

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	_____	_____	_____	_____	_____

Complete Water Analysis

Customer: **SHAKESPEARE OIL COMPANY**
 Geographic Region: **Kansas**
 Geographic Location: **Lane County**
 System Description: **Production System**

Equipment Description: **Gail 1-21**
 Sample Point: **Bleeder**
 Sample ID: **AV13108**
 Account Rep: **Michael.Walters@championx.com**

Collection Date: **02/16/2023**
 Receive Date: **02/22/2023**
 Report Date: **02/23/2023**
 Location Code: **430673**

Field Analysis

Analysis	Result	Analysis Method
Total Alkalinity (M-Alk as HCO ₃)	200 mg/L	Titration
Dissolved CO ₂	190 mg/L	Titration
Dissolved H ₂ S	120 mg/L	Titration
Pressure Surface	25 psi	
Temperature	100 °F	
pH of Water	7.5	Meter

Sample Analysis

Analysis	Result	Analysis Method
Specific Gravity	1.041	Densitometer
Ionic Strength	1.02 mol/L	Calculation
Total Dissolved Solids	56000 mg/L	Calculation
Calculated pH	7.50	Calculation
Calculated CO ₂ in the gas	0.0100 %	Calculation

Cations - Analyzed By ICP

Iron	14.0 mg/L	Boron	24.4 mg/L	Silicon	9.41 mg/L
Manganese	0.429 mg/L	Lithium	<1.000 mg/L	Aluminum	<0.400 mg/L
Barium	0.187 mg/L	Copper	<0.200 mg/L	Molybdenum	<0.200 mg/L
Strontium	47.3 mg/L	Nickel	<0.200 mg/L	Phosphorus	276 mg/L
Calcium	826 mg/L	Zinc	1.30 mg/L	Measured Sodium	21400 mg/L
Magnesium	353 mg/L	Lead	<0.500 mg/L		
Sodium	21400 mg/L	Cobalt	0.820 mg/L		
Potassium	227 mg/L	Chromium	0.262 mg/L		

Anions - Analyzed by IC

Chloride	29600 mg/L	Sulfate	3000 mg/L
Bromide	26.8 mg/L		

PTB

	Anhydrite	Barite	Calcite	Celestite	Gypsum	Halite	Iron Carbonate	Iron Sulfide
50°	0.00	0.10	0.00	0.00	0.00	0.00	0.00	7.72
75°	0.00	0.09	0.00	0.00	0.00	0.00	0.00	7.72
100°	0.00	0.07	0.00	1.87	0.00	0.00	0.00	7.71
125°	0.00	0.06	0.00	5.27	0.00	0.00	0.00	7.71
150°	0.00	0.04	0.00	9.04	0.00	0.00	0.00	7.70
175°	0.00	0.02	0.00	12.79	0.00	0.00	0.00	7.70
200°	0.00	0.00	0.00	16.27	0.00	0.00	0.00	7.70
225°	159.36	0.00	0.00	19.36	0.00	0.00	0.00	7.70
250°	296.94	0.00	0.00	22.03	0.00	0.00	0.00	7.70
275°	410.65	0.00	0.00	24.29	0.00	0.00	0.00	7.70
300°	505.67	0.00	0.00	26.18	0.00	0.00	0.00	7.70
325°	585.84	0.00	0.00	27.74	0.00	0.00	0.00	7.71
350°	653.95	0.00	0.00	29.02	0.00	0.00	0.00	7.71
375°	711.98	0.00	0.00	30.06	0.00	0.00	0.00	7.71
400°	761.31	0.00	0.00	30.89	152.91	0.00	0.00	7.72

