Inspection Report For Well: UT20736 - 07114

U.S. Environmental Protection Agency
Underground Injection Control Program, 8ENF-T
999 18th Street, Suite 300, Denver, CO 80202-2466

This form was printed on 9/24/2013

INSPECTOR(S): Lead: Roberts, Sarah — Date: ~~10~~ 12/10/2013

Others: Ajayi, Christopher — Time: 11:37 am / pm

OPERATOR (only if different): _____

REPRESENTATIVE(S): Chad Stevinson

PRE-INSPECTION REVIEW

Petroglyph Operating Company, Inc

Well Name:	Ute Tribal 20-02		
Well Type:	Enhanced Recovery (2R)		
Operating Status:	AC (ACTIVE) as of 7/23/2007		
Oil Field:	Antelope Creek (Duchesne)		
Location:	NWNE S20 T5S R3W		
Indian Country:	X, Uintah and Ouray		
Last Inspection:	8/28/2012	***Allowable Inj Pressure:***	1640 /
Last MIT:	Pass 7/8/2012	***Annulus Pressure From Last MIT:***	1045

BLACK = POSSIBLE VIOLATION GREY = DATA MISSING

INSPECTION TYPE: **(Select One)**

- [ ] Construction / Workover
- [ ] Plugging
- [ ] Post-Closure
- [ ] Response to Complaint
- [x] Routine
- [ ] Witness MIT
- [ ] Other

ICIS Entered
Date 12/20/13
Initials DB

OBSERVED VALUES:

Tubing Gauge:	[x] Yes [ ] No	Pressure: U: 1600 / L: ____ psig Gauge Range: Scada psig	Gauge Owner:	[ ] EPA [x] Operator
Annulus Gauge:	[x] Yes [ ] No	Pressure: 0 psig Gauge Range: Opened psig	Gauge Owner:	[x] EPA [ ] Operator
Bradenhead Gauge:	[ ] Yes [ ] No	Pressure: ____ psig Gauge Range: ____ psig	Gauge Owner:	[ ] EPA [ ] Operator
Pump Gauge:	[ ] Yes [ ] No	Pressure: ____ psig Gauge Range: ____ psig	Gauge Owner:	[ ] EPA [ ] Operator

Operating Status: (Select One)
- [x] Active
- [ ] Being Reworked
- [ ] Not Injecting
- [ ] Production
- [ ] Plugged and Abandoned
- [ ] Under Construction

	GREEN	BLUE	GRL
TAB		1	

See page 2 for photos, comments, and site conditions.

U3 Entered
Date 12/17/13
Initial SR

Inspection Report For Well: UT20736 - 07114 (PAGE 2)

PHOTOGRAPHS: ☐ Yes ☒ No List of photos taken: _____

Comments and site conditions observed during inspection: _____

GPS: GPS File ID: _____

Signature of EPA Inspector(s): _____ _____

☐ Data Entry ☐ Compliance Staff ☐ Hard Copy Filing

NOTICE OF INSPECTION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, 999 18TH STREET - SUITE 500
DENVER, COLORADO 80202-2405

Date: 12/16/13
Hour: 8:00a

Notice of inspection is hereby given according to Section 1445(b) of the Safe Drinking Water Act (42 U.S.C. §300f et seq.).

Firm Name: Petroglyph Operating, Inc.

Firm Address: Roosevelt, UT, Antelope Creek Oil Field

REASON FOR INSPECTION:

For the purpose of inspecting records, files, papers, processes, controls and facilities, and obtaining samples to determine whether the person subject to an applicable underground injection control program has acted or is acting in compliance with the Safe Drinking Water Act and any applicable condition of permit or rule authorization.

SECTION 1445(b) of the SAFE DRINKING WATER ACT is quoted below:

Section 1445(b)(1): Except as provided in Paragraph (2), the Administrator, or representatives of the Administrator duly designated by him, upon presenting appropriate credentials, and a written notice to any supplier of water or other person subject to (a), or person subject (A) a national primary drinking water regulation prescribed under Section 1412(B) an applicable Underground Injection Control Program, or (C) any requirement to monitor an unregulated contaminant pursuant to subsection (a), or person in charge of any of the property of such supplier or other person referred to in clause (A), (B), or (C), is authorized to enter any establishment, ... facility, or other property of such supplier or other person in order to determine whether such supplier or other person has acted or is acting in compliance with this title, including for this purpose, inspection, at reasonable times, of records, files, papers, processes, controls, and facilities, or in order to test any feature of a public water system, including its raw water source. The Administrator or the Comptroller General (or any representative designated by either) shall have access for the purpose of audit and examination to any records, reports, or information of a grantee which are required to be maintained under subsection (a) or which are pertinent to any financial assistance under this title.

