

Issued: June 26, 2012
Reply to: Dan Worcester
Southwest Research Institute
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These are the unapproved minutes of the 06.19.2012 Sequence VI Task Force meeting.

The meeting was called to order at 10:00 AM Central Daylight Time by Chair Dave Glaenzer.

Agenda

The Agenda is included as **Attachment 1**.

1.0 Roll Call

The Attendance list **Attachment 2**.

2.0 Approval of minutes

- 2.1. Approval of the minutes of the 05.22.2012 Conference Call.
The minutes were approved without changes.

3.0 Action Item Review

- 3.1. TMC to conduct engine coolant flow calibration round robin with meter supplied by Afton.
Altman/Grundza
This process has begun but no data supplied yet.
- 3.2. IAR to replicate Lubrizol flush effectiveness study to evaluate Ca carryover with 2012 GM engine. Complete Leverett and Brys

Motion – Recommend to the Surveillance Panel to perform 6 flushes after the FO flushes to remove the candidate oil.

Johnny De La Zerda/ Dave Glaenzer / Unanimous.

- 3.3. ExxonMobil to generate list of ECM data that would be desirable to monitor and record.
Mosher report
This remains open.
- 3.4. Survey of test stand oil line componentry on suction side of engine driven oil pump as well as lines to and from engine oil filter.
Complete Glaenzer
*There will be further action on this item. The Survey results are included as **Attachments 3, 4 and 5**.*

4.0 Old Business

4.1. None.

5.0 New Business

5.1. Standardization of piping on suction side of engine driven oil pump.

5.2. New Items?

Dan Worcester requested the SP to consider an E-Ballot to clearly define that the test with the 2012 engine be considered the VIE version. This was placed on hold.

6.0 Next Meeting

The next call will be at the call of the Chair.

7.0 Meeting Adjourned

The meeting adjourned at 10:30 AM Central Daylight Time.

Sequence VI Test Quality TF Teleconference

June 19, 2012

11:00 EDT

Call-in Number: 866-817-9787

Participant Passcode: 2158089

Non-Toll Free: 203-320-3489

Agenda

1) Attendance

2) Approval of minutes

2.1) Approve the minutes from May 22, 2012

3) Action Item Review from 03/27, 04/26 and 05/22

3.1. TMC to conduct engine coolant flow calibration round robin with meter supplied by Afton. Altman/Grundza Underway

3.2. IAR to replicate Lubrizol flush effectiveness study to evaluate Ca carryover with 2012 GM engine. Complete Leverett and Brys

3.3. ExxonMobil to generate list of ECM data that would be desirable to monitor and record. Mosher report

3.4. Survey of test stand oil line componentry on suction side of engine driven oil pump as well as lines to and from engine oil filter.

