1251 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2W - LOOSE		240	GUARANTY CHEVROLET MOTORS, INC	GA
REFER CASE 7382997 CODE P0461 AND P2066 8.0 OLH TO R AND R RIGHT TANK REPL SENDING UNIT SWAP LEFT TANK FROM ANOT UNIT PART NOT AVAIL CAR 2 WEEKS OLD TAS INSTRUCTED TO REPL RT SENDER NOT SOLVED LEFT TANK FOUND WARPED INTERNALLY	2004	1G1YY32G345106797	25/Sep/03	19/Mar/04	24/May/04	6/Jun/04	L1251 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	0B - OBDII Code used		2,045	MAXIE PRICE CHEVROLET-OLDSMOBILE, IN	GA
REFER CASE 7382997 CODE P0461 AND P2066 8.0 OLH TO R AND R RIGHT TANK, REPL SENDING UNIT, SWAP LEFT TANKFROM ANOT UNIT, PART NOT AVAIL, CAR 2 WEEKS OLD, TAS INSTRUCTED TO RSPL RT SENDER, NOT SOLVED, LEFT TANK FOUND WARPED INTERNALLY	2004	1G1YY32G345106797	25/Sep/03	19/Mar/04	24/May/04	29/Jun/04	L1251 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	0B - OBDII Code used		2,045	MAXIE PRICE CHEVROLET-OLDSMOBILE, IN	GA
	2004	1G1YY32G345121260	5/Feb/04	24/Mar/04	14/May/04	25/May/04	L1281 - TANK, LEFT FUEL-REPLACE		PN - PERFORMANCE: NO START(RI	6G - COMPONENT-SHORTED		1,941	LONG AUTOMOTIVE, INC.	CA
NEC TO RPL LFT FUEL TAND AND MODULE TO CORRECT CONDITION.	2004	1G1YY32G345126696	2/Apr/04	18/May/04	15/Jun/04	2/Jul/04	L1251 - TANK, LEFT FUEL-REPLACE		OL - OPERATION: INTERMNT(INSUF	6C - COMPONENT-INOPERATIVE		1,349	FOLSOM CHEVROLET/GEO, INC.	CA
	2004	1G1YY32G445107285	12/Sep/03	13/May/04	19/Mar/04	2/Apr/04	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	1D - BROKEN		54	O'REILLY CHEVROLET, INC.	AZ
TOW IN CRANKS BUT WILL NOT START FOUND RIGHT FUEL PUMP SENDERINOP INSTALL FUEL PUM FOUNF LEFT HAND FUEL TANK LEAK INSTALLNEW TANK AND PUMP FOR REPAIR.OLH BOTH TANK AND MODULE MULTILABOR OPS	2004	1G1YY32G545100883	15/Jul/03	10/Oct/03	20/Oct/03	11/Nov/03	L1251 - TANK, LEFT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	2P - INSUFFICIENT SEALANT		387	ALASKA SALES AND SERVICE, INC.	AK

DIAGNOSE, REMOVE DIFF AND TORQUE TO REMOVE TANKAND REPLACE GAGE ASSEMBLY. SPEC ORDER RT REAR STRUT FOR MISSING RETAINER ASSEMBLY	2004	1G1YY32G545103231	5/Aug/03	24/Mar/04	14/May/04	1/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	6C - COMPONENT-INOPERATIVE		1,360	LOEHMANN-BLASIUS CHEVROLET, INC.	CT
TAN CASE NUMBER 6842766 FUEL PUMP AND JET PUMP NOT TRANSFERING FFUEL BETWWEN TANKS NEC TO REPL BOTH TANKS I USED NEW LAB OP PAYS2.3 .3 DIAG AND 6.1 FOR FFS FUEL SYSTEM TECH 3.0 OLH NEEDS YOUR AUTH TO PAY PLEASE THNAKS	2004	1G1YY32G545106832	8/Sep/03	18/Sep/03	1/Oct/03	11/Nov/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	OJ - OPERATION: INOPERATIVE(HA	6C - COMPONENT-INOPERATIVE		118	BILL HEARD CHEVROLET CORP. - LAS VEG	NV
	2004	1G1YY32G645104280	15/Aug/03	27/Jun/04	21/Nov/03	5/Dec/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	OJ - OPERATION: INOPERATIVE(HA	4Q - WEAK		151	BILL HEARD CHEVROLET, INC.-PLANT CITY	FL
C-S HE WAS FILLING THE FUEL TANK - IT STARTED LEAKING BADLY REPLACED LEFT GAS TANK LEAKING INSPECT TNAKS AND FUEL LINES FOR LEAKING FOUND LEFITTING IN TANK LEAKS REFILL GAS TANK NO LONTER LEAKS	2004	1G1YY32G645114853	20/Nov/03	23/Jan/04	24/Mar/04	6/Apr/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2P - INSUFFICIENT SEALANT		2,989	BROWN & BROWN CHEVROLET, INC.	AZ
C-S THE FUEL TANK IS LEAKING AGAIN WHEN IT IS FILLED SEE ADVPERFORM OBD 2 TEST, P0442 EVAP LEAK PRESSURE TEST EVAP SYSTEM, LEFT TANK LEAKINGAT CROSS OVER PIPE. REPLACE FUEL TANK - INTERNAL LINES, PRES	2004	1G1YY32G645114853	20/Nov/03	23/Jan/04	4/May/04	21/May/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2P - INSUFFICIENT SEALANT		4,583	BROWN & BROWN CHEVROLET, INC.	AZ
	2004	1G1YY32G745100086	23/Jun/03	1/Jun/04	3/Sep/03	10/Oct/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	PN - PERFORMANCE: NO START(RI	6C - COMPONENT-INOPERATIVE		10	JACK CAULEY CHEVROLET, INC.	MI
	2004	1G1YY32G645102057	26/Jul/03	8/Aug/03	5/Aug/03	15/Aug/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	PN - PERFORMANCE: NO START(RI	2K - IMPROPERLY SEALED		149	BERGER CHEVROLET, INC.	MI
	2004	1G1YY32G645102235	29/Jul/03	26/Oct/03	6/Nov/03	23/Dec/03	L1281 - TANK, LEFT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	6C - COMPONENT-INOPERATIVE		148	STEVE MOORE CHEVROLET DELRAY, LLC	FL
	2004	1G1YY32G645112120	25/Oct/03	29/Nov/03	15/Jun/04	29/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED		8,709	MUSSER MOTORS, INC.	TX
CUSTOMER STATES CHECK ENGINE LIGHT ON LEFT REAR FUEL TANK VENT, LINE CRUSHED FROM FACTORY FUEL SENDER COVER SWELLED ANREPLACE LEFT FUEL TANK,DROVE TO FILL GAS TANKS AND TANK WOUL	2004	1G1YY32G645124204	6/Mar/04	11/Mar/04	21/Jun/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	6C - COMPONENT-INOPERATIVE		5,166	JIM RATHMANN CHEVROLET, INC.	FL
EVAPORATIVE LINES AT LEFT FUEL TANK CAME LOOSE-HAD TO REMOVETANK TO GAIN ACCESS TO LINES	2004	1G1YY32G945103653	11/Aug/03	10/Oct/03	9/Jun/04	25/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	2W - LOOSE		6,165	LEE CHEVROLET, INC.	NC
	2004	1G1YY32G945107184	12/Sep/03	14/Jun/04	14/Jun/04	25/Jun/04	L1280 - TANK, RIGHT FUEL-REPLACE		VK - VISUAL: FIT(FLUTTER)	3F - NOT CONNECTED		10	MAC MULKIN CHEVROLET, INC.	NH
CUST STATES THAT VEH IS LEAKING FUEL. ADVISE.1 REPLACE LSFT FUEL TANK AND FUEL FEED PIPE	2004	1G1YY32G945116712	10/Dec/03	2/Jan/04	9/Feb/04	24/Feb/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED		1,476	JON HALL CHEVROLET, INC.	FL
GREG-WE SPOKE ABOUT THIS VETTE THAT BEEN IN REVIEW LONG TIME. HAD TO REPLACE FUEL TANK-FUEL LEVEL SENSOR-FUEL PIPE-AND RETAINERS -	2004	1G1YY32GX45102670	1/Aug/03	7/Oct/03	19/Mar/04	4/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		OL - OPERATION: INTERMNT(INSUF	3K - REGISTERS INCORRECTLY		2,511	BILL BRANCH CHEVROLET, INC.	FL
	2004	1G1YY32GX45105055	25/Aug/03		26/May/04	22/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	6C - COMPONENT-INOPERATIVE		4,557	ELCO CHEVROLET INC.	MO
	2004	1G6YV34A045600344	18/Sep/03	24/Oct/03	26/May/04	25/Jun/04	L1280 - TANK, RIGHT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	1D - BROKEN		3,984	GREENWICH CADILLAC-OLDSMOBILE, INC.	CT
CRAIG,IN ADD,TO REPLACING FUEL TANK,NEC TO REPL BROKEN FUEL FEEDPIPE AT CROSSOVER AND CROSSOVER HOSE AND A VENT PIPE,ALSO, CAR SAT FOR SIX WEEKS WAITING FOR TANK CUSTOMER VERY UNHAPPY,SER MGR0K'D DETAILING CAR BEFORE CUST PICKED UP FOR COMPLETE SATISFACTO	2004	1G6YV34A045601476	8/Dec/03	16/Jan/04	8/Apr/04	25/May/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	3Z - RUPTURED		1,692	HERITAGE CADILLAC, INC.	IL
NADS- FUEL LEAK. MULTIPLE LEAKS DETECTED. LEAKS AT FUEL FEED CRO SSOVER HOSE AND LEFT SIDE FUEL TANK. NECESSARY TO REMOVE TRANSMI SSION AND REAR END ASSEMBLY FOR ACCESS TO CROSSOVER HOSE. EXTENS IVE REPAIR. 2004 XLR MODEL. PUNCH TIMES ON FILE.	2004	1G6YV34A045601607	17/Dec/03	7/Jan/04	9/Jun/04	13/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED		3,523	SARANT CADILLAC CORP.	NY
	2004	1G6YV34A145601566	15/Dec/03	31/Dec/03	26/Jan/04	3/Feb/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	2K - IMPROPERLY SEALED		752	ARBOR TREE MANAGEMENT, INC.	FL
	2004	1G6YV34A245600961	27/Oct/03	3/May/04	21/Jun/04	16/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	6C - COMPONENT-INOPERATIVE		997	MILLER BROTHERS CHEVROLET-OLDSMOE	MD
FUEL LEAK UNDER VEHICLE-NEC TO DROP REAR END OUT OF VEHICLE TO ACCESS GAS TANK-NEC TO REPLACE TANK DUE TO CRACKED COLLAR	2004	1G6YV34A245601608	17/Dec/03	31/Dec/03	3/May/04	9/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	1K - CRACKED		848	CRESTVIEW CADILLAC, INC.	MI
	2004	1G6YV34A345601469	5/Dec/03	30/Jan/04	10/May/04	25/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	4X - WORN		1,082	COUNTRY CADILLAC, BUICK, PONTIAC AND	NY
TAC CASE 6798816,ORING AROUND FILTER NOT SETTING RIGHT,REPL TANK AND PUMP,INSTALL DRIVETRAIN BACK,CHK SYS TECK 2,REMOVED FUEL FROM LEFT TANK,RIGHT SIDE NOT TRANSFERED,CALLED TAC,SENT US TANK FOR RIGHT TANK,REPLACED BOTH INNER FENDER WELDS	2004	1G6YV34A445600508	3/Sep/03	15/Sep/03	23/Sep/03	2/Jan/04	L1281 - TANK, LEFT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	6C - COMPONENT-INOPERATIVE		147	BUD DAVIS CADILLAC, INC.	TN
THIS IS THE LABOR FOR RIGHT TANK THAT TECHLINE SENT US ON RO 474256	2004	1G6YV34A445600508	3/Sep/03	15/Sep/03	29/Dec/03	2/Jan/04	L1280 - TANK, RIGHT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	6C - COMPONENT-INOPERATIVE		326	BUD DAVIS CADILLAC, INC.	TN
	2004	1G6YV34A445600542	8/Sep/03	31/Oct/03	9/Oct/03	26/Oct/03	L1280 - TANK, RIGHT FUEL-REPLACE		MJ - MISC: CUSTOMER SATISFACTI	8S - CUSTOMER SATISFACTION		39	CLEMENTS CADILLAC, INC.	MS
	2004	1G6YV34A445601629	17/Dec/03		24/Jun/04	20/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		OP - OPERATION: ODOR	2K - IMPROPERLY SEALED		2,286	ADDISON ON BAY LTD.	ON
	2004	1G6YV34A545601635	18/Dec/03	2/Jan/04	9/Jun/04	2/Jul/04	L1281 - TANK, LEFT FUEL-REPLACE		OP - OPERATION: ODOR	1K - CRACKED		4,701	SYMES CADILLAC, INC.	CA
	2004	1G6YV34A545600705	3/Oct/03	29/Oct/03	11/Feb/04	30/Mar/04	L1281 - TANK, LEFT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	6C - COMPONENT-INOPERATIVE		1,656	GUY HILL CADILLAC, INC.	CA
	2004	1G6YV34A545600705	3/Oct/03	29/Oct/03	11/Feb/04	30/Mar/04	L1280 - TANK, RIGHT FUEL-REPLACE		WG - WARNING LIGHTS: SERVICE I	6C - COMPONENT-INOPERATIVE		1,656	GUY HILL CADILLAC, INC.	CA
	2004	1G6YV34A745600521	4/Sep/03	16/Sep/03	22/Sep/03	16/Dec/03	L1282 - TANK,FUEL-BOTH-REPLACE	Y	WG - WARNING LIGHTS: SERVICE I	6F - COMPONENT-OPEN		136	STEVE BARNETT, INC.	FL
	2004	1G6YV34A745601474	6/Dec/03	31/Dec/03	10/Feb/04	20/Feb/04	L1281 - TANK, LEFT FUEL-REPLACE		OJ - OPERATION: INOPERATIVE(HA	6C - COMPONENT-INOPERATIVE		1,633	CREST CADILLAC COMPANY, INC.	FL
	2004	1G6YV34A845601600	17/Dec/03	21/Feb/04	29/Mar/04	6/Apr/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	6C - COMPONENT-INOPERATIVE		1,704	RIPPY CADILLAC-OLDSMOBILE, INC.	NC
	2004	1G6YV34A945600309	21/Aug/03		21/Apr/04	30/Apr/04	L1281 - TANK, LEFT FUEL-REPLACE		AV - VISUAL: UNUSUAL GAGE REAI	5L - PAINT- PEELING		7,742	LEGENDS CADILLAC OLDSMOBILE, L.L.C.	AZ
REQUESTING EXCESS OLH TAC CASE 7289340 A AND M SPEC VEHICLE STRAIGHT TIME LABOR OP NEC TO RR EXHAUST, REAR SUSPENSION, DIFFERENTIAL AND TRANSMISSION FOR ACCESS	2004	1G6YV34A945601606	17/Dec/03		14/Apr/04	11/Jun/04	L1281 - TANK, LEFT FUEL-REPLACE		VN - VISUAL: LEAK/LEAKS(MISSING	3Z - RUPTURED		686	UAG TORRANCE, INC.	CA
	2004	1G6YV34AX45600982	26/Oct/03	22/Dec/03	4/May/04	28/May/04	L1280 - TANK, RIGHT FUEL-REPLACE		PN - PERFORMANCE: NO START(RI	6C - COMPONENT-INOPERATIVE		2,914	TAYLOR CADILLAC, INC.	OH
THIS IS THE XLR THAT WE AGREED TO 16.0 HOURS TO REPL FUEL TANK AND CROSSOVER PIPE TO CORRECT FUEL ODOR - YOU SENT IT BACK TO ME TO PUT 5.7 HOURS IN OLH - OK PER BILL P	2004	1G6YV34AX45601470	8/Dec/03	23/Dec/03	15/Mar/04	7/May/04	L1281 - TANK, LEFT FUEL-REPLACE		OP - OPERATION: ODOR	2K - IMPROPERLY SEALED		2,655	COSTA MESA PONTIAC GMC BUICK, INC.	CA



Terry M. Stone
07/27/2004 09:12 AM

To: Patrick C Antus/C/US/GM/GMC@GM
Subject: Re: Parts Restriction

Another question for you: Can you create a fuel tank service kit part number for the LH tank for 2003 (RPO FFS)and 2004 C5, all XLR, and all C6 to include the welded shell asm (10362744), 8 full isolator pads (10310054) and 3 half isolator pads (10312858)? or is there a pad kit number for the full sheet of pads for the LH tank.