Sarah Roberts
Inspector's Name & Title (Print)

Inspector's Signature

EPA R8 3560-1 (8-89)

Original - Regional Office Copy
Yellow Copy - Operator Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: 8P-W-GW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Steve Wall, District Manager
Petroglyph Energy, Inc.
4116 West 3000 So. Ioka Lane
Roosevelt, UT 84066

RE: Authorization to Inject
UIC Permit No. UT20736-00000
Well ID: UT20736-07114
Ute Tribal No. 20-02
Duchesne County, Utah

Dear Mr. Wall:

Thank you for submitting information pertaining to the newly constructed or converted Ute Tribal No. 20-02 enhanced recovery injection well to the Region 8 Ground Water Program office of the Environmental Protection Agency (EPA). The "Prior To Commencing Injection" requirements for the Ute Tribal No. 20-02 injection well required well owner and operator Petroglyph Operating Company, Inc. to submit the following information to the Director:

I. A successful mechanical integrity test (MIT) demonstrating Part I Internal MI,
II. Pore pressure calculation of the proposed injection zone, and
III. Completed EPA Form No. 7520-12.

All required information has been submitted, and has been reviewed and approved by the EPA. Therefore, effective upon your receipt of this letter, Administrative approval hereby is granted for injection into the Ute Tribal No. 20-02 enhanced recovery injection well under the conditions of the Authorization for Additional Well and UIC Area Permit UT20736-00000 as modified.

As of this approval, responsibility for permit compliance and enforcement is transferred to the Region 8 UIC Technical Enforcement Program office. Therefore, please direct all future notification, reporting, monitoring and compliance correspondence to the following address, referencing your well and UIC Permit number on all correspondence regarding this well.

Technical Enforcement Program - UIC
U.S. EPA Region 8, Mail Code 8ENF-UFO
1595 Wynkoop Street
Denver, Colorado 80202-1129

The Director has determined that the maximum allowable surface injection pressure (MAIP) for the Ute Tribal No. 20-02 shall not exceed **1640** psig. Please be reminded that it is the responsibility of the owner/operator to be aware of, and to comply with, all conditions of Authorization for Additional Well UT20736-07114 and EPA UIC Area Permit UT20736-00000 and relevant modifications as issued.

If you have any questions regarding this Authorization, please call Linda Bowling of my staff at (303) 312-6254. For questions regarding notification, testing, monitoring, reporting or other Permit requirements, please contact Nathan Wiser of the UIC Technical Enforcement Program by calling (303) 312-6211.

Sincerely,

for Stephen S. Tuber
Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

cc:

Curtis Cesspooch, Chairperson
Uintah & Ouray Business Committee
Ute Indian Tribe

Ronald Groves, Councilman
Uintah & Ouray Business Committee
Ute Indian Tribe

Irene Cuch, Vice-Chairperson
Uintah & Ouray Business Committee
Ute Indian Tribe

Steven Cesspooch, Councilman
Uintah & Ouray Business Committee
Ute Indian Tribe

Shawn Chapoose, Director
Land Use Department
Ute Indian Tribe

Gil Hunt
Technical Services Manager
Utah Division of Oil, Gas, and Mining

Fluid Minerals Engineering Office
BLM - Vernal Office

Lynn Becker, Director
Energy and Minerals Department
Ute Indian Tribe

Phillip Chimbraus, Councilman
Uintah & Ouray Business Committee
Ute Indian Tribe

Francis Poowegup, Councilman
Uintah & Ouray Business Committee
Ute Indian Tribe

Chester Mills, Superintendent
BIA - Uintah & Ouray Indian Agency

Mr. Kenneth Smith
Executive Vice President and Chief
Operating Officer
Petroglyph Energy, Inc.

DENVER CO 802

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

PW-GW
UIC

JUL 23 2007

Mr. Steve Wall
District Manager
Petroglyph Energy, Inc
4116 West 3000 So. Ioka Lane
Roosevelt, UT 84066

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Patty Co

☐ Agent
☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

ROOSEVELT UT 840
JUL 25 2007
USPS

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label) 7005 1820 0005 4856 2937

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7005 1820 0005 4856 2937

U.S. Postal Service™
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OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage	

Postmark Here

Sent To Mr. Steve Wall
District Manager
Petroglyph Energy, Inc
Street, Apt. No or PO Box No. 4116 West 3000 So. Ioka Lane
City, State, ZIP Roosevelt, UT 84066

PS Form 3800, June 2002 See Reverse for Instructions

OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency
Washington, DC 20460

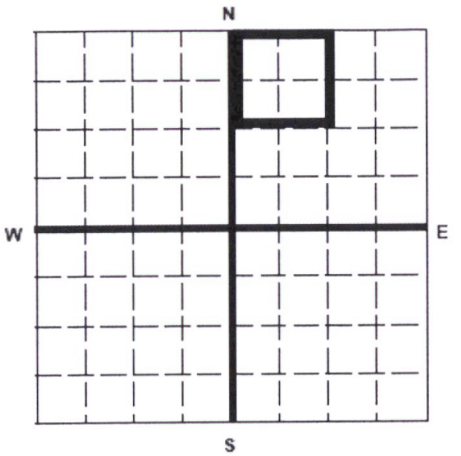
EPA

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee
Petroglyph Operating Company, Inc. 2258
P.O. Box 7608
Boise, Idaho 83709

