**Facility Well Name** CHS Refinery #2 **UIC Permit #** KS-01-113-009 **Month** June **Year** 2019

**Submitted** 07/25/2019 **Approved** 08/23/2019 **KOLAR Document ID** 1466741

# Class I-V Injection Well Monthly Monitoring

## Summary of Monthly Report

**Number of days injection occurred:** 29

**Barrels per Day Maximum:** 51,429

| | | | Annulus Pressure psig min 60 | | Injection Pressure | | |
|---|---|---|---|---|---|---|---|
| | Injection Volume Barrels per Day | Injection Rate Barrels per Minute | Gauge psig | Cont. Record psig | Gauge psig | Cont. Record psig | Amount Added to Seal Pot |
| Monthly Average | 17,957 | 12.47 | 101 | 101 | 10.7 | 9.8 | |
| Monthly Maximum | 30,301 | 21.05 | 116 | 116 | 14.0 | 13.7 | |
| Monthly Minimum | 1,409 | 0.98 | 94 | 92 | 2.0 | 0.6 | |
| Monthly Total | 520,750 | | | | | | |

## Summary of Continuous Recorder Data

| Maximum Annulus Pressure psig | Minimum Annulus Pressure psig | Maximum Injection Pressure psig | Minimum Injection Pressure psig |
|---|---|---|---|
| 129.61 | 90.94 | 15.25 | 0.00 |

**Comments:**

CHS Refinery #2 06/2019

# Daily Recorder Data

| Day | Time<br>24 hr | Injection Volume<br>Barrels Per Day | Injection Rate<br>Barrels Per Minute | Annulus Pressure (Gauge)<br>psig | Annulus Pressure (Continuous Recorder)<br>psig | Injection Pressure (Gauge)<br>+ / - | Injection Pressure (Continuous Recorder)<br>+ / - | Seal Pot Fluid Level<br>inches | Type of Fluid Added to Seal Pot | Amount of Fluid Added to Seal Pot<br>gallons | Initials of Collector of Field Recordings | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 07:00 | 16,390.81 | 11.38 | 102 | 99.6 | 3 | 3.0 | 8 | | | AS | | |
| 2 | 07:00 | 16,086.02 | 11.17 | 98 | 96.6 | 12 | 10.3 | 8 | | | AS | | |
| 3 | 07:00 | 15,865.05 | 11.02 | 104 | 104.6 | 2 | 1.3 | 10 | | | JC | | |
| 4 | 07:00 | 16,360.10 | 11.36 | 96 | 92.0 | 2 | 0.6 | 7 | | | JC | | |
| 5 | 07:00 | 17,693.52 | 12.29 | 94 | 93.4 | 13 | 11.6 | 11 | | | AS | | |
| 6 | 07:00 | 18,463.60 | 12.83 | 102 | 101.4 | 3 | 1.9 | 11 | | | AS | | |
| 7 | 07:00 | 18,431.98 | 12.81 | 98 | 96.3 | 14 | 13.7 | 11 | | | JC | | |
| 8 | 07:00 | 17,551.62 | 12.19 | 100 | 97.9 | 13 | 12.8 | 10 | | | JC | | |
| 9 | 07:00 | 18,567.29 | 12.90 | 100 | 98.4 | 14 | 13.5 | 10 | | | JC | | |
| 10 | 07:00 | 18,340.40 | 12.74 | 100 | 97.9 | 12 | 11.4 | 11 | | | RM | | |
| 11 | 07:00 | 17,939.57 | 12.45 | 102 | 101.8 | 14 | 12.7 | 11 | | | RM | | |
| 12 | 07:00 | 18,254.26 | 12.67 | 100 | 100.4 | 5 | 3.3 | 11 | | | JC | | |
| 13 | 07:00 | 18,398.21 | 12.79 | 100 | 101.7 | 14 | 12.5 | 12 | | | JC | | |
| 14 | 07:00 | 18,527.90 | 12.86 | 98 | 98.2 | 13 | 12.1 | 11 | | | BF | | |
| 15 | 07:00 | 18,606.64 | 12.93 | 101 | 102.5 | 14 | 12.3 | 12 | | | ZB | | |
| 16 | 07:00 | 18,638.57 | 12.95 | 104 | 103.6 | 14 | 12.6 | 12 | | | ZB | | |
| 17 | 07:00 | 18,446.93 | 12.81 | 101 | 100.7 | 14 | 13.1 | 12 | | | ZB | | |
| 18 | 07:00 | 18,817.26 | 13.07 | 102 | 104.4 | 14 | 11.9 | 12 | | | ZB | | |
| 19 | 07:00 | 19,296.29 | 13.40 | 102 | 101.4 | 14 | 12.3 | 12 | | | RM | | |
| 20 | 07:00 | 19,121.33 | 13.29 | 100 | 99.0 | 14 | 12.6 | 11 | | | RM | | |
| 21 | 07:00 | 19,248.17 | 13.36 | 101 | 100.7 | 14 | 12.1 | 12 | | | ZB | | |
| 22 | 07:00 | 16,512.52 | 11.48 | 102 | 101.1 | 13 | 12.4 | 12 | | | ZB | | |
| 23 | 07:00 | 4,245.40 | 2.95 | 97 | 96.5 | 14 | 12.0 | 11 | | | ZB | | |
| 24 | 07:00 | 1,409.38 | 0.98 | 98 | 98.3 | 3 | 3.2 | 10 | | | BF | | |
| 25 | 07:00 | | | 101 | 100.0 | | 13.4 | 10 | | | BF | | |
| 26 | 07:00 | 10,644.40 | 7.38 | 101 | 100.3 | | 13.5 | 10 | | | ZB | | |
| 27 | 07:00 | 29,927.19 | 20.79 | 104 | 106.9 | 11 | 9.9 | 12 | | | ZB | | |
| 28 | 07:00 | 30,300.98 | 21.05 | 104 | 103.9 | 12 | 10.5 | 11 | | | AS | | |
| 29 | 07:00 | 28,823.79 | 20.02 | 103 | 101.5 | 12 | 10.5 | 11 | | | AS | | |
| 30 | 07:00 | 19,840.31 | 13.79 | 116 | 115.8 | 3 | 1.7 | 14 | | | AS | | |
| 31 | 07:00 | | | | | | | | | | | | |

