

Seq. III Inventory Control Task Force Conference Call Minutes

Date: 10/26/11

Agenda:

- 1.) Roll Call
 - a. Jason Bowden, Matt Bowden, Adam Bowden, Bruce Matthews, Charlie Leverett, Mark Mosher, Jerry Brys, Pat Lang, Karen Haymann, Sid Clark, Rich Grundza
- 2.) Approval of Minutes from October 12th, 2011. Jason Bowden/Sid Clark- Approved
- 3.) Review Inventory Control Guidelines (focusing on FIFO procedure) (Attachment 2)
 - a. Categorization of parts. There was significant discussion with regards to further categorizing critical components for the purpose of FIFO. The group discussed how FIFO would apply to a variety of different critical components. There were concerns with regards to traceability with some components that were deemed critical due to either a lack of serialization, batch code information or parts may be in long service rotations which would prohibit FIFO application.
 - b. The group decided on the following modifications to the FIFO Procedure
 - i. Only include the critical parts on Form 12 that have clear batch code, serial number and limited service rotation. (Camshafts, Bearing Kit, Piston Rings, Intake & Exhaust Seals, Rocker Arms, Pistons, Oil Filter, Oil Cooler, Valve Springs, Lifters)
 - ii. The parts list for the procedure will be modified by adding a column to indicate which critical parts fall under the FIFO procedure. (Attachment 1)
 - iii. The Grace Period will be 90 days after start of a Reference or Candidate test to allow engine starts with a prior batch code or receive date.
 - c. **MOTION:** Jason Bowden / Bruce Matthews: Motion to accept for a recommendation to the Seq. III Surveillance Panel the FIFO procedure developed by the Inventory Control Task Force including the modifications shown above. (Attachment 2, Pages 14, 15 & 16)
7-0-0_ Approved Unanimous
- 4.) Review of Updated Form 12
 - a. The group reviewed Form 12 and made the following recommendations.
 - i. Add Camshaft Pour Code field
 - ii. Change Camshaft Batch Code to Camshaft Phosphate Batch Code
 - iii. Remove the need to identify individual lifter serial numbers by position. Labs will enter the lifter engine set number (ESET).
 - iv. Final Form 12 attached (Attachment 3)
- 5.) Meeting Adjourned

