



**Address** 100 Barr Harbor Drive  
PO BOX C700  
W. Conshohocken, PA  
19428-2959 | USA

**Phone** 610.832.9500  
**Fax** 610.832.9555  
**e-mail** [service@astm.org](mailto:service@astm.org)  
**Web** [www.astm.org](http://www.astm.org)

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## Unapproved minutes of the ASTM Cummins ISB Test Development Task Force Teleconference call on May 17<sup>th</sup>, 2004

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**Call to Order:** Mark Sarlo called the meeting to order at 10:03 AM EST.

**Meeting Minutes:** Approval of the minutes from the April 27<sup>th</sup> meeting was not voted on due to loss of electronic copy.

**Review of Agenda:** *Attachment 1* shows a copy of the meeting agenda.

**Review of Membership:** The current official membership list for the ISB Test Development Task Force is as follows:

NAME	COMPANY
Mark K Sarlo – Chairman	Southwest Research Institute
Joseph Huang – Secretary	Valvoline
Warren Totten	Cummins
Riccardo Conti	ExxonMobil
Jim Matasic	Lubrizol
Jeff Clark	TMC
Greg Shank	Mack/Volvo
Jim Moritz	PerkinElmer
Bob Campbell	Ethyl
Mark Cooper	Chevron Oronite
Ron Buck	TEI

The following members were present at the conference call: Mark Sarlo, Joseph Huang, Warren Totten, Dan Nyman, Riccardo Conti, Jim Matasic, Jeff Clark, Jim Moritz, John, Bob Campbell, Ron Buck, and Jim Gutzwiller.

## **Old Business**

### **Status of Engine Installation:**

SwRI should have their stand ready for viewing Wednesday, May 19, 2004. At that time it will lack the external oil cooler system because SwRI and PE are still working together to identify the size of the shell and tube heat exchanger.

PE stand will also be ready on Wednesday for viewing and their stand is about the same status as the one at SwRI

LZ, ExxonMobil, Valvoline and Ethyl stands are in various stages of completion hopefully scheduled for completion later this year.

### **Oil cooler bypass plate:**

Ron Buck gave us an update on the stainless steel cooler bypass plates. TEI has found another fabricator who will be able to make the plates at a fairer price. With the new fabricator, the price is estimated at a few hundred dollars per plate. These plates should be available in the next few weeks.

### **Oil consumption measurement system:**

There was discussion and the group agreed to use an external oil adder system similar to the configuration presently used on the 1P, 1R (1P spec is D6681). After today's call, SwRI will finish installing this configuration on their stand. Hose "suction" & "return" locations will be identified (and agreed on) by the group. After installed & operational, the system will only be used during the initial 100 hours of steady state conditions. At the end of the 100 hours, oil contained in the external circuit will then be returned to the engine's oil sump for the final 250 hours of cyclic operation. Cummins suggested that we might increase the initial oil charge to compensate for oil left in the external circuit at the end of the initial 100 hours. We want each lab to start the 250-hour cyclic portion of the test with the same amount of sooted oil.

### **Tappet weight gain research:**

SwRI continues to work on the Tappet Weight Gain matrix. SwRI recently received five sets of ISB common-rail-engine-type tappets from Cummins. The tappets have been engraved in sets (Note: Eventually, sets from TEI will be laser etched as numbered sets and the position will be identified in a numerical series 1-12). For this matrix at SwRI, the tappets have been weighed after being engraved, but before cleaning or soaking. SwRI received EnSolve® and will also use solvent and pentane as part of the weight gain matrix. Again SwRI will use Premium Blue, EF-411, and a third, commercially available oil (specified by Dan Nyman at Cummins). By the next conference call, data should be available from these five sets of tappets.

### **Alternate cam profile measurement method:**

LZ presently has a new and used ISB common-rail cam and their Metrology group is investigating an alternate (replacement for Adcole profiling) method to measure the cam

lobe profile. LZ is using an indexing method with a dial indicator that tracks the lobe profile. Preliminary results may be available by the next conference call.

