

**Sequence III Surveillance Panel
Teleconference Minutes**
December 17, 2013
14:00 EST

1.0) Attendance - shown in ***Attachment 1***.

2.0) Approval of Minutes - the minutes from the November 19, 2013 meeting in San Antonio, TX were approved as issued.

3.0) Action Item Review

- 3.1) **Cylinder Head Task Force** - on going, part of today's meeting.
- 3.2) **Test Longevity Task Force** - on going, part of today's meeting.
- 3.3) **Stats group analysis of Lifter Data for Reference Tests** - no update
- 3.4) **Sequence III G Severity Task** - on going, part of today's meeting.
- 3.5) **Copper Levels in used oil samples** - no update
- 3.6) **Batch 10 approval procedure** - see item 5.1, below
- 3.7) **Inventory of critical test parts** - report distributed on 12/17/13 by Dave Glaenzer, shown in ***Attachment 2***. If all goes well, it is expected that there will be enough cylinder heads for life of test.

4.0) New Business

4.1) **Chrysler Mopar proposal and plan to supply engines and parts for Chrysler Oxidation and Deposit test. *Shown in Attachment 3.***

Jeff Betz of Chrysler Mopar reviewed the proposal. Option 1 uses a new block each rebuild; Option 2 uses a block for 5 rebuilds. It was noted that the totals shown on the slide 4 were based upon a 7-year timeframe (calculated using registered candidates and reference tests only). Chrysler Mopar is planning to produce the full life-of-test supply of parts by 3Q 2014. It was noted that it was most likely not possible to obtain additional parts in the future. Discussion then focused on just how large an initial inventory of parts would be needed to last the life-of-test. Dave Glaenzer suggested and Jeff Betz agreed that a task force form to address the engine supply issues. They will organize the task force and report back at future meetings.

Additional discussion centered on making sure that whichever option was selected going forward, that pre-matrix test data be generated using that option.

4.2) Update on work by Cylinder Head Task Force

Scott Stapp updated the panel. They are currently waiting for seats - expected to arrive 12/20, but not much is expected to happen until after New Year's. Sid Clark stated that the TF is planning to have a conference call in January.

Pat Lang asked, that once they are available, what would be the plan to introduce the heads? Charlie noted that he felt they shouldn't be introduced unless sufficient supply is available to allow labs to run continuously. A quick poll indicated that four of six labs are willing to reference on stellite-seated heads in January. Scott Stapp will update the panel as events progress.

4.3) Update on work by Test Longevity Task Force (size 7 and 8 pistons). **J. Bowden** Jason Bowden is scheduling teleconference call for December 19.

4.4) Update on work by Sequence IIIG Severity Task Force. **G. Szappanos** George Szappanos has a few volunteers for the TF. He plans on scheduling activities in the new year.

5.0) Old Business

5.1) Batch 10 approval procedure

The reference oil wasn't selected as part of the approval procedure. After brief discussion, a motion (Altman, Grundza) was made that for the Batch 10 approval runs, use the same reference oil that was run in that particular stand's (not lab) last reference test, and the test is to be run using old heads (no stellite seat inserts). The motion was approved without objections (TEI waived).

6.0) Next Meeting

5.1) TBD

7.0) Meeting Adjourned - the meeting concluded at 3:20 p.m.

ATTACHMENT 1 TELECONFERENCE

ASTM Sequence III Surveillance Panel (20 Voting members)

date: 12/17/13

Name/Address	Phone/Fax/Email	12 Present	Signature
Ed Altman Afton Chemical Corporation 500 Spring Street Richmond, VA 23219 USA	804-788-5279 804-788-6358 ed.altman@aftonchemical.com	Voting Member	Present <input checked="" type="checkbox"/>
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ASTM Sequence III Surveillance Panel (20 Voting members)

date:

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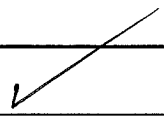



ASTM Sequence III Surveillance Panel (20 Voting members)


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ASTM Sequence III Surveillance Panel (20 Voting members)


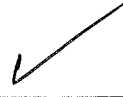
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Addison Schweitzer Intertek AR		Non-Voting Member	Present _____

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date:

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 Christian Porter Afton
 Sid Clark Afton
 Jeff Betz Chrysler
 Kurt Matson

Sequence IIIF / IIIG

Inventory of Key Test Components

Work underway to extend engine blocks via additional piston sizes. Work underway to rework cylinder heads. This will allow for availability of test through 2016.

