Report On
Sequence IVB Evaluation
Version

Conducted For
TSTSPON1
TSTSPON2

LABVALID	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

TSTOIL	NR = Non-reference oil test
	RO = Reference oil test

Test Number					
Test Stand	Number of Tests Since Last Stand Calibration Test			Total Runs on Test Stand	
STAND	CALCOUNT			TOTSTRUN	
Lab Engine Number	ENGNO		Total Runs on Engine	TOTENRUN	
Lab Head Number	HEADSN		Total Runs on Cyl Head	TOTHDRUN	
Intake Cam Number	INTCAMNO		Test Fuel	TESTFUEL	
Exhaust Cam Number	EXHCAMNO		Fuel Batch	FUELBTID	
EOT Date	DTCOMP		EOT Time	EOTTIME	
Oil Code	OILCODE				
Formulation/Stand	FORM				
Alternate Codes	ALTCODE1	ALTCODE2		ALTCODE3	

In my opinion this test OPVALID been conducted in a valid manner in accordance with the Test Method, D XXXX, and appropriate amendments. 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

Sequence IVB
Form 2
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Sequence IVB
Form 3
Summary of Test Method

The Sequence IVB engine valve train wear test is a fired engine dynamometer lubricant test which evaluates the ability of a test lubricant to reduce valve train wear. The test method is a low Temperature cyclic test, with a total running duration of 100 hours.

The Sequence IVB uses a Toyota 2NRFE water cooled, 4 cycle, in-line cylinder, 1.5 liter engine as the test apparatus. The engine incorporates a dual overhead cam, four valves per cylinder (2 intake; 2 exhaust), and direct acting mechanical bucket lifter valve train design. The critical test parts (camshafts, direct acting mechanical bucket lifters) are replaced each test. A 95 minute run-in schedule is conducted whenever the long block or cylinder head are replaced with new components.

The Sequence IVB valve train wear test is a flush and run type of lubricant test with four each 30 minute engine oil system flushes conducted prior to the actual test start. The test sequence is repeated for 6000 test cycles. Each cycle consists of four stages as outlined in the table below:

Parameter	Units	Ramp to Stage 1	Stage 1	Ramp to Stage 2	Stage 2
Duration	sec	8	22	8	22
Engine Speed	r/min	5600 to 800	800	800 to 5600	5600
Engine Torque	N·m	37.14 to 25	25	25 to 37.14	37.14
Oil Gallery Temperature	°C	52 to 49	49	49 to 52	52
Coolant Out Temperature	°C	70 to 65	65	65 to 70	70
Intake Air Temperature	°C	32	32	32	32
Intake Air Pressure	kPa	0.05	0.05	0.05	0.05
Intake Air Humidity	g/kg	11.5	11.5	11.5	11.5
Exhaust Back Pressure	kPa-abs	104.5 to 103.5	103.5	103.5 to 104.5	104.5
Differential Coolant Temperature	°C	2	2	2	2
Rocker Cover Coolant Outlet Temperature	°C	20	20	20	20

Sequence IVB
Form 4

Test Result Summary

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

Date Started	DTSTRT	Engine No.	ENGNO
Time Started	STRTTIME	Fuel Batch	FUELBTID
Date Completed	DTCOMP	SAE Viscosity	SAEVISC
Time Completed	EOTTIME	Reference Oil [A]	IND
Test Length	TESTLEN		

