

**REPORT ON
SEQUENCE IIIF EVALUATION**

VERSION 20010913 BETA

CONDUCTED FOR

*TSTSPON1
TSTSPON2*

<i>LABVALID</i>	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

<i>TSTOIL</i>	NR = Non-Reference Oil Test
	RO = Reference Oil Test

Test Number					
Test Stand	<i>STAND</i>	Stand Test Number	<i>STRUN</i>	Lab Test Number	<i>LABRUN</i>
Oil Code	<i>OILCODE</i>				
Formulation/Stand Code	<i>FORM</i>				
Alternate Codes	<i>ALTCODE1</i>	<i>ALTCODE2</i>	<i>ALTCODE3</i>		
EOT Date	<i>DTCOMP</i>	EOT Time	<i>EOTTIME</i>		

In my opinion this test *OPVALID* been conducted in a valid manner in accordance with the latest draft of Sequence IIIF 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: *SUBLAB*

Testing Laboratory

SUBSIGIM

Signature

SUBNAME

Typed Name

SUBTITLE

Title

Form 2

Sequence III F

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Sequence IIIF

FORM 3

Summary of Test Method

The Sequence IIIF Test is a fired-engine, dynamometer lubricant test for evaluating automotive engine oils for certain high-temperature performance characteristics, including oil thickening, varnish deposition, oil consumption, and engine wear. Such oils include both single viscosity grade and multiviscosity grade oils that are used in spark-ignition, gasoline-fueled engines, as well as diesel engines.

The Sequence IIIF Test utilizes a 1996 model Buick 3800 Series II, water-cooled, 4 cycle, V-6 engine as the test apparatus. The Sequence IIIF 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 IIIF Test consists of a 10-minute operational check, followed by 80 hours of engine operation at moderately high speed, load, and temperature conditions. The 80-hour segment is broken down into eight 10-hour test segments. Following each 10-hour segment, and the 10-minute operational check, oil samples are drawn from the engine. The kinematic viscosities of the 10-hour segment samples are compared to the viscosity of the 10-minute sample to determine the viscosity increase of the test oil.

The Sequence IIIF Test is operated at the following test states during the 80-hour portion of the test:

Parameter	Set Point
Engine Speed	3600 r/min
Engine Load	200 N-m
Oil Filter Block Temperature	155 °C
Coolant Outlet Temperature	122 °C
Fuel Pressure	365 kPa
Intake Air Temperature	27 °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
Breather Tube Coolant Outlet Temperature	40 °C

SEQUENCE III F
FORM 4
TEST RESULT SUMMARY

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		

DATE STARTED	<i>DTSTRT</i>	ENGINE NO.	<i>ENGINENO</i>
TIME STARTED	<i>STRTIME</i>	FUEL BATCH	<i>FUELBTID</i>
DATE COMPLETED	<i>DTCOMP</i>	SAE VISCOSITY	<i>SAEVISC</i>
TIME COMPLETED	<i>EOTIME</i>	TMC OIL CODE	<i>AIND</i>
TEST LENGTH	<i>TESTLEN</i>		

Pass/Fail Results						
	Viscosity Increase (%)	Screened Average Cam + Lifter Wear (µm)	Average Weighted Piston Deposits (merits)	Average Piston Skirt Varnish (merits)	Number of Hot-Stuck Rings	Oil Consumption (L) ^B
Original Units	<i>PVIS</i>	<i>SACLW</i>	<i>WPD</i>	<i>APV</i>	<i>HSTUKT</i>	<i>OILCON</i>
Transformed Results	<i>TPVIS</i>					
Industry Correction Factor	<i>PVIS_CF</i>	<i>SACLW_CF</i>	<i>WPD_CF</i>	<i>APV_CF</i>		
Corrected Transformed Result	<i>PVIS_COR</i>					
Severity Adjustment	<i>PVIS_SA</i>		<i>WPD_SA</i>	<i>APV_SA</i>		
Final Transformed Result	<i>TPVISFNL</i>					
Final Original Unit Result	<i>PVISFNL</i>	<i>SACLWFNL</i>	<i>WPDFNL</i>	<i>APVFNL</i>		

