Embrace the Change: Our Data Validation Journey

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NAAMC - Pittsburg, PA
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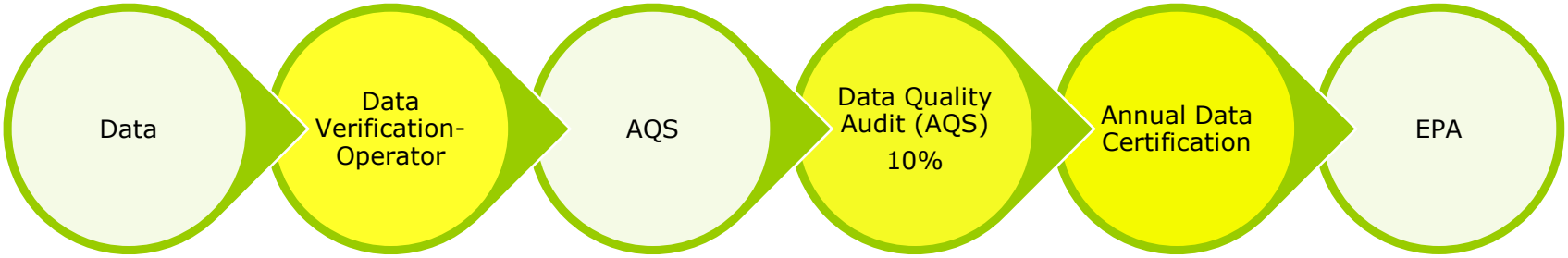
Where we began...

Air Program in 2015

- Program Manager – 20+ yrs
- Repair Technician – 40+ yrs
- Majority Operators – 15+ yrs
- Program on auto-pilot
- Changes/updates were always discussed but rarely implemented
- Programmatic changes were sent out by email only
- SOPs were drafted but never finalized

Original Data Flow



Data flowed to AQS with very little review. Program Manager relied on AQS to catch any large data issues.

Then the 2016 TSA…

"We will be fine; they have been here many times before and our program is fine."

-Anonymous

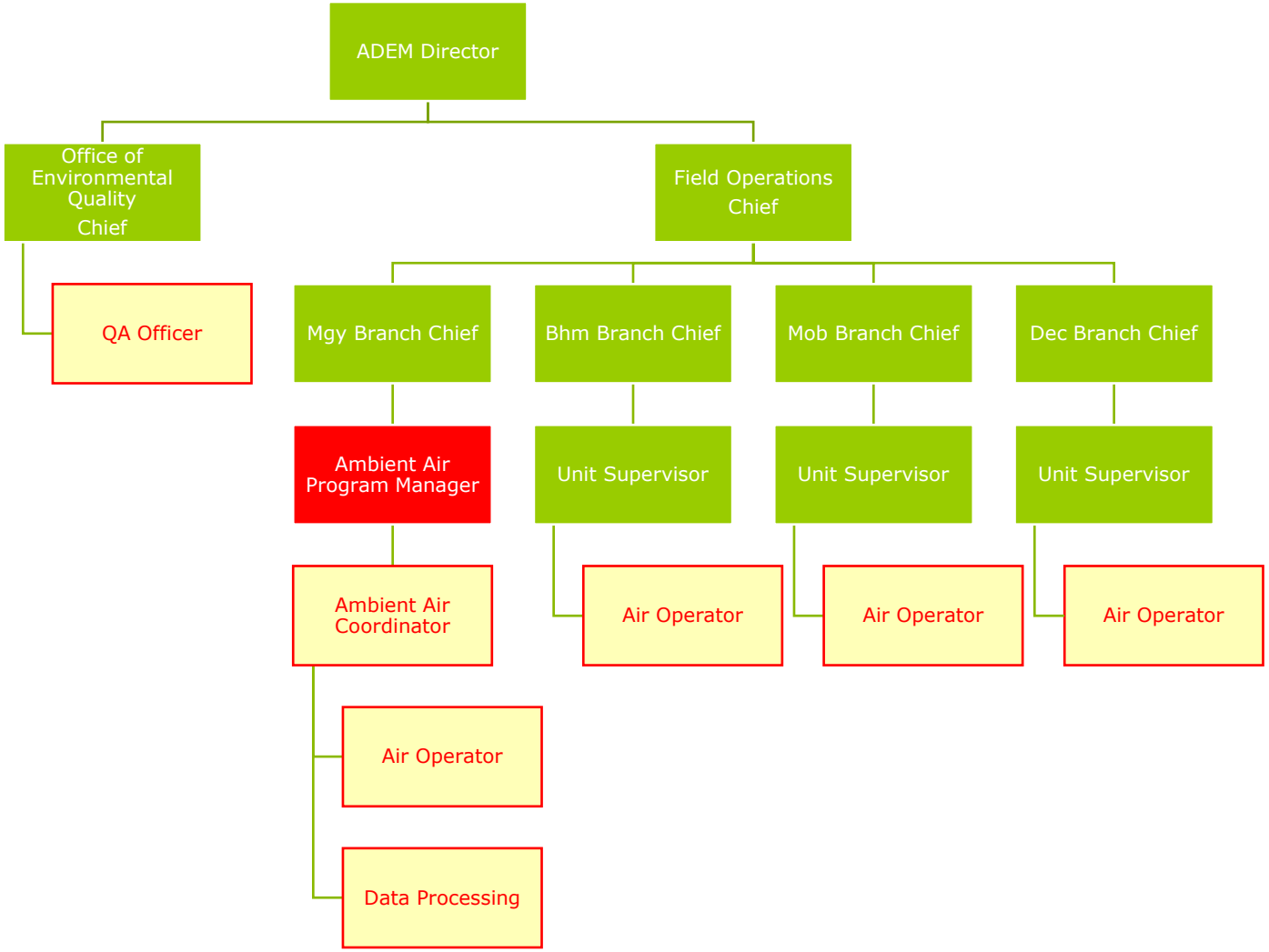
Two Most Significant Findings

- Data was not validated prior to AQS submittal
  - Current system verified data was present but very little validation in place
- Unable to find documentation to support data decisions
  - No consistent method of documentation-every operator used their own system of coding/filing
  - Many logbooks were missing or incomplete
  - Certifications were not found or filed in several different locations

The Plan…

Develop and implement a data validation system, get the established staff to buy-in on doing a lot more work, and close out our TSA…all in less than 3 years.

Organizational Challenges



Goal:
Development a Data Val System

1. Outline a consistent way to accept, reject or qualify data in an objective manner.
2. Ensure data is thoroughly reviewed by an independent source prior to submission to AQS.
3. Require each step to be completed in a timely manner to ensure this system will be successful.

Applied the Level Approach

- Level 0 – Automated data validation
  - Flag or code data which violates any of the programmed rules
- Level 1 – Done by the Operator
  - Confirm Level 0 coding to make sure it is correct
  - Complete required documentation
  - Code or invalidate any additional data not covered through automated methods
  - Complete Data Validation Checklist
- Level 2 – Done by supervisor within the same Field Office
  - Verify documentation is complete and accessible
  - Complete Data Validation Checklist
- Level 3 – Done by Independent Review Staff in Mgy
  - Makes sure that data meets its intended use and that all supporting documentation is correct

Updated Data Flow

Each step is influenced by numerous people and processes. Data that flows to AQS will be thoroughly verified and validated.

Data Validation-Level 0

- Validation rules are pre-programmed into database
- Runs automatically as data is polled
- Adds flags or null codes to data based on the rules
- Database generate emails with reports to operators when a parameter exceeds programmed warning or control limits
  - Shelter Temp Ranges, Flow Ranges, etc.

Data Validation-Level 1

- Review nightly precision checks
- Review automatic screening results
- Review graphs of hourly averaged data
- Ensure documentation is complete
- Ensure Excel datasheets, including logbooks are scanned, named correctly, and saved to the appropriate folders on the server
- Complete Monthly Verification Checklist

Data Validation-Level 2

- Supervisor review
- Complete Monthly Verification Checklist
- Ensures Operators are completing validation activities in a timely manner

Data Validation-Level 3

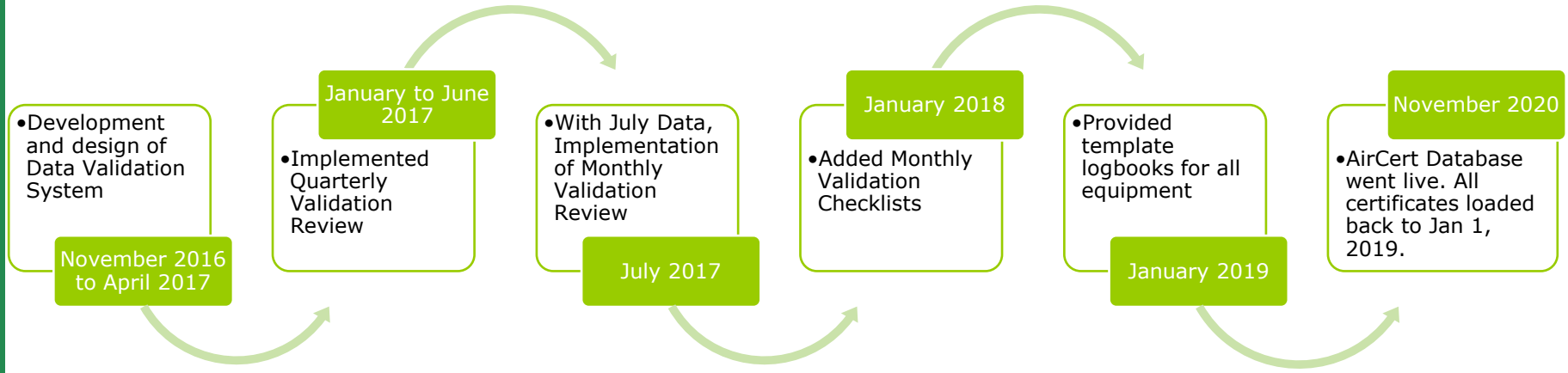
- Ensure data meets the intended use and is defensible
- Cross-check datasheets with raw data and flagging/invalidation of data
- Ensure all data are coded properly and no data gaps exist
- Ensure documentation and certifications are properly filed
- Ensure program is consistent across all field offices

Time for Implementation

"People love change"

-said no one ever

Timeline of Implementation



- 2016 TSA 3-yr deadline not met, open issues carried over to next TSA in 2019.

