

OSU & NBS Updates

2010 March Materials Meeting

Boeing Facility - Renton, WA

Materials Working Group

Michael Burns, FAA Tech Center

March 3rd & 4th, 2010



Federal Aviation
Administration



Agenda

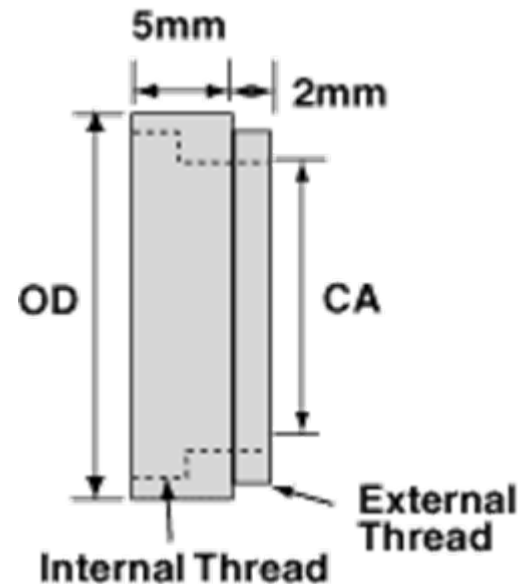
1. NBS - Photometric System Round Robin Follow On Work
2. New Task Group Participant Request
3. OSU - Questionnaire
4. Chapter 5 & 6 FAA Handbook Update
5. Maintenance Tips & Reminders
6. Next Steps



NBS Photometric System Round Robin

Initial Phase Of Photometric System Round Robin Has Been Completed

- Goal Was To Look At The Scatter The Photometric System / Software May Have On Fleet Test Data
- Test Included A Linearity Check Of Five Data Points Using Neutral Density Filters.



NBS Photometric System Round Robin

- 20 Labs (24 NBS Smoke Chambers) Were Able To Participate
- No Furnace Heat Or Pilot Burner Flame Used
- Zero Then Span System
 - Gradually Slid Filter Over Lower Glass Window
- Results Showed Very Good Comparison With % STDEV of Approximately 1% Between The Range Of 160 To 200 Ds

NBS Photometric System Round Robin Participants

AIM COMPOSITES

AIRBUS (2 Labs)

BOEING

C&D ZODIAC (2 Labs)

CEAT

CTAERO

DELSEN TESTING LABORATORIES, INC.

FAA

HEATH TECNA, INC.

HERB CURRY, INC.

ISOVOLTA

JAMCO (2 Labs)

KYDEX, LLC

L-3 COMMUNICATIONS

LANTAL

NEWPORT SCIENTIFIC

RESCOLL

SCHNELLER (2 Labs)

TESTCORP

THE GOVMARK ORGANIZATION,
INC.

NBS Photometric System Round Robin

- Follow On Work Will Include Testing Materials In The Flaming And Non-Flaming Mode
- Slight Delay In Obtaining Samples
- Hopefully Samples Will be Shipped Out Shortly



New Task Group Participant Request

- A New Effort Is Being Introduced To Develop OSU/NBS Training Tools That Can Be Found On The FAA Web Site
- Approach May Consist Of Two Parts (As Advisory Material):
 - Part I - Chapter Style Training Videos
 - Part II - Conformity Checklist To Accompany Videos
- Some Ideas May Include:
 1. Detailed Drawings / Dimensions
 2. Cold Inspection Checklist
 3. Hot Inspection Checklist
 4. Checkout And Maintenance Procedures
 5. Calibration
 6. Sample Preparation
 7. Testing Procedures



OSU Questionnaire

- A List Of Questions Is Being Formed That Will Be Distributed To Each Lab In Hopes Of Generating Discussion On Standard Operating Procedures Of OSU Testing.
- Responses / Comments Will Be Summarized And Reported Anonymously
- This Work May Be Able To Assist The Newly Formed Task Group In Their Effort
- If There Are Questions That A Lab Would Like To Include Please Submit Them To My Attention.



