February 6, 2014

**VIA CERTIFIED MAIL RETURN RECEIPT REQUESTED**

Region VI
Director -- Air, Pesticides, and Toxics Division
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202

**Re: Lion Oil Company - Alternative Monitoring Procedure Request and Notification for SN-822 and SN-823**

To whom it may concern:

In accordance with 40 C.F.R. § 60.13(i), this letter requests EPA approval of an alternative monitoring procedure (AMP) in lieu of the hydrogen sulfide ($H_2S$) monitoring requirements for the sour gas stream entering its affected flares (SN-822 and SN-823) in New Source Performance Standards (NSPS) Subpart Ja at 40 C.F.R. § 60.107a(a)(2). Alternatives to this requirement are permissible when the owner or operator can demonstrate that monitoring devices at alternative locations will enable accurate and representative measurements. See 40 C.F.R. § 60.13(i)(4).

Lion Oil operates two "affected flares" under NSPS Subpart Ja. Both of these flares were modified after June 24, 2008. See 40 C.F.R. § 60.100a(b). The flares, which themselves are emission control systems, were modified during the installation of the refinery's hydrogen plant and implementation of the MSAT2 compliance plan. The modifications were completed in August 2008 (hydrogen plant) and June 2011 (MSAT2 project), and the refinery's production capacity did not change as a result of the modifications of the flares. See 40 CFR § 60.7(a)(4).

Lion Oil also operates two flare gas recovery systems (FGRS), each supporting a different flare. The flare gas recovery systems can be lined up to function as one system, but normally operate separately. Each FGRS withdraws gas from the flare header upstream of the water seal at the base of the flare and recovers gas that would otherwise be burned in the flare.

This AMP is requested only for the sour gas stream, which is stagnant except when the water seal is broken and a flaring event occurs. It is not feasible for Lion Oil to install a continuous $H_2S$ monitor in the flare stack for the sour gas stream, because of significant safety concerns due to the flares' water seal location at the base of the flare stack. See Attachment 1 for flare system diagram. If the probe/sample line system had to be located in the flare stack, as well as a CEMs building in close proximity, refinery operators and testing personnel would risk thermal radiation exposure during flaring events. Lion Oil does not believe it could install the continuous monitoring equipment and comply with its obligation under ANSI/API Standard 521

to ensure that flare system design and plant equipment layout minimize the need for operator exposure when at all possible.

Lion Oil's proposed alternative monitoring method will provide accurate and representative measurements of the $H_2S$ content in the fuel gas. Moreover, EPA already has endorsed the proposed monitoring system as a "good compromise," given the refinery's inability to install continuous monitoring equipment in the flare stack. See Attachment 2, page 3 for EPA Minutes of 2009 Conference Call with Lion Oil.

As described above, both the high pressure flare and low pressure flare at the refinery have flare gas recovery systems with a knockout drum and water seal. The differential pressure is monitored at the water seal, and a pressure exceedances that breaks the water seal is considered a flaring event.

When the water seal is broken, an automatic e-mail is sent to Lab personnel, Operations personnel, and the Environmental department, and a signal is sent to the sample collection system to begin a sampling sequence. There is a short delay in the sample collection in order to make sure the horizontal flare line has been purged, which allows for collection of a representative sample. After completion of the short delay, a solenoid opens allowing the flare gas sample pump to fill the sample canister with a gas sample from the horizontal flare line. The sample is then analyzed using gas chromatography (GC). The GC analysis measures the $H_2S$ content and if required, total sulfur, as well as organic compounds. The lab personnel then provide the results to the Environmental Department for emissions quantification. The Environmental Department records a three hour rolling average based on the sampling results. The sample gathering and analysis take about one hour.

In accordance with a discussion on February 4, 2014, between George Garten, Lion Oil, and Charles Handrich, EPA, Lion Oil proposes to assign each individual flare system, High Pressure (HP) and Low Pressure (LP), an H2S value based on the previous year's flaring event sample analyses for that system. The value assigned for each system will be based on a statistical analysis of the previous year's data using the 95% confidence interval for the mean of the data set. This value will be used to estimate event emissions for the purpose of determining if a reportable event has occurred. The sample collected during the event will then be analyzed and the actual emissions adjusted based on the sample analysis. In the event that there is a sample system malfunction and no sample is collected best engineering estimates will be used. By January 31 of each year, Lion Oil will establish a new H2S value for each flare based on an analysis of the previous year's flaring data. Please find the attached 2013 flaring event H2S values for each flare system and a statistical summary of the data as an example. The refinery would assign a value of 4.92% H2S for the low pressure flare system and a value of 0.93% H2S for the high pressure flare system for 2014 flaring event reporting estimating. These values are based on the 95% confidence interval for the mean of the data set.

Lion Oil's sampling and analysis calculates the $SO_2$ emissions associated with the flaring event. Lion Oil calculates flaring event emissions using the monitoring results for pressure, flow

rate, and composition of the flare gas ($H_2S$ and total sulfur, if required). The flow rate is monitored by a Panametrics flow meter between the knockout drum and flare.

