



**Dennis Bolt**

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Mr. Steve Hill  
Air Quality Engineering Manager  
Bay Area Air Quality Management District  
929 Ellis Street  
San Francisco, CA 94109

RE: Title V Permit Amendments for Tesoro, Chevron, Shell, ConocoPhillips,  
and Valero Refineries NOx Alternative Compliance Plan Permit Conditions

Dear Mr. Hill:

The Western States Petroleum Association (WSPA) is a trade association that represents the majority of petroleum related interests in the western United States. These interests include production, transportation, refining, and marketing of petroleum and petroleum-based products. We are submitting these comments in response to the proposed revisions to the Title V permit conditions now posted on the District web site relative to the Alternative Compliance Plan (ACP) permit conditions for small heaters and boilers.

WSPA appreciates the extensive investigation that has gone into the development of these particular conditions. Regulation 9-10 allows an ACP for these sources because they are de minimus to the NOx emissions in the Bay Area, and the installation of Continuous Emissions Monitors (CEMs) is expensive and would yield no better emissions estimates.

The calculation of emissions required by the ACP provides for very conservative emission estimates. Our members report that emissions under the ACP may be overstated by as much as 30%. This finding is intuitive because all operating conditions are calculated at the highest emission factor, when most operating conditions are lower than the highest firing and O<sub>2</sub> rates.

Because there is ample evidence that the emission estimates are overly conservative, the latitude requested in the attached comments and supported by the exhibits is justified, and should not diminish the District's confidence that the conditions with WSPA amendments exceed demonstration of equivalency. The amendments will allow our members the flexibility to produce their products with less disruption for source testing and for administrative

reductions that will benefit both refineries and the District. Attachment A is a process flow chart for the NOx ACP compliance process.

Thank you for considering the attached comments.

Best regards,

WESTERN STATES PETROLEUM ASSOCIATION

Transmitted electronically by:

Dennis Bolt  
Senior Coordinator

DRB:db

## WSPA Permit Condition Amendments

### CONDITION \_\_\_\_\_

#### REGULATION 9-10 COMPLIANCE CONDITIONS FOR SOURCES

1. The following sources are subject to the refinery-wide NOx emission rate and CO concentration limits in Regulation 9-10: [Regulation 9-10-301 and 305]

S#	Description	NOx CEM
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2. The owner/operator of each source listed in Part 1. shall properly install, properly maintain, and properly operate an O2 monitor and recorder. This Part shall be effective September 1, 2004. [Regulation 9-10-502]
3. The owner/operator shall operate each source listed in Part 1, which does not have a NOx CEM within specified ranges of operating conditions (firing rate and oxygen content) as detailed in Part 5. The ranges shall be established by utilizing data from district-approved source tests.
  - a. The NOx Box for units with a maximum firing rate of 25 MM BTU/hr or more shall be established using the procedures in Part 4.
  - b. The NOx Box for units with a maximum firing rate less than 25 MM BTU/hr shall be established as follows: High-fire shall be the maximum rated capacity. Low-fire shall be 20% of the maximum rated capacity. There shall be no maximum or minimum O2. [Regulation 9-10-502]
4. The owner/operator shall establish the initial NOx box for each source subject to Part 3 by June 1, 2004. The NOx Box may consist of two operating ranges in order to allow for operating flexibility and to encourage emission minimization during standard operation. The procedure for establishing the NOx box is as follows:
  - a. Conduct District-approved source tests for NOx and CO, while varying the oxygen concentration and firing rate over the desired operating ranges for the furnace;
  - b. Determine the minimum and maximum oxygen concentrations and firing rates for the desired operating ranges (Note that the minimum O2 at low-fire may be different than the minimum O2 at high-fire. The same is true for the maximum O2). The owner/operator shall also verify the accuracy of the O2 monitor on an annual basis.
  - c. Determine the highest NOx emission factor (lb/MM BTU) over the preferred operating ranges while maintaining CO concentration below 200 ppm; the owner/operator may choose to use a higher NOx emission factor than tested.

