



# ANNUAL REPORT OF PRESSURE MONITORING, FLUID INJECTION AND ENHANCED RECOVERY

Complete all blanks - add pages if needed. Copy to be retained for five (5) years after filing date.

OPERATOR: License # \_\_\_\_\_  
Name: \_\_\_\_\_  
Address 1: \_\_\_\_\_  
Address 2: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_  
Contact Person: \_\_\_\_\_  
Phone: ( \_\_\_\_\_ ) \_\_\_\_\_  
Lease Name: \_\_\_\_\_  
Well Number: \_\_\_\_\_

API No.: \_\_\_\_\_  
Permit No.: \_\_\_\_\_  
Reporting Year: \_\_\_\_\_  
(January 1 to December 31)  
\_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ Sec. \_\_\_\_ Twp. \_\_\_\_ S. R. \_\_\_\_  E  W  
(a/a/a/a)  
\_\_\_\_\_ feet from  N /  S Line of Section  
\_\_\_\_\_ feet from  E /  W Line of Section  
County: \_\_\_\_\_

### I. Injection Fluid:

Type (Pick one):  Fresh Water  Treated Brine  Untreated Brine  Water/Brine  
Source:  Produced Water  Other (Attach list)  
Quality: Total Dissolved Solids: \_\_\_\_\_ mg/l Specific Gravity: \_\_\_\_\_ Additives: \_\_\_\_\_  
(Attach water analysis, if available)

### II. Well Data:

Maximum Authorized Injection Pressure: \_\_\_\_\_ psi Injection Zone: \_\_\_\_\_  
Maximum Authorized Injection Rate: \_\_\_\_\_ barrels per day  
Total Number of Enhanced Recovery Injection Wells Covered by this Permit: \_\_\_\_\_ (Include TA's)

III.	Month:	Total Fluid Injected BBL	Maximum Fluid Pressure	Total Gas Injected MCF	Maximum Gas Pressure	# Days of Injection
	January	_____	_____	_____	_____	_____
	February	_____	_____	_____	_____	_____
	March	_____	_____	_____	_____	_____
	April	_____	_____	_____	_____	_____
	May	_____	_____	_____	_____	_____
	June	_____	_____	_____	_____	_____
	July	_____	_____	_____	_____	_____
	August	_____	_____	_____	_____	_____
	September	_____	_____	_____	_____	_____
	October	_____	_____	_____	_____	_____
	November	_____	_____	_____	_____	_____
	December	_____	_____	_____	_____	_____
	<b>TOTAL</b>	_____	_____	_____	_____	_____





# DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

## SYSTEM IDENTIFICATION

OSAGE RESOURCES  
 FACILITY #20  
 RYAN KLAUSMEYER  
 WATER TANK OUTLET  
 BARBER KS

Sample ID#: 2046  
 ID: 105119  
 Report Date: 08-11-2015  
 Sample Date: 07-24-2015  
 at 0000

## WATER CHEMISTRY

### CATIONS

Calcium(as Ca)	14070
Magnesium(as Mg)	2674
Barium(as Ba)	18.29
Strontium(as Sr)	702.80
Sodium(as Na)	56619
Potassium(as K)	677.60
Lithium(as Li)	8.38
Iron(as Fe)	14.76
Field Iron(as Fe)	0.00
Ammonia(as NH <sub>3</sub> )	0.00
Aluminum(as Al)	2.04
Manganese(as Mn)	0.814
Zinc(as Zn)	0.0820
Lead(as Pb)	0.00

### ANIONS

Chloride(as Cl)	133800
Sulfate(as SO <sub>4</sub> )	50.00
Bromine(as Br)	0.00
Dissolved CO <sub>2</sub> (as CO <sub>2</sub> )	110.00
Bicarbonate(as HCO <sub>3</sub> )	36.60
Carbonate(as CO <sub>3</sub> )	0.00
Silica(as SiO <sub>2</sub> )	0.00
Phosphate(as PO <sub>4</sub> )	0.00
H <sub>2</sub> S (as H <sub>2</sub> S)	0.500
Fluoride(as F)	0.00
Nitrate(as NO <sub>3</sub> )	0.00
Boron(as B)	13.08