It is anticipated testing will diminish after 2013 as new tests become available.

Estimates

2014	500 tests
2015	400 tests
2016	300 tests

Sequence IIIF / IIIIG

Inventory of Key Test Components (cont.)

- **12593374 Connecting Rods**

- Chevrolet Performance 6,784 pieces
- Labs 565 pieces
- Total 7,349 pieces (1225 runs)
Based on 6 pieces per run

Labs have saved used rods should re-work become necessary

- **24502168 Crankshaft**

- Chevrolet Performance 139 pieces
- Labs 33 pieces
- Total 172 pieces (1032 runs)
Based on 6 runs per crankshaft

May need to look at extending use beyond 6 runs per unit

Sequence IIIF / IIIIG

Inventory of Key Test Components (cont.)

- **24502286 Cylinder Case (Block)**
 - Chevrolet Performance 86 pieces
 - Labs 35 pieces
 - Total 121 pieces (726 runs)
Based on 6 runs per block

Labs have been saving blocks after 6th run.

Work is underway to qualify size 7 & 8 pistons.

Will extend number of runs beyond 1250.

Sequence IIIF / IIIIG

Inventory of Key Test Components (cont.)

- **24502260B Cylinder Head**
 - Chevrolet Performance 810 pieces
 - Labs 381 pieces
 - Total 1,191 pieces

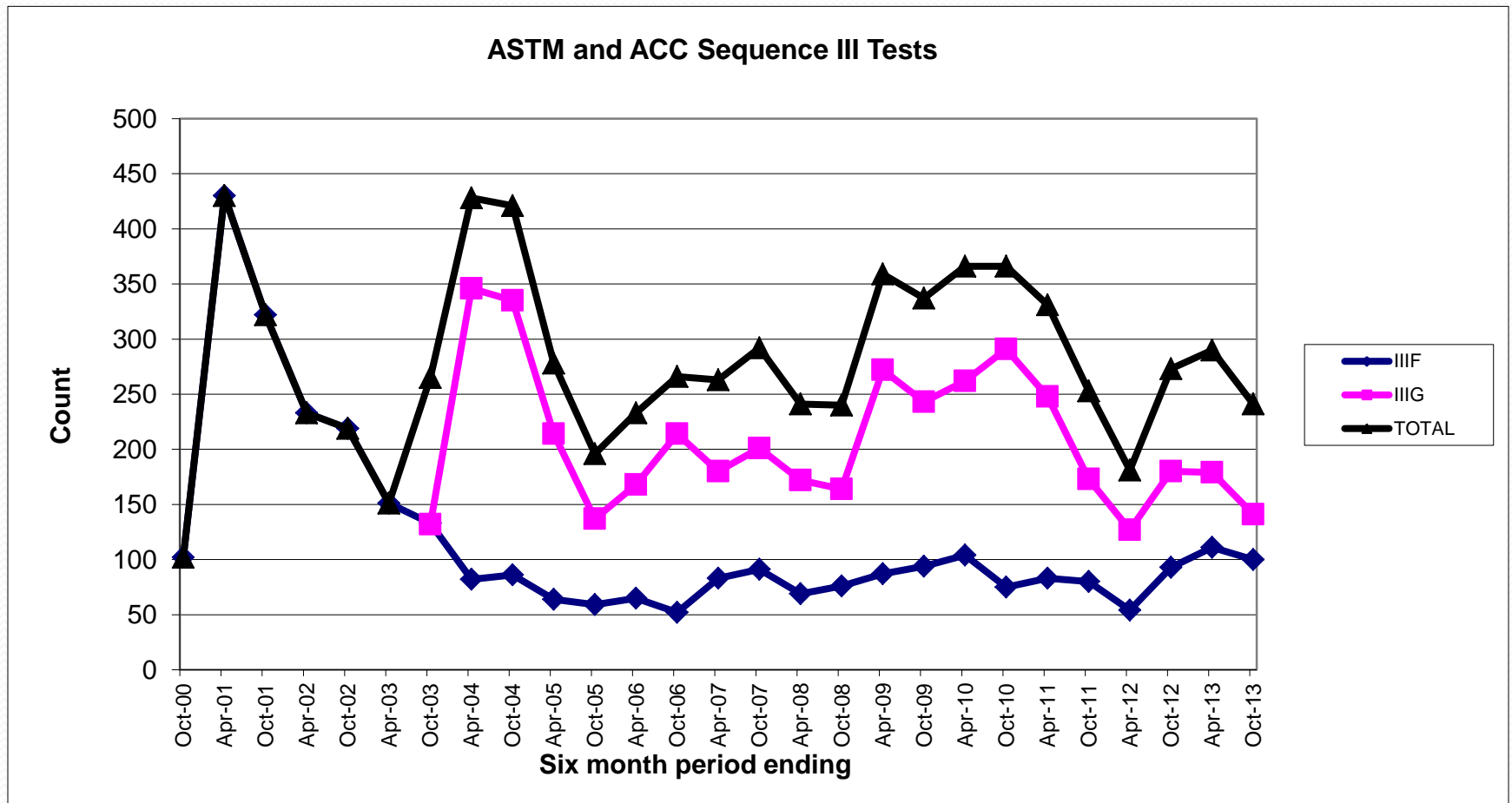
All 810 heads at Chevrolet Performance will have Stellite intake and exhaust seats installed (24502260S)

Work underway to define method of reusing these heads for multiple (two or greater) runs

Chevrolet Performance has 129 rejected "green" heads that may be salvageable with decking and Stellite seats

Will investigate refurbishing used heads if needed

Sequence IIIF / IIIG Activity



ATTACHMENT 3

Chrysler Oxidation and Deposit Test Parts and Testing Definition

- Each 100 Hour Test will:
 - start with a New Finished Components from our production engine plant. Engine, Shortblock, and Block will be finished and new
 - need re-honed to specific size for either scenario
 - start with New Assembled Cylinder Heads with valves installed at our production engine plant.
 - Head will be certified and leak tested
 - New head for each 100 hour test
 - have file fit piston rings set to the required gap by the test facility
 - have the following Mandatory Replacement Parts for each test:
 - Liquid Sealant
 - Head Bolts
 - Rod Bolts
 - Head Gaskets
 - Hydraulic Tensioners
 - Timing Kit

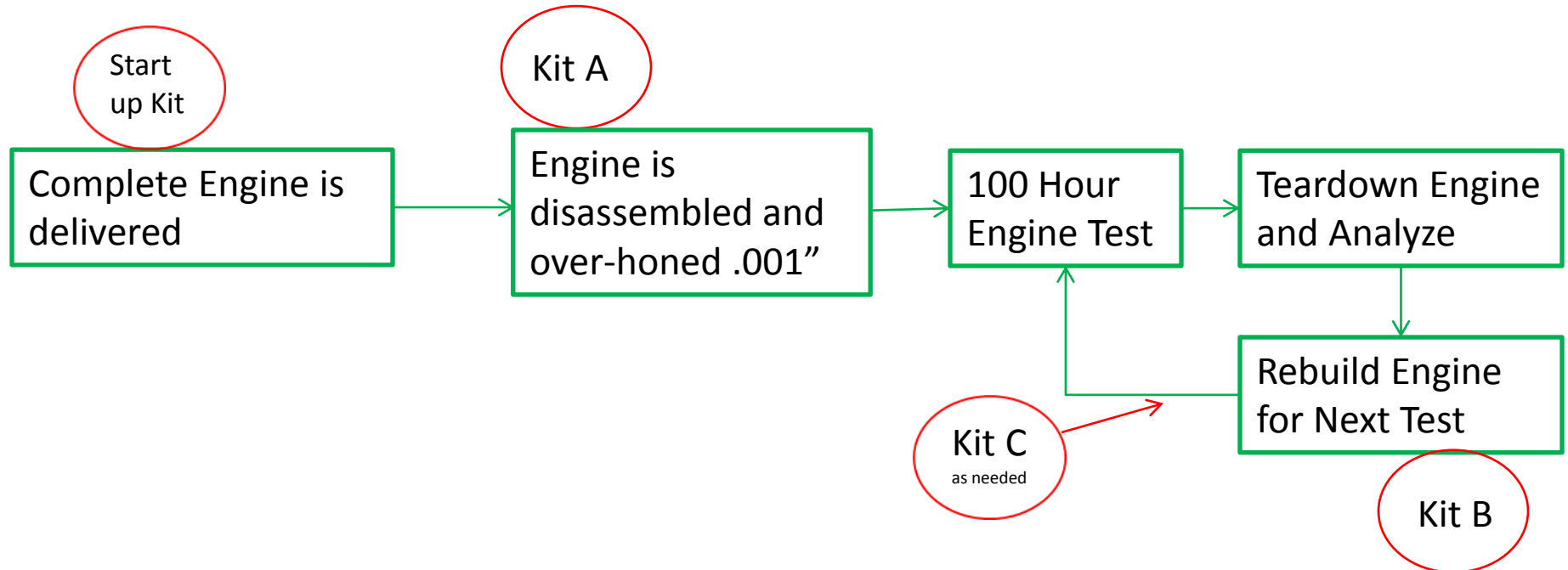
- First Test at each facility begins with a complete Engine Assembly
 - Includes Dyno Harness, PCM , Manual Flywheel, Fixed Timing Phasers and “Kit A”
- Engine is dis-assembled and custom built with correct ring gaps and new Cylinder Hone. New parts added from Kit A.
- 100 Hour Test is performed and completed
- Engine is torn down and analyzed
