

Report Forms  
**SEQUENCE VIC**

**VERSION: VIC VERSION 20020222 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>CC</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 VIC 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: CC

Testing Laboratory

*Signature Image*

Signature

CC

Typed Name

CC

Title

Fig. A7.1 Test Report Cover

**SEQUENCE VIC  
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	Phase II
Fuel Consumed,	<i>S1.123456</i>	<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>	<i>S12.12</i>
FEI Industry Correction Factor, %			<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
FEI Severity Adjustment, % (non-reference tests only)			<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
FEI Final Result, %			<i>S12.12</i>	<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>
		Phase II	Phase II
		<i>S12.12</i>	<i>S12.12</i>

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

**SEQUENCE VIC  
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>			

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

<b>Computed Averages</b>						
<b>Oil</b>	<b>Stage</b>	<b>BSFC kg/kW-h</b>	<b>BSFC C.V.%</b>	<b>Nominal Power kW</b>	<b>Weight Factor</b>	<b>Weighted Fuel Consumed kg</b>
<b>Test Oil Phase I</b>	<b>1</b>	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0802	<i>SI.123456</i>
	<b>2</b>	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0787	<i>SI.123456</i>
	<b>3</b>	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0848	<i>SI.123456</i>
	<b>4</b>	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0864	<i>SI.123456</i>
	<b>5</b>	<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 VIC  
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> 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
<b>Test Oil Phase II</b>	<b>1</b>	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0802	<i>SI.123456</i>
	<b>2</b>	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0787	<i>SI.123456</i>
	<b>3</b>	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0848	<i>SI.123456</i>
	<b>4</b>	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0864	<i>SI.123456</i>
	<b>5</b>	<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
<b>Test Oil Phase III</b>	<b>1</b>	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0802	<i>SI.123456</i>
	<b>2</b>	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0787	<i>SI.123456</i>
	<b>3</b>	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0848	<i>SI.123456</i>
	<b>4</b>	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0864	<i>SI.123456</i>
	<b>5</b>	<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
<b>BC After Test Oil</b>	<b>1</b>	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0802	<i>SI.123456</i>
	<b>2</b>	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0787	<i>SI.123456</i>
	<b>3</b>	<i>SI.12345</i>	<i>SI.12</i>	2.18	0.0848	<i>SI.123456</i>
	<b>4</b>	<i>SI.12345</i>	<i>SI.12</i>	15.39	0.0864	<i>SI.123456</i>
	<b>5</b>	<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 VIC  
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>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 <sup>A</sup>	MAX <sup>A</sup>	MIN <sup>A</sup>
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>

<sup>A</sup> Based on a minimum of one determination per hour

Fig. A7.7 General Parameter Listing

**SEQUENCE VIC  
FORM 8  
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>			

**80 Hour Aging**

	SPEC	AVERAGE <sup>A</sup>	MAX <sup>A</sup>	MIN <sup>A</sup>
1. Speed, r/min	2250 ± 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	135 ± 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>

<sup>A</sup> Based on a minimum of one determination per hour

Fig. A7.8 General Parameter Listing

**SEQUENCE VIC  
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 <sup>A</sup>	≤ 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 <sup>A</sup>	≤ 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 <sup>B</sup>	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>

<sup>A</sup> Difference between the maximum stage average reading of the entire test and the individual stage average readings

<sup>B</sup> Not required by test procedure

Fig. A7.9 General Parameter Summary

**SEQUENCE VIC  
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 <sup>A</sup>	≤ 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 <sup>A</sup>	≤ 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>

<sup>A</sup> Difference between the maximum stage average reading of the entire test and the individual stage average readings

Fig. A7.10 General Parameter Summary



**SEQUENCE VIC  
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>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>			

**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 <sup>A</sup>	≤ 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 <sup>A</sup>	≤ 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>

<sup>A</sup> Difference between the maximum stage average reading of the entire test and the individual stage average readings

Fig. A7.11 General Parameter Summary

**SEQUENCE VIC  
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>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 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 <sup>A</sup>	≤ 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 <sup>A</sup>	≤ 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>

<sup>A</sup> Difference between the maximum stage average reading of the entire test and the individual stage average readings

Fig. A7.12 General Parameter Summary

**SEQUENCE VIC**  
**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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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>										

<sup>A</sup> 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 VIC  
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-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 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 AFR < .50 <sup>A</sup>
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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										

<sup>A</sup> 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 VIC  
FORM 14  
CRITICAL PARAMETER SUMMARY- STAGE 2**

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

**BC Before Test Oil**

Step SPEC	BSFC kg/kW-h	Speed r/min 800 ± 2	Torque N-m 26 ± .07	Oil Gallery Temp. °C 105 ± 1	Coolant In Temp, °C 95 ± 1	Intake Air Temp, °C 27 ± 2	Fuel Rail Temp, °C 20 ± 2	EBP kPa 104 ± .17	Fuel Flow kg/h Record	AFR 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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 Phase I**

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

<sup>A</sup> 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 VIC  
FORM 14A  
CRITICAL PARAMETER SUMMARY- STAGE 2**

Lab: CC	Date Completed: YYYYMMDD	Time Completed: HH:MM
Test Number		
Test Stand: CCCCC	Runs On The Stand: CCCC	Engine No.: CCCCCCCCCCCCCC
Runs on Engine: CCCC		
Oil Code: 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 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 AFR ≤ .50 <sup>A</sup>
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 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 AFR ≤ .50 <sup>A</sup>
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										

<sup>A</sup> 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 VIC  
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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>										

<sup>A</sup> 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 VIC  
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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>										

<sup>A</sup> 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 VIC  
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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>										

<sup>A</sup> 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 VIC  
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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>										

<sup>A</sup> 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 VIC**  
**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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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 14.00-15.00	Delta AFR ≤ .50 <sup>A</sup>
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>										

<sup>A</sup> 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 VIC  
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-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 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 AFR ≤ .50 <sup>A</sup>
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 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 AFR ≤ .50 <sup>A</sup>
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										

<sup>A</sup> 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 VIC  
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 VIC  
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>CCCCC</i>	Runs On The Stand: <i>CCCC</i>	Engine No.: <i>CCCCCCCCCCCCCCC</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./ 1 cm	<i>S12.123</i>
Infrared for Nitration, Abs./ 1 cm	<i>S12.123</i>

Fig. A7.19 Used Oil Analysis