Name and Address of Surface Owner
Ute Indian Tribe
P.O. Box 70
Ft. Duchesne, Utah, 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT20736-07114

Surface Location Description
___ 1/4 of ___ 1/4 of NW 1/4 of NE 1/4 of Section 20 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 404 ft. frm (N/S) N Line of quarter section
and 1539 ft. from (E/W) E Line of quarter section.

WELL ACTIVITY
- [ ] Brine Disposal
- [X] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [X] Area

Number of Wells 111

U2 Entered
Date 4/4/17
Initial JB

Lease Name Ute Indian Tribe CBI
Well Number UTE TRIBAL 20-02

GREEN BLUE
TAE 2

MONTH	YEAR	INJECTION PRESSURE AVERAGE PSIG	INJECTION PRESSURE MAXIMUM PSIG	TOTAL VOLUME INJECTED BBL	TOTAL VOLUME INJECTED MCF	TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MINIMUM PSIG	TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MAXIMUM PSIG
January	16	1522	1543	1419		0	0
February	16	1564	1580	1533		0	0
March	16	1551	1592	1596		0	0
April	16	1512	1583	1480		0	0
May	16	1523	1608	1566		0	0
June	16	1569	1584	1651		0	0
July	16	1490	1501	1444		0	0
August	16	1477	1534	1508		0	0
September	16	1507	1539	1623		0	0
October	16	1508	1532	1847		0	0
November	16	1505	1603	1394		0	0
December	16	1575	1611	1171		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor	[signature]	03/21/2017

EPA Form 7520-11 (Rev. 12-11)

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 20-02 INJ, TT, DUCHESNE**	Lab Tech:	**Kaitlyn Natelli**
Sample Point:	**Well Head**		
Sample Date:	**1/6/2017**		
Sample ID:	**WA-345302**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics

Test Date:	1/25/2017
System Temperature 1 (°F):	300
System Pressure 1 (psig):	2000
System Temperature 2 (°F):	130
System Pressure 2 (psig):	50
Calculated Density (g/ml):	0.9984
pH:	6.90
Calculated TDS (mg/L):	1460.33
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	30.00
H_2S in Gas (%):	
H2S in Water (mg/L):	5.00
Tot. SuspendedSolids(mg/L):	
Corrosivity(LanglierSat.Indx)	0.00
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	0.74	Chloride (Cl):	157.00
Potassium (K):	4.12	Sulfate (SO_4):	90.00
Magnesium (Mg):	25.53	Bicarbonate (HCO_3):	732.00
Calcium (Ca):	54.43	Carbonate (CO_3):	
Strontium (Sr):	1.50	Hydroxide(HO):	
Barium (Ba):	2.23	Acetic Acid (CH_3COO)	
Iron (Fe):	289.36	Propionic Acid (C_2H_5COO)	
Zinc (Zn):	94.69	Butanoic Acid (C_3H_7COO)	
Lead (Pb):	0.00	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Ammonia NH_3:		Fluoride (F):	
Manganese (Mn):	0.49	Bromine (Br):	
Aluminum (Al):	0.64	Silica (SiO_2):	8.24
Lithium (Li):	2.61	Calcium Carbonate ($CaCO_3$):	
Boron (B):	0.63	Phosphates (PO_4):	10.42
Silicon (Si):	3.85	Oxygen (O_2):	

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
130.00	50.00	0.17	9.88	1.06	1.21	3.69	4.68	2.94	195.87	0.00	0.00	0.00	0.00	0.00	0.00	10.88	5.19
149.00	267.00	0.26	14.14	0.96	1.18	3.68	4.68	3.07	198.10	0.00	0.00	0.00	0.00	0.00	0.00	10.66	5.19
168.00	483.00	0.39	20.13	0.89	1.16	3.74	4.68	3.22	200.65	0.00	0.00	0.00	0.00	0.00	0.00	10.52	5.19
187.00	700.00	0.53	25.75	0.84	1.14	3.82	4.68	3.38	202.77	0.00	0.00	0.00	0.00	0.00	0.00	10.41	5.19
206.00	917.00	0.68	30.79	0.81	1.12	3.91	4.68	3.53	204.50	0.00	0.00	0.00	0.00	0.00	0.00	10.32	5.19
224.00	1133.00	0.84	35.10	0.79	1.11	4.03	4.68	3.68	205.89	0.00	0.00	0.00	0.00	0.00	0.00	10.25	5.19
243.00	1350.00	1.00	38.61	0.79	1.11	4.16	4.68	3.82	206.98	0.00	0.00	0.00	0.00	0.00	0.00	10.20	5.19
262.00	1567.00	1.18	41.33	0.80	1.11	4.30	4.68	3.97	207.82	0.00	0.00	0.00	0.00	0.00	0.00	10.17	5.19
281.00	1783.00	1.36	43.35	0.81	1.12	4.45	4.68	4.11	208.46	0.00	0.00	0.00	0.00	0.00	0.00	10.16	5.19
300.00	2000.00	1.55	44.78	0.84	1.14	4.62	4.68	4.24	208.94	0.00	0.00	0.00	0.00	0.00	0.00	10.15	5.19

