

IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

POLICY/PROCEDURE STATEMENT

TOPIC: Custom Monitoring Schedule for Fuel Bound Nitrogen and Sulfur

Policy Procedure Number: 3-b-12

Replaces Number: None

Date: 9/11/98

Effective Date: November 12, 1998

Preparer: David Phelps

Reviewer: Peter Hamlin

Approval: Bureau Chief: Peter Hamlin  **Date:** 11/12/98

Division Administrator: Allan Stokes  **Date:** 11/12/98

Applicable Code of Iowa or Iowa Administrative Code Rule:

IAC 567 Chapters 20-31

Attachments:

August 14, 1987 EPA memorandum from John Rasnic on the subject of Authority for Approval of Custom Fuel Monitoring Schedules Under NSPS Subpart GG.

REASON OR BACKGROUND

The purpose of this policy is to clarify the Air Quality Bureau's position on custom fuel monitoring programs for stationary gas turbines. On August 14, 1987, John B. Rasnic, Chief Compliance Monitoring Branch, issued a memorandum Authority for Approval of Custom Fuel Monitoring Schedules Under NSPS Subpart GG, granting authority to substitute a custom fuel monitoring schedule as an alternative to daily monitoring of the sulfur and nitrogen content of natural gas-fired in natural gas fired turbines covered under NSPS subpart GG. The Iowa Department of Natural Resources has exercised this authority for stationary sources since the issuance of the memorandum.

Fuel bound nitrogen compounds, organic chemical compounds which contain one or more nitrogen atoms, are normally only found in synthetically produced natural gas. Analytical techniques to analyze for these compounds at trace levels is a difficult, time consuming, expensive and generally fruitless task. It is not the type of experiment that most testing laboratories have the capability of performing. It is therefore not a practical requirement.

Sulfur compounds, in particular hydrogen sulfide, carbonyl sulfide and organic sulfides, do naturally occur in natural gas, but are physically removed from the commercially available product by either the producers or the transporters because they have a high potential to damage equipment. Distribution companies will add trace levels of sulfur compounds, generally organic sulfides like ethyl sulfide, as odor producing compounds to protect society. However, the concentration is in the parts per million range, sufficiently low that it will not impact the environment when combusted. Transmission quality natural gas is limited by tariffs to keep the concentration of hydrogen sulfide below four parts per million. Since the DNR limits sulfur dioxide emissions to less than five hundred parts per million (500 ppm), emissions from turbines will never exceed the regulation. The DNR has allowed a custom fuel monitoring plan for verification that the input fuel is pipeline quality.

DETAILS

Fuel Bound Nitrogen Monitoring

Monitoring for fuel bound nitrogen will not be required for stationary gas turbines while natural gas is the only fuel fired in the gas turbine.

Sulfur Monitoring

The approved Custom Fuel Sampling Schedule for stationary gas turbines is:

1. Analysis for fuel sulfur content of the natural gas shall be conducted using analytical techniques of quality equal to or better than approved ASTM reference methods. Approved reference methods are: ASTM D1072-80, ASTM D3031-81, ASTM D3246-81, and ASTM D4084-82. Analytical data from the fuel supplier are also acceptable.
2. Effective of the date of the custom schedule, sulfur monitoring shall be conducted twice monthly for six months. If the monitoring shows little variability in the fuel sulfur content, and indicates consistent compliance with 40 CFR 60.333, then sulfur monitoring shall be conducted once per month for six quarters.
3. If after the monitoring required in 2 above the monitoring shows little variability and, calculated as sulfur dioxide, represents consistent compliance with the sulfur dioxide emission limits specified at 40 CFR 60.333 sample analysis shall be conducted twice each calendar year, in the first and third quarters.
4. Should any sulfur analysis required in 2 and 3 above indicate noncompliance with 40 CFR 60.333 the owner or operator must notify the DNR of such excess emission.
5. If there is a change in fuel supply, the owner or operator must notify the DNR of the change.
6. Records of the analyses must be maintained for a period of three years and be available for inspection of the federal, state, and local air pollution agencies.