### PARAMETERS

Temperature(°F)	120.00
T.D.S.	201106
Conductivity:	327459
Sample pH	6.00
Resistivity:	3.05

## SCALE AND CORROSION POTENTIAL

Temp. (°F)	Press. (atm)	Calcite CaCO <sub>3</sub>		Anhydrite CaSO <sub>4</sub>		Gypsum CaSO <sub>4</sub> *2H <sub>2</sub> O		Barite BaSO <sub>4</sub>		Celestite SrSO <sub>4</sub>		Siderite FeCO <sub>3</sub>		Mackawenite FeS		CO <sub>2</sub> (mpy)	pCO <sub>2</sub> (atm)
50.00	0.00	0.0703	-0.00625	0.0370	-118.80	0.0516	-95.08	2.32	3.11	0.0362	-130.49	0.0278	-0.0191	0.0819	-0.627	0.0853	0.0104
65.45	0.00	0.0937	-0.00538	0.0333	-123.22	0.0450	-102.30	1.40	1.35	0.0315	-138.60	0.0415	-0.0148	0.0783	-0.648	0.250	0.0104
80.91	0.00	0.121	-0.00468	0.0318	-120.85	0.0401	-107.88	0.903	-0.439	0.0292	-140.01	0.0596	-0.0117	0.0737	-0.671	0.125	0.0104
96.36	0.00	0.150	-0.00410	0.0320	-112.86	0.0365	-111.83	0.616	-2.23	0.0280	-137.80	0.0822	-0.00935	0.0684	-0.697	0.163	0.0104
111.82	0.00	0.181	-0.00362	0.0338	-100.93	0.0363	-106.06	0.440	-4.01	0.0273	-134.26	0.109	-0.00755	0.0628	-0.726	0.174	0.0104
127.27	0.00	0.215	-0.00322	0.0371	-86.85	0.0382	-95.20	0.319	-5.93	0.0265	-131.55	0.142	-0.00615	0.0579	-0.757	0.152	0.0104
142.73	0.00	0.249	-0.00289	0.0422	-72.22	0.0400	-86.55	0.234	-8.01	0.0257	-129.81	0.180	-0.00505	0.0533	-0.790	0.128	0.0104
158.18	0.00	0.284	-0.00261	0.0498	-58.21	0.0415	-79.65	0.173	-10.30	0.0248	-128.97	0.223	-0.00417	0.0492	-0.826	0.119	0.0104
173.64	0.00	0.315	-0.00239	0.0604	-45.62	0.0428	-74.17	0.129	-12.81	0.0239	-128.99	0.268	-0.00347	0.0452	-0.864	0.111	0.0104
189.09	0.00	0.341	-0.00222	0.0754	-34.81	0.0439	-69.86	0.0977	-15.58	0.0229	-129.86	0.313	-0.00292	0.0414	-0.906	0.0486	0.0104
204.55	0.00	0.357	-0.00211	0.0964	-25.90	0.0448	-66.54	0.0745	-18.65	0.0220	-131.61	0.352	-0.00250	0.0377	-0.951	0.0366	0.0104
220.00	0.171	0.356	-0.00216	0.125	-19.45	0.0452	-66.37	0.0568	-22.51	0.0209	-138.16	0.377	-0.00228	0.0384	-1.01	0.0489	0.0122

  

	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels			

Saturation Levels (xSAT) are the ratio of ion activity to solubility, e.g. {Ca}{CO<sub>3</sub>}/K<sub>sp</sub>. pCO<sub>2</sub> (atm) is the partial pressure of CO<sub>2</sub> in the gas phase. Lbs/1000 Barrels scale is the quantity of precipitation (or dissolution) required to instantaneously bring the water to equilibrium.

