

**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: VIB VERSION 20041018 BETA

Conducted For:

CC
CC

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

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

Lab: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM	
Test Number			
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC	Runs on Engine: CCCC
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC			
Alternate Codes	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC

In my opinion this test CCCCCCC 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 Image
 Signature

 Typed Name

 Title

Form 2

Sequence VIB

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**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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		Runs on Engine: CCCC
Engine Serial Number: CCCCCCCCCC		
Formulation/Stand Code: CC-C-CCCCC-C-C-CCCCC-CC-CC-CCCC		

Test Documentation			
	BC Before	Test Oil	BC After
Start Date	YYYYMMDD	YYYYMMDD	YYYYMMDD
Start Time	HH:MM	HH:MM	HH:MM
End Date	YYYYMMDD	YYYYMMDD	YYYYMMDD
End Time	HH:MM	HH:MM	HH:MM
Oil Test Length, hhh:mm	HHH:MM	HHH:MM	HHH:MM
Calibration Oil Batch	CCCCCCCCCC		
Flush Oil Batch	CCCCCCCCCC		
Laboratory Oil Code		CCCCCCCCCCCCCCCCCC	
SAE Viscosity Grade		CCCCCC	
TMC Oil Code (Reference Oil Tests Only)		CCCCCC	
New Oil Viscosity @ 40 °C, cSt		S1234.12	
New Oil Viscosity @ 100°C, cSt		S1234.12	
Aged (80 h) Oil Viscosity @ 40 °C, cSt		S1234.12	
Aged (80 h) Oil Viscosity @ 100°C, cSt		S1234.12	
Total Test Length, hhh:mm	HHH:MM		
Total Engine Hours @ EOT	CCCC		
Most Recent Fuel Batch	CCCCCCCCCC		

Overall Results				
	BC Oil		Test Oil	
	Before	After	Phase I	Phase II
Fuel Consumed, kg	S1.123456	S1.123456	S1.123456	S1.123456
Shift Delta, %	S123.12			
Fuel Economy Improvement, %			S12.12	S12.12
FEI Industry Correction Factor, %			S12.12	S12.12
FEI Severity Adjustment, % (non-reference tests only)			S12.12	S12.12
FEI Final Result, %			S12.12	S12.12
Total Oil Consumption, mL			S12345	

Last Reference Oil Test on Stand/Engine History (Non-Reference Tests Only)			
Date Completed	YYYYMMDD	Fuel Batch	CCCCCCCCCC
TMC Oil Code	CCCCCC	SAE Viscosity Grade	CCCCCC
Oilcode	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	Calibration Oil Batch	CCCCCCCCCC
Runs on Stand	CCCC	Runs on Engine	CCCC
		Phase I	Phase II
Final FEI Results		S12.12	S12.12

**Sequence VIB
Form 5
Operational Data Analysis**

Lab: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

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	S1.12345	S1.12	15.39	0.0802	S1.123456
	2	S1.12345	S1.12	2.18	0.0787	S1.123456
	3	S1.12345	S1.12	2.18	0.0848	S1.123456
	4	S1.12345	S1.12	15.39	0.0864	S1.123456
	5	S1.12345	S1.12	15.39	0.0699	S1.123456
Total Fuel Consumed						S1.123456

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	S1.12345	S1.12	15.39	0.0802	S1.123456
	2	S1.12345	S1.12	2.18	0.0787	S1.123456
	3	S1.12345	S1.12	2.18	0.0848	S1.123456
	4	S1.12345	S1.12	15.39	0.0864	S1.123456
	5	S1.12345	S1.12	15.39	0.0699	S1.123456
Total Fuel Consumed						S1.123456

