STATE OF NEVADA
BUREAU OF AIR POLLUTION CONTROL

GUIDANCE FOR TESTING CONDITIONS AND REQUIREMENTS

Facility Requirements

- Any emission limit or standard exceeded at the time of testing must be reported immediately (within 24 hours) to the BAPC as required by NAC 445B.232 "Excess emissions." Emissions exceedances will be evaluated in accordance with the Air Quality regulations and may result in a Notice of Alleged Air Quality Violation and Order (NOAV). **Exceedances of an emission limit or standard at the time of testing must be retested no later than forty-five (45) days after receiving notice of the exceedance.** Failure to properly report an exceedance of a permitted emissions limit is also subject to a potential NOAV.
- The facility shall ensure that all emission units can be safely tested, meet all approved test method requirements, and address the following:
  1. Sampling ports adequate for test methods applicable to such facility. This includes constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures and providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures.
  2. All stacks shall have a minimum inner diameter of four (4) inches in order to comply with EPA Reference Method 1A.
  3. Safe sampling platform(s). The sampling probe must be supported in such a way (monorails or stationary stands), that other than traversing during testing, it does not move (i.e., using a man lift to support the probe will not be allowed).
  4. Safe access to sampling platform(s).
  5. Utilities for sampling and testing equipment.
- The BAPC requires the submittal of a complete test report in accordance with NAC 445B.252 "Testing and sampling." The following reporting requirements shall be met. If the following requirements are not met, the BAPC reserves the right to not accept the report and deem the report late.
  1. Any excess emissions, audit failures, or other Operating Permit deviations that occur during the test program, and any deviations from the specified testing methods or procedures, must be clearly identified in the first three (3) pages of the report.
  2. Test reports must be submitted to the BAPC within sixty (60) days of the conclusion of the unit being tested. Failure to submit the report within sixty (60) days is a violation of NAC 445B.252.
  3. The System Number and Unit Number shall identify the emission unit as specified in the Operating Permit.
  4. Documentation of the relevant operating parameters (e.g., process throughput, heat input), and all sampling and analytical results for the material or fuel processed, shall be provided in a single appendix in the source test report.
  5. The BAPC requires one printed copy of the completed source test report and an electronic data storage device (e.g., compact disk, USB drive, etc.) containing the complete text of the report (analysis, raw data, diagrams, etc.) in electronic PDF format and electronic EXCEL spreadsheet(s) provided by the BAPC containing the data collected during each test run.

6. The BAPC requires that all test reports be organized in a specific format. For an example of the required format, see the pages provided at the end of this review.

General Testing Provisions

Testing must be conducted in accordance with the requirements established in the Operating Permit and with applicable state and federal regulations. In addition, the following criteria shall be met. **If any of the following criteria are not met, the Nevada Division of Environmental Protection – Bureau of Air Pollution Control (BAPC) reserves the right to invalidate the source test.**

- Source emission tests and audits shall be conducted in accordance with Title 40 of the Code of Federal Regulations (CFR). Any deviations to the EPA Reference Methods as written in Title 40 of the CFR shall be approved by the US EPA Administrator and the BAPC prior to conducting the tests.
- Systems which exhibit low or steady flow must be tested using a manometer with appropriate sensitivity (e.g., digital manometer), as described by Section 6.2 of EPA Reference Method 2.
- The BAPC requires that all data that is measured in the field (excepting continuous emissions analyzers) be recorded on legible handwritten or physically typed at the time of measurement "raw" field data sheets. Data that is only submitted in an electronically processed form that was not recorded at the time of testing or is illegible will not be accepted.
- The source tests and audits must be conducted at hourly throughput rates and/or fuel usage that are representative of each system's performance. Conducting the tests at throughput and/or fuel combustion rates significantly less than the permitted limits for these or other operating parameters may limit the applicability of the tests or require the BAPC to limit these parameters in the future. **Throughput and/or fuel usage during the source test must be included in the source test report. Start and stop times for batch processes must also be included in the source test report.**
- The test report shall include EPA Reference Method 1 calculations and identification of any stack anomalies. Stack test ports shall be on the same plane in accordance with Section 11 of EPA Reference Method 1. The report shall include an EPA Reference Method 1 determination of cyclonic flow, if applicable. Traverse point descriptions should include stack information and a diagram of the thickness of the stack wall and the length of the test port if these items dictate traverse point locations.
- **For small ducts (i.e., less than 12 inches in diameter, or cross-sectional area, but greater than or equal to 4 inches in diameter, or cross-sectional area), EPA Reference Method 1A shall be used in conjunction with any additional methods used. This shall include the provisions in Section 11 of EPA Reference Method 1A.**
- For all pollutant emission rate test runs, both the volumetric flow rate and moisture content determination shall be simultaneous with, and for the same total length of time as, the pollutant emission rate run, unless otherwise specified in an applicable subpart of the standards.
- When test probes are in position, block off the openings around the probe and all other portholes to prevent unrepresentative dilution of the flow stream.

