

Environmental Reportable Events Summary



December 15, 2023 – January 15, 2024

Emissions violations are determined following review by the Colorado Department of Public Health & Environment (CDPHE); emissions exceedances do not necessarily constitute violations.

Event Date: December 16 – 18, 2023	
Event Title: Acid Gas Flaring Due to Power Outage – Shutdown and Startup	
Impacted Media (air, water, or soil): Air	
Operating Unit: Plant 1 Main Plant Flare	
<p>Event Summary: On December 15, 2023, at approximately 11:50 p.m. the Commerce City Refinery experienced a full plant power outage. Power was down for three to four minutes until it was restored. The power outage automatically triggered safety shutdowns of the appropriate process units in Plant 1, 2, and 3. This resulted in gases with high hydrogen sulfide (H₂S) concentrations to be sent to the Plant 1 Main Plant Flare and elevated sulfur dioxide (SO₂) emissions at the flare. The cause of the power outage is under investigation.</p> <p>The relevant permit terms or conditions for this event include:</p>	
Permit Term or Condition	Maximum Reported Value
Title V Operating Permit 96OPAD120, Various Conditions – H ₂ S concentrations in the fuel gas system shall not exceed 162 ppm of a 3-hour rolling average.	12/16/2023 5:00 p.m. – 11:00 p.m. (6 hours) Maximum H ₂ S was 284 ppm
Title V Operating Permit 96OPAD120, Condition 13.8 – Carbon Monoxide (CO) emissions from Boiler 6 and 8 shall not exceed 0.060 lbs/MMBtu of a 24-hour rolling average.	Boiler 6: 12/16/2023 8:00 a.m. to 12/17/2023 7:00 a.m. (23 hours) Maximum Boiler 6 CO was 0.09 lb/MMBtu Boiler 8: 12/16/2023 6:00 a.m. to 12/17/2023 7:00 a.m. (25 hours) Maximum Boiler 8 CO was 0.125 lb/MMBtu
Title V Operating Permit 96OPAD120, Condition 20.1 – SO ₂ from the tail gas incinerator (H-25) shall not exceed 15.68 lbs/hr.	12/16/2023 6:00 p.m. – 7:00 p.m. (1 hour) 12/16/2023 11:00 p.m. – 12/17/2023 12:00 a.m. (1 hour) 12/17/2023 2:00 a.m. – 4:00 a.m. (2 hours) 12/18/2023 11:00 a.m. – 2:00 p.m. (3 hours) 12/18/2023 3:00 p.m. – 7:00 p.m. (4 hours) Maximum SO ₂ was 189 lbs/hr
Title V Operating Permit 96OPAD120, Condition 20.9 – SO ₂ from the tail gas incinerator (H-25) shall not exceed 250 ppmv @ 0% on a 12-hour rolling average.	12/16/2023 12:00 a.m. – 3:00 p.m. (15 hours) 12/16/2023 6:00 p.m. – 12/19/2023 5:00 a.m. (59 hours) Maximum SO ₂ was 1,966 ppmv
Title V Operating Permit 96OPAD120, Condition 22.7 – Opacity from the No. 1 Fluidized Catalytic Cracking Unit (No. 1 FCCU) shall not exceed 20% on a six-minute rolling average.	12/16/2023 12:06 a.m. – 12:42 a.m. (36 minutes) 12/16/2023 4:36 a.m. – 4:48 a.m. (12 minutes) 12/18/2023 8:54 p.m. – 9:00 p.m. (6 minutes) Maximum Opacity was 53%