Additional Results			
Oil Consumption Hours, h ^B	<i>OCNHRS</i>	Average Oil Ring Plugging, %	<i>ORPAVG</i>
Maximum Cam + Lifter Wear, µm	<i>MCLW</i>	Number of Cold-Stuck Rings	<i>CSTUKT</i>
Average Cam + Lifter Wear, µm	<i>ACLW</i>		

Most Recent Stand Reference Oil Test History^C			
Test Number	<i>RSTAND - RSTRUN - RLABRUN</i>		
Oilcode	<i>ROILCODE</i>		
Date Completed	<i>RDTCOMP</i>	TMC Oil Code	<i>RIND</i>
Final Viscosity Increase, %	<i>RPVISFNL</i>	Fuel Batch	<i>RFUELBTID</i>
Final Average Piston Skirt Varnish, merits	<i>RAPVFNL</i>		
Final Average Cam + Lifter Wear, µm	<i>RACLWFNL</i>		
Final Maximum Cam + Lifter Wear, µm	<i>RMCLWFNL</i>		
Final Average Weighted Piston Deposit, merits	<i>RWPDFNL</i>		

^A Reference Oil Tests Only

^B Test Hours at which Oil Consumption was calculated

^C Non-Reference Oil Tests Only

**SEQUENCE IIIF
FORM 5
OPERATIONAL SUMMARY**

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		

	Parameter	Units	QI Threshold	EOT QI	Target	Average	Standard Deviation	Number Of	
								Samples	BQD
Controlled Parameters	Speed	r/min	0.000	<i>QRPM</i>	3600	<i>ARPM</i>	<i>SRPM</i>	<i>NRPM</i>	<i>BRPM</i>
	Load	Nm	0.000	<i>QLOAD</i>	200	<i>ALOAD</i>	<i>SLOAD</i>	<i>NLOAD</i>	<i>BLOAD</i>
	Oil Filter Block	°C	0.000	<i>QOTEMP</i>	155.0	<i>AOTEMP</i>	<i>SOTEMP</i>	<i>NOTEMP</i>	<i>BOTEMP</i>
	Engine Coolant Out	°C	0.000	<i>QCOLOUT</i>	122.0	<i>ACOLOUT</i>	<i>SCOLOUT</i>	<i>NCOLOUT</i>	<i>BCOLOUT</i>
	Condenser Coolant Out	°C	0.000	<i>QCCOLOUT</i>	40.0	<i>ACCOLOUT</i>	<i>SCCOLOUT</i>	<i>NCCOLOUT</i>	<i>BCCOLOUT</i>
	Left Air-to-Fuel Ratio		0.000	<i>QLAFR</i>	15.0	<i>ALAFR</i>	<i>SLAFR</i>	<i>NLAFR</i>	<i>BLAFR</i>
	Right Air-to-Fuel Ratio		0.000	<i>QRAFR</i>	15.0	<i>ARAFR</i>	<i>SRAFR</i>	<i>NRAFR</i>	<i>BRAFR</i>
	Left Exhaust Back Pressure	kPa	0.000	<i>QLEXBP</i>	6.0	<i>ALEXBP</i>	<i>SLEXBP</i>	<i>NLEXBP</i>	<i>BLEXBP</i>
	Right Exhaust Back Pressure	kPa	0.000	<i>QREXBP</i>	6.0	<i>AREXBP</i>	<i>SREXBP</i>	<i>NREXBP</i>	<i>BREXBP</i>
	Intake Air	kPa	0.000	<i>QINAIR</i>	0.05	<i>AINAIR</i>	<i>SINAIR</i>	<i>NINAIR</i>	<i>BINAIR</i>
	Engine Coolant Flow	L/min	0.000	<i>QCOLFLO</i>	160.0	<i>ACOLFLO</i>	<i>SCOLFLO</i>	<i>NCOLFLO</i>	<i>BCOLFLO</i>

