

Sequence III Surveillance Panel Conference Call
Meeting Minutes
November 20, 2015 14:00 EST

1.0) Attendance

1.1) Any change to voting member status?

No membership changes were announced. The attendance is shown in Attachment 1.

2.0) Chairman's Comments

Chairman Glaenzer noted that the IIIH Alternate Measures of Oxidation agenda item had been dropped as new information had just recently come to light which had not yet been review by the stats group or the IIIH task force.

3.0) Approval of minutes

3.1) 10/29/2015, Southfield, MI

The minutes were approved (Altman, Bowden) without objection.

4.0) New Business

4.1) Cylinder Head Re-Use Task Force. Addison Schweitzer (see Attachment 2)

After Addison's review of the presentation, the panel entertained the motion (Schweitzer, Matthews) contained in the task force report:

IAR recommends to the Sequence III Surveillance Panel that the maximum valve recession in the IIIF/G EAM be increased to 0.010" and factory valve seat width specifications (Intake Valve Seat Width = 0.060" – 0.080", Exhaust Valve Seat Width = 0.090" – 0.110") to enable additional runs on cylinder heads (PN: 24500260S). These heads would be considered by the Sequence III Surveillance Panel for non-reference testing provided that the laboratory has conducted a successful reference test on an engine containing cylinder heads with 0.005" – 0.010" maximum valve recession and meeting factory valve seat width specifications (Intake Valve Seat Width = 0.060" – 0.080", Exhaust Valve Seat Width = 0.090" – 0.110").

After brief discussion, the motion passed 10-0-1.

4.2) IIIF/IIIG/IIIH piston ring chamfer specifications/tolerances. Jason Bowden

Jason reported on two action items from a previous meeting:

1. Action Item – OH Technologies will inspect their inventory of Sequence IIIF/G/H piston rings to insure that the ring chamfers are within the current specifications/tolerances.

OHT confirmed that, based on samples and discussion with current manufacturers, rings supplied to date meet the print tolerances of test sponsor approved drawings.

2. Action Item – OH Technologies will review the ring chamfer specifications/tolerances with their suppliers of the Sequence IIIF/G/H piston rings to see if the specifications/tolerances can be tightened.

The purpose of these tolerances is to ensure a machined edge. Due to the composition of the ring used in the Seq. IIIF/G package, they are susceptible to small chips on the edge during gapping. The industry recognized this and developed industry control standards to ensure a machined edge. Seq. IIIF/G tolerances cannot be tightened without implementing changes to standards in place for the size of allowable exposed chips. IIIF/G rings tolerances are not the same as IIIH ring tolerances, as each test type has a unique ring package, that requires specific tolerances.

4.3) IIIH build-up/operational data analysis. Kevin O'Malley

Kevin quickly summarized the findings. The full report is included in the text below:

The Data Analysis Task Force met on November 4th, 5th, and 6th to conduct an extensive review of the data associated with the 28 valid matrix tests. These data included the raw controlled and uncontrolled operational parameters as well as all measurements captured in the LTMS file plus the additional IRPH measurements taken at SwRI. These data were investigated to gain insight and learnings into how the tests were run with a focus on finding a root cause for the performance of 106788-IIIH, 106789A-IIIH, and 107872-IIIH (of which 106788-IIIH was of primary focus). The following are conclusions of our review:

1. Corrections are needed in the Ltms file including:
 - a. Updating the validity codes of the 28 valid matrix tests
 - b. Standardizing the values within the BLOCKSN, RINGCODE, ORINGBAT, ERINGBAT, CYLNSNLT, CYLHSNRT, LABBLOCK, and PISBAT columns
 - c. It was suggested that piston ring gap data be added
 - d. IRPH was measured at SwRI. If IRPH is to be used as an oxidation metric, then it needs to be added to the LTMS file
 - e. MRV results of 106780-IIIH and 106781-IIIH need to be corrected
 - f. The IRO3EOT of 106781-IIIH needs to be corrected
2. Anomalies were identified in the data reviewed by the group, but could not be linked to test performance
3. A motion to exclude Lab D data from the matrix analysis did not pass
4. The industry statistician's group was asked to investigate and compare other parameters to evaluate oxidation as a replacement for PVIS. This has been completed
5. It was recommended that the surveillance panel form a group to investigate other possible causes to explain lab/stand differences observed in the matrix results

Chairman Glaenzer will consider forming another task force as needed once more info is available.