CHS Refinery #2 06/2019

# Weekly Injectate Samples

**Kansas Lab Certificate Number** E-10116

| **Week** | **Temperature** | | **pH** | | **Chloride** | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Degrees Fahrenheit | Date | Standard Units | Date | Cl concentration (mg/l) | Date Sample Collected | Date Sampl Analysed | | |
| 1 | 72.00 | 06/04/2019 | 7.30 | 06/04/2019 | 1,050.0 | 06/04/2019 | 06/18/2019 | | |
| 2 | 67.80 | 06/11/2019 | 7.76 | 06/11/2019 | 987.0 | 06/11/2019 | 06/24/2019 | | |
| 3 | 89.20 | 06/19/2019 | 6.89 | 06/19/2019 | 996.0 | 06/19/2019 | 07/04/2019 | | |
| 4 | 88.00 | 06/27/2019 | 7.45 | 06/27/2019 | 1,230.0 | 06/27/2019 | 07/08/2019 | | |
| 5 | | | | | | | | | |

## No monthly injectate samples required.

CHS Refinery #2 06/2019

# Quarterly Injectate Samples

**Quarter** 2
**Date Sample Collected** 06/19/2019
**Kansas Lab Certificate Number** E-10116
**Lab Name** Pace Analytical-Lenexa

*These samples shall be representative of injection activity and shall therefore be collected on days of injection.*

| Constituent | Value | Units |
|---|---|---|
| Calcium | 330.000 | mg/l |
| Chloride | 996.000 | mg/l |
| Iron | 6.180 | mg/l |
| Magnesium | 32.000 | mg/l |
| Sulfate | 792.000 | mg/l |
| Total Dissolved Solids | 3,580.000 | mg/l |
| Total Suspended Solids | 72.000 | mg/l |
| Total Alkalinity as CaCO3 | 418.000 | mg/l (as CaCO3) |
| Conductivity | 1.000 | Mmhos |
| Benzene | ND | mg/l |
| Ethylbenzene | ND | mg/l |
| Toluene | ND | mg/l |
| Xylene (Total) | 0.007 | mg/l |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |