Air Quality Advisory Committee

November 19, 2020

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 Open
Q3 Stack Testing Roles / Responsibilities Follow-up

OR DEQ	3rd Party Source Tester	Intel Environmental Compliance	Intel Facilities Operations	Intel Fab Operations
• Issue Stack Test Guidance Documents • Establish Permit Conditions • Review Stack Test Plan • Witness Stack Testing • Review Stack Test Report	• Author test protocol • Conduct testing following test plan • Contract lab analyses if needed • QA/QC • Final report • Ensure personnel are trained / qualified	• Contract 3rd Party Source Tester • Coordinate logistics • Ensure timely submittals of test plan and final report	• Logistics for testing • Ensure equipment is operating as test requires • Provide operational data	• Operate normally • Provide operational data

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;
  - Update on the implementation of the measures identified on Attachment A and any measures raised in prior AQAC meetings that require further action or consideration;
  - Any excess emissions and upsets reported to the Department during the most recent calendar quarter

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 must be approved by Oregon DEQ prior to testing
- Stack testing utilizes standard EPA and/or DEQ test methods
- DEQ and AQAC committee members can be onsite and witness testing events
- Stack testing performed by a 3rd party stack testing firm

Q4 2020 Stack Testing Update

- Test plans submitted to Oregon DEQ August 25, 2020
  - DEQ issued test plan approvals prior to start of the testing program
- Stack testing conducted late September / early October
- Purpose:
  - Determine removal efficiency of volatile organic compounds (VOC)
  - Demonstrate compliance with best available control technology (BACT) limits for NOx and CO
- Units tested:
  - Recurring RCTO D1X-RCTO-5
  - Recurring RCTO stack testing at Aloha (F15) units 1 & 2
  - Initial RCTO stack testing at Aloha (F15) unit 3
- Final Stack Test Report pending

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

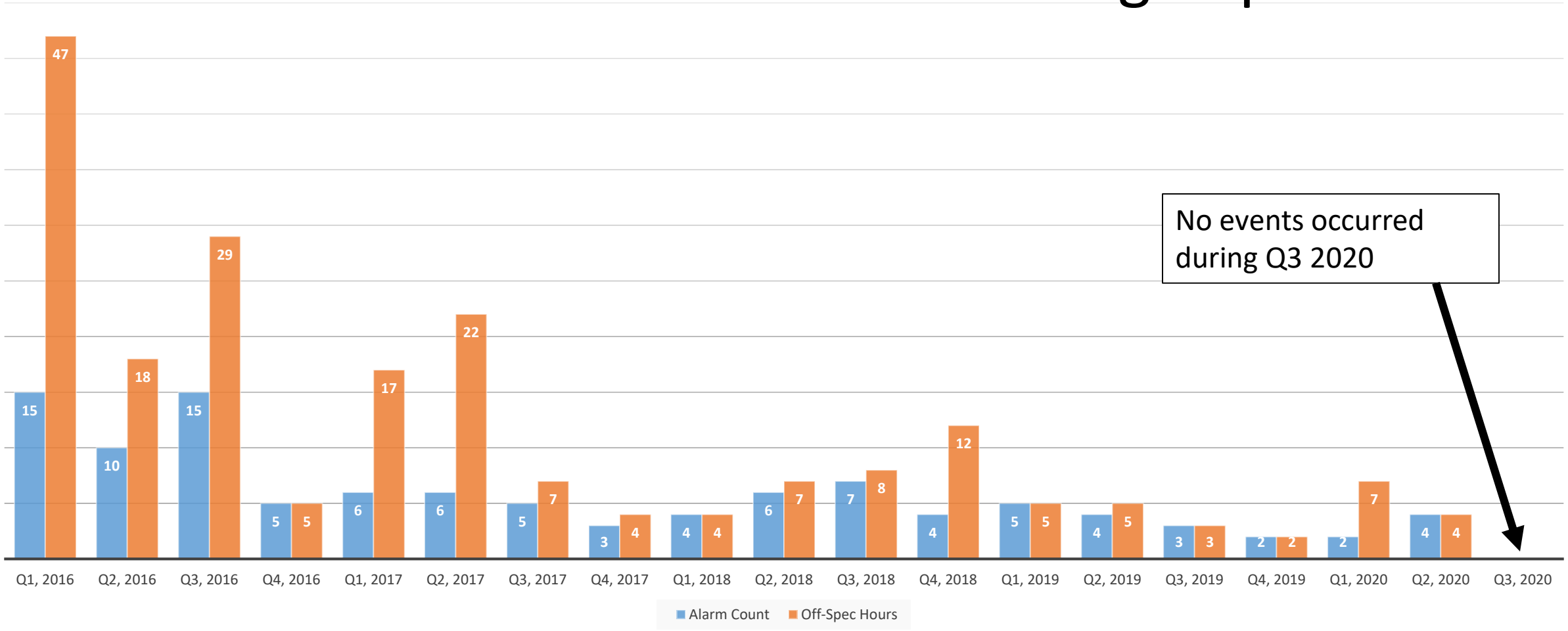
- Wet Scrubbers
  - Used to control emissions of acid gases, primarily Fluorides, HF, and HCl
  - Method of control: pH adjusted water absorption
    - Water flow rate and pH = Key operating parameters
    - Measurements via pH probe and flow meter
    - Minimum pH and flow established during stack testing
    - 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 – Q3, 2020

Attachment C

Source	Frequency	Parameter	Equipment	Q3, 2020 Report
Rotary Concentrator Thermal Oxidizers (RCTO)	Continuous	Temperature	Thermocouple	No issues
Acid Gas Scrubbers	Continuous	Flow pH	Flow Meter pH probe	No issues
Emergency Generators	When used	Hours of operation including time of engine start, time of engine stop and reason for operating		No issues

Continuous Emissions Monitoring Report



- Normal hourly operations for Q3 2020 is 100%
  - Off-spec operation is not an indication of excess emissions
- Blue bars indicate the number of alarms per quarter
- Orange bars indicate the number of hours outside of normal operation per quarter

DEQ Submittals

- Type 2 Notice of Intent to Construct submitted 10/30/2020
  - Update to a boiler included in 2019 Type 2 NOC

- Upcoming:
  - Emission Factor Update to be Submitted late January 2021
    - Updated process EFs based on recent tool level stack testing
    - Updated RCTO VOC DRE and NOx and CO EFs based on 2020 stack testing
    - Updated TF EFs based on 2019 testing (pending stack test report review by DEQ)

Agenda for Next Meeting

- Planning – 2021 quarterly meeting dates
- AQAC members to have input into the next agenda for each AQAC meeting
  - Standing agenda items
    - DEQ Submittals
    - Stack Testing Update
    - Project Update
  - LEPC Update?
  - AQAC 5-year retrospective?
  - 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	2nd 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	3rd quarter 2016	Reported out during Q3, 2016 AQAC quarterly meeting
Decommission four Fab 5 boilers	3rd quarter 2016	Completed
Assess feasibility of reducing waste tank emissions	4th quarter 2016	Completed
Retrofit RCTOs to optimize natural gas usage	2nd quarter 2017	Completed
Boiler replacement with ultra low-NOx burner boilers at RA2 and RP1	3rd quarter 2017	Project completed. Report out during Q3, 2017 AQAC meeting
Compare actual emissions inventory in 2020 to inventory used in HRA	2nd quarter 2021	Report to AQAC at quarterly meeting