

Air Quality Advisory Committee

May 8, 2024

Agenda

1. Welcome/Introductions
2. Recap of Previous Meeting
3. Community Opens
4. AQAC Opens
5. Good Neighbor Agreement Items Update
6. Agenda for Next Meeting
7. Public Comments/Questions

AQAC Opens

- Soil analysis and modeling
- Permit update
- GHG update

Air Permit Update

- DEQ issued Air Permit on April 16, 2024
- The permit is part of our site preparation efforts for potential future expansion in support of our ongoing investment in Oregon
- Summary of permitting requirements:
 - Demonstrating through air quality analysis that requested emissions limits do not result in an exceedance of the national ambient air quality standards (NAAQS)
 - Providing a Best Available Controls Technology assessment that ensures Intel is applying proper emissions controls
 - Verification through emissions testing and monitoring that emissions do not exceed permit limits
 - Ambient air monitoring near the property boundary
 - More frequent stack testing
 - Continuous monitoring to ensure abatement equipment is operating optimally
 - Conduct a study on particulate matter testing
- Visit DEQ website for details <https://www.oregon.gov/deq/programs/pages/intel.aspx>

Summary of Key New Permit Conditions

- **Ambient monitoring**
 - Pollutants: NO_x and PM_{2.5}
 - Monitoring Period of 3 years near property line
- **Equipment monitoring**
 - EXSC Emission action level for recirculation flow
 - RCTO Emission action level for regenerator air temperature
- **Increased monitoring and recordkeeping across site**
- **Scrubber start up procedures**
 - An additional procedural step has been added to verify EXSC equipment is operating properly prior to start up
- **Other permit conditions**
 - Boiler tuning
 - BACT limits for NO_x, CO, PM, PM₁₀, PM_{2.5}, VOC, GHG, F

Stack Testing

Increased Stack testing

Exhaust System	Testing Frequency	Tested Pollutants
RCTO	Every 2 years	NO _x , CO, VOC DRE
EXSC	Every Year	HF, F, HCl, NO _x , CO
EXAM	Every Year	HF, F, NO _x , CO
Boilers	Within 2 years of permit issuance	NO _x , CO
TMXW	Within 2 years of permit issuance	NO _x , CO

GHG Reporting Update for 2022

- Intel discovered a reporting error in the 2022 Greenhouse Gas emissions data
 - Due to an inaccurate end of year inventory of gas cylinders
- The error was self-reported to ODEQ in mid March 2024
- With the correction Intel's GHG emissions were still below our permit Plant Site Emission Limit (PSEL)
- Isolated to reporting year 2022
- Corrective Actions Taken
 - The inventory data was corrected
 - After action review completed & reviewed with site leadership. Shared learnings with other sites
 - Implementing additional engineering controls for data collection and automation
 - New Third-Party Verifier to re-verify our 2022 GHG report
 - An enhanced internal peer review involving staff from other sites is currently underway
- On 4/12/24 DEQ issued a warning letter with opportunity to correct
 - Resubmit corrected 2022 emissions report by May 27, 2024
 - Third-party reverification of the 2022 emission report by July 11, 2024

Good Neighbor Agreement Items

GNA-Specified Agenda Items

- Intel to report to the AQAC at its quarterly meetings on:
 - Stack testing completed since the last AQAC meeting; any stack testing planned before next AQAC meeting
 - Annual or semiannual reports submitted by Intel to DEQ pursuant to Intel's air permit
 - Any requests to DEQ for authority to modify emission factors or emission sources that were submitted since the last AQAC meeting or that Intel anticipates will be submitted prior to the next AQAC meeting
 - Any excess emissions and upsets reported to the Department during the most recent calendar quarter
- *Implemented measures identified on Attachment A

Stack Testing Overview

- Why does Intel perform stack testing?
 - Determination of compliance with Best Available Control Technology (BACT) emission limits
 - Determination of Rotary Concentrator Thermal Oxidizer (RCTO) control efficiencies
 - Development of emission calculations for fluorides and hydrogen fluoride
 - Good Neighbor Agreement Attachment B requirements
- Stack testing plans are reviewed and approved by Oregon DEQ and utilizes standard EPA and/or DEQ test methods
- Stack testing performed by a 3rd party stack testing firm