Attachment 1

TABLE A2.1 Parts to be Replaced Every Test				
Part Description	Part Number	Critical	Non-Critical	FIFO
Arm, Rocker with Pivot Bearing	OHT3F-058-1	X		X
BEARING, KIT, ENGINE	OHT3F-042-3	X		X
KIT INCLUDES:				
BEARING, CONNECTING ROD, KIT, UPPER AND LOWER,	OH-106	X		X
ASSY	3F042-01	X		X
MAIN BEARING KIT, OH101 ASSY, INCLUDES:	3F042-02	X		X
BEARING, MAIN, LOWER, #1 AND 3	OH-102	X		X
Bearing, Balance Shaft Front (part of 24502388)	SKF6205-2ZNRJEM		X	
BEARING, MAIN, LOWER, #4	OH-103	X		X
BEARING, MAIN, LOWER, FLANGE, #2	OH-104	X		X
BEARING, MAIN, UPPER, FLANGE, #2	OH-105	X		X
BEARING, CAM BUSHING, POSITIONS 1 & 4	3F028-09	X		X
BEARING, CAM BUSHING, POSITIONS 2 & 3	3F028-10	X		X
Bolt, Camshaft Sp rocket	24501366		X	
Bolt, Cylinder Head, Long	25527831		X	
Bolt, Cylinder Head, Short	25533811		X	
Bolt, Flywheel	24505092		X	
Bolt, Main Cap	24503056		X	
Bolt, Main Cap, Side	24505576		X	
Bolt, Rocker Arm, Special Test	3F-058-02		X	
Bolt/Screw, Thrust Plate retainer	25519242		X	
Camshaft, Special Test, including Manganese-phosphate coating	OHT3F-008-8	X		X
Cap, Valve Spring Retainer	24502257		X	
Chain, Timing	24504668		X	
Clip, Retainer, Piston Pin	OHT3F-012-1		X	
COOLER, OIL, NICKEL PLATED, BYPASS CLOSED	OHT3F-030-2	X		X
Damper, Timing Chain (includes bolt, retaining ring)	24503893		X	
FILTER, PRO TEC	OHT3F-057-3	X		X
Gasket kit, Intake Manifold lower	89017816		X	
Gasket, Cylinder Head, left	24503802		X	
Gasket, Cylinder Head, right	24503801		X	
Gasket, Front Cover	12587003		X	
Gasket, Oil Filter Adapter	25534742		X	
Gasket, Oil Pan	OHT3G-093-1		X	
Gasket, Oil Pan	OHT3G-093-2		X	
Gasket, Oil Suction Tube	24501259 or 12581570		X	
Gasket, Rear Cover Housing	24507388		X	
Gasket, Rocker Cover	25532619		X	
Gasket, Water Outlet	24502433		X	
Gasket, Water Pump	24501565		X	
Head, Cylinder	24502260B	X		
Key, Camshaft Sprocket	24500618		X	
Key, Valve Stem Keeper	10166345		X	
Lifter, Test ACI w/Flat (25338738A)	OHT3F-029-3	X		X
PIN, PISTON WRIST, PKG. OF 6	OHT3F-014-1	X		
PISTON, TEST, RUNS 1 & 2, GRADE 12	OHT3F-053-1	X		X
PISTON, TEST, RUNS 3 & 4, GRADE 34	OHT3F-054-1	X		X
PISTON, TEST, RUNS 5 & 6, GRADE 56	OHT3F-055-1	X		X
PLATE, CAMSHAFT THRUST, .1520 in. THICKNESS	OHT3F-011-2	X		
Plug, Engine Block Core Hole	24500867		X	
Plug, Cylinder Head Cup	24502262		X	
Plug, Engine Block, Oil Gallery	3835577		X	
Plug, Ignition Spark	NGK TR-6		X	
Plunger, Oil Relief	25530949		X	
PUSHROD, SPECIAL LENGTH, PKG. OF 12	OHT3F-007-1	X		
RETAINER CLIP, PISTON PIN PKG. OF 12	OHT3F-012-1	X		
1 EA. RING, PISTON, RUN 1, ENGINE SET	OHT3G050-RUN1	X		X
1 EA. RING, PISTON, RUN 2, ENGINE SET	OHT3G050-RUN2	X		X
1 EA. RING, PISTON, RUN 3, ENGINE SET	OHT3G051-RUN3	X		X
1 EA. RING, PISTON, RUN 4, ENGINE SET	OHT3G051-RUN4	X		X
1 EA. RING, PISTON, RUN 5, ENGINE SET	OHT3G052-RUN5	X		X
1 EA. RING, PISTON, RUN 6, ENGINE SET	OHT3G052-RUN6	X		X
ROCKER ARM ASSEMBLY (Includes: 3F058-02)	OHT3F-058-1	X		X
Rod, Connecting (powdered metal)	12593374	X		
Seal, Crankshaft Front Oil (24504098)	OHT3G-092-1		X	
Seal, Crankshaft Rear Oil (25534760)	OHT3G-091-1		X	
SEAL, EXHAUST VALVE STEM	OHT3F-061-1	X		X
SEAL, INTAKE VALVE STEM	OHT3F-060-1	X		X
Spring, Oil Relief Valve	1262505		X	
SPRING, VALVE Special Test (COLOR CODE PINK)	OHT3G-059-1	X		X
Sprocket, Camshaft	24505306		X	
Valve, Exhaust (STD)	12579949		X	
Valve, Intake (STD)	12569550		X	

TABLE A2.2 Parts to be Replaced As Needed

Part Description	Part Number	Critical	Non-Critical	FIFO
ADAPTER, BLOWBY BREATHER TUBE	OHT3F-040-1		X	
ADAPTER, OIL FILTER	OHT3F-035-1		X	
Adapter, Oil Filter, with External Bypass	OHT3F-080-1		X	
Adapter, Throttle Body, Air Inlet	OHT3F-001-2		X	
Balancer, Harmonic	12563265		X	
Bearing, Balance Shaft Front (part of 24502388)	SKF6205-2ZNRJEM		X	
Block, Engine Assembly	24502286	X		
Bolt, Connecting Rod	11610158		X	
Bolt, Counter Balance Gear	24501367		X	
Bolt, Counter Balance Shaft retainer	24500055		X	
Bolt, Engine Front Cover	24504712		X	
Bolt, Harmonic Balancer	24504736		X	
Bolt, Lower Intake	9440227		X	
Bolt, Oil Filter Adapter	24504713		X	
Bolt, Oil Pan	11610052		X	
Bolt, Oil Suction Tube	24505570		X	
Bolt, Rear Cover Housing	11518075		X	
Bolt, Rocker Cover	24502164		X	
Bolt, Screw Camshaft Sensor	25526395		X	
Bolt, Screw, Oil Gearotor, Cover	25519242		X	
Bolt, Stud Type, Front Cover & Crankshaft Sensor (long)	24504718		X	
Bolt, Stud Type, Front Cover & Crankshaft Sensor (short)	24504717		X	
Bolt, Upper Intake Long	24505205		X	
Bolt, Upper Intake Short	24506498		X	
Bolt, Upper Intake, Stud	24502453		X	
BRACKET, BREATHER TUBE	OHT3F-041-1		X	
BREATHER TUBE, S.S. MATERIAL	OHT3F-075-1		X	
Bushing, Balance Shaft Rear	24503193		X	
BUSHING, ROCKER COVER	OHT3F-028-1		X	
BUSHING, ROCKER COVER	OHT3F-028-2		X	
Coil, Ignition	10472401 or 89056799		X	
CONNECTOR, MODIFIED FOR LENGTH, GM PN 24502883	OHT3F-039-2		X	
COVER, FRONT, IMPREGNATED	OHT3G-085-1		X	
COVER, Rear, crankshaft rear seal housing	OHT3G-088-1		X	
Cover, Oil Gearotor	25521935		X	
Cover, Rocker Arm Valve Cover Left Side Plastic	12590366		X	
Crankshaft	24502168	X		
DIP STICK, METRIC, EXTENDED LENGTH	OHT3G-064-1		X	
FITTING, OIL FILTER ADAPTER	OHT3F-043-1		X	
FLYWHEEL, MANUAL, MODIFIED P.N. 24503285	OHT3F-020-2	X		
GASKET, EXHAUST, END PLATE	OHT3F-009-1		X	
GASKET, EXHAUST, FLANGE, METAL	OHT3F-018-1		X	
Gasket, Manifold, Upper Intake	89017556		X	
GASKET, OIL COOLER, PKG. OF 50	OHT3F-074-1		X	
GASKET, OIL FILTER, PKG. OF 50	OHT3F-062-1		X	
Gear, Balanceshaft Drive	24504792		X	
Gear, Balanceshaft Driven	24503524		X	
Gear, Counter Balance Drive	24504792		X	
Gear, Counter Balance Shaft	24503524		X	
Grommet, Rocker Arm Valve cover bolt	25534749		X	
HARNESS, COIL PACK SEGMENT	3F022-2	X		
HARNESS, FUEL INJECTOR SEGMENT	3F022-1	X		
HARNESS, WIRING, DYNO W/OHT3F-056-1 SENSOR	OHT3F-022-1	X		
HOUSING, ASSEMBLY, BYPASS VALVE	OHT3F-084-1		X	
Injector, Fuel	17120601		X	
Key, Crankshaft	12563282		X	
Magnet, Camshaft Position Sensor	10456195		X	
MANIFOLD, CAST IRON	OHT3F-003-0		X	
MANIFOLD, EXHAUST, WATER COOLED ASSY (ONE BANK)	OHT3F-003-1		X	
ASSEMBLY INCLUDES:				
1 EA. RUNNER, EXHAUST MANIFOLD	OHT3F-004-1		X	
1 EA. PLATE, REAR, EXHAUST MANIFOLD	OHT3F-005-1		X	
1 EA. ELBOW, EXHAUST, MODIFIED	OHT3F-005A-1		X	
1 EA. PLATE, FRONT, EXHAUST MANIFOLD	OHT3F-006-1		X	
2 EA. GASKET, EXHAUST, END PLATE	OHT3F-009-1		X	
1 EA. GASKET, EXHAUST, FLANGE, METAL	OHT3F-018-1		X	
Manifold, Lower Intake	24508923		X	
Manifold Kit, Upper Intake	89017272		X	
METER, BLOWBY	RX-116169-A1 REV N		X	
Module, Coil Pack	12617924		X	
MOUNT FRONT ENGINE W/ BOLT PATTERN FOR COIL PACK	OHT3F-026-1		X	

