



Florida Department of Environmental Protection

Field Operations Overview

April 26, 2017





Overview

- Introduction
- Preview Day 2 topics and activities
- SOP updates
- Forms discussions
- Resources and references
- Best Practices
- Wish list





Field Work



Photo credit: Pascal Brignole



Day 2 Topics and Activities

- Field Proficiency Overview
- Teledyne Model T640 presentation and demo
- Field Proficiency Rotations
 - Focus on QC, maintenance and troubleshooting
 - Huge thanks to FDEP shop and field staff, DV staff, PQAQO “volunteers”, Thermo and Teledyne reps
 - Break-out sessions for QA and SOP folks
- End of the day changes:
 - 3:15 – 3:45 Thermo and Teledyne tech resources
 - 3:45 – 4:15 Survey/pre-test results



SOP Updates

- SOPs in all stages:
 - Approved
 - Submitted & received comments from SESD
 - Submitted to SESD, waiting on comments
 - Final draft under review at OAM
 - Draft in committee
 - Still a glimmer in someone's eye...





Approved SOPs

- 5014i, DEP 03-16, August 2016
- 49i, DEP 06-13, February 2017
- PM_{2.5} Lab, PM-001, February 2017



- OK to make “pen-and-ink” changes
- OK to make minor form revisions
- Review annually
- Maintain revision history



SESD Comments Received

- 12/20: 2B Tech 202, DEP 06-16 Sept 2016, Greg Blanchard
- 2/14: T200UP, DEP 09-7 Sept 2016, Broward/Dade/Hills
- 2/14: BAM 1020, DEP 03-20 Jan 2017, Winston Davis
- 1/30: T-API 602, DEP 03-17 Aug 2016, Tom Bess





Submitted to SESD

TEI 42i NO ₂	DEP 09-2	Posted 4/17
TEI 48i/48i-TLE CO	DEP 08-5	Posted 4/17
TEI 146i Gas Calibrator	DEP 13-4	Posted 4/17
Data Handling SOP	DEP 18-27	Posted 4/17
TEI 49i-PS Ozone	DEP 06-14	Posted 10/16
TEI 1405 TEOM	DEP 03-12	Posted 8/16
PM ₁₀ Lab	DEP 16-22	Posted 7/16
Hi-Vol PM10 and Lead	DEP 16-23	Posted 1/17

- We can and should collect corrections now, to be added when we address SESD comments





Final Drafts

T100 SO ₂	DEP 07-8
API T200 NO ₂ SOP	DEP 09-5
T700	DEP 12-8
Agilaire 8872	DEP 17-11

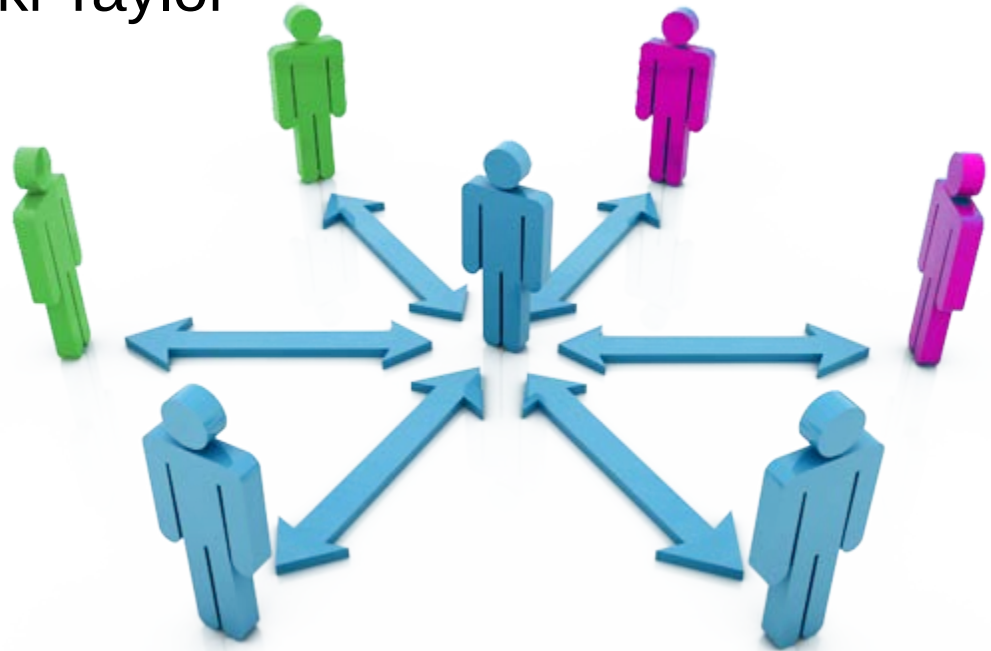
- Forms testing!
- Formatting challenges!





