ANR Storage Company
Excelsior Compressor Station
Kalkaska County, Michigan

40 CFR Part 63 Subpart HHH
Site Monitoring Plan

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700 Louisiana Street, Suite 700
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TransCanada
In business to deliver

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ANR Compressor Stations: Excelsior

1.0 Purpose

The purpose of this Procedure is to describe the continuous parameter monitoring system (CPMS) to be used at Excelsior Compressor Station to meet the requirements for National Emission Standards for Hazardous Air Pollutants (NESHAPS) from Natural Gas Transmission and Storage Facilities Maximum Achievable Control Technology (MACT), Subpart HHH of 40 CFR part 63. These regulations require the control and continuous parameter monitoring of air pollution control equipment associated with glycol dehydration systems, such as condensers and thermal oxidizers. This Facility Monitoring Procedure must be available for review if requested by the EPA or delegated state or local air quality agencies.

Contact Person

Any questions in regard to this Site Monitoring Plan should be directed to Melinda Holdsworth, Senior Air Specialist with TransCanada.

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2.0 Scope

This Procedure applies to the TransCanada ANR Excelsior Compressor Station located at 4936 State Road NE, Kalkaska, MI, 49646 which is wholly owned and operated by TransCanada.

3.0 References

CS&E and all other TOP documents can be accessed from the TOPs database using this link TOPs.

Note: TOP documents referenced in this document will have their titles underlined and can be opened up by using the hyperlink below or going to the TOPs database using the above TOPs link.

- Thermal Oxidizer Inspection and Maintenance (EDMS No. 009423217)
- Glycol Dehydration Exchanger Condenser Inspection and Maintenance (EDMS No. 005249224)
- Temperature Measurement Device Specifications (EDMS No. 003834760)

4.0 Procedure

Notes:

1. Each Activity should be performed after reviewing the appropriate CS&E TOPs (Procedures).

Special Resources: N/A
Qualification Requirement(s): N/A.

4.1 Affected Source(s) and Associated CPMS Equipment

Note: This section provides information on the affected air pollution control equipment across TransCanada's Glycol Dehydration Systems and their associated CPMS. Per §63.1283(d)(1)(ii-iv), the Site Monitoring Plan must include design specification and equipment performance criteria for the pollution control system equipment; including but not limited to sample interface, detector signal analyzer, data acquisition and calculations.

4.1.1 Affected Source(s) Description

TransCanada Pipelines uses a Condenser and Thermal Oxidizer at Excelsior CS for air emission control. As such, it is subject to limitations and control requirements per MACT HHH. See table 1 below for details.

Table 1 – Glycol Dehydration System to MACT HHH & Provisions of this Plan

Station	State	Unit ID	Control Device	CPMS Metric	CPMS Value	Device Manufacturer	Device Model
Excelsior	MI	EUEXGLYDEH	Condenser	Temp	120 °F (95% BTEX Control)	Rosemount Transmitter	3144(DD)
Excelsior	MI	EUEXGLYDEH	Thermal Oxidizer	Temp	Min 1400 °F	Omron	E5CK

4.1.2 System Design Considerations

The purpose of the CPMS is to ensure that across TransCanada's Pipelines, temperature data of air pollution control equipment in glycol dehydration systems are:

- Continuously monitored (or at a minimum, take temperature readings every 15 minutes and average hourly, not including periods of startup, shutdown or malfunction).

- Average the temperature data on a daily basis
- Average the temperature data on 12 month rolling basis.
- Ensure the air pollution control device(s) operating temperature is maintained within the established temperature range specified by manufacturer (for thermal oxidizers) and below the maximum operating temperature specified by manufacturer (for condensers).

4.1.3 Temperature Measurement Device Specifications

The following specifications apply to the temperature measurement device:

Thermal Oxidizer Control Device:

Parameter	Specification
Location	The temperature sensor shall be installed at a location representative of the combustion zone temperature.
Device Type	A temperature monitoring device equipped with a continuous recorder.
Tolerance	The monitoring device shall have a minimum accuracy of ±2 percent of the temperature being monitored in °C, or ±2.5 °C, whichever value is greater. [§63.1283(d)(3)(A)]

Condenser Control Device:

Parameter	Specification
Location	For a condenser, a temperature monitoring device equipped with a continuous recorder. The temperature monitoring device shall have a minimum accuracy of ±2 percent of the temperature being monitored in °C, or ±2.5 °C, whichever value is greater. The temperature sensor shall be installed at a location in the exhaust vent stream from the condenser that provides a representative measurement.
Device Type	A temperature monitoring device equipped with a continuous recorder.
Tolerance	The monitoring device shall have a minimum accuracy of ±2 percent of the temperature being monitored in °C, or ±2.5 °C, whichever value is greater. [§63.1283(d)(3)(E)]

4.1.4 Wiring

Conduit cable will be installed per the appropriate edition of the National Electric Code and TransCanada standards reflective of the time of installation.

