

**Sequence III Surveillance Panel Meeting
San Antonio, TX**

November 15, 2022

Agenda

The agenda is included as (Attachment 1).

1.0) Attendance

The attendance sheet is included as (Attachment 2).

2.0) Chairman Comments

None

3.0) Approval of Minutes

3.1) Minutes Approved from June 15, 2022 meeting.

4.0) IIIH Action Items

4.1) **IIIH hardware Update** – Jason Bowden provided the OHT Seq. IIIH Inventory Status Report (Attachment 3)

There are approximately 1.9 years remaining of Batch Code 5 Pistons.
There are approximately 3.4 years remaining of Batch Code 8 Rings.

Additional pistons are being acquired by the supplier to provide a minimum of 10 years of piston supply, with an expected final receipt date in the first quarter of 2023. Moving forward, the limiting factor for future IIIH test availability, with regards to critical engine components, will be the engine assemblies themselves. There are significant piston and ring inventory available for current and future testing.

There was no engine supplier update. Robert Stockwell estimated there may be 2,000 engines remaining.

Action Item 1: The Surveillance Panel chair will confirm the remaining engine inventory status with the engine supplier.

Action Item 2: Surveillance Panel will review what to do with used engines currently being stored at the laboratories. Mike Lochte will work with the lab task force.

4.2) Fuel Update – No Fuel Supplier Update was provided.

4.3) Control Chart Status Update – Rich Grundza (Attachment 3)
Rich Grundza provided the IIIH control Data.

WPD is in control, but has varied over the years.

APV is in control, but trending mild and close to alarm.

PVIS appears to be mild and in alarm. It has been in and out of alarm for a long time, but a mild trend appears to have started around early summer of 2019. It does not appear that the current piston batch is playing a role, as the PVIS has fluctuated throughout the life of the current piston batch.

Action Item 3: TMC and statisticians will review LTMS to determine if hardware changes, fuel batch introduction or new reference oil blends could be having an impact on the severity shift. Also look at reevaluating the standard deviations, reviewing the impact of log transforms, looking at oil consumption and blowby.

The panel discussed ensuring the CUSUM plots are scaled to 45° to ensure uniform comparisons.

Bob Campbell recommended that we review these shifts as soon as they are detected, so that we can take appropriate action in a timely manner.

4.3) D02.B01 Update-Stockwell

Robert will provide the industry update to B.

4.4) Research Report Update

The research report is in process.

4.6) Other Topics

Motion 1: Ben Maddock / Amol Savant: Modify section 10.4.3.2 to allow the use of type K thermocouples in addition to type E and J. Motion passed unanimously. (Attachment 4)

5.0) Old Business

Amol Savant recommended reviewing the 434-3 reference oil targets, as the oil breaks hard “hockey stick” effect and could be having a large impact on PVIS.

6.0) New Business

Paul Rubus requested the option to use a different coolant pump. The panel will gather details of the current pump specifications and proceed with an email motion to change the procedure to use a pump that is comparable to the current pump shown in the procedure.

Action Item 4: Rich Grundza and Paul Rubas will draft alternate coolant pump wording for an email motion.

7.0) Review / Update Scope and Objectives

Scope: Include IIIHA, IIIHB, IIIH70 and IIIH60.

Objectives: Monitor critical test hardware inventory. Review standard deviations of IIIH reference oils. Timely LTMS monitoring of introductions of new reference oils, fuel and critical hardware. (Attachment 5)

8.0) Next Meeting - TBD

Sequence III Surveillance Panel Meeting
Intertek - Port San Antonio facility, 391 Industrial Park Road
Tuesday November 15, 2022 1:00 – 3:00 CDT

Agenda

1.0) Attendance

2.0) Chairman Comments

3.0) Approval of minutes

3.1) Minutes from 6/15/2022 Meeting

4.0) IIIH Action Items

4.1) IIIH Hardware Update – Bowden
BC8 update - all

4.2) Fuel Update - Haltermann

4.3) Control Chart Status Update – Grundza
Some parameters have been off target for a while – discussion on appropriate actions

4.4) D02.B01 Update – Stockwell

4.5) Research Report update - Clark/Stockwell

4.6) Other Topics

5.0) Old Business

6.0) New Business

6.1) Alternate fuel supplier request

7.0) Review / Update Scope and Objectives

8.0) Next Meeting
TBD

9.0) Meeting Adjourned

ASTM Sequence III Surveillance Panel (19 Voting members)

date: 2022 11 15

Name/Address	Phone/Fax/Email	Signature:	
Jorge Agudelo	jorge.agudelo@bp.com	<i>Robert Stockwell</i>	Voting Member Present <input type="checkbox"/>
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PAUL	EXXON MOBIL		

MOTION TO ALLOW
 TYPE R THERMOGRAPHERS
 BEIN
 SECONDS
 AMOL SAVANT
 UNANIMOUS
 VOICE
 VOTE

ASTM Sequence III Surveillance Panel (19 Voting members)

date:

Name/Address	Phone/Fax/Email	Signature:	
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Yue Zhang	Yue.Zhang@Lubrizol.com	N-V Member	Present _____

