

**Report On**  
**Sequence IIIGA Evaluation**

**Version** IIIGA VERSION 20040521 BETA

Conducted For

CC  
CC

C	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

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

Test Number					
Test Stand	CCCC	Stand Test	CCCC	Lab Test	CCCC
Oil Code	CC				
Formulation/Stand	CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCC				
Alternate Codes	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC
EOT Date	YYYYMMDD	EOT Time	HH:MM		

In my opinion this test CCCCCC 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: CCC

Testing Laboratory

Signature Image

Signature

CC

Typed Name

CC

Title

## Form 2

### Sequence IIIGA

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## Sequence IIIGA

### Form 3

#### Summary of Test Method

The Sequence IIIGA 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 IIIGA Test utilizes a 1996 General Motors Powertrain 3800 Series II, water-cooled, 4 cycle, V-6 engine as the test apparatus. The Sequence IIIGA 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 IIIGA 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 IIIGA 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	CC	Oil Code	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Stand	CCCCC	Test No.	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Laboratory Oil Code		CCCCCCCCCCCCCCCCCCCC	
Formulation Stand Code		CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC	

Date Started	YYYYMMDD	Engine No.	CCCCCCCCCCCCCCCC
Time Started	HH:MM	Fuel Batch	CCCCCCCCCCCCCCCC
Date Completed	YYYYMMDD	SAE Viscosity	CCCCCC
Time Completed	HH:MM	TMC Oil Code <sup>A</sup>	CCCCCC
Test Length	S1234		

<b>Pass/Fail Results</b>	
<b>Mini Rotary Viscometer Viscosity (cP)</b>	
Original Units	AAAAAAA
Transformed Results - LN(MRV)	AAAAAAAAA
Industry Correction Factor	S12.123456
Corrected Transformed Result	AAAAAAAAA
Severity Adjustment	AAAAAAAAA
Final Transformed Result	AAAAAAAAA
Final Original Unit Result	AAAAAAA

<b>Additional Results</b>			
Oil Consumption Hours, h <sup>B</sup>	S12	Oil Consumption, L	S12.12
Yield Stress, Pa	AAAA		

<b>Most Recent Stand Reference Oil Test History<sup>C</sup></b>			
Test Number	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Date Completed	YYYYMMDD	TMC Oil	CCCCCC
Final Mini Rotary Viscometer Result, cP	AAAAAAA	Fuel Batch	CCCCCCCCCCCCCCCC

<sup>A</sup>Reference Oil Tests Only

<sup>B</sup>Test Hours at which Oil Consumption was calculated

<sup>C</sup>Non-Reference Oil Tests Only

**Sequence IIIGA**  
**Form 5**  
**Operational Summary**

Lab	CC	Oil Code	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Stand	CCCCC	Test No.	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Laboratory Oil Code		CCCCCCCCCCCCCCCCCCCC	
Formulation Stand Code		CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC	

Controlled Parameters	Parameter	Units	QI Threshold	EOT QI	Target	Average	Standard Deviation	Number of	
								Samples	BQD
	Speed	r/min	0.000	S12.123	3600	S12345	S12.123	S12345	S12345
	Load	Nm	0.000	S12.123	250	S12345	S12.123	S12345	S12345
	Oil Filter Block	°C	0.000	S12.123	150.0	S12345	S12.123	S12345	S12345
	Engine Coolant Out	°C	0.000	S12.123	115.0	S123.1	S12.123	S12345	S12345
	Condenser Coolant Out	°C	0.000	S12.123	40.0	S123.1	S12.123	S12345	S12345
	Left Air-to-Fuel Ratio		0.000	S12.123	15.0	S12.1	S12.123	S12345	S12345
	Right Air-to-Fuel Ratio		0.000	S12.123	15.0	S12.1	S12.123	S12345	S12345
	Left Exhaust Back Pressure	kPa	0.000	S12.123	6.0	S1.12	S12.123	S12345	S12345
	Right Exhaust Back Pressure	kPa	0.000	S12.123	6.0	S1.12	S12.123	S12345	S12345
	Intake Air	kPa	0.000	S12.123	0.05	S1.12	S12.123	S12345	S12345
	Engine Coolant Flow	L/min	0.000	S12.123	160.0	S123.1	S12.123	S12345	S12345

