

Report Forms
SEQUENCE VIBSJ

VERSION: VIBSJ VERSION 20020410 BETA

CONDUCTED FOR:

CC

CC

C	V = VALID
	I = INVALID
	N = RESULTS CANNOT BE INTERPRETED (REFER TO COMMENT SECTION)

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-CCCCC-CC-CC-CCCC		
Alternate Codes	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC
		CCCCCCCCCCCCCCCC

In my opinion this test CCCCCC been conducted in a valid manner in accordance with the VIB Test Procedure (RR: D02-1469) and the appropriate amendments through the Information Letter System. The remarks included in the report describe the anomalies associated with this test.

SUBMITTED BY: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Testing Laboratory

Signature Image

Signature

CC

Typed Name

CC

Title

Fig. A7.1 Test Report Cover

**SEQUENCE VIBSJ
FORM 4
TEST RESULT SUMMARY
NON-REFERENCE & REFERENCE OIL TESTS**

Lab: <i>CC</i>	Date Completed: <i>YYYYMMDD</i>	Time Completed: <i>HH:MM</i>
Test Number		
Test Stand: <i>CCCCC</i>	Runs On The Stand: <i>CCCC</i>	Engine No.: <i>CCCCCCCCCCCCCC</i>
Oil Code: <i>CCCCCCCCCCCCCC</i>	Engine Serial Number: <i>CCCCCCCCCCC</i>	
Formulation/Stand Code: <i>CC-CCCCCCCC-C-C-CCCCC-CC-CC-CCCC</i>		

TEST DOCUMENTATION		
	BC Before	Test Oil
Start Date	<i>YYYYMMDD</i>	<i>YYYYMMDD</i>
Start Time	<i>HH:MM</i>	<i>HH:MM</i>
End Date	<i>YYYYMMDD</i>	<i>YYYYMMDD</i>
End Time	<i>HH:MM</i>	<i>HH:MM</i>
Oil Test Length, hhh:mm	<i>HHH:MM</i>	<i>HHH:MM</i>
Calibration Oil Batch	<i>CCCCCCCCCC</i>	
Flush Oil Batch	<i>CCCCCCCCCC</i>	
Laboratory Oil Code		<i>CCCCCCCCCCCCCC</i>
SAE Viscosity Grade		<i>CCCCCC</i>
TMC Oil Code (Reference Oil Tests Only)		<i>CCCCCC</i>
New Oil Viscosity @ 40 °C, cSt		<i>S1234.12</i>
New Oil Viscosity @ 100°C, cSt		<i>S1234.12</i>
Total Test Length, hhh:mm	<i>CCCCC</i>	
Total Engine Hours @ EOT	<i>CCCCC</i>	
Most Recent Fuel Batch	<i>CCCCCCCCCC</i>	

OVERALL RESULTS		
	BC Oil	Test Oil
	Before	Phase I
Fuel Consumed, kg	<i>S1.123456</i>	<i>S1.123456</i>
Fuel Economy Improvement, %		<i>S12.12</i>
FEI Industry Correction Factor, %		<i>S12.12</i>
FEI Severity Adjustment, % (non-reference tests only)		<i>S12.12</i>
FEI Final Result, %		<i>S12.12</i>

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

Fig. A7.4 Test Result Summary - Non-reference and Reference Oil Tests

**SEQUENCE VIBSJ
FORM 5
OPERATIONAL DATA ANALYSIS**

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

Computed Averages						
Oil	Stage	BSFC kg/kW-h	BSFC C.V.%	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
BC Oil	1	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0802	<i>SI.123456</i>
	2	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0787	<i>SI.123456</i>
	3	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0848	<i>SI.123456</i>
	4	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0864	<i>SI.123456</i>
	5	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0699	<i>SI.123456</i>
Total Fuel Consumed						<i>SI.123456</i>

Computed Averages						
Oil	Stage	BSFC kg/kW-h	BSFC C.V.%	Nominal Power kW	Weight Factor	Weighted Fuel Consumed kg
Test Oil	1	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0802	<i>SI.123456</i>
	2	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0787	<i>SI.123456</i>
	3	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0848	<i>SI.123456</i>
	4	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0864	<i>SI.123456</i>
	5	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0699	<i>SI.123456</i>
Total Fuel Consumed						<i>SI.123456</i>

Fig. A7.5 Operational Data Analysis

**SEQUENCE VIBSJ
FORM 6**

GENERAL PARAMETER LISTING

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

16 Hour Aging

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

^A Based on a minimum of one determination per hour

Fig. A7.6 General Parameter Listing

**SEQUENCE VIBSJ
FORM 7
GENERAL PARAMETER SUMMARY**

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

BC Oil

General Parameters

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

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

^B Measurement not required by procedure.

