

Report Forms
SEQUENCE VIB

VERSION: VIB VERSION 20010716 BETA

CONDUCTED FOR:

CC

CC

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

<i>CC</i>	NR = Non-reference Oil Test
	RO = Reference Oil Test

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>CCCCCCCCCCCC</i>	Runs on Engine: <i>CCCC</i>
Oil Code: <i>CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC</i>			
Formulation/Stand Code: <i>CC-CCCCCCCC-C-C-CCCC-CC-CC-CCCC</i>			
Alternate Codes	<i>CCCCCCCC</i>	<i>CCCCCCCC</i>	<i>CCCCCCCC</i>

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

SUBMITTED BY: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Testing Laboratory

Signature Image

Signature

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Typed Name

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Title

Fig. A7.1 Test Report Cover

**SEQUENCE VIB
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>CCCCCCCCCCCCCCCC</i>
Oil Code: <i>CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC</i>	Engine Serial Number: <i>CCCCCCCCCCCC</i>	
Formulation/Stand Code: <i>CC-CCCCCCCCC-C-C-CCCCCC-CC-CC-CCCC</i>		

TEST DOCUMENTATION			
	BC Before	Test Oil	BC After
Start Date	<i>YYYYMMDD</i>	<i>YYYYMMDD</i>	<i>YYYYMMDD</i>
Start Time	<i>HH:MM</i>	<i>HH:MM</i>	<i>HH:MM</i>
End Date	<i>YYYYMMDD</i>	<i>YYYYMMDD</i>	<i>YYYYMMDD</i>
End Time	<i>HH:MM</i>	<i>HH:MM</i>	<i>HH:MM</i>
Oil Test Length, hhh:mm	<i>HHH:MM</i>	<i>HHH:MM</i>	<i>HHH:MM</i>
Calibration Oil Batch	<i>CCCCCCCCCC</i>		
Flush Oil Batch	<i>CCCCCCCCCC</i>		
Laboratory Oil Code		<i>CCCCCCCCCCCC</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>	
Aged (80 h) Oil Viscosity @ 40 °C, cSt		<i>S1234.12</i>	
Aged (80 h) Oil Viscosity @ 100°C, cSt		<i>S1234.12</i>	
Total Test Length, hhh:mm	<i>CCCCCC</i>		
Total Engine Hours @ EOT	<i>CCCCCC</i>		
Most Recent Fuel Batch	<i>CCCCCCCCCC</i>		

OVERALL RESULTS				
	BC Oil		Test Oil	
	Before	After	Phase I	Phase II
Fuel Consumed, kg	<i>S1.123456</i>	<i>S1.123456</i>	<i>S1.123456</i>	<i>S1.123456</i>
Shift Delta, %	<i>S1.12</i>			
Fuel Economy Improvement, %			<i>S12.12</i>	<i>S12.12</i>
FEI Industry Correction Factor, %			<i>S12.12</i>	<i>S12.12</i>
FEI Severity Adjustment, % (non-reference tests only)			<i>S12.12</i>	<i>S12.12</i>
FEI Final Result, %			<i>S12.12</i>	<i>S12.12</i>
Total Oil Consumption, mL	<i>S12345</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>CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC</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 VIB
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 Before 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>

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	<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 VIB
FORM 6
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>
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
Test Oil Phase II	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
BC After 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. A7.6 Operational Data Analysis

**SEQUENCE VIB
FORM 7**

GENERAL PARAMETER LISTING

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>			

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. A7.7 General Parameter Listing

**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

Fig. A7.8 General Parameter Listing

**SEQUENCE VIB
FORM 9
GENERAL PARAMETER SUMMARY**

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>		

BC Before 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. 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 Not required by test procedure

Fig. A7.9 General Parameter Summary

**SEQUENCE VIB
FORM 10
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 Phase I

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. A7.10 General Parameter Summary

**SEQUENCE VIB
FORM 11
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 Test 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 Phase II

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. A7.11 General Parameter Summary

**SEQUENCE VIB
FORM 12
GENERAL PARAMETER SUMMARY**

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>			

BC After 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. A7.12 General Parameter Summary

SEQUENCE VIB
FORM 13
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 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 14.25-15.25	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 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 14.25-15.25	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 1

**SEQUENCE VIB
FORM 13A
CRITICAL PARAMETER SUMMARY- STAGE 1**

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		

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 14.25-15.25	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										

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 14.25-15.25	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. A7.13A Critical Parameter Summary - Stage 1

**SEQUENCE VIB
FORM 14
CRITICAL PARAMETER SUMMARY- STAGE 2**

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 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 14.25-15.25	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 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 14.25-15.25	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. A7.14 Critical Parameter Summary - Stage 2

**SEQUENCE VIB
FORM 14A
CRITICAL PARAMETER SUMMARY- STAGE 2**

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>		

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 14.25-15.25	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>										

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 14.25-15.25	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. A7.14A Critical Parameter Summary - Stage 2

SEQUENCE VIB
FORM 15
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 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 14.25-15.25	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 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 14.25-15.25	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. A7.15 Critical Parameter Summary - Stage 3

**SEQUENCE VIB
FORM 15A
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>		

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 14.25-15.25	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>										

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 14.25-15.25	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. A7.15A Critical Parameter Summary - Stage 3

SEQUENCE VIB
FORM 16
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 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 14.25-15.25	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 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 14.25-15.25	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. A7.16 Critical Parameter Summary - Stage 4

**SEQUENCE VIB
FORM 16A
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>		

Test Oil Phase II

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.25-15.25	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>										

BC After Test Oil

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 70 ± 1	Coolant In Temp, °C 60 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.25-15.25	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. A7.16A Critical Parameter Summary - Stage 4

SEQUENCE VIB
FORM 17
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 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 14.25-15.25	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 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 14.25-15.25	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. A7.17 Critical Parameter Summary - Stage 5

**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: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC		

Test Oil Phase II

Step SPEC	BSFC kg/kW-h	Speed r/min 1500 ± 2	Torque N-m 98 ± .07	Oil Gallery Temp. °C 45 ± 1	Coolant In Temp, °C 45 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.25-15.25	Delta AFR ≤ .50 ^A
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 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	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

Fig. A7.17A Critical Parameter Summary - Stage 5

**SEQUENCE VIB
FORM 18
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. A7.18 Downtime and Other Comments

SEQUENCE VIB

FORM 19

Used Oil Analysis

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>		

USED OIL ANALYSIS	
High Temperature High Shear @ 100°C, cP	<i>S1234.1</i>
Cold Crank Simulator Viscosity, cP/°C	<i>CCCCCCCC</i>
Friction Coefficient by HFRR @ 105°C, mm	<i>S123.12</i>
Fuel Dilution, %	<i>S123.1</i>
Infrared for Oxidation, Abs./0.01 mm	<i>S12.123</i>
Infrared for Nitration, Abs./0.01 mm	<i>S12.123</i>

Fig. A7.19 Used Oil Analysis