



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	_____	_____	_____	_____	_____



O BRIEN ENERGY
DALE MEDER
THOMAS KS

MEYERS SWD
FLOWLINE

Report Date: 01-26-2016 Sampled: 01-16-2016
Sample #: 2433 at 0000

Sample ID: 117685

CATIONS

Calcium (as Ca)	621.30
Magnesium (as Mg)	257.30
Barium (as Ba)	0.966
Strontium (as Sr)	56.32
Sodium (as Na)	33840
Potassium (as K)	292.70
Lithium (as Li)	5.25
Ammonia (as NH ₃)	0.00
Aluminum (as Al)	0.00
Iron (as Fe)	0.0620
Manganese (as Mn)	0.0120
Zinc (as Zn)	1.32
Lead (as Pb)	0.00

ANIONS

Chloride (as Cl)	55500
Sulfate (as SO ₄)	2725
Bromine (as Br)	0.00
Dissolved CO ₂ (as CO ₂)	80.00
Bicarbonate (as HCO ₃)	366.00
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)	40.00
Fluoride (as F)	0.00
Nitrate (as NO ₃)	0.00
Boron (as B)	34.69

PARAMETERS

Calculated T.D.S.	92214
Molar Conductivity	128811
Resistivity	7.76
Sp.Gr.(g/mL)	1.06
Pressure(atm)	1.00
pCO ₂ (atm)	< 0.001
pH ₂ S(atm)	0.0258
Temperature (°F)	45.00
pH	8.50

COMMENTS

THOMAS KS



O BRIEN ENERGY	MEYERS SWD
DALE MEDER	FLOWLINE
THOMAS KS	
Report Date: 01-26-2016	Sampled: 01-16-2016
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SATURATION LEVEL

Calcite (CaCO ₃)	6.08
Aragonite (CaCO ₃)	5.43
Witherite (BaCO ₃)	0.00456
Strontianite (SrCO ₃)	1.93
Calcium oxalate (CaC ₂ O ₄)	0.00
Magnesite (MgCO ₃)	1.82
Anhydrite (CaSO ₄)	0.224
Gypsum (CaSO ₄ *2H ₂ O)	0.362
Barite (BaSO ₄)	57.12
Celestite (SrSO ₄)	1.19
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)	0.571
Halite (NaCl)	0.0305
Thenardite (Na ₂ SO ₄)	< 0.001
Iron sulfide (FeS)	20.96

MOMENTARY EXCESS (Lbs/1000 Barrels)

Calcite (CaCO ₃)	1.58
Aragonite (CaCO ₃)	1.55
Witherite (BaCO ₃)	-17.87
Strontianite (SrCO ₃)	1.29
Calcium oxalate (CaC ₂ O ₄)	-0.113
Magnesite (MgCO ₃)	0.716
Anhydrite (CaSO ₄)	-857.79
Gypsum (CaSO ₄ *2H ₂ O)	-576.29
Barite (BaSO ₄)	0.562
Celestite (SrSO ₄)	6.46
Fluorite (CaF ₂)	-10.34
Calcium phosphate	>-0.001
Hydroxyapatite	-293.88
Silica (SiO ₂)	-22.70
Brucite (Mg(OH) ₂)	0.0227
Magnesium silicate	-87.19
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	>-0.001
Siderite (FeCO ₃)	-0.0301
Halite (NaCl)	-143158
Thenardite (Na ₂ SO ₄)	-76125
Iron sulfide (FeS)	0.00562

SIMPLE INDICES

Langelier	1.29
Ryznar	5.93
Puckorius	6.66
Larson-Skold Index	481.09
Stiff Davis Index	0.657
Oddo-Tomson	0.280

