Test Method D 6837 for Measurement of the Effects of Automotive Engine Oils on the Fuel Economy of Passenger Cars and Light Trucks in the Sequence VIB 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			

In my opinion this test been conducted in a valid manner in accordance with the Test Method D 6837 and the appropriate amendments through the Information Letter System. The remarks included in the report describe the anomalies associated with this test.

Submitted By: _____
Testing Laboratory

_____
Signature

_____
Typed Name

_____
Title

Form 2

Sequence VIB

Table of Contents

Sequence VIB
Form 3

Summary of Test Method

The Sequence VIB 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 five different stages of operation.

A 1993 Ford 4.6L spark ignition, V-8 cylinder design,4-cycle engine is used as the test apparatus. The engine incorporates overhead camshafts, a cross-flow, fast-burn cylinder head design, two valves per cylinder, and an electronic port fuel injection.

The Sequence VIB test incorporates a flush and run type procedure. Each test consists of two 5-stage fuel economy measurements on baseline oil (BC), 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 1500 r/min and 125°C oil temperature. After the initial aging, a 5-stage fuel economy measurement is taken. The test oil is then aged an additional 80 hours at an engine speed of 2250 r/min and 135°C oil temperature. Following this final aging, the test oil once again goes through a 5-stage fuel economy measurement. The two fuel economy measurements taken on the baseline oil (BC) 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 5-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	1500	98	125	105
2	800	26	105	95
3	800	26	70	60
4	1500	98	70	60
5	1500	98	45	45

Aging Stage	**Speed (r/min)**	**Torque (N-m)**	**Oil Temp. (°C)**	**Coolant Temp. (°C)**
1	1500	98	125	105
2	2250	98	135	105

Sequence VIB
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			
	BC Before	**Test Oil**	**BC 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			
Aged (80 h) Oil Viscosity @ 40 °C, cSt			
Aged (80 h) Oil Viscosity @ 100°C, cSt			
Total Test Length, hhh:mm			
Total Engine Hours @ EOT			
Most Recent Fuel Batch			

Overall Results				
	BC Oil		**Test Oil**	
	Before	**After**	**Phase I**	**Phase II**
Fuel Consumed, kg				
Shift Delta, %				
Fuel Economy Improvement, %				
FEI Industry Correction Factor, %				
FEI Severity Adjustment, % (non-reference tests only)				
FEI Final Result, %				
Total Oil Consumption, mL				

Last Reference Oil Test on Stand/Engine History (Non-Reference Tests Only)			
Date Completed		Fuel Batch	
TMC Oil Code		SAE Viscosity Grade	
Oilcode		Calibration Oil Batch	
Runs on Stand		Runs on Engine	
		Phase I	**Phase II**
Final FEI Results			

Sequence VIB
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.%	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
BC Before Test Oil	1			15.39	0.0802	
	2			2.18	0.0787	
	3			2.18	0.0848	
	4			15.39	0.0864	
	5			15.39	0.0699	
Total Fuel Consumed						

Computed Averages						
Oil	Stage	BSFC kg/kW-h	BSFC C.V.%	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
Test Oil Phase I	1			15.39	0.0802	
	2			2.18	0.0787	
	3			2.18	0.0848	
	4			15.39	0.0864	
	5			15.39	0.0699	
Total Fuel Consumed						

Sequence VIB
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.%**	**Nominal Power kW**	**Weight Factor**	**Weighted Fuel Consumed kg**
Test Oil Phase II	1			**15.39**	**0.0802**	
	2			**2.18**	**0.0787**	
	3			**2.18**	**0.0848**	
	4			**15.39**	**0.0864**	
	5			**15.39**	**0.0699**	
Total Fuel Consumed						

Computed Averages						
Oil	**Stage**	**BSFC kg/kW-h**	**BSFC C.V.%**	**Nominal Power kW**	**Weight Factor**	**Weighted Fuel Consumed kg**
BC After Test Oil	1			**15.39**	**0.0802**	
	2			**2.18**	**0.0787**	
	3			**2.18**	**0.0848**	
	4			**15.39**	**0.0864**	
	5			**15.39**	**0.0699**	
Total Fuel Consumed						

