

# STACK TEST PROTOCOL - REQUEST FOR APPROVAL



This Section for DEQ Use Only

- PROTOCOL (consisting of pages 1 through \_\_\_\_ ) IS APPROVED **AS SUBMITTED**.
- PROTOCOL (consisting of pages 1 through \_\_\_\_ ) IS APPROVED **WITH REVISIONS NOTED IN APPENDIX B**.

Failure to conduct tests in accordance with the approved protocol may result in the test results being rejected by DEQ.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

I. <b>Facility Name:</b>	<b>DEQ Registration Number:</b>
<b>Physical Location:</b>	
<b>Emission Unit(s) to be tested:</b>	
*Is an audit sample required? Yes <input type="checkbox"/> No <input type="checkbox"/> Please explain why:	
If yes, is the Facility obtaining a sample in accordance with EPA requirements? Yes <input type="checkbox"/> No <input type="checkbox"/> Please explain why:	

II. <b>Stack Testing Firm:</b>	
<b>Contact Name:</b>	<b>Phone:</b>
<b>Environmental Lab:</b>	<b>**Virginia Laboratory ID:</b>
<b>Contact Name:</b>	<b>Phone:</b>

\*40 CFR [§60.8\(g\)](#), [§61.13\(e\)\(1\)](#), [§63.7\(c\)\(2\)\(iii\)](#), and [Part 51, Appendix M, §4.0](#)

\*\*As of 1/1/2012, analytical data submitted to DEQ to demonstrate compliance must have been performed by an environmental laboratory certified or accredited in accordance with 1VAC30, Chapter 45 and 46, available at <http://www.deq.virginia.gov/Programs/Air/PermittingCompliance/Compliance/VirginiaEnvironmentalLabAccreditation.aspx>. Failure to meet this requirement could result in rejection of the stack testing results.

**For any laboratory utilized during this testing event, documentation demonstrating VELAP certification/accreditation for the analytes being tested must be submitted with this protocol, or at a time in advance of the testing event acceptable to the DEQ regional office responsible for reviewing the data.**

**DOCUMENT CERTIFICATION:** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering and evaluating the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

Must be signed by a Responsible Official as defined in 9 VAC 5-20-230 of the Regulations for the Control and Abatement of Air Pollution, available at [www.deq.virginia.gov](http://www.deq.virginia.gov)

PRINTED NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

**III. Test Plan:**

**Test Required By:** Condition # \_\_\_\_\_ of permit dated \_\_\_\_\_ and/or \_\_\_\_\_

**Deadline:** Testing must be completed by \_\_\_\_\_ (date) to meet the \_\_\_\_\_ - day deadline required by  
 the permit dated \_\_\_\_\_ and/or  Regulation \_\_\_\_\_ (reference).

Test Date	Operating Rate	EPA Test Method To Be Used	Pollutant or Parameter Measured	No. Runs & Run Length for Pollutant Testing	Applicable Numeric Emission Limitation	Source of Emission Limitation (e.g., Permit condition #, NSPS, MACT, etc.)

(Continue on additional sheet if necessary)

**IV. Description of planned deviations from Test Methods:**

- No deviations are planned, OR
- Deviations are planned as described in the following table:

# PLANNED DEVIATIONS

<b>EPA Test Method</b>	<b>Description of Requirement</b> (Indicate Section No. from Method)	<b>Description of Deviation</b> (Identify reason if requesting DEQ approval)	<b>Approvals</b> (Attach copies of all EPA approvals)
			<input type="checkbox"/> EPA approval attached <input type="checkbox"/> EPA approval requested on _____(date) <input type="checkbox"/> DEQ approval requested
			<input type="checkbox"/> EPA approval attached <input type="checkbox"/> EPA approval requested on _____(date) <input type="checkbox"/> DEQ approval requested
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(Continue on additional sheet if necessary)

**V. Source Operations:** The purpose of a stack test is to demonstrate that a process and any associated emission control equipment are capable of meeting required emission limitations. Therefore, it is important to identify those parameters that affect actual emission rates and to ensure that such parameters remain at the tested or more conservative setting(s), except during start-up, shutdown, or malfunction. Records of those parameter settings must be maintained during and after the test to provide reasonable assurance that the equipment continues to operate in compliance with all operating and emission limitations. **The test results report must include the parameters identified below and their settings during testing.**

**1. Adjustable Operating Parameters:** Following a discussion with your air inspector, identify all adjustable process and control equipment parameters that have a measurable effect on emissions, and complete the table below. Example parameters are listed in Appendix A.

Parameter	Setting/value during stack test	Monitoring Frequency	Fixed <sup>1</sup> or Varying <sup>2</sup> after test	If varying <sup>2</sup> , justify not testing at multiple values.
Operating rate:				

(Continue on additional sheet if necessary)

<sup>1</sup> Fixed means that no changes will be made (except during start-up, shutdown, or malfunction) without validating with another stack test.

