

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Tuesday, March 29, 2011 3:23 PM
To: 'Kauffman, Katie'
Cc: Gray, Darold, EMNRD; Dade, Randy, EMNRD; Warnell, Terry G, EMNRD
Subject: Disposal of Yeso Waters into the Washington 34#1 disposal well

Tracking:	Recipient	Read
	'Kauffman, Katie'	
	Gray, Darold, EMNRD	
	Dade, Randy, EMNRD	Read: 3/29/2011 3:36 PM
	Warnell, Terry G, EMNRD	Read: 3/29/2011 3:23 PM

Hello Katie Kauffman:

On March 22, 2011 the Division received notice that Apache Corp intends to inject Yeso formation waters into the Washington 34 Well No. 1 SWD (SWD-710, API No, 30-015-29344).
We understand the surface owner was notified and compatibility problems are not expected.

Please accept this email as confirmation the Division is on notice of this.

Regards,

William V Jones, P.E.
Engineering, Oil Conservation Division
1220 South St. Francis Drive, Santa Fe, NM 87505
Tel 505.476.3448 ~ Fax 505.476.3462



FILE: SWD -710 and API 30-015-29344



RECEIVED OCD

2011 MAR 24 A 11:30

March 22, 2011

New Mexico Oil Conservation Division

ATTN: William V. Jones
1220 S. St Francis Dr
Santa Fe, NM 87505

RE: Washington 34 Well No. 1-SWD
API: 30-015-29344
Sec 34, T17S, R28E
Eddy Co, NM

Dear Mr. Jones,

Apache Corporation respectfully requests approval to inject water from the Yeso formation into the Washington 34 Well No 1-SWD system located in Section 34, T17S, R28E, Eddy County, New Mexico.

To support this request we have attached the following:

- 1) Water Analysis of Yeso water
- 2) Proof of Notification to Surface Owner (100% Apache)

Respectfully,

Katie Kauffman
Engineering Technician

Attachments

North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(432) 495-7240

Water Analysis Report by Baker Petrolite

Company:	APACHE CORPORATION	Sales RDT:	33512
Region:	PERMIAN BASIN	Account Manager:	WAYNE PETERSON (575) 910-9389
Area:	LOCO HILL, NM	Sample #:	544722
Lease/Platform:	'D' STATE	Analysis ID #:	105109
Entity (or well #):	25	Analysis Cost:	\$90.00
Formation:	UNKNOWN		
Sample Point:	WELLHEAD		

Summary		Analysis of Sample 544722 @ 75 °F							
Sampling Date:	12/13/10	Anions		mg/l	meq/l	Cations		mg/l	meq/l
Analysis Date:	12/20/10	Chloride:	117907.0		3325.73	Sodium:	66758.8		2903.84
Analyst:	JENNIFER HARDELL	Bicarbonate:	512.4		8.4	Magnesium:	5214.0		428.92
		Carbonate:	0.0		0.	Calcium:	1841.0		91.87
TDS (mg/l or g/m3):	197846.9	Sulfate:	5043.0		105.	Strontium:	47.0		1.07
Density (g/cm3, tonne/m3):	1.134	Phosphate:				Barium:	0.1		0.
Anion/Cation Ratio:	1	Borate:				Iron:	2.5		0.09
		Silicate:				Potassium:	521.0		13.32
Carbon Dioxide:	100 PPM	Hydrogen Sulfide:			153 PPM	Aluminum:			
Oxygen:		pH at time of sampling:			6.55	Chromium:			
Comments:		pH at time of analysis:				Copper:			
		pH used in Calculation:			6.55	Lead:			
						Manganese:	0.050		0.
						Nickel:			

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ *2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	0.28	17.36	-0.09	0.00	-0.07	0.00	-0.02	0.00	0.43	0.00	1.07
100	0	0.38	23.73	-0.16	0.00	-0.07	0.00	-0.04	0.00	0.22	0.00	1.33
120	0	0.46	30.67	-0.22	0.00	-0.06	0.00	-0.06	0.00	0.05	0.00	1.62
140	0	0.54	37.91	-0.28	0.00	-0.02	0.00	-0.07	0.00	-0.11	0.00	1.94