The meeting adjourned at 2:33 p.m.

ATTACHMENT 1

Name/Address	Phone/Fax/Email		Signature
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Tracey King Haltermann Solutions MI USA	947-517-4107 tking@Jhaltermann.com	Voting Member	Present <input type="checkbox"/>
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ASTM Sequence III Surveillance Panel (22 Voting members)

date:

Name/Address	Phone/Fax/Email		Signature
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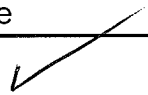



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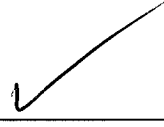
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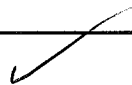



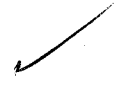
ASTM Sequence III Surveillance Panel (22 Voting members)

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ATTACHMENT 2

Sequence IIF/G Cylinder Head Re-use Task Force

➤➤ Additional Runs on
Part Number: 24502260S



Overview

- ▶ Original expectation was to obtain multiple runs on the Stellite seat cylinder heads from GM Performance (Part Number: 24502260S).
- ▶ IIF/G critical hardware inventory presented by the Seq III SP October 2015 showed a head shortage in the industry through the end the life of the Seq III.
 - Option 1: Increase the valve recession from the current max specification of 0.005" → 0.010" and allow labs to continue lapping valve seats.
 - Option 2: Third party machine shop to use grinding stones (30°, 45°, and 60°) on used inventory.
 - Option 3: Third party machine shop to remove/replace the current valve seats with Stellite material.

Proposal for Cylinder Head Re-Use

- ▶ Option 1: Increase the valve recession from the current max specification of 0.005" → 0.010" and allow labs to continue lapping valve seats.
- ▶ Additional uses on the cylinder heads contain the following revisions to the IIF/G EAM.
 - Increasing the maximum valve recession from 0.005" → 0.010"
 - Factory valve seat width specifications
 - Intake Valve Seat Width = 0.060" – 0.080"
 - Exhaust Valve Seat Width = 0.090" – 0.110"

			Description of Operation	
			<p>When reusing cylinder head part number 240502260S, Clean cylinder head by automated parts washer or ultrasound bath and spray with 50/50 solution of EF-411 and degreasing solvent. Remove excess solution using compressed air. Do not use sandpaper, scotchbrite pads or other abrasives to clean heads.</p> <p>Visually inspect seats for wear. Measure Valve recession using procedure in 5a, sheet 1. Reject any heads where valve recession exceeds 0.005" 0.010"</p> <p>Measure valve guide clearances at top and bottom of guides. Reject any heads which do not meet clearance of 0.0015 to 0.0032 inch.</p>	
			Specification	
REV	Date	Revision History	View	
			Initial Prep, reusing Head 24052260S	
Head Assembly		Sequence IIIG		Section
				5a
				Sheet
				2

			Description of Operation		
			<p>Lap valves using a water based valve grinding compound. Use Permatex Valve Grinding Compound, water mixed, item #80036.</p> <p>Thoroughly clean lapping compound from valves and seats using water and a lint free rag. Be sure all lapping compound is removed. After cleaning lapping compound, spray entire head with degreasing solvent. Spray with, with 50-50 mixture of degreasing solvent and EF411 then blow dry with compressed air.</p> <p>Apply bluing to each valve and install. Visually inspect for proper seating. The bluing ring should be a consistent width around the entire valve circumference and be positioned toward the middle of the face. If valves show proper seating appearance, repeat "Pre Test Measurement Procedure". If Valve seat wear does not exceed .005", heads are acceptable for re-use.</p>		
			Specification		
			View		
			Head Preparations (continued)		
REV	Date	Revision History			
Head Assembly		Sequence IIIG		Section	Sheet
				5a	4

If Valve seat wear does not exceed 0.010" and meets factory valve seat width specifications (Intake Valve Seat Width = 0.060" - 0.080", Exhaust Valve Seat Width = 0.090" - 0.110"), heads are acceptable for re-use.



