



Source (Stack) Testing – Developing an Effective Test Program

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Importance of Safety and Inspection Programs

- Field
 - ~ Equipment – electrical, pneumatic, hydraulic
 - ~ Fall Protection
 - ~ Adjacent Work Areas
- Office
 - ~ Emergency Exits, Fire Protection, Slips/Trips/Falls, AEDs
- Home
 - ~ Garage – tools, electrical, waste products, combustibles
 - ~ Unsafe Acts by family members

Safety Message

**NOTE: Not a
METCO vehicle
or project!!!**



Developing an Effective Source Test Program

- Source Sampling Key Drivers
- Procedures and Guidelines
- Preliminary Information for the Source Testers
- Physical Requirements to Perform the Test
- Number of Test Runs and Test Durations
- Data Required From the Facility
- Test Reports



Source Sampling Key Drivers

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- Compliance or Performance Test
 - ~ Federal Subpart
 - ~ TCEQ Operating Permit
 - ~ Consent Decree
 - ~ Texas Administrative Code
 - ~ Permit by Rule
- Continuous Emission Monitoring System (CEMS) Certification (a.k.a. RATA)
- EPA Information Collection Request (ICR)
- Vendor Performance Guarantee
- Engineering, Diagnostic, Troubleshooting





Procedures and Guidelines

- Procedures and guidelines can come from a number of requirements:
 - ~ Promulgated EPA Methods, such as 40 CFR 60, Appendix A; Part 51, Part 63, Part 75, etc.
 - ~ EPA Performance Specifications, such as 40 CFR 60, Appendix B
 - ~ Federal Subparts
 - ~ TCEQ Sampling Procedure Manual (revised July 1985)
 - ~ EPA National Stack Testing Guidance Document (revised April





Preliminary Information for the Source Testers

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- What source(s) are to be tested?
- What is driving the testing event?
- What are the applicable regulations and emission limits?
- How many tests runs and/or test conditions are required?
- Is it a continuous or batch process?
- Anticipated schedule?
- Conduct a Site Walk-Down?



Preliminary Information for the Source Testers

- Pre-test meeting with agency required?
- What are the agency test notification requirements?
- Are there atypical conditions involved?
 - ~ High concentrations of a specific pollutant
 - ~ High positive or negative pressure at the test location
 - ~ High flue gas temperature
 - ~ Saturated conditions or high particulates in the gas stream
 - ~ Height to sample ports