	Parameter	Units	Average	Standard Deviation	Number Of	
					Samples	BQD
Non-controlled Parameters	Oil Sump	°C	<i>AOSUMP</i>	<i>SOSUMP</i>	<i>NOSUMP</i>	<i>BOSUMP</i>
	Pump Outlet Pressure	kPa	<i>APOUTP</i>	<i>SPOUTP</i>	<i>NPOUTP</i>	<i>BPOUTP</i>
	Gallery Pressure	kPa	<i>AOILPRS</i>	<i>SOILPRS</i>	<i>NOILPRS</i>	<i>BOILPRS</i>
	Engine Coolant In	°C	<i>AECOLIN</i>	<i>SECOLIN</i>	<i>NECOLIN</i>	<i>BECOLIN</i>
	Fuel Inlet	°C	<i>AFUELIN</i>	<i>SFUELIN</i>	<i>NFUELIN</i>	<i>BFUELIN</i>
	Intake Air	°C	<i>AINAT</i>	<i>SINAT</i>	<i>NINAT</i>	<i>BINAT</i>
	Intake Air Dew Point	°C	<i>AINDEW</i>	<i>SINDEW</i>	<i>NINDEW</i>	<i>BINDEW</i>
	Intake Vacuum	kPa	<i>AINVAC</i>	<i>SINVAC</i>	<i>NINVAC</i>	<i>BINVAC</i>
	Crankcase	kPa	<i>ACCASEP</i>	<i>SCCASEP</i>	<i>NCCASEP</i>	<i>BCCASEP</i>
	Fuel Pressure	kPa	<i>APFUEL</i>	<i>SPFUEL</i>	<i>NPFUEL</i>	<i>BPFUEL</i>

OIL CONSUMPTION DATA									
HOURS	Initial Run-in	<i>CONH01</i>	<i>CONH02</i>	<i>CONH03</i>	<i>CONH04</i>	<i>CONH05</i>	<i>CONH06</i>	<i>CONH07</i>	<i>CONH08</i>
LEVEL (ml) low	<i>OILLINI</i>	<i>OILLH01</i>	<i>OILLH02</i>	<i>OILLH03</i>	<i>OILLH04</i>	<i>OILLH05</i>	<i>OILLH06</i>	<i>OILLH07</i>	<i>OILLH08</i>

NOx Measurement			
Hours	<i>NOXHH07</i>	<i>NOXHH09</i>	<i>NOXHH079</i>
NOx, ppm	<i>NOX_H07</i>	<i>NOX_H09</i>	<i>NOX_H079</i>

**SEQUENCE IIIF
FORM 6
USED OIL ANALYSIS RESULTS**

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		

VISCOSITY INCREASE DATA (cSt AT 40°C)			
HOURS	VISCOSITY ^A	CHANGE	PERCENT
NEW OIL	<i>VNEW</i>		
INITIAL ^B	<i>VINI</i>		
<i>VISTH010</i>	<i>VIS_H010</i>	<i>DVISH010</i>	<i>PVISH010</i>
<i>VISTH020</i>	<i>VIS_H020</i>	<i>DVISH020</i>	<i>PVISH020</i>
<i>VISTH030</i>	<i>VIS_H030</i>	<i>DVISH030</i>	<i>PVISH030</i>
<i>VISTH040</i>	<i>VIS_H040</i>	<i>DVISH040</i>	<i>PVISH040</i>
<i>VISTH050</i>	<i>VIS_H050</i>	<i>DVISH050</i>	<i>PVISH050</i>
<i>VISTH060</i>	<i>VIS_H060</i>	<i>DVISH060</i>	<i>PVISH060</i>
<i>VISTH070</i>	<i>VIS_H070</i>	<i>DVISH070</i>	<i>PVISH070</i>
<i>VISTH080</i>	<i>VIS_H080</i>	<i>DVISH080</i>	<i>PVISH080</i>
<i>TESTLEN</i>	<i>WISEOT</i>	<i>DWISEOT</i>	<i>PVIS</i>

