

Excel Based Electronic Documentation System

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Goal of Presentation

- Describe Development and Advantages
- Explain Current System
- Demonstrate Current System
- Inspire Others



Development Evolution

- Recognizing Advantages Prompted Development
- Started before Excel existed with Lotus 123
- Continued refinement with Excel Tools
- Worked with EPA to approve use of Electronic Documents
- Continued improvement through upgrades

Requirements and Goals of System

- Meet EPA requirements
- Ease of use, help new staff
- Reliable
- Reduce labor effort
- Adaptable for different station parameters
- Provide centralized system for all documentation needs

Current Document System

- Network of workbooks
- Forms Based, Button Navigation

TASK SELECTION CONTROL PANEL

TASK SELECTION CONTROL PANEL	
Click	I want to enter and save a BAM QC Check
Click	I want to either view or delete an individual BAM QC check from saved records
Click	I want to enter and save a BAM full Calibration
Click	I want to either view or delete an individual BAM full Calibration check from saved records
Click	I want to enter data from a zero background check, analyze, and save if check passes.
Click	I want to generate a monthly QC check form and monthly AQS flowcheck strings.
Click	I want to analyze QC checks saved in this workbook.
Click	I want to enter date when BAM inlet tube was cleaned.

Master Workbook

Site
Check/Log
Module

Met Module

Ozone Module

BAM Module

Current Document System

- Many tools to make form easy and foolproof

DATA ENTRY FORM						
Example Agency						
Site #1 Air Monitoring Station						
OZONE MULTI-POINT CALIBRATION DOCUMENT						
	Make	Model	S/N	Slope	Intercept	
Analyzer	TAPI	400E	1084	0.998	0.3	
Calibrator	TAPI	T703	269	1.0021	-0.1	
Certification Slope/Incpt		1	0	Cert. Date.	07/02/18	
Operator	jsc	Time Begin	10:00	Full Range		
Date	05/15/19	Time End	11:14	AS IS		
CALIBRATION DATA						
	Calibrator Response	TRUE OZONE	Analyzer Response	% Diff	Stability	Linearity Check
Zero	0	0	0.0	N/A	0.1	(<2%/1.5ppb from best fit)
Point #1 ~400ppb	400	400.0	405.0	1.3%	0.3	PASS
Point #2 ~250ppb	250	250.0	254.0	1.6%	0.1	PASS
Point #3 ~150ppb	150	150.0	153.0	2.0%	0.3	PASS
Point #4 ~70ppb	70	70.0	74.0	5.7%	0.2	FAIL

Click to Return to the Control Panel

The analyzer and calibrator's offset is entered in the cells below. The offset values for each instrument are obtained by pressing the test button on the instrument's front pannel until the offset value is displayed.

Additional Resources:
[T400 Analyzer Operation Manual](#)
[T703 Calibrator Operation Manual](#)
[SOP for Multipoint Calibrations](#)

CALIBRATION TOLERANCE FAILS	
Slope	0.99043283
Intercept	-1.50469795
Correlation	0.99997154

All Fields Entered
Data NOT Saved

Click to Save MPCal Form Data

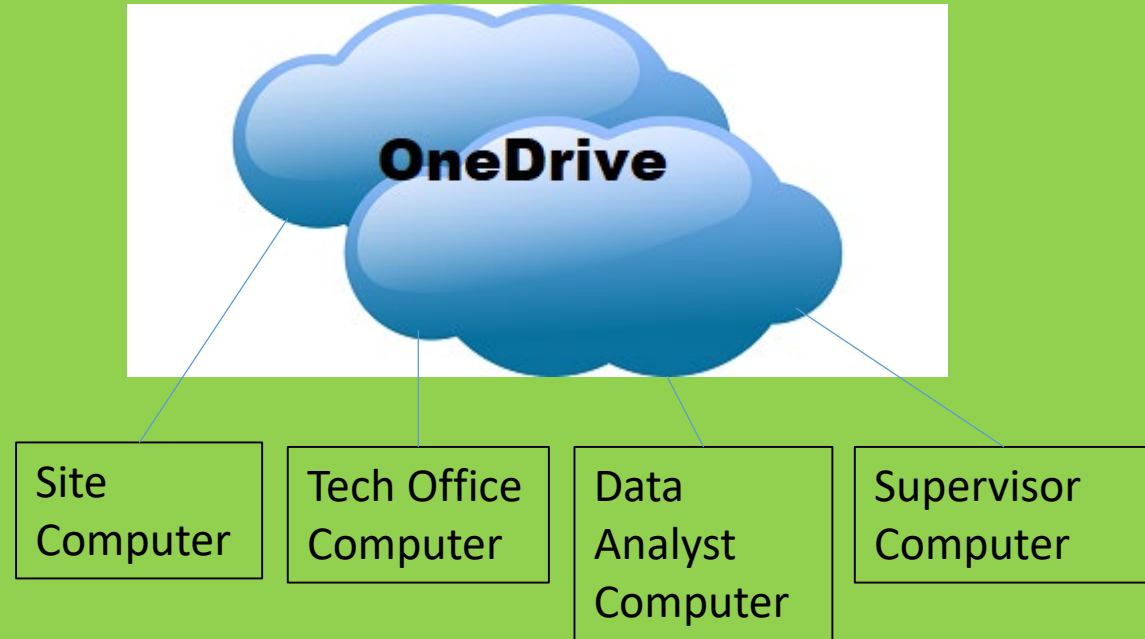
Current Document System

- Authentication through automated second copy and passwords

Santa Barbara County APCD				
Goleta Monitoring Station				
Particulate Sampler QC Flow Check-DATA ENTRY FORM				
Date:	<input type="text"/>	Standard Used		Sampler
Time Begin:	<input type="text"/>	S/N	<input type="text"/>	BAM 1020
Time End:	<input type="text"/>	Make/Model	0	J6136
Operator:	<input type="text"/>	Cert. Date	01/00/00	PM10
	Sampler	Standard	Difference	Control Limits
Flow Rate	<input type="text"/>	<input type="text"/>	#DIV/0!	+/- 4% of True
Ambient Temperature	<input type="text"/>	<input type="text"/>	0	+/-2 Deg C
Ambient Pressure	<input type="text"/>	<input type="text"/>	0	+/-10 mmHg
Leak Check	<input type="text"/>	<input type="text"/>	<input type="text"/>	<1.0 l/m
Pass/Fail	#DIV/0!	<input type="button" value="Click Here to Return to the Control Panel"/>		

Current Document System

- OneDrive provides automated cloud back-up
- OneDrive Sharing allows access to all staff/consultant
- Sharing can be read only if needed



Features to Make Use Easier

- All calculations are pre-programmed, changing color to indicate result ranges
- Entry Cell Pop Up directions for entry cells
- Links to Extra Resources
 - Portion of SOP providing procedure to fill out form
 - Equipment Manuals
 - Video Clips
- Ability to Present data in more useful formats
 - Chart
 - Mimic-CARB or Other QC Forms
 - Automatically create PM sampler flow verification AQS strings

Demonstrate System

Findings

- Details on One-Drive settings very important
- Very Reliable
- Central access to all Docs speeds data review
- Allows new operators to quickly master field tasks
- Need someone in Agency to manage
- Greatly reduces labor associated with documentation

Questions/Contact Info

- I am would enjoy discussing Ideas
- Willing to provide templates to those interested

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