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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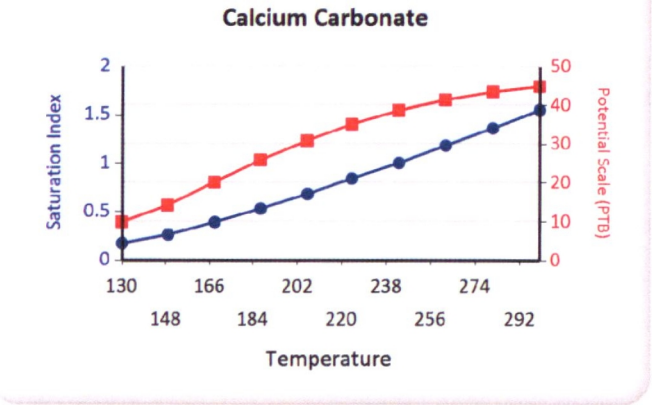
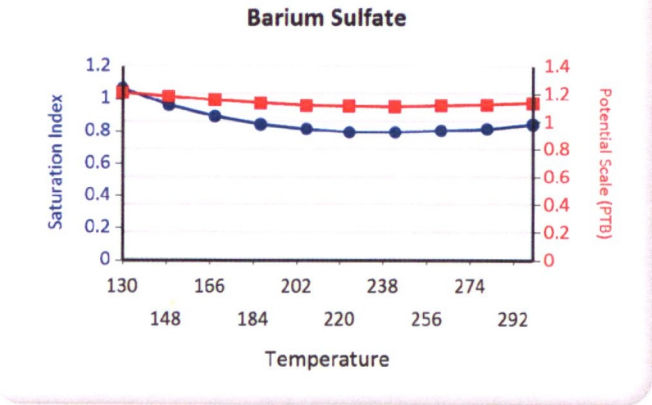
Water Analysis Report

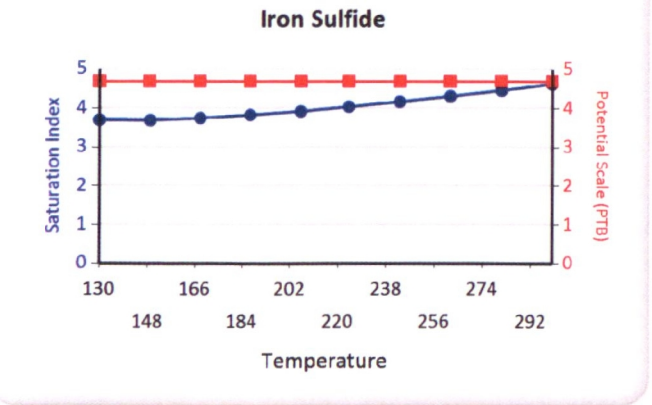
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
130.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	2.23	62.77	0.00	0.00	0.00	0.00	0.00	0.00	6.39	19.08
149.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46	63.14	0.00	0.00	0.00	0.00	0.00	0.00	6.99	19.10
168.00	483.00	0.00	0.00	0.00	0.00	0.00	0.00	2.71	63.37	0.00	0.00	0.00	0.00	0.00	0.00	7.83	19.11
187.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	2.95	63.50	0.00	0.00	0.00	0.00	0.00	0.00	8.69	19.11
206.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17	63.56	0.00	0.00	0.00	0.00	0.00	0.00	9.57	19.12
224.00	1133.00	0.00	0.00	0.00	0.00	0.00	0.00	3.38	63.60	0.00	0.00	0.60	5.54	0.00	0.00	10.47	19.12
243.00	1350.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	63.63	0.00	0.00	1.68	13.25	0.00	0.00	11.37	19.12
262.00	1567.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75	63.64	0.00	0.00	2.74	17.94	0.58	4.26	12.28	19.12
281.00	1783.00	0.00	0.00	0.00	0.00	0.00	0.00	3.92	63.65	0.00	0.00	3.80	20.16	1.23	7.44	13.19	19.12
300.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	4.07	63.65	0.00	0.00	4.84	20.98	1.88	9.26	14.09	19.12