Evaluation of Option 1 Summary

- ▶ First Run EOT Valve Seat Wear
 - Photos with indicated valve seat width wear
- ▶ Second Run EOT Valve Seat Wear
 - Photos with indicated valve seat width wear
- ▶ Second Run EOT Valve Seats After using Option 1
 - Photos
 - Valve Recession Data
 - Valve Seat Width Data

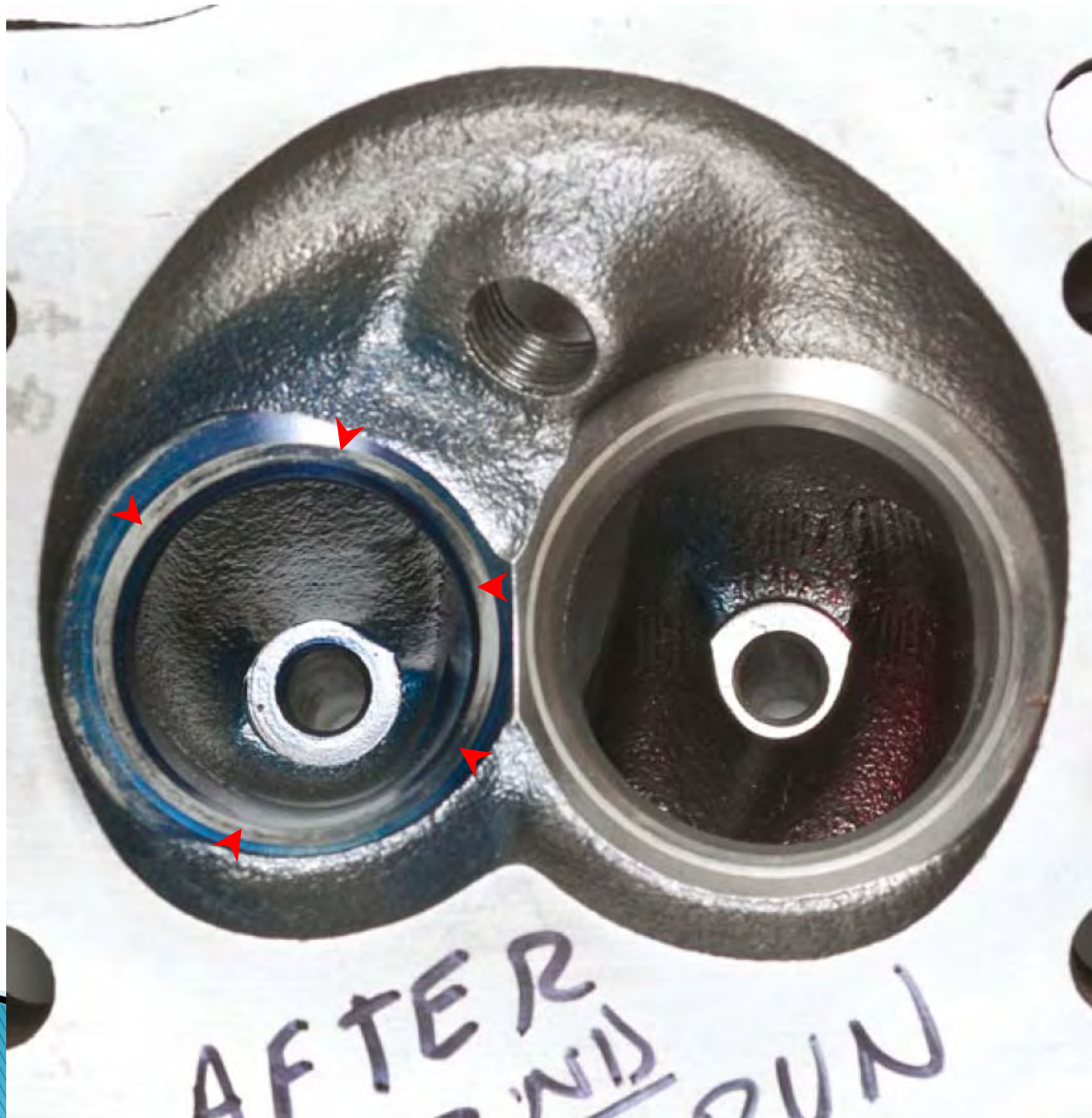


First Run EOT Valve Seat Wear





Second Run EOT Valve Seat Wear





Second Run EOT Valve Seats After Lapping (IAR)

Cylinder	1	3	5	2	4	6
New	0.299"	0.298"	0.298"	0.298"	0.297"	0.296"
2 nd Run (0.010" limit)	0.302"	0.302"	0.305"	0.304"	0.303"	0.303"
Valve Recession	0.003"	0.004"	0.007"	0.006"	0.006"	0.007"