- d. Plot the points representing the desired operating ranges on a graph. The resulting polygon(s) are the NOx Box, which represents the allowable operating range(s) for the furnace under which the NOx emission factor from part 5a is deemed to be valid.
  - i. The NOx Box can represent/utilize either one or two emission factors.
  - ii. The NOx Box for each emission factor can be represented either as a 4 or 5-sided polygon. The NOx box is the area within the 4 or 5-sided polygon formed by connecting the source test parameters that lie about the perimeter of successful approved source tests. The source test parameters forming the corners of the NOx box are listed in Part 5.
- e. Upon establishment of each NOx Box, the owner/operator shall prepare a graphical representation of the box. The representation shall be made available on-site for APCO review upon request. The box shall also be submitted to the BAAQMD with permit amendments.

[Regulation 9-10-502]

5. Except as provided in Part 5b and 5c, the owner/operator shall operate each source within the NOx Box ranges listed below-listed below at all times of operation. This operational range shall be maintained within a tolerance of equal to or less than 10% for measurement uncertainty. This part shall not apply to any source that has a properly operated and properly installed NOx CEM.

WSPA Rationale:

*The permit conditions under discussion are for the purposes of establishing equivalency for those heaters and boilers regulated by Regulation 9-10 using an Alternative Compliance Plan (ACP) under the provisions of that rule. Based on a direct equivalency, the District previously allowed a tolerance of 20% for source testing in its "District guidance on Equivalent Verification" issued June 2000 for the ACP.*

*There is inherent variability in all test methods and this is well documented in scientific and regulatory literature. See Attachment B. This is the basis for tolerances established in regulations and regulatory reference test methods. Tolerances for systemic and random errors of 20% have been established for CEMs. EPA and CARB Reference Test Methods verify CEMs results based on source testing results. An analysis of measurement uncertainty in source testing can be verified by a review of the various measurements required for source testing, the potential for random error, and the potential for systemic errors such as occur in data handling and collection. Based on a review of scientific literature and various federal, state, and local reference test methods, this measurement uncertainty is between 10 to 20% based on the specific source testing configuration, measurement devices, the data collection protocol, and the data handling techniques.*

*In addition, calculation of emissions using the method specified in the June 2000 guidance result in extremely conservative estimates. Our members report that emissions calculated according to the ACP may be overstated by as much as 30%. This finding is intuitive because all operating conditions are calculated at the highest emission factor (worst operating case scenario), when*

most operating conditions are lower than the highest firing and O<sub>2</sub> rates.

Therefore, there is a large margin for error introduced in the ACP calculation requirements themselves which directionally increases the likelihood of exceeding the emissions estimates that would have been yielded had CEMs been installed.

Thus, this requested amendment does nothing to harm the demonstration of alternative compliance assurance. Source tests are logistically and operationally burdensome, and returning to identical and previous operating conditions is even more costly, with the potential to increase emissions of NOx and other pollutants.

WSPA believes it to be within the District's authority to continue a 10 to 20% tolerance for measurement uncertainty.

a. NOx Box ranges

District should add a 2<sup>nd</sup> emission factor where

Source No.	Emission Factor <u>1</u> (lb/MMBtu)	Min O <sub>2</sub> at Low Firing (O <sub>2</sub> %, MMBtu/hr)	Max O <sub>2</sub> at Low Firing (O <sub>2</sub> %, MMBtu/hr)	Min O <sub>2</sub> at High Firing (O <sub>2</sub> %, MMBtu/hr)	Mid O <sub>2</sub> at Mid/High Firing (polygon) (O <sub>2</sub> %, MMBtu/hr)	Max O <sub>2</sub> at High Firing (O <sub>2</sub> %, MMBtu/hr)
<u>1</u>	EF1 - tbd	tbd	tbd	tbd	tbd	tbd
	EF2 - tbd	tbd	tbd	tbd	tbd	tbd
<u>2</u>	EF1 - tbd	tbd	tbd	tbd	tbd	tbd
	EF2 - tbd	tbd	tbd	tbd	tbd	tbd
<u>3</u>	tbd	tbd	tbd	tbd	tbd	tbd
5	tbd	tbd	tbd	tbd	tbd	tbd
7	tbd	tbd	tbd	tbd	tbd	tbd
9	tbd	tbd	tbd	tbd	tbd	tbd
11	tbd	tbd	tbd	tbd	tbd	tbd
12	tbd	tbd	tbd	tbd	tbd	tbd
20	tbd	tbd	tbd	tbd	tbd	tbd
22	tbd	tbd	tbd	tbd	tbd	tbd
29	tbd	tbd	tbd	tbd	tbd	tbd
30	tbd	tbd	tbd	tbd	tbd	tbd
31	tbd	tbd	tbd	tbd	tbd	tbd
336	tbd	tbd	tbd	tbd	tbd	tbd
337	tbd	tbd	tbd	tbd	tbd	tbd