Stack Testing Update Since Previous Meeting

- Activities since Q1 meeting (2/6/24)
 - 2024 RCTO and EXSC compliance stack testing commenced
- Planned stack testing
 - Continuation of 2024 RCTO and EXSC compliance stack testing

Continuous Emissions Monitoring System Overview

- Rotor Concentrator Thermal Oxidizer (RCTO)
 - Used to control emissions of VOCs
 - Method of control: Thermal oxidation (combustion)
 - Temperature = Key operating parameter
 - Measurement via thermocouple
 - Minimum temperature established during stack testing
 - Temperature measurements are reviewed on an ongoing basis
 - Alarms are also set to alert when measured value outside the acceptable range
 - Alarms are indication of off-spec operation, not an indication of excess emissions or bypass

Continuous Emissions Monitoring System Overview

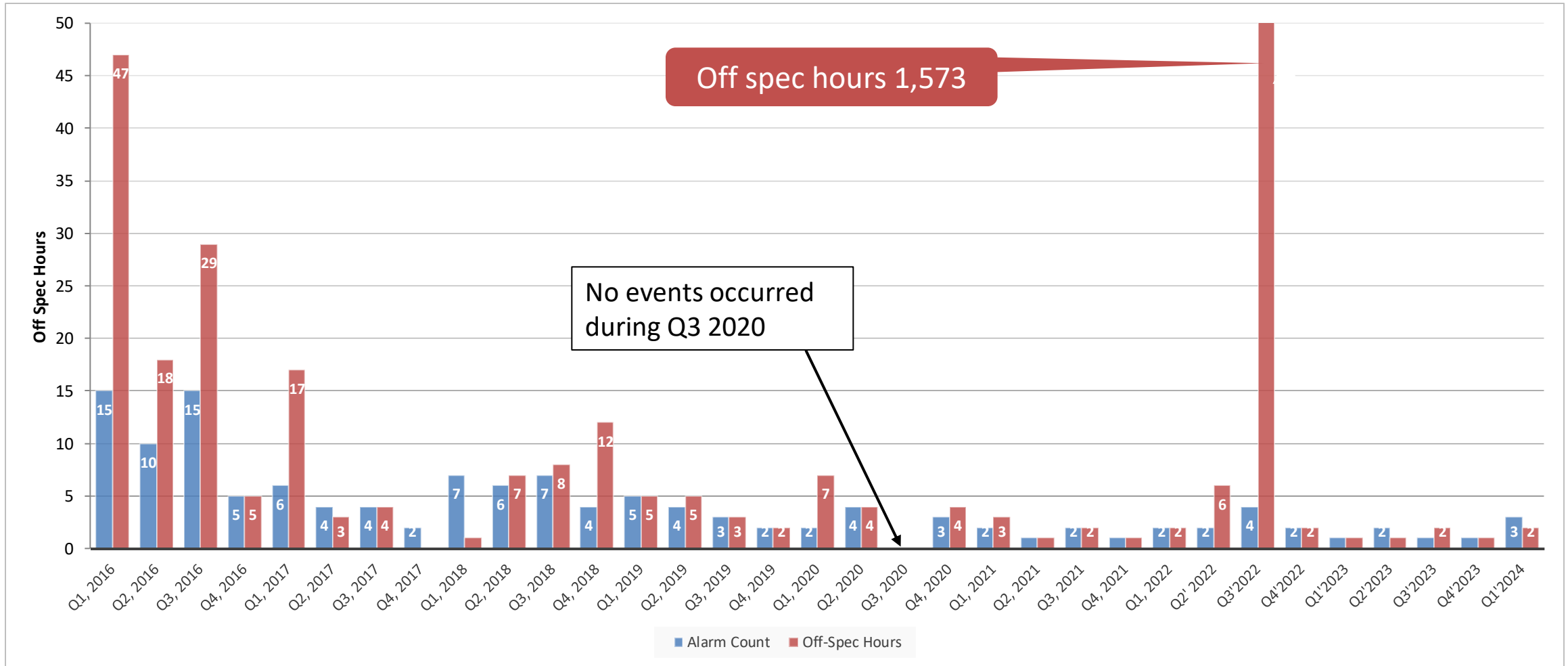
- Wet Scrubbers
 - Used to control emissions of acid gases, primarily Fluorides, HF, and HCl
 - Method of control: pH adjusted water absorption
 - Water flow rate and pH = Key operating parameters
 - Measurements via pH probe and flow meter
 - Minimum pH and flow established during stack testing
 - Measurements are reviewed on an ongoing basis
 - Alarms are also set to alert when measured value outside the acceptable range
 - Alarms are indication of off-spec operation, not an indication of excess emissions or bypass