**Sequence VIB
Form 6
Operational Date Analysis**

Lab: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

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	S1.12345	S1.12	15.39	0.0802	S1.123456
	2	S1.12345	S1.12	2.18	0.0787	S1.123456
	3	S1.12345	S1.12	2.18	0.0848	S1.123456
	4	S1.12345	S1.12	15.39	0.0864	S1.123456
	5	S1.12345	S1.12	15.39	0.0699	S1.123456
Total Fuel Consumed						S1.123456

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	S1.12345	S1.12	15.39	0.0802	S1.123456
	2	S1.12345	S1.12	2.18	0.0787	S1.123456
	3	S1.12345	S1.12	2.18	0.0848	S1.123456
	4	S1.12345	S1.12	15.39	0.0864	S1.123456
	5	S1.12345	S1.12	15.39	0.0699	S1.123456
Total Fuel Consumed						S1.123456

**Sequence VIB
Form 7
General Parameter Listing**

Lab: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C		

16 Hour Aging

	Spec	Average ^A	Max ^A	Min ^A
1. Speed, r/min	1500 ±5	S1234.1	S1234.1	S1234.1
2. Torque, N-m	98 ±0.10	S12.12	S12.12	S12.12
3. Oil Gallery Temperature, °C	125 ±2	S123.1	S123.1	S123.1
4. Coolant Inlet Temperature, °C	105 ±2	S123.1	S123.1	S123.1
5. Oil Circulation Temperature, °C	Record	S123.1	S123.1	S123.1
6. Coolant Out Temperature, °C	Record	S123.1	S123.1	S123.1
7. Intake Air Temperature, °C	27 ±2	S123.1	S123.1	S123.1
8. Fuel to Flowmeter Temperature, °C	20-32	S123.1	S123.1	S123.1
9. Fuel to Fuel Rail Temperature, °C	20 ±2	S123.1	S123.1	S123.1
10. Load Cell Temperature, °C	Record	S123.1	S123.1	S123.1
11. Oil Heater Temperature, °C	205 max	S123.1	S123.1	S123.1
12. Intake Air Pressure, kPa	0.05 ±0.02	S1.12	S1.12	S1.12
13. Fuel to Flowmeter Pressure, kPa	100 min	S123.1	S123.1	S123.1
14. Fuel to Fuel Rail Pressure, kPa	205-310	S123.1	S123.1	S123.1
15. Intake Manifold Pressure, kPa abs.	Record	S12.1	S12.1	S12.1
16. Exhaust Back Pressure, kPa abs.	104 ±0.20	S123.12	S123.12	S123.12
17. Engine Oil Pressure, kPa	Record	S123.1	S123.1	S123.1
18. Coolant Flow, L/min	130 ±4	S123.1	S123.1	S123.1
19. Fuel Flow, kg/h	Record	S12.123	S12.123	S12.123
20. Intake Air Humidity, grains/kg	11.4±0.8	S12.1	S12.1	S12.1
21. Air/Fuel Ratio	Record	S12.12	S12.12	S12.12
22. Crankcase Pressure, kPa	0.00 ±0.25	S12.12	S12.12	S12.12