PARAMETER	RESULT
Intake Camshaft Average Heel to Toe Wear, µm	ACWINT
Intake Camshaft Summation Heel to Toe Wear, µm	SCWINT
Exhaust Camshaft Average Heel to Toe Wear, µm	ACWEXH
Exhaust Camshaft Summation Heel to Toe Wear, µm	SCWEXH
Intake Bucket Lifters Average z diff, µm	IBLAZDIF
Intake Bucket Lifters Summation z diff, µm	IBLSZDIF
Intake Bucket Lifters Average Area Loss, μm^2	IBLAALOS
Intake Bucket Lifters Summation Area Loss, μm^2	IBLSALOS
Intake Bucket Lifters Average Mass Loss, mg	IBLAMASS
Intake Bucket Lifters Summation Mass Loss, mg	IBLSMASS
Exhaust Bucket Lifters Average z diff, µm	EBLAZDIF
Exhaust Bucket Lifters Summation z diff, µm	EBLSZDIF
Exhaust Bucket Lifters Average Area Loss, μm^2	EBLAALOS
Exhaust Bucket Lifters Summation Area Loss, μm^2	EBLSALOS
Exhaust Bucket Lifters Average Mass Loss, mg	EBLAMASS
Exhaust Bucket Lifters Summation Mass Loss, mg	EBLSMASS
Oil Consumption, g	OILCON
Fuel Consumption, kg	FUELCON
Fuel Dilution @ EOT, %	FUELH100
40ºC Viscosity @ EOT, cSt	VIS_H100
Total Acid Number @ EOT, g kOH/g	TAN_H100
Total Base Number @ EOT, g kOH/g	TBN_H100
Oxidation by FTIR 5.8 Peak Area @EOT, ABS/cm^2	IR58H100
Nitration by FTIR 6.1 Peak Area @EOT, ABS/cm^2	IR61H100
Used Oil Iron @EOT, ppm	FEWMH100

Sequence IVB
Form 5

Operational Summary – Phase 1

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

Parameter	Units	Minimum	Maximum	Average	Standard Deviation
Engine Speed	r/min	IRPM1	XRPM1	ARPM1	SRPM1
Engine Torque	N·m	ITORQUE1	XTORQUE1	ATORQUE1	STORQUE1
Engine Power	kW	IPOWER1	XPOWER1	APOWER1	SPOWER1
Brake Mean Effective Power	bar	IBMEP1	XBMEP1	ABMEP1	SBMEP1
Air Fuel Ratio	λ	IAFR1	XAFR1	AAFR1	SAFR1
Fuel Flow Rate	kg/h	IFFLO1	XFFLO1	XFFLO1	SFFLO1
Coolant Temperature Into Engine	°C	ICOLIN1	XCOLIN1	ACOLIN1	SCOLIN1
Coolant Temperature Out of Engine	°C	ICOLOUT1	XCOLOUT1	ACOLOUT1	SCOLOUT1
Coolant Delta	°C	ICOLDT1	XCOLDT1	ACOLDT1	SCOLDT1
Engine Oil Sump	°C	ISUMPT1	XSUMPT1	ASUMPT1	SSUMPT1
Engine Oil Gallery	°C	IOILT1	XOILT1	AOILT1	SOILT1
Intake Air	°C	IINAIRT	XINAIRT	AINAIRT	SINAIRT
Exhaust Gas	°C	IEXHT1	XEXHT1	AEXHT1	SEXHT1
Fuel @ Rail	°C	IFUELT1	XFUELT1	AFUELT1	SFUELT1
Test Cell	°C	ITSTCLT1	XTSTCLT1	ATSTCLT1	STSTCLT1
Rocker Cover Coolant In	°C	IRACINT1	XRACINT1	ARACINT1	SRACINT1
Rocker Cover Coolant Out	°C	IRACOUT1	XRACOUT1	ARACOUT1	SRACOUT1
Intake Air	kPa g	IINAIRP1	XINAIRP1	AINAIRP1	SINAIRP1
Oil Gallery	kPa g	IOILGP1	XOILGP1	AOILGP1	SOILGP1
Fuel Rail	kPa g	IFUELP1	XFUELP1	AFUELP1	SFUELP1
Crankcase Pressure	kPa g	ICCASEP1	XCCASEP1	ACCASEP1	SCCASEP1
Barometric Pressure	kPa	IBAROP1	XBAROP1	ABAROP1	SBAROP1
Intake Manifold	kPa	IMAP1	XMAP1	AMAP1	SMAP1
Exhaust Pressure	kPa	IEXHBP1	XEXHBP1	AEXHBP1	SEXHBP1
Blowby Flow Rate	sl/mi	IBLOWBY1	XBLOWBY1	ABLOWBY1	SBLOWBY1