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

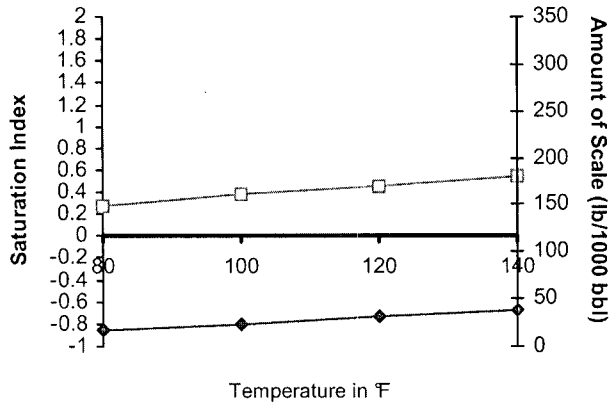
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

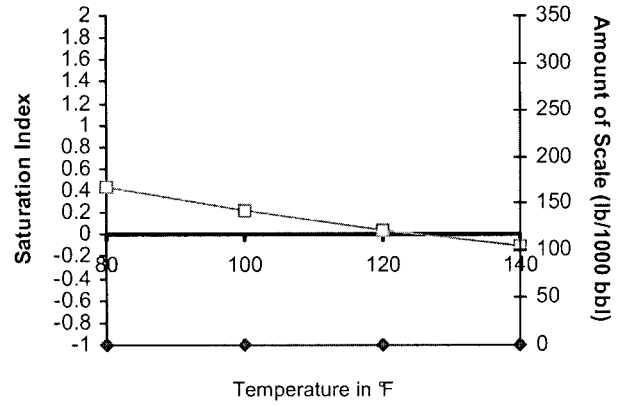
Scale Predictions from Baker Petrolite

Analysis of Sample 544722 @ 75 °F for APACHE CORPORATION, 12/20/10

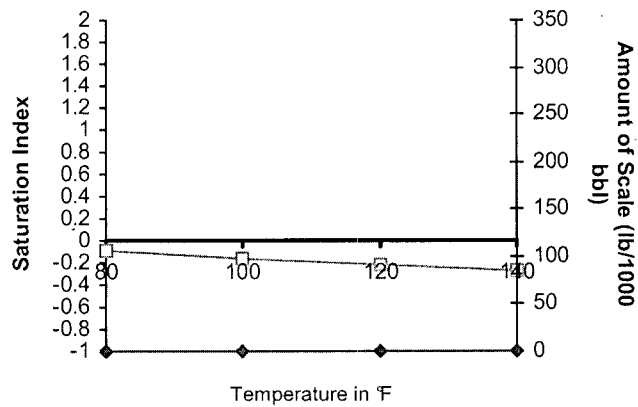
Calcite - CaCO_3



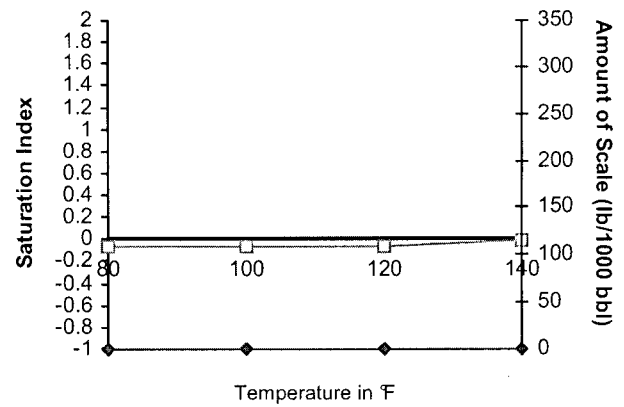
Barite - BaSO_4



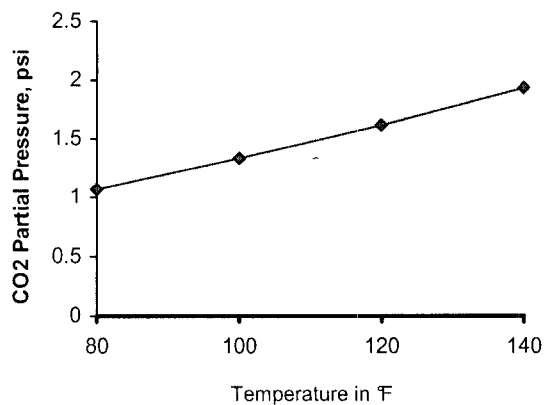
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