TABLE A2.2 Parts to be Replaced As Needed

Part Description	Part Number	Critical	Non-Critical
MOUNT, REAR ENGINE HOUSING W/AIR STARTER, MUFFLER & SHIM PACK	OHT3F-025-1		X
ASSEMBLY INCLUDES:			
STARTER, AIR	3F025-03		X
MUFFLER, STARTER, AIR	3F025-04		X
SHIM PACK, STARTER, AIR	3F025-05		X
MUFFLER, STARTER, AIR	3F025-04		X
Nut, Throttle Body Fuel Rail Retainer	3530297		X
Nut, Throttle body Retainer	3530297		X
OIL FILTER HOUSING ASSEMBLY, NO BYPASS, IMPREGNATED	OHT3G-080-1		X
OUTLET, COOLANT	OHT3F-034-1		X
PAN, IHF TEST, NICKEL PLATED	OHT3F-073-1		X
PCM, SPECIAL	OHT3F-021-1	X	
PCV, DUMMY	OHT3F-002-1		X
Pin, Cylinder Head Locating	25536320		X
Pin, Front Cover Lower	25536323		X
Pin, Front Cover Upper	25536323		X
PLATE, EGR BLOCKOFF	OHT3F-024-1		X
PLATE, FRONT, EXHAUST MANIFOLD	OHT3F-006-1		X
PLATE, REAR, EXHAUST MANIFOLD	OHT3F-005-1		X
PLATE, WATER PUMP HOUSING	OHT3F-031-1		X
Plug, Auto Hex, Socket, (Main Oil Gallery Block Off)	444777		X
PLUG, DIP STICK	OHT3F-065-1		X
PLUG, DRAIN, MODIFIED	OHT3F-063-1		X
Pump, Oil, Gearoter Set	24505433		X
Rail, Fuel Injector	12587077		X
REAMER, DIP STICK AND DIP STICK HOLE PLUG	OHT3F-071-1		X
Regulator, Fuel Pressure, on Rail	89017530 or 89060416		X
Retainer, Counter Balance, Timing Chain Oiler	24500374		X
Retainer, Rocker arm (replace after 6 tests)	24502278		X
RUNNER, EXHAUST MANIFOLD	OHT3F-004-1		X
Screen, Oil pump (w/suction pipe)	24505569		X
Seal, Ignition Coil	1989579		X
Seal, oil pan drain plug (o ring)	3536966		X
Sensor, Camshaft Position	10456148		X
Sensor, Crankshaft Position	10456161		X
Sensor, MAF	19112543 or 19179715		X
SENSOR, MODIFIED COOLANT TEMPERATURE	OHT3F-056-1		X
Shaft Assembly, Counter Balance	24506557		X
Shield, Crankshaft Position Sensor	24506440 or 12591982		X
SHIM PACK, STARTER, AIR	3F025-05		X
SHIM, STEEL, 0.127 mm THICK, 10 PER PKG.	OHT3F-072-005		X
SHIM, STEEL, 0.254 mm THICK, 10 PER PKG.	OHT3F-072-010		X
SHIM, STEEL, 0.381 mm THICK, 10 PER PKG.	OHT3F-072-015		X
SHIM, STEEL, 0.508 mm THICK, 10 PER PKG.	OHT3F-072-020		X
SHIM, STEEL, 0.787 mm THICK, 10 PER PKG.	OHT3F-072-031		X
SLEEVE, VALVE STEM PROTECTORS (PKG. OF 100)	OHT3F-070-1		X
SPROCKET, CRANKSHAFT, SPECIAL 2 PC	OHT3F-036-1		X
STARTER, AIR	3F025-03		X
Stud, front cover (2)	24504717		X
Stud, front cover (2)	24504718		X
Support, throttle body	24504697		X
Throttle Body (2 Bolt Mass Air Flow Sensor)	24507235		X
TOOL, CAMSHAFT BUSHING INSTALLATION	OHT3F-019-2		X
TOOL, OIL PUMP PRIMER	OHT3F-038-1		X
Tube, throttle body to fuel pressure regulator	24505671		X

