A16. Report Forms
Sequence VIII Engine Evaluation of Engine Oils

Form 1

VERSION *VIII VERSION 2000128 BETA*

CONDUCTED FOR
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

C	V = VALID
	I = INVALID

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

Test Number			
Test Stand	Power Section	# of Runs on Power Section Since Calibration Test	Total Runs on Power Section
CCCCC	*CCCCCC*	*CCC*	*CCCCC*
Date Completed: *YYYYMMDD*		Completion Time: *HH:MM*	
Oil Code: *CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*			
Formulation/Stand Code: *CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*			
Alternate Codes:	*CCCCCCCCCC*	*CCCCCCCCCC*	*CCCCCCCCCC*

In my opinion this test *CCCCCCCC* been conducted in a valid manner in accordance with the Sequence VIII Test Method D6709 and the appropriate amendments through the information letter system. The remarks included in this report describe the anomalies associated with this test.

SUBMITTED BY: *CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Testing Laboratory
Signature Image
Signature
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Typed Name
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Title

FIG. A16.1 Operational Validity Statement

Sequence VIII Engine Evaluation of Engine Oils
Form 4
Test Results

Laboratory	*CC*	Oilcode	*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Date Completed	*YYYYMMDD*	Time Completed	*HH:MM*
Test Number	*CCCCC / CCCCCC / CCC / CCCCC*		
Formulation/Stand	*CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		

SAE Viscosity	*CCCCCCC*	Test Oil Temperature (135.0˚ or 143.5˚C)	*S12345.1*
Laboratory Oil Code	*CCCCCCCCCCCC*	Date Started	*YYYYMMDD*
Test Fuel Type	*CCCCCCCCCCCCCCCC*	Time Started	*HH:MM*
Test Fuel Lot	*CCCCCCC*	Bearing Batch No.	*CCCCC*
Bearing Storage Oil Lead, ppm [A]	*S12*	Bearing Lot	*CC*
Test Length	*S12*	Industry Reference Oil Code [A]	*CCCCCC*

Bearing Weight Loss Summary	
Test Length @ Measurement, hours	*CCC*
Top Bearing Half, mg	*S123.1*
Bottom Bearing Half, mg	*S123.1*
Total, mg	*S123.1*
Industry Correction Factor	*S123.1*
Severity Adjustment (non-reference tests only)	*S123.1*
Final Bearing Weight Loss, mg	*S123.1*

Hours	Viscosity cSt @ 40˚C	Viscosity cSt @ 100˚C	Stripped Viscosity @ 100˚C
New Oil	*S123.12*	*S123.12*	
10	*S123.12*	*S123.12*	*S12.12*

Test Stand/Power Section Reference History					
Stand No.	*CCCCC*	Power Section No.	*CCCCCC*	Runs on Power Section	*CCCCC*
Bearing Batch No.			*CCCCC*	Bearing Lot No.	*CC*
Industry Reference Oil Code			*CCCCCC*	Stripped Viscosity, cSt	*S12.12*
Completion Date			*YYYYMMDD*	Completion Time	*HH:MM*
Total Bearing Weight Loss, mg			*S123.1*	Final Bearing Weight Loss, mg	*S123.1*
Oil Code			*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*		

[A] Reference Oil Tests Only

FIG. A16.4 Test Results

Sequence VIII Engine Evaluation of Engine Oils
Form 5
Operational Summary

Laboratory	*CC*	Oil Code	*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Date Completed	*YYYYMMDD*		
Test No.	*CCCCC / CCCCCC / CCC / CCCCC*		
Formulation/Stand	*CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		