SI

	Anhydrite	Barite	Calcite	Celestite	Gypsum	Halite	Iron Carbonate	Iron Sulfide
50°	-1.03	0.90	-0.74	-0.01	-0.43	-2.02	-1.16	3.61
75°	-0.82	0.66	-0.75	-0.01	-0.44	-2.05	-1.06	3.30
100°	-0.63	0.46	-0.75	0.02	-0.43	-2.07	-0.98	3.06
125°	-0.45	0.30	-0.76	0.07	-0.41	-2.09	-0.91	2.89
150°	-0.29	0.18	-0.76	0.13	-0.39	-2.09	-0.86	2.77
175°	-0.15	0.08	-0.75	0.20	-0.37	-2.10	-0.82	2.70
200°	-0.01	0.00	-0.73	0.20	-0.37	-2.09	-0.79	2.66
225°	0.13	-0.06	-0.71	0.36	-0.38	-2.09	-0.77	2.65
250°	0.25	-0.10	-0.68	0.44	-0.40	-2.08	-0.75	2.67
275°	0.37	-0.14	-0.63	0.53	-0.41	-2.06	-0.74	2.72
300°	0.49	-0.17	-0.58	0.61	-0.41	-2.05	-0.74	2.78
325°	0.61	-0.19	-0.51	0.70	-0.38	-2.03	-0.74	2.86
350°	0.73	-0.22	-0.44	0.79	-0.30	-2.00	-0.75	2.95
375°	0.84	-0.25	-0.35	0.88	-0.15	-1.98	-0.76	3.05
400°	0.96	-0.28	-0.26	0.96	0.09	-1.94	-0.77	3.16

Comments

Scaling predictions calculated using Scale Soft Pitzer 2019

Scaling predictions dependent on provided field data. Incomplete/partial field data may impact results generated by scaling software.

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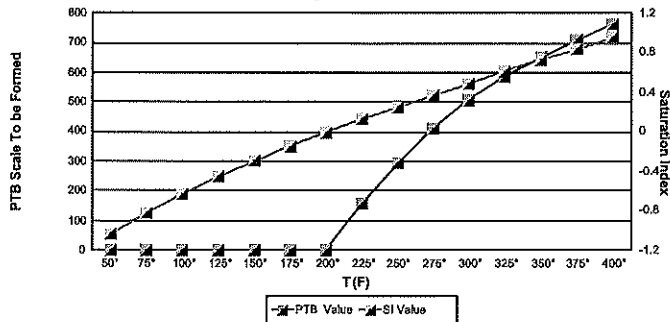
Complete Water Analysis

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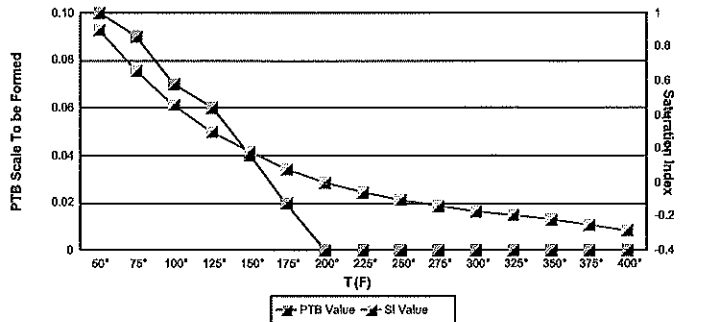
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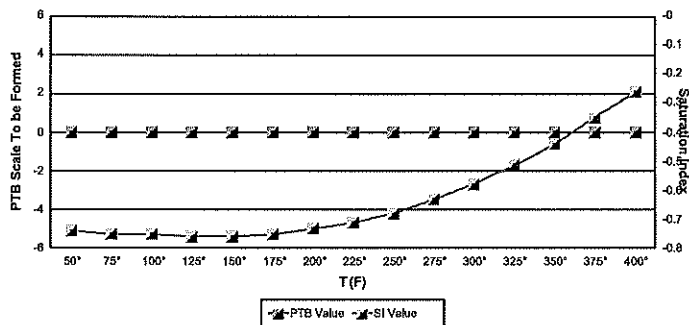
Anhydrite CaSO4