Sequence IVB
Form 6
Operational Summary – Phase 2

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code		LABOCODE	
Formulation Stand Code		FORM	

Parameter	Units	Minimum	Maximum	Average	Standard Deviation
Engine Speed	r/min	IRPM2	XRPM2	ARPM2	SRPM2
Engine Torque	N·m	ITORQUE2	XTORQUE2	ATORQUE2	STORQUE2
Engine Power	kW	IPOWER2	XPOWER2	APOWER2	SPOWER2
Brake Mean Effective Power	bar	IBMEP2	XBMEP2	ABMEP2	SBMEP2
Air Fuel Ratio	Λ	IAFR2	XAFR2	AAFR2	SAFR2
Fuel Flow Rate	kg/h	IFFLO2	XFFLO2	XFFLO2	SFFLO2
Coolant Temperature Into Engine	°C	ICOLIN2	XCOLIN2	ACOLIN2	SCOLIN2
Coolant Temperature Out of Engine	°C	ICOLOUT2	XCOLOUT2	ACOLOUT2	SCOLOUT2
Coolant Delta	°C	ICOLDT2	XCOLDT2	ACOLDT2	SCOLDT2
Engine Oil Sump	°C	ISUMPT2	XSUMPT2	ASUMPT2	SSUMPT2
Engine Oil Gallery	°C	IOILT2	XOILT1	AOILT2	SOILT2
Intake Air	°C	IINAIRT2	XINAIRT2	AINAIRT2	SINAIRT2
Exhaust Gas	°C	IEXHT2	XEXHT2	AEXHT2	SEXHT2
Fuel @ Rail	°C	IFUELT2	XFUELT2	AFUELT2	SFUELT2
Test Cell	°C	ITSTCLT2	XTSTCLT2	ATSTCLT2	STSTCLT2
Rocker Cover Coolant In	°C	IRACINT2	XRACINT2	ARACINT2	SRACINT2
Rocker Cover Coolant Out	°C	IRACOUT2	XRACOUT2	ARACOUT2	SRACOUT2
Intake Air	kPa g	IINAIRP2	XINAIRP2	AINAIRP2	SINAIRP2
Oil Gallery	kPa g	IOILGP2	XOILGP2	AOILGP2	SOILGP2
Fuel Rail	kPa g	IFUELP2	XFUELP2	AFUELP2	SFUELP2
Crankcase Pressure	kPa g	ICCASEP2	XCCASEP2	ACCASEP2	SCCASEP2
Barometric Pressure	kPa	IBAROP2	XBAROP2	ABAROP2	SBAROP2
Intake Manifold	kPa	IMAP2	XMAP2	AMAP2	SMAP2
Exhaust Pressure	kPa	IEXHBP2	XEXHBP2	AEXHBP2	SEXHBP2
Blowby Flow Rate	sl/min	IBLOWBY2	XBLOWBY2	ABLOWBY2	SBLOWBY2