^A 8000 cSt is maximum allowable viscosity

^B At end of leveling run

Results of ICP Analysis of Used Oil										
Test Hours	Initial	<i>TST_H010</i>	<i>TST_H020</i>	<i>TST_H030</i>	<i>TST_H040</i>	<i>TST_H050</i>	<i>TST_H060</i>	<i>TST_H070</i>	<i>TST_H080</i>	<i>TESTLEN</i>
Iron	<i>FEWMINI</i>	<i>FEWMH010</i>	<i>FEWMH020</i>	<i>FEWMH030</i>	<i>FEWMH040</i>	<i>FEWMH050</i>	<i>FEWMH060</i>	<i>FEWMH070</i>	<i>FEWMH080</i>	<i>FEWMEOT</i>
Copper	<i>CUWMINI</i>	<i>CUWMH010</i>	<i>CUWMH020</i>	<i>CUWMH030</i>	<i>CUWMH040</i>	<i>CUWMH050</i>	<i>CUWMH060</i>	<i>CUWMH070</i>	<i>CUWMH080</i>	<i>CUWMEOT</i>
Lead	<i>PBWMINI</i>	<i>PBWMH010</i>	<i>PBWMH020</i>	<i>PBWMH030</i>	<i>PBWMH040</i>	<i>PBWMH050</i>	<i>PBWMH060</i>	<i>PBWMH070</i>	<i>PBWMH080</i>	<i>PBWMEOT</i>

Cold Crank Simulator Results, D 5293	
Final Temperature, °C	<i>CCSTEMP</i>
Final Cold-Crank Simulator Viscosity, cP	<i>CCS</i>

Mini-Rotary Viscometer Results, D 4684	
MRV Temperature, °C	<i>MRVTEMP</i>
MRV Result, cP	<i>MRV</i>
Yield Stress, cP	<i>YSTRESS</i>

**SEQUENCE IIIF
FORM 7
VALVE LIFTER AND CAMSHAFT WEAR RESULTS**

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		

NUMBER	CAMSHAFT LOBE, μm	VALVE LIFTER, μm	CAM & LIFTER WEAR, μm
1	<i>CAMW01</i>	<i>LFTW01</i>	<i>CLW01</i>
2	<i>CAMW02</i>	<i>LFTW02</i>	<i>CLW02</i>
3	<i>CAMW03</i>	<i>LFTW03</i>	<i>CLW03</i>
4	<i>CAMW04</i>	<i>LFTW04</i>	<i>CLW04</i>
5	<i>CAMW05</i>	<i>LFTW05</i>	<i>CLW05</i>
6	<i>CAMW06</i>	<i>LFTW06</i>	<i>CLW06</i>
7	<i>CAMW07</i>	<i>LFTW07</i>	<i>CLW07</i>
8	<i>CAMW08</i>	<i>LFTW08</i>	<i>CLW08</i>
9	<i>CAMW09</i>	<i>LFTW09</i>	<i>CLW09</i>
10	<i>CAMW10</i>	<i>LFTW10</i>	<i>CLW10</i>
11	<i>CAMW11</i>	<i>LFTW11</i>	<i>CLW11</i>
12	<i>CAMW12</i>	<i>LFTW12</i>	<i>CLW12</i>
MAXIMUM	<i>MAXCW</i>	<i>MAXLFTW</i>	<i>MCLW</i>
MINIMUM	<i>MINCW</i>	<i>MINLFTW</i>	<i>MINCLW</i>
AVERAGE	<i>AVGCW</i>	<i>AVGLFTW</i>	<i>ACLW</i>

Screened Average Cam + Lifter Wear ^A	<i>SACLW</i>
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^A Average Cam + Lifter wear based on ten positions, excluding minimum and maximum positions.