Because Lion Oil operates flare gas recovery systems, it has elected to monitor according to the alternative monitoring requirements, effective November 11, 2015. See 40 C.F.R. §60.107a(g). Therefore, Lion Oil will not be required to continuously monitor sulfur and flow according to the requirements of 40 C.F.R. § 60.107a(e) and (f). If, however, Lion Oil experiences more than 4 "reportable pressure exceedances" in a rolling 365-day period and is required to comply with 40 C.F.R § 60.107a(e) and (f), it requests approval that the monitoring alternative described above satisfy the sulfur monitoring requirements of 40 C.F.R. § 60.107a(e).

If you have any questions regarding this submittal, please contact Chuck Hammock at 870-864-1289 or George Garten at 870-864-1453.

Sincerely,

Steve Cousins
Vice President and General Manager

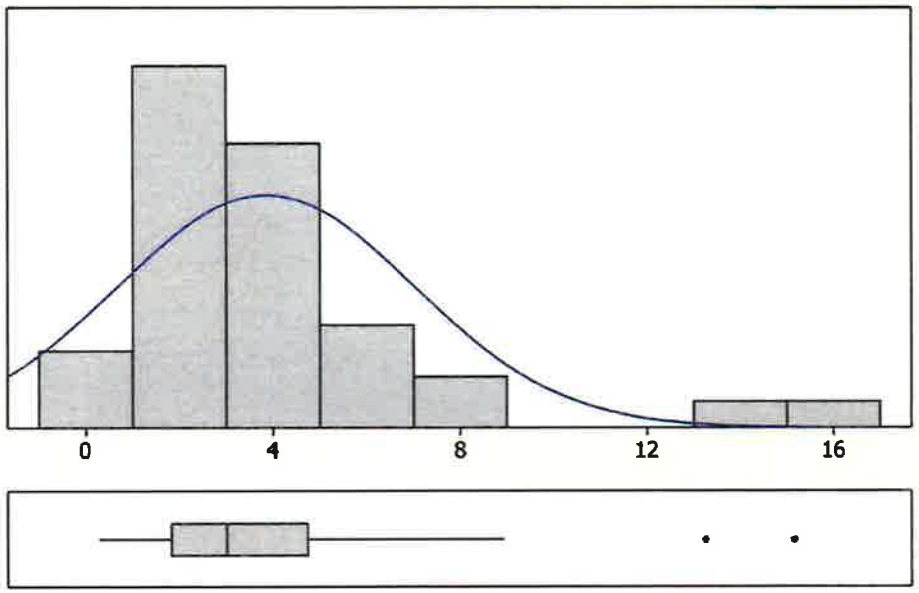
Attachments

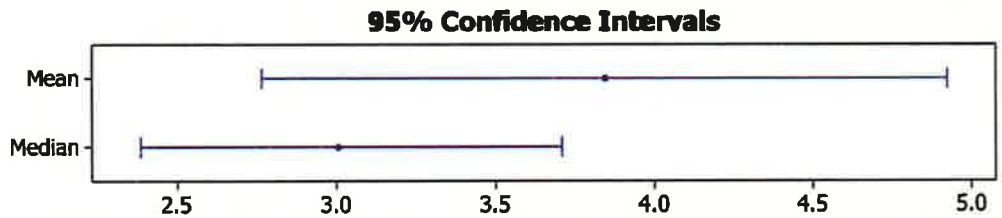
cc: Ms. Brenda Shine (via electronic mail)
Mr. Mike Norman (via electronic mail)
Mr. W.R. Chuck Hammock (via electronic mail)
Mr. George Garten (via electronic mail)
Mr. Charles Handrich (via electronic mail)

Arkansas Department of Environmental Quality
Mike Bates, Chief
5301 Northshore Drive
North Little Rock, AR 72118-5317

| 2013 | | | |
|---|---|---|---|
| Event No. | LP % H2S | Event No. | HP % H2S |
| 1 | 5 | 1 | 0.04 |
| 2 | 6.78 | 2 | 0.12 |
| 3 | 13.26 | 3 | 0.37 |
| 4 | 8.06 | 4 | 0.83 |
| 5 | 15.16 | 5 | 0.45 |
| 6 | 4.01 | 6 | 0.22 |
| 7 | 0.96 | 7 | 0.59 |
| 8 | 2.79 | 8 | 0.02 |
| 9 | 1.76 | 9 | 2.08 |
| 10 | 2.29 | 10 | 1.14 |
| 11 | 3.6 | 11 | 1.94 |
| 12 | 3.18 | 12 | 2.05 |
| 13 | 3.25 | 13 | 1.11 |
| 14 | 2.61 | 14 | 0.28 |
| 15 | 4.28 | 15 | 0.27 |
| 16 | 4.74 | 16 | 0.82 |
| 17 | 0.27 | 17 | 0.58 |
| 18 | 2.73 | 18 | 0.74 |
| 19 | 2.42 | 19 | 1 |
| 20 | 2.03 | 20 | 0.23 |
| 21 | 2.43 | 21 | 2.85 |
| 22 | 1.76 | 22 | 1 |
| 23 | 3 | 23 | 0.26 |
| 24 | 3.01 | 24 | 0.57 |
| 25 | 0.83 | 25 | 0.98 |
| 26 | 5.05 | 26 | 0.86 |
| 27 | 1 | 27 | 1.02 |
| 28 | 3.08 | 28 | 0.56 |
| 29 | 1.72 | 29 | 0.43 |
| 30 | 3.44 | 30 | 0.7 |
| 31 | 8.93 | 31 | 0.4 |
| 32 | 4.71 | 32 | 0.38 |
| 33 | 5 | 33 | 1.23 |
| 34 | 1.94 | 34 | 0.14 |
| 35 | 1.78 | 35 | 0.06 |
| 36 | 1.54 | 36 | 0.21 |
| | | 37 | 0.06 |
| | | 38 | 0.86 |