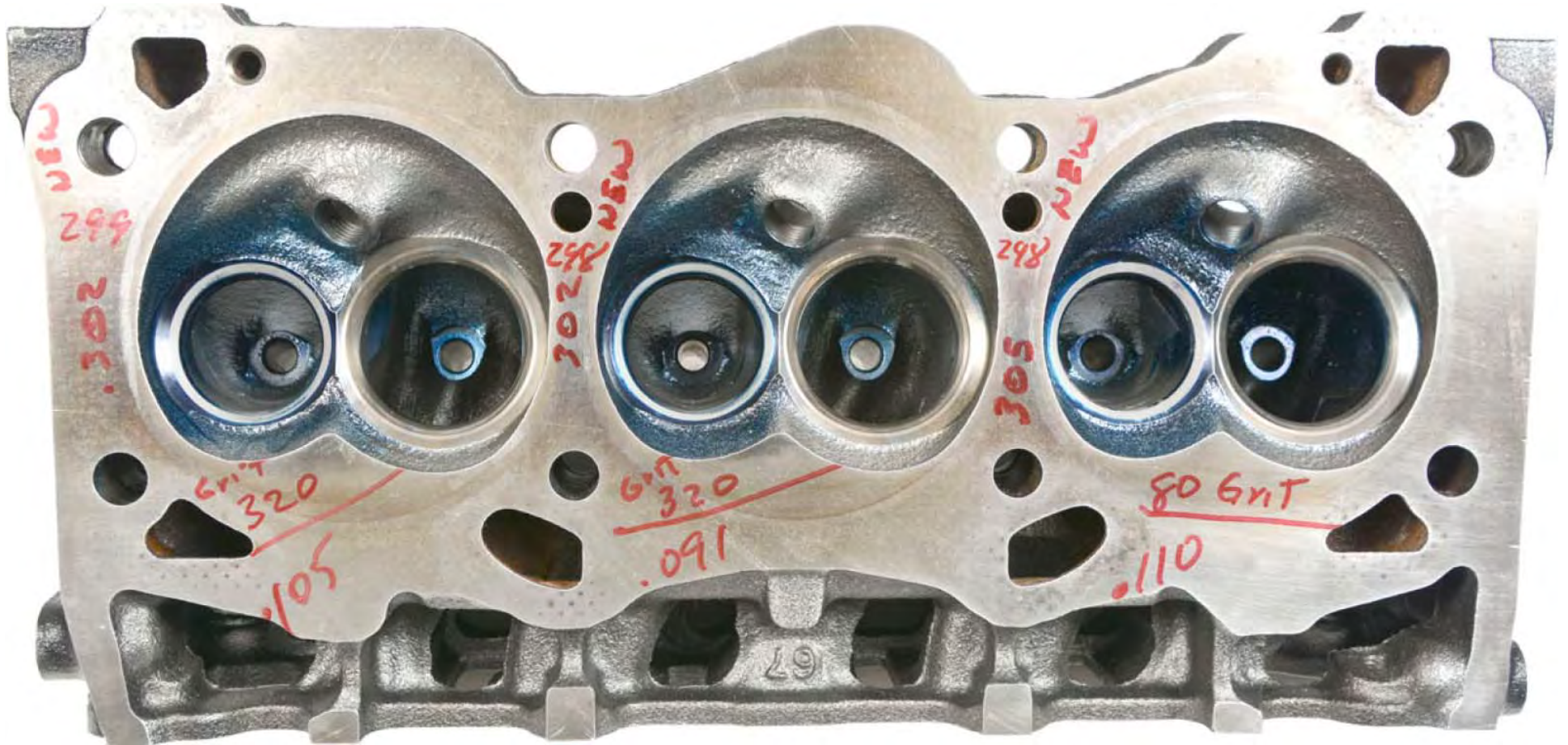
Cylinder	1	3	5	2	4	6
Valve Seat Width (Exh)	0.105"	0.091"	0.110"	0.106"	0.106"	0.107"

