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Air Operating Permit
Excess Emissions Report
Form Part II

Name of Facility	Shell, Puget Sound Refinery	Reported by	Tim Figgie
Date of notification	February 20, 2015	Incident type: breakdown/ upset/startup or shutdown	Shutdown
Start Date	February 20, 2015	Start Time:	2:30 PM
End Date	February 20, 2015	End Time:	4:30 PM
Process unit or system(s): East Flare			

Incident Description

On Friday, February 20th, at around 2pm, partially combusted gasses were released from the East Flare. An approximately 10 mph north wind carried odors toward La Conner and the Swinomish Reservation. Odor complaints were received by Shell PSR, the Anacortes 911, Northwest Clean Air Agency (NWCAA), EPA Emergency Response Unit and the Washington State Emergency Management Division.

The flare shutdown procedure began the previous day (Feb 19) when Operations started flushing 19NC6 Seal Pot and 19NC3 KO Drum by increasing the Seal Pot makeup water. The KO Drum was filled with firewater and pumped out on Thursday nightshift. Friday morning at about 8:45AM, the East Flare was blocked in and isolated from normal process flow by closing the valve upstream of the C3 KO drum.

Steam was introduced to the bottom of the KO Drum through a steam hose. This warmed up the drum enough to push vapors through the Seal Pot water level, and register at the Sulfur analyzers downstream[1]. It is estimated that the temperature in the KO Drum reached approximately 140 degrees. At about 12:30pm, 250lb steam was introduced into the KO Drum vapor space through a 2 inch line. This began to heat up the water in the C6 Seal Pot. When Operators realized that the C6 Seal Pot had a water level in it, they transferred it into the KO Drum. The 200 degree water increased the temperature of the KO Drum, causing more vapors to form. With the water seal removed, the vapors that had built up in the KO Drum moved into the Flare header. Partially combusted hydrocarbons and mercaptans were released to the atmosphere.

Immediate steps taken to limit the duration and/or quantity of excess emissions:

The East Flare decontamination process was stopped upon Shell PSR learning there were impacts to the community.

Applicable air operating permit term(s): 4.3 – 4.6

Estimated Excess Emissions: Based on Engineering Estimates	Pollutant(s): Sulfur and VOC Compounds	Pounds (Estimate): detailed emission calculations are being developed and the results will be sent to NWCAA by April 10, 2015 in a separate report.

[1] The sulfur analyzers were later shutdown at approximately 12:40PM to prevent water damage.

The incident was the result of the following (check all that apply):

- ☐ Scheduled equipment startup
- ☒ Scheduled equipment shutdown
- ☐ Poor or inadequate design
- ☐ Careless, poor, or inadequate operation
- ☐ Poor or inadequate maintenance
- ☒ A reasonably preventable condition

Did the facility receive any complaints from the public?

- ☐ No
- ☒ Yes (provide details below)

Shell PSR received community complaints from areas south of the refinery including Swede's Net Repair and Sales, Padilla Heights area, Shelter Bay area, the Town of La Conner and from the Swinomish Indian Tribal Community.

Did the incident result in the violation of an ambient air quality standard

- ☒ No
- ☐ Yes (provide details below)

Root and other contributing causes of incident:

The root cause of this event was insufficient procedures were used for the decontamination of the east flare prior to venting to the atmosphere.

The root cause of the incident was:

(The retention of records of all required monitoring data and support information shall be kept for a period of five years from the date of the report as per the WAC regulation (173-401-615))

- ☐ Identified for the first time
- ☒ Identified as a recurrence (explain previous incident(s) below – provide dates)

Odor complaints were received during previous flare shutdown and decontamination activities on January 24 and October 5, 2011 and on March 15, 2014.

Are the emissions from the incident exempted by the NSPS or NESHAP "malfunction" definitions below?

- ☒ No
- ☐ Yes (describe below)

Emissions occurred during shutdown of the East flare and after the flare was isolated from normal operation. There was no regular process or upset gas flow to the flare at the time of the event.

Definition of NSPS "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 60.2
Definition of NESHAP "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. 40 CFR 63.2

Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):

New procedures will be developed for future flare shutdowns and associated decontamination activities, before any future planned maintenance activities. PSR will provide NWCAA the new procedures once completed.

Description of corrective action to be taken (include commencement and completion dates):

See above

If correction not required, explain basis for conclusion:

See above

Attach Reports, Reference Documents, and Other Backup Material as Necessary. This report satisfies the requirements of both NWCAA regulation 340, 341, 342 and the WAC regulation (173-400-107).

Is the investigation continuing? ☐No ☒Yes

Is the source requesting additional time for completion of the report? ☐No ☒Yes

Based upon information and belief formed after reasonable inquiry, I certify that the statements and information in this document and all referenced documents and attachments are true, accurate and complete.

Prepared By: _ Tim Figgie Date: ___ March 17, 2015

Responsible Official or Designee: _____ Date: 30th March, 2015