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Title V Operating Permit 96OPAD120, Condition 35.2 – Opacity from the No. 1 FCCU shall not exceed 30% on a six-minute rolling average.	12/16/2023 12:18 a.m. – 12:42 a.m. (24 minutes) Maximum Opacity was 41%
Title V Operating Permit 96OPAD120, Condition 29.9– Plant 1 flare gas shall not exceed 162 ppmv H ₂ S averaged over a 3-hour period.	12/16/2023 1:00 a.m. – 12/18/2023 2:00 p.m. (61 hours) Maximum H ₂ S was 320 ppmv
Title V Operating Permit 96OPAD120, Condition 22.10, 22.11, and 22.12– CO from the No. 1 FCCU shall not to exceed 500 ppmvd at 0% O ₂ on a 1 hour average, and CO not to exceed 150 ppmvd at 0% on a 365 day rolling average.	12/16/2023 12:00 a.m. – 4:00 a.m. (4 hours) Maximum CO was 1,409 ppm
Title V Operating Permit 95OPAD108, Various Conditions– Plant 2 H ₂ S concentrations in the fuel gas system shall not exceed 162 ppm of a 3-hour rolling average.	12/16/2023 1:00 a.m. – 3:00 a.m. (2 hours) 12/16/2023 6:00 p.m. – 12/17/2023 6:00 a.m. (12 hours) Maximum H ₂ S was 299 ppm
Title V Operating Permit 95OPAD108, Condition 2.8 – Opacity not to exceed 20% from the Plant 2 Fluidized Catalytic Cracking Unit (No. 2 FCCU).	12/16/2023 7:18 p.m. – 7:24 p.m. (6 minutes) Maximum Opacity was 31%
Title V Operating Permit 95OPAD108, Condition 2.8 – Opacity not to exceed 30%, for a period or periods aggregating more than six minutes in any 60 consecutive minutes from the No. 2 FCCU.	Opacity Exceedance: 12/16/2023 7:18 p.m. – 7:24 p.m. (6 minutes) Maximum Opacity was 31%
Title V Operating Permit 95OPAD108, Condition 8.9 – Plant 2 flare gas shall not exceed 162 ppmv H ₂ S averaged over a 3-hour period.	12/16/2023 1:00 a.m. – 12/17/2023 11:00 p.m. (46 hours) Maximum H ₂ S was 321 ppm

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. In addition, the refinery’s fence line monitoring system (required by Colorado House Bill 21—1189) did not detect any increased levels of monitored compounds.

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December 15, 2023 – January 15, 2024

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Event Date: December 19 – 22, 2023	
Event Title: Plants 1 and 2 – No. 1 and 2 Fluid Catalytic Cracking Regenerator Unit (FCCU)	
Impacted Media (air, water, or soil): Air	
Operating Unit: Plant 1, No. 1 FCCU	
<p>Event Summary: Due to the power loss on December 15, 2023, the following units needed to be restarted.</p> <ul style="list-style-type: none"> On December 19, 2023, at approximately 2:00 p.m., the No. 1 FCCU was restarted. On December 21, 2023, at approximately 12:36 a.m., the No. 2 FCCU was restarted. <p>The start-up of the No. 1 FCCU resulted in increased SO₂ emissions at the Plant 1 Main Plant Flare.</p> <p>The relevant permit terms or conditions for this event include:</p>	
Permit Term or Condition	Maximum Reported Value
Title V Operating Permit 96OPAD120, Condition 22.7: Opacity not to exceed 20% on a 6-minute from the Plant 1 Fluidized Catalytic Cracking Unit (No. 1 FCCU).	12/20/2023 5:06 p.m. - 5:12 p.m. (6 minutes) 12/20/2023 7:18 p.m. - 7:30 p.m. (12 minutes) 12/20/2023 7:36 p.m. - 8:30 p.m. (54 minutes) 12/20/2023 8:36 p.m. - 9:30 p.m. (54 minutes) 12/20/2023 9:36 p.m. - 10:30 p.m. (54 minutes) 12/20/2023 10:36 p.m. - 11:30 p.m. (54 minutes) 12/20/2023 11:36 p.m. - 12/21/23 12:30 a.m. (54 minutes) 12/21/2023 12:36 a.m. - 10:42 p.m. (intermittent) Maximum Opacity was 73%
Title V Operating Permit 96OPAD120, Condition 22.10 and 22.11: the No. 1 FCCU shall meet an emission limit of 500 ppmvd CO at 0% O ₂ on a 1-hour average basis.	12/19/2023 2:00 p.m. – 12/21/2023 9:00 a.m. (43 hours) Maximum CO was 2,029 ppmvd
Title V Operating Permit 96OPAD120, Condition 22.12: The No. 1 FCCU shall meet an emission limit of 500 ppmvd CO at 0% O ₂ on a 1-hour average basis.	12/19/2023 2:00 p.m. – 12/20/2023 10:00 p.m. (32 hours) 12/19/2023 2:00 p.m. – 12/21/2023 9:00 a.m. (43 hours) 12/20/2023 11:00 p.m. – 12/21/2023 2:00 a.m. (3 hours) 12/21/2023 4:00 a.m. – 12/21/2023 9:00 a.m. (5 hours) Maximum CO was 1,030 ppmvd
Title V Operating Permit 96OPAD120, Condition 22.12: Opacity from the No. 2 FCCU not to exceed 20% on a 3-hour rolling average.	12/21/2023 6:48 p.m. – 12/22/2023 7:48 a.m. (intermittent) Maximum Opacity was 32%

