SANTA BARBARA COUNTY

AIR POLLUTION CONTROL DISTRICT

POLICIES AND PROCEDURES

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Topic: Permit Requirements for Source Testing

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This policy and procedure defines the criteria which triggers a source test, prescribes the necessary components of the permit condition that imposes the source test condition, and describes the interpretation and use of source test data. Source tests are conducted to verify compliance with District Rules, State and Federal Regulations, and permit conditions. Tests are required during the Source Compliance Demonstration Period (SCDP) to assess the accuracy of the information and assumptions used to establish emission and process limits in the Authority to Construct (ATC). After issuance of the Permit to Operate (PTO), source tests are generally conducted on a regular basis to verify ongoing compliance with emission and process limits. For facilities with Continuous Emission Monitoring Systems (CEMS), source tests also perform the function of auditing the CEMS. The District Source Test Procedures Manual (STPM) and Enforcement Policy and Procedure (P&P) I.D.10 (Source Test Observation and Enforcement) should be referenced for more detailed information on these topics. A Table of Contents for the P&P follows.

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I. PERMIT REQUIREMENTS FOR SOURCE TESTS

A. General Information

The District has the authority under the California Health and Safety Code (section 42303) to perform source tests as necessary to determine the quantity of emissions from a source. Furthermore, the California Air Resources Board (ARB) has two policy documents ("Elements of an Effective Air Pollution Control Program" and "Subvention Evaluation Criteria-Enforcement") which include criteria for District source testing programs. The District criteria specified below for triggering source tests of permitted equipment is consistent with the ARB policy. It should be noted that when a source testing requirement is triggered, all permitted pollutants for the affected piece of equipment shall be tested.

B. Compliance Source Test Criteria: New Sources (as defined in District rules)

Test Trigger

When processing an application for an ATC, a source test requirement shall be stipulated in the ATC by condition when one

or more of the following apply:

- The emission limit for any single pollutant for a specific process or piece of equipment exceeds 25 TPY, except carbon monoxide (CO). CO shall trigger source testing when the emission limit exceeds 100 TPY.

- The stationary source requires offsets.

- The equipment will provide emission reduction credits (ERCs).

- The source requires Best Available Control Technology (BACT). In most cases, source testing will be necessary to confirm that BACT standards are attained. For certain other BACT decisions, source testing is not applicable and other means of compliance may be used. Examples of BACT which does not require source testing include:

  (1) Gas stations with Phase I and II vapor recovery which require only control-specific performance tests during SCDP observed by inspectors,

  (2) Sources with an approved Inspection and Maintenance (I&M) program do not require source testing,

  (3) Low VOC coatings do not require source testing. Laboratory analysis for VOC content may be required.

- A specific District Prohibitory Rule applies (e.g., Rule 333 for internal combustion engines, Rule 336 for EtO sterilizers).

- The source is "borderline" exempt from BACT or other Rule requirements (e.g., estimated emissions are less than 10% below BACT trigger, emissions analysis assumptions are not well substantiated), or the source proposes non-BACT control to remain below Rule thresholds.

- Operating parameters or engineering assumptions used in the engineering evaluation require verification (e.g., emission rates based on manufacturer data, contaminated soil cleanup (CSC) projects. Note that CSC source tests are streamlined. Consult with the District CSC project manager for details).

Test Frequency

Source test frequency shall be specified in the permit condition. Test frequency is dependent upon the specifics of the source. For most New Source Review (NSR) permits which trigger a source test requirement, an annual test is required. Exceptions include:

- A District Rule specifies differently (e.g., Rule 333 specifies biennial tests for I. C. engines).

- Equipment operated less than 200 hours annually. The operation time must be verifiable for the test requirement to be waived.

- For facilities which require offsets, all applicable equipment (i.e., non-mobile stack emission sources) which contribute to the emission liability must be source tested during SCDP to verify the estimated emissions. In subsequent years, equipment at the facility which passes the SCDP source test (i.e., the accuracy of the estimated emissions is confirmed), and does not meet any other "test trigger" criteria detailed above, should be exempt from subsequent annual tests.