Sequence VIB
Form 7
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	**1500 ±5**			
2. Torque, N-m	**98 ±0.10**			
3. Oil Gallery Temperature, °C	**125 ±2**			
4. Coolant Inlet Temperature, °C	**105 ±2**			
5. Oil Circulation Temperature, °C	**Record**			
6. Coolant Out Temperature, °C	**Record**			
7. Intake Air Temperature, °C	**27 ±2**			
8. Fuel to Flowmeter Temperature, °C	**20-32**			
9. Fuel to Fuel Rail Temperature, °C	**20 ±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	**100 min**			
14. Fuel to Fuel Rail Pressure, kPa	**205-310**			
15. Intake Manifold Pressure, kPa abs.	**Record**			
16. Exhaust Back Pressure, kPa abs.	**104 ±0.20**			
17. Engine Oil Pressure, kPa	**Record**			
18. Coolant Flow, L/min	**130 ±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 VIB
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:			

80 Hour Aging

	Spec	Average [A]	Max[A]	Min [A]
1. Speed, r/min	**2250 ± 5**			
2. Torque, N-m	**98 ±0.10**			
3. Oil Gallery Temperature, °C	**135±2**			
4. Coolant Inlet Temperature, °C	**105 ±2**			
5. Oil Circulation Temperature, °C	**Record**			
6. Coolant Out Temperature, °C	**Record**			
7. Intake Air Temperature, °C	**27 ±2**			
8. Fuel to Flowmeter Temperature, "C	**20-32**			
9. Fuel to Fuel Rail Temperature, °C	**20 ±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	**100 min**			
14. Fuel to Fuel Rail Pressure, kPa	**205-310**			
15. Intake Manifold Pressure, kPa abs.	**Record**			
16. Exhaust Back Pressure, kPa abs.	**104 ± 0.20**			
17. Engine Oil Pressure, kPa	**Record**			
18. Coolant Flow, L/min	**130±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 VIB
Form 9
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:			

BC Before Test Oil

General Parameters

		Stage				
	Spec	**1**	**2**	**3**	**4**	**5**
1. Oil Circulation Temperature, "C	**Record**					
2. Coolant Out Temperature, °C	**Record**					
3. Fuel to Flowmeter Temperature,	**20-32**					
4. Delta Fuel to Flowmeter Temp.,	**≤4**					
5. Test Cell Temperature, °C	**Record**					
6. Load Cell Temperature, °C	**Record**					
7. Delta Load Cell Temperature,	**≤12**					
8. Oil Heater Temperature, °C	**205 max**					
9. Intake Air Pressure, kPa	**0.05 ± .02**					
10. Fuel to Flowmeter Pressure,	**100 min**					
11. Fuel to Fuel Rail Pressure, kPa	**205-310**					
12. Intake Manifold Pressure, kPa	**Record**					
13. Engine Oil Pressure, kPa	**Record**					
14. Coolant Flow, L/min	**130 ±4**					
15. Intake Air Humidity, grains/kg	**11.4 ±0.8**					
16. Crankcase Pressure, kPa	**0.00 ±0.25**					
17.Blowby,L/min [B]	**Record**					
18. Barometric Pressure, kPa	**Record**					

[A] Difference between the maximum stage average reading of the entire test and the individual stage average readings
[B] Not required by test procedure

Sequence VIB
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:			

Test Oil Phase I

General Parameters

		Stage				
	Spec	**1**	**2**	**3**	**4**	**5**
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. Test Cell Temperature, °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	**100 min**					
11. Fuel to Fuel Rail Pressure, kPa	**205 – 310**					
12. Intake Manifold Pressure, kPa abs.	**Record**					
13. Engine Oil Pressure, kPa	**Record**					
14. Coolant Flow, L/min	**130 ± 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 VIB
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:			

