

**Test Method D 7589 for Measurement of the Effects of Automotive Engine Oils on
the Fuel Economy of Passenger Cars and Light Trucks in the Sequence VID Spark
Ignition Engine
Report Cover Sheet**

Version:

Conducted For:

	V = Valid
	I = Invalid
	N = Results cannot be interpreted (refer to comment section)

	NR = Non-reference Oil Test
	RO = Reference Oil Test

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			
Alternate Codes			

<p>In my opinion this test _____ been conducted in a valid manner in accordance with the Test Method D 7589 and the appropriate amendments through the Information Letter System. The remarks included in the report describe the anomalies associated with this test.</p>
--

Submitted By: _____

Testing Laboratory

Signature

Typed Name

Title

Form 2

Sequence VID

Table of Contents

1.	Report Cover Sheet (Includes Validity Statement)	Form 1
2.	Summary of Test Method	Form 3
3.	Test Result Summary	Form 4
4.	Operational Data Analysis, BSFC, BL Before 1 & 2	Form 5
5.	Operational Data Analysis, BSFC, BL Before 3 & Test Oil 1	Form 6
6.	Operational Data Analysis, BSFC, Test Oil 2 & BL After	Form 7
7.	General Parameter Listing, 16 h Aging	Form 8
8.	General Parameter Listing, 84 h Aging	Form 9
9.	General Parameter Summary, BL Before Test Oil 1	Form 10
10.	General Parameter Summary, BL Before Test Oil 2	Form 11
11.	General Parameter Summary, BL Before Test Oil 3	Form 12
12.	General Parameter Summary, Test Oil Phase I	Form 13
13.	General Parameter Summary, Test Oil Phase II	Form 14
14.	General Parameter Summary, BL After Test Oil	Form 15
15.	Critical Parameter Summary – Stages 1 & 2	Form 16
16.	Critical Parameter Summary - Stages 3 & 4	Form 17
17.	Critical Parameter Summary - Stages 5 & 6	Form 18
18.	Downtime Occurrences & Outliers	Form 19
19.	ACC Conformance Statement ^A	Form 20

^A ACC Conformance Statement is required only for ACC registered tests

**Sequence VID
Form 3**

Summary of Test Method

The Sequence VID is an engine dynamometer test that measures a lubricant's ability to improve the fuel economy of passenger cars and light-duty trucks. The method compares the performance of a test lubricant to the performance of a baseline lubricant over six different stages of operation.

A 2008 Cadillac SRX 3.6L High Feature (HF) V6, 4-cycle engine is used as the test apparatus. The engine incorporates Dual Overhead Camshafts, 4 Valves / Cylinder, Dual Stage Plenum Induction Manifold, 94x85.6mm Bore & Stroke, with 10.2:1 compression ratio.

The Sequence VID test incorporates a flush and run type procedure. Each test consists of two 6-stage fuel economy measurements on baseline oil (BL), one at the beginning of the test and one at the end. The test oil is evaluated in between the two baseline runs. The test oil is initially aged during 16 hours of engine operation at 2250 r/min and 120°C oil temperature. After the initial aging, a 6-stage fuel economy measurement is taken. The test oil is then aged an additional 84 hours at an engine speed of 2250 r/min and 120°C oil temperature. Following this final aging, the test oil once again goes through a 6-stage fuel economy measurement. The two fuel economy measurements taken on the baseline oil (BL) and a final value for Fuel Economy Improvement is calculated for the test oil.

Below is a summary of the operation conditions for the aging and 6-stage fuel economy portions of the test.

Fuel Economy Measurement and Aging Condition				
FE Stage	Speed (r/min)	Torque (N-m)	Oil Temp. (°C)	Coolant Temp. (°C)
1	2000	105	115	109
2	2000	105	65	65
3	1500	105	115	109
4	695	20	115	109
5	695	20	35	35
6	695	40	115	109

Aging Stage	Speed (r/min)	Torque (N-m)	Oil Temp. (°C)	Coolant Temp. (°C)
1 & 2	2250	110	120	110

**Sequence VID
Form 4
Test Result Summary
Non-Reference & Reference Oil Tests**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:		Engine Serial Number:	
Formulation/Stand Code:			

