Sequence VIBSJ
Report Cover Sheet

Version: VIBSJ VERSION 20030820 BETA

Conducted For:
TSTSPON1
TSTSPON2

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

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			
Alternate Codes	ALTCODE1	ALTCODE2	ALTCODE3

In my opinion this test OPVALID 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:

SUBLAB
Testing Laboratory

SUBSIGIM
Signature

SUBNAME
Typed Name

SUBTITLE
Title

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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 VIBSJ test incorporates a flush and run type procedure. Each test consists of two 5-stage fuel economy measurements on baseline oil (BC) and test oil. The test oil is aged during 16 hours of engine operation at 1500 r/min and 125°C oil temperature. The fuel economy measurements taken on the baseline oil (BC) and test oil are used to calculate a final value for Fuel Economy Improvement.

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

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

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE		Engine Serial Number: ENGSN	
Formulation/Stand Code: FORM			

Test Documentation		
	BC Before	**Test Oil**
Start Date	BCBSDTE	DTSTRT
Start Time	BCBSTIM	STRTIME
End Date	BCBEDTE	TODTE
End Time	BCBETIM	TOTIM
Oil Test Length, hhh:mm	BCBTLEN	TOLEN
Calibration Oil Batch	BCOILBT	
Flush Oil Batch	BCFOILBT	
Laboratory Oil Code		LABOCODE
SAE Viscosity Grade		SAEVISC
TMC Oil Code (Reference Oil Tests Only)		IND
New Oil Viscosity @ 40 °C, cSt		V40NEW
New Oil Viscosity @ 100°C, cSt		V100NEW
Total Test Length, hhh:mm	TESTLEN	
Total Engine Hours @ EOT	ENHREND	
Most Recent Fuel Batch	FUELBTID	

Overall Results		
	BC Oil	**Test Oil**
Fuel Consumed, kg	BCKG	TOKG
Fuel Economy Improvement, %		FEI
FEI Industry Correction Factor, %		FEI1CF
FEI Severity Adjustment, % (non-reference tests only)		FEI1SA
FEI Final Result, %		FEI1FNL

Last Reference Oil Test on Stand/Engine History (Non-Reference Tests Only)			
Date Completed	RDTCOMP	Fuel Batch	RFUELBID
TMC Oil Code	RIND	SAE Viscosity Grade	RSAEVISC
Oilcode	ROILCODE	Calibration Oil Batch	RCALOIL
Runs on Stand	RSTRUN	Runs on Engine	RENRUN
		Phase I	**Phase II**
Final FEI Results		RFEI1FNL	RFEI2FNL

Sequence VIBSJ
Form 5
Operational Data Analysis

Lab: LAB	**Date Completed:** DTCOMP	**Time Completed:** EOTTIME	
Test Number			
Test Stand: STAND	**Runs On The Stand:** STRUN	**Engine No.** ENGNO	**Runs on Engine:** ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

Computed Averages						
Oil	**Stage**	**BSFC kg/kW-h**	**BSFC C.V.%**	**Nominal Power kW**	**Weight Factor**	**Weighted Fuel Consumed kg**
BC Oil	1	BFCARB1A	BFCCRB1A	**15.39**	**0.0802**	WFC_RB1A
	2	BFCARB2A	BFCCRB2A	**2.18**	**0.0787**	WFC_RB2A
	3	BFCARB3A	BFCCRB3A	**2.18**	**0.0848**	WFC_RB3A
	4	BFCARB4A	BFCCRB4A	**15.39**	**0.0864**	WFC_RB4A
	5	BFCARB5A	BFCCRB5A	**15.39**	**0.0699**	WFC_RB5A
Total Fuel Consumed						BCKG

Computed Averages						
Oil	**Stage**	**BSFC kg/kW-h**	**BSFC C.V.%**	**Nominal Power kW**	**Weight Factor**	**Weighted Fuel Consumed kg**
Test Oil	1	BFCARC1A	BFCCRC1A	**15.39**	**0.0802**	WFC_RC1A
	2	BFCARC2A	BFCCRC2A	**2.18**	**0.0787**	WFC_RC2A
	3	BFCARC3A	BFCCRC3A	**2.18**	**0.0848**	WFC_RC3A
	4	BFCARC4A	BFCCRC4A	**15.39**	**0.0864**	WFC_RC4A
	5	BFCARC5A	BFCCRC5A	**15.39**	**0.0699**	WFC_RC5A
Total Fuel Consumed						TOKG