SEQUENCE IIIF
FORM 8
SUMMARY OF OIL RING LAND DEPOSIT RATING

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		
RATER	<i>RLDRATER</i>	RATING DATE	<i>RLDRTDT</i>

PISTON	OIL RING LAND DEPOSIT, MERITS	% CHIPPED
1	<i>ORLD1</i>	<i>ORCHIP1</i>
2	<i>ORLD2</i>	<i>ORCHIP2</i>
3	<i>ORLD3</i>	<i>ORCHIP3</i>
4	<i>ORLD4</i>	<i>ORCHIP4</i>
5	<i>ORLD5</i>	<i>ORCHIP5</i>
6	<i>ORLD6</i>	<i>ORCHIP6</i>
Average	<i>ORLD</i>	<i>AVGORCHP</i>

PISTON	% OIL RING PLUGGING	RING STICKING ^A	
		HOT-STUCK RINGS	COLD-STUCK RINGS
1	<i>ORP1</i>	<i>HSTUK1</i>	<i>CSTUK1</i>
2	<i>ORP2</i>	<i>HSTUK2</i>	<i>CSTUK2</i>
3	<i>ORP3</i>	<i>HSTUK3</i>	<i>CSTUK3</i>
4	<i>ORP4</i>	<i>HSTUK4</i>	<i>CSTUK4</i>
5	<i>ORP5</i>	<i>HSTUK5</i>	<i>CSTUK5</i>
6	<i>ORP6</i>	<i>HSTUK6</i>	<i>CSTUK6</i>
Total		<i>HSTUKT</i>	<i>CSTUKT</i>
Average	<i>ORPAVG</i>		

^A Possible values T = top compression ring
B = bottom compression ring
O = oil ring
N = none

SEQUENCE III F
FORM 9
SUMMARY OF PISTON DEPOSITS

LAB	LAB	OIL CODE	OILCODE
TEST STAND NO.	STAND	TEST NO.	STAND - STRUN - LABRUN
LABORATORY OIL CODE	LABOCODE		
FORMULATION STAND CODE	FORM		
RATER	APVRATER	RATING DATE	APVRTDT

NOTE: CRC Manual 14 used for ALL Ratings

NOTE: These are unweighted ratings.

	Grooves, merits			Lands, merits		Undercrown, merits
	1	2	3	2	3	
Piston 1	G1P1	G2P1	G3P1	L2P1	ORLD1	UCP1
Piston 2	G1P2	G2P2	G3P2	L2P2	ORLD2	UCP2
Piston 3	G1P3	G2P3	G3P3	L2P3	ORLD3	UCP3
Piston 4	G1P4	G2P4	G3P4	L2P4	ORLD4	UCP4
Piston 5	G1P5	G2P5	G3P5	L2P5	ORLD5	UCP5
Piston 6	G1P6	G2P6	G3P6	L2P6	ORLD6	UCP6
WF	0.05	0.10	0.20	0.15	0.30	0.10

NOTE: These are unweighted ratings.

	Piston Skirt Varnish, merits		
	Thrust	Anti-Thrust	Average
Piston 1	PSVT1	PSVA1	PSVAV1
Piston 2	PSVT2	PSVA2	PSVAV2
Piston 3	PSVT3	PSVA3	PSVAV3
Piston 4	PSVT4	PSVA4	PSVAV4
Piston 5	PSVT5	PSVA5	PSVAV5
Piston 6	PSVT6	PSVA6	PSVAV6
Average	PSVTAV	PSVAAV	APV
WF			0.10

PSVAV_x = (PSVT_x + PSVA_x)/2 where x = Number of Piston
 PSVTAV = average of six Thrust Piston Skirt ratings.
 PSVAAV = average of six Anti-Thrust Piston Skirt ratings.
 APV = average of all 12 Piston Skirt ratings.

	Total Weighted Deposits, merits
Piston 1	WPD1
Piston 2	WPD2
Piston 3	WPD3
Piston 4	WPD4
Piston 5	WPD5
Piston 6	WPD6

$WPD_x = (WF * G1P_x) + (WF * G2P_x) + (WF * G3P_x) + (WF * L2P_x) + (WF * ORLD_x) + (WF * UCP_x) + (WF * PSVAV_x)$
 where: x = Number of Piston
 WF = Appropriate Weighting Factor (WF) for part, from table.