**Update on batch of pre-measured camshafts:**

Cummins reported that a batch of 50 cams has been set aside for the matrix. The first 10 have been premeasured using the Adcole and should be at TEI in ten days or less. The other 40 are to follow as premeasurements are completed.

**Update on batch of oil filters:**

Cummins did not have an update on the special batch of oil filters at this time.

**Pressure and thermocouple locations:**

The labs received the Excel file with numerous photos identifying locations for pressure taps and thermocouple locations presently used at PE and SwRI. The group discussed the location for the TURBO EXHAUST OUT temperature and pressure. It was agreed to use the newly-specified band clamp, full Marmon fitting, and the Dynaflex 3" long-radius elbow as the first components to route the exhaust out of the turbo. The tap locations will be located in a straight piece of 3" pipe after the elbow. They'll be located 6" from the weld seam and there will be at least 3" of straight pipe after the tap locations.

It was agreed to remove the heater elements from the OEM intake air heater block and tap it (as shown in one of the photos) for the intake air pressure tap.

SwRI is presently working on finalizing the location for the intake air thermocouple. It will be installed in the flat plate on top of the intake manifold (driver's side). This location was chosen to sense a more accurate induction air/intake manifold temperature because this location is downstream of the EGR flow entering the intake air stream.

**New Business**

**Mater list of part numbers – Jim Gutzwiller:**

Jim Gutzwiller, using information from emails, discussions, and input from PE and SwRI, has generated an Excel file with several, information-specific sheets identifying part numbers and sources. Jim will be the guardian of this list. Any changes, upgrades, or additions should be sent to Jim. If/when the file is returned to Jim for changes, please highlight your changes in a different color so that Jim can easily identify what was changed/added.

**Blowby Measurement:**

The group agreed to use a 5-gal sized vessel as the blowby reservoir. See example in the photos distributed by PE. The blowby metal elbow tap on the back of the bell housing (driver's side) can be rotated to route the blowby into the 5-gal reservoir located on either side of the engine.

**Oil Sampling Reminder:**

When installing the external oil cooler circuit, we need to remember to make provisions for an oil sample tap valve.

**Tour of PE and SwRI:**

For those traveling to San Antonio this week for meetings, they are invited to visit PE Wednesday (19 May) morning, lunch at SwRI, and tour SwRI's ISB, ISM, and C-13 stands in the afternoon.

**Future Meetings:** The next meeting will be held on June 1st, at 1 PM CST/2 PM EST. Warren will secure a phone number.

**Adjournment:** The meeting was adjourned approximately 12:15 PM EST.

For comments or questions regarding the minutes, please feel free to contact:

Joseph Huang  
The Valvoline Company  
PO BOX 14000  
Lexington, KY 40512  
Phone: 859-357-3518  
Email: [jhuang@ashland.com](mailto:jhuang@ashland.com)

# ATTACHMENT 1

Cummins 5.9L ISB Valvetrain Wear Test  
Conference Call, May 17, 2004  
10-11:00 a.m., CST, 11-12:00 EST  
812-377-6156

## Proposed Topics

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Review and approval of minutes from 27 Apr 04 conference call

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Old Business:

Update status of installation at each lab

Status of oil cooler bypass plates (SwRI & TEI)

Update on oil consumption measurement system, Cat-type oil adder going in at PE and SwRI (All)

Update on tappet weight gain research (SwRI)

Alternate cam profile measurement method to replace Adcole (All)

Update on batch of pre-measured camshafts (Cummins)

Update on batch of oil filters (Cummins)

Pressure and thermocouple locations (SwRI & PE)

## New Business

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Jim Gutzwiller has created ever-changing,  
master list of part numbers, to be released soon!

Tour PE and SwRI stands while in San Antonio.

Next call, June 1 at 1 pm CST, 2 pm EST???

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