Currently, the dealership technician has to pull 11 isolators from the old tank and put them on the new tank. This should help ensure that all of the pads are positioned correctly.

Thanks,
Terry

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/27/2004 08:57 AM -----

Terry M. Stone
07/26/2004 03:55 PM

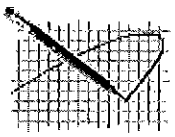
To: Patrick C Antus/C/US/GM/GMC@GM
cc: Art Spong/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, George Nagrant/US/GM/GMC, Len Tillard/US/GM/GMC, Michael J. French/US/GM/GMC@GM, mstange@us.tiauto.com, DAVE REEK/US/GM/GMC@GM
Subject: Re: Parts Restriction

Pat,

After speaking with Art regarding Parts Restriction, that would be difficult and wouldn't take effect until about 90 days. Would it be possible for you or someone at SPO to notify us if any fuel tank is ordered and where it is being shipped?

Thanks,
Terry

Terry M. Stone



Terry M. Stone
07/26/2004 09:21 AM

To: Len Tillard/US/GM/GMC
cc: Art Spong/US/GM/GMC@GM, Michael J. French/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, mstange@us.tiauto.com, George Nagrant/US/GM/GMC, Patrick C Antus/C/US/GM/GMC@GM
Subject: Parts Restriction

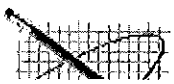
Len,

Please place the following parts on restriction:

	C5	XLR	C6
	2003 (FFS) - 2004	2004-2005	2005
Tank Asm - Fuel LH - Welded Shell	10337585, 10363245, 10339514, or 10362744	10339514, 10362744	10362744
Tank Asm Fuel - Welded Shell	10337582	10337582	10337582

All LH tank shells can be replaced with P/N 10362744. This and 10337582 are what TI will be making and what SPO will be (or has) ordered in large quantity.

Thanks,
Terry



Terry M. Stone
07/26/2004 05:40 PM

To: "Ceh, David" <DCeh@US.TIAuto.com>
Subject: Re: Poly One Processing Info

Dave,

Thanks for the info. Please provide the same showing the supply of the base resin from Solvay to Polyone and the TI tank S/N's made from each of these lots. I understand Meriden did not have proper traceability, so you will need to guess conservatively. Please provide the material certs for the base resin.

A few questions regarding the attached:

- The fact that the first two lots of material (including our validation material) were produced on twin screw extruders (TSE) is new news. Are the TSE's in Texas different from the TSE's (that degraded the material) in TN?
- Has anyone from TI visited the TN facility?
- The file shows that all of the extruders in TN are TSE's and FCM's. How did they make 4 lots of material on SSE's?
- In some lots, more material was manufactured than shipped. What happens to the extra material if Viking is the only user of it?

Addressing PolyOne's claim that they did not know that this was an Automotive application, the cert for the original material (dated 10/13/00) was addressed to TI AUTOMOTIVE SYSTEMS.

Regards,
Terry

"Ceh, David" <DCeh@US.TIAuto.com>

"Ceh, David" <DCeh@US.TIAuto.com>
07/26/2004 05:02 PM

To: terry.m.stone@gm.com, dave.reek@gm.com, michael.j.french@gm.com
cc:
Subject: Poly One Processing Info

Terry - Per your request in today's conference call. Please distribute within your organization.

David J Ceh
Quality Director - TI NA Fuel Systems
Office - (248)-209-3372
Cell - (586)-243-8632

Poly one processing info.pc

Manufacturing & Plant Information

Product: Maxxam DP-9052-3-1000
SAP Code: EM0090355060

Manufacturing & Shipment Summary:

Date of Mfr	PolyOne Lot #	Delivery Date	Viking Lot #	Ship Qty	Qty Mfrd.	Mfg Plant	Type of Line
10/13/00	459559	10/15/00	- - -	2,850	3,000	Houston, TX	TSE
03/06/02	2088503	5/16/02	2220	150	600	Houston, TX	TSE
04/28/02	2120045	5/8/02	2217	800	790	Dyersburg, TN	SSE
10/03/02	2244884	10/8/02	2332	900	910	Dyersburg, TN	SSE
10/22/02	2258190	10/28/02	2351	6,500	6,500	Dyersburg, TN	SSE
05/27/03	2444225	6/16/03	2540	1,163	1,600	Dyersburg, TN	SSE
09/30/03	2548703	10/4/03	2637	3,000	3,000	Dyersburg, TN	TSE
01/07/04	2626334	1/10/04	2697	2,292	3,600	Dyersburg, TN	TSE
02/17/04	2665852	2/18/04	2735	1,000	7,800	Broadview Hts, OH	SSE
		2/24/04	2740	6,237			

Plant Information:

Location	
Houston, TX	Plant Closed in April, 2002
Dyersburg, TN	9 Lines - all Twin-Screw Extruders (TSE) & Farrel Continuous Mixers (FCM) (ISO 9002/QS 9000)
Broadview Hts, OH	4 Lines - 2 Single-Screw (SSE) & 2 Twin-Screw Extruders (TSE) (ISO 9002/QS 9000)

Terry M. Stone
07/26/2004 05:12 PM

To: Vince Marsala/US/GM/GMC@GM
Subject: Updated: Corvette 2" QC Update

Vince,

We have an issue with the fuel systems on C5 and XLR that we are investigating. All indications to date are that the root cause is the material that the crossover quick connect (welded to the tank) is made from had a Quality issue. The Melt Flow Index for the material was unusually high for one or two batches. The base resin HLMI (high load melt index) was also out of specification. I've asked Gary who should be involved from the Chassis Center and he suggested you.

Attached is the open issues list and the daily conference call number. Please review and call in if you are available.

On Wed. at 2 pm Dave Reek (SQ FPE) will be at my desk for a review to catch him up, since he joined recently. If you are available, you may want to attend.

Thanks,
Terry
----- Forwarded by Terry M. Stone/US/GM/GMC on 07/26/2004 05:02 PM -----

"Reed, Bryan" <BReed@US.TIAuto.com>
07/26/2004 03:37 PM

To: "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>, "Ceh, David" <DCeh@US.TIAuto.com>, "Stange, Marshall" <MStange@US.TIAuto.com>, "Quick, Chris" <ChrisQuick@US.TIAuto.com>, "Blanco, Elco" <EBlanco@US.TIAuto.com>, "Bridgeman, Sherri" <SBridgeman@US.TIAuto.com>, "Ruggles, Mark" <MRuggles@US.TIAuto.com>, "Erwin, John" <JErwin@US.TIAuto.com>, "Kambakhsh, Manouchehr" <MKambakhsh@US.TIAuto.com>, "Terry Stone (E-mail)" <terry.m.stone@gm.com>, "Minoo Daroga (E-mail)" <minoo.daroga@gm.com>, "'michael.j.french@gm.com'" <michael.j.french@gm.com>, "'gary.e.pritchard@gm.com'" <gary.e.pritchard@gm.com>, "Gunter, John" <jgunter@US.TIAuto.com>, conrad.t.schmidt@gm.com, art.spong@gm.com, len.tillard@gm.com, lisa.a.jesme@gm.com, david.zimmerman@gm.com, michael.parrow@gm.com, joseph.paglialunga@gm.com, daniel.r.stec@gm.com, paul.s.chapman@gm.com, george.nagrant@gm.com
cc:
Subject: Updated: Corvette 2" QC Update

When: Occurs every Monday, Tuesday, Wednesday, Thursday, and Friday effective 7/26/2004 from 9:00 AM to 10:00 AM (GMT-05:00) Eastern Time (US & Canada).

~~*~*~*~*~*~*~*~*

All,
This is a updated notice for our daily reviews of the Corvette 2" QC status. The open issue matrix is attached.

Please note the caller passcode has changed

Conference Access:
Toll Free: 1-888-566-8440
Toll: 1-719-785-4400
Passcode: 336263

Please call me if you have any questions.

Regards,

Bryan D. Reed

Sr. Program Manager
Fuel Systems

TI Group Automotive Systems LLC
1227 Centre Road
Auburn Hills, MI 48326
Office: (248) 209-3403
Fax: (248) 377-1808
Mobile: (248) 895-5999
email: breed@us.tiauto.com

<<Corvette 2 Inch QC Open Issues List 072604.pdf>>

Corvette 2 Inch QC Open Issues List 072604

"Ceh, David"
<DCeh@US.TIAuto.com>

To: terry.m.stone@gm.com, dave.reek@gm.com, michael.j.french@gm.com
Subject: FW:

07/26/2004 04:13 PM

Here is the current list of known and suspected field failures. Please distribute to the appropriate individuals with in GM

Thanks

David J Ceh
Quality Director - TI NA Fuel Systems
Office - (248)-209-3372
Cell - (586)-243-8632

-----Original Message-----
From: digitalsender@us.tiauto.com [mailto:digitalsender@us.tiauto.com]
Sent: Monday, July 26, 2004 2:53 PM
To: dceh@us.tiauto.com
Subject:

Please open the attached document.
This document was sent to you using an HP Digital Sender.

Sent by:	<digitalsender@us.tiauto.com>
Number of pages:	3
Document type:	Color-B/W Photo
Attachment File Format:	Adobe PDF

To view this document you need to use the Adobe Acrobat Reader.
For free copy of the Acrobat reader please visit:

http://www.adobe.com

For more information on the HP Digital Sender please visit:

http://www.digitalsender.hp.com

Document.pdf

2" Connector Warranty Returns Corvette

Vehicle ID #	Location	Vehicle Build Date	Tank Information	O.D. Cavity	Reason Vehicle Returned	Finding	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	21-Jul
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	21-Jul
1G1YY32G845112120 Mileage 6709	Wylie Musser Chevrolet Terrell TX	10/25/2003				Wasn't analyzed at TI	21-Jul
1G1YY12S245115054 Mileage 1224	Jon Hall Automotive Group Daytona Beach FL	11/24/2003	Shell - 11/17/03-12:23 Barcode 42321310168 Module Install 11/17/03 17:01	2	Gas leaks on the ground during fill-up, also gas fumes in vehicle	Crack	
1G1YY22G845115304 Mileage 2874	Tropical Chevrolet Miami Shores FL	11/25/2003	Shell - 11/17/03 19:47 Barcode 42321320309 Module Install 11/18/03 12:48	4	Smells fuel from vehicle	Crack	
1G1YY32G145112847 Mileage 2971 (RH tank) Mileage 4735 (LH tank)	Kelley Chevrolet Hallandale FL	10/31/2003				Wasn't analyzed at TI	21-Jul
1G1YY22G845114833 Mileage 1640	Classic Chevrolet Grapevine TX	11/20/2003 LH & RH Tanks	RH Shell 11/10/03 LH Shell 11/10/03		Check Engine Light	Seam leak Crack	
1G1YY32G145114274 Mileage 774	Bush Chevy Cadillac Tiffin OH	11/17/2003	Shell 11/8/03		Odor	Crack	
1G1YY32G245114834 Mileage 918	Poway Chevrolet Poway CA	11/20/2003	Shell		Fuel Gas Leak	Crack - 2 ears ripped off quick connect	
1G1YY22G045114972 Mileage 1184	Porter Chevrolet Newark DE	11/25/2003			Fuel Leak	Wasn't analyzed at TI	
1G1YY22G745115147 Mileage 3385	Ed Morse Sunrise FL	11/26/2003			Fuel Leak	Wasn't analyzed at TI	
1G1YY32G845116935 Mileage 2800	Holler Chevrolet Winter Park FL	1/13/2004	Shell 12/19/2003 01:35 Barcode 42353330031	1	Fuel Leak	Seam leak	
1G1YY22G845116917 Mileage 5024	Deallo Chevrolet Huntington Beach CA	12/4/2003				Wasn't analyzed at TI	21-Jul
1G1YY22G445116689 Mileage 6319	Oasis Chevrolet Old Bridge NJ	12/10/2003				Wasn't analyzed at TI	21-Jul
1G1YY22G045117192 Mileage 276	Holiday Chevrolet Saint Cloud FL	12/15/2003				Wasn't analyzed at TI	21-Jul
1G1YY22GX15119452 Mileage 8689	Fisher Chevrolet Boulder CO	1/16/2004				Wasn't analyzed atTI	21-Jul
1G1YY22G845120172 Mileage 6287	Boyd Chevrolet Oakdale LA	1/26/2004				Wasn't analyzed at TI	21-Jul
1G1YY22G045120691 Mileage 3014	Ken Ware Chevrolet North Bend OR	1/30/2004				Wasn't analyzed at TI	21-Jul

1G1Y22G045123512 Mileage 2142	Bill Heard Chevrolet Las Vegas NV	3/1/2004	Shell 1/24/04 6:51 Barcode 42024430125	1	Fuel Leak	Cracked	
[redacted]							21-Jul
1G1YY12S745121481 Mileage 269	Hendrick Chevrolet Cary NC	2/9/2004				Wasn't analyzed at TI	21-Jul
1G1YY22G745122146 Mileage 3724	Van Chevrolet Scottsdale AZ		Shell 12/22/03 Barcode 42356330017	4	Fuel leak	Cracked	
[redacted]							21-Jul
[redacted]							21-Jul
[redacted]							21-Jul