Average Weighted Piston Deposits, merits	WPD	$WPD = (WPD1 + WPD2 + WPD3 + WPD4 + WPD5 + WPD6) / 6$
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**SEQUENCE IIIF
FORM 10
BLOWBY VALUES & PLOT**

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		

Blowby Plot

BLOWBYIM

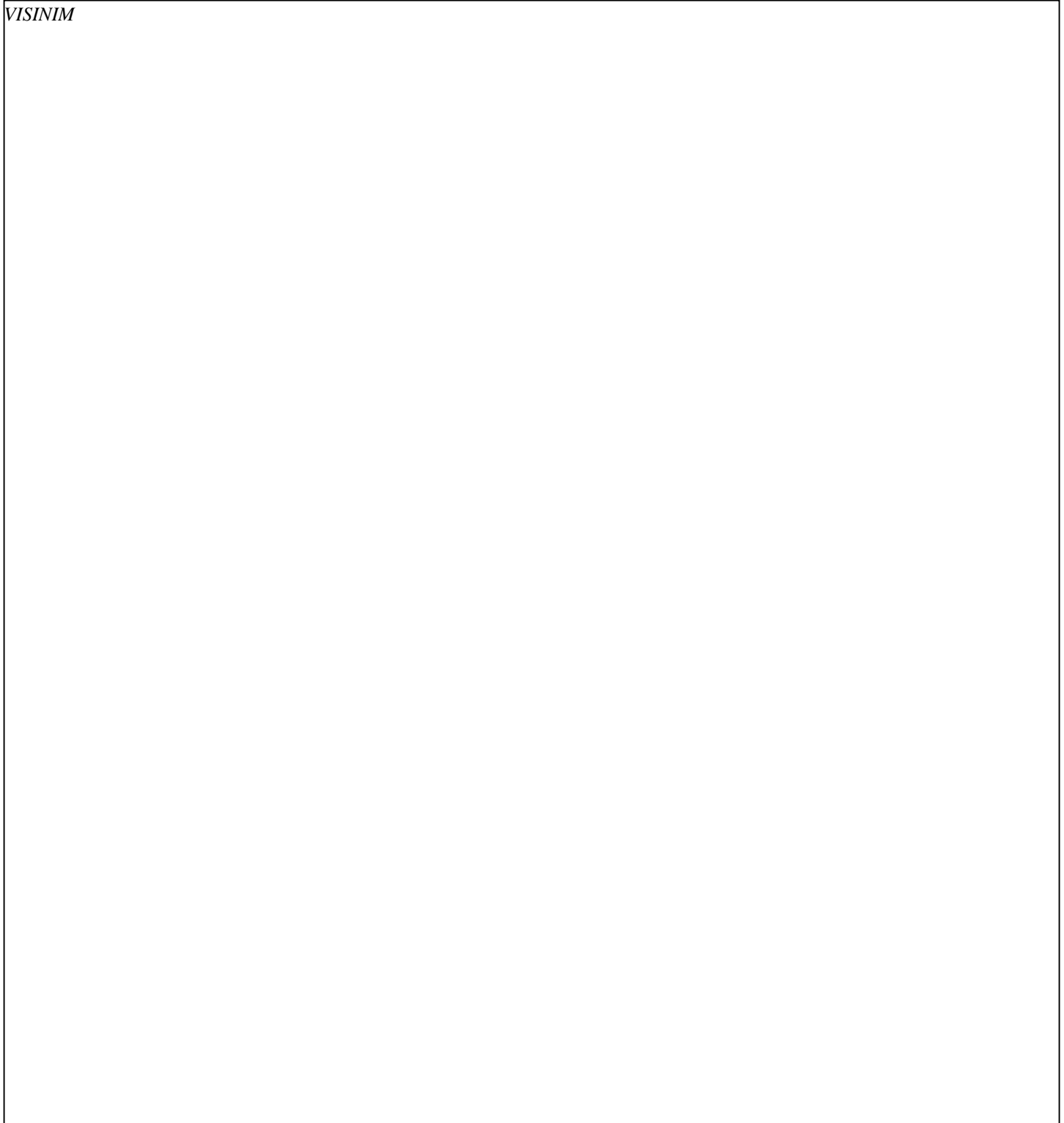


Test Hours	<i>BBYTH001</i>	<i>BBYTH006</i>	<i>BBYTH011</i>	<i>BBYTH016</i>	<i>BBYTH021</i>	<i>BBYTH026</i>	<i>BBYTH031</i>	<i>BBYTH036</i>	<i>BBYTH041</i>	<i>BBYTH046</i>
Blowby, L/min.	<i>BLWBH001</i>	<i>BLWBH006</i>	<i>BLWBH011</i>	<i>BLWBH016</i>	<i>BLWBH021</i>	<i>BLWBH026</i>	<i>BLWBH031</i>	<i>BLWBH036</i>	<i>BLWBH041</i>	<i>BLWBH046</i>
Test Hours	<i>BBYTH051</i>	<i>BBYTH056</i>	<i>BBYTH061</i>	<i>BBYTH066</i>	<i>BBYTH071</i>	<i>BBYTH076</i>	<i>BBYTH079</i>			Average
Blowby, L/min.	<i>BLWBH051</i>	<i>BLWBH056</i>	<i>BLWBH061</i>	<i>BLWBH066</i>	<i>BLWBH071</i>	<i>BLWBH076</i>	<i>BLWBH079</i>			<i>ABLOBY</i>

SEQUENCE III F
FORM 11
VISCOSITY INCREASE PLOT

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		

VISINIM



**SEQUENCE IIIF
FORM 12
HARDWARE INFORMATION**

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		

Build Completion Date	<i>BUILDDT</i>	Piston Batch (Code)	<i>PISTBAT</i>
