VG REPORT FORMS VERSION *VG VERSION 20020801*

REPORT ON SEQUENCE VG EVALUATION

CONDUCTED FOR

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

C	V = VALID
	I = INVALID
	N = RESULTS CAN NOT BE INTERPRETED AS REPRESENTATIVE OF OIL PERFORMANCE (NON-REFERENCE OIL) AND SHALL NOT BE USED IN DETERMINING AN AVERAGE TEST RESULT USING MULTIPLE TEST ACCEPTANCE CRITERIA.

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

Test Number		
Test Stand: *CCCCC*	Runs Between Calibration Tests: *CCCC*	Total Runs on Test Stand: *CCCCC*
Date Completed: *YYYYMMDD*	End of Test Time: *HH:MM*	
Oil Code: *CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*		
Formulation/Stand Code: *CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		
Alternate Codes: *CCCCCCCCCCCCCCC*	*CCCCCCCCCCCCCCC*	*CCCCCCCCCCCCCCC*

In my opinion this test *CCCCCCC* been conducted in a valid manner in accordance with the VG Test Method D6593 and the appropriate amendments through the Information Letter system. The remarks included in the report describe the anomalies associated with this test.

SUBMITTED BY: *CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*

Testing Laboratory

Signature Image

Signature

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Typed Name

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Title

FIG A7.1 Title Page

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

Laboratory: *CC*	Stand: *CCCCC*	Stand Runs: *CCCC*	Oil Code: *ccccccccccccccccccccccccccccccccccccc*
Date Started: *YYYYMMDD*	Time Started: *HH:MM*	Date Completed: *YYYYMMDD*	Time Completed: *HH:MM*
Formulation/Stand Code: *CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*			

Lab Engine Number: *CCCCCC*	SAE Viscosity: *CCCCCCC*
Test Length: *S1234*	Fuel Batch: *CCCCCCCC*
Industry Oil Code: *CCCCCC*	

CRITICAL PARAMETERS						
	Average Engine Sludge, merits	Rocker Cover Sludge, merits	Average Engine Varnish, merits	Average Piston Skirt Varnish, merits	Oil Screen Sludge, % Area	Number of Hot Stuck Rings
Original Result	*S12.12*	*S12.12*	*S12.12*	*S12.12*	*S123*	*S1*
Transformed Result					*S1.1234*	
Industry Correction Factor	*S12.12*	*S12.12*	*S12.12*	*S12.12*	*S1.1234*	*S1*
Corrected Transformed Result					*S1.1234*	
Severity Adjustment	*S12.12*	*S12.12*	*S12.12*	*S12.12*	*S1.1234*	*S1*
Final Transformed Result					*S1.1234*	
Final Original Unit Result	*S12.12*	*S12.12*	*S12.12*	*S12.12*	*S12.12*	*S12.12*

Clogging Information		**Additional Information**	
Oil Screen Debris, % Area	*S123*	Number of Cold Stuck Rings	*S1*
Oil Ring Clogging, % Area	*S123*	Average Blowby Stage II, L/min	*S12.12*
PCV Valve @ 25 kPa, %	*S12.12*	Oil Consumption, grams	*S123456*
PCV Valve @ 60 kPa, %	*S12.12*		

Last Reference Oil Test Calibrating Stand Information - Fill Out For Non-reference Oil Tests Only			
Stand: *CCCCC*	Total Runs on Test Stand: *CCCCC*	Oilcode: *ccccccccccccccccccccccccccccccccccccc*	
Industry Oil Code: *CCCCCC*	Engine Number: *CCCCCC*	SAE Viscosity: *CCCCCCC*	Date Completed: *YYYYMMDD*
Test Length: *S1234*	Fuel Batch: *CCCCCCCC*	Calibration Expiration Date: *YYYYMMDD*	

Clogging Information		**Additional Information**	
Oil Screen Debris, % Area	*S123*	Number of Cold Stuck Rings	*S1*
Oil Ring Clogging, % Area	S123	Average Blowby Stage II, L/min	*S12.12*
PCV Valve @ 25 kPa, %	*S12.12*	Oil Consumption, grams	*S123456*
PCV Valve @ 60 kPa, %	*S12.12*		

	Average Engine Sludge, merits	Average Rocker Cover Sludge, merits	Average Engine Varnish, merits	Average Piston Skirt Varnish, merits	Oil Screen Sludge, % Area	Number of Hot Stuck Rings
Final Original Unit Result	*S12.12*	*S12.12*	*S12.12*	*S12.12*	*S123*	*S1*

