

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form U3C
June 2015
Form must be Typed
Form must be completed
on a per well basis

**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	_____	_____	_____	_____	_____
	TOTAL	_____	_____	_____	_____	_____



JACAM LABORATORIES

DownHole R_x

WATER CHEMISTRY

LINN OPERATING
JASON URWIN
GRANT KS

LEIGH SWDW
STOCK TANK

Report Date: 03-08-2017 Sampled: 03-08-2017
Sample #: 3076 at 0000

Sample ID: 147876

CATIONS

Calcium (as Ca)	11130
Magnesium (as Mg)	3907
Barium (as Ba)	0.204
Strontium (as Sr)	270.90
Sodium (as Na)	59489
Potassium (as K)	794.20
Lithium (as Li)	16.94
Ammonia (as NH ₃)	0.00
Aluminum (as Al)	1.00
Iron (as Fe)	11.74
Manganese (as Mn)	0.0120
Zinc (as Zn)	0.0820
Lead (as Pb)	0.00

ANIONS

Chloride (as Cl)	136400
Sulfate (as SO ₄)	1200
Bromine (as Br)	0.00
Dissolved CO ₂ (as CO ₂)	150.00
Bicarbonate (as HCO ₃)	183.00
Carbonate (as CO ₃)	0.00
Oxalic acid (as C ₂ O ₄)	0.00
Silica (as SiO ₂)	0.00
Phosphate(as PO ₄)	0.00
H ₂ S (as H ₂ S)	5.00
Fluoride (as F)	0.00
Nitrate (as NO ₃)	0.00
Boron (as B)	34.73

PARAMETERS

Calculated T.D.S.	204888
Molar Conductivity	350080
Resistivity	2.86
Sp.Gr.(g/mL)	1.15
Pressure(atm)	1.00
pCO ₂ (atm)	0.0111
pH ₂ S(atm)	0.00351
Temperature (°F)	60.00
pH	7.00

COMMENTS

GRANT KS

JACAM LABORATORIES

205 S. Broadway · P.O. Box 96 · Sterling, KS 67579-0096



DownHole Rx

DEPOSITION POTENTIAL INDICATORS

LINN OPERATING
 JASON URWIN
 GRANT KS

LEIGH SWDW
 STOCK TANK

Report Date: 03-08-2017 Sampled: 03-08-2017
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SATURATION LEVEL

Calcite (CaCO ₃)	3.01
Aragonite (CaCO ₃)	2.66
Witherite (BaCO ₃)	< 0.001
Strontianite (SrCO ₃)	0.0701
Calcium oxalate (CaC ₂ O ₄)	0.00
Magnesite (MgCO ₃)	1.10
Anhydrite (CaSO ₄)	0.662
Gypsum (CaSO ₄ *2H ₂ O)	0.901
Barite (BaSO ₄)	0.455
Celestite (SrSO ₄)	0.311
Fluorite (CaF ₂)	0.00
Calcium phosphate	0.00
Hydroxyapatite	0.00
Silica (SiO ₂)	0.00
Brucite (Mg(OH) ₂)	< 0.001
Magnesium silicate	0.00
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	0.00
Siderite (FeCO ₃)	1.30
Halite (NaCl)	0.177
Thenardite (Na ₂ SO ₄)	< 0.001
Iron sulfide (FeS)	6.07

MOMENTARY EXCESS (Lbs/1000 Barrels)

Calcite (CaCO ₃)	0.0159
Aragonite (CaCO ₃)	0.0148
Witherite (BaCO ₃)	-26.86
Strontianite (SrCO ₃)	-0.464
Calcium oxalate (CaC ₂ O ₄)	-0.00338
Magnesite (MgCO ₃)	0.00189
Anhydrite (CaSO ₄)	-54.58
Gypsum (CaSO ₄ *2H ₂ O)	-13.28
Barite (BaSO ₄)	-0.144
Celestite (SrSO ₄)	-134.03
Fluorite (CaF ₂)	-1.83
Calcium phosphate	>-0.001
Hydroxyapatite	-248.94
Silica (SiO ₂)	-23.58
Brucite (Mg(OH) ₂)	0.00149
Magnesium silicate	-80.89
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	>-0.001
Siderite (FeCO ₃)	0.00627
Halite (NaCl)	-83237
Thenardite (Na ₂ SO ₄)	-87693
Iron sulfide (FeS)	0.536

SIMPLE INDICES

Langelier	1.30
Ryznar	4.40
Puckorius	3.88
Larson-Skold Index	1610
Stiff Davis Index	1.11
Oddo-Tomson	0.170

