

Report On
Sequence IIIGA Evaluation

Version

Conducted For

	V = Valid
	I = Invalid
	N = Results Cannot Be Interpreted As Representative Of Oil Performance (Non-Reference Oil) And Shall Not Be Used For Multiple Test Acceptance

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

Test Number				
Test Stand		Stand Test		Lab Test
Oil Code				
Formulation/Stand				
Alternate Codes				
EOT Date			EOT Time	

In my opinion this test _____ conducted in a valid manner in accordance with the latest draft of Sequence IIIGA procedure and the appropriate amendments through the information letter system. The remarks included in the report describe the anomalies associated with this test.

Submitted By: _____

Testing Laboratory

Signature

Typed Name

Title

Form 2

Sequence III GA

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Sequence III GA

Form 3

Summary of Test Method

The Sequence III GA Test is a fired-engine, dynamometer lubricant test for generating a used oil sample to evaluate the low-temperature performance of automotive engine oils after operation in a high-temperature environment. Such oils include both single viscosity grade and multi-viscosity grade oils that are used in spark-ignition, gasoline-fueled engines, as well as diesel engines. The Sequence III GA Test utilizes a 1996 General Motors Powertrain 3800 Series II, water-cooled, 4 cycle, V-6 engine as the test apparatus. The Sequence III GA test engine is an overhead valve design (OHV) and uses a single camshaft operating both intake and exhaust valves via pushrods and hydraulic valve lifters in a sliding-follower arrangement. The engine uses one intake and one exhaust valve per cylinder. Induction is handled by a modified GM port fuel injection system setting the Air-to-Fuel ratio at 15:1. The test engine is overhauled prior to each test, during which critical engine dimensions are measured and rated or measured parts (pistons, camshaft, valve lifters, etc.) are replaced.

The Sequence III GA Test consists of a 10-minute operational check, followed by 100 hours of engine operation at moderately high speed, load, and temperature conditions. The 100-hour segment is broken down into five 20-hour test segments. Following each 20-hour segment, and the 10-minute operational check, oil samples are drawn from the engine.

The Sequence III GA Test is operated at the following test states during the 100-hour portion of the test:

Parameter	Set Point
Engine Speed	3600 r/min
Engine Load	250 N-m
Oil Filter Block Temperature	150 °C
Coolant Outlet Temperature	115 °C
Fuel Pressure	377.5 kPa
Intake Air Temperature	35 °C
Intake Air Pressure	0.05 kPa
Intake Air Dew Point	16.1 °C
Exhaust Back Pressure	6 kPa
Engine Coolant Flow	160 L/min
Breather Tube Coolant Flow	10 L/min
Air-to-Fuel Ratio	15.0:1
Condenser Coolant Outlet Temperature	40 °C

**Sequence III GA
Form 4
Test Result Summary**

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Date Started		Engine No.	
Time Started		Fuel Batch	
Date Completed		SAE Viscosity	
Time Completed		TMC Oil Code	
Test Length			

Pass/Fail Results	
Mini Rotary Viscometer Viscosity (cP)	
Original Units	
Transformed Results	
Industry Correction Factor	
Corrected Transformed	
Severity Adjustment	
Final Transformed Result	
Final Original Unit Result	

Additional Results			
Oil Consumption Hours, h ^B		Oil Consumption, L	
Yield Stress, Pa			

Most Recent Stand Reference Oil Test History^C			
Test Number			
Oil Code			
Date Completed		TMC Oil	
Final Mini Rotary Viscometer Result, cP		Fuel Batch	