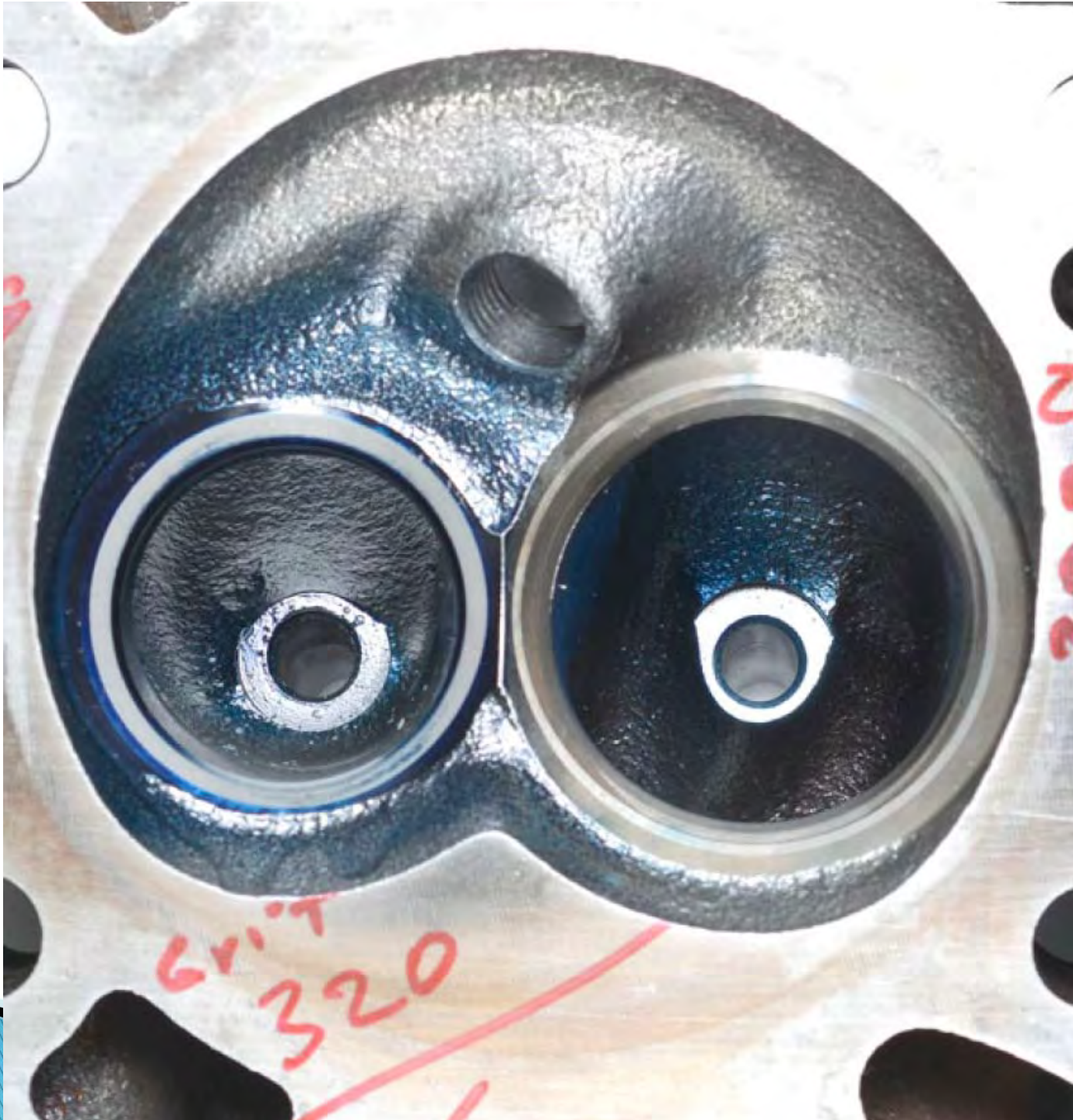
Specifications Used:

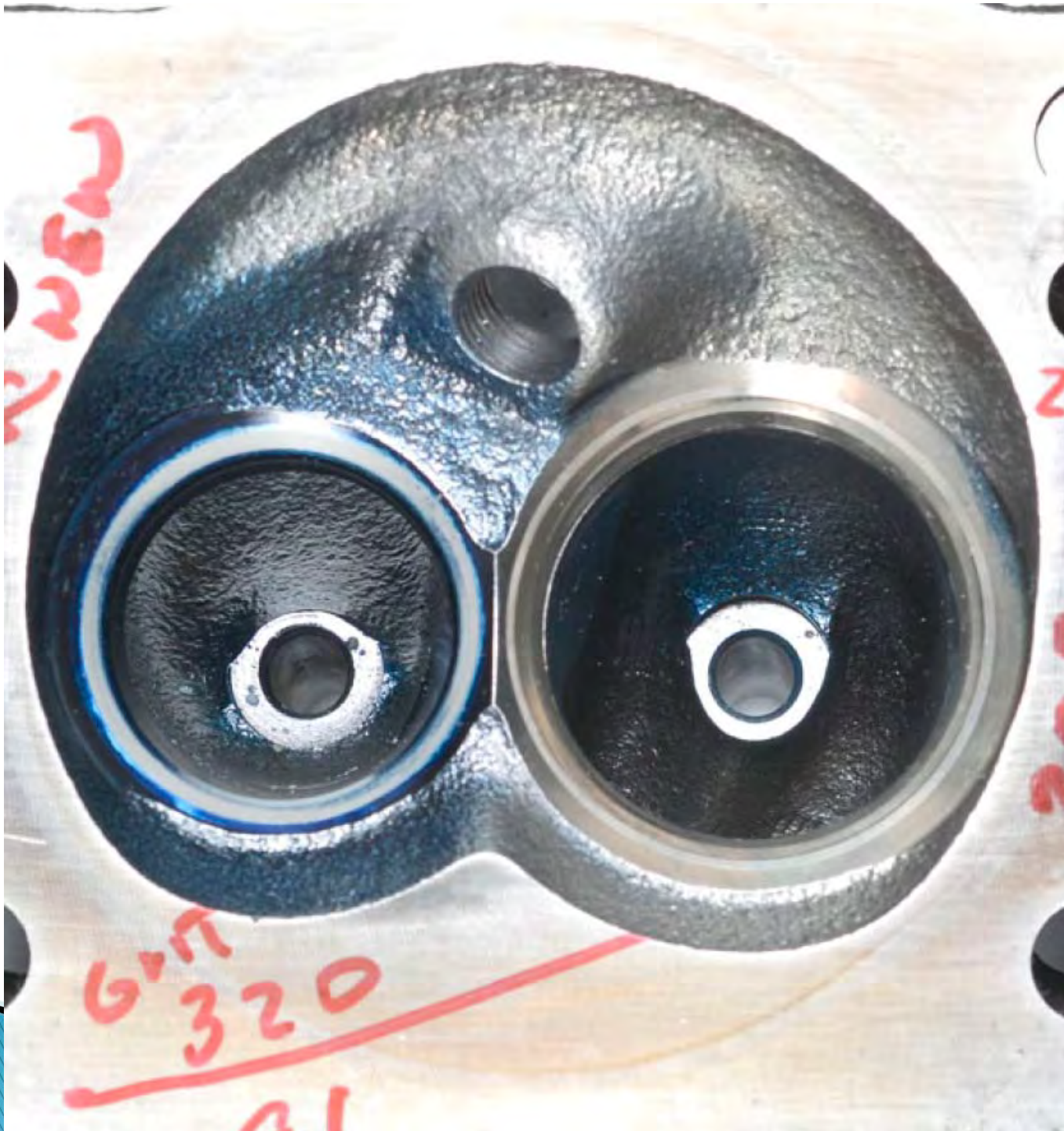
Maximum Valve Recession = 0.010"