BOUND IONS

Calcium	621.30
Barium	0.966
Carbonate	35.94
Phosphate	0.00
Sulfate	2725

TOTAL**FREE**

549.37
0.966
3.26
0.00
1874

OPERATING CONDITIONS

Temperature (°F)	45.00
Time(secs)	0.00

DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

SYSTEM IDENTIFICATION

O BRIEN ENERGY
 MEYERS SWD
 DALE MEDER
 FLOWLINE
 THOMAS KS

Sample ID#: 2433
 ID: 117685
 Report Date: 01-26-2016
 Sample Date: 01-16-2016
 at 0000

WATER CHEMISTRY

CATIONS

Calcium(as Ca)	621.30
Magnesium(as Mg)	257.30
Barium(as Ba)	0.966
Strontium(as Sr)	56.32
Sodium(as Na)	33840
Potassium(as K)	292.70
Lithium(as Li)	5.25
Iron(as Fe)	0.0620
Field Iron(as Fe)	0.00
Ammonia(as NH ₃)	0.00
Aluminum(as Al)	0.00
Manganese(as Mn)	0.0120
Zinc(as Zn)	1.32
Lead(as Pb)	0.00

ANIONS

Chloride(as Cl)	55500
Sulfate(as SO ₄)	2725
Bromine(as Br)	0.00
Dissolved CO ₂ (as CO ₂)	80.00
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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)	40.00
Fluoride(as F)	0.00
Nitrate(as NO ₃)	0.00
Boron(as B)	34.69

PARAMETERS

Temperature(°F)	45.00
Sample pH	8.50
T.D.S.	92214
Conductivity:	128811
Resistivity:	7.76

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	6.58	1.66	0.217	-880.48	0.349	-599.36	48.56	0.560	1.13	4.73	0.641	-0.0225	113.85	0.00581	0.00856	< 0.001
65.45	0.00	7.73	1.77	0.204	-918.21	0.318	-661.12	30.76	0.553	1.03	1.30	0.839	-0.00768	82.82	0.00564	0.0160	< 0.001
80.91	0.00	8.09	1.66	0.202	-909.62	0.295	-708.83	20.68	0.544	0.999	-0.0371	0.962	-0.00155	61.68	0.00541	0.00407	< 0.001
96.36	0.00	7.69	1.42	0.212	-861.40	0.279	-743.34	14.67	0.533	0.997	-0.140	0.980	>-0.001	46.52	0.00510	0.00533	< 0.001
111.82	0.00	6.81	1.12	0.231	-782.02	0.288	-709.50	10.86	0.519	1.01	0.280	0.904	-0.00381	35.08	0.00468	0.00559	< 0.001
127.27	0.00	5.78	0.852	0.263	-680.26	0.314	-636.58	8.14	0.502	1.01	0.500	0.770	-0.00969	26.09	0.00414	0.00469	< 0.001
142.73	0.00	4.79	0.628	0.310	-564.51	0.339	-575.42	6.16	0.479	1.01	0.474	0.609	-0.0180	18.87	0.00348	0.00380	< 0.001
158.18	0.00	3.90	0.452	0.377	-442.05	0.363	-524.18	4.70	0.450	1.01	0.223	0.447	-0.0282	13.06	0.00274	0.00396	< 0.001
173.64	0.00	3.16	0.319	0.471	-318.80	0.386	-481.40	3.61	0.414	0.994	-0.239	0.303	-0.0394	8.54	0.00198	0.00410	< 0.001
189.09	0.00	2.54	0.219	0.603	-199.24	0.406	-445.94	2.79	0.367	0.978	-0.907	0.188	-0.0507	5.18	0.00125	0.00207	< 0.001
204.55	0.00	2.05	0.144	0.789	-86.49	0.424	-416.93	2.18	0.309	0.957	-1.78	0.106	-0.0612	2.88	< 0.001	0.00106	< 0.001
220.00	0.171	1.62	0.0856	1.03	10.65	0.431	-408.11	1.66	0.228	0.911	-3.82	0.0538	-0.0716	1.65	< 0.001	0.00250	< 0.001

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.