^AReference Oil Tests Only

^BTest Hours at which Oil Consumption was calculated

^CNon-Reference Oil Tests Only

Sequence III GA
Form 5
Operational Summary

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Controlled Parameters	Parameter	Units	QI Threshold	EOT QI	Target	Average	Standard Deviation	Number of	
								Samples	BQD
	Speed	r/min	0.000		3600				
	Load	Nm	0.000		250				
	Oil Filter Block	°C	0.000		150.0				
	Engine Coolant Out	°C	0.000		115.0				
	Condenser Coolant Out	°C	0.000		40.0				
	Left Air-to-Fuel Ratio		0.000		15.0				
	Right Air-to-Fuel Ratio		0.000		15.0				
	Left Exhaust Back Pressure	kPa	0.000		6.0				
	Right Exhaust Back Pressure	kPa	0.000		6.0				
	Intake Air	kPa	0.000		0.05				
	Engine Coolant Flow	L/min	0.000		160.0				

Non-controlled Parameters	Parameter	Units	Average	Standard Deviation	Number of	
					Samples	BQD
	Oil Sump	°C				
	Pump Outlet Pressure	kPa				
	Gallery Pressure	kPa				
	Engine Coolant In	°C				
	Fuel Inlet	°C				
	Intake Air	°C				
	Intake Air Dew Point	°C				
	Intake Vacuum	kPa				
	Crankcase	kPa				
	Fuel Pressure	kPa				

Oil Consumption Data						
Hours	Initial Run-in					
Level (ml) low						
Total Oil Consumed (L)						

NO _x Measurement			
Hours			
NO _x , ppm			

Sequence IIIGA

Form 6

Used Oil Analysis Results

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Cold Crank Simulator Results, D 5293	
Specified Temperature, °C	
Cold-Crank Simulator Viscosity at Specified Temperature, cP	

Mini-Rotary Viscometer Results, D 4684	
MRV Temperature, °C	
MRV Result, cP	
Yield Stress, Pa	

Sequence IIIGA

Form 7

Blowby Values & Plot

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Blowby Plot



Test Hours										
Blowby, L/min.										
Test Hours										
Blowby, L/min.										
Test Hours		Average								
Blowby, L/min.										

Sequence III GA
Form 8
Hardware Information

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Build Completion Date		Piston Batch (Code)	
Block Serial Number		Piston Size (Grade)	
Crankshaft Serial Number		Piston Ring Batch Code	
Camshaft Serial Number		Oil Filter Batch Code	
Camshaft Batch Code		Oil Cooler Batch Code	
Cylinder Head Serial Number, Left		Valve Springs Batch Code	
Cylinder Head Serial Number, Right		Lifter Serial Number	1
Bearing Kit Serial Number			2
Top Ring Gap, mils			3
Bottom Ring Gap, mils			4
Intake Valve Seals Batch Code			5
Exhaust Valve Seals Batch Code			6
Rocker Arm Batch Code			7
Connecting Rod Type (CAST or PM)			8
			9
			10
			11
			12

Sequence III GA

Form 10

American Chemistry Council Code Of Practice Test Laboratory Conformance Statement

Test Laboratory					
Test Sponsor					
Formulation / Stand Code					
Test Number					
Start Date		Start Time		Time Zone	

Declarations

No. 1 All requirements of the ACC Code of Practice for which the test laboratory is responsible were met in the conduct of this test. Yes _____ No _____ *

No. 2 The laboratory ran this test for the full duration following all procedural requirements; and all operational validity requirements of the latest version of the applicable test procedure (ASTM or other), including all updates issued by the organization responsible for the test, were met. Yes _____ No _____ *

If the response to this Declaration is "No", does the test engineer consider the deviations from operational validity requirements that occurred to be beyond the control of the laboratory? Yes _____ * No _____

No 3. A deviation occurred for one of the test parameters identified by the organization responsible for the test as being a special case. Yes _____ * No _____ (*This currently applies only to specific deviations identified in the ASTM Information Letter System*)

	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
	*Operational review of this test indicates that the results should not be included in the Multiple Test Acceptance Criteria calculations.

Note: *Supporting comments are required for all responses identified with an asterisk.*

Comments

Signature

Date

Typed Name

Title