Sequence IVB
Form 7
Used Oil Analysis Results

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

Test Hour	**Flush1**	**Flush2**	**Flush3**	**Flush4**	TST_H001	TST_H025	TST_H050	TST_H075	TST_H100
D5185 Metals, ppm									
Aluminum (Al)	ALWMFL(	ALWMFL(	ALWMFL(	ALWMFI	ALWMH001	ALWMH025	ALWMH050	ALWMH075	ALWMH100
Boron (B)	BWMFL01	BWMFL02	BWMFL03	BWMFL0	BWMH001	BWMH025	BWMH050	BWMH075	BWMH100
Calcium (Ca)	CAWMFL(	CAWMFL(	CAWMFL(	CAWMFI	CAWMH001	CAWMH025	CAWMH050	CAWMH075	CAWMH100
Chromium (Cr)	CRWMFL(	CRWMFL(	CRWMFL(	CRWMFI	CRWMH001	CRWMH025	CRWMH050	CRWMH075	CRWMH100
Copper (Cu)	CUWMFL(	CUWMFL(	CUWMFL(	CUWMFI	CUWMH001	CUWMH025	CUWMH050	CUWMH075	CUWMH100
Iron (Fe)	FEWMFL(	FEWMFL(	FEWMFL(	FEWMFL	FEWMH001	FEWMH025	FEWMH050	FEWMH075	FEWMH100
Potassium (K)	KWMFL01	KWMFL02	KWMFL03	KWMFL0	KWMH001	KWMH025	KWMH050	KWMH075	KWMH100
Molybdenum (Mo)	MOWMFL	MOWMFL	MOWMFL	MOWMF	MOWMH001	MOWMH025	MOWMH050	MOWMH075	MOWMH100
Nickel (Ni)	NIWMFL0	NIWMFL0	NIWMFL0	NIWMFL	NIWMH001	NIWMH025	NIWMH050	NIWMH075	NIWMH100
Sodium (Na)	NAWMFL	NAWMFL	NAWMFL	NAWMFI	NAWMH001	NAWMH025	NAWMH050	NAWMH075	NAWMH100
Phosphorus (P)	PWMFL01	PWMFL02	PWMFL03	PWMFL0	PWMH001	PWMH025	PWMH050	PWMH075	PWMH100
Lead (Pb)	PBWMFL(	PBWMFL(	PBWMFL(	PBWMFL	PBWMH001	PBWMH025	PBWMH050	PBWMH075	PBWMH100
Silicon (Si)	SIWMFL0	SIWMFL0	SIWMFL0	SIWMFL(	SIWMH001	SIWMH025	SIWMH050	SIWMH075	SIWMH100
Tin (Sn)	SNWMFL(	SNWMFL(	SNWMFL(	SNWMFL	SNWMH001	SNWMH025	SNWMH050	SNWMH075	SNWMH100
Zinc (Zn)	ZNWMFL(	ZNWMFL(	ZNWMFL(	ZNWMFI	ZNWMH001	ZNWMH025	ZNWMH050	ZNWMH075	ZNWMH100
D3525 Fuel Dilution %						FUELH025	FUELH050	FUELH075	FUELH100
Viscosity 40ºC					VIS_H001	VIS_H025	VIS_H050	VIS_H075	VIS_H100
D664 Total Acid Number, gkOH/g					TAN_H001	TAN_H025	TAN_H050	TAN_H075	TAN_H100
D4739 Total Base Number, gkOH/g					TBN_H001	TBN_H025	TBN_H050	TBN_H075	TBN_H100
FTIR 5.8 Peak Area, ABS/cm^2						IR58H025	IR58H050	IR58H075	IR58H100
FTIR 6.1 Peak Area, ABS/cm^2						IR61H025	IR61H050	IR61H075	IR61H100

Sequence IVB
Form 8

Oil Analyses Trend Plots

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

FDVISIM

TANTBIM

Sequence IVB
Form 9
Engine Build Measurements

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code		LABOCODE	
Formulation Stand Code		FORM	

Bucket Lifter Size and Identification						
Cylinder	Intake			Exhaust		
	Location	Size	ID	Location	Size	ID
1	Intake 1	INTBL1SZ	INTBL1ID	Exhaust 1	EXHBL1SZ	EXHBL1ID
	Intake 2	INTBL2SZ	INTBL2ID	Exhaust 2	EXHBL2SZ	EXHBL2ID
2	Intake 3	INTBL3SZ	INTBL3ID	Exhaust 3	EXHBL3SZ	EXHBL3ID
	Intake 4	INTBL4SZ	INTBL4ID	Exhaust 4	EXHBL4SZ	EXHBL4ID
3	Intake 5	INTBL5SZ	INTBL5ID	Exhaust 5	EXHBL5SZ	EXHBL5ID
	Intake 6	INTBL6SZ	INTBL6ID	Exhaust 6	EXHBL6SZ	EXHBL6ID
4	Intake 7	INTBL7SZ	INTBL7ID	Exhaust 7	EXHBL7SZ	EXHBL7ID
	Intake 8	INTBL8SZ	INTBL8ID	Exhaust 8	EXHBL8SZ	EXHBL8ID

