DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N295465390

FACILITY: Cargill Salt - Hersey		**SRN / ID:** N2954
LOCATION: 1395 135th Ave, HERSEY		**DISTRICT:** Cadillac
CITY: HERSEY		**COUNTY:** OSCEOLA
CONTACT: Karl J. Tomaszewski , Facility Manager		**ACTIVITY DATE:** 10/12/2022
STAFF: Kurt Childs	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: 2023 FCE.		
RESOLVED COMPLAINTS:		

2023 Full Compliance Evaluation (FCE)

I conducted an FCE, including a site inspection on October 12, 2022 of Cargill Salt – Hersey in accordance with the Cadillac District inspection plan. The purpose of the FCE was to determine compliance with Permit to Install 338-06D and the Air Pollution Control Rules. This source was formerly ROP-subject but the ROP was voided upon issuance of PTI 338-06c on August 29, 2019, which limited the potential to emit of NOx and CO below major source thresholds. Cargill Salt – Hersey produces various sodium chloride salt products through solution mining by dissolving, concentrating and evaporating sodium chloride brine.

Prior to entering the plant I made some off-site observations. The weather was overcast and raining with a temperature of 42 degrees F and moderate south winds (10 mph). It was very damp outside, and I did not observe any fugitive dust emissions. Water vapor plumes were visible from the EUNACLREFINERY stacks, but no visible emissions were observed.

At the time of the inspection, I met with Ms. Laura Wekenman to conduct the site inspection and review company records. We began by looking at the two stacks for the "boiler" building and two stacks for the salt refinery. The boiler building stacks include a stack for the gas turbine and a stack for the combined gas turbine and heat recovery steam generator (HRSG). The salt refinery stacks include one stack for the combined exhaust from the salt dryer scrubber and salt cooler scrubber, and one stack for the salt compactor scrubber. In accordance with the AQD's inspection initiative for this fiscal year, I took measurements of each stack with a portable range finding unit to evaluate if the permitted stack heights are representative of actual stack heights. I took three, two point readings of each stack and averaged the readings. Note, there are no stack parameters for the gas turbine stack since normal operation is to exhaust the gas turbine through the HRSG and out SVTURBINE/HRSG. The results were as follows:

Stack & Vent ID	Minimum Height Above Ground (feet)	Measured Height (feet)
1. SVNACLSCRUBDRYCOOL	**147**	**148**
2. SVNACLSCRUBCOMP	**150**	**145**

Stack & Vent ID	Minimum Height Above Ground (feet)	Measured Height (feet)
3. SVTURBINE/HRSG	130	123

These results seem reasonable to confirm the plant stack heights comply with the permit limits given the variability introduced through use of a hand-held instrument and potential variations in where to measure the base of each stack (the stacks originate inside the buildings, readings were taken outside using the base of the building).

Most of the monitoring records are maintained in the plant control room and were reviewed during that portion of the inspection. Prior to the inspection I had reviewed past reporting and determined that all of the required reports (annual VE readings and Semi-annual operating parameter deviations) had been provided as necessary, in a complete and timely manner during the FCE review period. Note that no semi-annual reports of occurrences when operating parameters deviate ± 30% from the ranges identified in the MAP (established during stack testing) have been submitted. These reports are only necessary when there has been a deviation. Records reviewed during the inspection and interviews with Cargill staff revealed there have been no such deviations in the past 5 years.

We proceeded to the plant control room to review control device operating parameter logs and other operating data. The plant houses the turbine, HRSG, and salt refinery all of which were operating at the time of the inspection and generally operate 24/7. Cargill Salt staff inspect and record monitoring data from the salt cooler scrubber, salt dryer scrubber, and salt compaction scrubber twice per shift (4 times per day). The most recent month's records were available in the control room and additional records are on file.

I reviewed the records which indicated all observed readings were within the operating parameters specified in the MAP. The scrubber monitoring gauges are required to be calibrated annually and records of the calibration maintained. At the time of the inspection the Cargill Salt employee responsible for this was not available so I requested the records for 2022 be provided following the inspection. I received these records from Ms. Wekenman on November 14, 2022 which are attached. These include maintenance work orders for annual calibration of the monitoring gauges on each of the scrubbers (EUNACLREFINERY SC VI.2 and 3). There is one work order for each of the three scrubbers that covers each of the monitors for that scrubber. These work orders indicated that each of the monitors had been checked for calibration or replaced (cooler and dryer scrubber pressure gauges).