Test Documentation					
	BL Before 1	BL Before 2	BL Before 3	Test Oil	BL After
Start Date					
Start Time					
End Date					
End Time					
Oil Test Length, hhh:mm					
Calibration Oil Batch					
Flush Oil Batch					
Laboratory Oil Code					
SAE Viscosity Grade					
TMC Oil Code (Reference Oil Tests Only)					
New Oil Viscosity @ 40 °C, cSt					
New Oil Viscosity @ 100°C, cSt					
EOT Oil Viscosity @ 40 °C, cSt					
EOT Oil Viscosity @ 100°C, cSt					
Total Test Length, hhh:mm					
Total Engine Hours @ EOT					
Most Recent Fuel Batch					

Overall Results						
	BL Oil				Test Oil	
	Before 1	Before 2	Before 3	After	Phase I	Phase II
Fuel Consumed, Unweighted, kg						
Fuel Consumed, weighted, kg						
Shift Delta, % ^A						
Fuel Economy Improvement, %						
FEI Engine Hour Adjustment, %						
FEI Industry Correction Factor, %						
FEI Severity Adjustment, % (non-reference tests only)						
FEI Final Result, %						
FEI Sum, sum of FEI1 and FEI2 final results						
Total Oil Consumption, ml						

^A Calculate Baseline shift % using unweighted fuel consumed values. When a 3rd set of BL Before is used, calculate BL shift after using the BL Before 3 for BL Before 2

**Sequence VID
Form 5
Operational Data Analysis**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

Computed Averages							
Oil	Stage	BSFC kg/kW-h	BSFC C.V. %	Stage Length h	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
BL Before Test Oil 1	1			0.5	21.99	0.300	
	2			0.5	21.99	0.032	
	3			0.5	16.49	0.310	
	4			0.5	1.46	0.174	
	5			0.5	1.46	0.011	
	6			0.5	2.91	0.172	
Total Fuel Consumed							

Computed Averages							
Oil	Stage	BSFC kg/kW-h	BSFC C.V. %	Stage Length h	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
BL Before Test Oil 2	1			0.5	21.99	0.300	
	2			0.5	21.99	0.032	
	3			0.5	16.49	0.310	
	4			0.5	1.46	0.174	
	5			0.5	1.46	0.011	
	6			0.5	2.91	0.172	
Total Fuel Consumed							

Sequence VID
Form 6
Operational Date Analysis

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

Computed Averages							
Oil	Stage	BSFC kg/kW-h	BSFC C.V. %	Stage Length h	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
BL Before Test Oil 3	1			0.5	21.99	0.300	
	2			0.5	21.99	0.032	
	3			0.5	16.49	0.310	
	4			0.5	1.46	0.174	
	5			0.5	1.46	0.011	
	6			0.5	2.91	0.172	
Total Fuel Consumed							

Computed Averages							
Oil	Stage	BSFC kg/kW-h	BSFC C.V. %	Stage Length h	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
Test Oil Phase I	1			0.5	21.99	0.300	
	2			0.5	21.99	0.032	
	3			0.5	16.49	0.310	
	4			0.5	1.46	0.174	
	5			0.5	1.46	0.011	
	6			0.5	2.91	0.172	
Total Fuel Consumed							

Sequence VID
Form 7
Operational Date Analysis

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

Computed Averages							
Oil	Stage	BSFC kg/kW-h	BSFC C.V. %	Stage Length h	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
Test Oil Phase II	1			0.5	21.99	0.300	
	2			0.5	21.99	0.032	
	3			0.5	16.49	0.310	
	4			0.5	1.46	0.174	
	5			0.5	1.46	0.011	
	6			0.5	2.91	0.172	
Total Fuel Consumed							

Computed Averages							
Oil	Stage	BSFC kg/kW-h	BSFC C.V. %	Stage Length h	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
BL After Test Oil	1			0.5	21.99	0.300	
	2			0.5	21.99	0.032	
	3			0.5	16.49	0.310	
	4			0.5	1.46	0.174	
	5			0.5	1.46	0.011	
	6			0.5	2.91	0.172	
Total Fuel Consumed							

