



Shell Chemical Appalachia LLC
300 Frankfort Rd
Monaca, PA 15061

July 9, 2026

Mark Gorog P.E., Regional Manager Air Quality Program
Pennsylvania Department of Environmental Protection (PADEP)
Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222

RE: PA-04-00740C HP Ground Flares #1 and #2 (Source IDs C205A and B) Flaring Emissions and HP Ground Flare #1 Visible Emissions Malfunction Report

Dear Mr. Gorog,

Shell Chemical Appalachia LLC ("Shell"), located in Beaver County, Pennsylvania is submitting this Malfunction Report to the Pennsylvania Department of Environmental Protection (PADEP) for flaring emissions from HP Ground Flares #1 and #2 (Source IDs C205A and B) and visible emissions from HP Ground Flare #1 on July 13, 2026.

This malfunction did not pose an imminent and substantial danger to the public health and safety or the environment.

- **Name and location of the facility**
Shell Polymers Monaca
300 Frankfort Road, Monaca PA, 15061
- **Nature and cause of the incident**
On June 13, 2026, a valve failure in the Ethane Cracking Unit (ECU) resulted in venting to the HP flare system. During the incident, visible emissions (VE) were observed at HP Ground Flare #1 (Totally Enclosed Ground Flare A/TEGF A) starting at 08:51. The VE exceeded 5 minutes in a consecutive 2-hour period.
- **Time when the malfunction or breakdown was first observed**
The flaring associated with the ECU valve failure started at 08:30 on June 13, 2026.
The flaring VE started at 08:51 on June 13, 2026.
- **The date and time that the malfunction started and ended**
The flaring associated with the ECU valve failure started at 08:30 on July 13, 2026, and ended at 09:10.
The flaring VE started at 08:51 on July 13, 2026, continued intermittently, and ended at 09:08.
- **An estimate of the emissions associated with the malfunction**
The flaring emissions from the event are provided in Table 1 below.

Table 1 – Flaring Emissions Summary

Pollutant	Emissions (tons)
CO ₂ e	20.154
CO	0.049
NO _x	0.012
PM 10	0.001
PM 2.5	0.001
VOC	0.032
1, 3 Butadiene	0.002
Total HAPs	0.002

- **The calculations that were used to determine that quantity**

Flaring Emissions

The flaring emissions were calculated using the measured vent gas flow rate and composition, engineering estimates for any non-measured constituents, application of accepted hydrocarbon destruction efficiencies, and application of emission factors for products of combustion. In addition, a representative flaring baseline rate and composition for the time leading up to the ECU valve failure was established and subtracted from the totals to calculate the excess emissions. The flaring event gas chromatograph (GC) and flow data are included in Attachment A.

Visible Emissions

A summary of the cumulative VE time from TEGF A as determined by review of flare camera footage is captured in Table 2 below.

Table 2 – Visible Emissions Summary

TEGF	Start Time	End Time	Continuous or Intermittent	Total Duration
A	08:51:03	09:08:05	Intermittent	8 minutes, 5 seconds

In addition, Method 22 observations were performed by operations, and the form is included as Attachment B. Note that the observations were performed on both TEGF A and B.

- **The steps, if any, that the facility took to limit the duration and/or quantity of emissions associated with the malfunction**
Following the initiating event, ECU was stabilized as quickly as possible, and the valve with the failed positioner was manually closed.
- **A detailed analysis that sets forth the Root Cause of the malfunction, to the extent determinable**
On June 13, 2026, at approximately 08:25, the ECU Ethylene Refrigeration Compressor (ERC) recycle valve to the Quench Tower experienced a positioner failure. This resulted in flaring to the HP flare system from various sources within ECU. Starting at 08:51, VE were observed at TEGF A. The VE carried on intermittently and ceased at 09:08, for a total duration of 8 minutes and 5 seconds.

ECU Valve Positioner Failure and Associated Flaring

The failed valve positioner was determined to be due to a failed electrical component within the positioner.

The flaring caused by the positioner failure was determined to be due to the control logic associated with the valve's failed status, which yielded process conditions that required flaring.

TEGF A VE

The root cause of the TEGF VE is still being investigated.

- **An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of a malfunction resulting from the same Root Cause or contributing causes in the future**

ECU Valve Positioner Failure and Associated Flaring

- The failed positioner was replaced.
- The control logic associated with the valve's failed status was updated to improve the system response and reduce flaring in the event of future similar occurrences.

TEGF A VE

More analysis is needed to determine any potential corrective actions associated with TEGF A VE.

- **To the extent that investigations of the causes and/or possible corrective action(s) still are underway on the due date of the report, a statement of the anticipated date by which a follow-up report will be submitted**

A follow up report will be submitted to the Department on or before September 30, 2026, to provide a status update on any TBD items noted in Table 3 below.

- **Corrective action is final or timeline for implementation**

Table 3 – Root Causes and Corrective Actions

Event	Root Cause	Corrective Actions	Timing
ECU valve positioner failure	Electrical component failure	The positioner was replaced	Complete
Flaring associated with valve positioner failure	Controls logic issue	Controls logic was corrected	Complete
TEGF A VE	TBD	TBD pending root cause analysis	TBD

If you have any questions regarding this matter, please don't hesitate to contact Lauren Uffelman at lauren.uffelman@shell.com.

Sincerely,



Nathan Levin
Operations Manager

CC:

Jerod King, Air Quality Supervisor
Scott Beaudway, Air Quality Specialist

Attachment A- HP Flare GC and Flow Data

HP Flare System GC Hourly Average Wt % Compositions, Flow, and NHV
Shell Polymers Monaca

	Elemental Hydrogen	Nitrogen	Carbon Dioxide	Water	Methane	Non-VOC/HAP Hydrocarbon	Non-HAP VOC	HAP	Total	Actual Flow Rate	Mass Rate	NHVcz
Date and Time	% wt	% wt	% wt	% wt	% wt	% wt	% wt	% wt	% wt	m3/hr	tonne/hr	Btu/scf
13-Jun-26 08:00:00	6.52	25.21	0.08	0.70	33.69	11.80	20.83	1.16	100.00	33,444	22.70	1,083.31
13-Jun-26 09:00:00	3.17	11.27	0.03	0.98	14.11	18.55	51.17	0.72	100.00	8,249	7.27	1,116.56

Attachment B- Method 22 Form

Shell Polymers Monaca Method 22 Visible Emissions Observation Form SPM-HSE-FO-0003				
Observer Name: Observer Title: Date and Time (MM/DD/YY XX:XX): Sky Conditions: Precipitation: Wind Direction (direction from): Wind Speed (m/s): Visible Emissions Source: Observation Location: Observation Picture:	Field Operator 6/13/26 9:00 Clear None W264.47 0.77 Site MET Data (Wind Direction 500QT-060A and Speed 500QT-050A) HPGF A & B (A-59001A, A-59001B) M (HPGF B/HPGF A)			
				
Observations				
	Date (MM/DD/YY)	Clock Time (hh:mm)	Observation Period (accumulated time when you are looking at stack h:mm:ss) Emissions Observed (when you actually see smoke h:mm:ss)	
Begin	6/13/26	9:00	9:15:00	9:05-9:08
			9:30:00	0:00:00
			9:45:00	0:00:00
			10:00:00	0:00:00
			10:15:00	0:00:00
			10:30:00	0:00:00
			10:45:00	0:00:00
				0:00:00
				0:00:00
End	6/13/26	11:00		
General Notes				
SMOKE OBSERVED ON A TEGF FOR 3 MINUTES, 9:05-9:08 NO SMOKE OBSERVED ON B TEGF				