Sequence VIBSJ
Form 6
General Parameter Listing

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

16 Hour Aging

	Spec	Average [A]	Max[A]	Min [A]
1. Speed, r/min	**1500 ±5**	ARPM16H	XRPM16H	IRPM16H
2. Torque, N-m	**98 ±0.10**	ALD16H	XLD16H	ILD16H
3. Oil Gallery Temperature, °C	**125 ±2**	AOGT16H	XOGT16H	IOGT16H
4. Coolant Inlet Temperature, °C	**105 ±2**	ACINT16H	XCINT16H	ICINT16H
5. Oil Circulation Temperature, °C	**Record**	ASMPT16H	XSMPT16H	ISMPT16H
6. Coolant Out Temperature, °C	**Record**	ACOT16H	XCOT16H	ICOT16H
7. Intake Air Temperature, °C	**27 ±2**	AINAT16H	XINAT16H	IINAT16H
8. Fuel to Flowmeter Temperature, °C	**20-32**	AFTMM16H	XFTMM16H	IFTMM16H
9. Fuel to Fuel Rail Temperature, °C	**20 ±2**	AFTFR16H	XFTFR16H	IFTFR16H
10. Load Cell Temperature, °C	**Record**	ALCT16H	XLCT16H	ILCT16H
11. Oil Heater Temperature, °C	**205 max**	AHEAT16H	XHEAT16H	IHEAT16H
12. Intake Air Pressure, kPa	**0.05 ±0.02**	AINAP16H	XINAP16H	IINAP16H
13. Fuel to Flowmeter Pressure, kPa	**100 min**	AFPMM16H	XFPMM16H	IFPMM16H
14. Fuel to Fuel Rail Pressure, kPa	**205-310**	AFPFR16H	XFPFR16H	IFPFR16H
15. Intake Manifold Pressure, kPa abs.	**Record**	AINTV16H	XINTV16H	IINTV16H
16. Exhaust Back Pressure, kPa abs.	**104 ±0.20**	AEXBP16H	XEXBP16H	IEXBP16H
17. Engine Oil Pressure, kPa	**Record**	AOGP16H	XOGP16H	IOGP16H
18. Coolant Flow, L/min	**130 ±4**	AMCF16H	XMCF16H	IMCF16H
19. Fuel Flow, kg/h	**Record**	AFFLO16H	XFFLO16H	IFFLO16H
20. Intake Air Humidity, grains/kg	**11.4±0.8**	AINAH16H	XINAH16H	IINAH16H
21. Air/Fuel Ratio	**Record**	AAFR16H	XAFR16H	IAFR16H
22. Crankcase Pressure, kPa	**0.00 ±0.25**	ACCV16H	XCCV16H	ICCV16H

[A] Based on a minimum of one determination per hour

Sequence VIBSJ
Form 7
General Parameter Summary

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

BC Oil

General Parameters

		Stage				
	Spec	**1**	**2**	**3**	**4**	**5**
1. Oil Circulation Temperature,	**Record**	OCT_RB01	OCT_RB02	OCT_RB03	OCT_RB04	OCT_RB05
2. Coolant Out Temperature, °C	**Record**	COT_RB01	COT_RB02	COT_RB03	COT_RB04	COT_RB05
3. Fuel to Flowmeter	**20-32**	FFT_RB01	FFT_RB02	FFT_RB03	FFT_RB04	FFT_RB05
4. Delta Fuel to Flowmeter	**≤4**	FFTDRB01	FFTDRB02	FFTDRB03	FFTDRB04	FFTDRB05
5. Test Cell Temperature, °C	**Record**	TCT_RB01	TCT_RB02	TCT_RB03	TCT_RB04	TCT_RB05
6. Load Cell Temperature, °C	**Record**	LCT_RB01	LCT_RB02	LCT_RB03	LCT_RB04	LCT_RB05
7. Delta Load Cell Temperature,	**≤12**	LCTDRB01	LCTDRB02	LCTDRB03	LCTDRB04	LCTDRB05
8. Oil Heater Temperature, °C	**205 max**	OHT_RB01	OHT_RB02	OHT_RB03	OHT_RB04	OHT_RB05
9. Intake Air Pressure, kPa	**0.05 ±**	IAP_RB01	IAP_RB02	IAP_RB03	IAP_RB04	IAP_RB05
10. Fuel to Flowmeter Pressure,	**100 min**	FFP_RB01	FFP_RB02	FFP_RB03	FFP_RB04	FFP_RB05
11. Fuel to Fuel Rail Pressure,	**205-310**	FFRPRB01	FFRPRB02	FFRPRB03	FFRPRB04	FFRPRB05
12. Intake Manifold Pressure, kPa	**Record**	IMP_RB01	IMP_RB02	IMP_RB03	IMP_RB04	IMP_RB05
13. Engine Oil Pressure, kPa	**Record**	EOP_RB01	EOP_RB02	EOP_RB03	EOP_RB04	EOP_RB05
14. Coolant Flow, L/min	**130 ±4**	CFLORB01	CFLORB02	CFLORB03	CFLORB04	CFLORB05
15. Intake Air Humidity,	**11.4 ±0.8**	IAH_RB01	IAH_RB02	IAH_RB03	IAH_RB04	IAH_RB05
16. Crankcase Pressure, kPa	**0.00 ±**	CCV_RB01	CCV_RB02	CCV_RB03	CCV_RB04	CCV_RB05
17.Blowby,L/min [B]	**Record**	BLBYB01				
18. Barometric Pressure, kPa	**Record**	BAP_RB01	BAP_RB02	BAP_RB03	BAP_RB04	BAP_RB05