**Sequence VID
Form 8
General Parameter Listing**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

16 Hour Aging

	Spec	Average ^A	Max ^A	Min ^A
1. Speed, r/min	2250 ±5			
2. Torque, N-m	110 ±0.10			
3. Oil Gallery Temperature, °C	120 ±2			
4. Coolant Inlet Temperature, °C	110 ±2			
5. Oil Circulation Temperature, °C	Record			
6. Coolant Out Temperature, °C	Record			
7. Intake Air Temperature, °C	29 ±2			
8. Fuel to Flowmeter Temperature, °C	20-32			
9. Fuel to Fuel Rail Temperature, °C	22 ±2			
10. Load Cell Temperature, °C	Record			
11. Oil Heater Temperature, °C	205 max			
12. Intake Air Pressure, kPa	0.05 ±0.02			
13. Fuel to Flowmeter Pressure, kPa	110±10			
14. Fuel to Fuel Rail Pressure, kPa	405±10			
15. Intake Manifold Pressure, kPa abs.	Record			
16. Exhaust Back Pressure, kPa abs.	105 ±0.20			
17. Engine Oil Pressure, kPa	Record			
18. Coolant Flow, L/min	80 ±4			
19. Fuel Flow, kg/h	Record			
20. Intake Air Humidity, grains/kg	11.4±0.8			
21. Air/Fuel Ratio	Record			
22. Crankcase Pressure, kPa	0.00 ±0.25			

^A Based on a minimum of one determination per hour

**Sequence VID
Form 9
General Parameter Listing**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

84 Hour Aging

	Spec	Average ^A	Max ^A	Min ^A
1. Speed, r/min	2250 ± 5			
2. Torque, N-m	110 ±0.10			
3. Oil Gallery Temperature, °C	120±2			
4. Coolant Inlet Temperature, °C	110 ±2			
5. Oil Circulation Temperature, °C	Record			
6. Coolant Out Temperature, °C	Record			
7. Intake Air Temperature, °C	29 ±2			
8. Fuel to Flowmeter Temperature, °C	20-32			
9. Fuel to Fuel Rail Temperature, °C	22 ±2			
10. Load Cell Temperature, °C	Record			
11. Oil Heater Temperature, °C	205 max			
12. Intake Air Pressure, kPa	0.05 ±0.02			
13. Fuel to Flowmeter Pressure, kPa	110±10			
14. Fuel to Fuel Rail Pressure, kPa	405±10			
15. Intake Manifold Pressure, kPa abs.	Record			
16. Exhaust Back Pressure, kPa abs.	105 ± 0.20			
17. Engine Oil Pressure, kPa	Record			
18. Coolant Flow, L/min	80±4			
19. Fuel Flow, kg/h	Record			
20. Intake Air Humidity, grains/kg	11.4 ±0.8			
21. Air/Fuel Ratio	Record			
22. Crankcase Pressure, kPa	0.00 ±0.25			

^A Based on a minimum of one determination per hour

**Sequence VID
Form 10
General Parameter Summary**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

BL Before Test Oil 1

General Parameters

	Spec	Stage Average					
		1	2	3	4	5	6
1. Oil Circulation Temperature, °C	Record						
2. Coolant Out Temperature, °C	Record						
3. Fuel to Flowmeter Temperature, °C	20-32						
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4						
5. Load Cell Power Supply Temp., °C	Record						
6. Load Cell Temperature, °C	Record						
7. Delta Load Cell Temperature, °C ^A	≤ 12						
8. Oil Heater Temperature, °C	205 max						
9. Intake Air Pressure, kPa	0.05 ± .02						
10. Fuel to Flowmeter Pressure, kPa	110±10						
11. Fuel to Fuel Rail Pressure, kPa	405±10						
12. Intake Manifold Pressure, kPa abs.	Record						
13. Engine Oil Pressure, kPa	Record						
14. Coolant Flow, L/min	80 ± 4						
15. Intake Air Humidity, grains/kg	11.4 ± 0.8						
16. Crankcase Pressure, kPa	0.00 ± 0.25						
17. Barometric Pressure, kPa	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings

**Sequence VID
Form 11
General Parameter Summary**

Lab	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

BL Before Test Oil 2

General Parameters

	Spec	Stage Average					
		1	2	3	4	5	6
1. Oil Circulation Temperature, °C	Record						
2. Coolant Out Temperature, °C	Record						
3. Fuel to Flowmeter Temperature, °C	20-32						
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4						
5. Load Cell Power Supply Temp., °C	Record						
6. Load Cell Temperature, °C	Record						
7. Delta Load Cell Temperature, °C ^A	≤ 12						
8. Oil Heater Temperature, °C	205 max						
9. Intake Air Pressure, kPa	0.05 ± .02						
10. Fuel to Flowmeter Pressure, kPa	110±10						
11. Fuel to Fuel Rail Pressure, kPa	405±10						
12. Intake Manifold Pressure, kPa abs.	Record						
13. Engine Oil Pressure, kPa	Record						
14. Coolant Flow, L/min	80 ± 4						
15. Intake Air Humidity, grains/kg	11.4 ± 0.8						
16. Crankcase Pressure, kPa	0.00 ± 0.25						
17. Barometric Pressure, kPa	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings

**Sequence VID
Form 12
General Parameter Summary**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

BL Before Test Oil 3

General Parameters

		Stage Average					
		1	2	3	4	5	6
	Spec						
1. Oil Circulation Temperature, °C	Record						
2. Coolant Out Temperature, °C	Record						
3. Fuel to Flowmeter Temperature, °C	20-32						
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4						
5. Load Cell Power Supply Temp., °C	Record						
6. Load Cell Temperature, °C	Record						
7. Delta Load Cell Temperature, °C ^A	≤ 12						
8. Oil Heater Temperature, °C	205 max						
9. Intake Air Pressure, kPa	0.05 ± .02						
10. Fuel to Flowmeter Pressure, kPa	110±10						
11. Fuel to Fuel Rail Pressure, kPa	405±10						
12. Intake Manifold Pressure, kPa abs.	Record						
13. Engine Oil Pressure, kPa	Record						
14. Coolant Flow, L/min	80 ± 4						
15. Intake Air Humidity, grains/kg	11.4 ± 0.8						
16. Crankcase Pressure, kPa	0.00 ± 0.25						
17. Barometric Pressure, kPa	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings

**Sequence VID
Form 13
General Parameter Summary**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

**Test Oil Phase I
General Parameters**

	Spec	Stage Average					
		1	2	3	4	5	6
1. Oil Circulation Temperature, °C	Record						
2. Coolant Out Temperature, °C	Record						
3. Fuel to Flowmeter Temperature, °C	20-32						
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4						
5. Load Cell Power Supply Temp., °C	Record						
6. Load Cell Temperature, °C	Record						
7. Delta Load Cell Temperature, °C ^A	< 12						
8. Oil Heater Temperature, °C	205 max						
9. Intake Air Pressure, kPa	0.05 ± .02						
10. Fuel to Flowmeter Pressure, kPa	110±10						
11. Fuel to Fuel Rail Pressure, kPa	405±10						
12. Intake Manifold Pressure, kPa abs.	Record						
13. Engine Oil Pressure, kPa	Record						
14. Coolant Flow, L/min	80 ± 4						
15. Intake Air Humidity, grains/kg	11.4 ± 0.8						
16. Crankcase Pressure, kPa	0.00 ± 0.25						
17. Barometric Pressure, kPa	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings

**Sequence VID
Form 14
General Parameter Summary**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

**Test Oil Phase II
General Parameters**

		Stage Average					
	Spec	1	2	3	4	5	6
1. Oil Circulation Temperature, °C	Record						
2. Coolant Out Temperature, °C	Record						
3. Fuel to Flowmeter Temperature, °C	20-32						
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4						
5. Load Cell Power Supply Temp., °C	Record						
6. Load Cell Temperature, °C	Record						
7. Delta Load Cell Temperature, °C ^A	< 12						
8. Oil Heater Temperature, °C	205 max						
9. Intake Air Pressure, kPa	0.05 ± .02						
10. Fuel to Flowmeter Pressure, kPa	110±10						
11. Fuel to Fuel Rail Pressure, kPa	405±10						
12. Intake Manifold Pressure, kPa abs.	Record						
13. Engine Oil Pressure, kPa	Record						
14. Coolant Flow, L/min	80 ± 4						
15. Intake Air Humidity, grains/kg	11.4 ± 0.8						
16. Crankcase Pressure, kPa	0.00 ± 0.25						
17. Barometric Pressure, kPa	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings

**Sequence VID
Form 15
General Parameter Summary**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

**BL After Test Oil Phase
General Parameters**

	Spec	Stage Average					
		1	2	3	4	5	6
1. Oil Circulation Temperature, °C	Record						
2. Coolant Out Temperature, °C	Record						
3. Fuel to Flowmeter Temperature, °C	20-32						
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4						
5. Load Cell Power Supply Temp., °C	Record						
6. Load Cell Temperature, °C	Record						
7. Delta Load Cell Temperature, °C ^A	≤ 12						
8. Oil Heater Temperature, °C	205 max						
9. Intake Air Pressure, kPa	0.05 ± .02						
10. Fuel to Flowmeter Pressure, kPa	110±10						
11. Fuel to Fuel Rail Pressure, kPa	405±10						
12. Intake Manifold Pressure, kPa abs.	Record						
13. Engine Oil Pressure, kPa	Record						
14. Coolant Flow, L/min	80 ± 4						
15. Intake Air Humidity, grains/kg	11.4 ± 0.8						
16. Crankcase Pressure, kPa	0.00 ± 0.25						
17. Barometric Pressure, kPa	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings

**Sequence VID
Form 16
Critical Parameter Summary**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

Stage 1 Average

	Spec	BL Before Test Oil 1	BL Before Test Oil 2	BL Before Test Oil 3	Test Oil Phase I	Test Oil Phase II	BL After Test Oil
Speed, r/min	2000±5						
Torque, N-m	105±0.10						
Oil Gallery Temperature, °C	115±2						
Coolant Inlet Temperature, °C	109±2						
Intake Air Temperature, °C	29±2						
Fuel to Fuel Rail Temperature, °C	22±2						
Exhaust Back Pressure, kPa abs.	105±0.17						
Fuel Flow, kg/h	Record						
Air/Fuel Ratio	14.00–15.00						
Delta AFR ^A	≤ .50						
Load Cell Excitation, V	Record						
Load Cell Voltage Delta, % ^A	Record						
BSFC, kg/Kw-h	Record						
BSFC, Standard Deviation	Record						
BSFC C.V., %	Record						

Stage 2 Average

	Spec	BL Before Test Oil 1	BL Before Test Oil 2	BL Before Test Oil 3	Test Oil Phase I	Test Oil Phase II	BL After Test Oil
Speed, r/min	2000±5						
Torque, N-m	105±0.10						
Oil Gallery Temperature, °C	65±2						
Coolant Inlet Temperature, °C	65±2						
Intake Air Temperature, °C	29±2						
Fuel to Fuel Rail Temperature, °C	22±2						
Exhaust Back Pressure, kPa abs.	105±0.17						
Fuel Flow, kg/h	Record						
Air/Fuel Ratio	14.00–15.00						
Delta AFR ^A	≤ .50						
Load Cell Excitation, V	Record						
Load Cell Voltage Delta, % ^A	Record						
BSFC, kg/Kw-h	Record						
BSFC, Standard Deviation	Record						
BSFC C.V., %	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings.

Maximum Load Cell Excitation Voltage – Current Load Cell Excitation Voltage/Maximum Load Cell Excitation Voltage * 100

**Sequence VID
Form 17
Critical Parameter Summary**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

Stage 3 Average

	Spec	BL Before Test Oil 1	BL Before Test Oil 2	BL Before Test Oil 3	Test Oil Phase I	Test Oil Phase II	BL After Test Oil
Speed, r/min	1500±5						
Torque, N-m	105±0.10						
Oil Gallery Temperature, °C	115±2						
Coolant Inlet Temperature, °C	109±2						
Intake Air Temperature, °C	29±2						
Fuel to Fuel Rail Temperature, °C	22±2						
Exhaust Back Pressure, kPa abs.	105±0.17						
Fuel Flow, kg/h	Record						
Air/Fuel Ratio	14.00–15.00						
Delta AFR ^A	≤ .50						
Load Cell Excitation, V	Record						
Load Cell Voltage Delta, % ^A	Record						
BSFC, kg/Kw-h	Record						
BSFC, Standard Deviation	Record						
BSFC C.V., %	Record						