2" Connector Warranty Returns - XLR

Vehicle ID #	Location	Vehicle Build Date	Tank Information	Q.C. Cavity	Reason Vehicle Returned	Finding
1G6YV34A245601608 Mileage 848	Crestview Cadillac Rochester, MI	12/17/2003	Shell - 12/03/03 16:04 Barcode 42337320282 Module Install 12/7/03 8:51	3	Fuel leaking under car after filling	Crack
1G6YV34A145601566 Mileage 782	Coast Cadillac Sarasota, FL	12/15/2003	Shell - 12/03/03 21:48 Barcode 42337320386 Module Install 12/7/03 13:59	3	Gas fumes, Leaking fuel	Crack
1G6YV34A845601548 Mileage 117	Liberty Automobiles U.A.E.	12/15/2003	Shell - 11/21/03 16:00 Barcode 42325320301 Module Install 12/1/03 20:12	3	Petrol tank leaking from crossover hose	Crack
1G6YV34A245600981 Mileage 997	Miller Bros Cadillac Elkcott City MD	10/27/2003				Wasn't analyzed at TI
1G6YV34A945601606 Mileage 886	Penske Cadillac Torrance CA	12/17/2003	Shell 12/3/03 17:19 Barcode 42337320303 Module Install	3	Fuel leak	Crack
1G6YV34A345601469 Mileage 1082	Country Cadillac Huntington NY	12/22/2003	Shell 11/18/2003	3	Fuel Leak	Cracked
1G6YV34A745601474 Mileage 1833	Crest Cadillac Venice FL	12/10/2003			Fuel Leak	Wasn't analyzed at TI
1G6YV34A745601476 Mileage 1652	Heritage Cadillac Lombard IL	12/10/2003			Leak	Wasn't analyzed at TI
1G6YV34A445601609 Mileage 3684	Addison on Bay Ltd Toronto ONT	12/22/2003			Left Tank	Wasn't analyzed at TI
1G6YV34A545601635 Mileage 4701	Symes Cadillac Pasadena CA	12/22/2003	Shell 12/3/2003 20:59 Barcode 42337320371	1	Fuel Leak	Seam leak
1G6YV34A645601795 Mileage 2931	Tutwiler Cadillac Indianapolis IN	1/12/2004	Shell 12/8/03 Barcode 42342320268	4	Fuel Leak	Cracked
1G6YV34A145601602 Mileage 5400	Brogan Cadillac Ridgewood NJ	12/17/2003			Fuel Leak	Wasn't analyzed at TI
1G6YV34A045601507 Mileage 3523	Grant Cadillac Farmingdale NY	12/17/2003	Shell 12/3/03	3	Gas Smell	Crack

21-Jul

Terry M. Stone
07/26/2004 04:09 PM

To: DAVE REEK/US/GM/GMC@GM
Subject: RE: More tanks

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/26/2004 04:09 PM -----

"Stange, Marshall" <MStange@US.TIAuto.com>
07/26/2004 04:08 PM

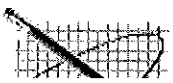
To: "art.spong@gm.com" <art.spong@gm.com>, terry.m.stone@gm.com
cc: len.tillard@gm.com
Subject: RE: More tanks

Art,

I have spoken to Don Short from Les Stanford. I will be getting tanks to him tomorrow morning. There are 5 vehicles left from the original 7. I have also tried to call Norm Spinelli at Matick. Please hold off checking other dealers until I get some of these sets back. I don't want to be wasting your time at this point.

Thanks, Marshall

> -----Original Message-----
> From: art.spong@gm.com [SMTP:art.spong@gm.com]
> Sent: Monday, July 26, 2004 8:39 AM
> To: terry.m.stone@gm.com
> Cc: len.tillard@gm.com; Mstange@US.TIAuto.com
> Subject: Re: More tanks
>
>
> I've contacted all of the local dealers and now I need to start expanding
> the search. I can contact a few of the worlds largest dealers, Kerbek in
> New Jersey, Maxie Price in Atlanta GA and sonic in Irving TX to get
> additional tanks. Marshal would need to ship the tanks and then provide
> shipping those tanks back to us. Do you want me to go forward or are the
> 13 tanks we have scheduled to be replaced enough?
>
> Please let me know, thanks
>
>
> Art Spong
> Brand Quality Manager, GM Performance Cars
> ph 586-947-8890 Cell 586-524-9931
>
>



Terry M. Stone
07/26/2004 04:07 PM

To: "Stange, Marshall" <MStange@US.TIAuto.com>
Subject: RE: More tanks

I was referring to the other 2/9/04 car:

2004	VEHICLE LEAKING FUEL GAS TANK (LH) CROSSOVER NECK TO TANK BODY LEAKING. DEFECTIVE. REPLACED LH FUEL TANK ASSEMBLY. TOOK TANK OUT OF NEW STOCK F	1G1YY12S745121481	2004-02-09

"Stange, Marshall" <MStange@US.TIAuto.com>

"Stange, Marshall" <MStange@US.TIAuto.com>
07/26/2004 03:59 PM

To: "terry.m.stone@gm.com" <terry.m.stone@gm.com>, "art.spong@gm.com" <art.spong@gm.com>
cc: "len.tillard@gm.com" <len.tillard@gm.com>
Subject: RE: More tanks

The vehicle built on 2/9/04 had a wiring harness problem. No tank was replaced. We are getting the 9/22 tank shipped to us to further investigate.

Marshall

> -----Original Message-----
> From: terry.m.stone@gm.com [SMTP:terry.m.stone@gm.com]
> Sent: Monday, July 26, 2004 3:16 PM
> To: art.spong@gm.com
> Cc: len.tillard@gm.com; Mstange@US.TIAuto.com
> Subject: Re: More tanks
>
>
> Art,
>
> I just left Marshall a VME. TI is contacting dealers about cars built on
> 9/22/03 and 2/9/04. If these have fractured crossover quick connects, we
> need to expand our search. This can start locally. As you mentioned, it
> may be easier to get the VINs and locations for all unsold 2004 C5's and
> XLR's.
>
> Let me know if the OnStar ping might be feasible (XLR's only).
>
> Regards,
> Terry
>
>
>
>
>
>
> Art Spong
>
> To: Terry M.
> Stone/US/GM/GMC@GM
> 07/26/2004 08:39 cc: Len
> Tillard/US/GM/GMC@GM, Mstange@US.TIAuto.com
> AM Subject: Re: More

> tanks(Document link: Terry M. Stone)
>
>
>
>
>
>
>
> I've contacted all of the local dealers and now I need to start expanding
> the search. I can contact a few of the worlds largest dealers, Kerbek in
> New Jersey, Maxie Price in Atlanta GA and sonic in Irving TX to get
> additional tanks. Marshal would need to ship the tanks and then provide
> shipping those tanks back to us. Do you want me to go forward or are the
> 13 tanks we have scheduled to be replaced enough?
>
> Please let me know, thanks
>
>
> Art Spong
> Brand Quality Manager, GM Performance Cars
> ph 586-947-8890 Cell 586-524-9931
>
>
>
>

Terry M. Stone
07/26/2004 03:55 PM

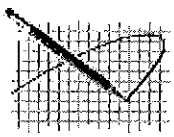
To: Patrick C Antus/C/US/GM/GMC@GM
Subject: Re: Parts Restriction

Pat,

After speaking with Art regarding Parts Restriction, that would be difficult and wouldn't take effect until about 90 days. Would it be possible for you or someone at SPO to notify us if any fuel tank is ordered and where it is being shipped?

Thanks,
Terry

Terry M. Stone



Terry M. Stone
07/26/2004 09:21 AM

To: Len Tillard/US/GM/GMC
cc: Art Spong/US/GM/GMC@GM, Michael J. French/US/GM/GMC@GM, "Reed, Bryan" <BReed@US.TIAuto.com>, mstange@us.tiauto.com, George Nagrant/US/GM/GMC, Patrick C Antus/C/US/GM/GMC@GM
Subject: Parts Restriction

Len,

Please place the following parts on restriction:

	C5	XLR	C6
	2003 (FFS) - 2004	2004-2005	2005
Tank Asm - Fuel LH - Welded Shell	10337585, 10363245, 10339514, or 10362744	10339514, 10362744	10362744
Tank Asm Fuel - Welded Shell	10337582	10337582	10337582

All LH tank shells can be replaced with P/N 10362744. This and 10337582 are what TI will be making and what SPO will be (or has) ordered in large quantity.

Thanks,
Terry

Terry M. Stone
07/26/2004 03:29 PM

To: DAVE REEK/US/GM/GMC@GM
Subject: Material Certs

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/26/2004 03:29 PM -----

Terry M. Stone
07/26/2004 08:20 AM

To: "Ceh, David" <DCeh@US.TIAuto.com>
cc: Michael J. French/US/GM/GMC@GM, Minoo Daroga/US/GM/GMC@GM
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Dave,

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Terry

"Ceh, David" <DCeh@US.TIAuto.com>

"Ceh, David" <DCeh@US.TIAuto.com>
07/23/2004 02:21 PM

To: terry.m.stone@gm.com
cc:
Subject: FW:

Terry - Per your request in this afternoon's meeting.

David J Ceh
Quality Director - TI NA Fuel Systems
Office - (248)-209-3372
Cell - (586)-243-8632

-----Original Message-----
From: digitalsender@us.tiauto.com [mailto:digitalsender@us.tiauto.com]
Sent: Friday, July 23, 2004 12:59 PM
To: dceh@us.tiauto.com
Subject:

Please open the attached document.
This document was sent to you using an HP Digital Sender.

Sent by:	<digitalsender@us.tiauto.com>
Number of pages:	7
Document type:	Color-B/W Photo
Attachment File Format:	Adobe PDF

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http://www.digitalsender.hp.com

Document.pdf

Terry M. Stone
07/26/2004 03:28 PM

To: DAVE REEK/US/GM/GMC@GM
Subject: Dealer Calls

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/26/2004 03:28 PM -----

Terry M. Stone
07/26/2004 08:22 AM

To: Michael J. French/US/GM/GMC@GM, Art Spong/US/GM/GMC@GM, Len Tillard/US/GM/GMC
cc: "Ceh, David" <DCeh@US.TIAuto.com>
Subject: Dealer Calls

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/26/2004 08:21 AM -----

"Ceh, David" <DCeh@US.TIAuto.com>
07/23/2004 02:08 PM

To: terry.m.stone@gm.com
cc:
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#	Vin #	POC	Customer Concerns	Concern Summary	Mechanics Comments	Notes	Tank Status
1	1G1YY22G745104309	Tony (Shop Foreman)	Check Engine Light is On	Mil Light	Evap System Error. Won't hold vaccum. Leak over top of right fuel tank evap crossover not connected. Reinstalled Old Parts and it worked	No Part Replacement. Tony faxed R/O	Part not replaced
2	1G1YY22G045101929	John (service), Bob (Parts)	Car Kept Stalling	Driveability	Blowing fuel pump fuse. Short in modules, couldn't get module out of tank so replaced entire left tank assembly	John Faxed the R/O. Need to setup pick up of the tank with crate and fly	Crate N Fly
3	1G1YY32G845112120	Don Hood	Gas leak when filling	Fuel Leak	Seam leaking on left tank	Don faxed R/O and is sending tank to AH	Part sent to AH
4	1G6YV34A245600961	Carl Bond (Service), Don (Parts)	Service engine soon light is on	Mil Light	Code P0455 large evap leak found left fuel tank has gross leak where transfer slides into tank	Carl faxed R/O. Must set up pick up with crate and fly	Crate N Fly
5	1G1YY32G145112847	Jeremy (service), Miriam (Parts Manager), Bob Allen (Warranty Guy)	Check Engine Light is On	Mil Light	Found leak with smoke at fuel cap	R/O 1	
			Check Engine Light is On	Mil Light	DTC P0442, right fuel tank leaks vapor. Couldn't find problem until TAN was called case # 7257903. Leak at crossover	R/O 2	
			Fuel leak driver side rear	Fuel Leak	Left tank leaking by crossover tube neck, replace	Part was sent by Miriam on 7/21/04	Part sent to AH
6	1G1YY22G845115917	Spencer)Service Writer), Rick (Service), Gary (Parts)	Car has a fuel leak from gas tank area	Fuel Leak	Left tank is leaking and missing alignment tabs on fuel bowl	Rick will fax the R/O and Gary has shipped the Tank to AH	Part sent to AH
7	1G1YY22G445116689	Christy (Service)	Fuel Leak at fuel tank	Fuel Leak	Leak on tank, replace	Christy is checking availability of tank and faxing the R/O over with that info 7/22/04	Call Back
8	1G1YY22G045117192	N/A	Fuel leak near left rear of car	Fuel Leak	Found fuel leak at tank	Faxing R/O. Tank Discarded	Tank Scrapped
9	1G6YV34A245601608	N/A	N/A	N/A	N/A	We already have this tank	Part Received
10	1G6YV34A045601607	N/A	N/A	N/A	N/A	We already have this tank	Part Received
11	1G6YV34A545601635	N/A	N/A	N/A	N/A	We already have this tank	Part Received
12	1G1YY22GX45119452	Bert (service), Phil Lackey (Service Manager)	Fuel Smell from inside of the vehicle	Fuel Leak	Left tank at crossover leaking called TAN, replaced	Tank Scrapped	Tank Scrapped
13	1G1YY22G945120172	Don (Service)	Odor of fuel	Fuel Leak	Fuel leaking from fuel tank seam at crossover	Don is sending R/O and Tank to AH	Part sent to AH
14	1G1YY22G045120691	Bill (Service Manager)	Strong smell of gas	Fuel Leak	Fuel coming from left tank transfer pipe connection, replace	Bill is faxing the R/O and looking for the part. Likely scrapped.	Looking for Part
15	1G1YY22G745121417	Travis (Service Manager)	Vehicle died while driving and would not restart	Driveability	Fuse blown for fuel pump, wire shorted at top of tank to body, no part replaced	Travis is faxing R/O	Part not replaced
16	1G1YY12S745121481	Matt Flowers (Service Advisor)	On delivery fill, dealership smelled fuel	Fuel Leak	Leaking at crossover tube connection	Matt will fax R/O. I must call David Piper Back	Call Back
17	1G1YY32G845124204	Leslie (service)	Check Engine Light is On	Mil Light	Left rear tank vent line crushed from factory, couldn't removed module so replaced entire system	Tank scrapped on 7/21/04	Tank Scrapped
18	1G1YY22G545124641	Scotty (Service)	Vehicle cut off and no start	Driveability	Fuel pump fuse blown. Shorted wire over left fuel tank. Push on tank and it would go open, pull on tank and it would go away.	No tank replacement. Scotty will send the R/O and shorted Wiring Harness to AH	Part not replaced
19	1G1YY32G345126698	Georgia (Service), Sandy (Service Advisor)	When gas tank is full is jumps to empty and then back up	Level Unit Issue	P0463 in history, removed left tank for level sensor issue could not get module out of tank and broke internal lines removing tank. Replaced entire assembly	Georgia is Faxing the R/O	Tank Scrapped

Terry M. Stone
07/26/2004 08:20 AM

To: "Ceh, David" <DCeh@US.TIAuto.com>
Subject: Material Certs

Dave,

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To: terry.m.stone@gm.com
cc:
Subject: FW:

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David J Ceh
Quality Director - TI NA Fuel Systems
Office - (248)-209-3372
Cell - (586)-243-8632

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"Reed, Bryan"
<BReed@US.TIAuto.com>

07/23/2004 05:05 PM

To: "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>, "Ceh, David" <DCeh@US.TIAuto.com>, "Stange, Marshall" <MStange@US.TIAuto.com>, "Quick, Chris" <ChrisQuick@US.TIAuto.com>, "Blanco, Elco" <EBlanco@US.TIAuto.com>, "Bridgeman, Sherri" <SBridgeman@US.TIAuto.com>, "Ruggles, Mark" <MRuggles@US.TIAuto.com>, "Erwin, John" <JErwin@US.TIAuto.com>, "Kambakhsh, Manouchehr" <MKambakhsh@US.TIAuto.com>, "Terry Stone (E-mail)" <terry.m.stone@gm.com>, "Minoo Daroga (E-mail)" <minoo.daroga@gm.com>, "'michael.j.french@gm.com'" <michael.j.french@gm.com>, "'gary.e.pritchard@gm.com'" <gary.e.pritchard@gm.com>, "Gunter, John" <jgunter@US.TIAuto.com>

Subject: Corvette 2" QC Update

When: Occurs every Monday, Tuesday, Wednesday, Thursday, and Friday effective 7/26/2004 from 9:00 AM to 10:00 AM (GMT-05:00) Eastern Time (US & Canada).
Where: !US AUB CR 4

~~*~*~*~*~*~*~*~*

All,
This is a notice for our daily reviews of the Corvette 2" QC status. The open issue matrix is attached.

Conference Access:
Toll Free: 1-888-566-8440
Toll: 1-719-785-4400
Passcode: 378881

Please call me if you have any questions.

Regards,

Bryan D. Reed

Sr. Program Manager
Fuel Systems

TI Group Automotive Systems LLC
1227 Centre Road
Auburn Hills, MI 48326
Office: (248) 209-3403
Fax: (248) 377-1808
Mobile: (248) 895-5999
email: breed@us.tiauto.com

<<Corvette 2 Inch QC Open Issues List 072304.pdf>>

Corvette 2 Inch QC Open Issues List 07230

REQUESTED REVISIONS TO THE NEW BUSINESS HOLD LIST

SUPPLIERS TO BE ADDED TO NEW BUSINESS HOLD DUE TO A QUALITY ISSUE

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Typical Product	Champion	Phone #	EP	QS9000 *	Yes, Spill, No or Next Week	Local Unit - GME / FIAT	Comment / Product line
07/21/04	Teleflex Automotive Sweden AB	Dalstorp, SE - SE	M	GM-Fiat	354888893	Bracket Asm-Brk Pedal - Mech. Ctls	Paris Pavlou	248-528-7212		Q	Yes		
07/21/04	Illinois Tool Works	Sante Fe Springs, CA	M	NAVO	041042180	Fasteners	Paris Pavlou	248-528-7212		Q	Yes		
07/21/04	Delphi E & C	Saginaw, MI	E	NAVO	005356845	Braking Systems	Tom Pougnet	(248) 528-5969		Q	Spill	NAVO	Quad attached

SUPPLIERS CURRENTLY ON HOLD WHO HAVE SATISFIED THE EXIT CRITERIA (RELATING TO QUALITY)

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Typical Product	Champion	Phone #	EP	QS9000 *		Local Unit - GME / FIAT	Comment / Product line
06/14/02	Isel	Minas Gerais	M	LAAM-Fiat	000043776	Screw Machine Parts -6/14/2002	Vilmar Fistarol	11-4234-4561		Q	Yes		
07/21/04	Tower Caserta	Capua (CE)	M	GM Fiat	000041760	Stampings - Puntone Ateriore dx/sx, Front Rail R/L	Garino				Yes		
02/04/04	Decoma Autosystems	Belleville, Ont Canada	E	AVO/Canad	200142508	Lighting	Tom Pougnet	(248) 528-5969		Q		NAVO/Canad	Quad attached
02/04/04	Decoma Autosystems	Belleville, Ont Canada	E	AVO/Canad	200142425	Lighting	Tom Pougnet	(248) 528-5969		Q		NAVO/Canad	Quad attached
02/04/04	Decoma Autosystems	Belleville, Ont Canada	E	AVO/Canad	200142466	Lighting	Tom Pougnet	(248) 528-5969		Q		NAVO/Canad	Quad attached

SUPPLIERS CURRENTLY ON HOLD WHO HAVE OBTAINED QS9000 CERTIFICATION

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Typical Product	Champion	Phone #	EP	QS9000 *		Local Unit - GME / FIAT	Comment / Product line
	—NONE—												

SUPPLIERS TO BE ADDED TO NEW BUSINESS HOLD BECAUSE THEY ARE NOT QS9000 CERTIFIED

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Typical Product	Champion	Phone #	EP	QS9000 *		Local Unit - GME / FIAT	Comment / Product line
	—NONE—												

SUPPLIERS WHERE A QS9000 WAIVER IS BEING REQUESTED

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Waiver Expiration Date	Champion	Phone #	EP	QS9000 *		Local Unit - GME / FIAT	Comment / Product line
	American Glass Products	Lima, Peru	C	LAAM-GM	934048844	03/21/2005							

Terry M. Stone
07/22/2004 01:51 PM

To: Minoo Daroga/US/GM/GMC@GM
Subject: Melt Flow Data

Minoo,

Here is the melt flow index results from PolyOne (via TI). Please review this. You will probably have these same question to ask of PolyOne:

- The original material callout on TI's drawing AEC00361 was "Fotriflex K50-10-136". This has recently been changed to "HDPE per GMP.PE.050 15% GF". Why does PolyOne's data indicate "Maxxam DP-9052-3-1000 (15% GF HDPE), EM00903550"?
- Why is the low load value on lot 2637 only 1.86. In October, the average on the Material Cert sheets was 3.
- The HLMI for lot 2697 is 38.7 and was tested at 190 C. Does that make this lot of material suspect?
- Why are the low load values for lot 2735 less than .08. This is a factor of 10 less expected. Was this a data entry error?

Please review and reply.

Terry

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/22/2004 01:23 PM -----

"Stange, Marshall" <MStange@US.TIAuto.com>
07/22/2004 11:14 AM

To: "'terry.m.stone@gm.com'" <terry.m.stone@gm.com>
cc:
Subject: FW:

> For more information on the HP Digital Sender please visit:
>
> http://www.digitalsender.hp.com <<Document.pdf>>

Document.pdf

"Ceh, David"
<DCeh@US.TIAuto.com>

07/21/2004 04:54 PM

To: michael.j.french@gm.com
Subject: FW: Vette 2" QC Open Issues

Updated open item list for 2" QC issue.

David J Ceh

Quality Director - TI NA Fuel Systems

Office - (248)-209-3372

Cell - (586)-243-8632

From: Reed, Bryan
Sent: Wednesday, July 21, 2004 4:46 PM
To: Terry Stone (E-mail)
Cc: Ceh, David
Subject: Vette 2" QC Open Issues

Terry,

Here is the updated open issues matrix.

<<Corvette 2 Inch QC Open Issues List 072104.pdf>>

Regards,

Bryan D. Reed

Sr. Program Manager

Fuel Systems

TI Group Automotive Systems LLC

1227 Centre Road

Auburn Hills, MI 48326

Office: (248) 209-3403

Fax: (248) 377-1808

Mobile: (248) 895-5999

email: breed@us.tiauto.com

Terry M. Stone
07/21/2004 10:26 AM

To: mstange@us.tiauto.com, "Ceh, David" <DCeh@US.TIAuto.com>, "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>, "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, "Reed, Bryan" <BReed@US.TIAuto.com>, Michael J. French/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, Art Spong/US/GM/GMC@GM, Len Tillard/US/GM/GMC, Murray J. Pyle/US/GM/GMC@GM
Subject: Warranty Data for Fuel Tanks

Here is the latest data. This includes data from Murray (7/2) and EDS (7/19). The EDS data is on the tab "New Detail" and includes 19 new cases for L1280, L1281, and L1282. It is sorted by labor code, then production date. It does not have the dealer info. The Word doc includes the VIS orders for the 19 cases for TI to contact the dealers to acquire RO's and tanks and determine which of the cases are related to the fractured quick connect. VIN 45601608 is one of the 19 cases and TI has that tank.


XLR and Corvette tank july 21.)


New Cases 7-21-04.do

Murray,

Please run the data again. I prefer your format.

Thanks,
Terry

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/21/2004 09:06 AM -----

Terry M. Stone
07/02/2004 01:49 PM

To: "Reed, Bryan" <BReed@US.TIAuto.com>
cc:
Subject: latest on the tanks

Bryan,

Here is the latest Warranty data for fuel tanks. Note that not all of these cases are the crossover QC issue. There are six additional cases in the TAC information from Art Spong. I added that info to Murray's file as the last tab.

Please forward this to the group with the Open Issues/Action Items list.

Regards,
Terry


XLR and Corvette tank july 2.)

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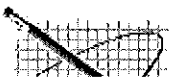

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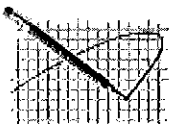

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Terry M. Stone
07/26/2004 03:28 PM

To: DAVE REEK/US/GM/GMC@GM
Subject: Dealer Calls

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Terry M. Stone
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http://www.digitalsender.hp.com

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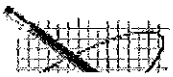
#	Vin #	POC	Customer Concerns	Concern Summary	Mechanics Comments	Notes	Tank Status
1	1G1YY22G745104309	Tony (Shop Foreman)	Check Engine Light is On	Mil Light	Evap System Error. Won't hold vaccum. Leak over top of right fuel tank evap crossover not connected. Reinstalled Old Parts and it worked	No Part Replacement. Tony faxed R/O	Part not replaced
2	1G1YY22G045101929	John (service), Bob (Parts)	Car Kept Stalling	Driveability	Blowing fuel pump fuse. Short in modules, couldn't get module out of tank so replaced entire left tank assembly	John Faxed the R/O. Need to setup pick up of the tank with crate and fly	Crate N Fly
3	1G1YY32G845112120	Don Hood	Gas leak when filling	Fuel Leak	Seam leaking on left tank	Don faxed R/O and is sending tank to AH	Part sent to AH
4	1G6YV34A245600961	Carl Bond (Service), Don (Parts)	Service engine soon light is on	Mil Light	Code P0455 large evap leak found left fuel tank has gross leak where transfer slides into tank	Carl faxed R/O. Must set up pick up with crate and fly	Crate N Fly
5	1G1YY32G145112847	Jeremy (service), Mirriam (Parts Manager), Bob Allen (Warranty Guy)	Check Engine Light is On	Mil Light	Found leak with smoke at fuel cap	R/O 1	
			Check Engine Light is On	Mil Light	DTC P0442, right fuel tank leaks vapor. Couldn't find problem until TAN was called case # 7257903. Leak at crossover	R/O 2	
			Fuel leak driver side rear	Fuel Leak	Left tank leaking by crossover tube neck, replace	Part was sent by Miriam on 7/21/04	Part sent to AH
6	1G1YY22G845115917	Spencer)Service Writer), Rick (Service), Gary (Parts)	Car has a fuel leak from gas tank area	Fuel Leak	Left tank is leaking and missing alignment tabs on fuel bowl	Rick will fax the R/O and Gary has shipped the Tank to AH	Part sent to AH
7	1G1YY22G445116689	Christy (Service)	Fuel Leak at fuel tank	Fuel Leak	Leak on tank, replace	Christy is checking availability of tank and faxing the R/O over with that info 7/22/04	Call Back
8	1G1YY22G045117192	N/A	Fuel leak near left rear of car	Fuel Leak	Found fuel leak at tank	Faxing R/O, Tank Discarded	Tank Scrapped
9	1G6YV34A245601608	N/A	N/A	N/A	N/A	We already have this tank	Part Received
10	1G6YV34A045601607	N/A	N/A	N/A	N/A	We already have this tank	Part Received
11	1G6YV34A545601635	N/A	N/A	N/A	N/A	We already have this tank	Part Received
12	1G1YY22GX45119452	Bert (service), Phil Lackey (Service Manager)	Fuel Smell from inside of the vehicle	Fuel Leak	Left tank at crossover leaking called TAN, replaced	Tank Scrapped	Tank Scrapped
13	1G1YY22G945120172	Don (Service)	Odor of fuel	Fuel Leak	Fuel leaking from fuel tank seam at crossover	Don is sending R/O and Tank to AH	Part sent to AH
14	1G1YY22G045120691	Bill (Service Manager)	Strong smell of gas	Fuel Leak	Fuel coming from left tank transfer pipe connection, replace	Bill is faxing the R/O and looking for the part. Likely scrapped.	Looking for Part
15	1G1YY22G745121417	Travis (Service Manager)	Vehicle died while driving and would not restart	Driveability	Fuse blown for fuel pump, wire shorted at top of tank to body, no part replaced	Travis is faxing R/O	Part not replaced
16	1G1YY12S745121481	Matt Flowers (Service Advisor)	On delivery fill, dealership smelled fuel	Fuel Leak	Leaking at crossover tube connection	Matt will fax R/O. I must call David Piper Back	Call Back
17	1G1YY32G845124204	Leslie (service)	Check Engine Light is On	Mil Light	Left rear tank vent line crushed from factory, couldn't removed module so replaced entire system	Tank scrapped on 7/21/04	Tank Scrapped
18	1G1YY22G545124641	Scotty (Service)	Vehicle cut off and no start	Driveability	Fuel pump fuse blown. Shorted wire over left fuel tank. Push on tank and it would go open, pull on tank and it would go away.	No tank replacement, Scotty will send the R/O and shorted Wiring Harness to AH	Part not replaced
19	1G1YY32G345126898	Georgia (Service), Sandy (Service Advisor)	When gas tank is full is jumps to empty and then back up	Level Unit Issue	P0453 in history, removed left tank for level sensor issue could not get module out of tank and broke internal lines removing tank. Replaced entire assembly	Georgia la Faxing the R/O	Tank Scrapped



Terry M. Stone
07/26/2004 08:20 AM

To: "Ceh, David" <DCeh@US.TIAuto.com>
Subject: Material Certs

Dave,

Thanks for the info. Please copy Mike on all correspondence as he is (or shares) the lead from GM's side of this issue. Copy Minoo on all material related information. I will assume that Bryan and Marshall have everything that you send me.

Thanks,
Terry

"Ceh, David" <DCeh@US.TIAuto.com>

"Ceh, David" <DCeh@US.TIAuto.com>
07/23/2004 02:21 PM

To: terry.m.stone@gm.com
cc:
Subject: FW:

Terry - Per your request in this afternoon's meeting.

David J Ceh
Quality Director - TI NA Fuel Systems
Office - (248)-209-3372
Cell - (586)-243-8632

-----Original Message-----
From: digitalsender@us.tiauto.com [mailto:digitalsender@us.tiauto.com]
Sent: Friday, July 23, 2004 12:59 PM
To: dceh@us.tiauto.com
Subject:

Please open the attached document.
This document was sent to you using an HP Digital Sender.