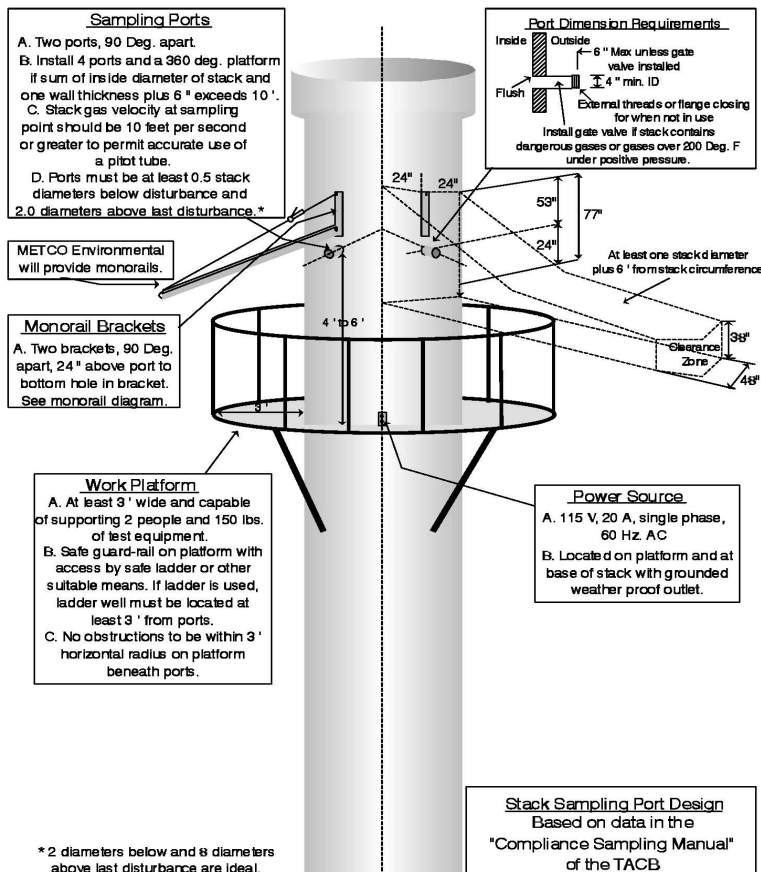


Preliminary Information for the Source Testers

- What are the plant entry and safety requirements?
 - ~ Drug Testing – DISA, 5-panel, 10-panel, Hair Test, Breath-Alcohol
 - ~ Background Checks
 - ~ Annual Safety - OSHA 24 or 40 Hour Hazwoper, Basic Orientation Plus, MSHA, SafeLand
 - ~ Site-Specific – computer based, instructor led
 - ~ Other – Fall Protection, First Aid/CPR, Equipment Certifications, Breathing Air

Physical Requirements to Perform the Test

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Physical Requirements to Perform the Test

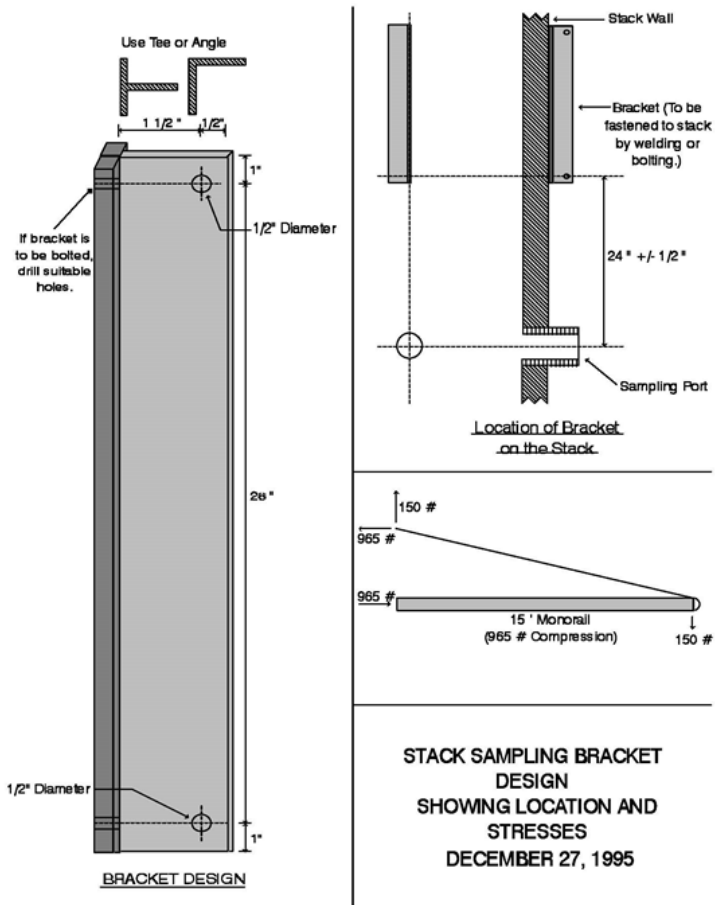
- Sample Ports
 - ~ Minimum of 2 at 90 degrees from each other
 - ~ 4 at 90 degrees if inside diameter is $>10'$
 - ~ 3" minimum port diameter (ideal)
 - ~ 6" minimum port diameter if sampling for PM_{10/2.5} (EPA Method 201A)
 - ~ Ports must be ≥ 2.0 stack diameters downstream from a disturbance (bend, constriction, expansion, inlet), and ≥ 0.5 stack diameters upstream from a disturbance (typically the outlet itself).