Updated 20170905, 20180105 added Domingo, 20180122 removed Terry Bates, 20180130 removed Bob Olree, 20180212 removed Rutherford, 20180511 removed Heimrich, Johnson, 20180724 Removed Lindholm, Farnsworth, 20180820 removed Andrews, 20181217 added Birnbaumer, King, changed Willis email, 20190102 removed Greg Shank, 20190122 updated Taylor email, added Zhang, 20190423 added VanScoyoc, 20190425 update Castanien email, 20190426 added Anderson, 20190604 removed Thom Smith, 20190722 remove Jim Linden add Angela as Total rep, removed Phil Rabbat email no longer works there, Jeff Betz to IMTS, 20191004 Deleted Ian & Bill Anderson, 20200106 deleted Salgueiro, added VanScoyoc, 20200430 delete Castanien, 20200512 Added Montufar, Deegan, Wingert, 20201209 Lukhard replaced Altman, delete BASF & Dingwell & Stap & Smith, 20210115 Deleted Romano and Jessica LZ, fix email Haiying, Rich, delete Ankit, add William, 20211117 Afton replace Luckhard & Smith with Maddock, 20220710 Jonathan replaced Ashley, 20220901 Removed Dvorak, replaced Tumari with Hairston, 20221110 deleted Matasic, O'Malley, Betz, Dvorak, Weber, Jing add Wolfe, Gabrel, 20221118 remove Doyle & Frank add Todd,

ROB ZDRADOWSKI FORD ✓
 AL LOPEZ IAR ✓
 JOE AFTON ✓
 ANDREW AFTON ✓
 TONY CATANESE LUBRIZOL ✓

Seq. IIIH Inventory Status Report As of October 31, 2022

Seq. III Surveillance Panel November 15, 2022 & PCEOCP December 06, 2022

1. Seq. IIIH Piston Inventory Life Estimates (Based on Industry Wide Consumption Rates)

Remaining Piston Inventory Life (Based on 2 Year Average Industry Consumption Rate)	
Seq. IIIH Pistons (Batch Code 5, Current Batch)	1.69 Years
Seq. IIIH Pistons (Batch Code 6)	5.24 Years
Total Current Piston Inventory Life	6.93 Years

Remaining Piston Inventory Life (Based on 1 Year Industry Consumption Rate)	
Seq. IIIH Pistons (Batch Code 5, Current Batch)	1.91 Years
Seq. IIIH Pistons (Batch Code 6)	5.94 Years
Total Current Piston Inventory Life	7.85 Years

Comments:

- Industry Piston Consumption Rates have decreased 21.16% over the past two years.
- At the time of this estimate, the supplier anticipates piston consumption rates to remain the same or decrease.
- Based on the engine inventory estimate provided to the Seq. III Surveillance Panel on November 17, 2021, the supplier began the process of acquiring enough pistons to support the remaining balance of Seq. IIIH engines. Once all pistons are acquired, the CPD estimates a ~10 year supply.

2. Seq. IIIH Ring Inventory Life Estimates (Based on Industry Wide Consumption Rates)

Remaining Ring Inventory Life (Based on 2 Year Average Consumption Rate)	
Seq. IIIH Rings (Batch Code 8, Current Batch)	3.06 Years

Remaining Camshaft Inventory Life (Based on 1 Year Consumption Rate)	
Seq. IIIH Rings (Batch Code 8, Current Batch)	3.47 Years

Comments:

- Industry Piston Consumption Rates have decreased 21.16% over the past two years.
- At the time of this estimate, the supplier anticipates ring consumption rates to remain the same or decrease.



Thermocouple Type in Seq IIIH

November 2022

Passion for Solutions™

Thermocouple Use in Sequence IIIH

10.4.3.2 *Temperature Measurements*—Use only Type E chromel-constantan or Type J iron-constantan thermocouples with an accuracy of 60.5 °C over a range of 0 °C to 200 °C. Refer to **Table 4** for a list of controlled and uncontrolled temperatures.

The procedure calls for Type E or J thermocouple. Type K and Type J thermocouples have the same accuracy while the Type K has a greater temperature range.

Common Thermocouple Temperature Ranges

Calibration	Temperature Range	Standard Limits Of Error	Special Limits Of Error
J	0° to 750°C (32° to 1382°F)	Greater of 2.2°C or 0.75%	Greater of 1.1°C or 0.4%
K	-200° to 1250°C (-328° to 2282°F)	Greater of 2.2°C or 0.75%	Greater of 1.1°C or 0.4%
E	-200° to 900°C (-328° to 1652°F)	Greater of 1.7°C or 0.5%	Greater of 1.0°C or 0.4%
T	-250° to 350°C (-418° to 662°F)	Greater of 1.0°C or 0.75%	Greater of 0.5°C or 0.4%

Motion

- **Modify Section 10.4.3.2 to allow the use of Type K thermocouples, in addition to Type E and Type J.**

ASTM SEQUENCE III SURVEILLANCE PANELSCOPE & OBJECTIVESSCOPE

The Sequence III Surveillance Panel is responsible for the surveillance and continual improvement of the Sequence IIIH test documented in ASTM Standard D8111 as updated by the Information Letter System. Data on test precision will be solicited and evaluated at least every six (6) months for Sequence III test procedures. The Surveillance Panel is to provide continual improvement of rating techniques, test operation, test monitoring and test validation through communication with the Test Sponsor, ASTM Test Monitoring Center, the Central Parts Distributor, Fuel Supplier, ASTM B0.01 Passenger Car Engine Oil Classification Panel, ASTM Committee B0.01, ACC Monitoring Agency and ASTM Deposit/Distress Workshop. Actions to improve the process will be recommended when appropriate based on input to the Surveillance Panel from one or more of the previously stated groups. This process will provide the best possible Sequence III Type Test Procedure for evaluating engine oil performance with respect to its ability to prevent oil thickening, varnish formation and engine deposits.

OBJECTIVESTARGET DATE

Monitor critical IIIH test hardware inventory	Ongoing
Review standard deviations of IIIH reference oils	May 1, 2023
Monitoring timely introduction of new critical hardware batches	Ongoing

Robert Stockwell, Chairman
Sequence III Surveillance Panel

Updated 11/15/22

During the meeting on 20221115 it was pointed out that the Scope needs to include the IIIHA, IIIHB, IIIH70 and IIIH60 so this needs additional updating.