Sent by:	<digitalsender@us.tiauto.com>
Number of pages:	7
Document type:	Color-B/W Photo
Attachment File Format:	Adobe PDF

To view this document you need to use the Adobe Acrobat Reader.
For free copy of the Acrobat reader please visit:

http://www.adobe.com

For more information on the HP Digital Sender please visit:

http://www.digitalsender.hp.com

"Reed, Bryan"
<BReed@US.TIAuto.com>

07/23/2004 05:05 PM

To: "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>, "Ceh, David" <DCeh@US.TIAuto.com>, "Stange, Marshall" <MStange@US.TIAuto.com>, "Quick, Chris" <ChrisQuick@US.TIAuto.com>, "Blanco, Elco" <EBlanco@US.TIAuto.com>, "Bridgeman, Sherri" <SBridgeman@US.TIAuto.com>, "Ruggles, Mark" <MRuggles@US.TIAuto.com>, "Erwin, John" <JErwin@US.TIAuto.com>, "Kambakhsh, Manouchehr" <MKambakhsh@US.TIAuto.com>, "Terry Stone (E-mail)" <terry.m.stone@gm.com>, "Minoo Daroga (E-mail)" <minoo.daroga@gm.com>, "'michael.j.french@gm.com'" <michael.j.french@gm.com>, "'gary.e.pritchard@gm.com'" <gary.e.pritchard@gm.com>, "Gunter, John" <jgunter@US.TIAuto.com>

Subject: Corvette 2" QC Update

When: Occurs every Monday, Tuesday, Wednesday, Thursday, and Friday effective 7/26/2004 from 9:00 AM to 10:00 AM (GMT-05:00) Eastern Time (US & Canada).
Where: !US AUB CR 4

~~*~*~*~*~*~*~*~*

All,
This is a notice for our daily reviews of the Corvette 2" QC status. The open issue matrix is attached.

Conference Access:
Toll Free: 1-888-566-8440
Toll: 1-719-785-4400
Passcode: 378881

Please call me if you have any questions.

Regards,

Bryan D. Reed

Sr. Program Manager
Fuel Systems

TI Group Automotive Systems LLC
1227 Centre Road
Auburn Hills, MI 48326
Office: (248) 209-3403
Fax: (248) 377-1808
Mobile: (248) 895-5999
email: breed@us.tiauto.com

<<Corvette 2 Inch QC Open Issues List 072304.pdf>>

Corvette 2 Inch QC Open Issues List 07230

REQUESTED REVISIONS TO THE NEW BUSINESS HOLD LIST

SUPPLIERS TO BE ADDED TO NEW BUSINESS HOLD DUE TO A QUALITY ISSUE

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Typical Product	Champion	Phone #	EP	QS9000 *	Yes, Spill, No or Next Week	Local Unit - GME / FIAT	Comment / Product line
07/21/04	Teleflex Automotive Sweden AB	Dalstorp, SE - SE	M	GM-Fiat	354888893	Bracket Asm-Brk Pedal - Mech. Ctls	Paris Pavlou	248-528-7212		Q	Yes		
07/21/04	Illinois Tool Works	Sante Fe Springs, CA	M	NAVO	041042180	Fasteners	Paris Pavlou	248-528-7212		Q	Yes		
07/21/04	Delphi E & C	Saginaw, MI	E	NAVO	005356845	Braking Systems	Tom Pougnet	(248) 528-5969		Q	Spill	NAVO	Quad attached

SUPPLIERS CURRENTLY ON HOLD WHO HAVE SATISFIED THE EXIT CRITERIA (RELATING TO QUALITY)

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Typical Product	Champion	Phone #	EP	QS9000 *		Local Unit - GME / FIAT	Comment / Product line
06/14/02	Isel	Minas Gerais	M	LAAM-Fiat	000043776	Screw Machine Parts -6/14/2002	Vilmar Fistarol	11-4234-4561		Q	Yes		
07/21/04	Tower Caserta	Capua (CE)	M	GM Fiat	000041760	Stampings - Puntone Ateriore dx/sx, Front Rail R/L	Garino				Yes		
02/04/04	Decoma Autosystems	Belleville, Ont Canada	E	AVO/Canad	200142508	Lighting	Tom Pougnet	(248) 528-5969		Q		NAVO/Canad	Quad attached
02/04/04	Decoma Autosystems	Belleville, Ont Canada	E	AVO/Canad	200142425	Lighting	Tom Pougnet	(248) 528-5969		Q		NAVO/Canad	Quad attached
02/04/04	Decoma Autosystems	Belleville, Ont Canada	E	AVO/Canad	200142466	Lighting	Tom Pougnet	(248) 528-5969		Q		NAVO/Canad	Quad attached

SUPPLIERS CURRENTLY ON HOLD WHO HAVE OBTAINED QS9000 CERTIFICATION

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Typical Product	Champion	Phone #	EP	QS9000 *		Local Unit - GME / FIAT	Comment / Product line
	—NONE—												

SUPPLIERS TO BE ADDED TO NEW BUSINESS HOLD BECAUSE THEY ARE NOT QS9000 CERTIFIED

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Typical Product	Champion	Phone #	EP	QS9000 *		Local Unit - GME / FIAT	Comment / Product line
	—NONE—												

SUPPLIERS WHERE A QS9000 WAIVER IS BEING REQUESTED

Date Added	Supplier	Supplier Locations	CME	Orig. Div.	Duns #	Waiver Expiration Date	Champion	Phone #	EP	QS9000 *		Local Unit - GME / FIAT	Comment / Product line
	American Glass Products	Lima, Peru	C	LAAM-GM	934048844	03/21/2005							

Terry M. Stone
07/22/2004 01:51 PM

To: Minoo Daroga/US/GM/GMC@GM
Subject: Melt Flow Data

Minoo,

Here is the melt flow index results from PolyOne (via TI). Please review this. You will probably have these same question to ask of PolyOne:

- The original material callout on TI's drawing AEC00361 was "Fotriflex K50-10-136". This has recently been changed to "HDPE per GMP.PE.050 15% GF". Why does PolyOne's data indicate "Maxxam DP-9052-3-1000 (15% GF HDPE), EM00903550"?
- Why is the low load value on lot 2637 only 1.86. In October, the average on the Material Cert sheets was 3.
- The HLMI for lot 2697 is 38.7 and was tested at 190 C. Does that make this lot of material suspect?
- Why are the low load values for lot 2735 less than .08. This is a factor of 10 less expected. Was this a data entry error?

Please review and reply.

Terry

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/22/2004 01:23 PM -----

"Stange, Marshall" <MStange@US.TIAuto.com>
07/22/2004 11:14 AM

To: "'terry.m.stone@gm.com'" <terry.m.stone@gm.com>
cc:
Subject: FW:

> For more information on the HP Digital Sender please visit:
>
> http://www.digitalsender.hp.com <<Document.pdf>>

Document.pdf

"Ceh, David" <DCeh@US.TIAuto.com>
07/21/2004 04:54 PM

To: michael.j.french@gm.com
Subject: FW: Vette 2" QC Open Issues

Updated open item list for 2" QC issue.

David J Ceh

Quality Director - TI NA Fuel Systems

Office - (248)-209-3372

Cell - (586)-243-8632

From: Reed, Bryan
Sent: Wednesday, July 21, 2004 4:46 PM
To: Terry Stone (E-mail)
Cc: Ceh, David
Subject: Vette 2" QC Open Issues

Terry,

Here is the updated open issues matrix.

<<Corvette 2 Inch QC Open Issues List 072104.pdf>>

Regards,

Bryan D. Reed

Sr. Program Manager

Fuel Systems

TI Group Automotive Systems LLC

1227 Centre Road

Auburn Hills, MI 48326

Office: (248) 209-3403

Fax: (248) 377-1808

Mobile: (248) 895-5999

email: breed@us.tiauto.com

Corvette 2 Inch QC Open Issues List 07210

Terry M. Stone
07/21/2004 10:26 AM

To: mstange@us.tiauto.com, "Ceh, David" <DCeh@US.TIAuto.com>, "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>, "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, "Reed, Bryan" <BReed@US.TIAuto.com>, Michael J. French/US/GM/GMC@GM, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM, Art Spong/US/GM/GMC@GM, Len Tillard/US/GM/GMC, Murray J. Pyle/US/GM/GMC@GM
Subject: Warranty Data for Fuel Tanks

Here is the latest data. This includes data from Murray (7/2) and EDS (7/19). The EDS data is on the tab "New Detail" and includes 19 new cases for L1280, L1281, and L1282. It is sorted by labor code, then production date. It does not have the dealer info. The Word doc includes the VIS orders for the 19 cases for TI to contact the dealers to acquire RO's and tanks and determine which of the cases are related to the fractured quick connect. VIN 45601608 is one of the 19 cases and TI has that tank.


XLR and Corvette tank july 21.x


New Cases 7-21-04.do

Murray,

Please run the data again. I prefer your format.

Thanks,
Terry

----- Forwarded by Terry M. Stone/US/GM/GMC on 07/21/2004 09:06 AM -----

Terry M. Stone
07/02/2004 01:49 PM

To: "Reed, Bryan" <BReed@US.TIAuto.com>
cc:
Subject: latest on the tanks

Bryan,

Here is the latest Warranty data for fuel tanks. Note that not all of these cases are the crossover QC issue. There are six additional cases in the TAC information from Art Spong. I added that info to Murray's file as the last tab.

Please forward this to the group with the Open Issues/Action Items list.

Regards,
Terry


XLR and Corvette tank july 2.x

1-25-03 15 CR 18 L
4-02-04 XLR 1 R

Verbatim	VIN	Prod Date	Veh Line	Sale Date	Labor_Code Description	Repair Date	TC	Trouble_Code Description	CC	Customer_Code_ Description	Miles
(WG) CUST. STATES CK. ENGINE LT. COMES ON- CK.REPORT TEST DRIVE, PERFORM SYSTEM TEST WITH TECH TWO, CODE P0455 EVAP SYSTEM, FOLLOW FRDETERMINE SYSTEM WILL NOT HOLD VAC, RAISE AND INSPECT AND FO	1G1YY22G745104309	2003-08-18	C5	2003-09-25	TANK, RIGHT FUEL-REPLACE	2004-07-12	2K	IMPROPERLY SEALED	WG	WARNING LIGHTS: SERVICE ENGINE SOON	3530
	1G1YY22G045101929	2003-07-25	C5	2004-01-27	TANK, LEFT FUEL-REPLACE	2004-06-14	1D	BROKEN	PN	PERFORMANCE: NO START(ROUGH IDLECOL	9220
	1G1YY32G845112120	2003-10-25	C5	2003-11-29	TANK, LEFT FUEL-REPLACE	2004-06-15	2K	IMPROPERLY SEALED	VN	VISUAL: LEAK/LEAKS(MISSING)	8709
	1G6YV34A245600961	2003-10-27	XLR	2004-05-03	TANK, LEFT FUEL-REPLACE	2004-06-21	6C	COMPONENT-INOPERATIVE	WG	WARNING LIGHTS: SERVICE ENGINE SOON	997
	1G1YY32G145112847	2003-10-31	C5	2004-01-30	TANK, LEFT FUEL-REPLACE	2004-05-21	1K	CRACKED	VN	VISUAL: LEAK/LEAKS(MISSING)	4735
NEED AUTH PE PLEASE. PTS BEYOND OUR LIMIT. WAS NEC TO REPLACE FUEL TANK AND MODULE DUE TO MODULE MISSING ALIGNMENT TABS ON FUEL PUMP BOW. . 9 ST TO SMOKE TEST FULE TANK SYS. TO ISOLATE LEAK. THANKS LG	1G1YY22G845115917	2003-12-04	C5	2004-04-23	TANK, LEFT FUEL-REPLACE	2004-06-21	3D	MISSING	VN	VISUAL: LEAK/LEAKS(MISSING)	5024
	1G1YY22G445116689	2003-12-10	C5	2004-03-11	TANK, LEFT FUEL-REPLACE	2004-06-07	3R	POROSITY	VN	VISUAL: LEAK/LEAKS(MISSING)	5319
	1G1YY22G045117192	2003-12-15	C5	2004-06-07	TANK, LEFT FUEL-REPLACE	2004-06-14	6C	COMPONENT-INOPERATIVE	VN	VISUAL: LEAK/LEAKS(MISSING)	276
FUEL LEAK UNDER VEHICLE-NEC TO DROP REAR END OUT OF VEHICLE TO ACCESS GAS TANK-NEC TO REPLACE TANK DUE TO CRACKED COLLAR	1G6YV34A245601608	2003-12-17	XLR	2003-12-31	TANK, LEFT FUEL-REPLACE	2004-05-03	1K	CRACKED	VN	VISUAL: LEAK/LEAKS(MISSING)	848
NADS- FUEL LEAK. MULTIPLE LEAKS DETECTED. LEAKS AT FUEL FEED CRO SSOVER HOSE AND LEFT SIDE FUEL TANK. NECESSARY TO REMOVE TRANSMI SSION AND REAR END ASSEMBLY FOR ACCESS TO CROSSOVER HOSE. EXTENS IVE REPAIR. 2004 XLR MODEL. PUNCH TIMES ON FILE.	1G6YV34A045601607	2003-12-17	XLR	2004-01-07	TANK, LEFT FUEL-REPLACE	2004-06-09	2K	IMPROPERLY SEALED	VN	VISUAL: LEAK/LEAKS(MISSING)	3523
	1G6YV34A545601635	2003-12-18	XLR	2004-01-02	TANK, LEFT FUEL-REPLACE	2004-06-09	1K	CRACKED	OP	OPERATION: ODOR	4701
	1G1YY22GX45119452	2004-01-16	C5	2004-02-27	TANK, LEFT FUEL-REPLACE	2004-06-15	6C	COMPONENT-INOPERATIVE	OJ	OPERATION: INOPERATIVE(HARSH)	6699

Part #	Total Cost	Part Cost	Labor Cost
	506.52	0	506.52
10363245	1364.8	889.06	475.74
10363245	988.15	529.21	458.94
10362744	905.93	437.75	468.18
10363245	976.22	513.84	462.38
10337585	1329.58	791.27	471.94
10363245	1227.5	705.64	521.86
10363245	1069.64	640.26	379.6
10339514	2117.63	543.8	806.49
10362744	1590.65	500.69	554.06
10339514	1069.34	500.69	462.5
10363245	1113.32	637.52	475.8