Physical Requirements to Perform the Test



Physical Requirements to Perform the Test

- Monorail Brackets



Physical Requirements to Perform the Test



Physical Requirements to Perform the Test

- Available Power
 - ~ 110V, 20A – How many separate circuits are available?
 - ~ 480V, 50A – Connect mobile laboratory
 - ~ Portable Generator (considered last option)
- Access to the Test Location
 - ~ Parking near the source
 - ~ Ladder, stairs, or elevator to existing platform with handrails
 - ~ Scaffolding
 - ~ Rooftop
 - ~ Man lift (JLG, Scissor lift)

Physical Requirements to Perform the Test

- Specialty Equipment
 - ~ Packing gland probes
 - ~ Water-cooled or Air-cooled probes
 - ~ Oversized impingers to accommodate high moisture



Number of Test Runs and Test Durations

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- Relative Accuracy Test Audit (RATA)
 - ~ Minimum of 9, 21-minute runs
 - ~ Maximum of 12 runs. Can disregard up to 3 for any reason.
- Compliance or Performance Test
 - ~ Triplicate, one-hour runs
 - ~ Durations can be driven by required minimum sample volume.
 - ~ Number and durations can be driven by the approved test plan.
 - ~ Test conditions may be described by the permit and/or the approved test plan.



Data Required from the Facility

Data Required From the Facility

- Written description of process, or process schematic.
- Copy of most recent applicable permit (current emission limits).
- Unit operational data collected during the testing event.
 - ~ Production (bbl/day, gallons/hr, lbs/hr, coke burn, etc.)
 - ~ Load (Megawatts, heat input, steam rate, etc.)
- Control equipment (scrubber rates, baghouse pressure drop, firebox temperatures, etc.)
- RATA requirements
 - ~ Hard copy of CEMS output and plant load
 - ~ 7-day drift test, if a new system
 - ~ Response time test



Facility Data Required From the Facility

- Units are typically operated at max rates for compliance or performance tests. Operating a unit >10% over the previous established operating rate will trigger another test. (*TCEQ Guidance Document*)
- Units are only required to operate at >50% of normal rate during a RATA.