Camshaft Journal Measurements				
Intake			Exhaust	
Journal Number	Oil Feed Hole Dia., mm	Journal Dia., mm	Oil Feed Hole Dia., mm	Journal Dia., mm
Main Feed	MFOFHDIN	MFJDIN	MFOFHDEX	MFJDEX
1	J1OFHDIN	J1JDIN	J1OFHDEX	J1JDEX
2	J2OFHDIN	J2JDIN	J2OFHDEX	J2JDEX
3	J3OFHDIN	J3JDIN	J3OFHDEX	J3JDEX
4	J4OFHDIN	J4JDIN	J4OFHDEX	J4JDEX
Run Out, mm		INRUNOUT	Run Out, mm	EXRUNOUT

Camshaft Lobe Measurements						
Intake				Exhaust		
Lobe	Heel to Toe, mm	Wt, µm	Ra, µm	Heel to Toe, mm	Wt, µm	Ra, µm
1	L1INTHT	L1INTWT	L1INTRA	L1EXHHT	L1EXHWT	L1EXHRA
2	L2INTHT	L2INTWT	L2INTRA	L2EXHHT	L2EXHWT	L2EXHRA
3	L3INTHT	L3INTWT	L3INTRA	L3EXHHT	L3EXHWT	L3EXHRA
4	L4INTHT	L4INTWT	L4INTRA	L4EXHHT	L4EXHWT	L4EXHRA
5	L5INTHT	L5INTWT	L5INTRA	L5EXHHT	L5EXHWT	L5EXHRA
6	L6INTHT	L6INTWT	L6INTRA	L6EXHHT	L6EXHWT	L6EXHRA
7	L7INTHT	L7INTWT	L7INTRA	L7EXHHT	L7EXHWT	L7EXHRA
8	L8INTHT	L8INTWT	L8INTRA	L8EXHHT	L8EXHWT	L8EXHRA

Sequence IVB
Form 10
Bucket Lifter Wear Measurements

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code		LABOCODE	
Formulation Stand Code		FORM	