The limits listed above are based on a calendar day averaging period for both firing rate and O<sub>2</sub>%.

b. Part 5a does not apply to low firing rate conditions (i.e., firing rate less than or equal to 20% of the unit's rated capacity), during startup or shutdown periods, or periods of curtailed operation (ex. during heater idling, refractory dryout, etc.) lasting 5 days or less. During these conditions the means for determining compliance with the refinery-wide limit shall be accomplished using the method described in 9-10-301.2 (i.e. units out of service and 30-day averaging data).

Add commas as shown to correct the intended meaning of this condition.

- c. Part 5a does not apply during any source test required or permitted by this condition. See Part 7 for the consequences of source test results that exceed the emission factors in Part 5. [Regulation 9-10-502]
- 6a. The owner/operator may deviate from the NOx Box (either the firing rate or oxygen limit) provided that the owner/operator conducts a District-approved source test which reasonably represents replicates the past operation outside of the established ranges. The source test representing the new conditions shall be conducted ~~no later than the next regularly scheduled source test period, or~~ within eight months of the event. The source test results will establish whether the source was operating outside of the emission factor utilized for the source. The source test results shall be submitted to the District Source Test manager within 45 days of the test. As necessary, a permit amendment application shall be submitted.

### WSPA Rationale:

#### Out of the Box Testing Conditions

*For an out of the box test WSPA members will, and do, attempt to reproduce the "out of the box" condition(s) although that cannot always be precisely accomplished. Thus, the language should be clarified to factor in this understanding. For example, if an out of the box condition occurred at 89.5 MMBtu/hr and 4.7% O2 a series of three runs could be conducted, at the start of the run the furnace may be sitting exactly at the test conditions, by the third run there may be slight changes in fuel flow and O2 due to heat of the day, fuel specific gravity, fuel pressure, etc. The final test result may indicate 89.4 MMBtu/hr, 4.8% O2. This should be considered as a reasonable replication of the "out of the box" condition. It can take hours to reach a certain operating condition to exactly replicate the condition. To exactly replicate an out-of-the-box condition over three runs can take a significant amount of time without actually obtaining a more accurate test result. Allowing this meager tolerance supports a feasible process.*

#### Out-of-the-Box Testing Schedule

*WSPA members agree it is advantageous to conduct out of the box testing as soon as possible, but there may be operational reasons to test at a later date. The facility is at risk for the results from any delay in testing. However, with seasonal formulation requirements, or a six-month source test deadline coming due, it is often unreasonable to duplicate operating conditions within the time period the District has proposed. This provision, as written, unduly requires refineries to modify production streams contrary to market needs, and to make system configurations that might not be feasible. Either of these untimely events could result in an unintended increase in emissions from other sources. Eight months is a reasonable period to track these conditions. The District can require facilities to demonstrate their tracking system to ensure timely source testing as part of its Compliance Assurance Program.*

- i. Source Test <= Emission Factor

If the results of this source test do not exceed the higher NOx emission factor in Part 5 by 5%, or the CO limit in Part 9, the unit will not be considered to be in ~~violation deviation~~ during this period for operating out of the "box." The facility may submit an accelerated permit program permit application to request an administrative change of the permit condition to adjust the NOx Box operating range(s), based on the new test data.

ii. Source Test > Emission Factor

If the results of this source test exceed the permitted emission concentrations or emission rates in Part 5a. by more than 5% then, utilizing measured emission concentration or rate, the owner/operator shall perform a retroactive emissions review per 9-10-301, and submit an amended emissions report as specified in 9-10-505 by one of two means: perform a, ~~retroactive to the date of the previous source test of compliance with Section 9-10-301~~

- (a) Calculate emissions, retroactive to the date of the previous source test, or,
- (b) Calculate the emissions only for the day(s) covered by the source test and submit an amended emissions report, as specified in 9-10-505, for the period(s) in question. In this case, this source test will not satisfy the requirement for the semi-annual source test.