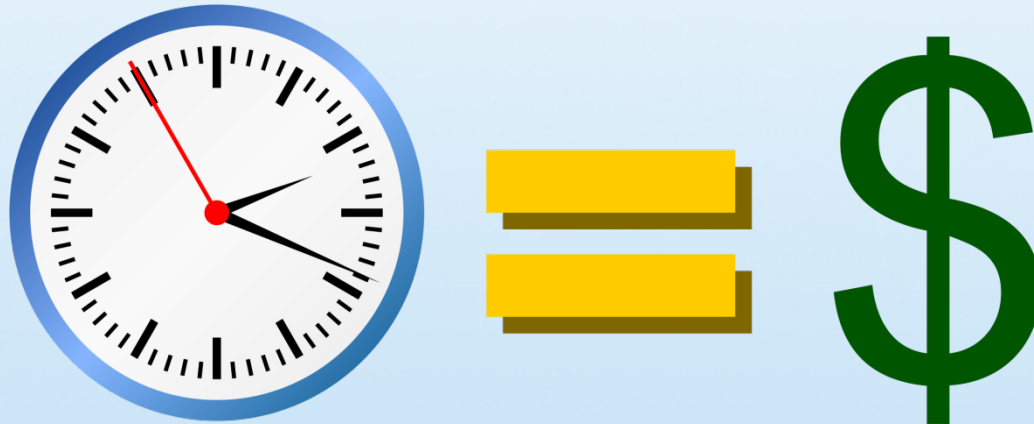


Test Reports

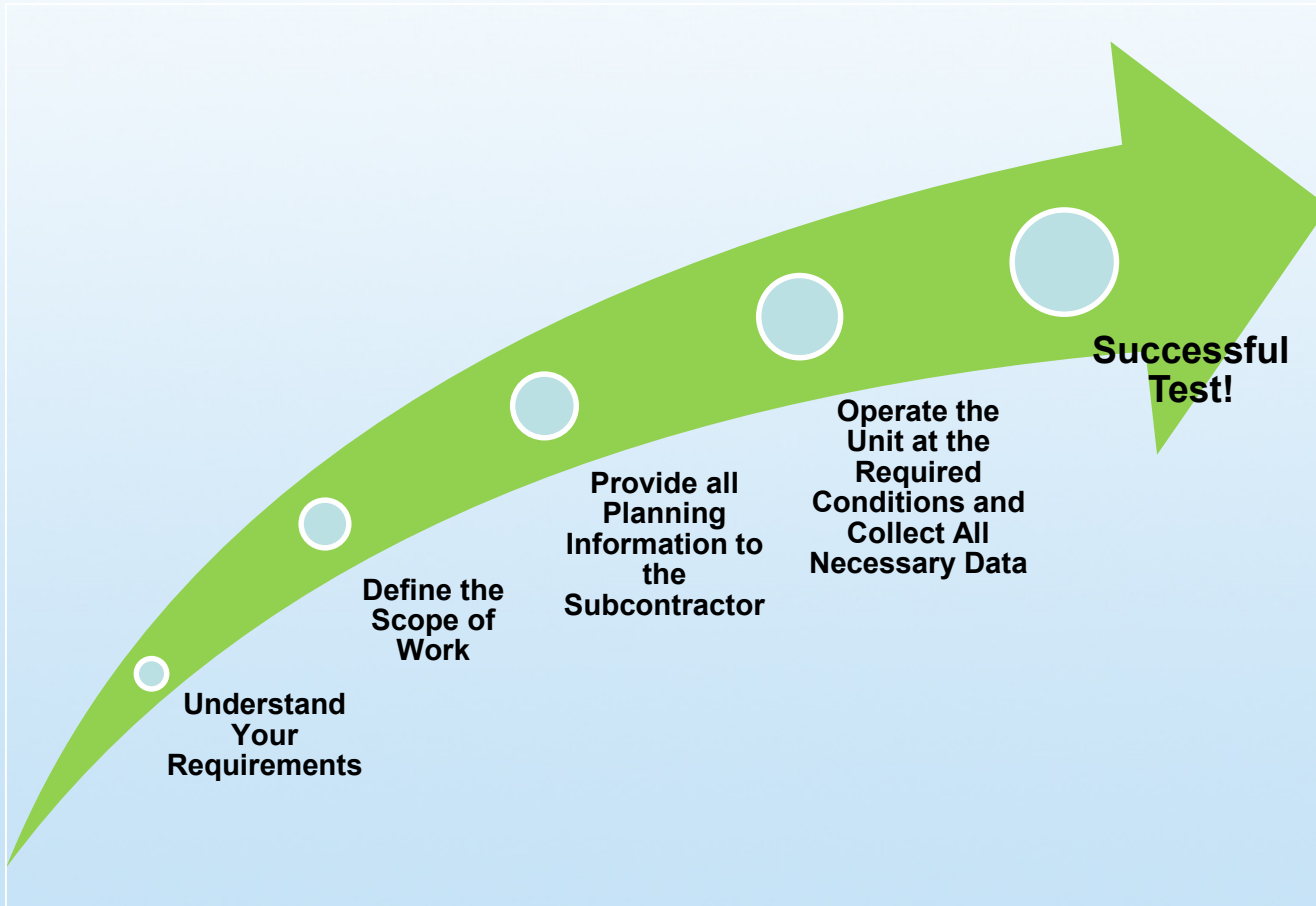
Test Reports

- TCEQ Sampling Procedures Manual, Chapter 14, “Contents of Sampling Reports”
- Electronic Reporting Tool (ERT)
- State Agency-specific
- Submittal deadlines
 - ~ Federal Subparts – 60 days
 - ~ TCEQ Operating Permits – 60 days, but some older permits still specify 30 days.
- Most reports can be generated within 14 – 21 days for draft review.

Bottom Line



Successful Source Test Planning





Acknowledgements

Mike Hutcherson, METCO Director of Field Operations

Questions?