^A Based on a minimum of one determination per hour

**Sequence VIB
Form 8
General Parameter Listing**

Lab: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

80 Hour Aging

	Spec	Average ^A	Max ^A	Min ^A
1. Speed, r/min	2250 ± 5	S1234.1	S1234.1	S1234.1
2. Torque, N-m	98 ±0.10	S12.12	S12.12	S12.12
3. Oil Gallery Temperature, °C	135±2	S123.1	S123.1	S123.1
4. Coolant Inlet Temperature, °C	105 ±2	S123.1	S123.1	S123.1
5. Oil Circulation Temperature, °C	Record	S123.1	S123.1	S123.1
6. Coolant Out Temperature, °C	Record	S123.1	S123.1	S123.1
7. Intake Air Temperature, °C	27 ±2	S123.1	S123.1	S123.1
8. Fuel to Flowmeter Temperature, °C	20-32	S123.1	S123.1	S123.1
9. Fuel to Fuel Rail Temperature, °C	20 ±2	S123.1	S123.1	S123.1
10. Load Cell Temperature, °C	Record	S123.1	S123.1	S123.1
11. Oil Heater Temperature, °C	205 max	S123.1	S123.1	S123.1
12. Intake Air Pressure, kPa	0.05 ±0.02	S1.12	S1.12	S1.12
13. Fuel to Flowmeter Pressure, kPa	100 min	S123.1	S123.1	S123.1
14. Fuel to Fuel Rail Pressure, kPa	205-310	S123.1	S123.1	S123.1
15. Intake Manifold Pressure, kPa abs.	Record	S12.1	S12.1	S12.1
16. Exhaust Back Pressure, kPa abs.	104 ± 0.20	S123.12	S123.12	S123.12
17. Engine Oil Pressure, kPa	Record	S123.1	S123.1	S123.1
18. Coolant Flow, L/min	130±4	S123.1	S123.1	S123.1
19. Fuel Flow, kg/h	Record	S12.123	S12.123	S12.123
20. Intake Air Humidity, grains/kg	11.4 ±0.8	S12.1	S12.1	S12.1
21. Air/Fuel Ratio	Record	S12.12	S12.12	S12.12
22. Crankcase Pressure, kPa	0.00 ±0.25	S12.12	S12.12	S12.12

^A Based on a minimum of one determination per hour

Sequence VIB
Form 9
General Parameter Summary

Lab: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM	
Test Number			
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC	Runs on Engine: CCCC
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Formulation/Stand Code: CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCC			

BC Before Test Oil

General Parameters

	Spec	Stage				
		1	2	3	4	5
1. Oil Circulation Temperature, °C	Record	S123.1	S123.1	S123.1	S123.1	S123.1
2. Coolant Out Temperature, °C	Record	S123.1	S123.1	S123.1	S123.1	S123.1
3. Fuel to Flowmeter Temperature,	20-32	S12.1	S12.1	S12.1	S12.1	S12.1
4. Delta Fuel to Flowmeter Temp.,	≤4	S12.1	S12.1	S12.1	S12.1	S12.1
5. Test Cell Temperature, °C	Record	S12.1	S12.1	S12.1	S12.1	S12.1
6. Load Cell Temperature, °C	Record	S12.1	S12.1	S12.1	S12.1	S12.1
7. Delta Load Cell Temperature,	≤12	S12.1	S12.1	S12.1	S12.1	S12.1
8. Oil Heater Temperature, °C	205 max	S123.1	S123.1	S123.1	S123.1	S123.1
9. Intake Air Pressure, kPa	0.05 ± .02	S1.12	S1.12	S1.12	S1.12	S1.12
10. Fuel to Flowmeter Pressure,	100 min	S123.1	S123.1	S123.1	S123.1	S123.1
11. Fuel to Fuel Rail Pressure, kPa	205-310	S123.1	S123.1	S123.1	S123.1	S123.1
12. Intake Manifold Pressure, kPa	Record	S12.1	S12.1	S12.1	S12.1	S12.1
13. Engine Oil Pressure, kPa	Record	S123.1	S123.1	S123.1	S123.1	S123.1
14. Coolant Flow, L/min	130 ±4	S123.1	S123.1	S123.1	S123.1	S123.1
15. Intake Air Humidity, grains/kg	11.4 ±0.8	S12.1	S12.1	S12.1	S12.1	S12.1
16. Crankcase Pressure, kPa	0.00 ±0.25	S12.12	S12.12	S12.12	S12.12	S12.12
17. Blowby, L/min ^B	Record	S12.12				
18. Barometric Pressure, kPa	Record	S123.12	S123.12	S123.12	S123.12	S123.12

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-C-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