[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 8
General Parameter Summary

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

Test Oil

General Parameters

		Stage				
	Spec	**1**	**2**	**3**	**4**	**5**
1. Oil Circulation Temperature, °C	**Record**	OCT_RC01	OCT_RC02	OCT_RC03	OCT_RC04	OCT_RC05
2. Coolant Out Temperature, °C	**Record**	COT_RC01	COT_RC02	COT_RC03	COT_RC04	COT_RC05
3. Fuel to Flowmeter Temperature, °C	**20-32**	FFT_RC01	FFT_RC02	FFT_RC03	FFT_RC04	FFT_RC05
4. Delta Fuel to Flowmeter Temp., °C [A]	**≤ 4**	FFTDRC01	FFTDRC02	FFTDRC03	FFTDRC04	FFTDRC05
5. Test Cell Temperature, °C	**Record**	TCT_RC01	TCT_RC02	TCT_RC03	TCT_RC04	TCT_RC05
6. Load Cell Temperature, °C	**Record**	LCT_RC01	LCT_RC02	LCT_RC03	LCT_RC04	LCT_RC05
7. Delta Load Cell Temperature, °C [A]	**≤ 12**	LCTDRC01	LCTDRC02	LCTDRC03	LCTDRC04	LCTDRC05
8. Oil Heater Temperature, °C	**205 max**	OHT_RC01	OHT_RC02	OHT_RC03	OHT_RC04	OHT_RC05
9. Intake Air Pressure, kPa	**0.05 ± .02**	IAP_RC01	IAP_RC02	IAP_RC03	IAP_RC04	IAP_RC05
10. Fuel to Flowmeter Pressure, kPa	**100 min**	FFP_RC01	FFP_RC02	FFP_RC03	FFP_RC04	FFP_RC05
11. Fuel to Fuel Rail Pressure, kPa	**205 – 310**	FFRPRC01	FFRPRC02	FFRPRC03	FFRPRC04	FFRPRC05
12. Intake Manifold Pressure, kPa abs.	**Record**	IMP_RC01	IMP_RC02	IMP_RC03	IMP_RC04	IMP_RC05
13. Engine Oil Pressure, kPa	**Record**	EOP_RC01	EOP_RC02	EOP_RC03	EOP_RC04	EOP_RC05
14. Coolant Flow, L/min	**130 ± 4**	CFLORC01	CFLORC02	CFLORC03	CFLORC04	CFLORC05
15. Intake Air Humidity, grains/kg	**11.4 ± 0.8**	IAH_RC01	IAH_RC02	IAH_RC03	IAH_RC04	IAH_RC05
16. Crankcase Pressure, kPa	**0.00 ± 0.25**	CCV_RC01	CCV_RC02	CCV_RC03	CCV_RC04	CCV_RC05
17. Barometric Pressure, kPa	**Record**	BAP_RC01	BAP_RC02	BAP_RC03	BAP_RC04	BAP_RC05