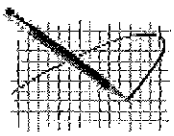
	1G1YY22G945120172	2004-01-26	C5	2004-03-05	TANK, LEFT FUEL-REPLACE	2004-06-18	2K	IMPROPERLY SEALED	VN	VISUAL: LEAK/LEAKS(MISSING)	6287
CUSTOMER STATES THAT THERE IS A STRONG SMELL OF GAS ADVISE CHECKED FOR LEAK - FUEL COMING FROM LH TAN TRANSFER PIPE CONNECT REMOVED LEFT FUEL TANK - REPLACED TRANSFER PIMP - INTERNAL FUEL	1G1YY22G045120691	2004-01-30	C5	2004-03-03	TANK, LEFT FUEL-REPLACE	2004-06-09	OB	OBDII Code used	OI	OPERATION: FUMES(HARD SHIFT)	3014
	1G1YY22G745121417	2004-02-09	C5	2004-05-04	TANK, LEFT FUEL-REPLACE	2004-06-17	6C	COMPONENT-INOPERATIVE	PN	PERFORMANCE: NO START(ROUGH	1341
VEHICLE LEAKING FUEL GAS TANK (LH) CROSSOVER NECK TO TANK BODY LEAKING. DEFECTIVE. REPLACED LH FUEL TANK ASSEMBLY. TOOK TANK OUT OF NEW STOCK F	1G1YY12S745121481	2004-02-09	C5	2004-06-23	TANK, LEFT FUEL-REPLACE	2004-06-23	2K	IMPROPERLY SEALED	VN	VISUAL: LEAK/LEAKS(MISSING)	269
CUSTOMER STATES CHECK ENGINE LIGHT ON LEFT REAR FUEL TANK VENT, LINE CRUSHED FROM FACTORY FUEL SENDER COVER SWELLED ANREPLACE LEFT FUEL TANK,DROVE TO FILL GAS TANKS AND TANK WOUL	1G1YY32G845124204	2004-03-08	C5	2004-03-11	TANK, LEFT FUEL-REPLACE	2004-06-21	6C	COMPONENT-INOPERATIVE	WG	WARNING LIGHTS: SERVICE ENGINE SOON	5168
	1G1YY22G545124641	2004-03-11	C5	2004-06-02	TANK, LEFT FUEL-REPLACE	2004-06-16	7L	WIRE-CUT/BROKEN/OPEN	MC	MISC: FAILED EMISSIONS	501
NEC TO RPL LFT FUEL TAND AND MODULE TO CORRECT CONDITION.	1G1YY32G345126698	2004-04-02	C5	2004-05-16	TANK, LEFT FUEL-REPLACE	2004-06-15	6C	COMPONENT-INOPERATIVE	OL	OPERATION: INTERMNT(INSUF HEAT/COOL)	1349

10337585	844.07	504.36	323.79
10363245	1442.56	1049	393.6
	494.09	0	492.54
10363245	922.74	529.21	393.53
10337585	1092.19	826.01	155.27
	377.9	0	377.9
10363245	1449.23	889.06	530.82

CONRAD T SCHMIDT
07/02/2004 11:51 AM

To: Michael J. French/US/GM/GMC@GM
Subject: Open Issues List

----- Forwarded by CONRAD T SCHMIDT/US/GM/GMC on 07/02/2004 11:51 AM -----



Terry M. Stone
07/02/2004 09:43 AM

To: "Reed, Bryan" <BReed@US.TIAuto.com>, "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, Patrick C Antus/C/US/GM/GMC@GM, CONRAD T SCHMIDT/US/GM/GMC@GM
cc: jgunter@us.tiauto.com, mstange@us.tiauto.com, George Nagrant/US/GM/GMC, Daniel R. Stec, Joseph Paglialunga/US/GM/GMC@GM, "Ceh, David" <DCeh@US.TIAuto.com>, "Rivenburgh, Mike" <MRivenburgh@US.TIAuto.com>, "Stumph, Tim" <TStumph@US.TIAuto.com>, "Smith, Tom (Ossian)" <TRSmith@US.TIAuto.com>, "Quick, Chris" <ChrisQuick@US.TIAuto.com>, Minoo Daroga/US/GM/GMC@GM, Anilkumar Pitta/US/GM/GMC@GM, Michael J. French/US/GM/GMC@GM, John Murawa/US/GM/GMC@GM, "Reginek, Jamie" <jreginek@US.TIAuto.com>, Art Spong/US/GM/GMC@GM, Len Tillard/US/GM/GMC, David Zimmerman/US/GM/GMC@GM, pcoyle@US.TIAuto.com, Paul S. Chapman/US/GM/GMC@GM, Gary E. Pritchard/US/GM/GMC@GM
Subject: Open Issues List

Bryan,

As we discussed this morning, please provide the open issues list today. Provide an update to the list on Wed. (7/7/04). Please include the following issues on the list:

TI to have their injection molding experts (from Meriden?) investigate the issue including the process changes at Viking Plastics. This is critical to help reduce the possible exposure. There should be limits on what the molder can change without having to re-PPAP.

Process parameters and parts from "A2" need to be evaluated.

Why were process changes not PPAP'd at PolyOne or Viking?

Provide the shipment information of suspect tanks to SPO. All suspect tanks need to be replaced.

Who is the main contact at TI for this issue over the next two weeks?

Provide a plan to accelerate fuel tank builds in Ossian, with and without MRA's.

Provide update on tanks from Jack Cauley car: Evaluate both tanks for possible leak, test RH component melt flow, conduct accelerated tests on LH tank.

Verify that all parts from process "A4" were scrapped.

Reduce maximum allowed regrind at Viking from 24% to 20%.

Update TI's component drawing to specify critical parameters and eventually include GM spec number to be provided by Minoo or Anil.

Provide requested information to Minoo to help create GM spec number.

Provide update and PPAP schedule for re-balancing the 4-cavity tool at Viking.

Update spreadsheet tracking all of field-returned parts with information regarding TAC case info, DTC's set, ...

Update 8d.

Provide list of questions/instructions for dealership in the case we find a car with the leak.

Ramesh,

Please provide the list of tank shipments that Dave Ceh sent to you yesterday along with all of the material reviewed on 6/28/04.

Pat,

Is there any way SPO could check tanks in stock for build dates (located on label on front of tank)?

Conrad,

Dave Ceh (586-243-8632) is the Quality Director at TI and is in charge of resolving this issue and updating GM Supplier Quality (you and Joe) on the status. Bryan Reed (248-895-5999) is the Program Manager for my programs and has been assigned to provide the open issues list.

Gary Smits
07/02/2004 08:39 AM

To: Rick Fox/US/GM/GMC@GM
Subject: Re: Corvette Fuel Tank

Here's some additional information that I had already forwarded to Doug


Fuel X Over Pipe TAC cases .: Fuel tank crack at crossover.p
Rick Fox

Rick Fox
07/02/2004 08:31 AM

To: Michael J. French/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM, Doug Wachtel/US/GM/GMC@GM, Christopher Janik/US/GM/GMC@GM
cc: Gary Smits, Loren Rusk/US/GM/GMC@GM
Subject: Corvette Fuel Tank

Some information attached. Follow up to yesterday's note.
----- Forwarded by Rick Fox/US/GM/GMC on 07/02/2004 08:29 AM -----

Maureen Foley-Gardner
07/02/2004 07:43 AM

To: Rick Fox/US/GM/GMC@GM
cc:
Subject: Case 1999 Form QN916

----- Forwarded by Maureen Foley-Gardner/US/GM/GMC on 07/02/2004 07:43 AM -----

Pat Radecki
07/02/2004 04:23 AM

To: Maureen Foley-Gardner/US/GM/GMC@GM
cc:
Subject: Case 1999 Form QN916

Maureen, attached is the corrective action document for 24hr CDP case# 1999, XLR and Corvette fuel tank issue.
----- Forwarded by Pat Radecki/US/GM/GMC on 07/02/2004 04:21 AM -----

Art Spong
07/01/2004 04:25 PM

To: Pat Radecki/US/GM/GMC@GM
cc:
Subject: Case 1999 Form QN916

Pat: I've review this an it seems appropriate to close this as a 24 hour issue. I am sending a copy to the FPE group for their information to see what they want to do with it. Thanks for your help. What else must I do to close this issue?

Art Spong
Brand Quality Manager, GM Performance Cars
ph 586-947-8890 Cell 586-524-9931

----- Forwarded by Art Spong/US/GM/GMC on 07/01/2004 04:23 PM -----

"Ceh, David" <DCeh@US.TIAuto.com>
06/30/2004 10:20 PM

To: len.tillard@gm.com, art.spong@gm.com, joseph.paglialunga@gm.com, terry.m.stone@gm.com, conrad.schmidt@gm.com
cc: "Stange, Marshall" <MStange@US.TIAuto.com>, "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, "Reed, Bryan" <BReed@US.TIAuto.com>, "Maxwell, Cindy"

<CMaxwell@US.TIAuto.com>
Subject: Case 1999 Form QN916

As requested, the preliminary copy of the corrective action

David J Ceh
Quality Director - TI NA Fuel Systems
Office - (248)-209-3372
Cell - (586)-243-8632

Corvette Quick Connect Crack QN 916.

CONRAD T SCHMIDT
07/02/2004 08:26 AM

To: Joseph Paglialunga/US/GM/GMC@GM
Subject: Re: F.Y.I. PRR issued to TI Group

NEED COPY OF TI AUTO 8D AND BREAKPOINT INFO. THIS IOSSUE IS GOING TO FPE GROUP. HAVE MIKE FRENCH ADDED TO DISTRIBUTION FOR THIS ISSUE.
THANKS
CONRAD
Joseph Paglialunga

Joseph Paglialunga
07/01/2004 07:33 AM

To: conrad.t.schmidt@gm.com
cc:
Subject: F.Y.I. PRR issued to TI Group

----- Forwarded by Joseph Paglialunga/US/GM/GMC on 07/01/2004 06:32 AM -----

Aaron Arndt
06/30/2004 04:41 PM

To: Daniel R. Stec/US/GM/GMC@GM
cc: Steve Thomas/US/GM/GMC@GM, Joseph Paglialunga/US/GM/GMC@GM, Charles Spurlock/US/GM/GMC@GM, Michael T. Joseph/US/GM/GMC@GM
Subject: PRR issued to TI Group

Daniel,

I wanted to make you aware of the PRR that was written against TI on the fuel tank. The PRR number 20040630-153608. The issue that we had was that a vehicle ran for a short time and died. More gas was added and the vehicle ran for a short time and died again. All the gas was in the right hand tank.

Joe P said that he would take the lead on this issue and we had the local rep for TI here as well. The tank should be getting sent back to TI for root cause.

If you need any additional info feel free to contact myself or Joe.

Thank you,
Aaron
(586) 709-8005

TAC Cases Reporting Alleged Fuel Leaks at Crossover Pipe Connection to Left Tank on 2004 YB

Data collected 06/25/04

2004 Chevrolet Corvette

Case	VIN	Build Date	Date Created	Non-Keyword Qualifier	Keyword Qualifier
7455798	1G1YY32G145114274	11/17/2003	06/23/04	LEFT FUEL TANK	ODOR
7265281	1G1YY32G245114834	11/20/2003	04/05/04	LEFT GAS TANK CROSSOVER PIPE FLANGE	FUEL GAS LEAK
7330737	1G1YY22G045114972	11/25/2003	05/03/04	LEFT TANK CROSSOVER CONNECTION	FUEL LEAK
7369775	1G1YY22G745115147	11/25/2003	05/19/04		FUEL LEAK
7196764	1G1YY22G845115304	12/02/2003	03/08/04	FUEL LEAK AT CROSSOVER TUBE	FUEL LEAK
7459338	1G1YY32G845118936	01/13/2004	06/24/04	CROSSOVER PIPE	FUEL LEAK LEFT TANK

2004 Cadillac XLR

Case	VIN		Date Created	Non-Keyword Qualifier	Keyword Qualifier
7347306	1G6YV34A345601469	12/22/2003	05/10/04	LEFT REAR	EXTERNAL FUEL LEAK TANK
7134321	1G6YV34A745601474	12/10/2003	02/11/04	DRIVERS TANK AT CROSSOVER	FUEL LEAK TANK
7276799	1G6YV34A045601476	12/10/2003	04/08/04	FUEL LEAK LEFT TANK	LEAK
7289340	1G6YV34A945601606	12/22/2003	04/14/04	FUEL LEAK FROM FUEL TANK AREA	FUEL
7462637	1G6YV34A445601609	12/22/2003	06/25/04	TANK SEAM AT CROSSOVERPIPE	LEFT TANK
7427154	1G6YV34A545601635	12/22/2003	06/11/04	AT THE TOP OF TANK P0455	FUEL LEAK
7405970	1G6YV34A545601795	01/12/2004	06/03/04	CROSS PIPE	FUEL LEAK

Rick Fox

07/02/2004 08:31 AM

To: Michael J. French/US/GM/GMC@GM, DAVE REEK/US/GM/GMC@GM, Doug Wachtel/US/GM/GMC@GM, Christopher Janik/US/GM/GMC@GM
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cc: "Stange, Marshall" <MStange@US.TIAuto.com>, "Saligrama, Ramesh" <RSaligrama@US.TIAuto.com>, "Reed, Bryan" <BReed@US.TIAuto.com>, "Maxwell, Cindy" <CMaxwell@US.TIAuto.com>
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Quality Director - TI NA Fuel Systems
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Corvette Quick Connect Crack QN 916.

TI Automotive

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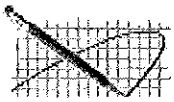
Subject: 24hr CDP Corvette Fuel Tank

I am led to believe SQA may already be involved and investigating. May be good to obtain effect on vehicle performance in addition to finding out who knows what. May need to call Radecki for specifics.
----- Forwarded by Rick Fox/US/GM/GMC on 07/01/2004 04:26 PM -----

Maureen Foley-Gardner
07/01/2004 09:44 AM

To: Rick Fox/US/GM/GMC@GM
cc:
Subject: 24hr CDP Emerging Issue, 6/30/04, case# 1999

----- Forwarded by Maureen Foley-Gardner/US/GM/GMC on 07/01/2004 09:44 AM -----



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06/29/2004 11:23 AM

To: Maureen Foley-Gardner/US/GM/GMC@GM
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----- Forwarded by Pat Radecki/US/GM/GMC on 06/29/2004 11:15 AM -----

Add-On | Solution | Memos | Status | Summary | FPIM | Impact

Product Report

GM Aftersales

FPR No: 1999/2004/US

Type: GMNA Passenger Car (US)

Status:	Country / Region:	Champion:
Open (25 d left)	United States of America / GMNA	Art Spong
	PRTS No.:	FPRD No: 6292

Corvette - Fuel Tank - Vehicle - 24hr - Check Engine Light - P0455

Affected Vehicles

Main Carline:	Other Potentially Affected Carlines:	Model Year:	Model:
Corvette		2004	
Engine:	**Transmission:**	**Axle:**	**Transfer Case:**
Local Component FPR:	**Options:**	**Steering:**	**No of Cases:**
No		LHD	1
Source of Information:	**24hr:**	**Brand Quality Plan:**	
	No	No	

Samples	VIN	Build Date	Engine No	Mileage (mi)	Transm. No.
Youngest	1G1YY22G845114833	11/21/2003		1640	
Between					

Oldest					

Problem Description

Functional Group Level 1:	Level 2:	Level 3:	Level 4:
15 Powertrain Integration	5 Fuel Storage & Handling	1 Fuel Tank & Canister	1 Tank

Trouble Category:	Trouble:
Z - Not assignable	Not Assignable (Add new Code)

Primary Labor Code	Trouble Codes Affected:	Driving Condition:	Environment Condition:
N/A			

2nd Labor Code	3rd Labor Code	4th Labor Code	5th Labor Code

Symptoms / Complaints:

Check Engine Light - P0455

Probable Cause:

When applying pressure to the fuel tank system, the left tank was leaking pressure at the area of the tank where the crossover pipe attaches to the tank. The leak was at the tank itself. The leak was near the white plastic sleeve that fits into the black plastic tank where the crossover pipe attaches. In between these two areas the pressure was leaking.