SEQ. III TEST HARDWARE CONTROL

A Template for Sequence III
Test Hardware Control
Procedures to be used by
Seq. III Surveillance Panel

Overview

- **Purpose of Hardware Control**
- **Planning**
- **Organization**
- **Control**
- **Feedback Information**
- **Industry Material Balance**
- **Summary**

Purpose of Hardware Control

- **Maintain and improve quality of hardware.**
- **Consistent quality of hardware between laboratories and batches.**
- **Availability.**
- **Accountability and traceability.**
- **Concurrent parts turnover within industry.**
- **Concurrent parts phase out.**
- **Ability to track and quantify industry severity and/or precision shifts as they relate to hardware.**

Planning

- Define parts by category and Supplier

- Parts Definitions (*Appendix 1*)

<u>Category</u>	<u>Supplier</u>
Critical Parts	CPD
Special Parts	CPD
Non-Production	CPD
Service parts	Test Developer / Sponsor
Test Developer / Sponsor print parts	Test Developer / Sponsor
Test Fuel	Central Fuel Supplier

- Parts usage and procurement procedures

- These procedures will be issued via information letter for inclusion in test procedure.

Control

- **Test Developer / Sponsor**
 - Select Central Parts Distributor (CPD) based on qualification criteria (**Appendix 2**)
 - Service Parts – Monitor availability of material and part number changes.
 - Test Developer / Sponsor print parts – Revise as required.
- **Surveillance Panel**
 - Receives Test developer / Sponsor report regarding any service parts issues.
 - Receives Central Parts Distributor report – Includes rejections, hardware availability, technical memos, batch changes and other hardware related issues.
 - CPD Review – Performed on a continual basis.
 - Receives Central Fuel Supplier report – Includes notification of any changes in fuel batches, after treatment rates and availability.
 - Information Letters – Issues information letter as required to modify procedure with regards to hardware.
- **Test Monitoring Center**
 - Receives hardware information page (Form 12) with serial number or batch code.
 - Analyzes and reports issues that correlate to specific hardware.
 - Audits laboratories for conformance to the test procedure.

Control

- Testing Laboratories
 - Purchase and consume parts as defined by procedure.
 - Provide Test Developer / Sponsor, Test Monitoring Center or Central Parts Distributor with rejection report immediately upon determination that material will be rejected.
- Central Parts Distributor
 - Purchase, inspect, document and distribute material per procedure (with modifications and/or specific instructions).
 - Confirms receipt of rejection as required based on input from laboratories.
 - Conducts surveys of vendors as required in order to guarantee availability.
 - Maintains critical parts database, including serial numbers or batch codes, CPD purchase order, receive date, laboratory purchase order, packing list number and inspection data as required.
 - Transfer of information as defined by accepted guidelines **(Technical and non-technical – Appendix 3)**
- Central Fuel Supplier
 - Maintain database – Including batch codes, blend date, laboratory purchase order, Certificate of Analysis and report to TMC the inspection of blend aging.
 - Keep accurate documentation of after treatment blend components.