- **The test report shall include pictures of any stacks being tested at the time of testing. Images must include all ports being tested from and the nearest upstream and downstream disturbances.**
- **The test report shall also include images of all equipment being used to conduct the testing (e.g., glassware, meter box, gas cylinders, probe assembly, etc.) at the time of testing.**
- **If the minimum number of traverse points to be used during testing according to Figure 1-1 or Figure 1-2 of EPA Reference Method 1 falls on a "step", the greater of the two values shall be used.**
- **All reports must include handwritten raw data. Handwritten raw data must be legible and recorded at the time of testing.**
- **Electronic templates for the raw data, provided on the NDEP website (https://ndep.nv.gov/air/permitting/download-permit-forms), must be filled out with all data and submitted electronically to the BAPC, along with the submission of the test report.**

Opacity Testing Provisions

- The EPA Reference Method 9 VEO (one (1) 6-minute average unless otherwise specified in an applicable subpart of the standards) must be done during one of the particulate matter test runs.

Isokinetic Testing Provisions

- The absence of cyclonic flow must be verified before testing any system **any time the system is tested**; documentation of the cyclonic flow check must be included with the test report. Cyclonic flow documentation will include both the ΔP at zero degrees and the angle at which the ΔP is zero, for each traverse point.
- For isokinetic determination the BAPC requires that the 'actual ΔH' value be documented. The 'actual ΔH' value refers to the value that is read off the manometer after the adjustment is made based off the 'calculated ΔH' value.
- For all isokinetic test runs, unless otherwise required by an applicable subpart of the standards, the BAPC requires a minimum sample volume of 60 dscf; test runs must be conducted for up to two hours in an effort to collect this minimum sample.

Particulate Testing Provisions

- For compliance purposes, the 1990 promulgated version of both EPA Reference Method 201A and EPA Reference Method 202 will no longer be accepted to determine PM/PM_{10}. The revised 2010 Methods must be used.
- An EPA Reference Method 201A and EPA Reference Method 5 run may only be conducted simultaneously if the respective probes are not located in the same test port, and the cross-sectional area of both probes is less than 6% of the cross-sectional area of the stack. If the blockage in the stack is greater than 3%, but less than 6%, EPA Reference Method 1A must be

used. All probe dimensions must be provided in the source test report to confirm the percent blockage of the probes.

- The BAPC determines the additional cross-sectional area of blockage from the EPA Reference Method 5 probe by averaging the maximum cross-sectional area at the farthest sample point from the probe port and the minimum cross-sectional area at the closest sample point to the probe port.

Gaseous Testing Provisions

- For all gaseous species test runs, the BAPC requires a minimum test duration of one (1) hour.
- For gas only test runs where only a single-point or three-point traverse is used, stratification must be verified and clearly documented.
- Any calibration gases used for source tests shall be certified prior to the tests and have valid certification dates during the tests. Only a certified independent laboratory shall certify the calibration gases.