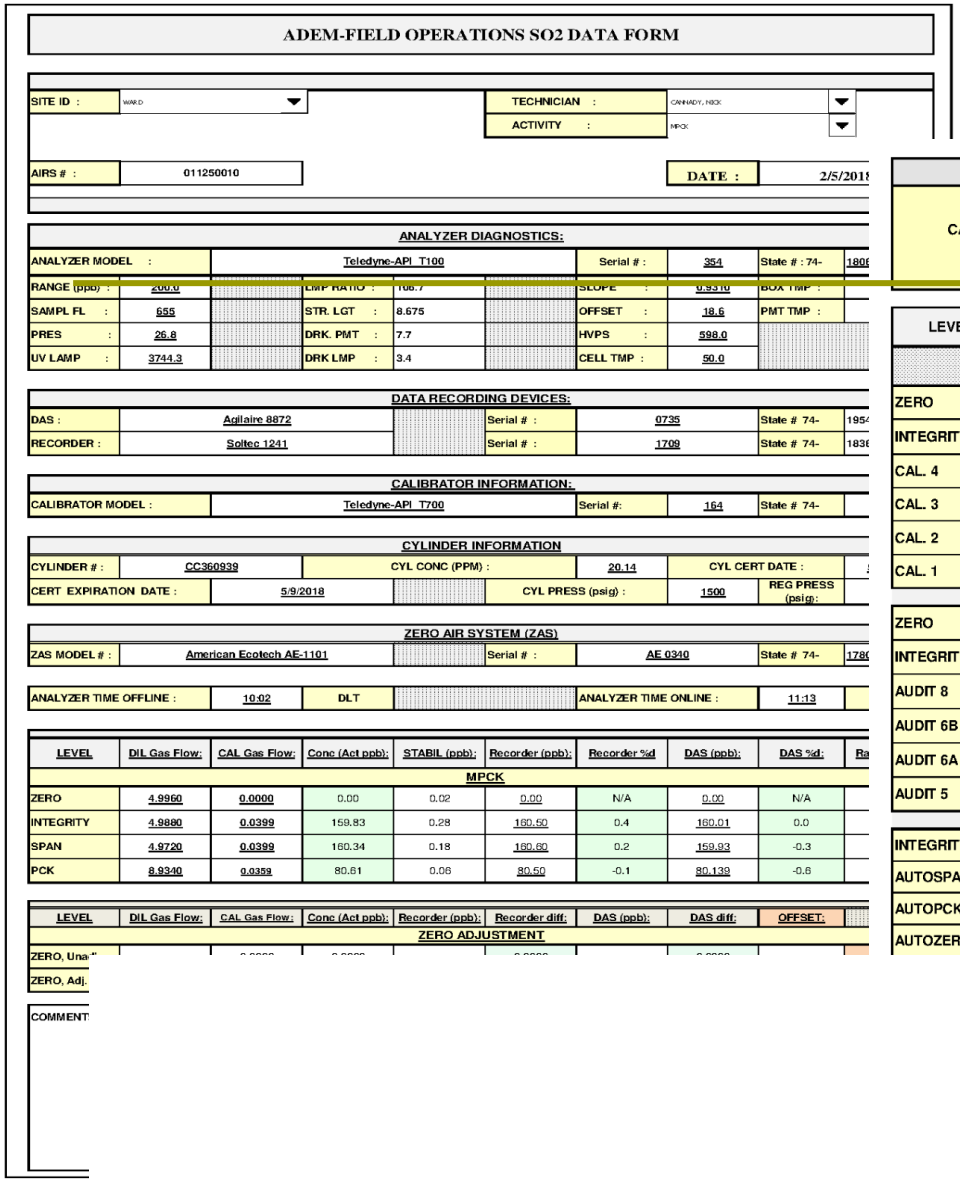
Tools to Help

- Forms
- Monthly Validation Checklists
- Logbooks
- Air Certification Database
- SOPs
- Routine QA call

Forms

Form Issues

- Sent out through email from one staff to another.
- Multiple versions in-use.
- Revisions were made for individuals and not sent out to the group.
- Slow to get updated: often missing new equipment or new staff.



ADEM-FIELD OPERATIONS SO2 DATA FORM

SITE ID : WARD | TECHNICIAN : CANNADY, NICK | ACTIVITY : MPCK

AIRS # : 011250010 | DATE : 2/5/2015

ANALYZER DIAGNOSTICS:

ANALYZER MODEL :	Teledyne-API T100				Serial # :	354	State # : 74-	1806
RANGE (ppb) :	200.0		LMP RATIO :	108.7		SLOPE :	0.9510	BOX TMP :
SAMPL FL :	655		STR. LGT :	8.675		OFFSET :	18.6	PMT TMP :
PRES :	26.8		DRK. PMT :	7.7		HVPS :	598.0	
UV LAMP :	3744.3		DRK LMP :	3.4		CELL TMP :	50.0	

DATA RECORDING DEVICES:

DAS :	Agilaire 8872	Serial # :	0735	State # 74-	1954
RECORDER :	Soltec 1241	Serial # :	1709	State # 74-	1836

CALIBRATOR INFORMATION:

CALIBRATOR MODEL :	Teledyne-API T700	Serial #:	164	State # 74-	

CYLINDER INFORMATION

CYLINDER # :	CC360939	CYL CONC (PPM) :	20.14	CYL CERT DATE :		
CERT EXPIRATION DATE :	5/9/2018		CYL PRESS (psig) :	1500	REG PRESS (psig):	

ZERO AIR SYSTEM (ZAS)

ZAS MODEL # :	American Ecotech AE-1101	Serial # :	AE 0340	State # 74-	1780

ANALYZER TIME OFFLINE :	10:02	DLT		ANALYZER TIME ONLINE :	11:13

LEVEL	DIL Gas Flow:	CAL Gas Flow:	Conc (Act ppb):	STABIL (ppb):	Recorder (ppb):	Recorder %d	DAS (ppb):	DAS %d:	Ra
MPCK									
ZERO	4.9960	0.0000	0.00	0.02	0.00	N/A	0.00	N/A	
INTEGRITY	4.9880	0.0399	159.83	0.28	160.50	0.4	160.01	0.0	
SPAN	4.9720	0.0399	160.34	0.18	160.60	0.2	159.93	-0.3	
PCK	8.9340	0.0359	80.61	0.06	80.50	-0.1	80.139	-0.6	

LEVEL	DIL Gas Flow:	CAL Gas Flow:	Conc (Act ppb):	Recorder (ppb):	Recorder diff:	DAS (ppb):	DAS diff:	OFFSET:
ZERO ADJUSTMENT								
ZERO, Una								
ZERO, Adj.								

COMMENT

ADEM-FIELD OPERATIONS SO2 DATA FORM

SITE:	WARD	DATE:	2/5/2018	TECHNICIAN:	CANNADY, NICK
CALIBRATOR MODEL:	Teledyne-API T700	Serial #:	164	State #74-	17831
ANALYZER MODEL:	Teledyne-API T100	Serial #:	354	State #74-	18060

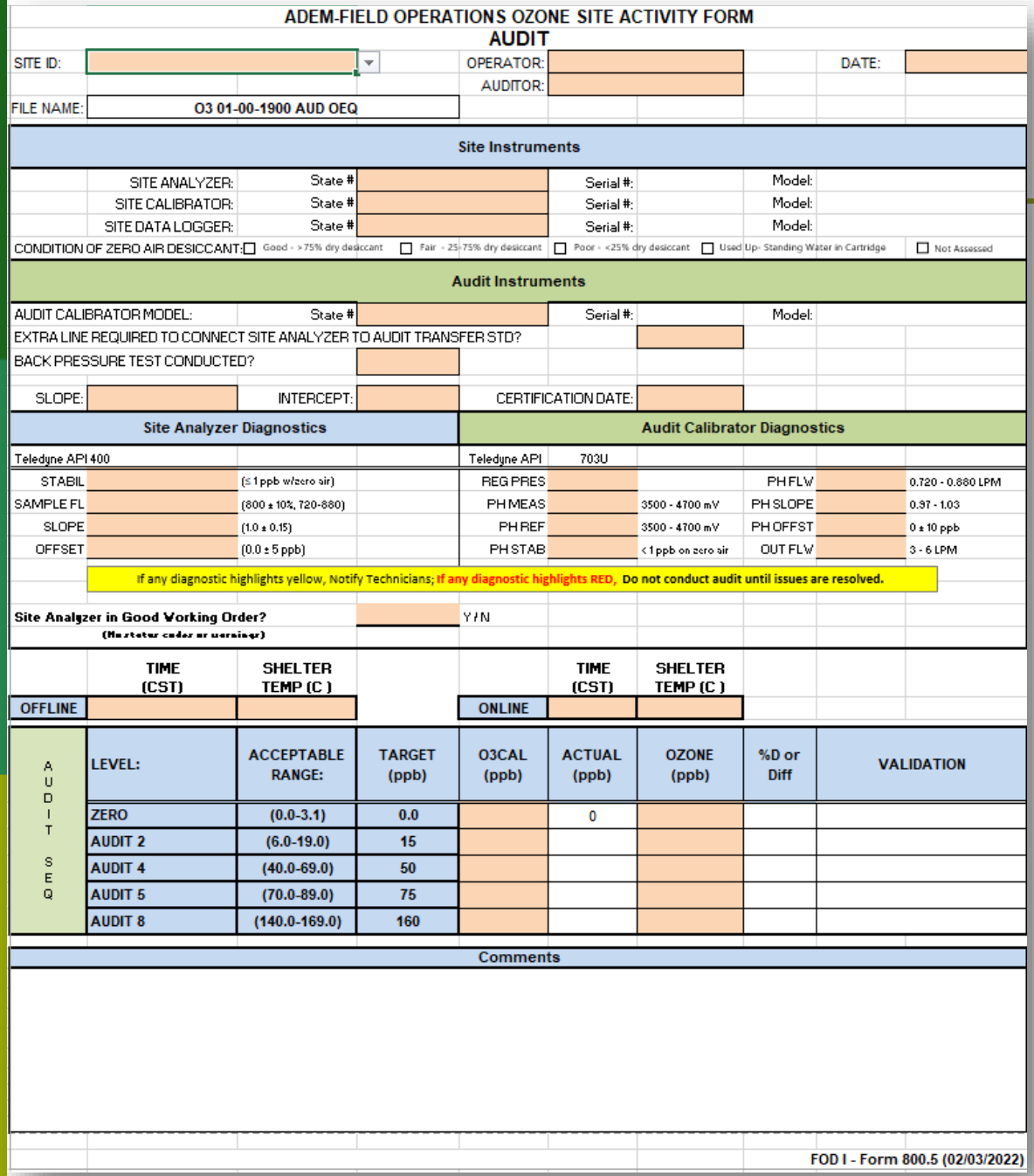
LEVEL:	DIL Gas Flow L/min:	CAL Gas Flow L/min:	Conc (Act) (ppb):	STABIL (ppb):	Recorder (ppb):	Recorder %d:	DAS (ppb):	DAS %d:	Range (ppb):
			ADJUSTED MCAL; UNADJUSTED MCAL INITIAL CAL; FINAL CAL:				Green filled cells are formula cells. Do not attempt to enter data into these cells.		
ZERO			0.0			N/A		N/A	0.000
INTEGRITY (Cal4)									~160.0
CAL. 4 (Lvl.1)									~160.0
CAL. 3 (Lvl.2)									~120.0
CAL. 2 (Lvl.3)									~80.0
CAL. 1 (Lvl.4)									~40.0
			PERFORMANCE AUDIT:						
ZERO			0.0			N/A		N/A	0.0000
INTEGRIT (160.0)									160.0
AUDIT 8 (160.0)									150.0 - 259.9
AUDIT 6B (75.0)									50.0 - 99.9
AUDIT 6A (50.0)									50.0 - 99.9
AUDIT 5 (30.0)									20.0 - 49.9
			PCK (Auto Check Verification):						
INTEGRITY (Cal4)									~160.0
AUTOSPAN (Cal4)									~160.0
AUTOPCK (Cal2)									~80.0
AUTOZERO			0.0			N/A		N/A	0.0000
			CAL (Auto Check Verification):						
									~160.0
									~120.0
									~80.0
									~40.0
			0.0			N/A		N/A	0.0000