The unit will be considered to have been in violation of 9-10-301 for each day the facility was operated in excess of the refinery wide limit. ~~The facility may submit a permit application to request an alteration of the permit condition to change the NOx emission factor and/or adjust the operating range, based on the new test data.~~

Following the retroactive emissions review, the facility may then submit an application for an Administrative Change to amend the emission factor in 5a.  
—[Regulation 9-10-502]

*WSPA Rationale:*

*Semi-annual source tests should have a tolerance of 5% because the emissions involved are miniscule in relation to the calculations involved, the paperwork for both the District and facility is extensive and provides no environmental benefit. This provision will operate in both directions, since the facility would not be submitting for REDUCTIONS if a single source test result showed it 5%, or even 10% lower. This does nothing but reduce the administrative burden from the ACP.*

*If the source test is greater than 5% of the existing emission factor in 5a, the facility should have the option of either:*

- a. using this source test at the higher emission factor to create a new Box by submitting a permit application for a new operating limit (which would also satisfy the requirement for the semi-annual source test) and retroactively applying the higher emission factor back to the last source test; or*
- b. applying the higher emission factor determined from the source test only*

*to that day(s) of operation outside the permitted limit (in which case the source test DOES NOT satisfy the requirement for a semi-annual source test). The facility might choose to perform two source tests to satisfy this condition: one "as-found" test to satisfy the semi-annual/annual source test requirement, and a separate test to calculate the emissions for the out-of-box day(s) using the operating conditions appropriate for that test.*

*Either of these options demonstrates that the facility emission estimate has at least been met, and that actual emissions are likely lower than the emissions estimate derived using a CEM, thereby demonstrating alternative compliance.*

The unit will be considered to have been in violation of 9-10-301 for each day the facility was operated in excess of the refinery wide limit. ~~The facility may submit permit application to request an alteration of the permit condition to change the NOx emission factor and/or adjust the operating range, based on the new test data.~~

[Regulation 9-10-502]

6b. The owner/operator must report conditions outside of box within 96 hours of occurrence.

[Regulation 9-10-502]

7. For each source subject to Part 3, the owner/operator shall conduct source tests ~~at-on~~ the schedule listed below. The source tests are performed in order to measure NOx, CO, and O2 at the as-found firing rate, or at conditions reasonably specified by the APCO. The source test results shall be submitted to the District Source Test manager within 45 days of the test.

a. Source Testing Schedule

- i. Heater < 25 MMBtu/hr: One source test per consecutive 12 month period. The time interval between source tests shall not exceed 16 months.
- ii. Heaters  $\geq$  25 MMBtu/hr: Two source tests per consecutive 12 month period. The time interval between source tests shall not exceed 8 months and ~~the tests should be at least not be less than~~ 5 months apart. The source test results shall be submitted to the district source test manager within 45 days of the test.

b. If the results of any source test under this part exceed the permitted concentrations or emission rates in Part 5a, by more than 5%, the owner/operator shall ~~follow the requirements of Part 6a(ii)-perform a calculation of emissions, retroactive to the date of the previous source test of compliance with Section 9-10-301 and either, If the owner/operator chooses not to~~

- i. submit an application to revise the emission factor, or
- ii. conduct another Part 7 source test at the same conditions within 90 days of the initial test.

*WSPA Rationale:*

*This section previously pointed to Section 6, WSPA members believe it is simpler to follow from an enforcement and compliance standpoint to separate the concept of "out of the box" and periodic source testing requirements in respect to higher emission factor results.*

- c. If a source has been shutdown longer than the period allowed between source testing periods (e.g. <25 MMBtu/hr - > 12 mos or > 25 MMBtu/hr - > 8 mos), the owner/operator shall conduct the required semi-annual source test within 30 days of start up of the source.

*WSPA Rationale:*

*When units are out-of-service for extended periods of time provisions must be provided for timely source testing without violation.*

[Regulation 9-10-502]

8. For each source listed in Part 1 with a NOx CEM installed, the owner/operator shall conduct semi-annual District-approved CO source tests at as-found conditions. The time interval between source tests shall not exceed 8 months. District conducted CO emission tests associated with District-conducted NOx CEM field accuracy tests may be substituted for the CO semi-annual source tests.