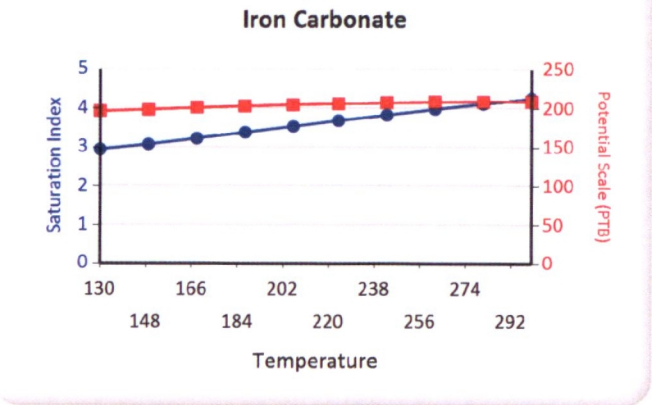
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Fe Silicate

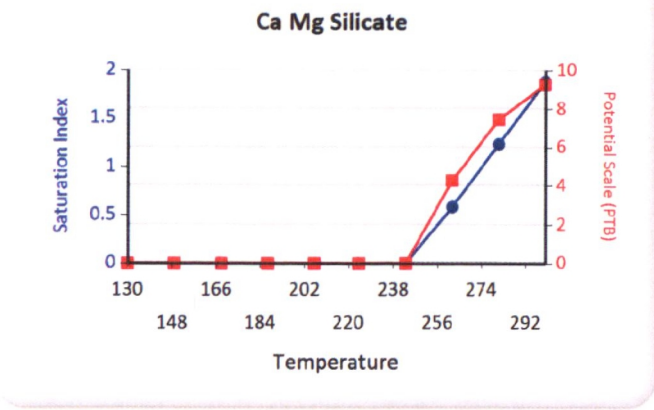
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

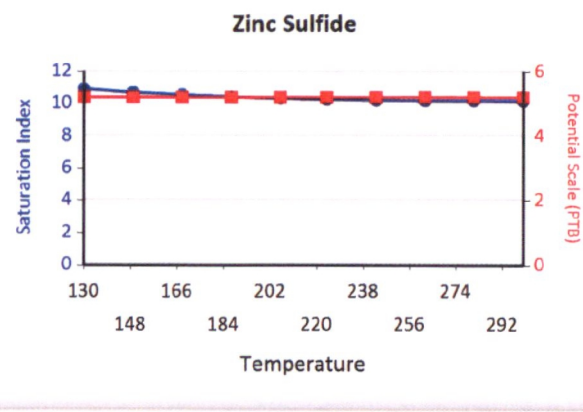


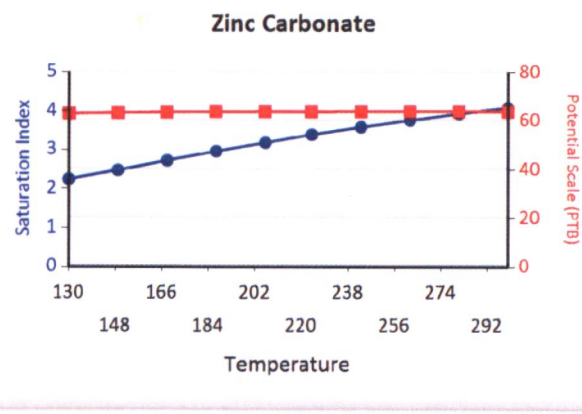


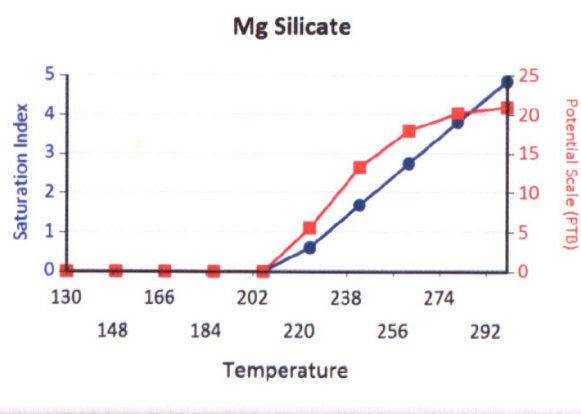


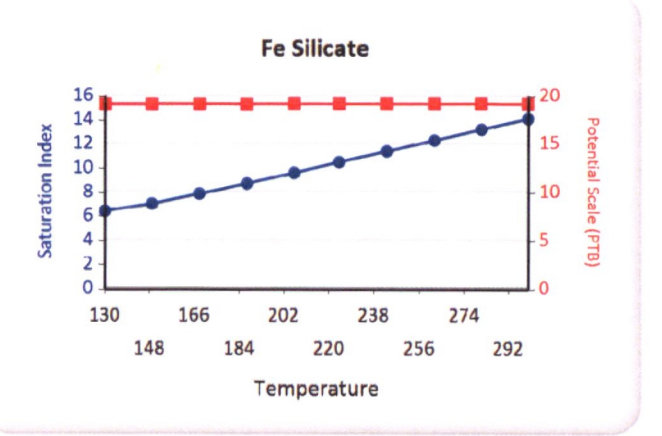



Ca Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
130 148 166 184 202 220 238 256 274 292