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<p>Title V Operating Permit 96OPAD120, Condition 22.7 and 35.2: Opacity from the No. 1 FCCU shall not exceed 30% on a 6-minute rolling average.</p>	<p>12/20/2023 7:42 p.m. - 12/21/2023 6:00 a.m. (9.3 hours) 12/21/2023 6:42 a.m. - 4:42 p.m. (intermittent) Maximum Opacity was 73%</p>
<p>Title V Operating Permit 96OPAD120, Condition 29.2: Flare gas from the Plant 1 Main Plant Flare shall not exceed 162 ppmv H₂S averaged over a 3-hour period.</p>	<p>12/19/2023 11:00 a.m. – 12:00 p.m. (1 hour) 12/21/2023 10:00 a.m. – 1:00 p.m. (3 hours) 12/22/2023 5:00 a.m. – 7:00 p.m. (14 hours) H₂S maximum was 245 ppmvd</p>
<p>Title V Operating Permit 96OPAD120, Condition 20.1: SO₂ from the Plant 1 tail gas incinerator (H-25) shall not exceed 15.68 lbs per hour.</p>	<p>12/21/2023 4:00 p.m. – 5:00 p.m. (1 hour) 12/21/2023 9:00 p.m. -10:00 p.m. (1 hour) SO₂ maximum was 18 lbs</p>
<p>Title V Operating Permit 96OPAD120, Condition 20.9: SO₂ from the Plant 1 tail gas incinerator (H-25) shall not exceed 250 ppmv SO₂ corrected to 0% O₂ on a 12-hour rolling average.</p>	<p>12/21/2023 5:00 p.m. – 12/22/2023 12:00 p.m. (19 hours) SO₂ maximum was 442 ppmv</p>
<p>Title V Operating Permit 95OPAD108, Condition 2.8: Opacity from the No. 2 FCCU not to exceed 20%, and opacity not to exceed 30% for a period or periods aggregating more than 6-minutes in any 60 consecutive minutes.</p>	<p>Opacity >20%: 12/21/2023 6:48 p.m. - 7:18 p.m. (30 minutes) 12/21/2023 7:30 p.m. - 7:48 p.m. (18 minutes) 12/21/2023 9:30 p.m. - 9:42 p.m. (12 minutes) 12/22/2023 1:42 a.m. – 7:48 p.m. (intermittent) Opacity maximum was 32%</p> <p>Opacity >30%: 12/21/2023 7:30 p.m. - 7:42 p.m. (12 minutes) Opacity maximum was 32%</p>
<p>Title V Operating Permit 95OPAD108, Condition 2.7: CO from the No. 2 FCCU shall not exceed 500 ppmvd at 0% O₂ on a 1-hour average.</p>	<p>12/21/2023 5:00 a.m. - 7:00 a.m. (2 hours) 12/22/2023 1:00 a.m. – 10:00 a.m. (9 hours) CO maximum was 2031 ppm</p>
<p>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. In addition, the refinery’s fence line monitoring system (required by Colorado House Bill 21—1189) did not detect any increased levels of monitored compounds.</p>	

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Emissions violations are determined following review by the Colorado Department of Public Health & Environment (CDPHE); emissions exceedances do not necessarily constitute violations.