Complete Glaenzer

4) New or Additional Areas of Concern

4.1. Standardization of piping on suction side of engine driven oil pump.

4.2 New Items?

5) Next Meeting

Teleconference on XX/XX/2012

6) Meeting Adjourned

ASTM SEQUENCE VI

TEST QUALITY TASK FORCE Teleconference 06/19/12

Name	Address	Phone/Fax/Email	Attendance
Jason Bowden Voting Member	OH Technologies, Inc. P.O. Box 5039 Mentor, OH 44061-5039	Phone: 440-354-7007 Fax: 440-354-7080 jhbowden@ohtech.com	✓
Timothy Caudill Voting Member	Ashland, Inc. 21st and Front Streets Ashland, KY 41101	Phone: 606-329-5708 Fax: 606-329-3009 Tlcaudill@ashland.com	✓
David Glaenzer Voting Member	Afton Research Center 500 Spring Street Richmond, VA 23218	Phone: 804-788-5214 Fax: 804-788-6358 Dave.Glaenzer@aftonchemical.com	✓
Rich Grundza Voting Member	ASTM TMC 6555 Penn Ave. Pittsburgh, PA 15206-4489	Phone: 412-365-1034 Fax: 412-365-1047 reg@astmtmc.cmu.edu	✓
Charlie Leverett Voting Member	Intertek Automotive Research 5404 Bandera Road San Antonio, TX 78238	Phone: 210-647-9422 Fax: 210-523-4607 charlie.leverett@intertek.com	
Jim Linden Voting Member	Toyota	lindenjim@hotmail.com	
Bruce Matthews Voting Member	GM Powertrain Engine Oil Group Mail Code: 483-730-472 823 Joslyn Rd	Pontiac, MI 48340 Phone: 248-830-9197 bruce.matthews@gm.com	✓
Timothy Miranda Voting Member	BP Castrol Lubricants USA 1500 Valley Road Wayne, NJ 07470	Phone: 973-305-3334 Timothy.Miranda@bp.com	
Nathaniel Moles Voting Member	Lubrizol 29400 Lakeland Blvd. Wickliffe, OH 44092	Phone: (440) 347-4472 Nathaniel.Moles@Lubrizol.com	✓
Mark Mosher Voting Member	ExxonMobil 600 Billingsport Road Paulsboro, NJ 08066	Phone: 856-224-2132 Fax: 856-224-3628 mark_r_mosher@exxonmobil.com	
Andy Ritchie Voting Member	Infineum 1900 East Linden Ave. Linden, NJ 07036-0735	Phone: 908-474-2097 Fax: 908-474-3637 Andrew.Ritchie@infineum.com	

ASTM SEQUENCE VI

Name	Address	Phone/Fax/Email	Attendance
Ron Romano Voting Member	Ford Motor Company 21500 Oakwood Blvd POEE Bldg Rm DR 167 MD 44 Dearborn, MI 48121-2053	Phone: 313-845-4068 rromano@ford.com	
Mark Sutherland Voting Member	Chevron Oronite Company LLC 4502 Centerview Ste. 210 San Antonio, TX 78228	Phone: 210.731.5605 Fax: 210.731.5621 msut@chevrontexaco.com	
Haiying Tang Voting Member	Chrysler	HT146@Chrysler.com Tel: 248-512-0593	
Dan Worcester Voting Member	Southwest Research Institute (SwRI) 6220 Culebra Road San Antonio, TX 78228	Phone: 210.522.2405 dan.worcester@swri.org	✓

Guests

Ed Altman	ed.altman@aftonchemical.com	Afton	
Bob Campbell	Bob.Campbell@aftonchemical.com	Afton	✓
Todd Dvorak	todd.dvorak@aftonchemical.com	Afton	
Christian Porter	Christian.porter@aftonchemical.com	Afton	✓
Jo Martinez	jogm@chevron.com	Chevron	
Kurt Knapp	knappka@cpchem.com	CP	
Jim Carter	jecarter@jhaltermann.com	Haltermann	
Doyle Boese	Doyle.boese@infineum.com	Infineum	
Jerry Brys	Jerome.brys@lubrizol.com	Lubrizol	✓
Jeff Kettman	Jeff.kettman@gm.com	GM	

ASTM SEQUENCE VI

Name	Address	Phone/Fax/Email	Attendance
Don Smolenski	<u>donald.j.smolenski@gm.com</u>	GM	✓
Robert Stockwell	<u>Robert.Stockwell@GM.com</u> Phone: 210.563.0785	GM	
Angela Willis	<u>angela.p.willis@gm.com</u>	GM	
Matthew Snider	<u>matthew.j.snider@gm.com</u>	GM	
Scott Stap	<u>Scott.stap@tgdirect.com</u>	TG Direct	
Dwight Bowden	<u>dhbowden@ohtech.com</u>	OHT	
Matt Bowden	<u>mjbowden@ohtech.com</u>	OHT	✓
Clayton Knight	<u>cknight@tei-net.com</u>	TEI	
Jeff Clark	<u>jac@astmtmc.cmu.edu</u>	TMC	
Guy Stubbs	<u>Guy.Stubbs@swri.org</u>	SwRI	
William Buscher	<u>wbuscher@swri.edu</u>	SwRI	

Terry Hollman Alton ✓
 Johnny DeLezerda IAR ✓ Representing Leverett
 Liping Wang GM ✓