Zinc Sulfide
Saturation Index
Potential Scale (PTB)
Temperature
130 148 166 184 202 220 238 256 274 292


Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
130 148 166 184 202 220 238 256 274 292


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
130 148 166 184 202 220 238 256 274 292


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
16
14
12
10
8
6
4
2
0
20
15
10
5
0
130
148
166
184
202
220
238
256
274
292

UT20736-07114

Mechanical Integrity Test
Tubing/Casing Annulus Pressure Test

U.S. Environmental Protection Agency
Underground Injection Control Program
1595 Wynkoop Street, Denver, CO 80202

EPA Witness: _____ Date: 08 / 03 / 17
Test conducted by: TROY REHRER
Others present: ERIC NORTON

Well Name: UTE TRIBAL 20-02 Type: (ER) SWD **Status:** (AC) TA UC
Field: PETROGLYPH (ANTELOPE CREEK)
Location: NWNE Sec: 20 T 5 N/(S) R 3 E/(W) County: DUCHESNE State: UT
Operator: CRESCENT POINT ENERGY
Last MIT: ____/____/____ **Maximum Allowable Pressure:** _____ **PSIG**

Regularly scheduled test? [✓] Yes [ ] No
Initial test for permit? [ ] Yes [ ] No
Test after well rework? [ ] Yes [ ] No

Well injecting during test? If Yes, rate: 89 **bpd**
Pre-test annulus pressure: 0 **psig**

MIT DATA TABLE	*Test #1*	*Test #2*	*Test #3*
TUBING		***PRESSURE RECORD***	
Initial Pressure	1550 psig	psig	psig
End of test pressure	1550 psig	psig	psig
CASING / TUBING ANNULUS		***PRESSURE RECORD***	
0 minutes	1,000 psig	psig	psig
5 minutes	1,000 psig	psig	psig
10 minutes	1,000 psig	psig	psig
15 minutes	1,000 psig	psig	psig
20 minutes	1,000 psig	psig	psig
25 minutes	1,000 psig	psig	psig
30 minutes	1,000 psig	psig	psig
_____ *minutes*	psig	psig	psig
_____ *minutes*	psig	psig	psig
RESULT	[✓] *Pass* [ ]*Fail*	[ ] *Pass* [ ]*Fail*	[ ] *Pass* [ ]*Fail*

Does the annulus pressure build back up after the test ? If Yes, _____ psig.

GREEN	BLUE	CBI
	2	

U2 Entered
Date 9-13-17
Initial NW

MECHANICAL INTEGRITY PRESSURE TEST

Additional comments for mechanical integrity pressure test, such as volume of fluid added to annulus and bled back at end of test, reason for failing test (casing head leak, tubing leak, other), etc.:

LOAD ANNULUS W/ < 1/4 BBL TREATED FLUID

Signature of Witness:_____

OFFICE USE ONLY - COMPLIANCE FOLLOWUP

Staff _____ Date: ____/____/

Do you agree with the reported test results? [ ] YES [ ] NO

If not, why?