- Sources which have verified emissions/operating parameters proposed in the ATC application via the SCDP source test. This applies to CSC sources and sources "borderline" exempt from annual test requirements. Due to the project life span and the fact that monthly monitoring is required, CSC sources generally require only an SCDP test. For sources borderline exempt from Rule requirements, the level of actual emissions (as tested) relative to any trigger threshold, and the technical confidence in the reliability of the system, should be considered when determining whether subsequent tests should be stipulated in the PTO.

C. Compliance Source Test Criteria: Existing Sources

Test Trigger

When processing a permit reevaluation for a PTO, the District shall add/include a source test requirement in the PTO if any of the following apply:

- A single pollutant for a specific process or piece of equipment exceeds 25 TPY of actual emissions or 100 TPY of

permitted emissions, with the exception of carbon monoxide (CO). CO shall trigger source testing in the case permitted emissions exceed 100 TPY.

- An applicable Prohibitory Rule has been adopted since issuance or the last reevaluation of a permit.

- The source is "borderline" compliant with an emission limit in a District rule (estimated emissions within 10% of a rule limit).

- The source uses a control device to comply with a District rule or to remain below the 25 TPY actual emissions source test trigger.

- The District has good reason to believe that actual emissions deviate substantially from those originally permitted, and may exceed the 25 TPY actual emission source test trigger or any applicable emission limit.

- The owner/operator of a source wants to set emission limits in the PTO based on emission factors developed through source testing on its equipment.

Test Frequency

The District shall include the source test frequency in the permit condition. Test frequency depends on the specifics of the source. The guidelines below should be followed when adding a source test requirement during a permit reevaluation:

- An annual test is required if actual emissions (based on applicable emission factor and annual operation) for any pollutant for a specific process or piece of equipment exceeds 25 TPY (except for CO) or permitted emissions exceed 100 TPY.

- If permitted emissions exceed 25 TPY but are less than 100 TPY, and actual emissions are less than 25 TPY: (1) triennial tests are required if the equipment includes a control device; (2) if the equipment does not include a control device, no tests are required when the actual emissions are maintained below 25 TPY. The source must maintain records which verify annual emissions via an accepted emission factor and annual hours of operation.

- If an initial source test is performed on uncontrolled

equipment to set permitted emission limits, then no subsequent source tests are required when the permitted emissions of all pollutants are less than or equal to 25 TPY (based on the initial test).

- In cases where actual emissions are less than 25 TPY and an initial source test is triggered as a result of uncertainty about compliance with emission limits, subsequent source test requirements would be determined based on the measured emissions and system reliability. Examples include:

  (1) If the initial source test indicates that actual emissions are within 10 percent of the emission limit, or the source uses an unproven control technology or a technology which requires routine maintenance and is subject to failure (such as catalytic controls), annual tests shall be required.

  (2) If the source uses an established control technology not subject to performance degradation and the source test indicates that actual emissions are less than 90 percent of the emission limit, then triennial tests will suffice.

  (3) If the source is uncontrolled and the source test indicates that actual emissions are less than 90 percent of the emission limit, then no subsequent tests would be necessary.

  Since the status of the emissions will not be known until after the PTO is issued and the source test complete, the test condition must be crafted to specify an annual source test requirement which will be deleted or relaxed to triennial frequency if warranted by the results of the initial source test.

D. General Permit Requirements

Process Operation

At a minimum, source tests must be performed with the process operating at the maximum process rate(s) specified in the permit. Generally, operation within 10% of the permitted maximum is acceptable as long as emissions data extrapolated to full load does not exceed the permitted emission limit. For SCDP source tests, tests may be required at reduced rates as well. The scope and frequency of reduced load tests is dependent upon

the projected use of the equipment. For example, during SCDP, a turbine should be tested at approximately 30, 50, 75 and 100% of the maximum permitted load. Unless the SCDP tests reveal an anomaly at reduced loads, testing in subsequent years need only be performed at the maximum operating load. Every effort should be made to schedule tests such that peak operation is tested. If an SCDP or annual source test is not performed at maximum load/throughput, then, unless defined otherwise in the permit, the operating rate during the source test will be the maximum allowed unless compliance is verified at a higher operating rate via additional tests. The engineer processing the permit application shall clearly state this requirement in the source test condition of the draft permit to be reviewed by the source.