Drafts in Committee

- 43i/43i-TLE, DEP 07-6
 - Comments to Alain Watson
- T300/T300U, DEP 08-4
 - Comments to Vicki Taylor





Up Next...

EnviroNics 6100 Gas Calibrator	TBD	Palm Beach/Miami
Ambient Air Monitoring Site Checks	DEP 01-1	Orange/other volunteers?
Zero Air Generator System (TEI 111 + 5 Stage Dryer)	DEP 02-4	Orange
Definer 220 and Defender 530 Flow Meters	DEP 02-5	Orange
Min/Max Thermometer (updated to digital)	DEP 02-6	Orange
Shelter Temperature Sensor	DEP 02-7	Orange
T 703 Ozone Calibrator	DEP 06-17	Palm Beach/Pinellas
TSI 3031	TBD	Broward
Teledyne 651	TBD	Hillsborough
SASS	TBD	Hills/Broward/DEP
URG 3000	TBD	Hills/Broward/DEP
Met Equip.	TBD	Hills/Broward/DEP
Ultrafine Particle Counter	TBD	Hills/Broward





Special Attention...

- 2025 & 2025i revisions –
 - SESD comments received in July for May versions
 - Aug/Sept comments on 2025 – thanks Chris Stoll!
 - Reviewed again in training recently - thanks Megan Frink!
 - Dec comments on 2025i – thanks Susie Murray!
 - Drafts for combined forms – thanks Alanna Glusica!
 - Annual temp calibration form – thanks Ashley Stroman!
 - Need all hands on deck!
- Good timing...
 - PM_{2.5} QAPP revision in progress, due asap
 - Lab transition complete June
 - Lab SOP annual review due July
 - Cooler shipping SOP update overdue





Form Revisions – 49i

- Matt Dodd, Sarasota has made several rounds of revisions to address the many comments received – thanks all!



Microsoft Excel
Worksheet

DEP 06-13-B



Microsoft Excel
Worksheet



Microsoft Word
Document

DEP 06-13-C & Instructions



Form Revisions – 43i/43i-TLE



Microsoft Excel
Worksheet

DEP 07-6-B

- Conditional formatting for ambient/NAAQS and trace level/NCore instruments

DEP 07-6 Table 10-1: Calibration Check Points

Calibration Point	Model 43i/43i-TLE (ppb) @ NAAQS	Model 43i-TLE (ppb) @ NCore
Zero	0	0
Span	400	80
Upscale	200	50
Precision	75	20
Low	45	7

DEP 07-6 Table 12-1: QA/QC Acceptance

Parameter	NAAQS (43i) Acceptance Criteria	NCore (43i-TLE) Acceptance Criteria	Frequency
One Point QC Check for Precision	Control within $\pm 10.0\%$ (percent difference) Warning identified at $> 7.0\%$	Control within $\pm 15.0\%$ (percent difference) Warning identified at $> 12.0\%$	minimum every 14 days
Zero/Span QC Check	Zero drift within ± 5.0 ppb Span drift within $\pm 10.0 \%$	Zero drift within ± 5.0 ppb Span drift within $\pm 15.0 \%$	minimum every 14 days



Form Revisions – 2025i Annual Temp Calibration



Microsoft Excel
Worksheet

For DEP 03-15-A

- Method 2.12 Guidance, Section 6.4 recommends 3-point annual temp calibration of all sensors for FRM/FEM monitors, and monthly 1-point check of ambient sensor
- Annual multi-point cal should be followed by single point verification
- Three cal points should be evenly spaced over expected operating range
- Ideally performed in the field
- Multi-point cal should be performed if 1-point verification differs by $> 2.1^{\circ}\text{C}$
- Recommended procedure is elaborate, and even includes a warning that removing the filter temp sensor could cause internal leaks!
- We'll do the best we can!