Corrective Action:	Success of Corrective Action:	Remark:
Replace the tank. Found the right tank to be leaking too		

Attachment:

Affected Parts

Part No:	(Catalog No only valid if OPEL report) Catalog No:	Parts name:	Sample Parts Available:
10363245, 10337582			No

Shipping details:	Remark/ Location of Parts:

Deck Code:

Serial No. / Casting No./ Component Date Code:

Severity / Requested Action

Severity:	Action requested:
4 - Annoyance	Field Remedy

Originator Information

Originator:	NSC:
Melissa Suhy	USA

Dealer and Field Contact Information

Dealer Name:	Dealer Number:	Dealer Phone:

CLASSIC CHEVROLET, INC.	7566	8174211200
Dealer Contact Name:	Dealer E-Mail Address:	
Field Rep Contact Name:	Field Rep. Number:	Field Rep. Phone:
	Field Rep. E-Mail Address:	

Champion Assignment

Champion:	Department:	Location:
Art Spong	Vehicle Sales Service & Marketing (VSSM)	Warren, MI
E-Mail:	Phone:	Fax:
Art Spong/US/GM/GMC@GM		

Champion Designee Assignment

Champion:	Department:	Location:
E-Mail:	Phone:	Fax:

Visibility

Access: ○ restricted ● public

Document Information

Document created by:	Melissa Suhy/C/US/GM/GMC	06/16/2004 03:40:37 PM
Last Modified by:	Stacey Alfano/US/GM/GMC	06/25/2004 08:11:01 AM
Last Accessed:	06/24/2004 04:23:52 PM	

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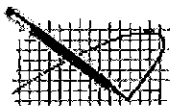

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Field Rep Contact Name:	Field Rep. Number:	Field Rep. Phone:
	Field Rep. E-Mail Address:	

Champion Assignment

Champion:	Department:	Location:
Art Spong	Vehicle Sales Service & Marketing (VSSM)	Warren, MI
E-Mail:	Phone:	Fax:
Art Spong/US/GM/GMC@GM		

Champion Designee Assignment

Champion:	Department:	Location:
E-Mail:	Phone:	Fax:

Visibility

Access: ○ restricted ● public

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Add-On > Solution > Memos > Status > Summary > FPIM > Impact

PE10-015

GM

6/30/2010

ATTACHMENT 1

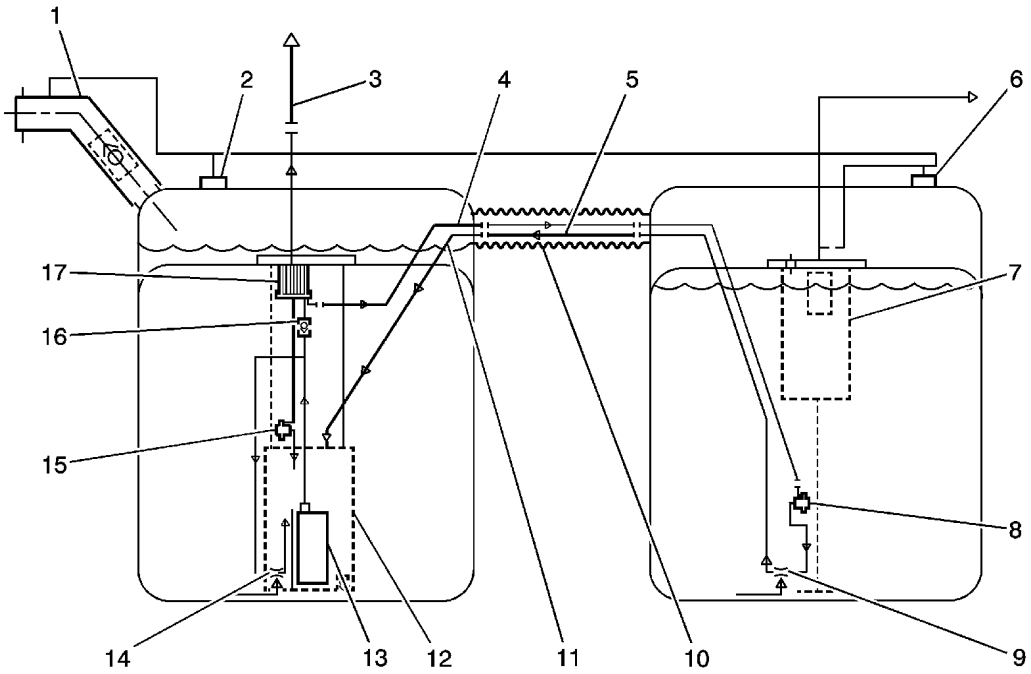
Q8

GM Investigation Q_08_2004
Corvette Fuel Tank description

Fuel System Description

System Overview

Fuel Tank Assembly



(1) Fuel Fill Hose
(2) Left Fuel Tank Grade Vent Valve
(3) Fuel Feed Pipe to Engine
(4) 5/16 Inch Auxiliary Fuel Feed Pipe
(5) 3/8 Inch Auxiliary Fuel Return Pipe
(6) Right Fuel Tank Grade Vent Valve
(7) Fill Limiter Vent Valve (FLVV)
(8) Secondary Fuel Pressure Regulator
(9) Siphon Jet Pump
(10) Convoluted Crossover Hose
(11) Anti-Siphon Hole
(12) Fuel Sender Reservoir
(13) Turbine Fuel Pump
(14) Venturi Pump
(15) Primary Fuel Pressure Regulator

(16) Reverse Flow Check Valve
(17) Fuel Filter

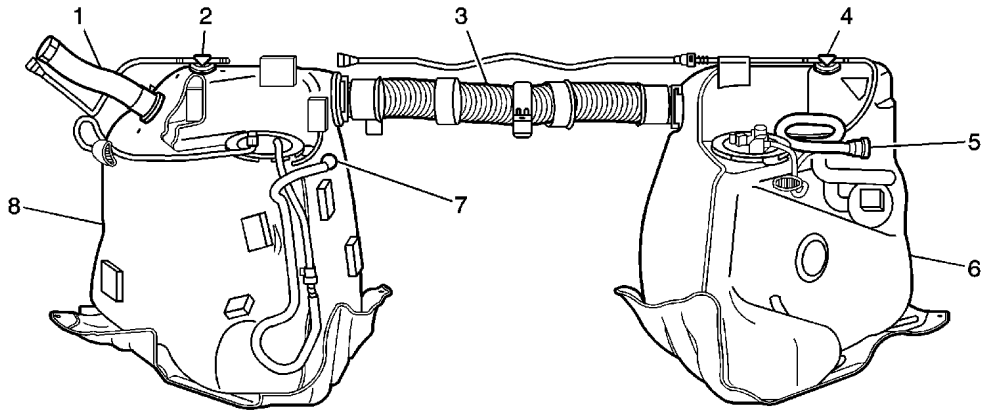
The fuel system is a returnless on-demand design. The fuel pressure regulator is a part of the fuel sender assembly, eliminating the need for a return pipe from the engine. A returnless fuel system reduces the internal temperature of the fuel tank by not returning hot fuel from the engine to the fuel tank. Reducing the internal temperature of the fuel tank results in lower evaporative emissions.

Two fuel tanks store the fuel supply. An electric turbine style fuel pump (13) attaches to the fuel sender assembly inside the left fuel tank. The fuel pump supplies high pressure fuel through the fuel filter (17) and the fuel feed pipe (3) to the fuel injection system. The fuel pump provides fuel at a higher rate of flow than is needed by the fuel injection system. The fuel pump also supplies fuel to the venturi pump (14) located on the bottom of the left fuel sender assembly. The function of the venturi pump is to fill the fuel sender assembly reservoir (12). The primary fuel pressure regulator (15), a part of the left fuel sender assembly, maintains the correct fuel pressure to the fuel injection system. The fuel pump and sender assembly contains a reverse flow check valve (16). The check valve, the primary fuel pressure regulator, and the secondary fuel pressure regulator maintain fuel pressure in the fuel feed pipe and the fuel rail in order to prevent long cranking times.

The fuel pump also supplies a small amount of pressurized fuel through the auxiliary fuel feed pipe (4) to the siphon jet pump (9) inside the right fuel tank. The pressurized fuel creates a venturi action inside the siphon jet pump. The venturi action causes the fuel to be drawn out of the right fuel tank. The fuel transfers from the right fuel tank to the left fuel tank through the auxiliary fuel return pipe (5). The auxiliary fuel return pipe inside the left fuel tank contains an anti-siphon hole (11) in order to prevent fuel from siphoning from the left fuel tank into the right fuel tank. Both the auxiliary fuel feed pipe and the auxiliary fuel return pipe are located inside the convoluted stainless steel crossover hose (10).

The right fuel sender assembly contains a secondary fuel pressure regulator (8). The secondary fuel pressure regulator has a lower set point than the primary regulator in order to allow fuel to flow to the siphon jet pump on the right fuel sender. When the engine is shut off, the pressure in the feed pipes immediately drops to the secondary regulator set point. This prevents the siphon jet pump from operating and in turn prevents the equalization of the left and right fuel tanks. The secondary fuel pressure regulator maintains fuel pressure in the auxiliary fuel feed pipe which reduces the time to prime the siphon jet pump. The pressurization also reduces fuel vaporization and boiling in the auxiliary fuel feed pipe.

Fuel Tanks

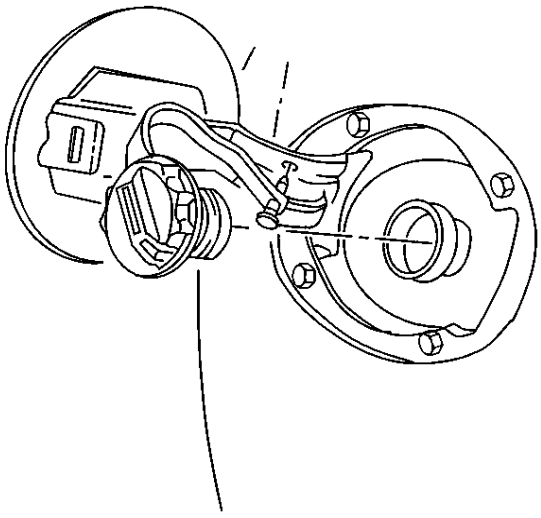


The fuel tanks (6, 8) store the fuel for the vehicle. The fuel tanks are located on the left and right side of the vehicle in front of the rear wheels. The fuel tanks are molded from high density polyethylene.

Fuel Tank Fill Pipe and Hose

The fuel tank fill pipe is positioned at the rear of the vehicle on the left side. A built in restrictor in the fuel tank fill pipe prevents refueling with leaded fuel. The fuel tank fill pipe connects to the left fuel tank with a rubber hose. Fuel transfers to the right fuel tank during fueling by a stainless steel convoluted crossover tube/hose which connects the left fuel tank to the right fuel tank.

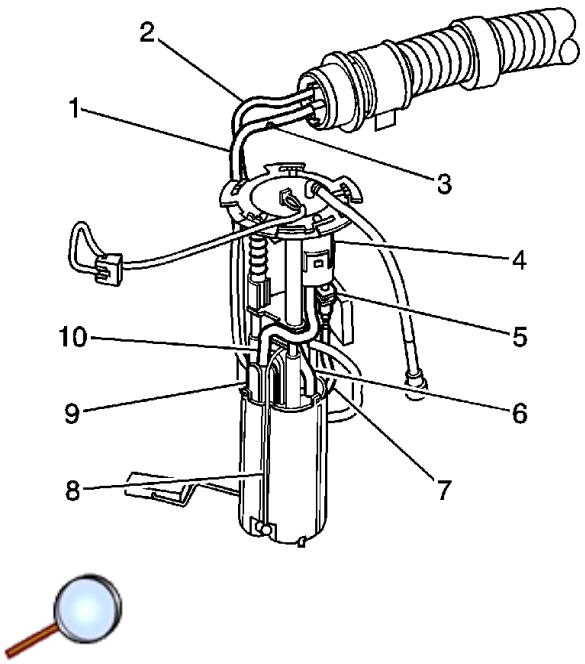
Fuel Filler Cap



Notice: If a fuel tank filler cap requires replacement, use only a fuel tank filler cap with the same features. Failure to use the correct fuel tank filler cap can result in a serious malfunction of the fuel and EVAP system.

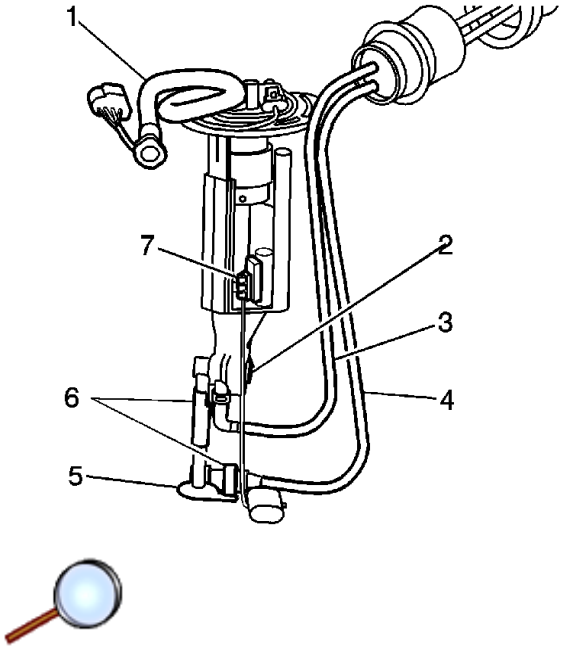
The fuel tank filler pipe has a tethered fuel tank filler cap. The fuel tank filler cap requires a quarter of a turn in order to be removed. A torque limiting device prevents the cap from being over tightened.

Fuel Sender Assembly



A fuel sender assembly is located inside each fuel tank. The fuel sender assembly attaches to the top of each fuel tank. The left fuel sender assembly consists of the following major components:

- The fuel level sensor
- The fuel pump and reservoir assembly
- The fuel pump strainer
- The fuel filter (4)
- The primary fuel pressure regulator (9)



The right fuel sender assembly consists of the following major components:

- The fuel level sensor (7)
- The siphon jet pump (5)
- The secondary fuel pressure regulator (2)
- The fill limiter vent valve (FLVV)

Fuel Level Sensor

The fuel level sensor consists of a float, a wire float arm, and a variable resistor. The position of the float arm indicates the fuel level. The fuel level sensor contains a variable resistor, which changes the resistance corresponding to the amount of fuel in the fuel tanks. The PCM uses inputs from both fuel level sensors in order to calculate the total fuel remaining in both fuel tanks. This information is sent via a Class 2 message to the instrument panel cluster (IPC) to be displayed on the fuel gauge.

Fuel Pump

An electric turbine style fuel pump attaches to the fuel sender assembly inside the left fuel tank. The fuel pump supplies fuel to the fuel rail assembly at a specified flow and pressure. The fuel pump delivers a constant flow of fuel to the engine even during low fuel conditions and aggressive vehicle maneuvers. The PCM controls the electric fuel pump operation through a fuel pump relay.