If the source test establishes an operating rate less than the permitted maximum, the source must immediately: (1) notify the District of any subsequent increase in operations above the tested rate (increase is never to exceed the permitted maximum rate); and (2) perform a source test at the new operating rate within 60 days of the date on which operation was increased above the previously tested rate. For facilities in SCDP or operating under a new PTO which slowly ramp up operations to the permitted maximum, the ATC/PTO must clearly define threshold operating rates at which source tests must be performed during the ramp up period. This requirement may trigger multiple source tests in a single year, and at a minimum, tests must occur annually.

For sources which provide ERCs, annual source tests should be performed at the load representative of the three year baseline (± 10%). If this is not possible, the "as-found" emissions must be adjusted to the baseline based on a load dependent emission factor curve acceptable to the District. The load-adjusted emissions are used to verify that the required ERCs are in place. Refer to Section 12 of the Engineering Division Permit Processing Manual for information on the computation of ERCs.

Data Extrapolation

When verifying compliance with emission limits, linear extrapolation of source test emissions data from tested operating rates to maximum permitted operations is not allowed unless the extrapolation method is specifically defined in the permit. It is the responsibility of the source to propose such a method to the District. The extrapolation methodology must be proposed by the source and approved by the District during permit processing and shall be included in the permit upon issuance. Unless the source can provide thorough technical support specific to the equipment and process operation (e.g., emission curves from the manufacturer, site specific emission curves generated during source tests), linear extrapolation should only be allowed over small operating ranges (e.g., from 90% to 100% of maximum).

BACT Operating Constraints

For sources which use a control device with associated operating constraints, compliance must be verified over a reasonable range of operating conditions during SCDP. At a minimum, the operating extremes of the design operating window should be tested. For example, if a facility uses SCR and water injection for NOx control, compliance with emission limits should be verified over the proposed operating range of $NH_3/NO_{x,in}$ ratios and water/fuel ratios. If compliance is not verified over the BACT design operating range, the source shall be limited to operations most protective of air quality. This limitation shall be reflected in the BACT permit condition of the PTO. For example, if a manufacturer specifies a water/fuel ratio range of 0.8 to 1.0, but the source test only verifies compliance at a ratio of 0.9, then subsequent operation must occur at a water/fuel ratio no less than 0.9 and no greater than 1.0.

Once a compliant operating range is defined during SCDP, post-SCDP tests may be streamlined by testing only at the least stringent BACT operating condition. If streamlined test requirements are considered for post-SCDP testing, the full effect of BACT process parameters on emissions must be understood and reflected in the test requirements. For example, if a source verifies compliance during SCDP at $NH_3/NO_{x,in}$ ratios of 1.1 to 1.3 and water/fuel ratios of 0.8 to 1.0, subsequent tests may only be required at a $NH_3/NO_{x,in}$ ratio of 1.1 and water/fuel ratio of 0.8. However, if ammonia emissions are a concern, annual tests which include ammonia measurement should be performed at the maximum allowed $NH_3/NO_{x,in}$ ratio (1.3 in the

example). If SCDP tests indicate a substantial increase in ROC or CO emissions when the water/fuel ratio increased, the operating extremes (water/fuel ratio of 0.8 and 1.0) should be tested in subsequent annual tests.

Test Measurements

If a source test requirement is triggered, all permitted pollutants for the affected piece of equipment must be measured, unless an alternative method of compliance is stated in the source file/permit. Two common alternative methods are: (1) compliance verification for SO_2 based on fuel sulfur analysis and fuel flowrate measurement; and (2) a waiver of the PM test for natural gas fired units with no other PM contributor in the process (e.g., a natural gas-fired kiln which directly dries crushed rock would not be exempt from the PM test).