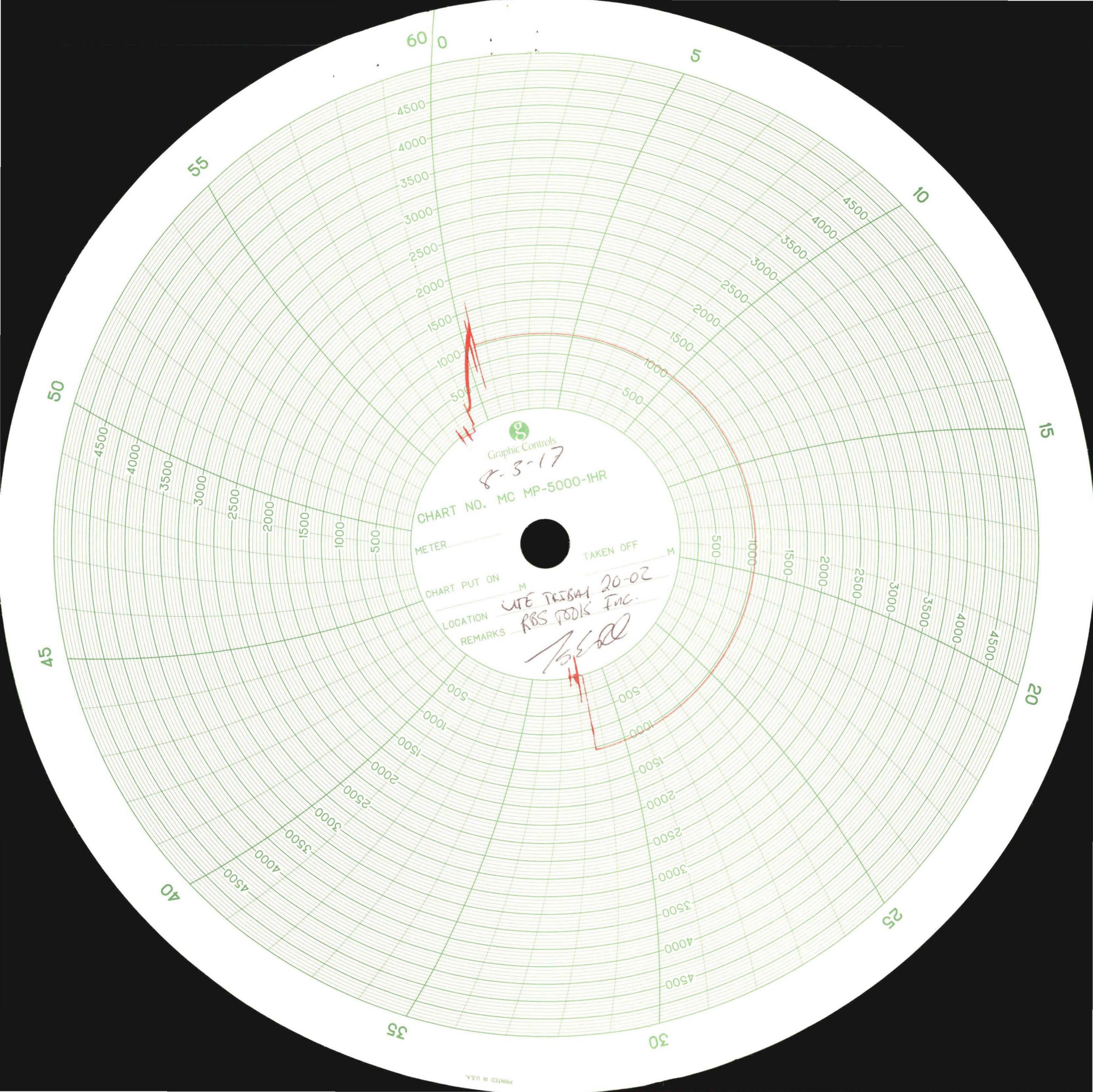
Possible violation identified? [ ] YES [ ] NO

If YES, what

If YES - followup initiated? [ ] YES

[ ] NO - why not?

[ ] Data Entry [ ] Compliance Staff [ ] 2nd Data Entry [ ] Hardcopy Filing


Graphic Controls
8-3-17
CHART NO. MC MP-5000-1HR
METER
TAKEN OFF
CHART PUT ON
LOCATION UTE TRIBAL 20-02
REMARKS RBS TOOLS INC.
PRINTED IN U.S.A.

main / 720.880.3610
fax / 303.292.1562
toll free / 1.888.693.0020

Crescent Point

555 17th Street, Suite 1800
Denver, Colorado
USA 80202

RECEIVED
AUG 21 2017
Office of Enforcement, Compliance
and Environmental Justice (Water)

To Nathan Wiser or Whom It May Concern,

Please find completed Mechanical Integrity Tests and R8 forms for wells that are part of the Antelope Creek field. All tests passed pressure testing with greater than 200 psi differential across tubing/casing with the exception of the Ute Tribal 13-10D which lost ~150 psi over the 30 minute test. Crescent Point has flagged this well as a priority issue and will be sending a workover rig to identify and repair the failure within the next 30 days.

With Regards,

Aaron Miller
Operations Engineer

86 North 1500 East
Ballard City, UT 84066
p. 435.722.0025
c. 435.823.0668

Crescent Point

OMB No. 2040-0042 Approval Expires 11/30/2014

EPA

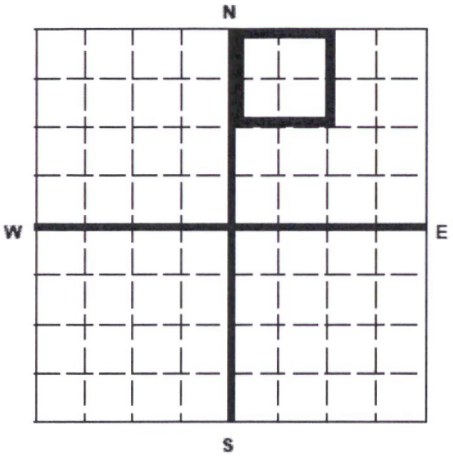
United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee
Petroglyph Operating Company, Inc. 2258
P.O. Box 7608
Boise, Idaho 83709

Name and Address of Surface Owner
Ute Indian Tribe
P.O. Box 70
Ft. Duchesne, Utah, 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-~~04434~~ 07114

Surface Location Description
___ 1/4 of ___ 1/4 of NW 1/4 of NE 1/4 of Section 20 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 404 ft. frm (N/S) N Line of quarter section
and 1539 ft. from (E/W) E Line of quarter section.