Block Serial Number	<i>BLOCKSN</i>	Piston Size (Grade)	<i>PISTSIZE</i>
Crankshaft Serial Number	<i>CRANKSN</i>	Piston Ring Batch Code	<i>RINGCODE</i>
Camshaft Serial Number	<i>CAMSN</i>	Oil Filter Batch Code	<i>OILFIBAT</i>
Cylinder Head Serial Number, Left	<i>LHEADSN</i>	Intake Valve Seals Batch Code	<i>INVS LBAT</i>
Cylinder Head Serial Number, Right	<i>RHEADSN</i>	Valve Springs Batch Code	<i>VALSPBAT</i>
Bearing Kit Serial Number	<i>BRNGSN</i>	Lifter Serial Number	1 <i>LFTR1SN</i>
Top Ring Gap, mils	<i>TRINGGAP</i>		2 <i>LFTR2SN</i>
Bottom Ring Gap, mils	<i>BRINGGAP</i>		3 <i>LFTR3SN</i>
			4 <i>LFTR4SN</i>
			5 <i>LFTR5SN</i>
			6 <i>LFTR6SN</i>
			7 <i>LFTR7SN</i>
			8 <i>LFTR8SN</i>
			9 <i>LFTR9SN</i>
			10 <i>LFTR10SN</i>
			11 <i>LFTR11SN</i>
			12 <i>LFTR12SN</i>

**SEQUENCE III F
FORM 13
DOWNTIME & OUTLIER REPORT FORM**

LAB	<i>LAB</i>	OIL CODE	<i>OILCODE</i>
TEST STAND NO.	<i>STAND</i>	TEST NO.	<i>STAND - STRUN - LABRUN</i>
LABORATORY OIL CODE	<i>LABOCODE</i>		
FORMULATION STAND CODE	<i>FORM</i>		

Downtime Occurrences		<i>DWNOCR</i>	
Test Hours	Date	Total Downtime	Reasons
<i>DOWNR001</i>	<i>DDATR001</i>	<i>DTIMR001</i>	<i>DREAR001</i>
Total Downtime		<i>TOTLDOWN</i> Maximum allowable downtime: 24 hours	

Other Comments & Outliers	<i>TOTCOM</i>
<i>OCOMR001</i>	