BOUND IONS

Calcium	11130
Barium	0.204
Carbonate	7.44
Phosphate	0.00
Sulfate	1200

TOTAL		FREE
	10891	
	0.204	
	0.0409	
	0.00	
	219.08	

OPERATING CONDITIONS

Temperature (°F)	60.00
Time(secs)	0.00

DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

SYSTEM IDENTIFICATION

LINN OPERATING
LEIGH SWDW
JASON URWIN
STOCK TANK
GRANT KS

Sample ID#: 3076
ID: 147876
Report Date: 03-08-2017
Sample Date: 03-08-2017
at 0000

WATER CHEMISTRY

CATIONS

Calcium(as Ca)	11130
Magnesium(as Mg)	3907
Barium(as Ba)	0.204
Strontium(as Sr)	270.90
Sodium(as Na)	59489
Potassium(as K)	794.20
Lithium(as Li)	16.94
Iron(as Fe)	11.74
Field Iron(as Fe)	0.00
Ammonia(as NH ₃)	0.00
Aluminum(as Al)	1.00
Manganese(as Mn)	0.0120
Zinc(as Zn)	0.0820
Lead(as Pb)	0.00

ANIONS

Chloride(as Cl)	136400
Sulfate(as SO ₄)	1200
Bromine(as Br)	0.00
Dissolved CO ₂ (as CO ₂)	150.00
Bicarbonate(as HCO ₃)	183.00
Carbonate(as CO ₃)	0.00
Silica(as SiO ₂)	0.00
Phosphate(as PO ₄)	0.00
H ₂ S (as H ₂ S)	5.00
Fluoride(as F)	0.00
Nitrate(as NO ₃)	0.00
Boron(as B)	34.73

PARAMETERS

Temperature(°F)	60.00
T.D.S.	204888
Conductivity:	350080
Sample pH	7.00
Resistivity:	2.86

SCALE AND CORROSION POTENTIAL

Temp. (°F)	Press. (atm)	Calcite CaCO ₃		Anhydrite CaSO ₄		Gypsum CaSO ₄ *2H ₂ O		Barite BaSO ₄		Celestite SrSO ₄		Siderite FeCO ₃		Mackawenite FeS		CO ₂ (mpy)	pCO ₂ (atm)
50.00	0.00	2.49	0.0128	0.720	-44.06	0.997	-0.369	0.641	-0.0676	0.346	-121.71	0.996	>-0.001	30.91	0.937	0.00403	0.0111
65.45	0.00	3.30	0.0174	0.639	-58.52	0.857	-19.72	0.382	-0.195	0.297	-138.70	1.48	0.00936	25.34	0.909	0.0308	0.0111
80.91	0.00	4.14	0.0213	0.602	-63.26	0.752	-35.74	0.243	-0.376	0.271	-146.28	2.06	0.0167	20.75	0.877	0.00784	0.0111
96.36	0.00	4.89	0.0239	0.596	-59.86	0.674	-48.54	0.163	-0.618	0.256	-148.59	2.70	0.0218	17.04	0.840	0.0283	0.0111
111.82	0.00	5.44	0.0250	0.619	-50.59	0.660	-47.85	0.114	-0.928	0.245	-148.58	3.30	0.0247	14.07	0.799	0.0297	0.0111
127.27	0.00	5.77	0.0249	0.670	-37.82	0.686	-39.76	0.0817	-1.34	0.235	-149.10	3.83	0.0257	11.72	0.754	0.0249	0.0111
142.73	0.00	5.82	0.0235	0.753	-23.65	0.708	-33.71	0.0590	-1.90	0.224	-150.36	4.20	0.0250	9.84	0.705	0.0202	0.0111
158.18	0.00	5.58	0.0212	0.876	-9.66	0.725	-29.19	0.0431	-2.62	0.213	-152.33	4.34	0.0230	8.29	0.654	0.0210	0.0111
173.64	0.00	5.11	0.0182	1.05	3.10	0.739	-25.83	0.0318	-3.56	0.203	-154.98	4.26	0.0200	6.99	0.600	0.0218	0.0111
189.09	0.00	4.49	0.0149	1.30	14.10	0.749	-23.37	0.0237	-4.76	0.192	-158.33	3.99	0.0166	5.89	0.542	0.0110	0.0111
204.55	0.00	3.83	0.0118	1.64	23.20	0.757	-21.62	0.0179	-6.25	0.182	-162.40	3.59	0.0133	4.94	0.482	0.00920	0.0111
220.00	0.171	3.10	0.00888	2.11	31.20	0.756	-21.57	0.0135	-8.16	0.171	-171.04	3.03	0.0102	4.63	0.448	0.0125	0.0130

	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
50.00							
65.45							
80.91							
96.36							
111.82							
127.27							
142.73							
158.18							
173.64							
189.09							
204.55							
220.00							

Saturation Levels (xSAT) are the ratio of ion activity to solubility, e.g. {Ca}{CO₃}/K_{sp}. pCO₂ (atm) is the partial pressure of CO₂ in the gas phase. Lbs/1000 Barrels scale is the quantity of precipitation (or dissolution) required to instantaneously bring the water to equilibrium.

