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### **Sequence VI E**

The October 20, 2014 SP meeting resulted in some standard changes. The main item that is missing is the precision statement. Once the precision matrix is completed the SP will need to approve the test and forward for approval to the Pass Car Panel. I understand that the matrix has not been identified to date.

### **Sequence IV B**

The status of test development is the Test stand design is locked; Golden Stand concept is being used; Test hardware locked; development testing has been conducted to identify, optimize and lock the test hardware design; Test cycle (7 / 8 sec transient cycle) locked; development testing has been conducted to identify, optimize and lock the test cycle and operational conditions; Test length opened and to be finalized; 150hr, 175hr, 200hr or something in between; hardware evaluated for wear opened and to be finalize; still evaluating intake and exhaust camshaft lobes and lifters, but intake lifter wear is most promising to-date; wear measurement method (for lifter wear) opened and to be finalized; PDI MicroAnalyzer 2000 w/ standardized fixture and notched lifters or Keyence VR3000 3D Macroscope; initial reproducibility testing has been conducted on Intertek stands; wear measurement round robin conducted between independent labs; PDI measurement discrepancy was identified and has been resolved; root cause was identified to be a combination of PDI software differences and inconsistencies with lifter fixtures and lifter indexing (lifter indexing refers to locating the 0° and 90° measurement points); PDI released a software update to address the differences between their WIN98 and WINXP software package; labs beta tested the updated PDI software and have proven the fixes to be successful; OHT is currently designing a standardized lifter fixture and mechanical indexing system to address the fixture and indexing inconsistencies; development testing has been conducted to scope different test lengths.

Experimental Design Matrix: current proposed matrix is as follows: Matrix design is linear + one interaction; evaluating stand effect, oil effect, test length effect and oil/test length interaction; 28 tests to be included; 24 unique combinations; 4 repeats; 3 oils to be included (ASTM REO 1006-2, ASTM REO 300 and SD / SE OIL (poor oil)); 3 test Lengths to be included (150 hours, 175 hours and 200 hours); 2 labs and 6 stands (3 stands at each lab to be included (SwRI (3 stands labeled S-18, S-19, S-20) and Intertek (3 stands labeled I-100, I-101, I-102); including the 150 hour test length and the SD / SE OIL (poor oil) are currently being discussed; hoping to finalize the matrix design

and run order at a test development team conference call on Thursday, 11/20/14; hoping to start the matrix by the end of November 2014.

Status of industry matrix stands: 5 stands at 3 labs (2 at SwRI, 2 at Intertek, 1 at Lubrizol) installed and operational; the 4 stands at the independent labs have all completed 1 or more tests; the 1 stand at the dependent lab has not yet run any tests and is currently in shake-down.

Status of the Golden Stand replacement hardware on-hand for precision matrix + 1 reference period. Percent complete still not available.

Status of the consumable test hardware on-hand for precision matrix + 1 reference period. Percent complete still not available.

Status of precision matrix: Expected start sometime in Q1 2015 and the real question is "is this a good estimate for now, or should we indicate Q2 2015?"

## **MACK T-13**

I have made my initial review of the draft standard, and Lyle has reviewed it for SI compliance. The matrix testing is underway and it is approximately 50% complete.

**I spent 26 hours working on the 3 documents over the past 6 months.**

Respectfully submitted,

*E. A. Hap Thompson*

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Facilitator