Lifter	Position	Intake			Exhaust		
		Max z diff., µm	Area Loss, μm^2	Mass Loss, mg	Max z diff., µm	Area Loss, μm^2	Mass Loss, mg
1	X	BL1XMZDI	BL1XMALI	BL1INTML	BL1XMZDE	BL1XMALE	BL1EXHML
	Y	BL1YMZDI	BL1YMALI		BL1YMZDE	BL1YMALE	
2	X	BL2XMZDI	BL2XMALI	BL2INTML	BL2XMZDE	BL2XMALE	BL2EXHML
	Y	BL2YMZDI	BL2YMALI		BL2YMZDE	BL2YMALE	
3	X	BL3XMZDI	BL3XMALI	BL3INTML	BL3XMZDE	BL3XMALE	BL3EXHML
	Y	BL3YMZDI	BL3YMALI		BL3YMZDE	BL3YMALE	
4	X	BL4XMZDI	BL4XMALI	BL4INTML	BL4XMZDE	BL4XMALE	BL4EXHML
	Y	BL4YMZDI	BL4YMALI		BL4YMZDE	BL4YMALE	
5	X	BL5XMZDI	BL5XMALI	BL5INTML	BL5XMZDE	BL5XMALE	BL5EXHML
	Y	BL5YMZDI	BL5YMALI		BL5YMZDE	BL5YMALE	
6	X	BL6XMZDI	BL6XMALI	BL6INTML	BL6XMZDE	BL6XMALE	BL6EXHML
	Y	BL6YMZDI	BL6YMALI		BL6YMZDE	BL6YMALE	
7	X	BL7XMZDI	BL7XMALI	BL7INTML	BL7XMZDE	BL7XMALE	BL7EXHML
	Y	BL7YMZDI	BL7YMALI		BL7YMZDE	BL7YMALE	
8	X	BL8XMZDI	BL8XMALI	BL8INTML	BL8XMZDE	BL8XMALE	BL8EXHML
	Y	BL8YMZDI	BL8YMALI		BL8YMZDE	BL8YMALE	
	Sum	SMZDIFIN	SALOSIN	SMLOSIN	SMZDIFEX	SALOSEX	SMLOSEX
	Average	AMZDIFIN	AALOSIN	AMLOSIN	AMZDIFEX	AALOSEX	AMLOSEX
	Minimum	IMZDIFIN	IALOSIN	IMLOSIN	IMZDIFEX	IALOSEX	IMLOSEX
	Maximum	XMZDIFIN	XALOSIN	XMLOSIN	XMZDIFEX	XALOSEX	XMLOSEX
	Standard Deviation	SDMZDIFI	SDALOSIN	SDMLOSIN	SDMZDIFE	SDALOSEX	SDMLOSEX

Avg Wear Rate per Hour of Test Time	Intake			EXHAUST		
	z diff., µm	Area Loss, μm^2	Mass Loss, mg	z diff., µm	Area Loss, µm2	Mass Loss, mg
	AZDIFFIN	AALOSSIN	AMLOSSIN	AZDIFFEX	AALOSSEX	AMLOSSEX

Sequence IVB
Form 11
Camshaft Lobe Wear Measurements

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

Camshaft Lobe Measurements						
Lobe	Intake Camshaft			Exhaust Camshaft		
	Start of Test Heel to Toe, mm	End of Test Heel to Toe, mm	Wear, µm	Start of Test Heel to Toe, mm	End of Test Heel to Toe, mm	Wear, µm
1	SOTINTH1	EOTINTH1	INTWEAR1	SOTEXHH1	EOTEXHH1	EXHWEAR1
2	SOTINTH2	EOTINTH2	INTWEAR2	SOTEXHH2	EOTEXHH2	EXHWEAR2
3	SOTINTH3	EOTINTH3	INTWEAR3	SOTEXHH3	EOTEXHH3	EXHWEAR3
4	SOTINTH4	EOTINTH4	INTWEAR4	SOTEXHH4	EOTEXHH4	EXHWEAR4
5	SOTINTH5	EOTINTH5	INTWEAR5	SOTEXHH5	EOTEXHH5	EXHWEAR5
6	SOTINTH6	EOTINTH6	INTWEAR6	SOTEXHH6	EOTEXHH6	EXHWEAR6
7	SOTINTH7	EOTINTH7	INTWEAR7	SOTEXHH7	EOTEXHH7	EXHWEAR7
8	SOTINTH8	EOTINTH8	INTWEAR8	SOTEXHH8	EOTEXHH8	EXHWEAR8
		Sum of Wear	SUMINTW		Sum of Wear	SUMEXHW
		Average	AVGINTW		Average	AVGEXHW
		Minimum	MININTW		Minimum	MINEXHW
		Maximum	MAXINTW		Maximum	MAXEXHW
		Std. Dev.	STDINTW		Std. Dev.	STDEXHW

Sequence IVB
Form 12
Cycle 25 Critical Parameter Plots

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

TEMPIM

SPDTORIM

Sequence IVB
Form 13
Hardware Information

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

Hardware Information			
		Intake	Exhaust
Camshaft		CAMPTNOI	CAMPTNOE
Bucket Lifter Position	1	BLINTPN1	BLEXHPN1
	2	BLINTPN2	BLEXHPN2
	3	BLINTPN3	BLEXHPN3
	4	BLINTPN4	BLEXHPN4
	5	BLINTPN5	BLEXHPN5
	6	BLINTPN6	BLEXHPN6
	7	BLINTPN7	BLEXHPN7
	8	BLINTPN8	BLEXHPN8