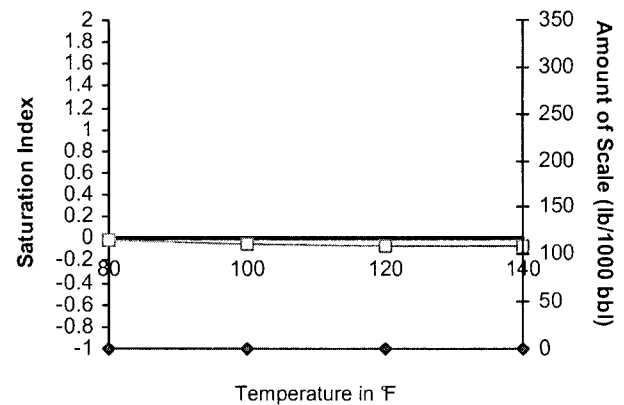
Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - SrSO_4



North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(432) 495-7240

Water Analysis Report by Baker Petrolite

Company:	APACHE CORPORATION	Sales RDT:	33512
Region:	PERMIAN BASIN	Account Manager:	WAYNE PETERSON (575) 910-9389
Area:	LOCO HILL, NM	Sample #:	544723
Lease/Platform:	N B TWEEN	Analysis ID #:	105110
Entity (or well #):	STATE 5	Analysis Cost:	\$90.00
Formation:	UNKNOWN		
Sample Point:	WELLHEAD		

Summary		Analysis of Sample 544723 @ 75 °F							
Sampling Date:	12/13/10	Anions		mg/l	meq/l	Cations		mg/l	meq/l
Analysis Date:	12/20/10	Chloride:	121356.0		3423.01	Sodium:	76321.0		3319.78
Analyst:	JENNIFER HARDELL	Bicarbonate:	414.8		6.8	Magnesium:	634.0		52.16
		Carbonate:	0.0		0.	Calcium:	2445.0		122.01
TDS (mg/l or g/m3):	205904.1	Sulfate:	3988.0		83.03	Strontium:	64.0		1.46
Density (g/cm3, tonne/m3):	1.138	Phosphate:				Barium:	0.1		0.
Anion/Cation Ratio:	1	Borate:				Iron:	2.0		0.07
		Silicate:				Potassium:	679.0		17.36
Carbon Dioxide:	110 PPM	Hydrogen Sulfide:			34 PPM	Aluminum:			
Oxygen:		pH at time of sampling:			6.4	Chromium:			
Comments:		pH at time of analysis:				Copper:			
		pH used in Calculation:			6.4	Lead:			
						Manganese:	0.200		0.01
						Nickel:			

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ *2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	0.23	12.92	-0.05	0.00	-0.02	0.00	0.00	0.00	0.31	0.00	1.23
100	0	0.31	17.80	-0.14	0.00	-0.04	0.00	-0.03	0.00	0.10	0.00	1.51
120	0	0.39	22.97	-0.21	0.00	-0.03	0.00	-0.05	0.00	-0.08	0.00	1.8
140	0	0.47	28.13	-0.27	0.00	-0.01	0.00	-0.07	0.00	-0.25	0.00	2.09

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

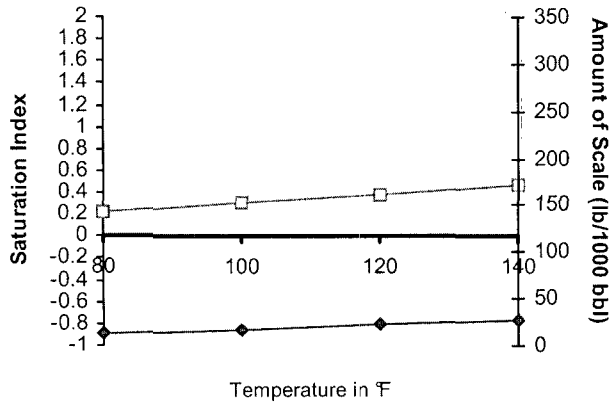
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