Test Parameter	Specification	Minimum	Maximum	Average
Speed, r/min	3150 ± 25	*S1234.1*	*S1234.1*	*S1234.1*
Air/Fuel Ratio	13.43 ± 0.5:1	*S123.1*	*S123.1*	*S123.1*
Fuel Flow, kg/h	2.25 ± 0.11	*S1.12*	*S1.12*	*S1.12*
Output, W	Record	*S1234.1*	*S1234.1*	*S1234.1*
Oil Heater Input, W (optional)	Record	*S1234.1*	*S1234.1*	*S1234.1*
Crankcase Off-Gas, L/h	850 ± 28	*S1234*	*S1234*	*S1234*
Temperatures	**Specification**	**Minimum**	**Maximum**	**Average**
Gallery Oil [A], ˚C	143.5 or 135.0 ± 1	*S123.1*	*S123.1*	*S123.1*
Coolant-In, ˚C	Record	*S123.1*	*S123.1*	*S123.1*
Coolant-Out, ˚C	93.5 ± 1	*S123.1*	*S123.1*	*S123.1*
Delta T Coolant, ˚C	5.6 ± 1	*S12.1*	*S12.1*	*S12.1*
Intake Air, ˚C	Record	*S123.1*	*S123.1*	*S123.1*
Pressures	**Specification**	**Minimum**	**Maximum**	**Average**
Oil, kPa	276 ± 14	*S12345*	*S12345*	*S12345*
Intake Man. Vac., kPa	Record	*S1.1*	*S1.1*	*S1.1*
Exhaust, in. kPa	0 to 3.4	*S1.1*	*S1.1*	*S1.1*
Crankcase Vac., kPa	0.50 ± 0.12	*S12.12*	*S12.12*	*S12.12*
Spark Advance, ºBTDC	35 ± 1	*S12*	*S12*	*S12*
Blowby, L/h	Record	*S123.1*	*S123.1*	*S123.1*

Oil Consumption [B]	Initial Oil Charge (ml)	New Oil Added (ml)	Oil Samples (ml)	Final Oil Drain (ml)
	S12345	*S12345*	*S12345*	*S12345*
			Total Oil Consumption	*S12345*

[A] (See Table 1 for Viscosity-Related Temperature.)

[B] Total Oil Consumption = (Initial Oil Charge + New Oil Added) - (Oil Samples + Final Oil Drain)

FIG. A16.5 Operational Summary

Sequence VIII Engine Evaluation of Engine Oils
Form 6
Parts Measurement and Critical Parts Listing

Laboratory	*CC*	Oil Code	*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Date Completed	*YYYYMMDD*		
Test Number	*CCCCC* / *CCCCCC* / *CCC* / *CCCCC*		
Formulation/Stand	*CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		

Power Section Measurements, mm				
Measurement	**Specification**	**Minimum**	**Maximum**	**Average**
Valve Stem Clearance in Guide, Inlet	0.0508 - 0.1016	*S1.1234*	*S1.1234*	*S1.1234*
Valve Stem Clearance in Guide, Exhaust	0.0762 - 0.1270	*S1.1234*	*S1.1234*	*S1.1234*
Connecting Rod Bearing Clearance	0.0610 - 0.0762	*S1.1234*	*S1.1234*	*S1.1234*
Main Bearing Clearance, Front	0.0508 - 0.0762	*S1.1234*	*S1.1234*	*S1.1234*
Main Bearing Clearance, Rear	0.0508 - 0.0762	*S1.1234*	*S1.1234*	*S1.1234*
Connecting Rod Journal Out-of-Round	0.0254 Maximum		*S1.1234*	

Runs on Liner	*S12*	Liner may be used as long as the piston to liner clearance is in the specified range.
Piston to Liner Clearance	*S1.1234*	0.0305 to 0.0635 mm

Critical Parts Listing	
Parts	**I.D. Code**
Crankshaft	*CCCCCCCCCC*
Camshaft	*CCCCCCCCCC*
Main Bearings	*CCCCCCCCCC*
Camshaft Bearings	*CCCCCCCCCC*
Connecting Rod	*CCCCCCCCCC*
Piston	*CCCCCCCCCC*
Cylinder Liner	*CCCCCCCCCC*

FIG. A16.6 Parts Measurement, Oil Analysis, and Critical Parts Listing

Sequence VIII Engine Evaluation of Engine Oils
Form 7
Downtime Occurrences and Other Comments

Laboratory	*CC*	Oil Code	*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Date Completed	*YYYYMMDD*		
Test Number	*CCCCC* / ***CCCCCC*** / *CCC* / *CCCCC*		
Formulation/Stand	*CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		

Number of Downtime Occurrences		*S1*	
Test Hours	Date	Downtime	Reasons
HHH:MM	*YYYYMMDD*	*HHH:MM*	*CCCCCCCCCCCCCCCCCCCC