Engine	ENGNO
Cylinder Head	HEADPTNO
Oil Filter	OFLTPTNO
Spark Plug	SPKGPTNO
Number of Runs on Cylinder Head	TOTHDRUN
Number of Runs on Engine	TOTENRUN

Sequence IVB
Form 14
Downtime Summary

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

Number of Downtime Occurrences		DWNOCR	
Test Hours	**Date**	**Downtime**	**Reasons**
DOWNR001	DDATR001	DTIMR001	DREAR001
DOWNR002	DDATR002	DTIMR002	DREAR002
DOWNR003	DDATR003	DTIMR003	DREAR003
DOWNR004	DDATR004	DTIMR004	DREAR004
DOWNR005	DDATR005	DTIMR005	DREAR005
DOWNR006	DDATR006	DTIMR006	DREAR006
DOWNR007	DDATR007	DTIMR007	DREAR007
DOWNR008	DDATR008	DTIMR008	DREAR008
DOWNR009	DDATR009	DTIMR009	DREAR009
DOWNR010	DDATR010	DTIMR010	DREAR010
DOWNR011	DDATR011	DTIMR011	DREAR011
DOWNR012	DDATR012	DTIMR012	DREAR012
DOWNR013	DDATR013	DTIMR013	DREAR013
DOWNR014	DDATR014	DTIMR014	DREAR014
DOWNR015	DDATR015	DTIMR015	DREAR015
DOWNR016	DDATR016	DTIMR016	DREAR016
DOWNR017	DDATR017	DTIMR017	DREAR017
DOWNR018	DDATR018	DTIMR018	DREAR018
DOWNR019	DDATR019	DTIMR019	DREAR019
DOWNR020	DDATR020	DTIMR020	DREAR020
DOWNR021	DDATR021	DTIMR021	DREAR021
DOWNR022	DDATR022	DTIMR022	DREAR022
DOWNR023	DDATR023	DTIMR023	DREAR023
DOWNR024	DDATR024	DTIMR024	DREAR024
DOWNR025	DDATR025	DTIMR025	DREAR025
		TOTLDOWN	**Total Downtime (hours)**

Sequence IVB
Form 15
Test Comments

Lab	LAB	Oil Code	OILCODE
Stand	STAND	Test No.	TESTNUM
Laboratory Oil Code			LABOCODE
Formulation Stand Code			FORM

Number of Comment Lines	TOTCOM	
OCOMR001		
OCOMR002		
OCOMR003		
OCOMR004		
OCOMR005		
OCOMR006		
OCOMR007		
OCOMR008		
OCOMR009		
OCOMR010		
OCOMR011		
OCOMR012		
OCOMR013		
OCOMR014		
OCOMR015		
OCOMR016		
OCOMR017		
OCOMR018		
OCOMR019		
OCOMR020		
OCOMR021		
OCOMR022		
OCOMR023		
OCOMR024		
OCOMR025		

Sequence IVB

Form 16
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement

Test Laboratory	SUBLAB				
Test Sponsor	TSTSPON1				
Formulation / Stand Code	FORM				
Test Number	TESTNUM				
Start Date	DTSTRT	Start Time	STRTTIME	Time Zone	TZONE

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 YESRQM No NORQMI *

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 YESFULL No NOFULL *

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 YESNODE * No NONODEC

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

INCLUDE	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
DONOTINC	*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
ACCCOMM1
ACCCOMM2
ACCCOMM3
ACCCOMM4

SUBSIGIM
Signature

SUBDATE
Date

SUBNAME
Typed Name

SUBTITLE
Title