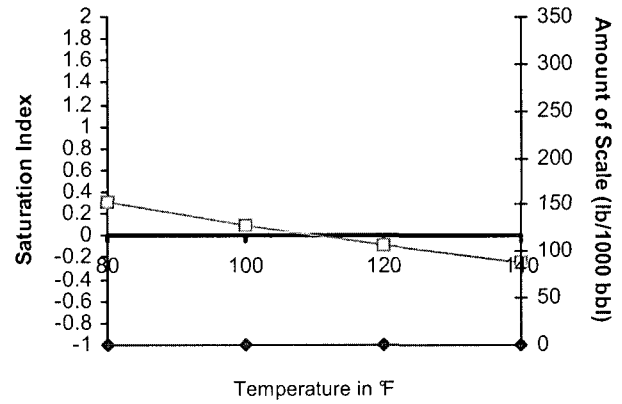
Scale Predictions from Baker Petrolite

Analysis of Sample 544723 @ 75 °F for APACHE CORPORATION, 12/20/10

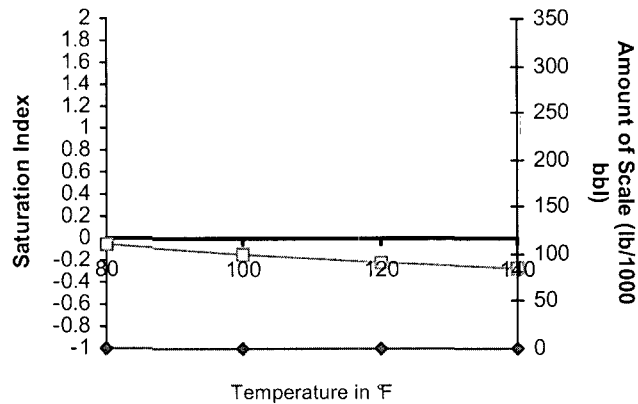
Calcite - CaCO_3



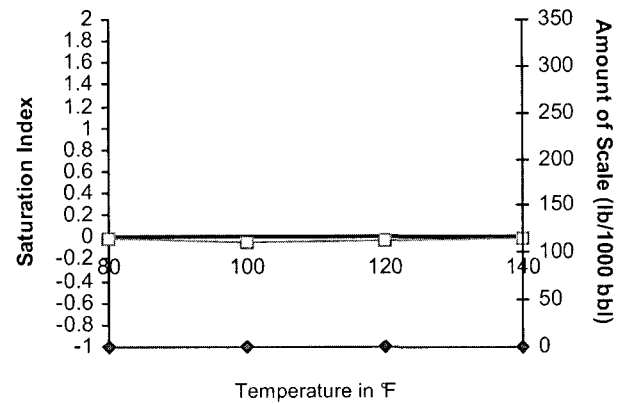
Barite - BaSO_4



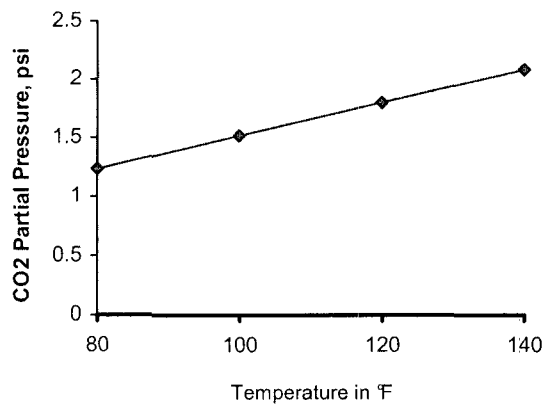
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



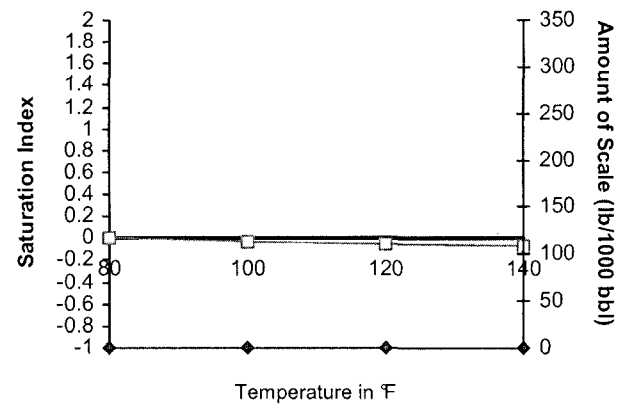
Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - SrSO_4