**Test Oil Phase I
General Parameters**

	Spec	Stage				
		1	2	3	4	5
1. Oil Circulation Temperature, °C	Record	S123.1	S123.1	S123.1	S123.1	S123.1
2. Coolant Out Temperature, °C	Record	S123.1	S123.1	S123.1	S123.1	S123.1
3. Fuel to Flowmeter Temperature, °C	20-32	S12.1	S12.1	S12.1	S12.1	S12.1
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4	S12.1	S12.1	S12.1	S12.1	S12.1
5. Test Cell Temperature, °C	Record	S12.1	S12.1	S12.1	S12.1	S12.1
6. Load Cell Temperature, °C	Record	S12.1	S12.1	S12.1	S12.1	S12.1
7. Delta Load Cell Temperature, °C ^A	≤ 12	S12.1	S12.1	S12.1	S12.1	S12.1
8. Oil Heater Temperature, °C	205 max	S123.1	S123.1	S123.1	S123.1	S123.1
9. Intake Air Pressure, kPa	0.05 ± .02	S1.12	S1.12	S1.12	S1.12	S1.12
10. Fuel to Flowmeter Pressure, kPa	100 min	S123.1	S123.1	S123.1	S123.1	S123.1
11. Fuel to Fuel Rail Pressure, kPa	205 – 310	S123.1	S123.1	S123.1	S123.1	S123.1
12. Intake Manifold Pressure, kPa abs.	Record	S12.1	S12.1	S12.1	S12.1	S12.1
13. Engine Oil Pressure, kPa	Record	S123.1	S123.1	S123.1	S123.1	S123.1
14. Coolant Flow, L/min	130 ± 4	S123.1	S123.1	S123.1	S123.1	S123.1
15. Intake Air Humidity, grains/kg	11.4 ± 0.8	S12.1	S12.1	S12.1	S12.1	S12.1
16. Crankcase Pressure, kPa	0.00 ± 0.25	S12.12	S12.12	S12.12	S12.12	S12.12
17. Barometric Pressure, kPa	Record	S123.12	S123.12	S123.12	S123.12	S123.12

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM	
Test Number			
Test Stand: CCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC	Runs on Engine: CCCC
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Formulation/Stand Code: CC-CCCCCCCCC-C			

**Test Oil Phase II
General Parameters**

	Spec	Stage				
		1	2	3	4	5
1. Oil Circulation Temperature, °C	Record	S123.1	S123.1	S123.1	S123.1	S123.1
2. Coolant Out Temperature, °C	Record	S123.1	S123.1	S123.1	S123.1	S123.1
3. Fuel to Flowmeter Temperature, °C	20-32	S12.1	S12.1	S12.1	S12.1	S12.1
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4	S12.1	S12.1	S12.1	S12.1	S12.1
5. Test Cell Temperature, °C	Record	S12.1	S12.1	S12.1	S12.1	S12.1
6. Load Cell Temperature, °C	Record	S12.1	S12.1	S12.1	S12.1	S12.1
7. Delta Load Cell Temperature, °C ^A	≤ 12	S12.1	S12.1	S12.1	S12.1	S12.1
8. Oil Heater Temperature, °C	205 max	S123.1	S123.1	S123.1	S123.1	S123.1
9. Intake Air Pressure, kPa	0.05 ± .02	S1.12	S1.12	S1.12	S1.12	S1.12
10. Fuel to Flowmeter Pressure, kPa	100 min	S123.1	S123.1	S123.1	S123.1	S123.1
11. Fuel to Fuel Rail Pressure, kPa	205 – 310	S123.1	S123.1	S123.1	S123.1	S123.1
12. Intake Manifold Pressure, kPa abs.	Record	S12.1	S12.1	S12.1	S12.1	S12.1
13. Engine Oil Pressure, kPa	Record	S123.1	S123.1	S123.1	S123.1	S123.1
14. Coolant Flow, L/min	130 ± 4	S123.1	S123.1	S123.1	S123.1	S123.1
15. Intake Air Humidity, grains/kg	11.4 ± 0.8	S12.1	S12.1	S12.1	S12.1	S12.1
16. Crankcase Pressure, kPa	0.00 ± 0.25	S12.12	S12.12	S12.12	S12.12	S12.12
17. Barometric Pressure, kPa	Record	S123.12	S123.12	S123.12	S123.12	S123.12