<sup>2</sup> Varying exclusive of start-up, shutdown, or malfunction.

**2. Performance Indicator Parameters:** Other parameters necessary to establish system performance, or useful in detecting deteriorating performance, need to be monitored as well. Some example parameters are listed in Appendix A. Any parameter that is required by permit to be monitored must be monitored during the stack test at a frequency that will provide a representative average. Following a discussion with your air inspector, complete the table below. **The test results report must include the run averages and also raw data if manually recorded.**

Parameters to be Monitored	Measurement Frequency

(Continue on additional sheet if necessary)

**VI. Sampling Ports:** In the space below or on a separate sheet, sketch the stack or duct as follows:

<b>TOP VIEW</b> - show: 1) shape, 2) sample ports.	<b>ELEVATION VIEW</b> - show: 1) shape, 2) sampling ports, 3) all flow disturbances (upstream and downstream) affecting conditions at sampling ports, 4) distances from ports to disturbances, 5) gas flow direction.
<p>Circular Stack: Diameter = _____</p> <p>Rectangular Stack: L = _____ W = _____ <math>\Leftarrow</math> Equivalent Diameter = <math>(2LW)/(L+ W) =</math> _____</p>	

	UPSTREAM (exit side of ports)	DOWNSTREAM (process side of ports)
Type of Disturbance (E.g., exit, fan, bend, baffles, expansion, restriction, visible flame)		
Distance from Port to Disturbance = (dist.)		
No. diameters from Port to Disturbance = (dist./dia.) or (dist./equivalent diameter)	Diameters	Diameters

## APPENDIX A

### EXAMPLES OF PARAMETERS TO BE MONITORED DURING TESTING

*Note: The facility is responsible for identifying and monitoring all process and control parameters that may reasonably be expected to affect the stack test results and to confirm operating conditions. These examples are not all-inclusive and may not always apply.*

I. PROCESS	ADJUSTABLE OPERATING PARAMETERS	PERFORMANCE INDICATOR PARAMETERS
<b>ALL</b>	Operating rate; raw material composition and quality; automatic or manual control; equipment settings	Instrument readings as appropriate to establish operating conditions
<b>Combustion</b>	Fuel composition and quality; soot blowing frequency; damper settings, flue gas recirculation; water/steam injection rate; burner pressures; over/under fire air adjustments	Visible emissions/opacity; CO, HC concentration in flue gas; excess air; O <sub>2</sub> concentration.
<b>Coating (printing, painting)</b>	VOC content of inks, coatings; equipment settings	

II. CONTROL EQUIPMENT	ADJUSTABLE OPERATING PARAMETERS	PERFORMANCE INDICATOR PARAMETERS
<b>ALL</b>	Automatic or manual control; equipment settings	Instrument readings as appropriate to establish operating conditions
<b>Capture System</b>	Damper positioning; doors or access panels open or shut; fan sheave or speed setting	Fan amps; pressure inside enclosure; integrity (door closed, no new openings); duct air velocity; direction of air flow at openings
<b>Afterburner or Thermal Oxidizer</b>	Temperature set points; frequency of flow reversal (for a regenerative system)	Temperature
<b>Carbon Adsorber</b>	Bed regeneration setting (initiated by time or outlet concentration); inlet gas temperature	Pressure drop
<b>Catalytic Oxidizer</b>	Temperature set points	Inlet & outlet temperature; catalyst activity; HC concentration in flue gas (measured with hand held PID or FID); pressure drop
<b>Dry Scrubber</b>	Type of reactive chemical; purity of reactive chemical; particle size of reactive chemical; injection rate; temperature	Feed rate indicator; temperature indicator
<b>ESP</b>	Number of fields in service; location of out-of-service fields(s); control software/microprocessor settings and/or methodology; gas temperature; rap rate; flue gas flow	Visible emissions/opacity; power levels (secondary current & secondary voltage)
<b>Fabric filter</b>	Setting for bag cleaning frequency (e.g. time or pressure drop settings); number of bags/compartments in service	Pressure drop; visible emissions/opacity; triboelectric sensor reading (bag leak detector)
<b>Liquid Scrubber (packed bed, spray; venturi)</b>	Liquid flow rate; venturi throat opening; particulate concentration in liquid (all fresh just before test or equilibrium levels); fresh liquid make-up rate; set point for neutralizing, oxidizing or reactive chemical addition; pH set point.	Pressure drop; neutralizing, oxidizing or reactive chemical concentration; pH

## APPENDIX B

### REVISIONS REQUIRED BY DEQ AS A CONDITION OF APPROVAL

This Section for DEQ Use Only	
Section Reference	Required Revision(s) to Protocol

(Continue on additional sheet if necessary)