Continuous Emissions Monitoring Report

– Q1 2024 Attachment C

Source	Frequency	Parameter	Monitoring Equipment	Q1, 2024 Report
Rotary Concentrator Thermal Oxidizers (RCTO)	Continuous	Temperature	Thermocouple	No events
Acid Gas Scrubbers	Continuous	Flow	Flow Meter	3 events
		pH	pH probe	No events
Emergency Generators/Fire Pumps	When used	Hours of operation including time of engine start, time of engine stop and reason for operating		No events

Continuous Emissions Monitoring Report



- Normal hourly operations for Q1 2024 is > 99.99%
 - Off-spec operation is not an indication of excess emissions and was limited to <0.01% of the hours for Q1 2024
- Blue bars indicate the number of alarms per quarter
- Red bars indicate the number of hours outside of normal operation per quarter

Since Previous AQAC Meeting DEQ Submittals

- EXSC Stack Test Plans (2/12/24)
- RCTO Stack Test Plans (2/22/24)
- Process Emission Factor Update (2/26/24)
- Annual compliance report (3/15/24)
- D1X Mod2 EXVO Bypass Event Notification (5/6/24)

D1XM2 EXVO Bypass Event 4/22/2024

- During a planned maintenance activity, an equipment fault occurred causing a shutdown on a D1XM2 RCTO resulting in a bypass
- The offline RCTO undergoing maintenance was halted, and work began to bring the RCTO online
- Once the RCTO was ready for operation the bypass ended
- The total time of bypass was 3 hours and 11 minutes
- Intel conducted an after-action review and identified corrective actions for this event

D1XM2 RCTO Bypass Event – 4/22/2024

- Assessment of D1XM2 RCTO bypass event
 - Calculated Maximum Acute Residential Impact if we assume the affected RCTO offered zero control
 - Used DEQ screening methodology from Cleaner Air Oregon (aka, Level 1)
 - Maximum Acute Residential Impact: 0.003 due to RCTO fault
 - Added RCTO-specific impact (0.003) to the facility-wide impact (0.46) from 2015 HRA
 - Maximum Acute Residential Impact: 0.463
 - Total impact < 3
- Conclusion: Acute impact from D1XM2 RCTO bypass event was well below the HRA Threshold Level of 3

Annual Air Permit Compliance Report

Submitted to NCA and NEDC as required by GNA

- Annual Air Compliance Report including an emissions inventory is posted on the ODEQ webpage
 - www.deq.state.or.us/AQPermitsonline/34-2681-ST-02_AR_2023.PDF

Agenda for Q3 AQAC Meeting 2024

- Next Meeting: Wednesday August 14
- 2024 Proposed AQAC meeting date:
 - Wednesday November 13

AQAC members input into the next agenda

Standing agenda items

- DEQ Submittals
- Stack Testing Update
- Project Update
- Other

Public Comments/Questions

Backup

Attachment A

Emission Reduction Project	Target Date	Status / Method of Confirmation
Advocate to contractors working at the Facility to use newer onroad and nonroad diesel engines	2 nd quarter 2016	Ongoing collaboration with suppliers to encourage reductions
Evaluate ways to reduce (if possible) diesel particulate matter emissions either with onsite or offsite projects	3 rd quarter 2016	Reported out during Q3, 2016 AQAC quarterly meeting
Decommission four Fab 5 boilers	3 rd quarter 2016	Completed
Assess feasibility of reducing waste tank emissions	4 th quarter 2016	Completed
Retrofit RCTOs to optimize natural gas usage	2 nd quarter 2017	Completed
Boiler replacement with ultra low-NOx burner boilers at RA2 and RP1	3 rd quarter 2017	Project completed. Report out during Q3, 2017 AQAC meeting
Compare actual emissions inventory in 2020 to inventory used in HRA	2 nd quarter 2021	Completed. Reported to AQAC at quarterly meeting