- Rebuild is performed with either
 - New Shortblock – Option 1
 - Re-honing the previous shortblock and adding new components.

Component Build Flowchart

3702 Total Tests



CHRYSLER GROUP LLC



REBUILD OPTIONS

Option 1 New Block each build

Rebuild with New Shortblock each time
 New Shortblock will be overhoned .001"

30 Completes = 30 Test Blocks, 180 cranks
 3672 Blocks = 3672 Tests
 3702 Pairs of Heads (New for each Head)
 587 Crankshafts = 3522 Tests

Option 2 Hone block 6 times up to .006" o/s

Rebuild with .001" overhone
 Rebuild same block 5 times
 Last build will be .006" o/s

30 Completes = 180 Test Blocks, 180 cranks
 587 Blocks = 3522 Tests
 3702 Pairs of Heads (New for each Test)
 587 Crankshafts = 3522 Tests

- **Startup Kit**
 - Complete Engine Assembly
 - Manual Flywheel and Engine Mounting Hardware
 - Fixed Timing Phasers
 - PCM and Dyno Wiring Harness

- **Kit A**
 - Oversized Pistons (not supplied by Chrysler)
 - Set of o/s Piston Rings (not supplied by Chrysler)
 - Liquid Sealer
 - Head Gaskets
 - Rod Bolts
 - Head Bolts
 - Damper Bolt

- **Kit B**
 - Everything in Kit A
 - New Production Block (Option 1 only)
 - Incremental O/S Pistons (Option 2 only)
 - Stud Kit for Heads and Main Caps (Option 2 only)
 - New Cylinder Heads
 - Hydraulic Tensioners
 - Timing Kit

- **Kit C**
 - Sensors
 - Gaskets
 - Misc Wear Items