FFLINE :		DLT	ANALYZER TIME ONLINE :		DLT
NGE:	YES	X	CHART CHANGE:	YES	
	NO			NO	X

COMMENTS:

PAGE 2 OF 2 | FOD 1-Form 816 (06/06/14)

- Lots of blanks when complete



ADEM-FIELD OPERATIONS OZONE SITE ACTIVITY FORM

AUDIT

SITE ID: | OPERATOR: | DATE:

AUDITOR:

FILE NAME: O3 01-00-1900 AUD OEQ

Site Instruments

SITE ANALYZER:	State #		Serial #:	Model:
SITE CALIBRATOR:	State #		Serial #:	Model:
SITE DATA LOGGER:	State #		Serial #:	Model:

CONDITION OF ZERO AIR DESICCANT: ☐ Good - >75% dry desiccant ☐ Fair - 25-75% dry desiccant ☐ Poor - <25% dry desiccant ☐ Used Up- Standing Water in Cartridge ☐ Not Assessed

Audit Instruments

AUDIT CALIBRATOR MODEL: State # Serial #: Model:

EXTRA LINE REQUIRED TO CONNECT SITE ANALYZER TO AUDIT TRANSFER STD?

BACK PRESSURE TEST CONDUCTED?

SLOPE: INTERCEPT: CERTIFICATION DATE:

Site Analyzer Diagnostics			Audit Calibrator Diagnostics				
Teledyne API 400			Teledyne API	703U			
STABIL		(≤ 1 ppb w/zero air)	REG PRES			PH FLW	0.720 - 0.880 LPM
SAMPLE FL		(800 ± 10%, 720-880)	PH MEAS		3500 - 4700 mV	PH SLOPE	0.97 - 1.03
SLOPE		(1.0 ± 0.15)	PH REF		3500 - 4700 mV	PH OFFST	0 ± 10 ppb
OFFSET		(0.0 ± 5 ppb)	PH STAB		< 1 ppb on zero air	OUT FLW	3 - 6 LPM

If any diagnostic highlights yellow, Notify Technicians; If any diagnostic highlights RED, Do not conduct audit until issues are resolved.

Site Analyzer in Good Working Order? Y / N

(No status codes or warnings)

	TIME (CST)	SHELTER TEMP (C)		TIME (CST)	SHELTER TEMP (C)
OFFLINE			ONLINE		

AUDIT SEQ	LEVEL:	ACCEPTABLE RANGE:	TARGET (ppb)	O3CAL (ppb)	ACTUAL (ppb)	OZONE (ppb)	%D or Diff	VALIDATION
	ZERO	(0.0-3.1)	0.0		0			
	AUDIT 2	(6.0-19.0)	15					
	AUDIT 4	(40.0-69.0)	50					
	AUDIT 5	(70.0-89.0)	75					
	AUDIT 8	(140.0-169.0)	160					

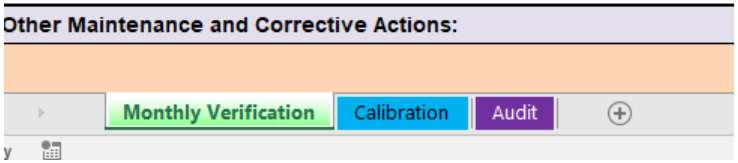
Comments

FOD I - Form 800.5 (02/03/2022)

- Separated forms by activity
- No blanks when complete
- Nomenclature standardized across all forms
- Conditional formatting added

Additional Forms Improvements

- Workbook format
- One workbook will have multiple tabs



- Easily updated and consistent between the same pollutant
- Contains a button that automatically names the file and prints to PDF

ADEM-FIELD OPERATIONS OZONE SITE ACTIVITY FORM
AUDIT

SITE ID:	CHICKASAW	OPERATOR:	HICKEY, AL	DATE:	5/5/2022
		AUDITOR:	STAMPS, JERREMY		
FILE NAME:	CHK O3 05-05-2022 AUD AAU				

Site Instruments

SITE ANALYZER:	State #	74-018057	Serial #:	411	Model:	Teledyne-API 400
SITE CALIBRATOR:	State #	74-018061	Serial #:	137	Model:	Teledyne T703
SITE DATA LOGGER:	State #	74-020582	Serial #:	1162	Model:	Datalogger 8872

CONDITION OF ZERO AIR DESICCANT: ☐ Good - >75% dry desiccant ☐ Fair - 25-75% dry desiccant ☐ Poor - <25% dry desiccant ☐ Used Up- Standing Water in Cartridge ☐ Not Assessed

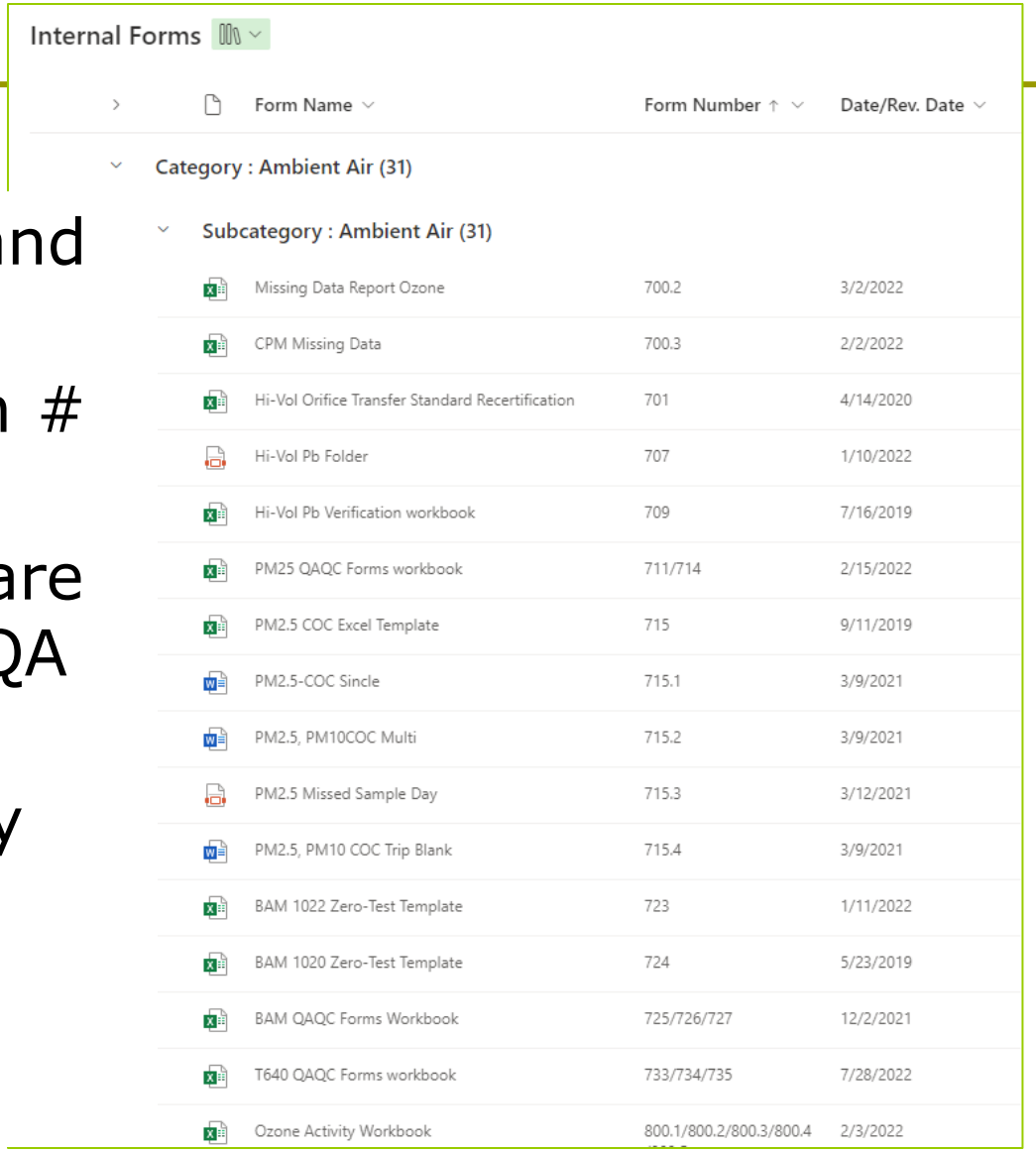
Audit Instruments

Clear Form

Save as PDF

Form Availability

- Password protected and centrally located
- Each form has a form # and revision date
- Update notifications are included in monthly QA email
- Goal is to update only once a year