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

Sequence VIBSJ
Form 9
Critical Parameter Summary - Stage 1

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

BC 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	BFC_RB11	RPM_RB11	LOADRB11	OGT_RB11	CINTRB11	IAT_RB11	FRT_RB11	EBP_RB11	FCR_RB11	AFR_RB11	
2	BFC_RB12	RPM_RB12	LOADRB12	OGT_RB12	CINTRB12	IAT_RB12	FRT_RB12	EBP_RB12	FCR_RB12	AFR_RB12	
3	BFC_RB13	RPM_RB13	LOADRB13	OGT_RB13	CINTRB13	IAT_RB13	FRT_RB13	EBP_RB13	FCR_RB13	AFR_RB13	
4	BFC_RB14	RPM_RB14	LOADRB14	OGT_RB14	CINTRB14	IAT_RB14	FRT_RB14	EBP_RB14	FCR_RB14	AFR_RB14	
5	BFC_RB15	RPM_RB15	LOADRB15	OGT_RB15	CINTRB15	IAT_RB15	FRT_RB15	EBP_RB15	FCR_RB15	AFR_RB15	
6	BFC_RB16	RPM_RB16	LOADRB16	OGT_RB16	CINTRB16	IAT_RB16	FRT_RB16	EBP_RB16	FCR_RB16	AFR_RB16	
AVG.	BFCARB1A	RPM_RB1A	LOADRB1A	OGT_RB1A	CINTRB1A	IAT_RB1A	FRT_RB1A	EBP_RB1A	FCR_RB1A	AFR_RB1A	AFRDRB1A
SD	BFCSRB1A										
C.V.	BFCCRB1A										

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	BFC_RC11	RPM_RC11	LOADRC11	OGT_RC11	CINTRC11	IAT_RC11	FRT_RC11	EBP_RC11	FCR_RC11	AFR_RC1	
2	BFC_RC12	RPM_RC12	LOADRC12	OGT_RC12	CINTRC12	IAT_RC12	FRT_RC12	EBP_RC12	FCR_RC12	AFR_RC1	
3	BFC_RC13	RPM_RC13	LOADRC13	OGT_RC13	CINTRC13	IAT_RC13	FRT_RC13	EBP_RC13	FCR_RC13	AFR_RC1	
4	BFC_RC14	RPM_RC14	LOADRC14	OGT_RC14	CINTRC14	IAT_RC14	FRT_RC14	EBP_RC14	FCR_RC14	AFR_RC1	
5	BFC_RC15	RPM_RC15	LOADRC15	OGT_RC15	CINTRC15	IAT_RC15	FRT_RC15	EBP_RC15	FCR_RC15	AFR_RC1	
6	BFC_RC16	RPM_RC16	LOADRC16	OGT_RC16	CINTRC16	IAT_RC16	FRT_RC16	EBP_RC16	FCR_RC16	AFR_RC1	
AVG.	BFCARC1A	RPM_RC1A	LOADRC1A	OGT_RC1A	CINTRC1A	IAT_RC1A	FRT_RC1A	EBP_RC1A	FCR_RC1A	AFR_RC1A	AFRDRC1A
SD	BFCSRC1A										
C.V.	BFCCRC1A										

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

Sequence VIBSJ
Form 10
Critical Parameter Summary - Stage 2

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUI	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

BC 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	BFC_RB21	RPM_RB21	LOADRB2	OGT_RB21	CINTRB21	IAT_RB21	FRT_RB21	EBP_RB21	FCR_RB21	AFR_RB21	
2	BFC_RB22	RPM_RB22	LOADRB2	OGT_RB22	CINTRB22	IAT_RB22	FRT_RB22	EBP_RB22	FCR_RB22	AFR_RB22	
3	BFC_RB23	RPM_RB23	LOADRB2	OGT_RB23	CINTRB23	IAT_RB23	FRT_RB23	EBP_RB23	FCR_RB23	AFR_RB23	
4	BFC_RB24	RPM_RB24	LOADRB2	OGT_RB24	CINTRB24	IAT_RB24	FRT_RB24	EBP_RB24	FCR_RB24	AFR_RB24	
5	BFC_RB25	RPM_RB25	LOADRB2	OGT_RB25	CINTRB25	IAT_RB25	FRT_RB25	EBP_RB25	FCR_RB25	AFR_RB25	
6	BFC_RB26	RPM_RB26	LOADRB2	OGT_RB26	CINTRB26	IAT_RB26	FRT_RB26	EBP_RB26	FCR_RB26	AFR_RB26	
AVG.	BFCARB2A	RPM_RB2A	LOADRB2	OGT_RB2A	CINTRB2A	IAT_RB2A	FRT_RB2A	EBP_RB2A	FCR_RB2A	AFR_RB2A	AFRDRB2A
SD	BFCSRB2A										
C.V.	BFCCRB2A										

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	BFC_RC21	RPM_RC21	LOADRC2	OGT_RC21	CINTRC21	IAT_RC21	FRT_RC21	EBP_RC21	FCR_RC21	AFR_RC21	
2	BFC_RC22	RPM_RC22	LOADRC2	OGT_RC22	CINTRC22	IAT_RC22	FRT_RC22	EBP_RC22	FCR_RC22	AFR_RC22	
3	BFC_RC23	RPM_RC23	LOADRC2	OGT_RC23	CINTRC23	IAT_RC23	FRT_RC23	EBP_RC23	FCR_RC23	AFR_RC23	
4	BFC_RC24	RPM_RC24	LOADRC2	OGT_RC24	CINTRC24	IAT_RC24	FRT_RC24	EBP_RC24	FCR_RC24	AFR_RC24	
5	BFC_RC25	RPM_RC25	LOADRC2	OGT_RC25	CINTRC25	IAT_RC25	FRT_RC25	EBP_RC25	FCR_RC25	AFR_RC25	
6	BFC_RC26	RPM_RC26	LOADRC2	OGT_RC26	CINTRC26	IAT_RC26	FRT_RC26	EBP_RC26	FCR_RC26	AFR_RC26	
AVG.	BFCARC2A	RPM_RC2A	LOADRC2	OGT_RC2A	CINTRC2A	IAT_RC2A	FRT_RC2A	EBP_RC2A	FCR_RC2A	AFR_RC2A	AFRDRC2A
SD	BFCSRC2A										
C.V.	BFCCRC2A										

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

Sequence VIBSJ
Form 11
Critical Parameter Summary - Stage 3

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

BC 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	BFC_RB31	RPM_RB31	LOADRB30	OGT_RB31	CINTRB31	IAT_RB31	FRT_RB31	EBP_RB31	FCR_RB31	AFR_RB31	
2	BFC_RB32	RPM_RB32	LOADRB30	OGT_RB32	CINTRB32	IAT_RB32	FRT_RB32	EBP_RB32	FCR_RB32	AFR_RB32	
3	BFC_RB33	RPM_RB33	LOADRB30	OGT_RB33	CINTRB33	IAT_RB33	FRT_RB33	EBP_RB33	FCR_RB33	AFR_RB33	
4	BFC_RB34	RPM_RB34	LOADRB30	OGT_RB34	CINTRB34	IAT_RB34	FRT_RB34	EBP_RB34	FCR_RB34	AFR_RB34	
5	BFC_RB35	RPM_RB35	LOADRB30	OGT_RB35	CINTRB35	IAT_RB35	FRT_RB35	EBP_RB35	FCR_RB35	AFR_RB35	
6	BFC_RB36	RPM_RB36	LOADRB30	OGT_RB36	CINTRB36	IAT_RB36	FRT_RB36	EBP_RB36	FCR_RB36	AFR_RB36	
AVG.	BFCARB3A	RPM_RB3A	LOADRB30	OGT_RB3A	CINTRB3A	IAT_RB3A	FRT_RB3A	EBP_RB3A	FCR_RB3A	AFR_RB3A	AFRDRB3A
SD	BFCSRB3A										
C.V.	BFCCRB3A										

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	BFC_RC31	RPM_RC31	LOADRC30	OGT_RC31	CINTRC31	IAT_RC31	FRT_RC31	EBP_RC31	FCR_RC31	AFR_RC31	
2	BFC_RC32	RPM_RC32	LOADRC30	OGT_RC32	CINTRC32	IAT_RC32	FRT_RC32	EBP_RC32	FCR_RC32	AFR_RC32	
3	BFC_RC33	RPM_RC33	LOADRC30	OGT_RC33	CINTRC33	IAT_RC33	FRT_RC33	EBP_RC33	FCR_RC33	AFR_RC33	
4	BFC_RC34	RPM_RC34	LOADRC30	OGT_RC34	CINTRC34	IAT_RC34	FRT_RC34	EBP_RC34	FCR_RC34	AFR_RC34	
5	BFC_RC35	RPM_RC35	LOADRC30	OGT_RC35	CINTRC35	IAT_RC35	FRT_RC35	EBP_RC35	FCR_RC35	AFR_RC35	
6	BFC_RC36	RPM_RC36	LOADRC30	OGT_RC36	CINTRC36	IAT_RC36	FRT_RC36	EBP_RC36	FCR_RC36	AFR_RC36	
AVG.	BFCARC3A	RPM_RC3A	LOADRC30	OGT_RC3A	CINTRC3A	IAT_RC3A	FRT_RC3A	EBP_RC3A	FCR_RC3A	AFR_RC3A	AFRDRC3A
SD	BFCSRC3A										
C.V.	BFCCRC3A										