4.1.5 Data Acquisition System

The Data Acquisition System (DAS, aka PLC) shall be in continuous operation and will provide the operator with the following local readouts: [§63.8(c) (2) (ii)]

- Instantaneous readings of control device exhaust gas temperature.
- 15-minute snapshot temperature readings.
- 1-hour average temperatures.
- Readout or other indication of operation must be readily accessible on site.

Data will be retained for at least five (5) years in the DAS for retrieval in the event of a failure reporting system. Additionally, the operator will have the capability of generating a screen print from the DAS in the event of a failure of the reporting system.

4.1.6 Reporting System

A PC with reporting software installed will be connected to the DAS for data retention and report generation. The software is used to collect the data from the DAS, collate into a report formatted for printing and for long term retention of the data.

4.2 Temperature Monitoring System Performance Evaluation & QA/QC

4.2.1 Periodicity

An initial verification of the CPMS was performed upon original equipment installation. [§63.8(c)(3)] Annual QA/QC evaluations of the CPMS shall be conducted as described below. [§63.1283(d)(1)]

4.2.2 Methodology

One of the following methods shall be used for performance evaluations:

RTD Replacement

The RTD shall be replaced with a factory calibrated unit meeting the design requirements listed above. The calibration certification sheets or other appropriate documentation shall be retained demonstrating factory calibration.

Concurrently, a calibrated RTD simulator shall be used to test the remaining elements of the CPMS system in accordance with manufacturer's recommendations and company policies and procedures. A written work plan or SAP work order documenting steps to be followed shall be used. [§63.8(d)(2) – (3)]

Calibration

The calibration of the RTD shall be checked in place in accordance with manufacturer's recommendations and company policies and procedures. The methods used shall address both the RTD and the DAS. A written work plan or SAP work order documenting steps to be followed shall be used. [§63.8(d)(2) – (3)]

4.2.3 Notification

Notification to MDEQ prior to conducting the performance evaluation or with results after testing is required.

4.2.4 Troubleshooting a Malfunctioning CPMS

Malfunctioning CPMS shall be evaluated and repaired in accordance with manufacturer's recommendations, company policy and procedures and good operating practices.

4.3 CPMS Operation and Maintenance

4.3.1 CPMS Operation

The CPMS will be in operation whenever the monitored control device (condenser or thermal oxidizer) is in service and exhaust gases are being vented to the atmosphere with the exception of monitoring malfunctions, associated repairs, and required quality assurance or control activities. Data will be collected as follows:

- Sample the control device exhaust gas temperature at least once every 15 minutes.
- Average the 15-minute samples on an hourly basis. Average the hourly average on a daily basis and the daily basis on a monthly and 12 month rolling basis.
- An hour is defined as a 60 minute period beginning at the o-clock (i.e. 1:00, 2:00 etc.).
- If the system starts midway through an hour, record 15-minute data points but begin averaging only if there are at least two data points for the first clock based 60 minute period. Each of the two data points should represent a 15-minute period.
- If a unit stops midway through an hour, the 15-minute data points will be monitored and recorded; however, the average for that last clock based 60 minute period should only be computed if at least two data points are available. Each of the two data points should represent a 15-minute period.
- Each daily average calculation will include all hourly averages starting with the hour of 9:00 a.m. Central US Time Zone and concluding 24 hours later (i.e., 8:59 p.m.).
- The CPMS shall alarm, at a minimum, when the control device exhaust gas temperature hourly average approaches 10% of the permitted limit.
- The CPMS shall divert exhaust gas flow to the secondary control device (i.e., condenser vent) and record temperature infraction from the lower limit (i.e., 1400 °F for Thermal Oxidizer and 135°F for the condenser).
- Alarms shall be disabled as follows:
  - Thermal Oxidizer Low Temperature: Never.
  - Condenser Exhaust High Temperature: Never

4.3.2 CPMS Maintenance

Preventive Maintenance

CPMS Maintenance will be conducted in accordance with company policy and procedures [§63.8(d)(2)(iii)]. Alternately, the RTDs may be replaced annually with a concurrent performance evaluation as described above. Additionally, station walk downs take place at least weekly (when the station is manned) to check on obvious signs of physical failure of the equipment.