Source tests are to be performed consistent with the requirements of the STPM by an independent contractor certified by the CARB.

Plan/Report Submittal

Source test plans and reports must follow the format specified in the STPM. Deadlines associated with a source test program are detailed in the STPM and must be included in the permit. In general:

- A Source Test Plan must be received by the District at least 30 calendar days in advance of the proposed test commencement date. Once an approved plan is on file at the District, source tests in subsequent years can be triggered by submitting a letter (at least 30 days prior to test) which references the approved plan. If the test contractor has changed, this letter must include qualifications of the new contractor and concurrence from the contractor that they will abide by the requirements of the plan on file.

- The facility must contact the District Source Test Staff to arrange a mutually agreeable test date at least 10 calendar days prior to test commencement.

- The Source Test Report must be received by the District no later than 45 calendar days after completion of the source tests.

Administrative modification of these deadlines will be

considered on a case-by-case basis provided the source submits a written request to the compliance project manager or responsible source test staff member. Enforcement P&P V.F requires such a request to be submitted at least 14 days in advance of the deadline, and sources should be encouraged to adhere to this policy. However, extenuating circumstances will be considered when evaluating an extension request received by the District less than 14 days prior to the deadline.

Test Schedule

The allowed window for test commencement must be stipulated in the permit. Performance of the initial compliance test must be tied to SCDP or the issuance date of a reevaluated PTO. For SCDP tests, the test must be completed such that the source test report is received no later than the PTO application. For reevaluated permits with a first time source test condition, include a test commencement deadline in the permit condition. An example of typical permit language would be, "... the initial source test must commence no later than 60 calendar days after the issuance date of this PTO."

Tests performed in subsequent years (i.e., annual, bi/triennial tests) should commence within ±30 calendar days of the anniversary date established by the initial test. This allows a 60 day window for test commencement. The permit condition must be flexible enough to allow administrative relief from this deadline. The source must request such relief, with each request considered on a case-by-case basis. In practice, the District allows considerable flexibility when scheduling source tests, so that sources can arrange tests in conjunction with peak operating/production demands. If special circumstances (e.g., repair or like replacement of equipment operating under a variance) result in a source test being performed outside of the "annual" requirement, that test may be used as the annual test at the District's discretion.

II. CEMS AUDITS/CERTIFICATION

For facilities which include Continuous Emission Monitoring Systems (CEMS), quarterly audits of the system are required. The requirements for these audits are defined in the District CEMS Protocol and the facility specific CEMS Plan. In three of the four calendar quarters, a streamlined audit is performed. The other audit is termed a CEMS certification audit and is broader in scope. The annual certification audit ensures the integrity of the entire CEMS (exhaust stack sample probe through data acquisition system) in actual operation by comparing CEMS measurements of facility emissions to those obtained by an independent test contractor. The other three quarterly audits are more narrow in scope in that the function of principle components of the CEMS is verified, but an actual "stack through DAS check" is not performed. Submittal and District approval of a CEMS Plan shall be required by a permit condition. For new sources, this condition shall require the source to adhere to the requirements of the District CEMS Protocol. Since the CEMS Plan details CEMS operation and audit requirements, no reference to audits is required in the permit.

Data obtained for the annual certification audit will also meet some requirements of the annual compliance source test. By conducting the annual compliance test simultaneously with the CEMS certification audit, the facility can reduce observation and review time for District staff, and other costs. Note that although there are parallels between the compliance source test and CEMS certification audit, differences also exist. For example, to obtain a statistically significant amount of data the audit requires more test runs than the compliance test (nine versus three), and while the compliance test measures all permitted pollutants, the audit only measures continuously monitored pollutants/diluents.

III. SOURCE TEST DATA INTERPRETATION/USES

A. Compliance Determination

Compliance source tests include three, 40 to 60 minute test runs (a minimum of two hours of data). The duration of each test run depends on the pollutant being measured. Compliance is determined by comparing the average of the three runs to the permitted limit, with the source test emissions data rounded to the same number of significant figures as the permitted limit. If the source test results indicate emissions in excess of the permitted emission limit, the source is in violation of its

permit. Normally, an NOV will be issued. Depending upon the circumstances of the emission exceedance, possible exceptions to this policy include emission exceedances for first time source tests on existing sources, and during SCDP (see section on emission limit revisions below). For guidance on enforcement action associated with emission exceedances, please refer to Enforcement P&Ps V.B on SCDP and I.D.10 on Source Test Observation and Enforcement.

B. CEMS Certification

Performance and accuracy of CEMS are verified by comparing independent test measurements to CEMS data. Specific accuracy requirements vary by monitor type and are defined in Appendices B and F of 40 CFR 60, as well as the CEMS Protocol and facility specific CEMS Plan. Refer to these documents for details on audit requirements. Refer to District P&P 5100.014.93 for details on the disposition of CEMS enforcement and compliance issues.

C. Emission Factors

Source test data allow the determination of emission factors (e.g., lbs NOx/MMBtu) from the facility tested. These emission factors can serve several purposes, including use in conjunction with annual process throughput to determine annual emission fees.
For permitting purposes, the emission factors may be used to refine permitted emission limits as discussed below.

Emission Limit Revisions: ATC

The emission factor from SCDP tests or from first time source tests of existing sources can be used to develop a more appropriate emission limit (concentration and/or mass emission rate) in the PTO. This new emission limit will generally be higher than the existing emission limit, but can never exceed any applicable Prohibitory Rule limit. Use of source test data for this purpose must be requested by the source and should only be allowed if such a change is technically defensible.

In the case of SCDP tests for NSR sources, the emission limit is usually based on an emission factor supplied by the source in the ATC application. The emission factor is frequently based on vendor specifications and backed by a guarantee (i.e., a vendor will guarantee the source that a burner will not exceed specific pollutant concentration limits). Thus, revising an emission

factor based on SCDP source tests is a rare occurrence. If a source desires such a revision to increase emission limits, it must petition for such a change via submittal of an application for modification to the ATC. The requested change must not result in an emission limit which violates District Rules or BACT requirements. The ATC-mod application must provide definitive information which refutes the emission factor proposed in the original ATC application and supports the applicability of the source test emission factor.

Emission Limit Revisions: PTO

For a first time source test of an existing source, instances will occur when use of source test emission factors for revision of permitted emission limits is warranted. Since source specific emission factors may not be available when devising emission limits during the permit reevaluation process, AP-42 or other generic emission factors will generally be used to establish the emission limits. Due to idiosyncracies associated with these existing sources and the generic nature of these emission factors, the applicability of the permitted emission limit will be questionable in some cases. For this reason, it is anticipated that the initial source test will result in apparent emission violations (i.e., tested emissions exceed the permitted limit) for some existing sources performing their initial test.

The addition of emission limits and source test requirements to a reevaluated PTO is consistent with CARB requirements and District policy. However, these existing facilities have a vested right to emit at current levels as long as they are not violating District Rules (note that emission factors used to compute emission limits may be more stringent than District Rules). If the circumstances warrant, in lieu of issuing a NOV, the source will be allowed to rectify first time source test emission exceedances by submitting an application for a PTO modification. This application will request emission limit increases based on emission factors generated from the source test data. Such a request should be granted as long as the emission exceedances: (1) can be logically attributed to a process idiosyncracy which substantiates the inadequacy of the emission factor used in the PTO engineering evaluation; (2) do not exceed a Prohibitory Rule limit; and, (3) are not due to improper maintenance or operating procedures. Subsequent to issuance of the modified PTO, the source will be required to meet the revised emission limits in any future source tests.

IV. SOURCE TEST FUNDING

Refer to Enforcement P&P I.D.10 for specific details on source test funding. In general, CEMS activities, toxics source tests, and compliance source tests for permits processed on a cost reimbursement basis will be funded on a cost reimbursable basis. District activities associated with compliance source tests of criteria pollutants for fee based permits will be funded consistent with fee Schedule C of Rule 210.