Stage 4 Average

	Spec	BL Before Test Oil 1	BL Before Test Oil 2	BL Before Test Oil 3	Test Oil Phase I	Test Oil Phase II	BL After Test Oil
Speed, r/min	695±5						
Torque, N-m	20±0.10						
Oil Gallery Temperature, °C	115±2						
Coolant Inlet Temperature, °C	109±2						
Intake Air Temperature, °C	29±2						
Fuel to Fuel Rail Temperature, °C	22±2						
Exhaust Back Pressure, kPa abs.	104±0.17						
Fuel Flow, kg/h	Record						
Air/Fuel Ratio	14.00–15.00						
Delta AFR ^A	≤ .50						
Load Cell Excitation, V	Record						
Load Cell Voltage Delta, % ^A	Record						
BSFC, kg/Kw-h	Record						
BSFC, Standard Deviation	Record						
BSFC C.V., %	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings.
Maximum Load Cell Excitation Voltage – Current Load Cell Excitation Voltage/Maximum Load Cell Excitation Voltage * 100

**Sequence VID
Form 18
Critical Parameter Summary**

Lab:	Date Completed:	Time Completed:	
Test Number			
Test Stand:	Runs On The Stand:	Engine No.	Runs on Engine:
Oil Code:			
Formulation/Stand Code:			

Stage 5 Average

	Spec	BL Before Test Oil 1	BL Before Test Oil 2	BL Before Test Oil 3	Test Oil Phase I	Test Oil Phase II	BL After Test Oil
Speed, r/min	695±5						
Torque, N-m	20±0.10						
Oil Gallery Temperature, °C	35±2						
Coolant Inlet Temperature, °C	35±2						
Intake Air Temperature, °C	29±2						
Fuel to Fuel Rail Temperature, °C	22±2						
Exhaust Back Pressure, kPa abs.	104±0.17						
Fuel Flow, kg/h	Record						
Air/Fuel Ratio	14.00–15.00						
Delta AFR ^A	≤ .50						
Load Cell Excitation, V	Record						
Load Cell Voltage Delta, % ^A	Record						
BSFC, kg/Kw-h	Record						
BSFC, Standard Deviation	Record						
BSFC C.V., %	Record						

Stage 6 Average

	Spec	BL Before Test Oil 1	BL Before Test Oil 2	BL Before Test Oil 3	Test Oil Phase I	Test Oil Phase II	BL After Test Oil
Speed, r/min	695±5						
Torque, N-m	40±0.10						
Oil Gallery Temperature, °C	115±2						
Coolant Inlet Temperature, °C	109±2						
Intake Air Temperature, °C	29±2						
Fuel to Fuel Rail Temperature, °C	22±2						
Exhaust Back Pressure, kPa abs.	104±0.17						
Fuel Flow, kg/h	Record						
Air/Fuel Ratio	14.00–15.00						
Delta AFR ^A	≤ .50						
Load Cell Excitation, V	Record						
Load Cell Voltage Delta, % ^A	Record						
BSFC, kg/Kw-h	Record						
BSFC, Standard Deviation	Record						
BSFC C.V., %	Record						

^A Difference between the maximum stage average reading of the entire test and the individual stage average readings.

Maximum Load Cell Excitation Voltage – Current Load Cell Excitation Voltage/Maximum Load Cell Excitation Voltage * 100

**Sequence VID
Form 20
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement**

Test Laboratory					
Test Sponsor					
Formulation / Stand Code					
Test Number					
Start Date		Start Time		Time Zone	

Declarations

No. 1 All requirements of the ACC Code of Practice for which the test laboratory is responsible were met in the conduct of this test. Yes _____ No_____ *

No. 2 The laboratory ran this test for the full duration following all procedural requirements; and all operational validity requirements of the latest version of the applicable test procedure (ASTM or other), including all updates issued by the organization responsible for the test, were met.
Yes _____ No_____ *

If the response to this Declaration is “No”, does the test engineer consider the deviations from operational validity requirements that occurred to be beyond the control of the laboratory? Yes _____* No_____

No 3. A deviation occurred for one of the test parameters identified by the organization responsible for the test as being a special case. Yes _____* No_____ *(This currently applies only to specific deviations identified in the ASTM Information Letter System)*

Check The Appropriate Conclusion

	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
	*Operational review of this test indicates that the results should not be included in the Multiple Test Acceptance Criteria calculations.

Note: *Supporting comments are required for all responses identified with an asterisk.*

Comments

Signature

Date

Typed Name

Title