Corrective Maintenance

Corrective maintenance will be conducted according to manufacturer's recommendations, company policy and procedures and good operating practices in a manner consistent with safety and good air pollution control practices for minimizing emissions in the event of a CPMS malfunction, impending malfunction, or out-of-control CPMS. In lieu of conducting immediate corrective maintenance, Operations may shutdown the dehy system until such time as corrective maintenance can be performed as per above.

Corrective Maintenance actions taken will be documented in SAP. To the extent practical, a written plan will be used when conducting corrective maintenance. [63.8(d)(2)(vi)]

4.4 Data Management

4.4.1 Valid Data

Valid data is defined as data not "recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities." [§63.6635] Specifically, valid data is comprised of:

- 15-minute readings not recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities.
- Hourly averages consisting of two (2) valid 15-minute readings.
- Daily averages consisting of a single (1) valid hourly average.
- Monthly averages consisting of at least one (1) valid daily averages.
- 12 Month rolling averages consisting of the current month and prior eleven (11) months.

4.4.2 Data Review

Operations shall review the CPMS data daily reports to: [§63.8(c)(6)]

- Confirm all required data was collected.
- Identify any data collected that was not valid data as defined above.
- Confirm that no exceedances of temperature limits occurred. Missing data may be recovered by:
    - Calling the Automation group to assist in recovering data from the DAS/PLC.
    - Generating a screen print from the HMI panel.

If missing data is unrecoverable (e.g., due to power failure), exceedances are identified, or non-valid data is identified, the Environment Department shall be notified immediately. Additionally, in the event of repeated instances of missing data, whether recoverable or unrecoverable, over a short duration of time, the Environment Department shall be notified such that an investigation as to the causes can be conducted.

5.0 DOCUMENTATION/REPORTING REQUIREMENTS

1. Closeout of the SAP work order shall be considered sufficient documentation provided field readings and/or other results as appropriate are included in the closeout comments or attached to the work order.
2. Logs documenting the malfunction of the CPMS, immediate actions and corrective actions shall be taken in accordance with Section 5.1.1 of this plan. Additionally the Environment Department shall be notified immediately of the malfunction. The Environment Department is responsible for reporting the malfunction in accordance with Section 5.1.2 of this plan.
3. The Environment Department shall review the data prior to filing Quarterly Deviation Reports, Semiannual Reports, or Annual Compliance Certifications as appropriate.
4. Revisions to this monitoring plan must be retained for 5 years from the date of the revision per §63.8(d) (2).

5.1 Recordkeeping

The following records collected by the CPMS are required to be retained for a period of five years. At minimum the most recent two year data shall be available on site. The other three years data may be stored off site but should be accessible within a reasonable time. [§63.10(b)(1) and §63.6660] These records can be retained either electronically, via hard copy or both and shall be easily accessible.

- 12-month rolling average. (COMET/File 1.5.5)
- Monthly average BTEX. (COMET/File 1.5.5)
- Each daily average. (COMET/File 1.5.5)
- Each hourly average used to calculate the daily average values. (COMET/File 1.5.5)
- Each 15-minute data point used to calculate hourly average values, as well as 15-minute data points during start-up and shutdowns. [§63.10(b)(2)(vii)] (COMET/File 1.5.5)
- The algorithm/calculation procedure used to reduce data. (this document)
- All readings taken during periods of CPMS breakdowns and out-of-control periods. (File 1.5.5) Additionally, the following records shall be created and retained by Operations regarding the CPMS:
- The date and time identifying each period during which the CPMS was inoperative except for zero (low-level) and high-level checks. (File 1.5.5)
- The date and time identifying each period during which the CMS was out of control. (File 1.5.5)
- The date and time of commencement and completion of each time period of where the CPMS 4-hour rolling temperature was out of the specified limits in this plan other than during periods other than startups, shutdowns, and malfunctions of the affected source. (File 1.5.5)
- The nature and cause of any malfunction (if known). (File 1.5.5)
- The corrective action taken or preventive measures adopted. (File 1.5.5)
- The nature of the repairs or adjustments to the CPMS that was inoperative or out of control. (File 1.5.5)
- The total process operating time during the reporting period. (File 1.5.5)
- Documentation of any QA/QC procedures performed for CPMS.

