**Facility Well Name** CHS Refinery #1 **UIC Permit #** KS-01-113-008 **Month** July **Year** 2019

**Submitted** 08/20/2019 **Approved** 09/01/2019 **KOLAR Document ID** 1469439

# Class I-V Injection Well Monthly Monitoring

## Summary of Monthly Report

**Number of days injection occurred:** 31

**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** | 22,575 | 15.68 | 105 | 102 | 3.1 | 2.6 | |
| **Monthly Maximum** | 28,174 | 19.57 | 160 | 115 | 13.0 | 12.6 | |
| **Monthly Minimum** | 3,919 | 2.71 | 80 | 86 | 2.0 | 0.8 | |
| **Monthly Total** | 699,817 | | | | | | |

## Summary of Continuous Recorder Data

| Maximum Annulus Pressure psig | Minimum Annulus Pressure psig | Maximum Injection Pressure psig | Minimum Injection Pressure psig |
|---|---|---|---|
| 127.19 | 83.67 | 15.27 | 0.43 |

**Comments:**

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# 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 | 19,958.76 | 13.86 | 80 | 86.0 | 2 | 2.0 | 8 | | | JC | | |
| 2 | 07:00 | 23,862.29 | 16.57 | 100 | 97.4 | 2 | 1.8 | 8 | | | JC | | |
| 3 | 07:00 | 22,821.33 | 15.86 | 100 | 98.0 | 2 | 1.7 | 9 | | | AS | | |
| 4 | 07:00 | 21,856.00 | 15.17 | 105 | 103.5 | 2 | 0.8 | 9 | | | AS | | |
| 5 | 07:00 | 22,099.17 | 15.36 | 160 | 100.4 | 2 | 1.6 | 7 | | | JC | | |
| 6 | 07:00 | 22,472.71 | 15.60 | 100 | 101.1 | 2 | 1.8 | 9 | | | JC | | |
| 7 | 07:00 | 21,421.64 | 14.88 | 102 | 104.7 | 2 | 2.0 | 9 | | | JC | | |
| 8 | 07:00 | 23,263.64 | 16.17 | 115 | 113.6 | 2 | 2.8 | 10 | | | BF | | |
| 9 | 07:00 | 25,734.81 | 17.88 | 112 | 112.6 | 3 | 2.1 | 11 | | | BF | | |
| 10 | 07:00 | 23,050.48 | 16.00 | 98 | 93.1 | 2 | 1.7 | 10 | | | JC | | |
| 11 | 07:00 | 23,739.10 | 16.48 | 100 | 103.3 | 2 | 2.2 | 10 | | | JC | | |
| 12 | 07:00 | 23,081.31 | 16.02 | 104 | 104.3 | 3 | 2.2 | 10 | | | BF | | |
| 13 | 07:00 | 23,291.40 | 16.17 | 104 | 106.0 | 3 | 2.3 | 10 | | | JC | | |
| 14 | 07:00 | 23,499.24 | 16.31 | 110 | 109.3 | 3 | 2.2 | 11 | | | JC | | |
| 15 | 07:00 | 28,174.07 | 19.57 | 102 | 102.8 | 11 | 10.0 | 10 | | | ZB | | |
| 16 | 07:00 | 15,805.50 | 10.98 | 99 | 94.8 | 13 | 12.6 | 8 | | | ZB | | |
| 17 | 07:00 | 3,918.93 | 2.71 | 102 | 98.3 | 3 | 1.9 | 9 | | | BF | | |
| 18 | 07:00 | 25,676.88 | 17.83 | 116 | 112.5 | 3 | 2.3 | 11 | | | BF | | |
| 19 | 07:00 | 23,873.93 | 16.57 | 104 | 102.5 | 2 | 1.7 | 9 | | | ZB | | |
| 20 | 07:00 | 22,897.90 | 15.90 | 108 | 106.1 | 3 | 2.3 | 10 | | | ZB | | |
| 21 | 07:00 | 23,385.48 | 16.24 | 105 | 104.4 | 3 | 2.2 | 10 | | | ZB | | |
| 22 | 07:00 | 24,019.98 | 16.69 | 104 | 101.2 | 3 | 2.3 | 10 | | | AS | | |
| 23 | 07:00 | 21,789.93 | 15.14 | 100 | 99.4 | 2 | 1.4 | 9 | | | AS | | |
| 24 | 07:00 | 24,025.52 | 16.69 | 102 | 103.7 | 3 | 2.1 | 9 | | | ZB | | |
| 25 | 07:00 | 21,850.98 | 15.17 | 118 | 115.0 | 3 | 2.2 | 8 | | | ZB | | |
| 26 | 07:00 | 25,195.50 | 17.50 | 112 | 111.8 | 3 | 2.2 | 8 | | | AS | | |
| 27 | 07:00 | 24,138.71 | 16.76 | 95 | 92.8 | 2 | 1.7 | 6 | | | AS | | |
| 28 | 07:00 | 25,024.98 | 17.38 | 94 | 93.4 | 3 | 1.6 | 7 | | | AS | | |
| 29 | 07:00 | 25,393.10 | 17.64 | 100 | 101.2 | 2 | 3.0 | 9 | | | JC | | |
| 30 | 07:00 | 21,003.02 | 14.60 | 96 | 94.5 | 2 | 1.7 | 6 | | | JC | | |
| 31 | 07:00 | 23,491.05 | 16.31 | 108 | 102.4 | 3 | 2.3 | 8 | | | AS | | |

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# 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 | 85.00 | 07/02/2019 | 7.30 | 07/02/2019 | 1,240.0 | 07/02/2019 | 07/16/2019 | | |
| 2 | 101.00 | 07/09/2019 | 7.79 | 07/09/2019 | 1,040.0 | 07/09/2019 | 07/26/2019 | | |
| 3 | 87.00 | 07/16/2019 | 8.15 | 07/16/2019 | 1,090.0 | 07/16/2019 | 07/26/2019 | | |
| 4 | 87.00 | 07/23/2019 | 7.50 | 07/23/2019 | 1,030.0 | 07/23/2019 | 07/31/2019 | | |
| 5 | 84.00 | 07/30/2019 | 7.50 | 07/30/2019 | 475.0 | 07/30/2019 | 08/14/2019 | | |

## No monthly injectate samples required.