Test Oil Phase II

General Parameters

		Stage				
	Spec	**1**	**2**	**3**	**4**	**5**
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. Test Cell Temperature, °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	**100 min**					
11. Fuel to Fuel Rail Pressure, kPa	**205 – 310**					
12. Intake Manifold Pressure, kPa abs.	**Record**					
13. Engine Oil Pressure, kPa	**Record**					
14. Coolant Flow, L/min	**130 ± 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 VIB
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:			

BC After Test Oil

General Parameters

		Stage				
	Spec	**1**	**2**	**3**	**4**	**5**
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. Test Cell Temperature, °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	**100 min**					
11. Fuel to Fuel Rail Pressure, kPa	**205 - 310**					
12. Intake Manifold Pressure, kPa abs.	**Record**					
13. Engine Oil Pressure, kPa	**Record**					
14. Coolant Flow, L/min	**130 ± 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 VIB
Form 13
Critical Parameter Summary - Stage 1

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

BC Before Test Oil

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 125 ± 1	Coolant In Temp, °C 105 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

Test Oil Phase I

Step SPEC	BSFC kg/Kw-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 125 ± 1	Coolant In Temp, °C 105 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 13A
Critical Parameter Summary - Stage 1

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

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 125 ± 1	Coolant In Temp, °C 105 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

BC After Test Oil

Step SPEC	BSFC kg/Kw-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 125 ± 1	Coolant In Temp, °C 105 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
D											
C.V.											

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

Sequence VIB
Form 14
Critical Parameter Summary - Stage 2

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

BC Before Test Oil

Step SPEC	BSFC kg/kW-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 105 ± 1	Coolant In Temp, °C 95 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

Test Oil Phase I

Step SPEC	BSFC kg/Kw-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 105 ± 1	Coolant In Temp, °C 95 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 14A
Critical Parameter Summary - Stage 2

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

Step SPEC	BSFC kg/kW-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 105 ± 1	Coolant In Temp, °C 95 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

BC After Test Oil

Step SPEC	BSFC kg/Kw-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 105 ± 1	Coolant In Temp, °C 95 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 15
Critical Parameter Summary - Stage 3

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

BC Before Test Oil

Step SPEC	BSFC kg/kW-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

Test Oil Phase I

Step SPEC	BSFC kg/Kw-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 15A
Critical Parameter Summary - Stage 3

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

Step SPEC	BSFC kg/kW-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

BC After Test Oil

Step SPEC	BSFC kg/Kw-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 16
Critical Parameter Summary - Stage 4

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

BC Before Test Oil

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

Test Oil Phase I

Step SPEC	BSFC kg/Kw-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 16A
Critical Parameter Summary - Stage 4

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

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

BC After Test Oil

Step SPEC	BSFC kg/Kw-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 17
Critical Parameter Summary – Stage 5

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

BC Before Test Oil

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 45 ± 1	Coolant In Temp, °C 45 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

Test Oil Phase I

Step SPEC	BSFC kg/Kw-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 45 ± 1	Coolant In Temp, °C 45 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 17A
Critical Parameter Summary - Stage 5

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

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 45 ± 1	Coolant In Temp, °C 45 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

BC After Test Oil

Step SPEC	BSFC kg/Kw-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 45 ± 1	Coolant In Temp, °C 45 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta [A] AFR ≤ .50
1											
2											
3											
4											
5											
6											
AVG.											
SD											
C.V.											

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

Sequence VIB
Form 18
Downtime And Other Comments

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

Number of Downtime Occurrences			
Test Hours	**Date**	**Downtime**	**Reasons**
Total Downtime			

Other Comments		
Number of Comment Lines		

Sequence VIB
Form 18A
Downtime And Other Comments

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

Number of Downtime Occurrences			
Test Hours	**Date**	**Downtime**	**Reasons**
Total Downtime			

Other Comments		
Number of Comment Lines		

Sequence VIB
Form 18B
Downtime And Other Comments

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

Number of Downtime Occurrences			
Test Hours	**Date**	**Downtime**	**Reasons**
Total Downtime			

Other Comments		
Number of Comment Lines		

Sequence VIB
Form 19
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