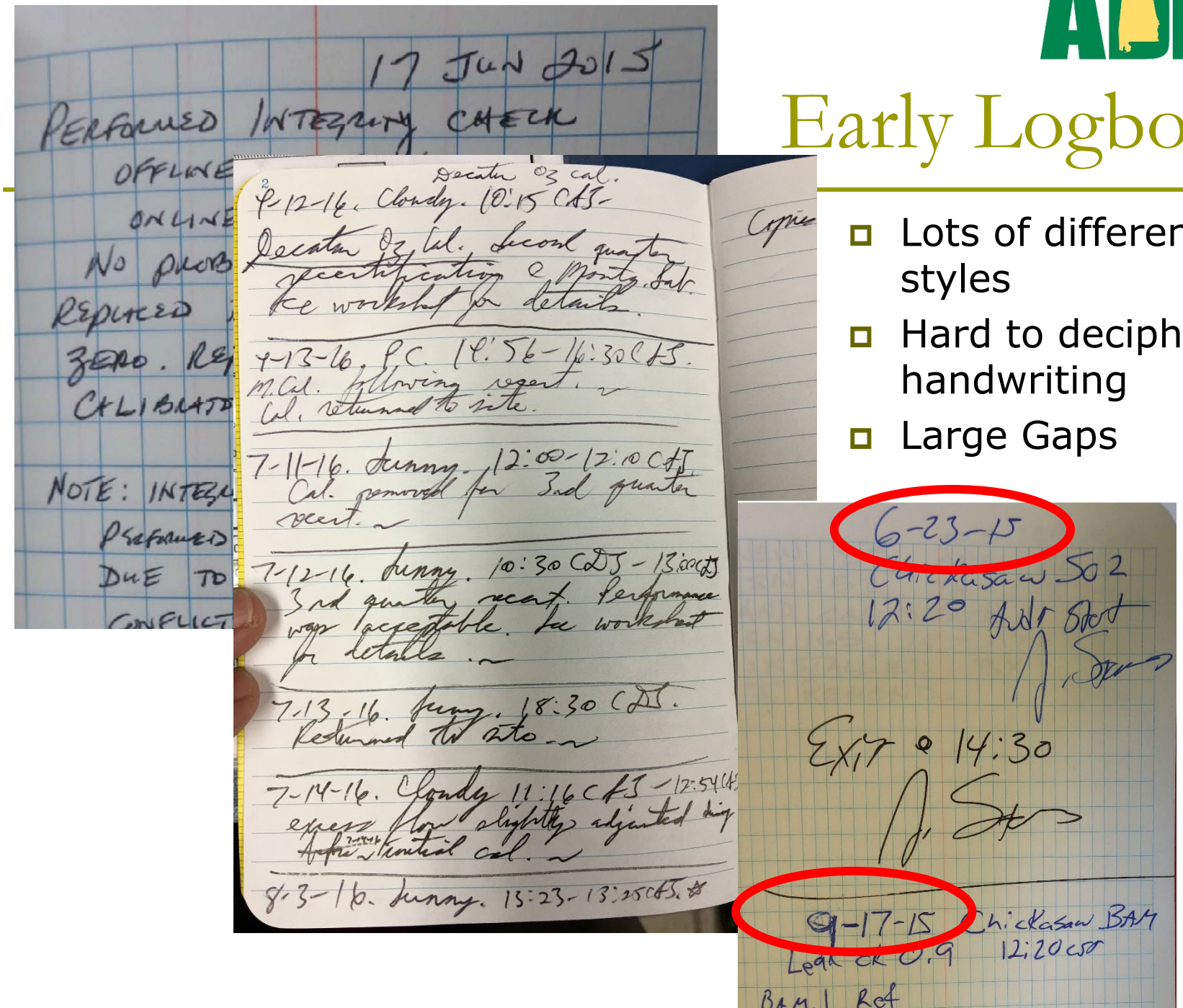
Internal Forms

Form Name	Form Number	Date/Rev. Date
Category : Ambient Air (31)		
Subcategory : Ambient Air (31)		
Missing Data Report Ozone	700.2	3/2/2022
CPM Missing Data	700.3	2/2/2022
Hi-Vol Orifice Transfer Standard Recertification	701	4/14/2020
Hi-Vol Pb Folder	707	1/10/2022
Hi-Vol Pb Verification workbook	709	7/16/2019
PM25 QAQC Forms workbook	711/714	2/15/2022
PM2.5 COC Excel Template	715	9/11/2019
PM2.5-COC Sincle	715.1	3/9/2021
PM2.5, PM10COC Multi	715.2	3/9/2021
PM2.5 Missed Sample Day	715.3	3/12/2021
PM2.5, PM10 COC Trip Blank	715.4	3/9/2021
BAM 1022 Zero-Test Template	723	1/11/2022
BAM 1020 Zero-Test Template	724	5/23/2019
BAM QAQC Forms Workbook	725/726/727	12/2/2021
T640 QAQC Forms workbook	733/734/735	7/28/2022
Ozone Activity Workbook	800.1/800.2/800.3/800.4	2/3/2022

Logbooks

Early Logbooks

- Lots of different styles
- Hard to decipher handwriting
- Large Gaps



Logbooks

- Templates created
- Color coded by pollutant
- Printed on Rite-in-the-Rain Paper
- Bound with page numbers
- Contains one year of information

Logbook Template

- Cover Page
- Logbook Best Practices Page
- Signature Page
- Template of Daily Activities
- Routine Maintenance
- Audits
- Calibrations/Multipoint Verifications
- Shelter Temperature Checks (if applicable)

Front cover- Pollutants

Ozone Analyzer Logbook

CY2022

Asset # 74-018059

Serial # 413

Site Record

Site Code	Begin Date	End Date

Available Site Codes

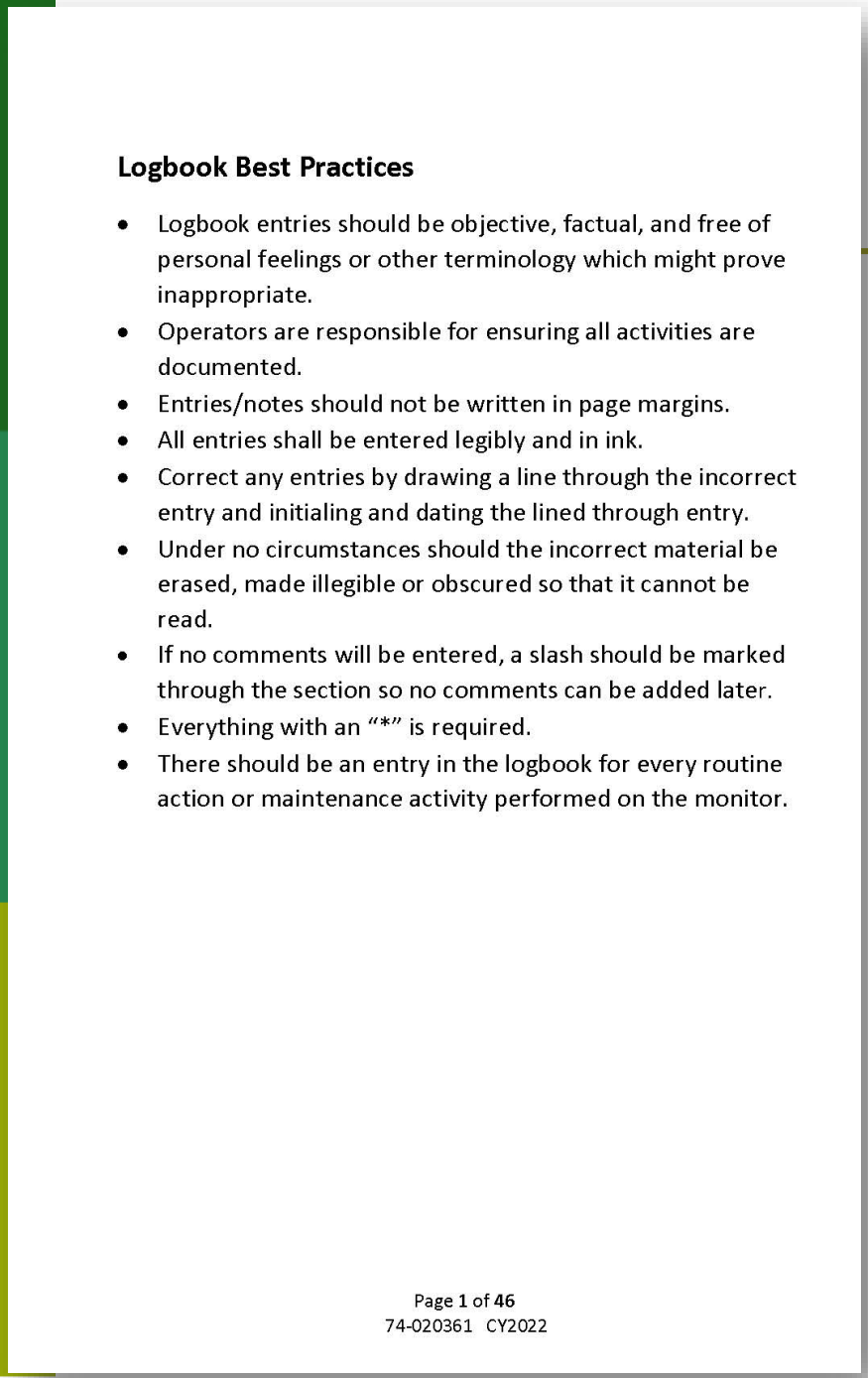
Site Code	*Site Name*
AAU	Ambient Air Lab
BAY	Bay Road
CHK	Chickasaw
DEC	Decatur
TSC	Duncanville
FHP	Fairhope
HEL	Helena
MOM	Montgomery
PCG	Phenix City-Girard School
STH	Southside
WRD	Ward
WTT	Wetumpka Technology