Non-controlled Parameters	Parameter	Units	Average	Standard Deviation	Number of	
					Samples	BQD
	Oil Sump	°C	S123.1	S12.123	S12345	S12345
	Pump Outlet Pressure	kPa	S123.1	S12.123	S12345	S12345
	Gallery Pressure	kPa	S1234	S12.123	S12345	S12345
	Engine Coolant In	°C	S1234	S12.123	S12345	S12345
	Fuel Inlet	°C	S12345	S12.123	S12345	S12345
	Intake Air	°C	S12345	S12.123	S12345	S12345
	Intake Air Dew Point	°C	S123.1	S12.123	S12345	S12345
	Intake Vacuum	kPa	S12345	S12.123	S12345	S12345
	Crankcase	kPa	S1.123	S12.123	S12345	S12345
	Fuel Pressure	kPa	S1234	S12.123	S12345	S12345

Oil Consumption Data						
Hours	Initial Run-in	S12	S12	S12	S12	S12
Level (ml) low	S123	S123	S123	S123	S123	S123
Total Oil Consumed (L)		S12.12	S12.12	S12.12	S12.12	S12.12

NO <sub>x</sub> Measurement			
Hours	S12	S12	S12
NO <sub>x</sub> , ppm	S12345	S12345	S12345

**Sequence IIIGA**

**Form 6**

**Used Oil Analysis Results**

Lab	CC	Oil Code	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Stand	CCCCC	Test No.	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Laboratory Oil Code	CCCCCCCCCCCCCCCCCCCC		
Formulation Stand Code	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

<b>Cold Crank Simulator Results, D 5293</b>	
Specified Temperature, °C	AAA
Cold-Crank Simulator Viscosity at Specified Temperature, cP	AAAAAA

<b>Mini-Rotary Viscometer Results, D 4684</b>	
MRV Temperature, °C	AAA
MRV Result, cP	AAAAAAA
Yield Stress, Pa	AAAA

**Sequence IIIGA**

**Form 7**

**Blowby Values & Plot**

Lab	CC	Oil Code	CC
Stand	CCCCC	Test No.	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Laboratory Oil Code		CCCCCCCCCCCCCCCCCCCC	
Formulation Stand Code		CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC	

**Blowby Plot**



<b>Test Hours</b>	S12	S12	S12	S12	S12	S12	S12	S12	S12	S12
<b>Blowby, L/min.</b>	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1
<b>Test Hours</b>	S12	S12	S12	S12	S12	S12	S12	S12	S12	S12
<b>Blowby, L/min.</b>	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1
<b>Test Hours</b>	S12	<b>Average</b>								
<b>Blowby, L/min.</b>	S12.1	S12.1								

**Sequence IIIA**  
**Form 8**  
**Hardware Information**

Lab	CC	Oil Code	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Stand	CCCCC	Test No.	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Laboratory Oil Code	CCCCCCCCCCCCCCCCCCCC		
Formulation Stand Code	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCCC		

Build Completion Date	YYYYMMDD	Piston Batch (Code)	CCCCC
Block Serial Number	CCCCCC	Piston Size (Grade)	CC
Crankshaft Serial Number	CCCCC	Piston Ring Batch Code	CCCCC
Camshaft Serial Number	CCCCCCC	Oil Filter Batch Code	CCCCC
Camshaft Batch Code	CCCCCC	Oil Cooler Batch Code	CCCCCC
Cylinder Head Serial Number, Left	CCCCCCCCCC	Valve Springs Batch Code	CCCCC
Cylinder Head Serial Number, Right	CCCCCCCCCC	Lifter Serial Number	1 CCCCCCCC
Bearing Kit Serial Number	CCCCCC		2 CCCCCCCC
Top Ring Gap, mils	S12		3 CCCCCCCC
Bottom Ring Gap, mils	S12		4 CCCCCCCC
Intake Valve Seals Batch Code	CCCCC		5 CCCCCCCC
Exhaust Valve Seals Batch Code	CCCCC		6 CCCCCCCC
Rocker Arm Batch Code	CCCCC		7 CCCCCCCC
Connecting Rod Type (CAST or PM)	CCCC		8 CCCCCCCC
			9 CCCCCCCC
			10 CCCCCCCC
			11 CCCCCCCC
			12 CCCCCCCC







**Sequence III GA**

**Form 10**

**American Chemistry Council Code Of Practice  
Test Laboratory Conformance Statement**

Test Laboratory	CC				
Test Sponsor	CC				
Formulation / Stand Code	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC				
Test Number	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC				
Start Date	YYYYMMDD	Start Time	HH:MM	Time Zone	CCC

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  C  No  C  \*

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  C  No  C  \*

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  C  \* No  C

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  C  \* No  C  (*This currently applies only to specific deviations identified in the ASTM Information Letter System*)

C	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
C	*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	
	CC
	CC
	CC
	CC

Signature Image \_\_\_\_\_

YYYYMMDD \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

CC

CC

Typed Name \_\_\_\_\_

Title \_\_\_\_\_