5.2 Compliance Reports

The Environment Department is responsible for compiling all compliance reports to be sent to regulatory agencies, including, but not limited to:

- Immediate notifications of non-compliance where required by state rules.
- Quarterly deviation reports where required by state rules.
- Semiannual Reports and Annual Compliance Reports.
- Notification of malfunctioning and out-of-control CPMS events.
- Notification of intent to conduct performance tests.
- Notification of Compliance Status at the completion of performance tests.

- Notification within 2 working days if an action taken during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) is not consistent with this Procedure and the source exceeds any applicable emission limitation per §63.6(e)(3)(iv).

6.0 Definitions

Malfunction:	Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. This definition is provided for information only. Operations should consult with the Environmental Coordinator to determine whether or not a malfunction has occurred due to any unit alarm or shutdown for purposes related to the MACT rules.
Out-of-Control:	A CPMS is out-of-control if the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the applicable performance specification or in the relevant standard; or The CPMS fails a performance test audit, relative accuracy audit, relative accuracy test audit, or linearity test audit.

7.0 Latest Revisions

Description:	Revision 01: Section 4.1.1 – Updated CPMS values
Rationale Statement:	Updated to account for the 95% BTEX control
Impact Assessment Summary:	The update provided more precise limitations and control requirements for the station's Condenser.

Attachment A

Regulatory Cross Reference (40 CFR Part 63, Subpart HHH)

NESHAP From Natural Gas Transmission and Storage Facilities (40 CFR 63 Subpart HHH)	Description of Section	Plan Section
§ 63.1283(d)(ii)(A)	Performance and design criteria for monitoring system requirement	Sections 4.2 and 4.4
§63.1283(d)(ii)(B)	Sampling location	Section 4.1
§63.1283(d)(ii)(C)	Audit procedures	Sections 4.2.2(2) and 4.3.2(2)
§63.1283(d)(ii)(D)	Ongoing operational and maintenance procedures	Section 4.3.2(2)
§63.1283(d)(ii)(D)(i)	Operating CMS with good air pollution control practices	Section 4.3.2(2)
§63.1283(d)(ii)(E)	Ongoing reporting and recordkeeping procedures	Section 5.0
§63.1283(d)(ii)(E)(i)	Required CMS measurements	Section 5.1.1
§63.1283(d)(ii)(E)(ii)	Identifying inoperative periods for CMS	Section 5.1.1
§63.1283(d)(ii)(E)(iii)	Identifying each period when the CMS was out of control	Section 5.1.1
§63.1283(d)(ii)(E)(iv)	Specific identification	Section 4.1
§63.1283(d)(ii)(E)(vi)	Corrective actions and preventative measures	Section 4.3.1
§63.1283(d)(ii)(E)(vii)	Corrective actions and preventative measures	Section 4.3.1
§63.1283(d)(ii)(E)(viii)	Operating time during reporting period	Section 4.3.1
§63.1283(d)(ii)(E)(x)	Results of CMS performance evaluation	Section 4.2.2(2)
§63.1283(d)(ii)(E)(xi)	Duration of each malfunction	Section 4.2.4
§63.1283(d)(ii)(E)(xvi)	Measurements to comply with standards	Section 4.1.2(3)
§63.1283(d)(ii)(E)(xvii)	Results of performance tests and emission observations	Section 5.1.2(1)
§63.1283(d)(ii)(E)(xix)	CMS calibration checks	Section 4.2.2(2)
§63.1283(d)(ii)(E)(xx)	CMS maintenance	Section 4.3

NESHAP From Natural Gas Transmission and Storage Facilities (40 CFR 63 Subpart HHH)	Description of Section	Plan Section
§63.1283(d)(ii)(E)(xxii)	Notification of compliance status	Section 5.1.2(1)
§63.1283(d)(iii)	CPMS equipment performance check	Section 4.3
§63.1283(d)(iiv)	CPMS equipment performance check	Section 4.3