

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 1820 D SWD
DREW LOTT	FLOWLINE
HAMILTON KS	
Report Date: 03-06-2017	Sampled: 01-24-2017
Sample #: 3076	at 0000
Sample ID: 145345	

SATURATION LEVEL

Calcite (CaCO ₃)	0.488
Aragonite (CaCO ₃)	0.434
Witherite (BaCO ₃)	< 0.001
Strontianite (SrCO ₃)	0.0174
Calcium oxalate (CaC ₂ O ₄)	0.00
Magnesite (MgCO ₃)	0.170
Anhydrite (CaSO ₄)	0.774
Gypsum (CaSO ₄ *2H ₂ O)	1.07
Barite (BaSO ₄)	2.13
Celestite (SrSO ₄)	0.483
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)	0.00831
Strengite (FePO ₄ *2H ₂ O)	0.00
Siderite (FeCO ₃)	0.00241
Halite (NaCl)	0.196
Thenardite (Na ₂ SO ₄)	< 0.001
Iron sulfide (FeS)	0.00

MOMENTARY EXCESS (Lbs/1000 Barrels)

Calcite (CaCO ₃)	-0.0123
Aragonite (CaCO ₃)	-0.0153
Witherite (BaCO ₃)	-24.30
Strontianite (SrCO ₃)	-0.964
Calcium oxalate (CaC ₂ O ₄)	-0.00904
Magnesite (MgCO ₃)	-0.0482
Anhydrite (CaSO ₄)	-87.60
Gypsum (CaSO ₄ *2H ₂ O)	23.49
Barite (BaSO ₄)	0.0641
Celestite (SrSO ₄)	-68.66
Fluorite (CaF ₂)	-2.89
Calcium phosphate	>-0.001
Hydroxyapatite	-239.49
Silica (SiO ₂)	-19.46
Brucite (Mg(OH) ₂)	< 0.001
Magnesium silicate	-77.04
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	>-0.001
Siderite (FeCO ₃)	-0.428
Halite (NaCl)	-80419
Thenardite (Na ₂ SO ₄)	-85355
Iron sulfide (FeS)	-0.446

SIMPLE INDICES

Langelier	0.285
Ryznar	6.23
Puckorius	5.87
Larson-Skold Index	2879
Stiff Davis Index	0.0188
Oddo-Tomson	-0.863

BOUND IONS

Calcium	4532
Barium	0.204
Carbonate	2.41
Phosphate	0.00
Sulfate	1975

TOTAL

FREE

4294
0.204
0.0202
0.00
656.41

OPERATING CONDITIONS

Temperature (°F)	48.00
Time(secs)	0.00

DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

SYSTEM IDENTIFICATION

LINN OPERATING
HCU 1820 D SWD
DREW LOTT
FLOWLINE
HAMILTON KS

Sample ID#: 3076
ID: 145345
Report Date: 03-06-2017
Sample Date: 01-24-2017
at 0000

WATER CHEMISTRY

CATIONS

Calcium(as Ca)	4532
Magnesium(as Mg)	1769
Barium(as Ba)	0.204
Strontium(as Sr)	119.10
Sodium(as Na)	68101
Potassium(as K)	643.70
Lithium(as Li)	15.83
Iron(as Fe)	0.0510
Field Iron(as Fe)	0.00
Ammonia(as NH ₃)	0.00
Aluminum(as Al)	2.44
Manganese(as Mn)	0.221
Zinc(as Zn)	1.91
Lead(as Pb)	0.00

ANIONS

Chloride(as Cl)	131600
Sulfate(as SO ₄)	1975
Bromine(as Br)	0.00
Dissolved CO ₂ (as CO ₂)	140.00
Bicarbonate(as HCO ₃)	102.00
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)	20.60

PARAMETERS

Temperature(°F)	48.00
T.D.S.	199764
Conductivity:	336486
Sample pH	6.80
Resistivity:	2.97

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	0.509	-0.0116	0.761	-93.50	1.05	17.18	1.99	0.0601	0.472	-71.36	0.00256	-0.421	0.00	-0.447	0.0598	0.00924
65.45	0.00	0.691	-0.00646	0.688	-125.40	0.921	-27.31	1.21	0.0208	0.412	-86.77	0.00389	-0.369	0.00	-0.453	0.112	0.00924
80.91	0.00	0.879	-0.00225	0.659	-134.32	0.823	-64.14	0.780	-0.0341	0.383	-94.87	0.00551	-0.327	0.00	-0.460	0.0534	0.00924
96.36	0.00	1.05	< 0.001	0.664	-124.02	0.749	-93.54	0.532	-0.106	0.367	-98.64	0.00727	-0.292	0.00	-0.467	0.0679	0.00924
111.82	0.00	1.17	0.00262	0.700	-99.65	0.746	-89.94	0.379	-0.198	0.357	-100.42	0.00893	-0.264	0.00	-0.475	0.0659	0.00924
127.27	0.00	1.23	0.00336	0.769	-66.72	0.786	-68.30	0.274	-0.319	0.347	-102.62	0.0103	-0.240	0.00	-0.484	0.0529	0.00924
142.73	0.00	1.23	0.00311	0.876	-30.16	0.822	-51.98	0.201	-0.481	0.335	-105.41	0.0112	-0.221	0.00	-0.493	0.0429	0.00924
158.18	0.00	1.16	0.00209	1.03	6.09	0.852	-39.71	0.148	-0.693	0.322	-108.75	0.0114	-0.206	0.00	-0.504	0.0468	0.00924
173.64	0.00	1.05	< 0.001	1.25	39.45	0.878	-30.53	0.110	-0.970	0.309	-112.59	0.0111	-0.193	0.00	-0.515	0.0521	0.00924
189.09	0.00	0.913	-0.00102	1.56	68.41	0.900	-23.74	0.0832	-1.33	0.296	-116.93	0.0103	-0.183	0.00	-0.527	0.0271	0.00924
204.55	0.00	0.769	-0.00262	1.99	92.48	0.916	-18.86	0.0631	-1.78	0.282	-121.78	0.00920	-0.174	0.00	-0.540	0.0227	0.00924
220.00	0.171	0.616	-0.00441	2.56	113.60	0.918	-18.31	0.0477	-2.39	0.266	-129.84	0.00777	-0.170	0.00	-0.560	0.0309	0.0108
		xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 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.

