

# **AUTHORITY TO SUSPEND INDUSTRY WIDE LABORATORY CALIBRATION STATUS WHEN A TEST IS JUDGED TO BE GIVING UNINTERPRETABLE PERFORMANCE**

## BACKGROUND

The Classification Panels request the authority to suspend industry wide laboratory calibration status when a test is judged to be out of control. This is needed to get immediate industry expertise solely focused on solving the test problem and prevent the continued approval of oils based on suspect data. To assure that any decision to temporarily suspend testing is justified, the following analysis process will be used and documented. This process also includes a method for determining when the test is back in control and calibrated testing can resume. This process was developed to address the concerns expressed during the earlier balloting of this subject.

## FLOW PLAN

Step 1: An action alarm at the industry level must trigger on the Exponentially Weighted Moving Average (EWMA) plots, for either precision or severity, using the ASTM Reference Monitoring System.

Step 2a: The test surveillance panel must consider the scope and size of the problem:

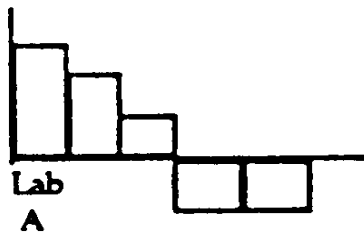
- Is the problem due to an identifiable cause?
- Is it affecting precision and/or severity?
- If the problem only affects severity, can a temporary correction be applied?
- Is the problem reference oil specific?
- Is it test lab or stand specific?
- When did the problem start?
- Are critical, non-critical, or both types of parameters involved?
- Does the problem transcend test type?
- What tools (statistical) were used to assess the problem?
- Was the problem a gradual one or an abrupt one?
- Does existing candidate oil experience support any reference oil trends?
- Has the problem been defined clearly?
- Has the available data been analyzed in a logical and methodical manner?

Step 2b: The following tools will be used, as a minimum, in the analysis of the problem:

## DATA ANALYSIS

## POTENTIAL INSIGHTS

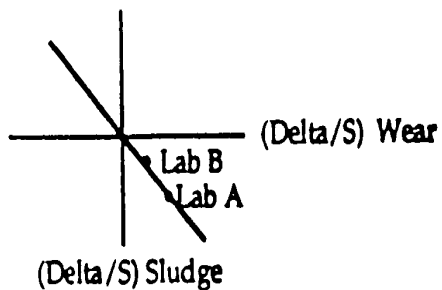
1. All charts (lab, stand) should be made available for the Test Parameter which has gone out.
2. Mark on charts when Industry changed parts, fuel batches, etc.
3. Plot each lab's last EWMA for the affected parameter:



1. Time trends and changes, start of problem.
2. Special Cause.
3. Scope of Problem, Special Cause.

4. Provide a list of coded labs (or stands) which have had out of control signals on the Test Parameter within the last three months.
5. Plots of known problem parameters (e.g. sludge/wear).

4. Scope of Problem, Special Cause.
5. Problem discrimination.

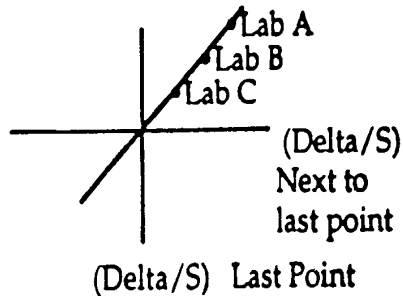


6. EWMA charts with  $\lambda = 0.1$  (detects small shifts)

6. Gradual vs. Step change.

7. Youden plot of labs' last two points:

7. Precision vs. Severity, Scope, Special cause.



8. Dot plot of all data in last three months.

8. Special Cause.



Step 3a:

The Surveillance Panel decision to recommend to the appropriate Classification Panel that a test to be declared out of control will require a  $\frac{3}{4}$  approval vote of voting members (or their alternates) present at a special Surveillance Panel meeting held to review all data developed. All negative votes must be resolved (declared non-persuasive, persuasive, or non-germane). For purposes of determining persuasiveness of a negative, a  $\frac{2}{3}$  majority vote of members present (or their alternates) will be used. The final vote plus all persuasive arguments and an action plan with timetable will be forwarded to the appropriate Classification Panel.

Step 3b:

Within two weeks of such a Surveillance Panel decision, the appropriate Classification Panel will meet to determine if the test is out of control.

Step 3c:

If the Classification Panel decides the test is out of control it may temporarily suspend calibrated testing. A technical memorandum will be issued immediately by the TMC (advising that calibration status for the appropriate test type cannot be technically supported in all previously calibrated laboratories effective for each stand prior to the start of the next test). This memorandum will be issued to all members of the Surveillance Panel involved, all calibrated test labs, the appropriate classification panel, and all members of Subcommittee B. This memorandum will provide the background on the Surveillance Panel's decision, as well as a proposed action plan with timetable and milestones. A comment period will be extended for 30 days after the memorandum. Comments will go to the Subcommittee B Chairman who will determine if they are of sufficient quality to call a special session of B within 30 more days. TMC calibration status will continue to be suspended during this period unless the test has been declared back in control (see step 4a).

Step 3d:

Any external communication (outside of ASTM Subcommittee B) will be sent through the Chairman of Subcommittee B.

API will be sent a letter by Chairman of Subcommittee B notifying them of this action and stating that the performance category XX as stated in ASTM D4485 can no longer be measured until further notice. The reason that this performance can no longer be measured is that the calibration status of the uninterpretable test cannot be technically supported.

Step 4:

Determination that the test is back in control will be made by the Surveillance Panel or when the industry EWMA charts for precision and severity are back within the defined control limits whichever occurs first. At that point, an information memorandum will be immediately issued by TMC to the same distribution outlined in Step 3c. Any requirements, if necessary, to resume calibrated testing will be defined in this memorandum.