[Regulation 9-10-502]

9. For any source with a maximum firing limit greater than 25 MMBtu/hr listed in Part 1 for which any two source test results over any consecutive five year period are greater than or equal to 200 ppmv CO at 3% O<sub>2</sub>, the owner/operator shall properly install, properly maintain, and properly operate a CEM to continuously measure CO and O<sub>2</sub>. The owner/operator shall install the CEM within the time period allowed in the District's Manual of Procedures. [Regulation 9-10-502, 1-522]

*WSPA Rationale:*

*The "NOx, CO, and O<sub>2</sub> Monitoring Compliance w/Regulation 9, Rule 10" guidance policy issued June 23, 2000 was intended by the Air District to define the equivalent verification system for affected sources subject to the monitoring requirements in 9-10-502. The policy clearly states that the following affected combustion sources would require installing a CO CEMs if two source test results over any 5 year consecutive period were  $\geq 200$  ppm CO @ 3%O<sub>2</sub>:*

- ❖ Units abated by SCR or SNCR and large sized units ( $\geq 200$  MMbtu/h)*
- ❖ medium units (between 25 - 200 MMbtu/h) which are not abated by SCR or SNCR or are unmodified combustion units without NOx control.*

*The June 2000 policy does not extend the CO CEM requirement to small sources that are not abated by SCR or SNCR and are unmodified combustion units without NOx Control. Please refer to the initial guidance document issued in June 2000 for background information.*

10. In addition to records required by 9-10-504, the facility must maintain records of all source tests conducted to demonstrate compliance with Parts 1 and 5. These records shall be kept on site for at least five years from the date of entry in a District approved log and be made available to District staff upon request. [Recordkeeping, Regulation 9-10-504]

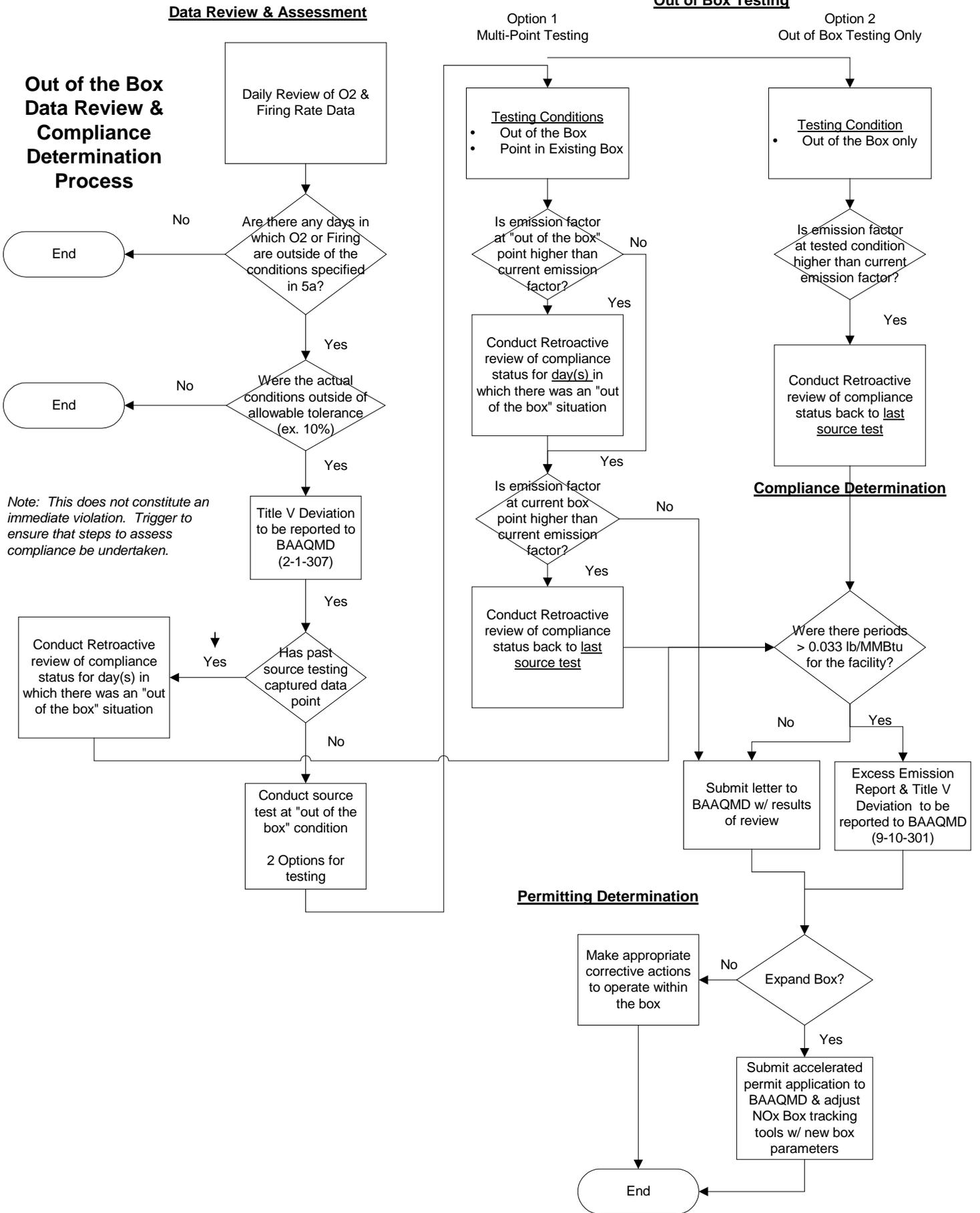
11. *If the source test result submission deadlines specified in 6a. or 7. cannot be met based on reasonable cause acceptable to the District, the APCO may, at its sole discretion, grant a single extension of up to 90 days.*