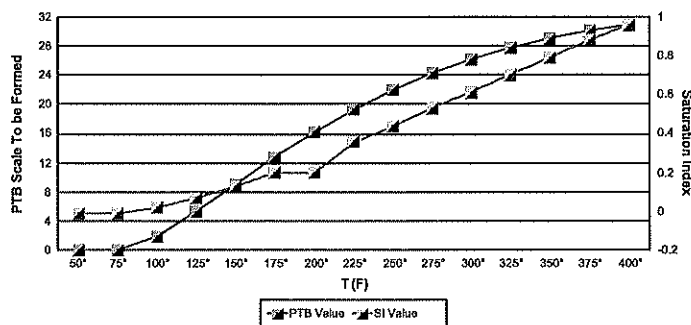
Barite BaSO4



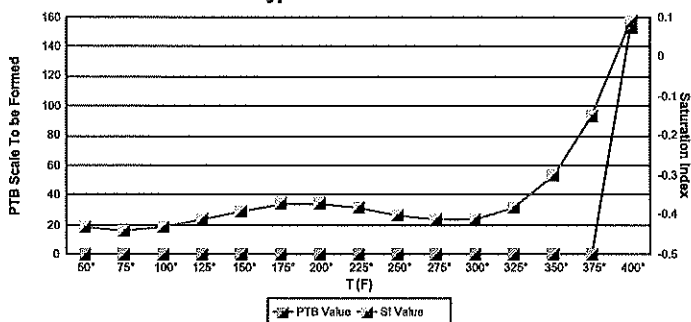
Calcite CaCO3



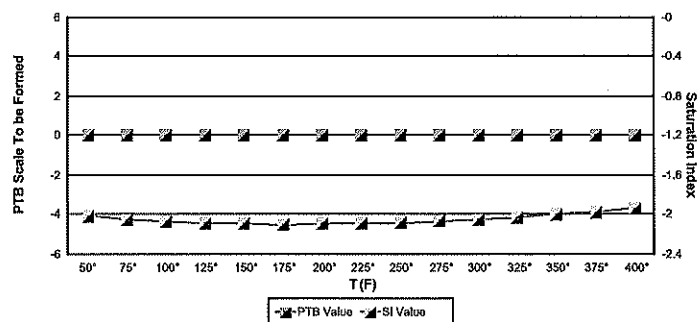
Celestite SrSO4



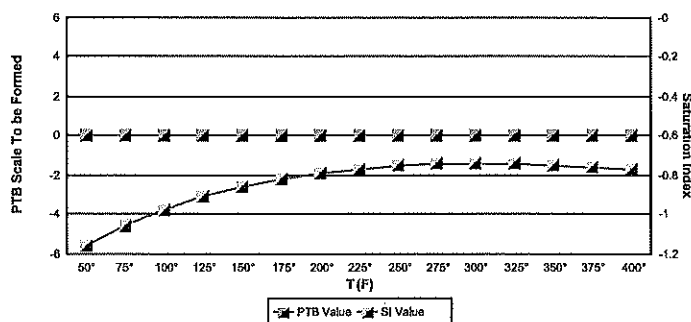
Gypsum CaSO4



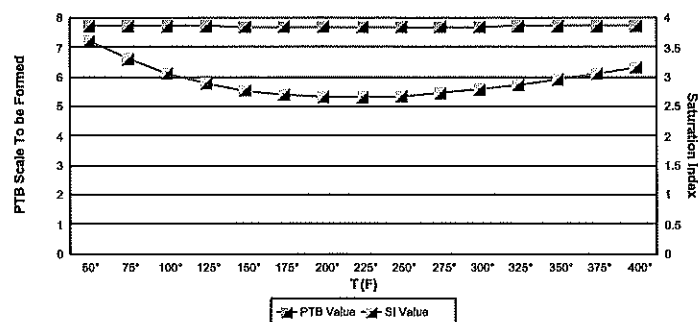
Halite NaCl



Iron Carbonate FeCO3



Iron Sulfide FeS



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 02/24/2023