Central States Air Resource Agencies Association (CenSARA)

Presentation
of
EPA's APTI
Course #450/468

Monitoring Compliance Testing
and
Source Test Observations

5.0 Day Workshop

June 9-13, 2014
Jefferson City, MO

Presented By:

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AGENDA

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
AIR POLLUTION TRAINING INSTITUTE (APTI)

EPA APTI Course #450/468
Monitoring Compliance Testing and Source Test Observation

COURSE LOCATION	COURSE DIRECTOR
Tim Largent State of Missouri Department of Natural Resources Air Pollution Control Program Jefferson City, MO 573-751-9496	Jerry Winberry EnviroTech Solutions 1502 Laughridge Drive Cary, North Carolina 27511 919-467-2785 (Office) 919-418-2427 (Cell)

DAY/TIME SUBJECT

June 9, 2014 (Monday, Day 1)

8:30 AM Welcome and Introduction
9:00 Pretest

Topics Dealing with Source Testing Guidance

9:45 Driving Force for Stack Testing/Sources of Methods/Defining HAPs
10:30 Introduction to Stack Testing and Gas Physics
-Gas Physics
-Boyle/Charles Laws
-Correction to Standard Temperature and Pressure
12:00 **LUNCH (On Your Own)**

Topics Dealing with FRMs 1 through 5

1:15 PM Stack Testing Basics: Overview of Federal Reference Methods
Federal Reference Methods 1-2
(Classroom Demonstration with Method 5 Sampling Train)
-Sampling Point Locations **(On-line IsoCal Spreadsheet)**
-Stack Gas Velocity **(On-line IsoCal Spreadsheet)**
3:00 BREAK
3:15 Stack Testing Basics (Cont'd)
Federal Reference Methods 3-4
-Stack Gas Molecular Weight **(On-line IsoCal Spreadsheet)**
-Stack Gas Moisture **(On-line IsoCal Spreadsheet)**
-Sampling Train Configuration
-State Agency Observation Checklist
5:00 Review of Day 1/Adjourn/Homework Problem

DAY/TIME	SUBJECT
June 10, 2014 (Tuesday, Day 2)	
8:30 AM	Homework Review
8:40	Federal Reference Method 5 Operation, Associated Equations and Setting % Isokinetic Sampling Rate
10:15	**BREAK**
10:30	The Source Test
11:00	Role of the Agency Inspector
12:00	**LUNCH (On Your Own)**
1:00 PM	FRM 201/201A for PM-10
2:00	FRM 202 Condensibles and Update
2:45	Review of Laboratory Exercises at Source Simulator
2:55	Laboratory Exercises at Source Simulator Station #1: Nozzle Diameter Station #2: DGM "γ" Station #3: Orifice Meter "ΔH@" Station #4: Stack Gas V_s & Q_s Station #5: Calibration of Type S Pitot Tube Station #6: Stack Gas Moisture Station #7: Pitot Tube Inspection Station #8: FRM 5 Sampling Train Station #9: Apex IsoCal Electronic Spreadsheet for FRM 5 Test Station #10: FRM 1 Traverse Point Determination
4:45	Review of Day 2/Homework Complete Laboratory Exercises Calculations

DAY/TIME	SUBJECT
June 11, 2014 (Wednesday, Day 3)	
8:30 AM	Homework Review/Laboratory Exercises Review
8:40	Laboratory Exercises Station #1: Nozzle Diameter Station #2: DGM "γ" Station #3: Orifice Meter "ΔH@" Station #4: Stack Gas V_s & Q_s Station #5: Calibration of Type S Pitot Tube Station #6: Stack Gas Moisture Station #7: Pitot Tube Inspection Station #8: FRM 5 Sampling Train Station #9: Apex IsoCal Electronic Spreadsheet for FRM 5 Test Station #10: FRM 1 Traverse Point Determination
12:00	**Working Lunch (FRM 5 Setting Isokinetic Rate)**

1:15 PM Laboratory Exercises
Station #1: Nozzle Diameter
Station #2: DGM "γ"
Station #3: Orifice Meter "ΔH@"
Station #4: Stack Gas V_s & Q_s
Station #5: Calibration of Type S Pitot Tube
Station #6: Stack Gas Moisture
Station #7: Pitot Tube Inspection
Station #8: FRM 5 Sampling Train
Station #9: Apex IsoCal Electronic Spreadsheet for FRM 5 Test
Station #10: FRM 1 Traverse Point Determination
4:30 Review of Laboratory Exercises/Group Presentations
4:45 Review of Day 3/Homework Complete Laboratory Exercises

DAY/TIME	SUBJECT

June 12, 2014 (Thursday, Day 4)

8:30 AM Homework Review
8:40 Finalize Laboratory Exercises
Station #1: Nozzle Diameter
Station #2: DGM "γ"
Station #3: Orifice Meter "ΔH@"
Station #4: Stack Gas V_s & Q_s
Station #5: Calibration of Type S Pitot Tube
Station #6: Stack Gas Moisture
Station #7: Pitot Tube Inspection
Station #8: FRM 5 Sampling Train
Station #9: Apex IsoCal Electronic Spreadsheet for FRM 5 Test
Station #10: FRM 1 Traverse Point Determination
10:00 New Advances in FRM 5 Sampling Equipment
10:30 BREAK

Topics Dealing With VOC Stack Testing

10:45 Introduction to VOCs/Selecting VOC Sampling and Analytical Methods
(State of Pennsylvania Selection Process)
Reporting VOC Emissions (in ppms? In #/Hr.? etc.) and Calculations (i.e., "As Carbon?"; "As VOCs?"; "As Organics?"; As Propane?")
Midwest Scaling Protocal
11:45 LUNCH (On Your Own)
12:45 Overview of Stack Testing for VOCs Utilizing FRMs 18, 25, 25A , CTS 035 and SW-846 Methods
1:15 Federal Reference Method 18

2:15 Federal Reference Method 25
3:15 BREAK
3:30 Federal Reference Method 25A
4:30 Weaknesses/Strengths of FRMs 18, 25, 25A
5:15 Review of Day 4/Study for Final Exam

DAY/TIME SUBJECT

June 13, 2014 (Friday, Day 5)

8:30 AM Review of Day 4

Topics Dealing With Stack Testing Gas Turbines, Acid Gas Monitoring and Topics

8:40 Overview of CEMS for Engines and Gas Turbine Testing
- Federal Reference Method 6C/7E/3A and 20
- Portable Electrochemical Systems (i.e., ECOM, Land Combustion, ANARAC etc.)
- Fourier Transform Infrared (FTIR) Spectroscopy Technology
-ASTM D6522-00 (Portable Analyzer Technology

11:00 FRM 320/ASTM D6348-03

12:00 LUNCH (On Your Own)

1:00 Federal Reference Method 26/SW-846 Methods 0050/0051 (HCl/Cl_2)
-Sampling Train Design
-Sampling Techniques
-Analytical Methodology
-Agency Observer Checklist

2:00 Stack Testing Special Topics
-High Moisture Stacks
-High Pressure Stacks
-High VOC Concentration Stacks/Molecular Weight Determination

3:00 Final Exam/Course Adjourn

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