OPERATIONAL EVALUATIONS TABLE PM_{2.5} Filter Based Local Conditions

Field Activities			
<i>One-point Temp Verification</i>	every 30 days	$< \pm 2.1^{\circ}\text{C}$	1) 40 CFR Part 50, App. L, Sec. 9.3 2) Method 2.12 Sec. 7.4.5 and Table 6-1 3) Recommendation
<i>Pressure Verification</i>	every 30 days	$< \pm 10.1 \text{ mm Hg}$	1) 40 CFR Part 50, App. L, Sec. 9.3 2) Method 2.12 Sec. 7.4.6 and Table 6-1 3) Recommendation
Annual Multi-point Verifications/Calibrations			
<i>Temperature multi-point Verification/Calibration</i>	on installation, then every 365 days and once a calendar year	$< \pm 2.1^{\circ}\text{C}$	1) 40 CFR Part 50, App. L, Sec. 9.3 2 and 3) Method 2.12 Sec. 6.4.4 Table 6-1



Resources and References

DARM_Common (N:) > Air_QA >		
Name	Date modified	Type
.Form Templates	3/29/2017 12:08 PM	File folder
.Technical Notes	4/18/2017 5:14 PM	File folder
Air Permitting	4/25/2017 6:33 PM	File folder
Data Validation	4/25/2017 9:56 AM	File folder
District Archive	2/28/2017 8:11 AM	File folder
Emerald Coast	11/10/2015 3:37 PM	File folder

DARM_Common (N:) > Air_QA > Field Reference Info		
First Coast		
Forgotten Coast		
Lee Island Coast		
Local Data Review & Spot-Checks		
MRAS		
Nature Coast		
Naval Aviation Coast		
PM2.5 Lab Environmental Conditions		
PM10 Lab Environmental Conditions		
Space Coast		
Sun Coast		
DARM_Common (fldcp1) (N) - Shortcut		

DARM_Common (N:) > Air_QA > Field Reference Info	
Name	Date modified
Data Handling Validation Quality	4/25/2017 6:40 PM
Hands-on Workshop Travel info	4/13/2017 5:27 PM
Network Plan	4/25/2017 6:39 PM
pics	
PM2.5M	
QA Handbook and Guidance	
QAPP_QMP	
Safety	
Travel and P-Card	
TSA 2017	
User Guides	
Vehicle and Fuel Card	
Copy of Module-Reference-List-All	

DARM_Common (N:) > Air_QA > MRAS	
Name	
2014 Air Workshop photos	
DIGI INFO	
Instrument Certifications	
Instrument Maintenance Records	
Inventory Pics 2016	
Reference Instrument Certifications	
Vendor Manuals	

- One stop shopping for records, PQAO & guidance docs, reference info, manuals, certs, reports
- Forms templates housed here, but carefully – DV checks for correct version



Resources and References

- Tech notes
- Tips & Tricks
- Vendor websites, manuals, tech notes, newsletters, training
- EPA AMTIC website <https://www.epa.gov/amtic>
- AirNow: <https://airnow.gov/>
- SAQS:
<http://ca.dep.state.fl.us/mapdirect/?focus=sags>
- Other region/state air monitoring programs
- Call notes, FAMAC minutes,



Best Practices

- QA Handbook Vol II, Section 17.0
 - DAS Data Review
 - (SO) Review of zero, span, one-point QC verification information, the hourly data, and any flags that could affect data; record any information on the daily summaries that might be vital to proper review of the data.
 - (SO) Transfer strip charts information (both analog and digital), daily summaries, monthly maintenance sheets, graphic displays of meta data and site log notes to the central location for a secondary and more thorough review.
 - (SO) At the central location, review the data, marking any notations of invalidations and provide electronic strip charts, meta data charts, daily summaries, site notes, and monthly maintenance sheets for ready access by the data processing staff.
 - Outliers
 - “Measurements that are extremely large or small relative to the rest of the data and are suspected of misrepresenting the population from which they were collected”



Best Practices

- DEP 18-27 Data Handling and Data Validation, Section 3.2 Deadlines:
 - Daily
 - Concentration, met, & equipment diagnostic data
 - Strip charts – auto QC checks, baseline, anomalous data
 - Minute data – review, comment, initial
 - Null codes and flags
 - Site visit/maintenance documentation
 - Weekly
 - Outliers – Site Comparison Graph report in FAMAS
 - See Section 12.5 Continuous Monitoring Data Review/Validation Criteria
 - PM_{2.5} paperwork, F1 files, cooler shipping
 - Biweekly/monthly
 - QC checks
 - Control charts*
 - Quarterly, semi-annual, or annual
 - Calibrations, preventative maintenance
 - Performance audits
 - Certifications



Best Practices

Green Light Thinking





Wish List

- SOP template(s) and “boilerplate” sections
- Forms sequence/naming alignment
- Adobe, MS Office wizards & apprentices
- Quarterly PQAO field ops conference call
- Refocus biweekly SOP conference call
- Small group hands-on training sessions round-robin
- Agilaire workshop
- Lab QA workshop





Summary

- Preview Day 2 topics and activities
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- Forms discussions
- Resources and references
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Questions?



Anna Lomasney

email: Anna.Lomasney@dep.state.fl.us

850-717-9053