Process	Date	Work Order Number
Salt Dryer Scrubber	11/02/22	410297997
Salt Cooler Scrubber	11/03/22	410297998

Salt Compaction Scrubber	**10/31/22**	**410297999**

Daily natural gas usage is tracked in the control room and is available on the plant computer system. There is a plantwide usage limit of 1,308.8 MMSCF/YR and a requirement to track usage daily for the salt dryer burner, turbine, and duct burner. The attached photo is a screenshot of the daily usages for October 2022. This data is used to generate the annual usage reported to MAERS. Annual fuel usage has not exceeded this limit.

Ms. Wekenman and I inspected the remainder of the plant, stopping to observe and record the scrubber monitor readings. My observations were as follows:

Process	Observed Inlet Pressure	Limits (MAP)	Observed Differential Pressure	Limits (MAP)	Observed Nozzle pressure / flow	Limits (MAP)
Salt Cooler Scrubber	9.5”	8.8” – 16.3”	10.0”	8.8” – 13.2”	25 psig	10.2” – 30.4”
Salt Dryer Scrubber	6”	5” – 10.2”	11.0”	9” – 13.6”	25 psig	7.6” – 30.4”
Salt Compacti-on Scrubber	10.0”	9.1” – 18.2”	13.6	11.5” – 17.3”	271 gpm	234 gpm – 350 gpm

These readings were consistent with those I observed on the plant log sheets and with the limits in the MAP and ROP.

Compliance with emission limits is based on emission factors from stack testing and records of these calculations are maintained on a spreadsheet. The spreadsheets are used for the annual MAERS submittal. Data from the 2021 MAERS emission calculation spreadsheet indicate that emissions are within the following permit limits:

Pollutant	MAERS	Limit	Time Period / Operating Scenario	Equipment
1. NO_x		89.57 tpy	12-month rolling time period as determined at	FGFACILITY

Pollutant	MAERS	Limit	Time Period / Operating Scenario	Equipment
	17 tpy		the end of each calendar month.	
2. CO	18	89.42 tpy	12-month rolling time period as determined at the end of each calendar month.	FGFACILITY

Emissions testing every five years is no longer required since the ROP was voided. NOx and PM testing may be required upon request of the AQD District Supervisor. CO testing was required within 180 days from the issuance of the permit (11/26/2019). The most recent test was conducted on 12/4/19. That testing demonstrated compliance with the NOx and CO emission limits for the salt dryer, gas turbine, and HRSG. Compliance testing for NOx and PM emissions for the salt dryer/cooler and the salt compaction scrubbers took place in March 2018.

Visible emissions from the evaporator building and salt compaction building are prohibited (these buildings house the crushing/grinding, screening, conveying, and bagging operations subject to 40 CFR 60 Subpart OOO). Annual Method 22 VE testing and reporting is required to demonstrate compliance with this limit. The AQD has received semi-annual reports of the required Method 22 testing (most recently on 10/20/22) that demonstrate compliance with these requirements.

In order to limit emissions from the gas turbine and HRSG to below major source thresholds, PTI 338-06D included limitations on the number of startups and shutdowns (75), and hours of operation below 0 degrees F (250). Records provided by Cargill indicate there have only been 9 startups and shutdowns in 2022 and no hours of operation at outdoor temperatures below 0 degrees F.

PTI 338-06D requires that Cargill maintain on file the natural gas fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the natural gas specifying the maximum total sulfur content, and contains natural gas fuel quality limits of 0.01% by weight, of sulfur. This record is maintained (copy attached) and demonstrates that sulfur content is guaranteed to below 5.0 grains of sulfur per 100 cubic feet which is less than 0.05 % by weight.

Conversion Factors

1 Grain/100 ft3 = ~15.7 PPM/V

10,000 PPM/V = 1%

500 PPM/V = 0.05%

Conversion

5 Grain/100 ft3 = 78.5 PPM/V

PTI 338-06D includes requirements to maintain and operate in compliance with an approved Malfunction Abatement Plan (MAP). The AQD has a copy of the approved plan dated June 2020 on file. The MAP contains the most recent scrubber operating ranges established during testing.

Summary

As a result of this inspection, it appears that Cargill Salt – Hersey is currently in compliance with the requirements of PTI 338-06D and the Air Pollution Control Rules.

NAME _____ DATE _____ SUPERVISOR _____ 2022.12.29 15:23:27 -05'00'