FIG A7.4 Test Result Summary

SEQUENCE VG
FORM 5
TEST RESULT SUMMARY
NON-REFERENCE & REFERENCE OIL TESTS

Laboratory: *CC*	Stand: *CCCCC*	Stand Runs: *CCCC*	Oil Code: *ccccccccccccccccccccccccccccccccccc*
Date Started: *YYYYMMDD*	Time Started: *HH:MM*	Date Completed: *YYYYMMDD*	Time Completed: *HH:MM*
Formulation/Stand Code: *CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*			

Hardware Identification	Production Number *CCCCCCCCCCCCCC*	Serial Number *CCCCCCCCCCCCCC*	
Casting Numbers	Block *CCCCCCCCCCCCCC*	Cam, Left *CCCCCCCCCCCCCC*	Cam, Right *CCCCCCCCCCCCCC*
Piston Part Number *CCCCCCCCCCCCCC*		Piston Ring Casting Number *CCCCCCCCCCCCCC*	
Cylinder Head Casting Number	Left *CCCCCCCCCCCCCCCCCCCCCCCCCC*	Right *CCCCCCCCCCCCCCCCCCCCCCCCCC*	

Sludge Deposits	
Area	**Merit**
Rocker Arm Cover, Left	*S1.12*
Rocker Arm Cover, Right	*S1.12*
Camshaft Baffle, Left	*S1.12*
Camshaft Baffle, Right	*S1.12*
Timing Chain Cover	*S1.12*
Oil Pan Baffle	*S1.12*
Oil Pan	*S1.12*
Valve Deck Area, Left	*S1.12*
Valve Deck Area, Right	*S1.12*
Average Engine Sludge	*S12.12*

Varnish Deposits	
Area	**Merit**
Piston Skirt, Thrust	*S12.12*
Cam Baffle, Left	*S1.12*
Cam Baffle, Right	*S1.12*
Average Engine Varnish	*S12.12*

Wear Measurements		
Ring Wear	**Units**	**Value**
Follower Pin Wear, cyl #8, Intake.	µm	*S123.1*
Follower Pin Wear, cyl #8, Exhaust.	µm	*S123.1*
Ring Gap Increase, cyl #1 & #8, Max	µm	*S123.1*
Ring Gap Increase, cyl #1 & #8, Avg	µm	*S123.1*

Piston Varnish Deposits, Thrust Side	
Piston Number	**Merit**
1	*S1.12*
2	*S1.12*
3	*S1.12*
4	*S1.12*
5	*S1.12*
6	*S1.12*
7	*S1.12*
8	*S1.12*
Average	*S12.12*

FIG A7.5 Deposit Breakdown

SEQUENCE VG
FORM 6
OPERATIONAL SUMMARY

Laboratory: *CC*	Date Completed: *YYYYMMDD*	Time Completed: *HH:MM*
Stand: *CCCCC*	Stand Runs: *CCCC*	Total Runs on Stand: *CCCCC*	Oil Code: *CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*
Formulation/Stand Code: *CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*		

	Parameter	Units	QI Threshold	EOT QI	Target			Average			Samples	BQD	Over/Under Range
					Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3			
Controlled Parameters	Speed	r/min	0.000	*S12.123*	1200	2900	700	*S1234*	*S1234*	*S1234*	*S12345*	*S12345*	*S12345*
	Manifold Abs Press	kPa	0.000	*S12.123*	69	66	Record	*S12.1*	*S12.1*	*S12.1*	*S12345*	*S12345*	*S12345*
	Engine Oil, In	˚C	0.000	*S12.123*	68	100	45	*S123.1*	*S123.1*	*S123.1*	*S12345*	*S12345*	*S12345*
	Engine Coolant,Out	˚C	0.000	*S12.123*	57	85	45	*S12.1*	*S12.1*	*S12.1*	*S12345*	*S12345*	*S12345*
	Engine Coolant Flow	L/min	0.000	*S12.123*	48	Record	Record	*S123.1*	*S123.1*	*S123.1*	*S12345*	*S12345*	*S12345*
	Engine Coolant Pressure	kPa	0.000	*S12.123*	70	70	70	*S123.1*	*S123.1*	*S123.1*	*S12345*	*S12345*	*S12345*
	RAC Coolant, In	˚C	0.000	*S12.123*	29	85	29	*S12.1*	*S12.1*	*S12.1*	*S12345*	*S12345*	*S12345*
	RAC Flow	L/min	0.000	*S12.123*	15	15	15	*S12.1*	*S12.1*	*S12.1*	*S12345*	*S12345*	*S12345*
	Intake Air	˚C	0.000	*S12.123*	30	30	30	*S12.1*	*S12.1*	*S12.1*	*S12345*	*S12345*	*S12345*
	Intake Air Pressure	kPa	0.000	*S12.123*	0.05	0.05	0.05	*S1.123*	*S1.123*	*S1.123*	*S12345*	*S12345*	*S12345*
	Intake Air Humidity	g/kg	0.000	*S12.123*	11.4	11.4	11.4	*S12.1*	*S12.1*	*S12.1*	*S12345*	*S12345*	*S12345*
	Exhaust Backpressure	kPa	0.000	*S12.123*	104	107	Record	*S123.1*	*S123.1*	*S123.1*	*S12345*	*S12345*	*S12345*
Non-controlled Parameters	**Parameter**	**Units**			**Specifications**								
	Fuel Flow	kg/h			Record	Record	Record	*S12.1*	*S12.1*	*S12.1*			
	Blowby	L/min			Record	60-70			*S12.12*				
	Power	kW			Record	Record	1.3 ± 0.2	*S12.12*	*S12.12*	*S12.12*			
	Exhaust Gas												
	Lambda, Left Bank	AFR			1.0	1.0	0.75	*S1.12*	*S1.12*	*S1.12*			
	Lambda, Right Bank	AFR			1.0	1.0	0.75	*S1.12*	*S1.12*	*S1.12*			