- Unique identifiers
- Site record is location record for an entire calendar year
- Calibrator logbooks also have latest slope/intercept information from last certification

Certification- Slope/Intercept*

DATE	SLOPE	INTERCEPT

*Please verify values against original forms in AirCert



Logbook Best Practices

- Logbook entries should be objective, factual, and free of personal feelings or other terminology which might prove inappropriate.
- Operators are responsible for ensuring all activities are documented.
- Entries/notes should not be written in page margins.
- All entries shall be entered legibly and in ink.
- Correct any entries by drawing a line through the incorrect entry and initialing and dating the lined through entry.
- Under no circumstances should the incorrect material be erased, made illegible or obscured so that it cannot be read.
- If no comments will be entered, a slash should be marked through the section so no comments can be added later.
- Everything with an "*" is required.
- There should be an entry in the logbook for every routine action or maintenance activity performed on the monitor.

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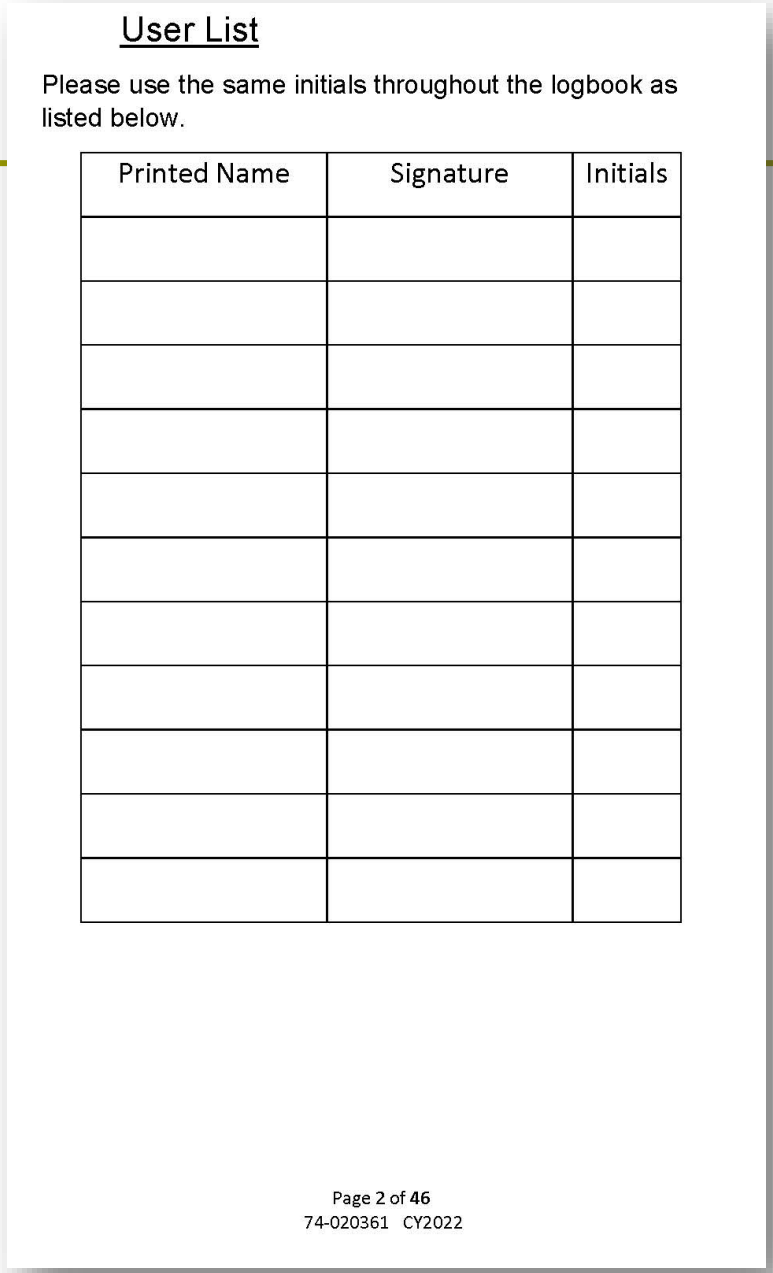
74-020361 CY2022

Best Practices

- 1st page contains general logbook best practices
- Also includes instructions for that particular type of logbook

Signature Page

- 2nd Page contains list of names and initials
- Everyone who uses this logbook must be in this list
- Auditors and repair techs sign all the logbooks before deployment



User List

Please use the same initials throughout the logbook as listed below.

Printed Name	Signature	Initials

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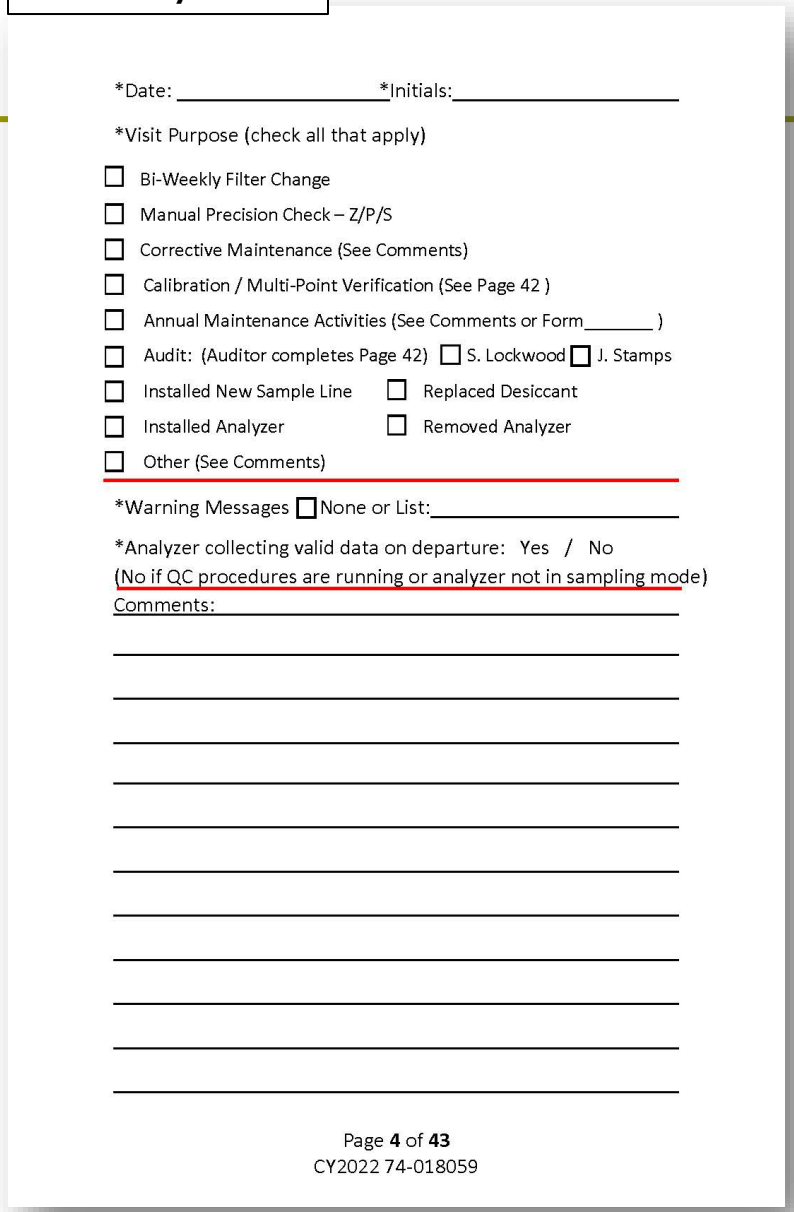
Activity Pages

- Operator checks activities conducted during a visit
- Cross reference to other tables in the logbook by "See Page #"
- Generally, one page per visit
- Each page has the page number, logbook year, and property number of the equipment

Analyzer



*Date: _____ *Initials: _____

*Visit Purpose (check all that apply)

- ☐ Bi-Weekly Filter Change
- ☐ Manual Precision Check – Z/P/S
- ☐ Corrective Maintenance (See Comments)
- ☐ Calibration / Multi-Point Verification (See Page 42)
- ☐ Annual Maintenance Activities (See Comments or Form_____)
- ☐ Audit: (Auditor completes Page 42) ☐ S. Lockwood ☐ J. Stamps
- ☐ Installed New Sample Line ☐ Replaced Desiccant
- ☐ Installed Analyzer ☐ Removed Analyzer
- ☐ Other (See Comments)

*Warning Messages ☐ None or List: _____

*Analyzer collecting valid data on departure: Yes / No
(No if QC procedures are running or analyzer not in sampling mode)
Comments: _____

