



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 Rx

WATER CHEMISTRY

LINN OPERATING
MICHAEL BELLOMY
STANTON KS

NEFF MINNIE 1 SWDW
FLOWLINE

Report Date: 01-22-2016 Sampled: 01-11-2016
Sample #: 3076 at 0000

Sample ID: 117373

CATIONS

Calcium (as Ca)	9460
Magnesium (as Mg)	4818
Barium (as Ba)	0.204
Strontium (as Sr)	197.10
Sodium (as Na)	74406
Potassium (as K)	636.90
Lithium (as Li)	7.50
Ammonia (as NH ₃)	0.00
Aluminum (as Al)	0.00
Iron (as Fe)	6.57
Manganese (as Mn)	2.79
Zinc (as Zn)	1.72
Lead (as Pb)	0.00

ANIONS

Chloride (as Cl)	165800
Sulfate (as SO ₄)	975.00
Bromine (as Br)	0.00
Dissolved CO ₂ (as CO ₂)	115.00
Bicarbonate (as HCO ₃)	18.30
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)	0.500
Fluoride (as F)	0.00
Nitrate (as NO ₃)	0.00
Boron (as B)	0.613

PARAMETERS

Calculated T.D.S.	241528
Molar Conductivity	460906
Resistivity	2.17
Sp.Gr.(g/mL)	1.17
Pressure(atm)	1.00
pCO ₂ (atm)	0.00614
pH ₂ S(atm)	< 0.001
Temperature (°F)	49.30
pH	5.79

COMMENTS

STANTON KS

JACAM LABORATORIES

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



LINN OPERATING
MICHAEL BELLOMY
STANTON KS

NEFF MINNIE 1 SWDW
FLOWLINE

Report Date: 01-22-2016 Sampled: 01-11-2016
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SATURATION LEVEL

Calcite (CaCO ₃)	0.0142
Aragonite (CaCO ₃)	0.0126
Witherite (BaCO ₃)	< 0.001
Strontianite (SrCO ₃)	< 0.001
Calcium oxalate (CaC ₂ O ₄)	0.00
Magnesite (MgCO ₃)	0.00724
Anhydrite (CaSO ₄)	0.507
Gypsum (CaSO ₄ *2H ₂ O)	0.661
Barite (BaSO ₄)	0.406
Celestite (SrSO ₄)	0.157
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)	0.00281
Halite (NaCl)	0.316
Thenardite (Na ₂ SO ₄)	< 0.001
Iron sulfide (FeS)	0.00254

MOMENTARY EXCESS (Lbs/1000 Barrels)

Calcite (CaCO ₃)	-0.00784
Aragonite (CaCO ₃)	-0.00883
Witherite (BaCO ₃)	-25.86
Strontianite (SrCO ₃)	-0.669
Calcium oxalate (CaC ₂ O ₄)	-0.00303
Magnesite (MgCO ₃)	-0.0130
Anhydrite (CaSO ₄)	-76.33
Gypsum (CaSO ₄ *2H ₂ O)	-45.81
Barite (BaSO ₄)	-0.177
Celestite (SrSO ₄)	-188.60
Fluorite (CaF ₂)	-1.67
Calcium phosphate	>-0.001
Hydroxyapatite	-209.35
Silica (SiO ₂)	-18.54
Brucite (Mg(OH) ₂)	< 0.001
Magnesium silicate	-71.20
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	>-0.001
Siderite (FeCO ₃)	-0.0458
Halite (NaCl)	-56955
Thenardite (Na ₂ SO ₄)	-88980
Iron sulfide (FeS)	-1.23

SIMPLE INDICES

Langelier	-0.970
Ryznar	7.73
Puckorius	7.47
Larson-Skold Index	18552
Stiff Davis Index	-1.02
Oddo-Tomson	-2.03

BOUND IONS

Calcium	9460	9307
Barium	0.204	0.204
Carbonate	0.0534	< 0.001
Phosphate	0.00	0.00
Sulfate	975.00	161.52

TOTAL

FREE

OPERATING CONDITIONS

Temperature (°F)	49.30
Time(secs)	0.00

DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

SYSTEM IDENTIFICATION

LINN OPERATING
NEFF MINNIE 1 SWDW
MICHAEL BELLOMY
FLOWLINE
STANTON KS

Sample ID#: 3076
ID: 117373
Report Date: 01-22-2016
Sample Date: 01-11-2016
at 0000

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Iron(as Fe)	6.57
Field Iron(as Fe)	0.00
Ammonia(as NH ₃)	0.00
Aluminum(as Al)	0.00
Manganese(as Mn)	2.79
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Lead(as Pb)	0.00

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Fluoride(as F)	0.00
Nitrate(as NO ₃)	0.00
Boron(as B)	0.613

PARAMETERS

Temperature(°F)	49.30
T.D.S.	241528
Sample pH	5.79
Conductivity:	460906
Resistivity:	2.17

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	0.0144	-0.00779	0.504	-77.14	0.656	-46.70	0.396	-0.184	0.156	-189.66	0.00287	-0.0453	0.0136	-1.21	0.0793	0.00614
65.45	0.00	0.0197	-0.00684	0.441	-89.77	0.555	-64.50	0.232	-0.398	0.131	-206.01	0.00441	-0.0357	0.0132	-1.23	0.257	0.00614
80.91	0.00	0.0258	-0.00608	0.408	-92.96	0.479	-79.03	0.145	-0.708	0.118	-212.52	0.00643	-0.0287	0.0126	-1.26	0.112	0.00614
96.36	0.00	0.0324	-0.00547	0.398	-88.26	0.423	-90.43	0.0957	-1.13	0.110	-213.53	0.00893	-0.0234	0.0119	-1.29	0.147	0.00614
111.82	0.00	0.0391	-0.00498	0.408	-77.89	0.409	-87.87	0.0662	-1.67	0.104	-212.21	0.0119	-0.0195	0.0111	-1.32	0.158	0.00614
127.27	0.00	0.0463	-0.00459	0.435	-64.17	0.418	-77.73	0.0466	-2.40	0.0978	-211.57	0.0154	-0.0164	0.0104	-1.35	0.142	0.00614
142.73	0.00	0.0536	-0.00427	0.483	-49.15	0.426	-69.92	0.0332	-3.37	0.0921	-211.86	0.0194	-0.0141	0.00972	-1.39	0.124	0.00614
158.18	0.00	0.0606	-0.00401	0.554	-34.42	0.431	-63.90	0.0239	-4.63	0.0865	-213.04	0.0239	-0.0122	0.00911	-1.43	0.114	0.00614
173.64	0.00	0.0668	-0.00381	0.657	-21.00	0.434	-59.29	0.0175	-6.23	0.0812	-215.12	0.0285	-0.0108	0.00852	-1.47	0.103	0.00614
189.09	0.00	0.0714	-0.00367	0.802	-9.42	0.435	-55.81	0.0129	-8.22	0.0761	-218.11	0.0328	-0.00960	0.00793	-1.52	0.0421	0.00614
204.55	0.00	0.0737	-0.00357	1.00	0.144	0.435	-53.26	0.00960	-10.63	0.0713	-222.05	0.0364	-0.00868	0.00735	-1.57	0.0297	0.00614
220.00	0.171	0.0719	-0.00364	1.28	7.87	0.431	-53.56	0.00718	-13.66	0.0665	-231.81	0.0381	-0.00823	0.00762	-1.64	0.0395	0.00718

	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.