Sequence VIII Engine Evaluation of Engine Oils
Form 8
Operational Outliers Occurrences

Laboratory	*CC*	Oil Code	*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Date Completed	*YYYYMMDD*		
Test Number	*CCCCC / CCCCCC / CCC / CCCCC*		
Formulation/Stand	*CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		

Number of Operational Outliers Occurrences *S12*					
Test Hours	Parameter	Parameter Range	Reading	Time Out	Deviation Percentage
HH:MM	*CCCCCCCCCCCCCCC*	*CCCCCCCCCCCCCCC*	*CCCCCCCC*	*HH:MM*	*S123.1*

FIG. A16.8 Operational Outliers Occurrences

Sequence VIII Engine Evaluation of Engine Oils
Form 9
Deviations of Operational Parameters

Laboratory	*CC*	Oil Code	*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Date Completed	*YYYYMMDD*		
Test Number	*CCCCC* / *CCCCCC* / *CCC* / *CCCCC*		
Formulation/Stand	*CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		

Primary Parameter	Maximum Permitted Deviation Percentage	Calculated Total Deviation Percentage
Engine Oil Gallery Temperature	2.5%	*S123.1*
Engine Coolant Outlet Temperature	2.5%	*S123.1*
Engine Coolant Delta Temperature	2.5%	*S123.1*
Fuel Flow	2.5%	*S123.1*
Crankcase Off Gas	2.5%	*S123.1*
Oil Pressure	2.5%	*S123.1*
Secondary Parameters		
Engine Speed	5%	*S123.1*
AFR	5%	*S123.1*
Spark Advance	5%	*S123.1*
Exhaust	5%	*S123.1*
Crankcase Vacuum	5%	*S123.1*

FIG. A16.9 Deviations of Operational Parameters

Sequence VIII Engine Evaluation of Engine Oils
Form 10
Data Acquisition System Details

Laboratory	*CC*	Oil Code	*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Date Completed	*YYYYMMDD*		
Test Number	*CCCCC / CCCCCC / CCC / CCCCC*		
Formulation/Stand	*CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		

PARAMETER (1)	SENSING DEVICE (2)	CALIBRATION FREQUENCY (3)	RECORD DEVICE (4)	OBSERVATION FREQUENCY (5)	RECORD FREQUENCY (6)	LOG FREQUENCY (7)	SYSTEM RESPONSE (8)
TEMPERATURES							
OIL IN	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
COOLANT OUT	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
COOLANT DELTA	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
OTHER							
FUEL FLOW	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
ENGINE SPEED	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
AFR	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
EXHAUST PRESSURE	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
CRANKCASE OFF GAS	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
OIL	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*
CRANKCASE VAC.	*CCCCCCCCCCCCCC*	*CCCCCCCCCCCCCC*	*CCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCCCCCC*	*CCCCCCCC*

LEGEND:

(1) OPERATING PARAMETER
(2) THE TYPE OF DEVICE USED TO MEASURE TEMPERATURE, PRESSURE OR FLOW
(3) FREQUENCY AT WHICH THE MEASUREMENT SYSTEM IS CALIBRATED
(4) THE TYPE OF DEVICE WHERE DATA IS RECORDED
LG - HANDLOG SHEET
DL - AUTOMATIC DATA LOGGER
SC - STRIP CHART RECORDER
C/M - COMPUTER, USING MANUAL DATA ENTRY
C/D - COMPUTER, USING DIRECT I/O ENTRY
(5) DATA ARE OBSERVED BUT ONLY RECORDED IF OFF SPEC
(6) DATA ARE RECORDED BUT ARE NOT RETAINED AT EOT
(7) DATA ARE LOGGED AS PERMANENT RECORD, NOTE SPECIFY IF:
SS - SNAPSHOT TAKEN AT SPECIFIED FREQUENCY
AG/X AVERAGE OF X DATA POINTS AT SPECIFIED FREQUENCY
(8) TIME FOR THE OUTPUT TO REACH 63.2% OF FINAL VALUE FOR STEP CHANGE AT INPUT
(9) SEE ANNEX A11 FOR PROCEDURE TO DETERMINE SYSTEM RESPONSE OF THE CHARACTERISTICS OF THE ACQUISITION SYSTEM.

FIG. A16.10 Data Acquisition System Details