Fuel Analysis (EPA Reference Method 19) Provisions

- The F_d Factor must be calculated. Default values for F_d may not be used.
- An Ultimate Fuel Analysis must be performed in order to determine the test specific Fd factor and Fuel Heat Content. Only ASTM methods as approved by the EPA shall be used for these determinations. Lab results shall be included in the source test report.
- Fuel meter readings must correspond with the start and stop times of each emissions test. Coarse measurement or estimates of fuel usage during the testing are not acceptable for calculating emission flow rates.
- A post-test calibration of the fuel meter installed for use during the testing must be conducted, and documentation must be included in the source test report. Where a test meter has not been installed for the measurement of gas flow during the testing, and a permanently mounted meter has been used to measure the amount of fuel burned during each test, a pretest calibration value will be acceptable provided that the calibration criteria are met.
- Fuel meter calibration must meet the requirements of RM 2A, Section 6.1, and the calibration must be conducted using the same fuel type as that being measured by the fuel meter during the testing.
- If not using a pressure and temperature compensated meter, gas temperature and pressure readings, along with meter volume readings for each start and stop observation shall be included. Meter volume readings shall be corrected as necessary to determine the standard cubic feet of gas combusted during each test. Calibration documentation for the temperature and pressure devices must also conform to RM 2A, Section 6.1.

Mercury Testing (Subpart EEEEEEE) Provisions

- For all test runs, the BAPC requires a minimum sample volume of 30 dscf (40 CFR Part 63 Subpart EEEEEEE – National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category §63.11646(a)(2)).

- **Mercury retort test runs shall be conducted at different stages of the retort process. Test runs will be performed at low, mid, and high temperatures. Test run retort temperatures must be included in the source test report.**
- The BAPC requires analysis of the mercury content of representative samples of the material that the thermal unit processes during the source testing. One sample shall be taken for each test run. Samples shall be processed individually and not as composites. Total mercury content shall be determined using EPA Reference Method 7471A, 7471B or 6010B (soils) and EPA Reference Method 7470 (liquids). The analysis shall determine the mercury content (in parts per billion, or at elevated concentrations of parts per million) of the material processed by the thermal unit.

RATA Provisions

- For gas only test runs where only a single-point or three-point traverse is used, stratification must be verified and clearly documented.
- **Emission standards may not be back calculated using permitted emission limits**.

SOURCE TEST REPORT FORMAT

- Cover Page
  1. Facility Name and Location
  2. Source Permit Number
  3. Emission Systems Source Tested
  4. Testing Company or agency, name and address
  5. Certification by Source Testing Company that the sampling and analytical procedures and the data presented in the report are authentic and accurate.
- Deviation Report **(within the first three pages of the report)**
  1. Identify any emissions exceedances, exceedances of permitted operating parameters or other permit deviations during the source test.
  2. Identify and explain any process upsets or other anomalies that occur during the test program.
  3. Identify and discuss any deviations from the EPA Reference Methods.
  4. Identify any deviations from standard analytical procedures.
  5. Describe any errors in quality assurance procedures.
- Table of Contents
- Introduction
  1. Test purpose
  2. Test location
  3. Test dates
  4. System processes
  5. Pollutants tested
  6. Observers' names, titles, and their industry or agency
  7. Pictures of stacks tested and equipment used
  8. Other relevant background information
- One Page Summary of Test Parameters & Results for Each Unit Tested
  1. Emission results reported in same System and Units numbers specified in the permit for each source tested emission unit.
     - Permitted emission limits (indicate any exceedances).
  2. Visible Emission (Opacity) Observation Summary (if required.)
- Test Data & Sampling Method (for each source tested)
  1. Original raw field data
     - Original opacity observation field reports
     - Visible Emission Observer’s Certification.

- Cyclonic flow determination
- Particulate matter source test field data

2. Electronic copy of Excel spreadsheet (PM SOURCE TEST DATA TEMPLATE) containing the data collected during each particulate matter source test run.
3. Description of System, process, any control devices, and control equipment flow diagram.
4. Process startups, shutdowns, and other operational changes during tests, such as the time of start and stop, shall be explained and noted.
5. Applicable federal test reference sample calculations.