SEQUENCE VID TEST STAND HARDWARE SURVEY

LAB: ALL LABS

STAND: ALL REPORTED STANDS

**OIL LINES THAT CONNECT OIL PAN SUMP
TO SUCTION SIDE OF ENGINE OIL PUMP**

- 1 Oil exits pan to flying flush system at right-front corner of pan sump
1.31 to 0.75 straight thread bushing is part of OHT6D-001-1 oil pan
Lab uses (Choose one)
 - 0.75 inch straight thread male connector to 37° flare #8
 - 0.75 inch straight thread male connector to 37° flare #10
 - 0.75 inch straight thread 45° elbow male connector to 37° flare #8
 - 0.75 inch straight thread 45° elbow male connector to 37° flare #10
 - 0.75 inch straight thread 90° elbow male connector to 37° flare #8
 - 0.75 inch straight thread 90° elbow male connector to 90° flare #10
 - 0.75 inch straight thread to 1/2" npt adapter
 - 1/2" npt 45° elbow male connector to 37° flare #10
- 2 Swivel fitting for 37° flare
Lab uses (Choose one)
 - #8 screw together type fitting
 - #8 crimp on type fitting
 - #10 screw together type fitting
 - #10 crimp on type fitting
- 3 Flexible hose
Lab uses (Choose one)
 - Aeroquip (or Aeroquip-like) #8
Length
 - Aeroquip (or Aeroquip-like) #10
Length
- 4 Swivel fitting for 37° flare
Lab uses (Choose one)
 - #8 screw together type fitting
 - #8 crimp on type fitting
 - #10 screw together type fitting
 - #10 crimp on type fitting
- 5 Adapter to solid pipe or pipe tee fitting
Lab uses (Choose one)
 - 1/2" npt male connector to 37° flare #8
 - 1/2" npt male connector to 37° flare #10
 - 1/2" npt female connector to 37° flare #8
 - 1/2" npt female connector to 37° flare #10
 - 1/2" npt 45° elbow male connector to 37° flare #8
 - 1/2" npt 45° elbow male connector to 37° flare #10
 - 1/2" npt 45° elbow female connector to 37° flare #8
 - 1/2" npt 45° elbow female connector to 37° flare #10
- 6 Pipe before tee fitting
Lab uses (Choose one)
 - 1/2" npt pipe
Length
 - No pipe

	Afton			Ash	ExMo	Intertek					Southwest Research					Lubrizol		
	C115	C119	CA103	1	3107	1	2	3	4	5	61	62	70	72	73	76	258	284
											X	X	X	X	X	X		
						X												
	X	X	X		X												X	XX
				X				X	X	X	X							
								X	X	X	X							
												X						
	X	X	X								X		X	X	X	X	X	X
				X	X	X	X	X	X	X								
											X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X	27	23.5	18.5	19.5	19	19.5	14	14
	X	X	X														X	X
				X	X	X	X	X	X	X								
											X	X	X	X	X	X	X	X
	X	X	X		X	X	X	X	X	X								
				X														
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