Event Date: December 22 – 23, 2023	
Event Title: No. 3 Hydrodesulfurizer (HDS) Shutdown	
Impacted Media (air, water, or soil): Air	
Operating Unit: Plant 1 – No. 3 HDS	
<p>Event Summary: On December 22, 2023, at approximately 1:08 p.m., a small fire occurred at the No. 3 Hydrodesulfurizer (HDS). The fire required an emergency safety shutdown of the No. 3 HDS. The No. 3 HDS normally sends hydrogen sulfide (H₂S) to the sulfur plants. The emergency shutdown created a change in the flow rate that affected the conversion of the sulfur complex, which led to temporarily increased emissions. The gases with high H₂S concentrations were sent to the Plant 1 Tail Gas Unit Incinerator (H-25). No employees were injured during this event. The cause of the small fire is under investigation.</p> <p>The relevant permit terms or conditions for this event include:</p>	
Permit Term or Condition	Maximum Reported Value
Title V Operating Permit 96OPAD120, Condition 20.9 – SO ₂ from the Plant 1 tail gas incinerator (H-25) shall not exceed 250 ppmv @ 0% O ₂ on a 12-hour rolling average.	12/22/2023 2:00 p.m. – 12/23/2023 1:00 p.m. (23 hours) Maximum SO ₂ was 4,726 ppmv
Title V Operating Permit 96OPAD120, Condition 20.1 – SO ₂ from the Plant 1 tail gas incinerator (H-25) shall not exceed 15.68 lbs/hr.	12/22/2023 3:00 p.m. – 12/23/2023 2:00 a.m. (11 hours) Maximum SO ₂ was 335 lbs/hr
Title V Operating Permit 96OPAD120, Various Conditions – H ₂ S concentrations in the Plant 1 fuel gas system shall not exceed 162 ppm of a 3-hour rolling average.	12/22/2023 5:00 p.m. – 9:00 p.m. (4 hours) Maximum H ₂ S was 258 ppm
<p>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. In addition, the refinery’s fence line monitoring system (required by Colorado House Bill 21—1189) did not detect any increased levels of monitored compounds.</p>	

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Emissions violations are determined following review by the Colorado Department of Public Health & Environment (CDPHE); emissions exceedances do not necessarily constitute violations.

Event Date: December 27 – 28, 2023	
Event Title: Plant 1 – No. 4 Hydrodesulfurizer (HDS) Startup	
Impacted Media (air, water, or soil): Air	
Operating Unit: Plant 1 – Tail Gas Unit Incinerator (H-25)	
<p>Event Summary: On December 27, 2023, at approximately 2:00 p.m., the No. 4 Hydrodesulfurizer (HDS) was restarted. The No. 4 HDS had been shutdown since December 16, 2023, due to a power loss. The start-up of the No. 4 HDS resulted in increased SO₂ emissions at H-25.</p> <p>The relevant permit terms or conditions for this event include:</p>	
Permit Term or Condition	Maximum Reported Value
Title V Operating Permit 96OPAD120, Condition 20.9 – SO ₂ from the tail gas incinerator (H-25) shall not exceed 250 ppmv @ 0% O ₂ on a 12-hour rolling average.	12/27/2023 1:00 p.m. - 12/28/2023 3:00 p.m. (26 hrs) SO ₂ maximum was 879 ppm
Title V Operating Permit 96OPAD120, Condition 20.1 – SO ₂ from the tail gas incinerator (H-25) shall not exceed 15.68 lbs/hr.	12/27/2023 2:00 p.m. – 12/27/2023 4:00 p.m. (2 hours) 12/28/2023 2:00 a.m. – 4:00 a.m. (2 hours) SO ₂ maximum was 260 lb/hr
<p>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. In addition, the refinery’s fence line monitoring system (required by Colorado House Bill 21—1189) did not detect any increased levels of monitored compounds.</p>	

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Event Date: January 6, 2024	
Event Title: Plant 1 – No. 4 Hydrodesulfurization (HDS) Unit trip/shutdown	
Impacted Media (air, water, or soil): Air	
Operating Unit: Plant 1 – No. 4 HDS Unit and Tail Gas Unit Incinerator (H-25)	
Event Summary: On January 6, 2024, at approximately 2:00 p.m., the No. 4 Hydrodesulfurizer (HDS) experienced a malfunction that required a shutdown of the unit. The shutdown resulted in increased SO ₂ emissions at H-25, The cause of the incident is under investigation.	
The relevant permit terms or conditions for this event include:	
Permit Term or Condition	Maximum Reported Value
Title V Operating Permit 96OPAD120, Condition 20.1: SO ₂ from the tail gas incinerator (H-25) shall not exceed 15.68 lbs/hr.	1/6/2024 2:00 p.m. – 3:00 p.m. (1 hour) SO ₂ maximum was 166 lbs/hr
Title V Operating Permit 96OPAD120, Condition 20.6: SO ₂ from the tail gas incinerator (H-25) shall not exceed 250 ppmv SO ₂ corrected to 0% O ₂ on a 12-hour rolling average.	1/6/2024 2:00 p.m. - 1/7/2024 2:00 a.m. SO ₂ maximum was 470 ppmv
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. In addition, the refinery’s fence line monitoring system (required by Colorado House Bill 21—1189) did not detect any increased levels of monitored compounds.	

