MS Flare

In the Flare Analysis Table, EPA identified 31,372 MS Flare events in which the net heating value of the flare gas being combusted was less than 200 Btu/scf. The MS Flare spreadsheet submitted to EPA on August 30, 2010 did not include the BTU net heating value from the pilot gas and make up natural gas. These streams are the primary sources of BTU heating value for this flare. Four new columns have been added to the attached spreadsheet and the net heating value of the vent gas has been recalculated. The corrected BTU heating value (Column "O") is above 200 Btu/scf for the entire time period.

Prior to January 3, 2007, there was no measurement for the natural gas flow rates. Since January 3, 2007, flow meter "7FIC3153.PV" has been active and recording, (see Column "H" on worksheet "MS Flare Questions 1-6").

On the attached spreadsheet Column "G", pilot natural gas flow has been added.

Prior to January 3, 2007, the natural gas flow measurement was a locally installed valve that stayed open at all times. The spreadsheet attached below reflects that, prior to 2007; the natural gas flow used in the flare was only for pilots. As per manufacturer's specifications (included below), the three pilots are designed for 600,000 BTU/hr.

EPA MS Flare Request data rev2.xl

MS Flare Mfr Pilot specs.pdf

The information regarding the MS Flare provided in this Supplemental Response shows that there were no MS Flare events in which the net heating value of the flare gas being combusted was less than the 200 Btu/scf requirement.

4 HAP Flare

EPA identified thirty-three (33) 4 HAP Flare events when the net heating value of the 4 HAP Flare gas being combusted was less than 300 BTU/scf. Ticona has determined that these events coincide with storage tank filling events with the exception of June 2, 2007.

The flare event of June 28, 2007 was the result of performing a pressure test on the vessel pressure transmitter. This test was performed on a short section of pipe and not the whole vessel. The calculation spreadsheets of August 30, 2010 assumed the pressure increase was due to a level change in the tank which did not occur and thus gave an erroneous indication.

There were twenty-seven (27) flare events which resulted from an indication of a level increase in V-2719, a vessel which was being used for pentanol storage at the time. An increase in level was assumed to result in the venting of the vapor space from the vessel to the 4 HAP Flare. However, during each of these 27 events, the level increase was the result of a transfer of pentanol from a trailer to the vessel V-2719 while the vessel was vapor balanced to the trailer. No venting to the 4 HAP Flare header occurred during any of these 27 flare events of:

November 10, 2007	December 13, 2007	October 26, 2008
November 13, 2007	December 15, 2007	October 27, 2008
November 22, 2007	December 19, 2007	October 29, 2008
November 24, 2007	December 20, 2007	October 30, 2008
November 25, 2007	December 22, 2007	November 3, 2008
November 26, 2007	January 5, 2008	November 5, 2008
November 28, 2007	October 17, 2008	November 9, 2008
December 2, 2007	October 20, 2008	November 11, 2008

The following five (5) flare events resulted from an indication of pressure change in the HF storage tank, V-2816 during loading operations. These were of short duration causing the vent to the flare to increase and a decrease in Btu:

June 18, 2007	September 20, 2007
September 19, 2007	September 21, 2007
September 19, 2007	

Assuming a worst case scenario of a full one (1) hour release per each event the total emission from the flare for all five (5) events would have been 0.177 lbs.

GUR Flare

EPA identified sixty (60) GUR Flare events in which the steam to vent gas ratio was higher than 10, (mass based ratio, lb.-steam/lb.-vent gas). Ticona retrieved these flare events and found each one to be a random occurrence. Ticona reviewed each event to verify whether the initial conclusions were correct.

The methodology Ticona used to evaluate each alleged event was:

1. Ticona calculated the total nitrogen flow to the GUR Flare, utilizing each GUR Flare sub-header's nitrogen flow meter.

2. Ticona calculated the total natural gas flow to the GUR Flare header by taking the GUR Unit boundary natural gas flow meter indication and subtracting the natural gas flow to the GUR Flare gas pilots. The GUR Flare pilot natural gas flow was assumed to be 50 scfh, (conservative, based on the flare manufacturer's minimum recommended flow).

3. Ticona subtracted the nitrogen and natural gas flows from the GUR Flare total vent flow rate.

4. Any unaccounted for flow was assumed to be 100% n-Hexane (conservative, Ticona knows the gas is a mixture of C_6 isomers).

5. The GUR Flare Destruction Efficiency was calculated based upon EPA's Flare Efficiency Study.[1] Ticona created a regression based upon this figure.

6. The Flare Destruction Efficiency regression was used to calculate the amount of n-Hexane released from the GUR Flare.

The amount of n-Hexane released was then compared with the permitted n-Hexane emission rate for the GUR Flare (EPN 6118-T-50801) of 30.79 pounds per hour, TCEQ Permit No. 46560. In

[1] Flare Efficiency Study, EPA-600/2-83-052, July 1983, Figure 8, page 38.

no case did the amount of n-Hexane released exceed the permitted emission rate. In other words, none of the 60 GUR Flare events identified by EPA resulted in an n-Hexane emission rate of greater than the permitted emission rate of 30.79 pounds per hour.

WWTP Flare

EPA did not identify any events for the WWTP Flare.

IBU Flare

EPA did not identify any events for the IBU Flare.

FLARE analysis table from EPA.doc