FIG A7.6 Operational Summary

SEQUENCE VG
FORM 7
OIL ADDITION RECORD & BLOWBY RATES
NON-REFERENCE & REFERENCE OIL TESTS

Laboratory: *CC*	Stand: *CCCCC*	Stand Runs: *CCCC*	Oil Code: *ccccccccccccccccccccccccccccccccccccc*
Date Started: *YYYYMMDD*	Time Started: *HH:MM*	Date Completed: *YYYYMMDD*	Time Completed: *HH:MM*
Formulation/Stand Code: *CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*			

Cycle	Test Hour	Oil Added, g	Oil Consumed, g
S123	*HHH:MM*	*S1234*	*S1234*
S123	*HHH:MM*	*S1234*	*S1234*
S123	*HHH:MM*	*S1234*	*S1234*
S123	*HHH:MM*	*S1234*	*S1234*
S123	*HHH:MM*	*S1234*	*S1234*
S123	*HHH:MM*	*S1234*	*S1234*
S123	*HHH:MM*	*S1234*	*S1234*
S123	*HHH:MM*	*S1234*	*S1234*
S123	*HHH:MM*		*S1234*
Total, g		*S123456*	*S123456*

Stage II	
Test Hours	Blowby, L/min
HHH:MM	*S12.12*
HHH:MM	*S12.12*
HHH:MM	*S12.12*
HHH:MM	*S12.12*
HHH:MM	*S12.12*
HHH:MM	*S12.12*
HHH:MM	*S12.12*
HHH:MM	*S12.12*
HHH:MM	*S12.12*
HHH:MM	*S12.12*
Maximum	*S12.12*
Minimum	*S12.12*
Average Blowby, Hours 23 - 119	*S12.12*
Average	*S12.12*

FIG A7.7 Blowby and Oil Additions

SEQUENCE VG
FORM 8
ANALYSIS OF OIL

Laboratory: *CC*	Stand: *CCCCC*	Stand Runs: *CCCC*	Oil Code: *ccccccccccccccccccccccccccccccccccccccc*
Date Started: *YYYYMMDD*	Time Started: *HH:MM*	Date Completed: *YYYYMMDD*	Time Completed: *HH:MM*
Formulation/Stand Code: *CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*			

Test Hours	Ag, ppm	Al, ppm	Cr, ppm	Cu, ppm	Fe, ppm	Pb, ppm	Si, ppm	Sn, ppm	Fuel Dilution by GC, Wt. % D3525	Pentane Insolubles, Wt. % D893B [A]	TBN D4739 [A]	Vis. @ 40˚C, cSt D445	Vis. @ 100˚C, cSt D445 [A]
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*			*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*		*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*	*S1.12*	*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*		*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*	*S1.12*	*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*		*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*	*S1.12*	*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*		*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*	*S1.12*	*S12.12*	*S123.12*	*S123.12*
CCC	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12345*	*S12.1*	*S1.12*	*S12.12*	*S123.12*	*S123.12*

[A] Analyses not required by Test Method

FIG A7.8 Oil Analysis

SEQUENCE VG
FORM 9
DOWNTIME OCCURRENCES AND OTHER COMMENTS

Laboratory: *CC*	Stand: *CCCCC*	Stand Runs: *CCCC*	Oil Code: *ccccccccccccccccccccccccccccccccccc*
Date Started: *YYYYMMDD*	Time Started: *HH:MM*	Date Completed: *YYYYMMDD*	Time Completed: *HH:MM*
Formulation/Stand Code: *CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC*			

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