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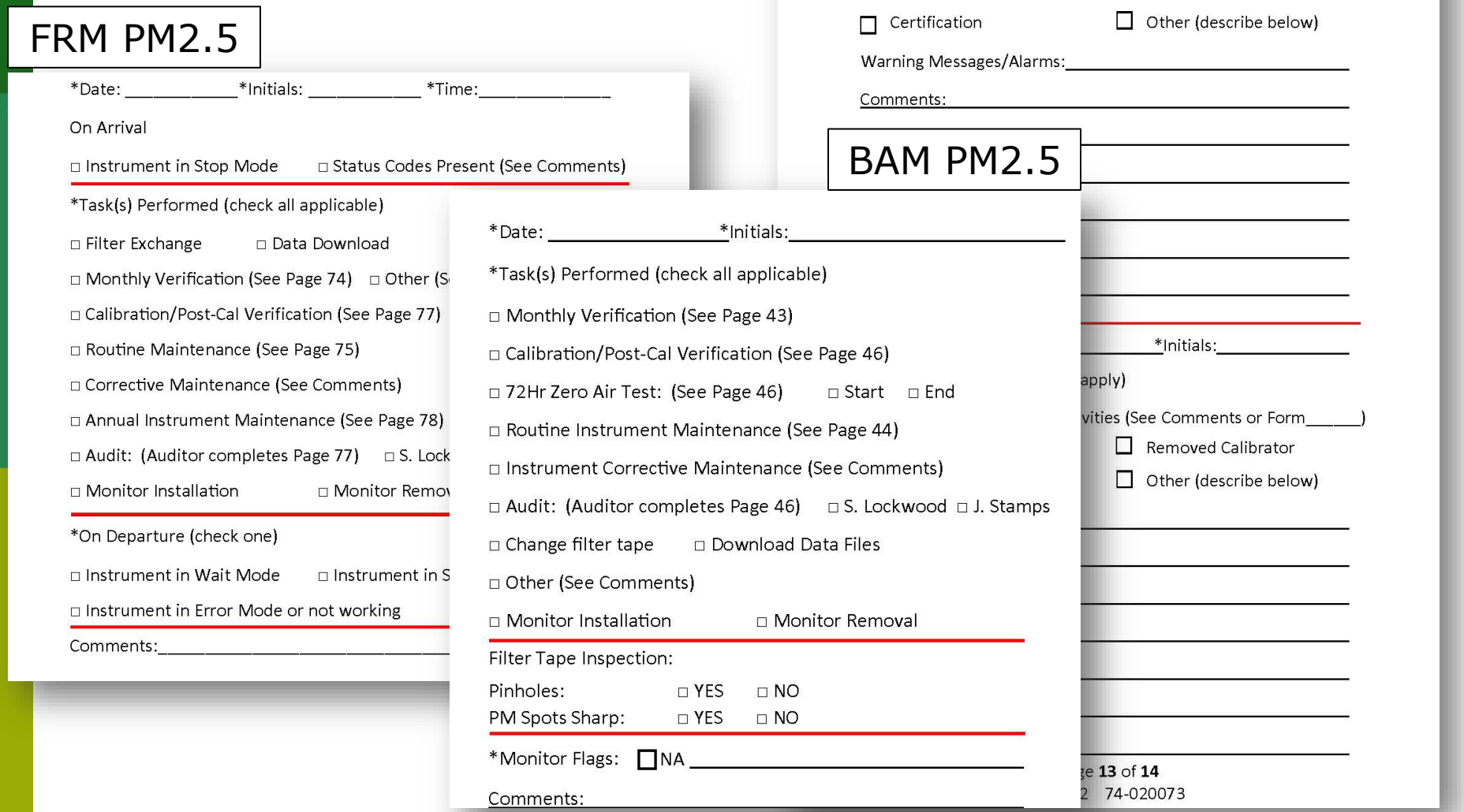
CY2022 74-018059

Activity Pages



FRM PM2.5

*Date: _____ *Initials: _____ *Time: _____

On Arrival

□ Instrument in Stop Mode □ Status Codes Present (See Comments)

*Task(s) Performed (check all applicable)

□ Filter Exchange □ Data Download

□ Monthly Verification (See Page 74) □ Other (S

□ Calibration/Post-Cal Verification (See Page 77)

□ Routine Maintenance (See Page 75)

□ Corrective Maintenance (See Comments)

□ Annual Instrument Maintenance (See Page 78)

□ Audit: (Auditor completes Page 77) □ S. Lock

□ Monitor Installation □ Monitor Remov

*On Departure (check one)

□ Instrument in Wait Mode □ Instrument in S

□ Instrument in Error Mode or not working

Comments: _____

BAM PM2.5

*Date: _____ *Initials: _____

*Task(s) Performed (check all applicable)

□ Monthly Verification (See Page 43)

□ Calibration/Post-Cal Verification (See Page 46)

□ 72Hr Zero Air Test: (See Page 46) □ Start □ End

□ Routine Instrument Maintenance (See Page 44)

□ Instrument Corrective Maintenance (See Comments)

□ Audit: (Auditor completes Page 46) □ S. Lockwood □ J. Stamps

□ Change filter tape □ Download Data Files

□ Other (See Comments)

□ Monitor Installation □ Monitor Removal

Filter Tape Inspection:

Pinholes: □ YES □ NO

PM Spots Sharp: □ YES □ NO

*Monitor Flags: ☐ NA _____

Comments: _____

*Date: _____ *Initials: _____

*Visit Purpose (check all that apply)

☐ Annual Maintenance Activities (See Comments or Form_____)

☐ Installed Calibrator ☐ Removed Calibrator

☐ Certification ☐ Other (describe below)

Warning Messages/Alarms: _____

Comments: _____

*Initials: _____

apply)

vities (See Comments or Form_____)

Removed Calibrator

Other (describe below)

ge **13** of **14**

2 74-020073

Routine Maintenance

- Color coded for maintenance tracking
- Easy to validate and confirm we are meeting requirements

FRM PM2.5

Routine Instrument Maintenance

Date	Initials	Air Intake Foam	PM10 Inlet	Rain Hoods	VSCC	Downtube	Radiation Shield	Sampler Exterior	Sampler Interior

T640

Routine Instrument Maintenance

Date	Initials	Inlet Cleaning	Inspect inner & outer sample tubes	Downtube cleaned	Check downtube is vertically plumbed	Inspect & clean optical chamber and RH/T sensors	Replace Disposable Filter Unit

Required Monthly | Required Quarterly | Required every 6 mos | Required Annually

Other QC Activities

- Space to capture the dates of other required activities
- Quick assessment if site is in compliance

Routine QA Activities

Calibrations (Required at least once every 365 days)

Date of Last Calibration: _____

Date	Initials	Check One: Upon Installation	Check One: Annual

72Hr Zero Test-Dates Monitor was Not Sampling Ambient Air
(Required at least once every 365 days)

Start Date	End Date

Instrument Performance Audit
(Required twice a calendar year)
To Be Completed by Auditor

Date	Initials

Monthly Verification
(Required once a month)

Month	DATE	INITIALS
Jan		
Feb		
Mar		
Apr		

Monthly Validation Checklists

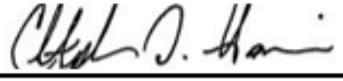
Level 1- Data Validation Checklist

- Simple and easy to answer
- Comments direct the data validator to appropriate documentation
- Sign and date once the information has been verified

PM2.5 Criteria – Operator	Yes	No	NA	Comments
1. Did any status codes/data flags lead to data qualification (removal)?	○	◉	○	
2. Were more than 2 filters voided in a month?	○	◉	○	
3. Monthly flow verification completed?	◉	○	○	6/15/2022
4. All 1-pt flow verifications passed (std and design value)?	◉	○	○	
5. All 1-pt temperature verifications passed?	◉	○	○	
6. All 1-pt pressure verifications passed?	◉	○	○	
7. Any external leak check failures?	○	◉	○	
8. Raw Data saved to server and uploaded to Access/AirVision Db?	◉	○	○	
9. Date of last Calibration?	6/15/2022			
	○	○	○	
	○	○	○	
	○	○	○	
Other comments: 11 out of 11 filters were valid.				
I certify that the above statements are true and accurate to the best of my knowledge.				
Signature: [signature]	Date:	7/21/2022		

Level 2- Data Validation Checklist

- Supervisor check
- Supervisor signs and dates once the information has been verified

PM2.5 Criteria – Supervisor Review	Yes	No	NA	Comments
1. Data Verification Checklist complete w/comments?	◉	○	○	
2. At least 1 VER saved to ESC server?	◉	○	○	
3. Monthly (.csv) Data File saved to ESC server?	◉	○	○	
4. COC saved to ESC server?	◉	○	○	
5. Logbooks saved to ESC server?	◉	○	○	
6. Check instrument logbook, all maintenance completed as required?	◉	○	○	
7. Has one calibration been performed in previous 12 months?	◉	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
Other comments:				
I certify that the above statements are true and accurate to the best of my knowledge.				
Signature: 		Date:	7/21/2022	

Data Verification Checklist		Date		June 2022
Ozone Criteria – Operator	**Yes**	**No**	**NA**	**Comments**
1. At least 1 manual or automated precision check every 14 days?	◉	○	○	
2. Monthly MPKR template used and any issues addressesed?	◉	○	○	
3. Bi-weekly FC recorded on Excel form?	◉	○	○	
4. Shelter temp maintained within 5-40° C?	◉	○	○	
5. Shelter temp < +/- 2.1C SD over 24 hrs?	◉	○	○	
6. Required annotations added to data in AirVision?	◉	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
Other comments:				

Data Verification Checklist		Date		June 2022
Ozone Criteria – Supervisor Review	**Yes**	**No**	**NA**	**Comments**
1. Monthly AirVision Data Report checked for blanks?	◉	○	○	
2. Data Verification Checklist complete w/comments?	◉	○	○	
3. At least 2 FC saved to ESC server?	◉	○	○	
4. MMFDF saved to ESC server?	◉	○	○	
5. MPKR saved to ESC server?	◉	○	○	
6. Logbooks saved to ESC server?	◉	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	

PM2.5 Criteria – Operator	Yes	No	NA	Comments
1. Did any status codes/data flags lead to data qualification (removal)?	○	◉	○	
2. Were more than 2 filters voided in a month?	○	◉	○	
3. Monthly flow verification completed?	◉	○	○	6/15/2022
4. All 1-pt flow verifications passed (std and design value)?	◉	○	○	
5. All 1-pt temperature verifications passed?	◉	○	○	
6. All 1-pt pressure verifications passed?	◉	○	○	
7. Any external leak check failures?	○	◉	○	
8. Raw Data saved to server and uploaded to Access/AirVision Db?	◉	○	○	
9. Date of last Calibration?	6/15/2022			
	○	○	○	
	○	○	○	
	○	○	○	
Other comments: 11 out of 11 filters were valid.				