Fig. A7.7 General Parameter Summary

**SEQUENCE VIBSJ
FORM 8
GENERAL PARAMETER SUMMARY**

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

**Test Oil
General Parameters**

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

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

Fig. A7.8 General Parameter Summary

SEQUENCE VIBSJ
FORM 9
CRITICAL PARAMETER SUMMARY- STAGE 1

Lab: <i>CC</i>	Date Completed: <i>YYYYMMDD</i>	Time Completed: <i>HH:MM</i>
Test Number		
Test Stand: <i>CCCCC</i>	Runs On The Stand: <i>CCCC</i>	Engine No.: <i>CCCCCCCCCCCCCCCC</i>
Oil Code: <i>CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC</i>		
Formulation/Stand Code: <i>CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC</i>		

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
2	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
3	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
4	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
5	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
6	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
AVG.	<i>SI.12345</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	<i>SI2.12</i>
SD	<i>SI.1234</i>										
C.V.	<i>SI.12</i>										

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
2	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
3	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
4	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
5	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
6	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
AVG.	<i>SI.12345</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	<i>SI2.12</i>
SD	<i>SI.1234</i>										
C.V.	<i>SI.12</i>										

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

Fig. A7.9 Critical Parameter Summary - Stage 1

SEQUENCE VIBSJ
FORM 10
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: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-C-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
2	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
3	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
4	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
5	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
6	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
AVG.	SI.12345	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	SI2.12
SD	SI.1234										
C.V.	SI.12										

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
2	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
3	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
4	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
5	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
6	SI.1234	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	
AVG.	SI.12345	SI234.1	SI2.12	SI23.1	SI23.1	SI2.1	SI2.1	SI23.12	SI.123	SI2.12	SI2.12
SD	SI.1234										
C.V.	SI.12										

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

Fig. A7.10 Critical Parameter Summary - Stage 2

SEQUENCE VIBSJ
FORM 11
CRITICAL PARAMETER SUMMARY- STAGE 3

Lab: <i>CC</i>	Date Completed: <i>YYYYMMDD</i>	Time Completed: <i>HH:MM</i>
Test Number		
Test Stand: <i>CCCCC</i>	Runs On The Stand: <i>CCCC</i>	Engine No.: <i>CCCCCCCCCCCCCCCC</i>
Oil Code: <i>CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC</i>		
Formulation/Stand Code: <i>CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC</i>		

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
2	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
3	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
4	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
5	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
6	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
AVG.	<i>SI.12345</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	<i>SI2.12</i>
SD	<i>SI.1234</i>										
C.V.	<i>SI.12</i>										

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
2	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
3	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
4	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
5	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
6	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
AVG.	<i>SI.12345</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	<i>SI2.12</i>
SD	<i>SI.1234</i>										
C.V.	<i>SI.12</i>										

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

Fig. A7.11 Critical Parameter Summary - Stage 3

SEQUENCE VIBSJ
FORM 12
CRITICAL PARAMETER SUMMARY- STAGE 4

Lab: <i>CC</i>	Date Completed: <i>YYYYMMDD</i>	Time Completed: <i>HH:MM</i>
Test Number		
Test Stand: <i>CCCCC</i>	Runs On The Stand: <i>CCCC</i>	Engine No.: <i>CCCCCCCCCCCCCCCC</i>
Oil Code: <i>CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC</i>		
Formulation/Stand Code: <i>CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC</i>		

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
2	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
3	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
4	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
5	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
6	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
AVG.	<i>SI.12345</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	<i>SI2.12</i>
SD	<i>SI.1234</i>										
C.V.	<i>SI.12</i>										

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
2	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
3	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
4	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
5	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
6	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
AVG.	<i>SI.12345</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	<i>SI2.12</i>
SD	<i>SI.1234</i>										
C.V.	<i>SI.12</i>										

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

Fig. A7.12 Critical Parameter Summary - Stage 4

SEQUENCE VIBSJ
FORM 13
CRITICAL PARAMETER SUMMARY- STAGE 5

Lab: <i>CC</i>	Date Completed: <i>YYYYMMDD</i>	Time Completed: <i>HH:MM</i>
Test Number		
Test Stand: <i>CCCCC</i>	Runs On The Stand: <i>CCCC</i>	Engine No.: <i>CCCCCCCCCCCCCCCC</i>
Oil Code: <i>CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC</i>		
Formulation/Stand Code: <i>CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC</i>		

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
2	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
3	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
4	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
5	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
6	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
AVG.	<i>SI.12345</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	<i>SI2.12</i>
SD	<i>SI.1234</i>										
C.V.	<i>SI.12</i>										

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 14.25-15.25	Delta AFR ≤ .50 ^A
1	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
2	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
3	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
4	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
5	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
6	<i>SI.1234</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	
AVG.	<i>SI.12345</i>	<i>SI234.1</i>	<i>SI2.12</i>	<i>SI23.1</i>	<i>SI23.1</i>	<i>SI2.1</i>	<i>SI2.1</i>	<i>SI23.12</i>	<i>SI.123</i>	<i>SI2.12</i>	<i>SI2.12</i>
SD	<i>SI.1234</i>										
C.V.	<i>SI.12</i>										

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

Fig. A7.13 Critical Parameter Summary - Stage 5

**SEQUENCE VIBSJ
FORM 14
DOWNTIME AND OTHER COMMENTS**

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

Downtime Occurrences		<i>S12</i>	
Test Hours	Date	Downtime	Reasons
<i>HHH:MM</i>	<i>YYYYMMDD</i>	<i>HH:MM</i>	<i>CC</i>
Total Downtime		<i>HHH:MM</i>	

Total Number of Comments & Outlier Lines	<i>SI</i>
<i>CC</i>	

Fig. A7.14 Downtime and Other Comments