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

Sequence VIBSJ
Form 12
Critical Parameter Summary - Stage 4

Lab: LAB	**Date Completed:** DTCOMP	**Time Completed:** EOTTIME	
Test Number			
Test Stand: STAND	**Runs On The Stand:** STRUI	**Engine No.** ENGNO	**Runs on Engine:** ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

BC 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	BFC_RB41	RPM_RB41	LOADRB40	OGT_RB41	CINTRB41	IAT_RB41	FRT_RB41	EBP_RB41	FCR_RB41	AFR_RB41	
2	BFC_RB42	RPM_RB42	LOADRB40	OGT_RB42	CINTRB42	IAT_RB42	FRT_RB42	EBP_RB42	FCR_RB42	AFR_RB42	
3	BFC_RB43	RPM_RB43	LOADRB40	OGT_RB43	CINTRB43	IAT_RB43	FRT_RB43	EBP_RB43	FCR_RB43	AFR_RB43	
4	BFC_RB44	RPM_RB44	LOADRB40	OGT_RB44	CINTRB44	IAT_RB44	FRT_RB44	EBP_RB44	FCR_RB44	AFR_RB44	
5	BFC_RB45	RPM_RB45	LOADRB40	OGT_RB45	CINTRB45	IAT_RB45	FRT_RB45	EBP_RB45	FCR_RB45	AFR_RB45	
6	BFC_RB46	RPM_RB46	LOADRB40	OGT_RB46	CINTRB46	IAT_RB46	FRT_RB46	EBP_RB46	FCR_RB46	AFR_RB46	
AVG.	BFCARB4A	RPM_RB4A	LOADRB40	OGT_RB4A	CINTRB4A	IAT_RB4A	FRT_RB4A	EBP_RB4A	FCR_RB4A	AFR_RB4A	AFRDRB4A
SD	BFCSRB4A										
C.V.	BFCCRB4A										

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	BFC_RC41	RPM_RC41	LOADRC40	OGT_RC41	CINTRC41	IAT_RC41	FRT_RC41	EBP_RC41	FCR_RC41	AFR_RC41	
2	BFC_RC42	RPM_RC42	LOADRC40	OGT_RC42	CINTRC42	IAT_RC42	FRT_RC42	EBP_RC42	FCR_RC42	AFR_RC42	
3	BFC_RC43	RPM_RC43	LOADRC40	OGT_RC43	CINTRC43	IAT_RC43	FRT_RC43	EBP_RC43	FCR_RC43	AFR_RC43	
4	BFC_RC44	RPM_RC44	LOADRC40	OGT_RC44	CINTRC44	IAT_RC44	FRT_RC44	EBP_RC44	FCR_RC44	AFR_RC44	
5	BFC_RC45	RPM_RC45	LOADRC40	OGT_RC45	CINTRC45	IAT_RC45	FRT_RC45	EBP_RC45	FCR_RC45	AFR_RC45	
6	BFC_RC46	RPM_RC46	LOADRC40	OGT_RC46	CINTRC46	IAT_RC46	FRT_RC46	EBP_RC46	FCR_RC46	AFR_RC46	
AVG.	BFCARC4A	RPM_RC4A	LOADRC40	OGT_RC4A	CINTRC4A	IAT_RC4A	FRT_RC4A	EBP_RC4A	FCR_RC4A	AFR_RC4A	AFRDRC4A
SD	BFCSRC4A										
C.V.	BFCCRC4A										