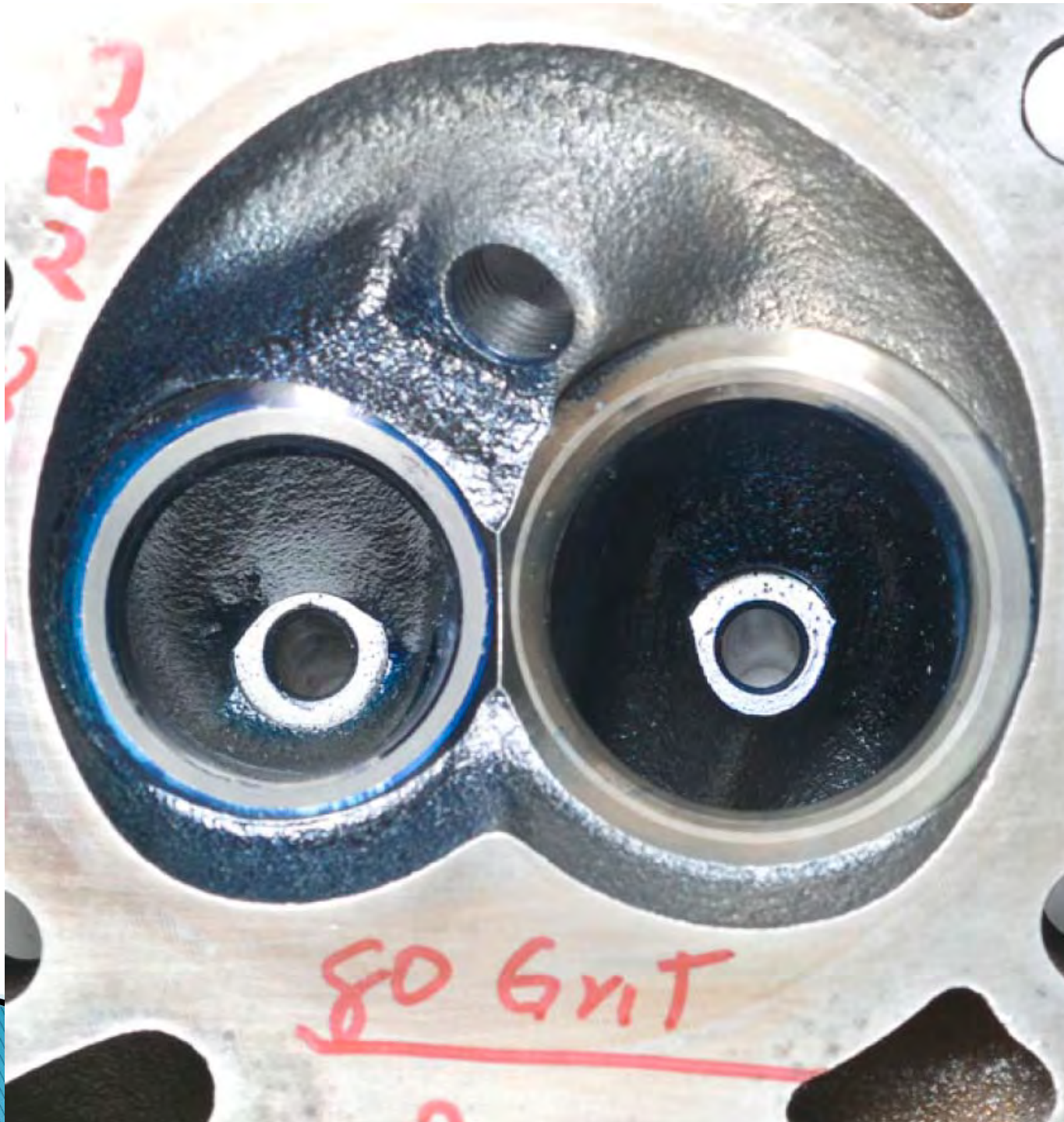
Intake Valve Seat Width = 0.060" - 0.080"