7	Tee fitting Lab uses (Choose one) <input type="checkbox"/> 0.50 inch pipe tee <input type="checkbox"/> Other - Specify	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	Pipe after tee fitting Lab uses (Choose one) <input type="checkbox"/> 1/2" npt pipe Length <input type="text"/> <input type="checkbox"/> No pipe	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	FCV-150C																	
9A						2"nip	2"nip	2"nip	2"nip	2"nip								
10	Tee fitting Lab uses (Choose one) <input type="checkbox"/> 1/2" npt pipe <input type="checkbox"/> Other - Specify	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	Pipe after tee fitting Lab uses (Choose one) <input type="checkbox"/> 1/2" npt pipe Length <input type="text"/> <input type="checkbox"/> No pipe				X												X	X
		X	X	X	3	X	X	X	X	X	X	X	X	X	X	X	3	3
12	Adapter to solid pipe or pipe tee fitting Lab uses (Choose one) <input type="checkbox"/> 1/2" npt male connector to 37° flare #8 <input type="checkbox"/> 1/2" npt male connector to 37° flare #10 <input type="checkbox"/> 1/2" npt female connector to 37° flare #8 <input type="checkbox"/> 1/2" npt female connector to 37° flare #10 <input type="checkbox"/> 1/2" npt 45° elbow male connector to 37° flare #8 <input type="checkbox"/> 1/2" npt 45° elbow male connector to 37° flare #10 <input type="checkbox"/> 1/2" npt 45° elbow female connector to 37° flare #8 <input type="checkbox"/> 1/2" npt 45° elbow female connector to 37° flare #10				X	X						X		X			X	X
		X	X	X			X	X	X	X	X	X	X	X	X	X		
13	Swivel fitting for 37° flare Lab uses (Choose one) <input type="checkbox"/> #8 screw together type fitting <input type="checkbox"/> #8 crimp on type fitting <input type="checkbox"/> #10 screw together type fitting <input type="checkbox"/> #10 crimp on type fitting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	Flexible hose Lab uses (Choose one) <input type="checkbox"/> Aeroquip (or Aeroquip-like) #8 Length <input type="text"/> <input type="checkbox"/> Aeroquip (or Aeroquip-like) #10 Length <input type="text"/>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		31.5	32.5	31	42	10.5	13	11.5	15.5	14	13	18.5	17.5	17.5	17.5	17.5	17	14
15	Swivel fitting for 37° flare Lab uses (Choose one) <input type="checkbox"/> #8 screw together type fitting <input type="checkbox"/> #8 crimp on type fitting <input type="checkbox"/> #10 screw together type fitting <input type="checkbox"/> #10 crimp on type fitting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	Oil enters pan from flying flush system Adapter spool that connects to oil pick-up tube 1.31 to 0.75 straight thread bushing is part of OHT6D-001-1 oil pan																	

Lab uses (Choose one)																					
<input type="checkbox"/>	0.75 inch straight thread male connector to 37° flare #8										X	X	X	X	X						
<input type="checkbox"/>	0.75 inch straight thread male connector to 37° flare #10					X															
<input type="checkbox"/>	0.75 inch straight thread 45° elbow connector to 37° flare #8																				
<input type="checkbox"/>	0.75 inch straight thread 45° elbow connector to 37° flare #10	X	X	X																	
<input type="checkbox"/>	0.75 inch straight thread 90° elbow connector to 37° flare #8																			X	X
<input type="checkbox"/>	0.75 inch straight thread 90° elbow connector to 90° flare #10					X															
<input type="checkbox"/>	0.75 inch straight thread to 1/2" npt adapter							X	X	X	X										
<input type="checkbox"/>	1/2" npt 45° elbow male connector to 37° flare #10							X	X	X	X										
OIL LINES THAT CONNECT TO EXTERNAL ENGINE OIL FILTER (FIL-2 in D7589 Figure A2.6)																					
1	OHT6D-003-1 Oil Filter Adapter Assembly (D7589 Figure A2.10) Threaded connections are 1/2" npt Oil out to filter (lower connection) Lab uses (Choose one)																				
<input type="checkbox"/>	1/2" npt male connector to 37° flare #8																			X	X
<input type="checkbox"/>	1/2" npt male connector to 37° flare #10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	Swivel fitting for 37° flare Lab uses (Choose one)																				
<input type="checkbox"/>	#8 screw together type fitting																			X	X
<input type="checkbox"/>	#8 crimp on type fitting																				
<input type="checkbox"/>	#10 screw together type fitting	X	X	X																	
<input type="checkbox"/>	#10 crimp on type fitting				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	Flexible hose Lab uses (Choose one)																				
<input type="checkbox"/>	Aeroquip (or Aeroquip-like) #8 Length																			X	X
<input type="checkbox"/>	Aeroquip (or Aeroquip-like) #10 Length	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	12	12
4	Swivel fitting for 37° flare Lab uses (Choose one)																				
<input type="checkbox"/>	#8 screw together type fitting																				
<input type="checkbox"/>	#8 crimp on type fitting																			X	X
<input type="checkbox"/>	#10 screw together type fitting	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
<input type="checkbox"/>	#10 crimp on type fitting			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	Connector to inlet of Racor filter housing Racor literature indicates a 1 1/16 - 12 straight tread O-ring female port Lab uses (Choose one)																				
<input type="checkbox"/>	1 1/16 straight thread male connector to 37° flare #8																				
<input type="checkbox"/>	1 1/16 straight thread male connector to 37° flare #10					X															
<input type="checkbox"/>	1 1/16 straight thread 45° elbow connector to 37° flare #8																				
<input type="checkbox"/>	1 1/16 straight thread 45° elbow connector to 37° flare #10						X														
<input type="checkbox"/>	1 1/16 straight thread 90° elbow connector to 37° flare #8																			X	X
<input type="checkbox"/>	1 1/16 straight thread 90° elbow connector to 37° flare #10	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X		
6	Connector to outlet of Racor filter housing Racor literature indicates a 1 1/16 - 12 straight tread O-ring female port Lab uses (Choose one)																				
<input type="checkbox"/>	1 1/16 straight thread male connector to 37° flare #8																				
<input type="checkbox"/>	1 1/16 straight thread male connector to 37° flare #10																				
<input type="checkbox"/>	1 1/16 straight thread 45° elbow connector to 37° flare #8																				