The fuel pump also supplies a small amount of pressurized fuel to the right fuel tank siphon jet pump through the auxiliary fuel feed pipe. The pressurized fuel creates a venturi action inside the siphon jet pump. The venturi action causes the fuel to be drawn out of the right fuel tank. Fuel is then transferred from the right fuel tank to the left fuel tank through the auxiliary fuel return pipe. The fuel pump also supplies fuel to a venturi pump located on the bottom of the left fuel sender assembly. The function of the venturi pump is to fill the fuel sender assembly reservoir.

Fuel Strainer

The fuel strainer is made of woven plastic. The functions of the fuel strainer are to filter the contaminants and to wick the fuel. The fuel strainer attaches to the bottom of the fuel pump inside of the fuel sender reservoir. The fuel strainer normally requires no maintenance. Fuel stoppage at this point indicates that the fuel tanks contain an abnormal amount of sediment. If the fuel strainer is plugged, refer to Fuel System Cleaning.

Fuel Filter

The fuel filter is contained in the fuel sender assembly inside the left fuel tank. The paper filter element of the fuel filter traps particles in the fuel that may damage the fuel injection system. The fuel filter housing is made to withstand maximum fuel system pressure, exposure to fuel additives, and changes in temperature. There is no service interval for fuel filter replacement.

Primary Fuel Pressure Regulator

The primary fuel pressure regulator is contained in the left fuel sender assembly. The fuel pressure regulator is a diaphragm relief valve. The diaphragm has fuel pressure on one side and regulator spring pressure on the other side. A software bias compensates the injector on-time because the fuel pressure regulator is not referenced to the manifold vacuum. The primary fuel pressure regulator keeps fuel available to the injectors at a regulated pressure.

Secondary Fuel Pressure Regulator

The right fuel sender assembly contains a secondary fuel pressure regulator. The secondary fuel pressure regulator has a lower set point than the primary regulator in order to allow fuel to flow to the siphon jet pump on the right fuel sender. When the engine is shut off, the pressure in the feed pipes immediately drops to the secondary regulator set point. This prevents the siphon jet pump from operating and in turn prevents the equalization of the left and right fuel tanks. The secondary fuel pressure regulator maintains fuel pressure in the auxiliary fuel feed pipe which reduces the time to prime the siphon jet pump. The pressurization also reduces fuel vaporization and boiling in the auxiliary fuel feed pipe.

Fuel Feed and Return Pipes

The engine compartment connecting fuel pipe connects the chassis fuel pipe to the fuel rail assembly. The engine compartment fuel pipe is constructed of Teflon® with a braided stainless steel covering.

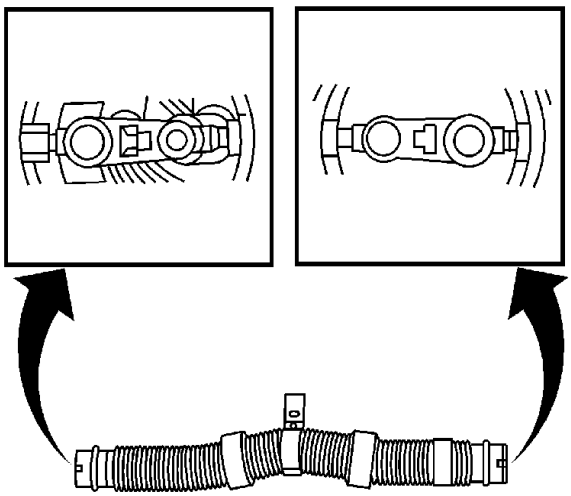
The chassis fuel pipe is located under the vehicle on the left side of the tunnel. The chassis fuel pipe connects the rear fuel feed pipe from the left fuel sender assembly to the engine compartment connecting fuel pipe. The chassis fuel pipe is constructed of aluminum with a plastic coating.

The rear fuel feed pipe connects the left fuel sender fuel pipe to the chassis fuel pipe. The rear fuel feed pipe is constructed of nylon with a covering of heat resistant rubber hose.

The auxiliary fuel feed pipes and the auxiliary fuel return pipes are located inside of the fuel crossover hose and inside of each fuel tank. The fuel pump supplies fuel through the auxiliary fuel feed pipe to the siphon jet pump inside the right fuel tank. The siphon jet pump transfers fuel from the right fuel tank to the left fuel tank through the auxiliary fuel return pipe. The return pipe feeds returning fuel from the right fuel tank directly into the left fuel sender reservoir. The auxiliary fuel

feed and return pipes are constructed of nylon.

Fuel Tank Crossover Tube/Hose



The fuel tank crossover tube/hose is comprised of a convoluted stainless steel outer tubing. The crossover tube/hose internally houses the auxiliary fuel feed pipe and the auxiliary fuel return pipe. The crossover tube/hose has the following functions:

- Fuel liquid and vapor transfer during refueling
- High pressure siphon jet pump feed
- Low pressure siphon jet pump return
- Electrostatic discharge ground to body

Nylon Fuel Pipes

Caution: In order to reduce the risk of fire and personal injury observe the following items:

- Replace all nylon fuel pipes that are nicked, scratched or damaged during installation, do not attempt to repair the sections of the nylon fuel pipes
- Do not hammer directly on the fuel harness body clips when installing new fuel pipes. Damage to the nylon pipes may result in a fuel leak.
- Always cover nylon vapor pipes with a wet towel before using a torch near them. Also, never expose the vehicle to temperatures higher than 115°C (239°F) for more than one hour, or more than 90°C (194°F) for any extended period.
- Apply a few drops of clean engine oil to the male pipe ends before connecting fuel pipe fittings. This will ensure proper reconnection and prevent a possible fuel leak. (During normal operation, the O-rings located in the female connector will swell and may prevent proper reconnection if not lubricated.)

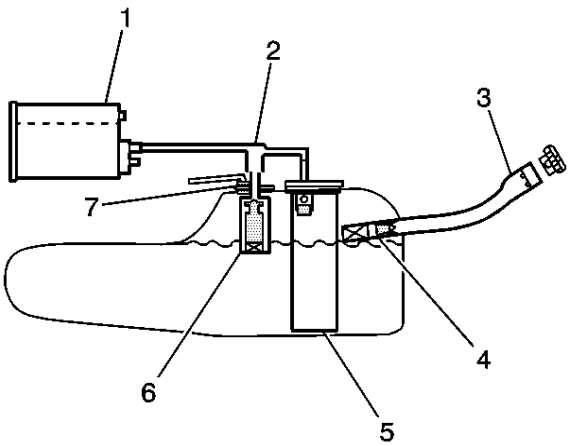
Nylon pipes are constructed to withstand maximum fuel system pressure, exposure to fuel additives, and changes in temperature. There are 2 sizes of nylon fuel pipes used. A 9.53 mm (3/8 in) ID pipe is used for the fuel feed pipe and the auxiliary fuel return pipe. A 7.94 mm (5/16 in) ID pipe is used for the auxiliary fuel feed pipe. Heat resistant rubber hose protects the section of the rear fuel feed pipe that is exposed to chafing, high temperature or vibration.

Nylon fuel pipes are somewhat flexible and can be formed around gradual turns under the vehicle. However, if nylon fuel pipes are forced into sharp bends, the pipes will kink and restrict the fuel flow. Also, once exposed to the fuel, nylon pipes may become stiffer and are more likely to kink if bent too far. Take special care when working on a vehicle with nylon fuel pipes.

Quick-Connect Fittings

Quick-connect fittings provide a simplified means of installing and connecting fuel system components. The fittings consist of a unique female connector and a compatible male pipe end. O-rings located inside the female connector provide the fuel seal. Integral locking tabs located inside the female connector hold the fittings together.

On-Board Refueling Vapor Recovery System (ORVR)

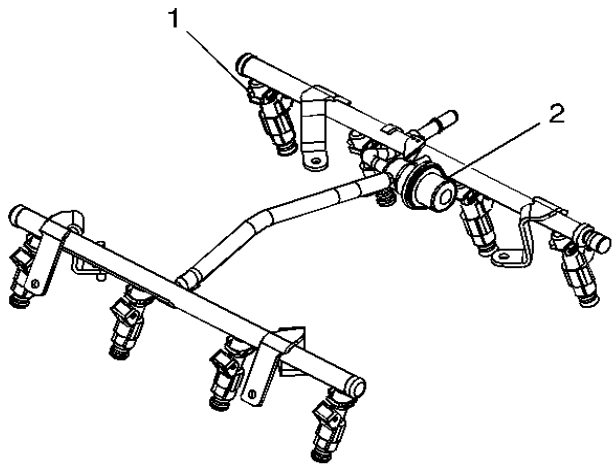


The on-board refueling vapor recovery system (ORVR) is an on board vehicle system designed to recover fuel vapors during the vehicle refueling operation. The flow of liquid fuel down the fuel filler pipe provides a liquid seal which prevents vapor from leaving the fuel filler pipe. An EVAP pipe transports the fuel vapor to the EVAP canister for use by the engine. Listed below are the ORVR system components with a brief description of their operation:

- The EVAP canister (1)--the EVAP canister receives refueling vapor from the fuel system, stores the vapor and releases the vapor to the engine upon demand.
- The EVAP pipes (2)--transports fuel vapor from the fuel tank to the EVAP canister.
- The fuel filler pipe (3)--the pipe which carries fuel from the fuel nozzle to the fuel tank.

- The check valve (4)--the check valve limits fuel "spit back" from the fuel tank during the refueling operation by allowing fuel flow only into the fuel tank. This check valve is located at the bottom of the fuel filler pipe.
- The modular fuel sender assembly (5)--this assembly pumps fuel to the engine from the fuel tank.
- The fill limiter vent valve (FLVV) (6)--this valve acts as a shut off valve. The FLVV is located on the right fuel sender. This valve is not serviced separately. The FLVV has the following functions:
  - Controls the fuel tank fill level by closing the primary vent from the fuel tank.
  - Prevents the fuel from exiting the fuel tank via the EVAP pipe to the canister.
  - Provides fuel-spillage protection in the event of a vehicle rollover by closing the vapor path from the fuel tank to the EVAP canister.

Fuel Rail Assembly



The fuel rail assembly attaches to the engine intake manifold. The fuel rail assembly performs the following functions:

- Positions the injectors (1) in the intake manifold
- Distributes the fuel evenly to the injectors
- Integrates the fuel pulse dampener (2) into the fuel metering system

Fuel Injectors

The fuel injector assembly is a solenoid device, controlled by the PCM, that meters pressurized fuel to a single engine cylinder. The PCM energizes the injector solenoid to open a normally closed ball valve. This allows the fuel to flow into the top of the injector, past the ball valve, and through a director plate at the injector outlet. The director plate has machined holes that control the fuel

flow, generating a spray of finely-atomized fuel at the injector tip. Fuel from the injector tip is directed at the intake valve, causing the fuel to become further atomized and vaporized before entering the combustion chamber. This fine atomization improves fuel economy and emissions.

Fuel Metering Modes of Operation

The PCM monitors voltages from several sensors in order to determine how much fuel to give the engine. The PCM controls the amount of fuel delivered to the engine by changing the fuel injector pulse width. The fuel is delivered under one of several modes.

Starting Mode

When the ignition is first turned ON, the PCM energizes the fuel pump relay for 2 seconds. This allows the fuel pump to build pressure in the fuel system. The PCM calculates the air/fuel ratio based on inputs from the engine coolant temperature (ECT), mass air flow (MAF), manifold absolute pressure (MAP), and throttle position (TP) sensors. The system stays in starting mode until the engine speed reaches a predetermined RPM.

Clear Flood Mode

If the engine floods, clear the engine by pressing the accelerator pedal down to the floor and then crank the engine. When the TP sensor is at wide open throttle (WOT), the PCM reduces the fuel injector pulse width in order to increase the air to fuel ratio. The PCM holds this injector rate as long as the throttle stays wide open and the engine speed is below a predetermined RPM. If the throttle is not held wide open, the PCM returns to the starting mode.

Run Mode

The run mode has 2 conditions called Open Loop and Closed Loop. When the engine is first started and the engine speed is above a predetermined RPM, the system begins Open Loop operation. The PCM ignores the signal from the heated oxygen sensors (HO2S). The PCM calculates the air/fuel ratio based on inputs from the ECT, MAF, MAP, and TP sensors. The system stays in Open Loop until meeting the following conditions:

- Both front HO2S have varying voltage output, showing that both HO2S are hot enough to operate properly.
- The ECT sensor is above a specified temperature.
- A specific amount of time has elapsed after starting the engine.

Specific values for the above conditions exist for each different engine, and are stored in the electrically erasable programmable read-only memory (EEPROM). The system begins Closed Loop operation after reaching these values. In Closed Loop, the PCM calculates the air/fuel ratio, injector ON time, based upon the signal from various sensors, but mainly from the HO2S. This allows the air/fuel ratio to stay very close to 14.7:1.

Acceleration Mode

When the driver pushes on the accelerator pedal, air flow into the cylinders increases rapidly. To prevent possible hesitation, the PCM increases the pulse width to the injectors to provide extra fuel during acceleration. This is also known as power enrichment. The PCM determines the amount of fuel required based upon the TP, the ECT, the MAP, the MAF, and the engine speed.

Deceleration Mode

When the driver releases the accelerator pedal, air flow into the engine is reduced. The PCM monitors the corresponding changes in the TP, the MAP, and the MAF. The PCM shuts OFF fuel completely if the deceleration is very rapid, or for long periods, such as long, closed-throttle coast-down. The fuel shuts OFF in order to prevent damage to the catalytic converters.

Battery Voltage Correction Mode

When the battery voltage is low, the PCM compensates for the weak spark delivered by the ignition system in the following ways:

- Increasing the amount of fuel delivered
- Increasing the idle RPM
- Increasing the ignition dwell time

Fuel Cutoff Mode

The PCM cuts OFF fuel from the fuel injectors when the following conditions are met in order to protect the powertrain from damage and improve driveability:

- The ignition is OFF. This prevents engine run-on.
- The ignition is ON but there is no ignition reference signal. This prevents flooding or backfiring.
- The engine speed is too high, above red line.
- The vehicle speed is too high, above rated tire speed.
- During an extended, high speed, closed throttle coast down--This reduces emissions and increases engine braking.
- During extended deceleration, in order to prevent damage to the catalytic converters

Fuel Trim

The PCM controls the air/fuel metering system in order to provide the best possible combination of driveability, fuel economy, and emission control. The PCM monitors the HO2S signal voltage while in Closed Loop and regulates the fuel delivery by adjusting the pulse width of the injectors based on this signal. The ideal fuel trim values are around 0 percent for both short and long term fuel trim. A positive fuel trim value indicates the PCM is adding fuel in order to compensate for a lean condition by increasing the pulse width. A negative fuel trim value indicates that the PCM is reducing the amount of fuel in order to compensate for a rich condition by decreasing the pulse width. A change made to the fuel delivery changes the long and short term fuel trim values. The short term fuel trim values change rapidly in response to the HO2S signal voltage. These changes fine tune the engine fueling. The long term fuel trim makes coarse adjustments to fueling in order to re-center and restore control to short term fuel trim. A scan tool can be used to monitor the short and long term fuel trim values. The long term fuel trim diagnostic is based on an average of several of the long term speed load learn cells. The PCM selects the cells based on the engine speed and engine load. If the PCM detects an excessively lean or rich condition, the PCM will set a fuel trim diagnostic trouble code (DTC).