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Emissions violations are determined following review by the Colorado Department of Public Health & Environment (CDPHE); emissions exceedances do not necessarily constitute violations.

Event Date: January 13 – 18, 2024	
Event Title: Plant 1, 2, and 3 – Cold Weather Event	
Impacted Media (air, water, or soil): Air	
Operating Unit: Plant 1 – Tail Gas Unit Incinerator (H-25), Main Plant Flare, GBR Flare, Fuel Gas System, Boiler 8. Plant 2 – Main Plant Flare	
<p>Event Summary: On January 13, 2024, the refinery had multiple process unit upsets during a cold weather event. The causes of the unit upsets are under investigation.</p> <p>The relevant permit terms or conditions for this event include:</p>	
Permit Term or Condition	Maximum Reported Value
Title V Operating Permit 96OPAD120, Condition 13.8: Emissions of CO from Boiler 8 shall not exceed 0.060 lbs/mmbtu on a 24-hour rolling average.	1/16/2024 9:00 p.m. - 1/17/2024 7:00 p.m. (22 hours) CO maximum was 0.094 lbs/mmbtu
Title V Operating Permit 96OPAD120, Condition 20.1: Emissions of SO ₂ from the tail gas incinerator (H-25) not to exceed 15.68 lbs/hr.	1/13/2024 7:00 p.m. - 1/15/2024 6:00 a.m. (35 hours) 1/16/2024 12:00 a.m. - 2:00 a.m. (2 hours) 1/16/2024 3:00 a.m. - 4:00 a.m. (1 hour) SO ₂ maximum was 2,651 lbs/hr
Title V Operating Permit 96OPAD120, Condition 20.6: SO ₂ emissions from the tail gas incinerator (H-25) not to exceed 250 ppmv @ 0% O ₂ on a 12-hour rolling average.	1/13/2024 7:00 p.m. - 1/15/2024 12:00 p.m. (41 hours) 1/15/2024 2:00 p.m. - 1/17/2024 12:00 a.m. (34 hours) SO ₂ maximum was 18,769 ppmv
Title V Operating Permit 96OPAD120, Condition 29.8: Maintain the Net Heating Value in the combustion zone of the Plant 1 Main Plant Flare above 270 Btu/scf.	1/16/2024 12:45 a.m. - 10:00 a.m. (9.25 hours) Net Heating Value was <270 Btu/scf
Title V Operating Permit 96OPAD120, Condition 30.10: Plant 3 flare gas shall not exceed 162 ppmv H ₂ S averaged over a 3-hour period.	1/13/2024 9:00 a.m. – 12:00 p.m. (3 hours) H ₂ S maximum was 321 ppmv

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<p>Title V Operating Permit 96OPAD120, Condition 31.8: Maintain the Net Heating Value in the combustion zone of the GBR Flare above 270 Btu/scf.</p>	<p>1/16/2024 3:15 a.m. - 3:30 a.m. (15 minutes) 1/16/2024 5:00 a.m. - 5:15 a.m. (15 minutes) Net Heating Value was <270 Btu/scf</p>
<p>Title V Operating Permit 96OPAD120, Various Conditions: Plant 1 fuel gas shall not exceed 162 ppmv H₂S averaged over a 3-hour period.</p>	<p>1/13/2024 8:00 a.m. – 12:00 p.m. (4 hours) 1/14/2024 3:00 a.m. - 1/15/2024 5:00 p.m. (38 hours) 1/16/2024 2:00 a.m. – 12:00 p.m. (10 hours) Fuel Gas maximum was 327 ppmv</p>
<p>Title V Operating Permit 95OPAD108, Condition 32.9: Plant 2 flare gas shall not exceed 162 ppmv H₂S averaged over a 3-hour period.</p>	<p>1/14/2024 2:00 a.m. - 10:00 p.m. (20 hours) 1/15/2024 2:00 a.m. - 4:00 p.m. (14 hours) H₂S maximum was 330 ppmv</p>

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. In addition, the refinery’s fenceline monitoring system (required by Colorado House Bill 21—1189) did not detect any increased levels of monitored compounds.

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