Oil Line Volumes	#8 Line	0.42" d	2.3	ml/inch
	#10 Line	0.51" d	3.3	ml/inch
	#12 Line	0.64" d	5.3	ml/inch

		Suction Side of Engine Oil Pump			Lines for Engine Oil Filter			Line Total
		Length(in)	Size	Volume	Length(in)	Size	Volume	
Afton	CA103	59.0	10	194.7	27.0	10	89.1	283.8
	C115	58.5	10	193.1	22.0	10	72.6	265.7
	C119	60.0	10	198.0	22.0	10	72.6	270.6
IAR	1	25.0	10	82.5	20.0	10	66.0	148.5
	2	20.5	10	67.7	23.0	10	75.9	143.6
	3	27.5	10	90.8	28.5	10	94.1	184.8
	4	29.0	10	95.7	29.5	10	97.4	193.1
	5	27.0	10	89.1	22.0	10	72.6	161.7
Ashland	1	56.0	10	184.8	24.0	10	79.2	264.0
SRI	61	45.5	8	104.7	32.0	10	105.6	210.3
	62	41.0	8	94.3	35.0	10	115.5	209.8
	70	36.0	8	82.8	33.0	10	108.9	191.7
	72	37.0	8	85.1	35.0	10	115.5	200.6
	73	36.5	8	84.0	35.0	10	115.5	199.5
	76	36.5	8	84.0	37.0	10	122.1	206.1
Lubrizol	258	28.0	8	64.4	28.0	8	64.4	128.8
	284	28.0	8	64.4	28.0	8	64.4	128.8
ExMo	3107	30.0	10	99.0	41.0	10	135.3	234.3
Max				198.0			135.3	283.8
Min				64.4			64.4	128.8

MY2012 GM engine GM5					
Engine Oil Gallery Pressure, kPa					
Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
278	535	252	160	516	154
372	584	292	158	538	154
377	590	299	158	543	153
318	549	256	136	520	131
270	430	220	140	N/A	140

Smallest orifice
#10 Swivel (0.474")
#10 Swivel (0.474")
FCV150C (0.500")
FCV150C (0.500")
"Similar green engine"

Afton BLB1 with 60" line length of #10 hose
Afton BLB1 with 18" line length of #10 hose
Afton BLB1 with 18" line length of #12 hose

Afton 5W-30 with 18" line length of #12 hose
GM 5W-30 info from 03/27/2012 TF meeting

FCV150C has 0.500" orifice.

#10 hose is ~0.510" ID
#10 screw together swivels are ~0.474" ID.
#10 crimp on swivels are ~0.435" ID.
#10 45° or 90° elbows are ~0.486" ID.

#12 hose is ~0.640" ID
#12 screw together swivels are ~0.574" ID.
#12 crimp on swivels are ~0.562" ID.
#12 45° or 90° elbows are ~0.610" ID.

#8 hose is ~2.3 ml per inch length
#10 hose is ~3.3 ml per inch length
#12 hose is ~5.3 ml per inch length