Environmental Reportable Events Summary

Event Date: 02/24/2022

Event Title: No. 4 Hydrodesulfurization (No. 4 HDS) Unit Trip

Impacted Media (air, water, or soil): Air

Operating Unit: #4 Hydrodesulfurization Unit (No. 4 HDS)

Event Summary:

While under normal operation, an alarm for high seal gas flow sounded in the control room indicating a potential leak at the main compressor for the No. 4 HDS. This alarm caused the unit to trip offline to prevent a more hazardous condition near the compressor and to prevent damage to the unit. The trip of the No. 4HDS also caused unit stability issues which caused the Flare Gas Recovery Unit (FGRU) and the No. 1 Sulfur Recovery Unit (SRU) to trip. These unit trips caused the gases normally processed in the units to be sent to the Plant 1 Main Plant Flare for safe combustion. H_2S is combusted at the flare, which results in the generation of SO_2 and water vapor. With the unit offline, several other processing units in the refinery were destabilized causing permit exceedances in Plant 1.

This event began 02/24/2022 at 6:20 a.m. and ended on 02/26/2022 at 3:00 p.m. once all units were stabilized.

The specific permit exceedances for this event were:

- 162 ppm H_2S in flare gas for a 3-hour average (Plant 1 Main Plant Flare)
  - Reported at **300 ppm** H_2S in flare gas for a 3-hour average
- 15.68 lb/hr of SO_2 1-hour average from the tail gas incinerator (H-25)
  - Reported at **37.73 lb/hr** of SO_2 for a 1-hour average (maximum)
- 250 ppm SO_2 at 0% O_2 for a 12-hour rolling average from the tail gas incinerator (H-25)
  - Reported at **628 ppm** SO_2 at 0% O_2 for a 12-hour average

The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.

Environmental Reportable Events Summary

Event Date: 02/25/2022

Event Title: Tier 2 Event – Vapor Release Alarm Activated

Impacted Media (air, water, or soil): Air

Operating Unit: Flare Gas Recovery Unit (FGRU)

Event Summary:

On the morning of February 25, operators around the Plant 1 Flare Gas Recovery Unit (FGRU) noted the smell of hydrogen sulfide gas (H_2S). Refinery personnel activated the plant alarm system indicating a vapor release in the area. Operations personnel quickly routed the gases in the units, including Plant 3 gases, to the flare which stopped the release at the FGRU. H_2S is combusted at the flare, which results in the generation of SO_2 and water vapor.

More details regarding this event will be included in a separate summary report which will be posted online.

This event began 02/25/2022 at 10:00 a.m. and ended 02/27/2022 at 7:00 p.m. when the repairs were made to the FGRU.

The specific permit exceedances for this event were:

- 162 ppm H_2S in flare gas for a 3-hour average (Plant 1 Flare)
  - Reported at **300 ppm** H_2S in flare gas for a 3-hour average
- 162 ppm H_2S in flare gas for a 3-hour average (Plant 3 Flare)
  - Reported at **264 ppm** H_2S in flare gas for a 3-hour average
- Emergency Planning and Community Right-to-Know Act (EPCRA) reportable quantity (RQ) exceedance for SO_2 – 500 lbs 24-hour rolling total
  - **1.1 tons** of SO_2

The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.

Event Date: 02/25/2022

Event Title: Tier 2 Event – Vapor Release Alarm Activated

Impacted Media (air, water, or soil): Air

Operating Unit: Plant 1 Catalytic Polymerization unit

Event Summary:

During normal operation, a leak developed at a flange in the Plant 1 Catalytic Polymerization Unit. Operations personnel activated the plant alarm system indicating a vapor release in the unit. Operations personnel attempted to tighten the bolts on the flange but were unsuccessful. Operations then shut down the unit to stop the leak.

More details regarding this event will be included in a separate summary report which will be posted online.

The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.

Environmental Reportable Events Summary

Event Date: 02/28/2022

Event Title: Plant 1 Hydrogen Unit Shutdown Exceedances

Impacted Media (air, water, or soil): Air

Operating Unit: Plant 1 Hydrogen Unit

Event Summary:

The Plant 1 Hydrogen Unit was shut down to perform maintenance on equipment. During the shutdown, the Flare Gas Recovery Unit (FGRU) was temporarily bypassed and gases from the Hydrogen Unit were sent to the flare for safe combustion. H_2S is combusted at the flare, which results in the generation of SO_2 and water vapor.

This event began 02/28/2022 at 10:00 a.m. and ended on 02/28/2022 at 1:00 p.m. when the Hydrogen Unit was taken offline and the FGRU was brought back to full operation.

The specific permit exceedances for this event were:

- 162 ppm H_2S in flare gas for a 3-hour average (Plant 1 Main Plant Flare)
  - Reported at **241 ppm** H_2S in flare gas for a 3-hour average

The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.

Event Date: 03/02/2022

Event Title: Plant 2 Flare Exceedance

Impacted Media (air, water, or soil): Air

Operating Unit: Plant 2 Unsaturated Gas Unit

Event Summary:

While purging the Unsaturated gas unit to prepare for maintenance work, some residual sour gases from the unit were sent to the flare for safe combustion. H_2S is combusted at the flare, which results in the generation of SO_2 and water vapor.

This event began 03/02/2022 at 5:00 a.m. and ended on 03/02/2022 at 8:00 a.m. when operators completed the purge of the Unsaturated Gas unit.

The specific permit exceedance for this event was:

- 162 ppm H_2S in Plant 2 Flare Gas for a 3-hour average
  - Reported at **222 ppm** for a 3-hour average

The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.

**Information in this report is based on the facts known to Suncor Energy (U.S.A.), Inc. at the time of preparation. We may update or change the information contained herein if and to the extent additional facts become available.*

Environmental Reportable Events Summary

Event Date: 03/12/2022

Event Title: No. 4 Hydrodesulfurization (No. 4 HDS) Unit Shut Down Exceedances

Impacted Media (air, water, or soil): Air

Operating Unit: No. 4 Hydrodesulfurization (#4 HDS) Unit

Event Summary:

The No. 4 HDS unit was required to be shut down to make the necessary repairs to the main compressor. This work was related to the unit trip on February 24. During the planned shutdown, gases were routed to the Plant 1 Main Plant Flare for safe combustion. H_2S is combusted at the flare, which results in the generation of SO_2 and water vapor.

This event began 03/12/2022 at 1:00 a.m. and ended on 03/12/2022 at 4:00 a.m. when the No.4 HDS was fully shut down.

The specific permit exceedances for this event were:

- 162 ppm H_2S in flare gas for a 3-hour average (Plant 1 Main Plant Flare)
  - Reported at **248 ppm** H_2S in flare gas for a 3-hour average

The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.