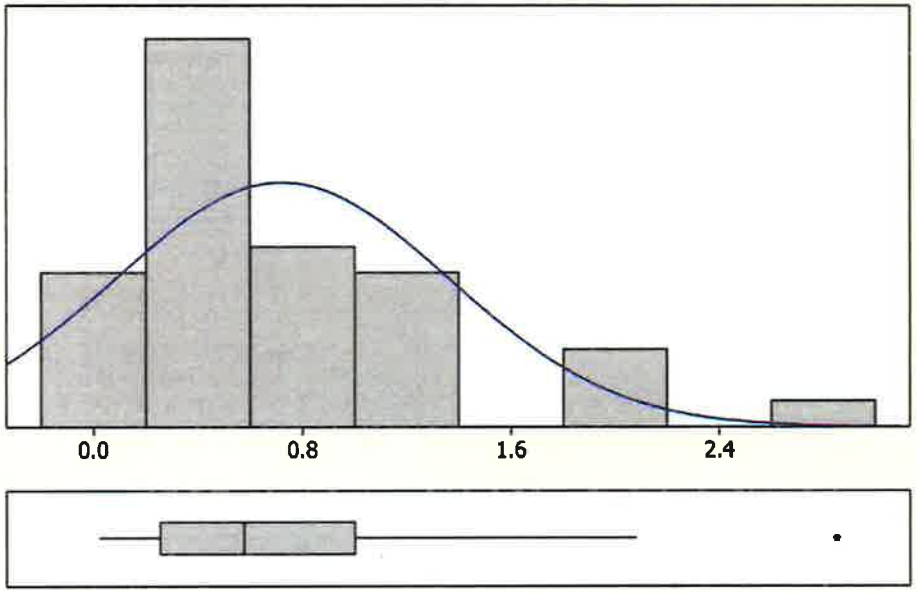
# Summary for LP % H2S

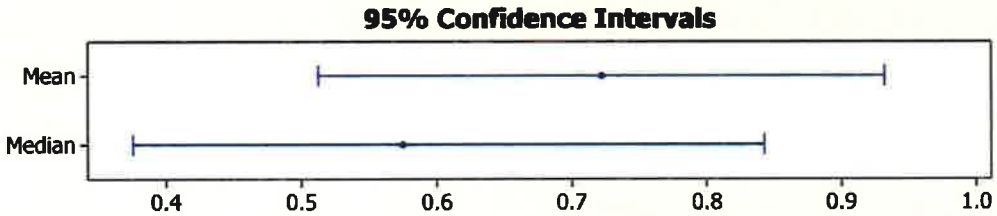



| Anderson-Darling Normality Test | |
|---|---|
| A-Squared | 2.60 |
| P-Value < | 0.005 |
| Mean | 3.8444 |
| StDev | 3.1899 |
| Variance | 10.1755 |
| Skewness | 2.16580 |
| Kurtosis | 5.19268 |
| N | 36 |
| Minimum | 0.2700 |
| 1st Quartile | 1.8200 |
| Median | 3.0050 |
| 3rd Quartile | 4.7325 |
| Maximum | 15.1600 |
| 95% Confidence Interval for Mean | |
| 2.7651 | 4.9238 |
| 95% Confidence Interval for Median | |
| 2.3856 | 3.7085 |
| 95% Confidence Interval for StDev | |
| 2.5873 | 4.1610 |

# Summary for HP % H2S




| Anderson-Darling Normality Test | |
|---|---|
| A-Squared | 1.58 |
| P-Value < | 0.005 |
| Mean | 0.72237 |
| StDev | 0.63817 |
| Variance | 0.40726 |
| Skewness | 1.55198 |
| Kurtosis | 2.64406 |
| N | 38 |
| Minimum | 0.02000 |
| 1st Quartile | 0.25250 |
| Median | 0.57500 |
| 3rd Quartile | 1.00000 |
| Maximum | 2.85000 |
| 95% Confidence Interval for Mean | |
| 0.51261 | 0.93213 |
| 95% Confidence Interval for Median | |
| 0.37580 | 0.84261 |
| 95% Confidence Interval for StDev | |
| 0.52028 | 0.82563 |