Feedback information

- **Test Developer / Sponsor**
 - Updated service parts list furnished.
 - Advise Surveillance Panel of any parts issues.
- **Test Monitoring Center**
 - Reports on test performance versus hardware..
- **Central Parts Distributor**
 - Rejection reports summarized and reported.
 - Update service parts spreadsheet.
 - Maintain Timeline representing the introduction of batch material furnished.
 - Advise Surveillance Panel on any parts issues.
- **Central Fuel Supplier**
 - Notification to laboratories of new batch of fuel introduction.
 - Advise Surveillance Panel on specifics of blend adjustments and aging.

Industry Material Balance Plan

- CPD and Test Developer / Sponsor
 - Required to maintain a minimum six month industry inventory of critical parts.
 - Must rotate inventory by the FIFO (first in, first out) process.
 - Maintain an even balance of batches and quantities of material at the laboratories as most reasonably possible.
- Testing Laboratories
 - Must use inventory by the FIFO (first in, first out) process. (detailed Lab FIFO Procedures, Appendix 4)
 - Parts usage guidelines:

	First in First out	Maximum Single Order Quantity	Maximum in-house Inventory	Use / Rej. Required	Report Entry
Critical parts	Yes	60 days	6 months	Yes	Serial #
Non-prod. parts	Yes	N/A	6 months	Yes	N/A
Service parts	Yes	N/A	6 months	Yes	N/A

ASTM Sequence III Parts List

- See Appendix 5

Summary

- Maintain and improve quality of hardware.
- Consistent quality of hardware between laboratories and batches.
- Availability.
- Accountability and traceability.
- Concurrent parts turnover within industry.
- Concurrent parts phase out.
- Ability to track and quantify industry severity and/or precision shifts as they relate to hardware.

Parts Definitions (Appendix 1)

- **The Surveillance Panel will decide the classification of individual components based on the following definitions.**
- **Critical Parts:** Parts known to affect test severity. These parts will be identified with a serial number or a batch lot control number as supplied by the central parts distributor.
- **Service Parts:** Those remaining parts that are available through local test developer / sponsor dealer networks.
- **Non-Production Parts:** Parts no longer available except through the central parts distributor or by special order through the test developer / sponsor.
- **Special Test Parts:** Parts which do not meet all the definitions of critical parts, service parts or non-production parts, but must be obtained from the central parts distributor.

Equipment Distributor Qualifications (Appendix 2)

- The distributor must not be an oil test laboratory, a producer or user.
- The distributor shall have demonstrated previous knowledge of quality control concepts.
- In-house machine capability of the distributor is preferred, but not mandatory.
- In-house inspection capability is preferred, but not mandatory.
- The distributor will demonstrate active involvement in ASTM Panel (s) they provide parts for.
- The distributor shall have available warehousing and shipping capabilities. Split storage or warehousing capability is required to insure a constant supply of parts in the event of a natural disaster.
- The distributor must be able to demonstrate financial stability. This financial stability can be demonstrated by the ability of the distributor to stock a six month industry inventory of parts out-of-pocket.
- Distributor performance will be reviewed by the Surveillance Panel annually.
- The distributor will be chosen by the test developer based on the above guidelines.

CPD Guidelines (Appendix 3)

The CPD will act under the following guidelines with respect to information transfer:

- **Non Technical Information** – The CPD is authorized to provide a laboratory, on an as needed basis, with specific information pertaining to that laboratory's inventory / shipments and may provide overall industry inventories, both CPD in-house and shipped (i.e. batch lot codes, quantities, etc.).
- **Technical Information** – The CPD will direct any requests for technical information pertaining to Critical Parts, Non-Production Parts or CPD Special Test Parts to the test developer / sponsor. If released, test developer / sponsor will determine if the industry as a whole should receive the same information.