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

Sequence VIBSJ
Form 13
Critical Parameter Summary – Stage 5

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

BC 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	BFC_RB51	RPM_RB51	LOADRB51	OGT_RB51	CINTRB51	IAT_RB51	FRT_RB51	EBP_RB51	FCR_RB51	AFR_RB51	
2	BFC_RB52	RPM_RB52	LOADRB52	OGT_RB52	CINTRB52	IAT_RB52	FRT_RB52	EBP_RB52	FCR_RB52	AFR_RB52	
3	BFC_RB53	RPM_RB53	LOADRB53	OGT_RB53	CINTRB53	IAT_RB53	FRT_RB53	EBP_RB53	FCR_RB53	AFR_RB53	
4	BFC_RB54	RPM_RB54	LOADRB54	OGT_RB54	CINTRB54	IAT_RB54	FRT_RB54	EBP_RB54	FCR_RB54	AFR_RB54	
5	BFC_RB55	RPM_RB55	LOADRB55	OGT_RB55	CINTRB55	IAT_RB55	FRT_RB55	EBP_RB55	FCR_RB55	AFR_RB55	
6	BFC_RB56	RPM_RB56	LOADRB56	OGT_RB56	CINTRB56	IAT_RB56	FRT_RB56	EBP_RB56	FCR_RB56	AFR_RB56	
AVG.	BFCARB5A	RPM_RB5A	LOADRB5A	OGT_RB5A	CINTRB5A	IAT_RB5A	FRT_RB5A	EBP_RB5A	FCR_RB5A	AFR_RB5A	AFRDRB5
SD	BFCSRB5A										
C.V.	BFCCRB5A										

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	BFC_RC51	RPM_RC51	LOADRC51	OGT_RC51	CINTRC51	IAT_RC51	FRT_RC51	EBP_RC51	FCR_RC51	AFR_RC51	
2	BFC_RC52	RPM_RC52	LOADRC52	OGT_RC52	CINTRC52	IAT_RC52	FRT_RC52	EBP_RC52	FCR_RC52	AFR_RC52	
3	BFC_RC53	RPM_RC53	LOADRC53	OGT_RC53	CINTRC53	IAT_RC53	FRT_RC53	EBP_RC53	FCR_RC53	AFR_RC53	
4	BFC_RC54	RPM_RC54	LOADRC54	OGT_RC54	CINTRC54	IAT_RC54	FRT_RC54	EBP_RC54	FCR_RC54	AFR_RC54	
5	BFC_RC55	RPM_RC55	LOADRC55	OGT_RC55	CINTRC55	IAT_RC55	FRT_RC55	EBP_RC55	FCR_RC55	AFR_RC55	
6	BFC_RC56	RPM_RC56	LOADRC56	OGT_RC56	CINTRC56	IAT_RC56	FRT_RC56	EBP_RC56	FCR_RC56	AFR_RC56	
AVG.	BFCARC5A	RPM_RC5A	LOADRC5A	OGT_RC5A	CINTRC5A	IAT_RC5A	FRT_RC5A	EBP_RC5A	FCR_RC5A	AFR_RC5A	AFRDRC5A
SD	BFCSRC5A										
C.V.	BFCCRC5A										

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

Sequence VIBSJ
Form 14
Downtime And Other Comments

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

Number of Downtime Occurrences		DWNOCR	
Test Hours	**Date**	**Downtime**	**Reasons**
DOWNR001	DDATR001	DTIMR001	DREAR001
DOWNR002	DDATR002	DTIMR002	DREAR002
DOWNR003	DDATR003	DTIMR003	DREAR003
DOWNR004	DDATR004	DTIMR004	DREAR004
DOWNR005	DDATR005	DTIMR005	DREAR005
DOWNR006	DDATR006	DTIMR006	DREAR006
DOWNR007	DDATR007	DTIMR007	DREAR007
DOWNR008	DDATR008	DTIMR008	DREAR008
DOWNR009	DDATR009	DTIMR009	DREAR009
DOWNR010	DDATR010	DTIMR010	DREAR010
DOWNR011	DDATR011	DTIMR011	DREAR011
DOWNR012	DDATR012	DTIMR012	DREAR012
DOWNR013	DDATR013	DTIMR013	DREAR013
DOWNR014	DDATR014	DTIMR014	DREAR014
DOWNR015	DDATR015	DTIMR015	DREAR015
Total Downtime		TOTLDOWN	