PM2.5 Criteria – Supervisor Review	Yes	No	NA	Comments
1. Data Verification Checklist complete w/comments?	◉	○	○	
2. At least 1 VER saved to ESC server?	◉	○	○	
3. Monthly (.csv) Data File saved to ESC server?	◉	○	○	
4. COC saved to ESC server?	◉	○	○	
5. Logbooks saved to ESC server?	◉	○	○	
6. Check instrument logbook, all maintenance completed as required?	◉	○	○	
7. Has one calibration been performed in previous 12 months?	◉	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
	○	○	○	
Other comments:				

I certify that the above statements are true and accurate to the best of my knowledge.

Signature: Jennifer VanSickle Date: 7/21/2022

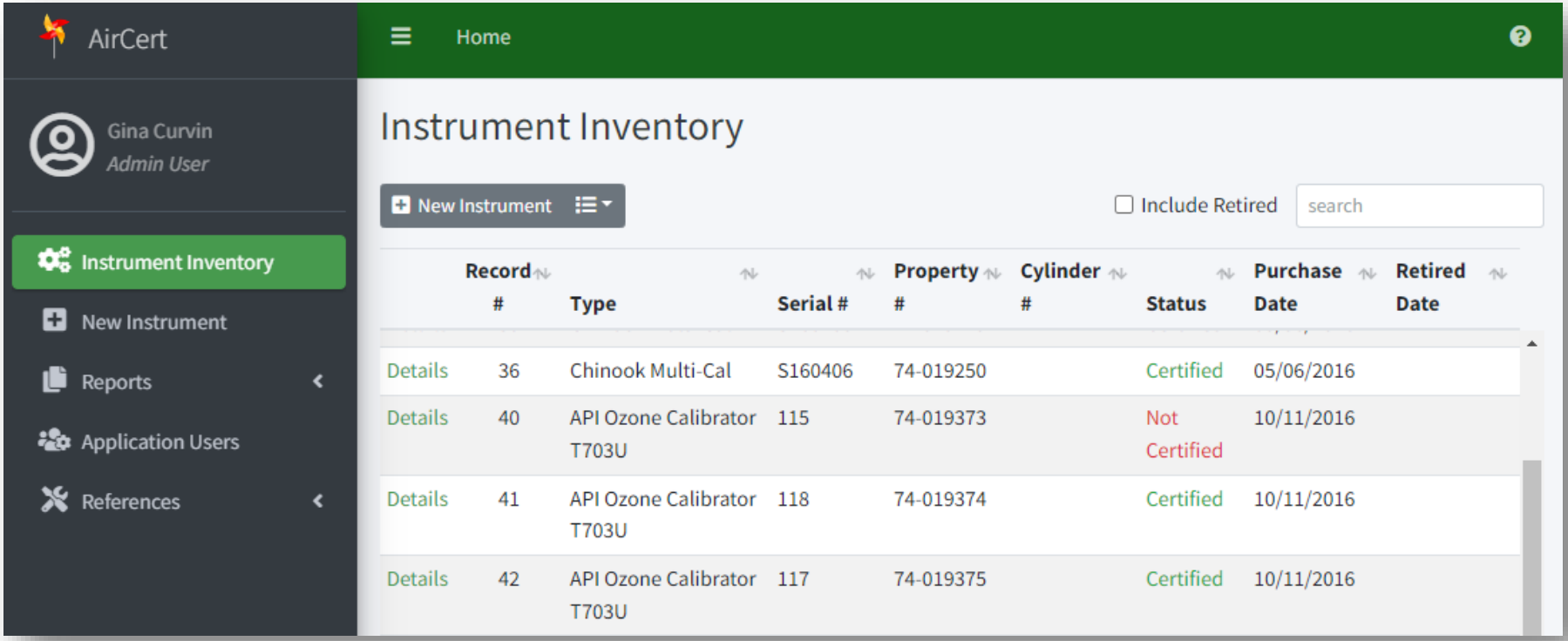
I certify that the above statements are true and accurate to the best of my knowledge.

Signature: Clifford D. Hanni Date: 7/21/2022

AirCert Database

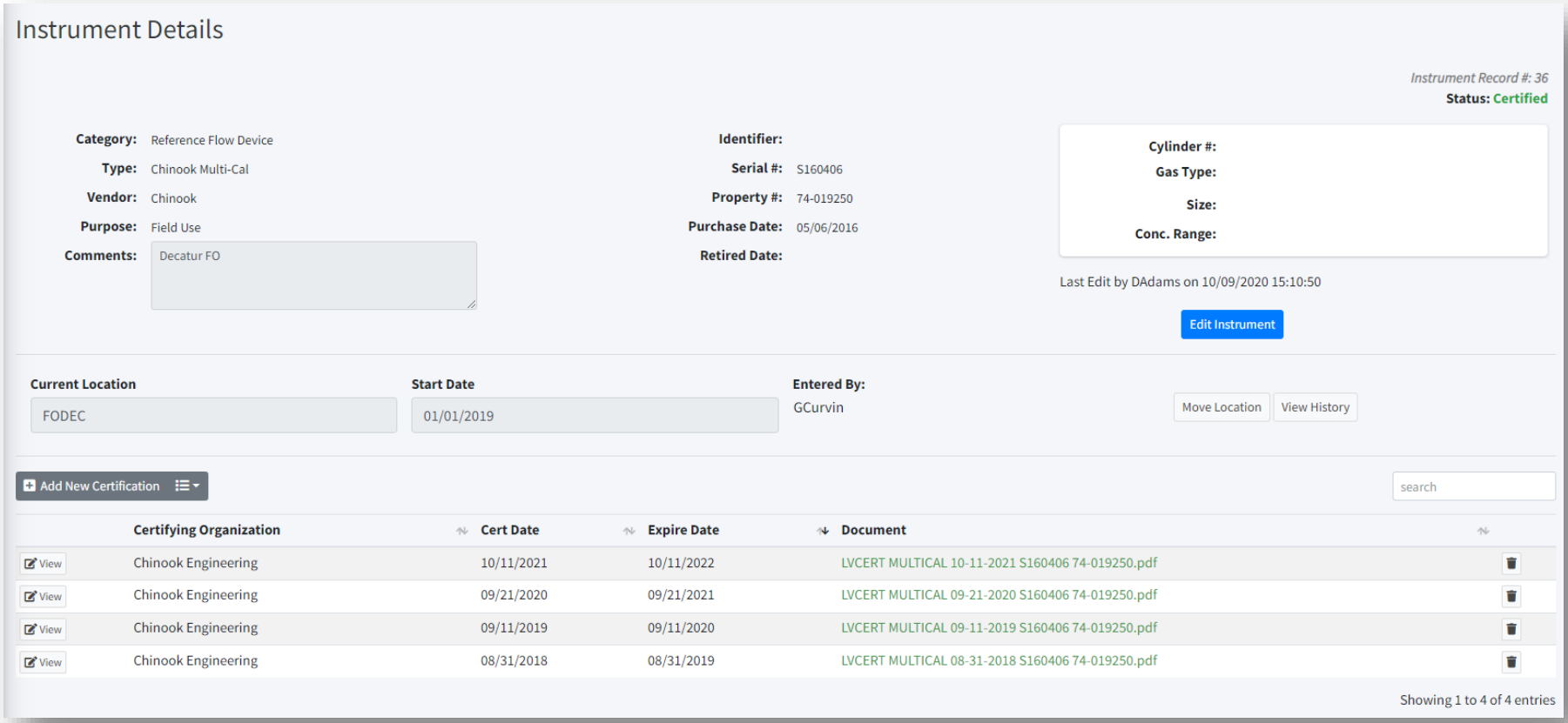
AirCert Database

- Organize and file certifications
- Quickly see certification status
- Easy to search



AirCert Database

- Easy to see certification history of each device and current location



Instrument Details

Instrument Record #: 36
Status: Certified

Category: Reference Flow Device
Type: Chinook Multi-Cal
Vendor: Chinook
Purpose: Field Use
Comments: Decatur FO

Identifier:
Serial #: S160406
Property #: 74-019250
Purchase Date: 05/06/2016
Retired Date:

Cylinder #:
Gas Type:
Size:
Conc. Range:

Last Edit by DAdams on 10/09/2020 15:10:50

Edit Instrument

Current Location: FODEC
Start Date: 01/01/2019
Entered By: GCurvin

Move Location | View History

Add New Certification

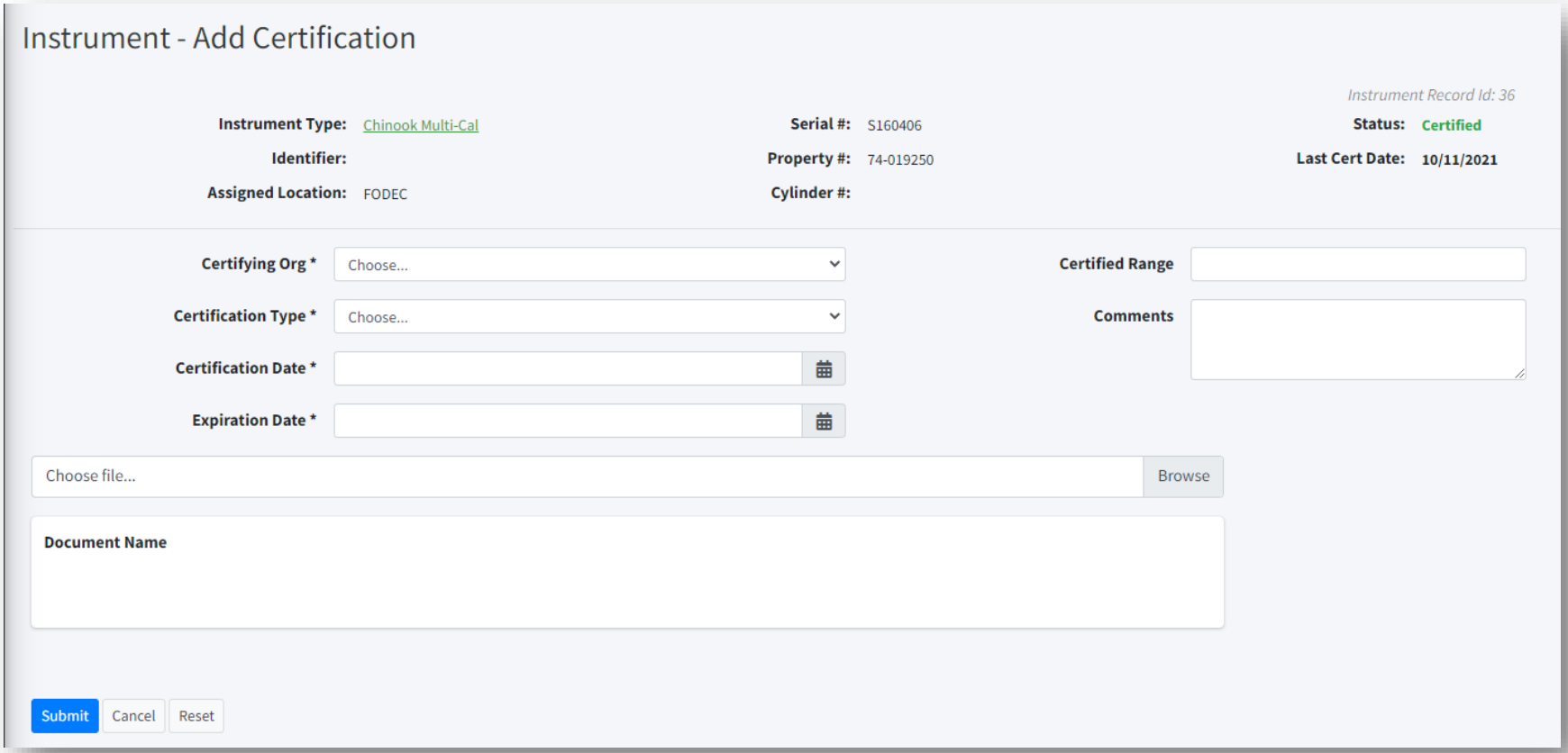
search

	Certifying Organization	Cert Date	Expire Date	Document
View	Chinook Engineering	10/11/2021	10/11/2022	LVCERT MULTICAL 10-11-2021 S160406 74-019250.pdf
View	Chinook Engineering	09/21/2020	09/21/2021	LVCERT MULTICAL 09-21-2020 S160406 74-019250.pdf
View	Chinook Engineering	09/11/2019	09/11/2020	LVCERT MULTICAL 09-11-2019 S160406 74-019250.pdf
View	Chinook Engineering	08/31/2018	08/31/2019	LVCERT MULTICAL 08-31-2018 S160406 74-019250.pdf

Showing 1 to 4 of 4 entries

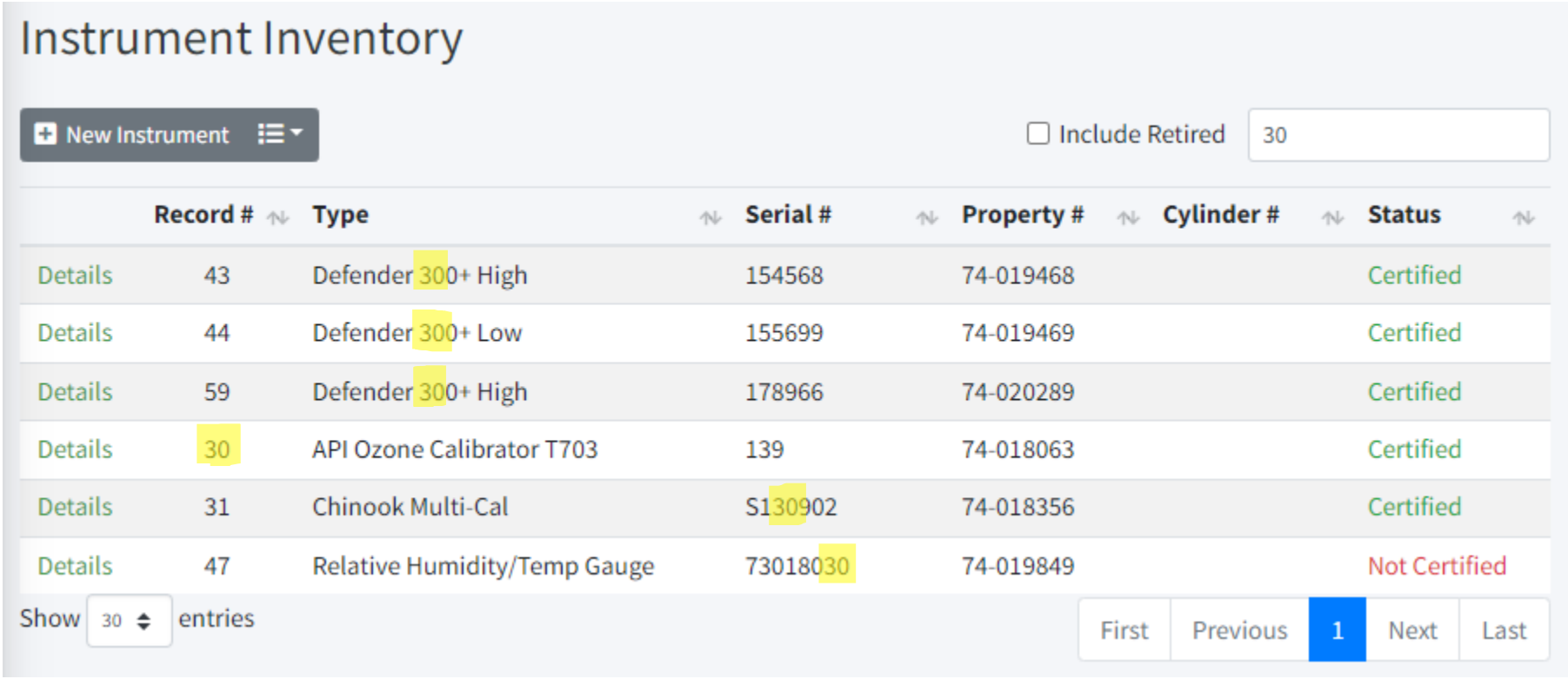
AirCert Database

- Operators can add certifications
- Only add/modify permissions



AirCert Database

- Smart search will show all matching inventory to search key



Instrument Inventory

New Instrument | Include Retired | 30

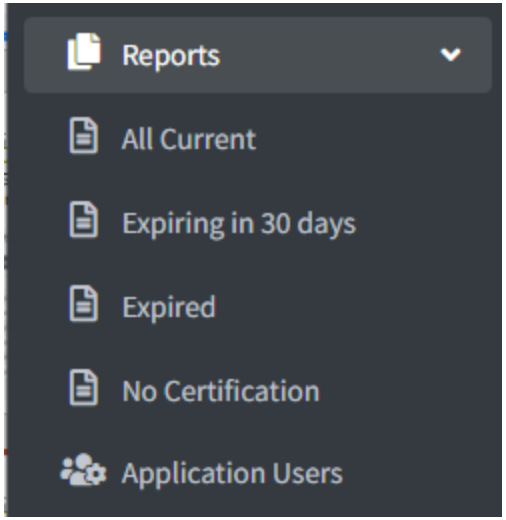
	Record #	Type	Serial #	Property #	Cylinder #	Status
Details	43	Defender 300+ High	154568	74-019468		Certified
Details	44	Defender 300+ Low	155699	74-019469		Certified
Details	59	Defender 300+ High	178966	74-020289		Certified
Details	30	API Ozone Calibrator T703	139	74-018063		Certified
Details	31	Chinook Multi-Cal	S130902	74-018356		Certified
Details	47	Relative Humidity/Temp Gauge	73018030	74-019849		Not Certified

Show 30 entries

First | Previous | 1 | Next | Last

AirCert Database

- Generates status reports on demand
- Automatically sends monthly report with inventory expiring within 60 days to all supervisors



Standard Operating Procedures (SOPs)

SOPs

- All current SOPs were finalized and posted to share point site for easy access

SOP #	Rev #	Cited Meth...	Name	Created
2412	1.0		Pb-TSP Sampling using VFC.pdf	September 9, 2019
2421	1.0		Low Volume PM2.5, PM10 Sampling.pdf	June 5, 2019
2429	0		PM2.5 Chemical Speciation Network Carbon Sampling by...	March 2
2440	0		BAM 1020.pdf	December 20, 2019
2441	1.0		Continuous PM2.5 Using BAM1022.pdf	February 28
2450	1.0		Filter Handling for Low Vol PM2.5 PM10 Sampling.pdf	March 7
2480	2.0		SO2 Using API T100.pdf	March 8
2531	1.0		T400 Ozone Analyzer.pdf	February 28
2550	1.0		AQS State Node-Data Mgt.pdf	January 31
2565	3.0		Data Handling for Operators-SO2, O3, Cont PM2.5.pdf	March 14
2566	1.0		Level 3 Data Validation.pdf	March 14
2567	1.0		AAQMP Audit Procedures.pdf	February 28
2568	1.0		Level 2 Data Validation.pdf	February 14
2569	2.0		Data Handling for Operators-PM2.5 HiVol.pdf	February 28
2570	1.0		AAQMP Corrective Actions.pdf	February 22

SOPs – Staff Involvement

- All operators have opportunity to review SOPs every year
- Using Microsoft Teams so all edits go into one document
  - Gives staff opportunity to post comments and questions
- All staff have access to current SOPs from share point site

Routine QA Call

Communication

- Started with monthly calls, now quarterly
- Dedicated platform to raise issues and discuss problems
- Short call to go over common issues or operator questions that have come up during validation
- Keeps all four field offices engaged in the data validation process

Where are we now?

New Data Validation System

- Now fully implemented, all of EPA's findings and concerns from the 2016 and 2019 TSAs have been addressed
- It took about 5 years to fully implement
- Validation procedures are evaluated and updated annually
- Still encounter some staff resistance

Thank you for attending!

Contact Info

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334-260-2783