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Water Analysis Report by Baker Petrolite

Company:	APACHE CORPORATION	Sales RDT:	33512
Region:	PERMIAN BASIN	Account Manager:	WAYNE PETERSON (575) 910-9389
Area:	LOCO HILL, NM	Sample #:	544721
Lease/Platform:	DAD STATE	Analysis ID #:	105108
Entity (or well #):	40	Analysis Cost:	\$90.00
Formation:	UNKNOWN		
Sample Point:	WELLHEAD		

Summary		Analysis of Sample 544721 @ 75 °F							
Sampling Date:	12/13/10	Anions		mg/l	meq/l	Cations		mg/l	meq/l
Analysis Date:	12/20/10	Chloride:	124406.0	3509.04	Sodium:	79864.6	3473.91		
Analyst:	JENNIFER HARDELL	Bicarbonate:	561.2	9.2	Magnesium:	428.0	35.21		
TDS (mg/l or g/m3):	212154.4	Carbonate:	0.0	0.	Calcium:	1748.0	87.23		
Density (g/cm3, tonne/m3):	1.141	Sulfate:	4518.0	94.06	Strontium:	48.0	1.1		
Anion/Cation Ratio:	1	Phosphate:			Barium:	0.1	0.		
		Borate:			Iron:	1.5	0.05		
		Silicate:			Potassium:	579.0	14.81		
Carbon Dioxide:	130 PPM	Hydrogen Sulfide:		102 PPM	Aluminum:				
Oxygen:		pH at time of sampling:		6.4	Chromium:				
Comments:		pH at time of analysis:			Copper:				
		pH used in Calculation:		6.4	Lead:				
					Manganese:	0.030	0.		
					Nickel:				

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ *2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	0.24	17.69	-0.14	0.00	-0.10	0.00	-0.08	0.00	0.36	0.00	1.7
100	0	0.32	23.97	-0.23	0.00	-0.13	0.00	-0.11	0.00	0.15	0.00	2.07
120	0	0.39	30.53	-0.30	0.00	-0.12	0.00	-0.14	0.00	-0.04	0.00	2.46
140	0	0.47	37.66	-0.37	0.00	-0.10	0.00	-0.15	0.00	-0.20	0.00	2.86

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

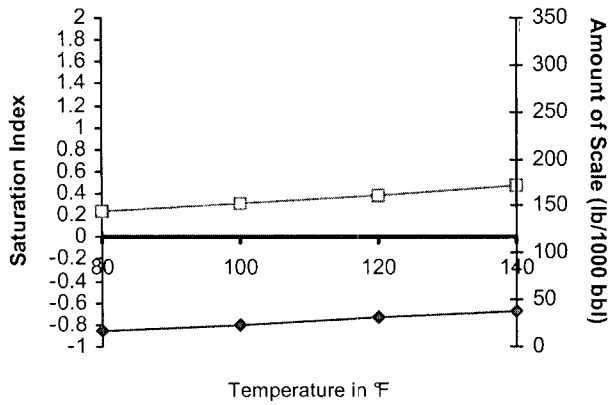
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

