

ExxonMobil Chemical Ltd Fife Ethylene Plant (FEP), Mossmorran Flaring Events – Summary 2008 to 2017

EXXONMOBIL CHEMICAL LTD, FIFE ETHYLENE PLANT (FEP), MOSSMORRAN						
YEAR	NUMBER OF FLARING EVENTS <sup>1</sup>	NUMBER OF OCCASIONS WITH MORE THAN 15 MINUTES DARK SMOKE (> Ringelmann 2) <sup>2</sup>	TOTAL TONNES from ELEVATED FLARE	TOTAL TONNES from GROUND FLARE	Total Tonnes Flared	COMMENTS BASED ON OPERATOR REPORTS TO SEPA AND THE MOSSMORRAN & BRAEFoot BAY INDEPENDENT AIR QUALITY MONITORING REVIEW GROUP
2008	26	0	13,305	14,438	27,743	There were a number of periods of planned maintenance that led to flaring during the year. Additionally there were 2 unplanned process upsets which resulted in elevated flaring. The quantity flared in 2008 was greater than in 2007 (7,797 tonnes elevated flares, 10,563 tonnes ground flares) but within the range reported in earlier years.
2009	46	1	5,475	4,400	9,875	There were four unplanned process upsets which resulted in elevated flaring in 2009. One process upset resulted in a period of smoky flaring over a few hours, following a cable fault on an instrument that led to an unplanned plant shutdown and flaring. The shutdown coincided with a fault on another instrument controlling the air intake to B boiler that resulted in a low steam header pressure, reduced steam supply to the flare and a smoky flare.
2010	48	0	8,085	12,134	20,219	The quantity flared in 2010 was greater than the level in 2009 due to a planned shutdown. There was a more significant level of flaring from both the ground level and elevated flares during September when the plant was closed down for planned maintenance. There were two process upsets which resulted in elevated flaring in 2010.
2011	89	0	9,793	3,995	13,788	Due to maintenance on the ground level flares during August through to December, some of the normal operations flaring had to be directed to the elevated flare. There was a more significant level of flaring from both the ground level and elevated flares during June when a pressure safety valve failure resulted in an unplanned shutdown of the plant. There was one unplanned process upset which resulted in elevated flaring in 2011.
2012	110	0	11,019	16,804	27,823	There was a small amount of flaring from the elevated and ground flares between January and July. There was a greater amount of flaring from both flares due to the planned plant shutdown from late August until October and problems following start-up of the Plant in October. Three further flaring events occurred during October, November and December as a result of operational incidents.
2013	231	0	7,179	5,331	12,510	Initial problems with foaming when the upgraded Feed treatment unit was started up led to a process upset in February and around 6,397 tonne of gas was flared during this 5 day event. The only other process upset was in August when the online acetylene converter went off specification and 563 tonne of gas was flared during a 5 hour period.
2014	50	0	1,836	3,399	5,235	The total quantity of gas flared in 2014 from Mossmorran was the lowest since the facilities were commissioned. There was one minor process upset in November when the online acetylene converter was being changed to the offline one. The product went off specification and 398 tonnes of gas had to be flared during a 5 hour period. 155 tonnes was flared via the elevated flare and the remainder in the ground flare.
2015	45	0	9,009	4,498	13,507	A recent project to refurbish the ground flares meant availability increased. There were three unplanned process upsets which resulted in elevated flaring in 2015.
2016	25	0	12,594	22,567	35,161	From September 16th – October 3rd 2016, planned maintenance activities took place which resulted in increased flaring. In addition there were 3 unplanned process upsets which also resulted in elevated flaring.
2017	31	1	14,447	12,502	26,949	FEP reported 3 major elevated flaring incidents in 2017; 12 <sup>th</sup> June (pump failure), 18 <sup>th</sup> June (loss of feed) and 27 <sup>th</sup> October (ethylene release) respectively. These events accounted for approx. <sup>2</sup> / <sub>3</sub> of the flaring in the year. Event with more than 15 minutes dark smoke was due to a loss of feed.

<sup>1</sup> This is a count of the number of times the elevated flare was utilised.

<sup>2</sup> 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.