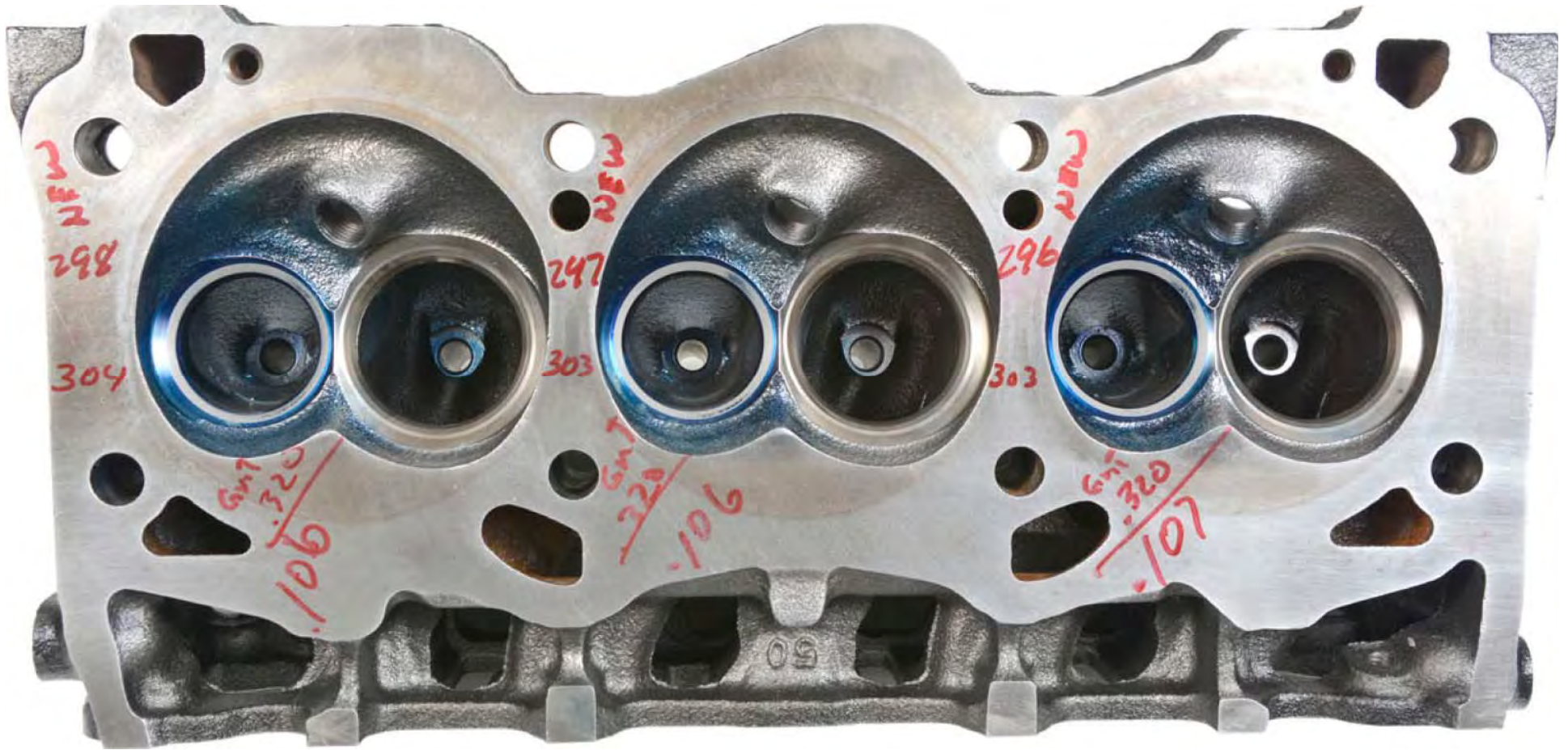
Exhaust Valve Seat Width = 0.090" - 0.110"

















Conclusions on Option 1

- ▶ Option 1: Increase the valve recession from the current max specification of 0.005" → 0.010" and allow labs to continue lapping valve seats.
 - ▶ 2nd run EOT cylinder heads (Part Number: 24502260S) valve seats were lapped with an increased maximum valve recession limit of 0.010" with good results.
 - ▶ Valve Seat Width's remained within factory service specifications.



Task Force Recommendation

▶ MOTION:

- The Sequence IIF/G Cylinder Head Re-use Task Force recommends to the Sequence III Surveillance Panel that the IIF/G EAM be modified to include an increased maximum valve recession of 0.010" and factory valve seat width specifications (Intake Valve Seat Width = 0.060" – 0.080", Exhaust Valve Seat Width = 0.090" – 0.110") to enable additional runs on cylinder heads (PN: 24500260S). These heads would be considered by the Sequence III Surveillance Panel for non-reference testing provided that the laboratory has conducted a successful reference test on an engine containing cylinder heads with 0.005" – 0.010" maximum valve recession and meeting factory valve seat width specifications (Intake Valve Seat Width = 0.060" – 0.080", Exhaust Valve Seat Width = 0.090" – 0.110").
 - *E-balloted Motion Passed 11/17/2015*

Motion to Seq. III SP

- ▶ MOTION:

- IAR recommends to the Sequence III Surveillance Panel that the maximum valve recession in the IIF/G EAM be increased to 0.010" and factory valve seat width specifications (Intake Valve Seat Width = 0.060" – 0.080", Exhaust Valve Seat Width = 0.090" – 0.110") to enable additional runs on cylinder heads (PN: 24500260S). These heads would be considered by the Sequence III Surveillance Panel for non-reference testing provided that the laboratory has conducted a successful reference test on an engine containing cylinder heads with 0.005" – 0.010" maximum valve recession and meeting factory valve seat width specifications (Intake Valve Seat Width = 0.060" – 0.080", Exhaust Valve Seat Width = 0.090" – 0.110").