Lab FIFO Procedure (Appendix 4)

- **The critical hardware specified below must be consumed using this first in, first out (FIFO) procedure with regards to batch codes, pour codes and receive date.**
 - **Camshaft**
 - **Lifters**
 - **Main bearings, connecting rod bearings, camshafts bushings**
 - **Oil Filter**
 - **Oil Cooler**
 - **Pistons**
 - **Piston rings**
 - **Rocker arms**
 - **Valve springs**
 - **Valve stem seals (intake and exhaust)**

Lab FIFO Procedure (Appendix 4) con't

- **FIFO guidelines:**
 - **The order in which critical parts will be consumed is determined by the following (in order of importance):**
 - 1. Batch Code / Pour Code
 - 2. Date of Receipt at lab
 - During an engine build the lab must consume the earliest batch or pour code available.
 - If no batch information is available then critical hardware must be consumed by earliest receive date available.
 - **Recording of specified critical hardware date of receipt**
 - The laboratory will record the date (month, day, year) a critical part was received at the given lab.
 - **Ring and piston batches are engine run independent**
 - If you change to a new batch of rings or pistons for a specific engine run (Engine Run 1-6) you can not revert back to the prior batch for that specific engine run. (i.e. you may change to a new batch of rings or pistons at different intervals based on the specific engine run being built)
 - Example: If you change from a Batch Code 7 to a Batch Code 8 Piston on Engine Run 1, you can not consume a Batch Code 7 Piston on future Run 1 builds. You may still consume Batch Code 7 pistons on all other engine runs as long as it is the earliest available batch code.

Lab FIFO Procedure (Appendix 4) con't

- **Grace period-** Each lab will have a 90 day grace period which will begin with the first engine start (reference or candidate) of a new batch code, pour code or date of receipt where FIFO may not be possible during overlap of batch codes, pour codes and receive dates of prebuilt engines.
 - The purpose of the grace period is due to the fact that labs have engines built in advance and may have overlap with regards to batches, etc. between engines.
 - The 90 day grace period begins on the date the reference or candidate test is started.
 - After the introduction (reference or candidate test engine start) of a new batch code, pour code or date of receipt the lab will not be able to start a reference or candidate test on a prior batch code, pour code or date of receipt after 90 days.
- **TMC Reporting**
 - Lab must document and report any deviations from the FIFO procedure to the TMC. They must also provide a corrective action report to the TMC.
 - The TMC will report any deviations found during lab visits and the lab will have to provide a corrective action report to the TMC.
 - The TMC will report on a blind coded lab basis any deviations at Surv. Panel meetings.

ASTM Sequence III Parts List (Appendix 5)

SAMPLE ENTRIES

**Sequence III G
Form 12
Hardware Information**

Laboratory:		Oil Code:	
Test Stand No.:		Test No.:	
Laboratory Oil Code:			
Formulation / Stand Code:			

	Build Completion Date	20111025
	Block Serial Number	5E10025
	Crankshaft Serial Number	
FIFO	Camshaft Serial Number	J281107
FIFO	Camshaft Pour Code	PC 16
	Camshaft Phosphate Batch Code	111026 (YYMMDD)
	Cylinder Head Serial Number, Left	20H11021
	Cylinder Head Serial Number, Right	20H11022
FIFO	Bearing Kit Serial Number	9536
FIFO	Main Bearings (M) Batch Code	19
FIFO	Connecting Rod Bearings (CR) Batch Code	18
FIFO	Camshaft Bushing (CB) Batch Code	21
FIFO	Intake Valve Seals Batch Code	4
FIFO	Exhaust Valve Seals Batch Code	3
FIFO	Lifter Engine Set Number (ESET)	9130

FIFO	Oil Filter Batch Code	6
FIFO	Oil Cooler Batch Code (C/SP)	111026 (YYMMDD)
FIFO	Piston Batch (Code)	26
FIFO	Piston Size (Grade)	12 <u>or</u> 34 <u>or</u> 56
FIFO	Piston Ring Batch Code	8
FIFO	Oil Control Ring (OC) Batch Code	15
FIFO	Expander Ring (EXP) Batch Code	15
	Top Ring Gap, mils	25
	Bottom Ring Gap, mils	42
FIFO	Rocker Arm Batch Code	16
FIFO	Valve Springs Batch Code	10