

Shell UK Natural Gas Liquids (NGL) Plant, Mossmorran Flaring Events – Summary 2008 to 2017

SHELL UK NATURAL GAS LIQUIDS (NGL) PLANT MOSSMORRAN									
Year	Number of flaring events	Number of major flaring events (>20 tonnes; as defined by PPC Permit condition)	Number of occasions with more than 15 minutes dark smoke (> Ringelmann 2) ¹	Class 1 ² operational ground flaring (tonnes)	Class 1 operational elevated flaring (tonnes)	Class 1 pilots and purges (tonnes)	Class 2 ³ flaring (tonnes)	Total tonnes flared	Comments based on operator reports
2008	13	1	0	392				392	There were no unplanned flaring events, with all flaring from the NGL plant arising during planned maintenance and routine events.
2009	61	5	0	1836				1,836	Flaring arose as a result of planned maintenance, routine events, unplanned flaring incidents, and flare pilot and purge.
2010	40	3	0	2000				2,000	Operational flaring was 1652 tonnes. An additional 348 tonnes were flared as a result of the plant receiving out of specification gas from an off-shore platform.
2011	48	2	0	3641				3,641	The increased flaring on previous years resulted primarily from a single event of a fault on a compressor.
2012	97	1	2	412		2002	1243	3,657	Increased flaring can be attributed to (i) nitrogen generation unit issues throughout the year resulting in the need for fuel gas purges, to prevent air ingress in the flare stacks, as opposed to the usual nitrogen purges. (ii) During the start-up of the plant, after a total Plant shutdown, faults developed at the neighbouring FEP, any excess gas that could not be sent to Grangemouth or utilised as fuel gas had to be flared. The ethane flared during this time amounted to 1216 tonnes.
2013	102	0	1	202		1618	1	1,821	The bulk of flaring was from pilots and purges.
2014	131	1	0	253		1331	1	1,585	The total quantity of gas flared in 2014 from Mossmorran was the lowest since the facilities were commissioned.
2015	105	1	0	97	184	2,363	0	2,644	Ground flare refurbishment programme completed. As a result, ground flare availability increased considerably with the pilots requiring a greater consumption of fuel gas. Flaring due to major maintenance contributed to additional flaring between August and November, due to shut downs, start up and purging processes.
2016	156	1	0	36	248	3,302	0	3,586	Ground flare availability has remained high with continued usage of fuel gas for pilots but greater use of the ground flares in preference to elevated flaring. Routine maintenance of the ground flares is scheduled in 2017 which will ensure continued access to these.
2017	126	0	1	201		2,407	0	2,608	Event with more than 15 minutes dark smoke due to module shutdowns caused by an electrical supply fault.

¹ The [Ringelmann chart](#) is used to define dark smoke. The chart has 5 shades of grey with 0 being clear and 5 being black. Smoke is considered 'dark' if it is shade 2 or darker.

² Class 1 is defined as the amount of gas flared during daily operations and for periods of operational disruption at the Mossmorran fractionation plant.

³ Class 2 is defined as the amount of gas flared during periods when either ExxonMobil Chemicals or INEOS Chemicals (located at Mossmorran and Grangemouth) are unable to receive ethane product from FNL.