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

**BC After Test Oil
General Parameters**

	Spec	Stage				
		1	2	3	4	5
1. Oil Circulation Temperature, °C	Record	S123.1	S123.1	S123.1	S123.1	S123.1
2. Coolant Out Temperature, °C	Record	S123.1	S123.1	S123.1	S123.1	S123.1
3. Fuel to Flowmeter Temperature, °C	20-32	S12.1	S12.1	S12.1	S12.1	S12.1
4. Delta Fuel to Flowmeter Temp., °C ^A	≤ 4	S12.1	S12.1	S12.1	S12.1	S12.1
5. Test Cell Temperature, °C	Record	S12.1	S12.1	S12.1	S12.1	S12.1
6. Load Cell Temperature, °C	Record	S12.1	S12.1	S12.1	S12.1	S12.1
7. Delta Load Cell Temperature, °C ^A	≤ 12	S12.1	S12.1	S12.1	S12.1	S12.1
8. Oil Heater Temperature, °C	205 max	S123.1	S123.1	S123.1	S123.1	S123.1
9. Intake Air Pressure, kPa	0.05 ± .02	S1.12	S1.12	S1.12	S1.12	S1.12
10. Fuel to Flowmeter Pressure, kPa	100 min	S123.1	S123.1	S123.1	S123.1	S123.1
11. Fuel to Fuel Rail Pressure, kPa	205 - 310	S123.1	S123.1	S123.1	S123.1	S123.1
12. Intake Manifold Pressure, kPa abs.	Record	S12.1	S12.1	S12.1	S12.1	S12.1
13. Engine Oil Pressure, kPa	Record	S123.1	S123.1	S123.1	S123.1	S123.1
14. Coolant Flow, L/min	130 ± 4	S123.1	S123.1	S123.1	S123.1	S123.1
15. Intake Air Humidity, grains/kg	11.4 ± 0.8	S12.1	S12.1	S12.1	S12.1	S12.1
16. Crankcase Pressure, kPa	0.00 ± 0.25	S12.12	S12.12	S12.12	S12.12	S12.12
17. Barometric Pressure, kPa	Record	S123.12	S123.12	S123.12	S123.12	S123.12

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-C-CCCCCCCC-C-C-CCCC-CC-CC-CCCC		

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-C-CCCCCCCC-C-C-CCCC-CC-CC-CCCC		

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
D	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-C		

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCC-C-C-CCCC-CC-CC-CCCC		

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCC-C-C-CCCC-CC-CC-CCCC		

Test Oil Phase II

Step	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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

BC After Test Oil

Step	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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

^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: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No. CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCC-C-C-CCCC-CC-CC-CCCC		

Test Oil Phase II

Step	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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

BC After Test Oil

Step	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	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
2	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
3	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
4	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
5	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
6	S1.1234	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	
AVG.	S1.12345	S1234.1	S12.12	S123.1	S123.1	S12.1	S12.1	S123.12	S1.123	S12.12	S12.12
SD	S1.1234										
C.V.	S1.12										

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

**Sequence VIB
Form 19
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement**

Test Laboratory	CC				
Test Sponsor	CC				
Formulation / Stand Code	CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCC				
Test Number	CC				
Start Date	YYYYMMDD	Start Time	HH:MM	Time Zone	CCC

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 C No C *

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 C No C *

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 C * No C

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 C * No C
(This currently applies only to specific deviations identified in the ASTM Information Letter System)

Check The Appropriate Conclusion

C	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
C	*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
CC
CC
CC
CC

Signature Image _____

YYYYMMDD _____

Signature _____

Date _____

CC

CC

Typed Name _____

Title _____