- Operating/Process Data
  1. Process data, throughput and production data pertaining to operational permit limits for each system tested.
  2. System, process and control device-operating parameters during the test as compared to normal operation. Control device parameters should include pressure drop, flow rates, make-up water rates, recycle water solids content for scrubbers; voltages, currents, spark rates and rapping cycle times for electrostatic precipitators; pressure drops and cleaning cycles for baghouses.
  3. Characterization of the gas stream to the control device.
  4. Type of raw material used and/or fuel products. Operational data signed and dated by the plant official.
  5. Certification by a facility representative that the production rate and/or heat input rate during the source test, are reported accurately.
- Appendices
  1. Facility Process Information for each emission system or unit
     - Process throughput data, heat input data, and/or other operating parameters
     - Sampling and analytical results for material processed and/or fuel combusted
  2. Description of EPA Reference Methods.
     - Test reference method procedures.
  3. Sampling and Analysis Procedures
     - Sampling port location and dimensional cross-section diagram.
     - Sampling point description, including labeling system.
     - Sampling train description. Including nozzle size and leak test methods with results.
  4. Lab Samples and Procedures
     - Description of collected samples and Chain of Custody for any collected samples from point of collection to post analysis.
     - Laboratory report, with chain of custody.
     - Laboratory Certification

5. Calibration and quality assurance procedures and results
   - Calibration gases expiration date.
6. Source Test log.
7. Project participants and titles.
8. Related correspondence.

BEST MANAGEMENT PRACTICES FOR VIRTUAL OBSERVATIONS

- Designate and train at least one employee to conduct virtual source test observations. The use of an alternate is highly recommended as the primary designee may not always be available. Designated personnel should have the knowledge base necessary to answer questions concerning the systems and emission units involved in the source testing schedule and normal operations of each of the processes involved in the source testing schedule. Designated personnel should also have, at minimum, a basic working understanding of the testing equipment and procedures being used in order to effectively communicate with the inspector and capture key components of the testing program. Additionally, designated personnel should be able to adequately operate the technology required to conduct a remote source test observation (e.g., smartphone, tablet, etc.).
- Designated personnel should be prepared to follow the direction of the inspector at all times while operating the device (e.g., smartphone, tablet, etc.). If the designated personnel are asked to video or otherwise highlight an area of concern, the designated personnel should illustrate the area of concern to the inspector's satisfaction.
- Any circumstances that could interrupt a virtual source test observation should be discussed with the inspector prior to the start of the source test observation and efforts should be made to mitigate or minimize such interruptions from occurring. Such instances could include but are not limited to: facility hazards (e.g., confined spaces, trip or fall hazards, ladders, excessive noise, machinery, etc.), personnel scheduling conflicts, technology failures, or confidential business information. Additionally, designated personnel should remain available for the duration of the source test observation.
- A smartphone or tablet capable of conducting a remote source test observation should be fully charged prior to the source test observation. The use of an external battery may be useful depending on the expected battery life of the chosen device. Additionally, all device notifications should be muted prior to the start and for the duration of the source test observation.
- A current itinerary of the source testing program schedule should be given to the designated personnel prior to the start of the source test observation. The designated personnel should be familiar with the facility's systems and testing locations and be able to quickly navigate to the areas in which the inspector directs the designee to go. It is recommended that hazards the designee may encounter be mapped out prior to source testing.
- Prior to the start of the source testing schedule, the designated personnel and inspector should test the live streaming and check for any potential technology failures.
- If at any time the video connection between the inspector and the designee is dropped, the designee will immediately begin to follow any contingency plans necessary. The designee will also contact the inspector while attempting to reestablish the connection. If a connection cannot be reestablished, the designee will note the date, time, and reason for the disconnection and will relay that information to the inspector.

- Remote source test observations should begin each day of a testing program at a location with a strong wireless data or Wi-Fi signal to establish a basic plan with the designee for each testing day that is being observed.