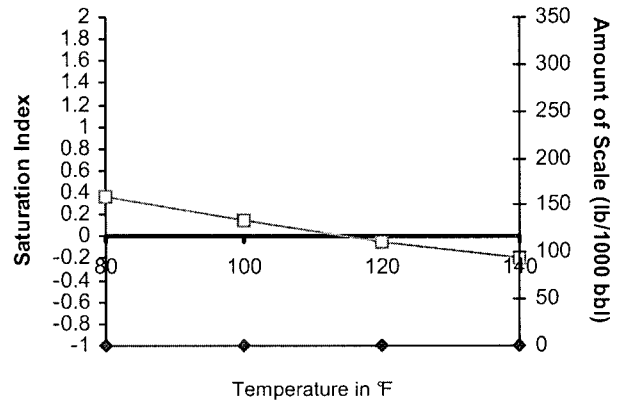
Scale Predictions from Baker Petrolite

Analysis of Sample 544721 @ 75 °F for APACHE CORPORATION, 12/20/10

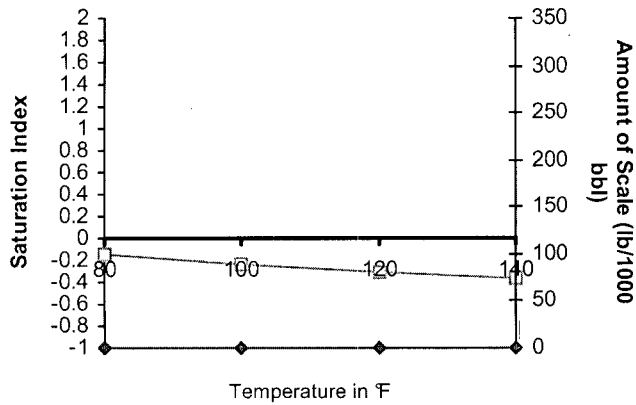
Calcite - CaCO_3



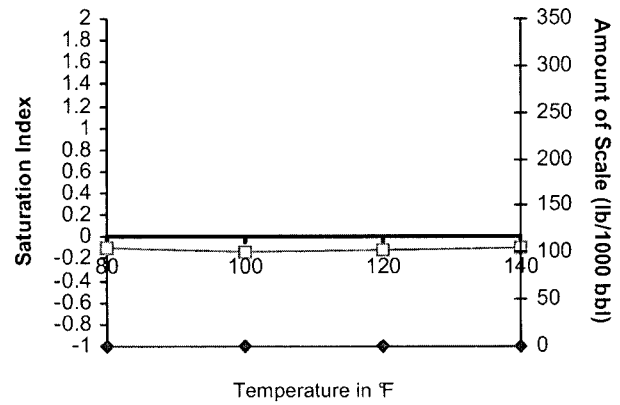
Barite - BaSO_4



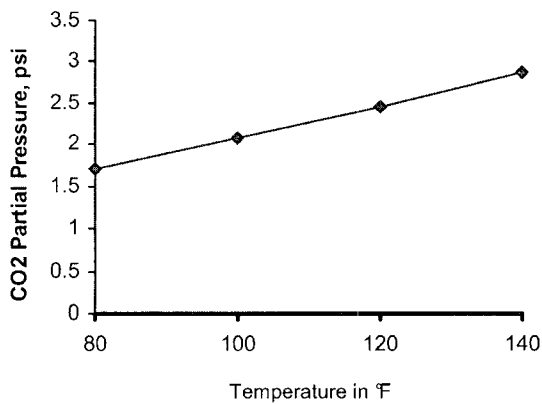
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



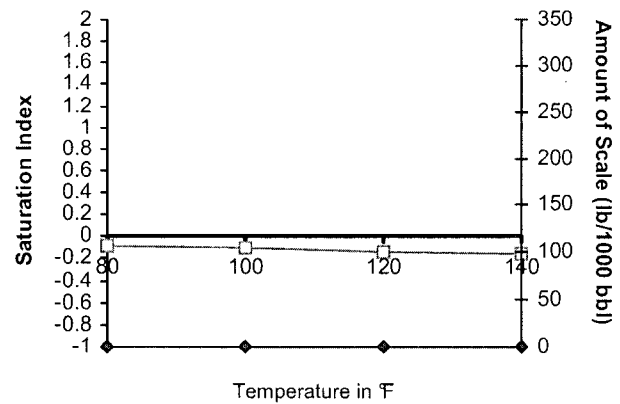
Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - SrSO_4



NOTICE OF NOTIFICATION

Notification has not been provided as Apache Corporation has 100% surface ownership in the Washington State 34 No 1-SWD well.

SURFACE OWNER

Apache Corporation
303 Veterans Airpark Ln. Ste 3000
Midland, TX 79705

A handwritten signature in black ink, reading "Katie Kauffman", is written over a solid horizontal line.

Katie Kauffman
Production Engineer Technician