Other Comments		
Number of Comment Lines	TOTCOM	
OCOMR001		
OCOMR002		
OCOMR003		
OCOMR004		
OCOMR005		
OCOMR006		
OCOMR007		
OCOMR008		
OCOMR009		
OCOMR010		
OCOMR011		
OCOMR012		
OCOMR013		
OCOMR014		
OCOMR015		

Sequence VIBSJ
Form 14A
Downtime And Other Comments

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

Number of Downtime Occurrences		DWNOCR	
Test Hours	**Date**	**Downtime**	**Reasons**
DOWNR016	DDATR016	DTIMR016	DREAR016
DOWNR017	DDATR017	DTIMR017	DREAR017
DOWNR018	DDATR018	DTIMR018	DREAR018
DOWNR019	DDATR019	DTIMR019	DREAR019
DOWNR020	DDATR020	DTIMR020	DREAR020
DOWNR021	DDATR021	DTIMR021	DREAR021
DOWNR022	DDATR022	DTIMR022	DREAR022
DOWNR023	DDATR023	DTIMR023	DREAR023
DOWNR024	DDATR024	DTIMR024	DREAR024
DOWNR025	DDATR025	DTIMR025	DREAR025
DOWNR026	DDATR026	DTIMR026	DREAR026
DOWNR027	DDATR027	DTIMR027	DREAR027
DOWNR028	DDATR028	DTIMR028	DREAR028
DOWNR029	DDATR029	DTIMR029	DREAR029
DOWNR030	DDATR030	DTIMR030	DREAR030
Total Downtime		TOTLDOWN	

Other Comments		
Number of Comment Lines	TOTCOM	
OCOMR016		
OCOMR017		
OCOMR018		
OCOMR019		
OCOMR020		
OCOMR021		
OCOMR022		
OCOMR023		
OCOMR024		
OCOMR025		
OCOMR026		
OCOMR027		
OCOMR028		
OCOMR029		
OCOMR030		

Sequence VIBSJ
Form 14B
Downtime And Other Comments

Lab: LAB	Date Completed: DTCOMP	Time Completed: EOTTIME	
Test Number			
Test Stand: STAND	Runs On The Stand: STRUN	Engine No. ENGNO	Runs on Engine: ENRUN
Oil Code: OILCODE			
Formulation/Stand Code: FORM			

Number of Downtime Occurrences		DWNOCR	
Test Hours	**Date**	**Downtime**	**Reasons**
DOWNR031	DDATR031	DTIMR031	DREAR031
DOWNR032	DDATR032	DTIMR032	DREAR032
DOWNR033	DDATR033	DTIMR033	DREAR033
DOWNR034	DDATR034	DTIMR034	DREAR034
DOWNR035	DDATR035	DTIMR035	DREAR035
DOWNR036	DDATR036	DTIMR036	DREAR036
DOWNR037	DDATR037	DTIMR037	DREAR037
DOWNR038	DDATR038	DTIMR038	DREAR038
DOWNR039	DDATR039	DTIMR039	DREAR039
DOWNR040	DDATR040	DTIMR040	DREAR040
DOWNR041	DDATR041	DTIMR041	DREAR041
DOWNR042	DDATR042	DTIMR042	DREAR042
DOWNR043	DDATR043	DTIMR043	DREAR043
DOWNR044	DDATR044	DTIMR044	DREAR044
DOWNR045	DDATR045	DTIMR045	DREAR045
Total Downtime		TOTLDOWN	

Other Comments	
Number of Comment Lines	TOTCOM
OCOMR031	
OCOMR032	
OCOMR033	
OCOMR034	
OCOMR035	
OCOMR036	
OCOMR037	
OCOMR038	
OCOMR039	
OCOMR040	
OCOMR041	
OCOMR042	
OCOMR043	
OCOMR044	
OCOMR045	

Sequence VIBSJ
Form 15
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement

Test Laboratory	SUBLAB				
Test Sponsor	TSTSPON1				
Formulation / Stand Code	FORM				
Test Number	TESTNUM				
Start Date	DTSTRT	Start Time	STRTIME	Time Zone	TZONE

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 ESRQMI No ORQME *

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 YESFULI No NOFULI*

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 ESNODE* No NONODEC

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

Check The Appropriate Conclusion

INCLUDE	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
DONOTINC	*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
ACCCOMM1
ACCCOMM2
ACCCOMM3
ACCCOMM4

SUBSIGIM _____ SUBDATE _____
Signature Date

SUBNAME _____ SUBTITLE _____
Typed Name Title