

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	_____	_____	_____	_____	_____



DownHole R_x

DEPOSITION POTENTIAL INDICATORS

LINN OPERATING	HCU 1411 SWD
DREW LOTT	FLOWLINE
HAMILTON KS	
Report Date: 03-06-2017	Sampled: 01-24-2017
Sample #: 3076	at 0000
Sample ID: 145343	

SATURATION LEVEL

Calcite (CaCO ₃)	1.18
Aragonite (CaCO ₃)	1.05
Witherite (BaCO ₃)	< 0.001
Strontianite (SrCO ₃)	0.0278
Calcium oxalate (CaC ₂ O ₄)	0.00
Magnesite (MgCO ₃)	0.400
Anhydrite (CaSO ₄)	1.01
Gypsum (CaSO ₄ *2H ₂ O)	1.29
Barite (BaSO ₄)	1.35
Celestite (SrSO ₄)	0.415
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)	80.62
Strengite (FePO ₄ *2H ₂ O)	0.00
Siderite (FeCO ₃)	7.90
Halite (NaCl)	0.363
Thenardite (Na ₂ SO ₄)	< 0.001
Iron sulfide (FeS)	0.00

MOMENTARY EXCESS (Lbs/1000 Barrels)

Calcite (CaCO ₃)	0.00223
Aragonite (CaCO ₃)	< 0.001
Witherite (BaCO ₃)	-25.10
Strontianite (SrCO ₃)	-0.755
Calcium oxalate (CaC ₂ O ₄)	-0.00470
Magnesite (MgCO ₃)	-0.0187
Anhydrite (CaSO ₄)	1.31
Gypsum (CaSO ₄ *2H ₂ O)	59.88
Barite (BaSO ₄)	0.0313
Celestite (SrSO ₄)	-99.62
Fluorite (CaF ₂)	-2.06
Calcium phosphate	>-0.001
Hydroxyapatite	-206.79
Silica (SiO ₂)	-17.59
Brucite (Mg(OH) ₂)	< 0.001
Magnesium silicate	-70.70
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	>-0.001
Siderite (FeCO ₃)	0.0149
Halite (NaCl)	-51505
Thenardite (Na ₂ SO ₄)	-87109
Iron sulfide (FeS)	-0.00914

SIMPLE INDICES

Langelier	0.934
Ryznar	5.23
Puckorius	5.15
Larson-Skold Index	3544
Stiff Davis Index	0.866
Oddo-Tomson	-0.142

BOUND IONS

Calcium	6283	5982
Barium	0.204	0.204
Carbonate	7.29	0.0254
Phosphate	0.00	0.00
Sulfate	2025	490.29

TOTAL FREE

OPERATING CONDITIONS

Temperature (°F)	48.00
Time(secs)	0.00

DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

SYSTEM IDENTIFICATION

LINN OPERATING
 HCU 1411 SWD
 DREW LOTT
 FLOWLINE
 HAMILTON KS

Sample ID#: 3076
 ID: 145343
 Report Date: 03-06-2017
 Sample Date: 01-24-2017
 at 0000

WATER CHEMISTRY

CATIONS

Calcium(as Ca)	6283
Magnesium(as Mg)	2186
Barium(as Ba)	0.204
Strontium(as Sr)	161.00
Sodium(as Na)	83588
Potassium(as K)	1031
Lithium(as Li)	13.56
Iron(as Fe)	139.30
Field Iron(as Fe)	0.00
Ammonia(as NH ₃)	0.00
Aluminum(as Al)	3.42
Manganese(as Mn)	1.46
Zinc(as Zn)	3.04
Lead(as Pb)	0.00

ANIONS

Chloride(as Cl)	168000
Sulfate(as SO ₄)	2025
Bromine(as Br)	0.00
Dissolved CO ₂ (as CO ₂)	160.00
Bicarbonate(as HCO ₃)	120.00
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)	0.00
Fluoride(as F)	0.00
Nitrate(as NO ₃)	0.00
Boron(as B)	21.63

PARAMETERS

Temperature(°F)	48.00
T.D.S.	247009
Conductivity:	465174
Sample pH	7.10
Resistivity:	2.15

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	1.22	0.00275	0.987	-2.99	1.26	55.14	1.26	0.0248	0.405	-102.89	8.33	0.0153	0.00	-0.00919	0.0303	0.00595
65.45	0.00	1.55	0.00593	0.886	-27.55	1.10	21.56	0.757	-0.0387	0.350	-121.32	11.79	0.0178	0.00	-0.00962	0.0568	0.00595
80.91	0.00	1.79	0.00763	0.842	-37.42	0.972	-6.50	0.484	-0.129	0.322	-130.71	15.15	0.0187	0.00	-0.0101	0.0242	0.00595
96.36	0.00	1.88	0.00776	0.842	-34.94	0.879	-29.19	0.328	-0.248	0.307	-134.86	17.65	0.0181	0.00	-0.0107	0.0317	0.00595
111.82	0.00	1.83	0.00666	0.882	-23.46	0.869	-29.90	0.232	-0.400	0.296	-136.60	18.80	0.0161	0.00	-0.0114	0.0332	0.00595
127.27	0.00	1.66	0.00494	0.962	-6.47	0.910	-18.47	0.166	-0.603	0.285	-138.79	18.67	0.0136	0.00	-0.0121	0.0279	0.00595
142.73	0.00	1.44	0.00306	1.09	12.92	0.946	-10.18	0.121	-0.875	0.274	-141.64	17.51	0.0109	0.00	-0.0130	0.0226	0.00595
158.18	0.00	1.20	0.00131	1.28	32.35	0.976	-4.16	0.0888	-1.23	0.262	-145.08	15.71	0.00857	0.00	-0.0141	0.0235	0.00595
173.64	0.00	0.973	>-0.001	1.54	50.24	1.00	0.163	0.0659	-1.70	0.250	-149.11	13.63	0.00657	0.00	-0.0154	0.0243	0.00595
189.09	0.00	0.777	-0.00135	1.91	65.77	1.02	3.23	0.0494	-2.30	0.238	-153.74	11.53	0.00499	0.00	-0.0170	0.0123	0.00595
204.55	0.00	0.614	-0.00228	2.44	78.68	1.04	5.36	0.0374	-3.07	0.227	-158.98	9.55	0.00377	0.00	-0.0190	0.0103	0.00595
220.00	0.171	0.465	-0.00322	3.14	91.03	1.04	5.64	0.0282	-4.09	0.213	-168.32	7.51	0.00281	0.00	-0.0223	0.0140	0.00697
		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}{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.