**WSPA Rationale:**

*Based on WSPA members' experiences with source testing contractors, it can be difficult to receive the final, formal test reports back in a timely manner. Both the contractor and facility must QA/QC the data that have been included in the report. It has often taken longer than 45-days to complete this process, especially when the contractors experience a bubble of source testing activity and they wait until all testing is completed to report test results. Typically facilities have preliminary results during the test. Thus, this extension will not result in any harm to the environment, for a prudent facility in threat of violation will make immediate adjustments/applications necessary to correct the indicated deficiency.*

*The provision as originally proposed would require both deviation reports and variances in response to conditions outside refinery control, thereby creating an increased administrative burden for both facilities and BAAQMD. With the new self-reporting requirements of this permit, facilities require some leeway to comply with this provision. If this solution is not acceptable, we request 120-days to submit the required reports.*

# Attachment A - WSPA Comments



**ATTACHMENT B  
WSPA COMMENTS**

**Reg 9 Rule 10 Alternative Compliance Monitoring**

**Demonstration of NOx Box Tolerance(s) Equivalence to CEMS**

<b>Continuous Emissions Monitoring Systems</b>	<b>Mean Difference</b>	<b>Source Testing</b>	<b>Mean Difference</b>
Sampling location and stratification	1%	Sampling location and stratification, 12 traverses	1%
extractive/in-situ sampling		extractive/in-situ sampling	
probe, type and location	3-6%	probe, type and location	2-10%
calibration drift	<2.5%	calibration drift	<2.5%
Interference	2%	Interference	2%
calibration gases	<5%	calibration gases	<5%
CO <sub>2</sub> or O <sub>2</sub> diluent correction monitor	<1%	CO <sub>2</sub> or O <sub>2</sub> diluent correction monitor	<1%
Flow monitor	2-15%	Flow monitor	2-15%
Water Correction	3-5%	Water Correction	3-5%
Pressure Measurements	5%	Pressure Measurements	5%
Temperature Measurements	1.5%	Temperature Measurements	1.5%
Data acquisition and handling system		Data acquisition and handling system	
Rounding errors, equation errors, linearity		Rounding errors, equation errors, linearity	
Bias Adjustment Factor correct for systematic error			
Relative Accuracy of CEMS	<20%	Source Test Accuracy	<20%
		Address systematic error	
		Address random error	

"Accuracy of a measurement refers to the degree of agreement between the measured value and a true value. In source measurements, the true value of a physical parameter is rarely known. In source testing, the "true" value is assumed to be that value determined by the EPA Reference Method."

Reference 6

Sources:

1. BAAQMD Manual of Procedures
2. Cal EPA ARB Method 7 Determination of Nitrogen Oxide Emissions from Stationary Sources
3. EPA 40 CFR 60 Appendices A, B
4. SCAQMD Protocol for the Measurement of Nitrogen Oxides, Carbon Monoxide, and Oxygen from Sources Subject to SCAQMD Rule 1146
5. "Techniques to Improve Measurement Accuracy in Power Plant Reported Emissions", All contents copyright © 2002 ISA The Instrumentation, Systems, and Automation Society. All rights reserved.
6. EPA's Operator's Guide to Eliminating Bias in CEMS Systems <http://www.epa.gov/airmarkets/monitoring/bias/>