Chapter 5 Update to FAA Handbook

Software Analyzing Calculator (Calibration Factor)

Methane Gas Temperature @ Meter: 20 °C

Barometric Pressure: 760 mm/Hg

4 Flows (Millivolt Input)

- 1 Liter - 25 mv
- 4 Liter - 31 mv
- 6 Liter - 35 mv
- 8 Liter - 39 mv

Results:

Reference Total Calibration Factor (Cal Factor)= **11.514**

- Enter your Total Calibration Factor (Cal Factor) to get the percentage error compared to the reference Cal Factor
- Percentage Error= **x.xx%**

Interpreting the results:

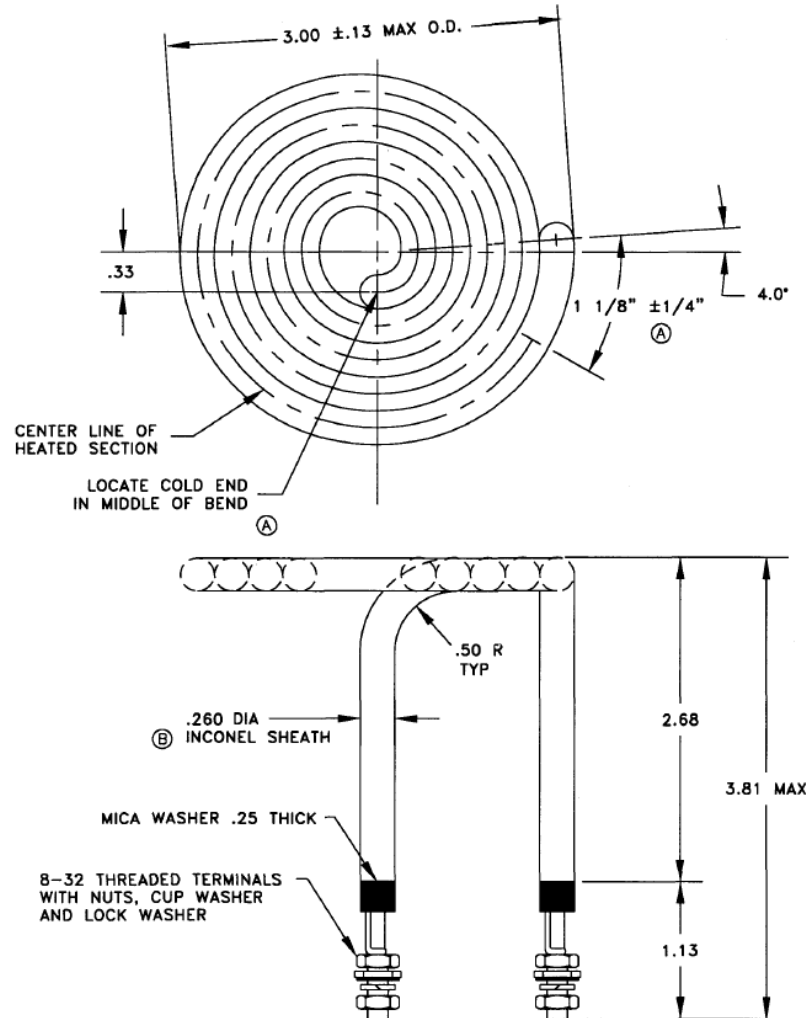
- If your percentage error is half a percent (0.5%) or less , you are using the correct constant value of 25.31
- If your percentage error is within half a percent of 7%, you are using the incorrect value of 23.55
- If your percentage error is something else, please double check your entered values as the Total Calibration Factor is not within range.

Chapter 6 Update to FAA Handbook

- NISTIR 4917 (September 1992) New Heater and Flux Gage For The NBS Smoke Box
 - NIST report has been posted on the FAA web site.
 - Report allows the use of water-cooled heat flux gages as a replacement for the older air cooled radiometers in the NBS smoke chamber.
 - This was in response to industry's concerns that the older style radiometers took too long to calibrate.
- From this report came the fact that a lab may use the water-cooled heat flux gage as long as they also use the newer tubular furnace.
- Most recent detailed drawing of the new tubular furnace that replaces the old wire-wound furnace.

Note: Follow up to dark center discovery a few months back

Chapter 6 Update to FAA Handbook



Maintenance Tips & Reminders

- **OSU**

- Remember To Clean Thermopile, Chimney, Baffle Plate, Inner Cone And Lower Plate Prior To Conducting A Gas Calibration
- Make Sure Corner Heat Flux Gage Is As Close To The Corner Of The Holder As Possible

- **NBS**

- Chamber Walls May Be Cleaned With A Vacuum Cleaner To Remove Soot Buildup
- Remember To Set Heat Flux With Burner In Place

Next Steps

- Complete Follow-On Testing To The NBS Photometric System Round Robin
 - Flaming / Non-Flaming
- Assist Newly Formed Task Group In Developing Training Video / Checklist
- Assist The Flammability Standardization Task Group As Needed
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