U2 Entered
Date 3/2/16
Initial JB

WELL ACTIVITY	TYPE OF PERMIT
[ ] Brine Disposal	[ ] Individual
[X] Enhanced Recovery	[X] Area
[ ] Hydrocarbon Storage	Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 20-02

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	15	1492	1530	1421		0	0
February	15	1520	1581	1014		0	0
March	15	1550	1610	1210		0	0
April	15	1534	1585	1121		0	0
May	15	1568	1589	1300		0	0
June	15	1572	1588	1341		0	0
July	15	1582	1597	1501		0	0
August	15	1546	1584	1211		0	0
September	15	1454	1588	829		0	0
October	15	1444	1527	1056		0	0
November	15	1494	1519	1218		0	0
December	15	1547	1579	1460		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		02/08/2016

EPA Form 7520-11 (Rev. 12-11)

TAB	GREEN	BLUE	CBI
		2	

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

multi-chem®
A HALLIBURTON SERVICE

Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 20-02 INJ, DUCHESNE**	Lab Tech:	**Michele Pike**
Sample Point:	**Well Head**		
Sample Date:	**1/6/2016**		
Sample ID:	**WA-327633**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics

Test Date:	1/14/2016
System Temperature 1 (°F):	60
System Pressure 1 (psig):	2000
System Temperature 2 (°F):	180
System Pressure 2 (psig):	50
Calculated Density (g/ml):	1.0018
pH:	7.70
Calculated TDS (mg/L):	6418.26
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	100.00
H_2S in Gas (%):	
H2S in Water (mg/L):	0.00
Tot. SuspendedSolids(mg/L):	
Corrosivity(LanglierSat.Indx)	0.00
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	2047.39	Chloride (Cl):	3000.00
Potassium (K):	2.88	Sulfate (SO_4):	470.00
Magnesium (Mg):	78.30	Bicarbonate (HCO_3):	610.00
Calcium (Ca):	169.36	Carbonate (CO_3):	
Strontium (Sr):	5.12	Acetic Acid (CH_3COO)	
Barium (Ba):	1.38	Propionic Acid (C_2H_5COO)	
Iron (Fe):	4.20	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	2.70	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.49	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.06	Silica (SiO_2):	26.38
Aluminum (Al):	0.04	Calcium Carbonate ($CaCO_3$):	
Lithium (Li):	0.90	Phosphates (PO_4):	3.96
Boron (B):	0.35	Oxygen (O_2):	
Silicon (Si):	12.33		

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180.00	50.00	1.39	67.27	0.97	0.73	0.00	0.00	1.87	3.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
167.00	267.00	1.24	58.01	0.99	0.74	0.00	0.00	1.70	2.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153.00	483.00	1.15	52.12	1.02	0.74	0.00	0.00	1.58	2.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	700.00	1.05	46.52	1.06	0.75	0.00	0.00	1.46	2.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
127.00	917.00	0.97	41.29	1.11	0.76	0.00	0.00	1.34	2.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113.00	1133.00	0.88	36.48	1.17	0.77	0.00	0.00	1.22	2.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	1350.00	0.81	32.12	1.25	0.77	0.00	0.00	1.10	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87.00	1567.00	0.74	28.23	1.34	0.79	0.00	0.00	0.98	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.00	1783.00	0.67	24.83	1.45	0.79	0.00	0.00	0.86	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	2000.00	0.61	21.89	1.57	0.80	0.00	0.00	0.75	2.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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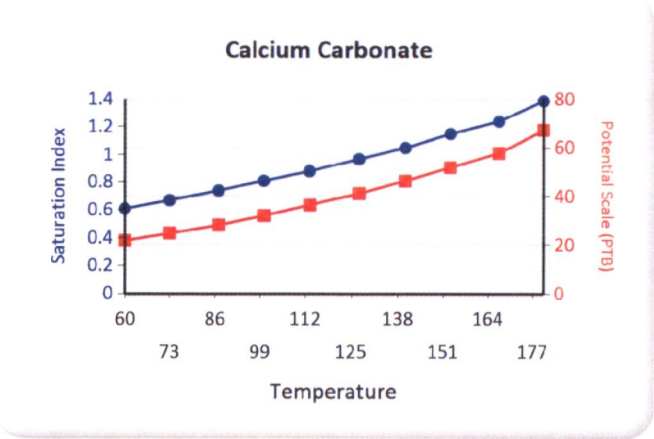
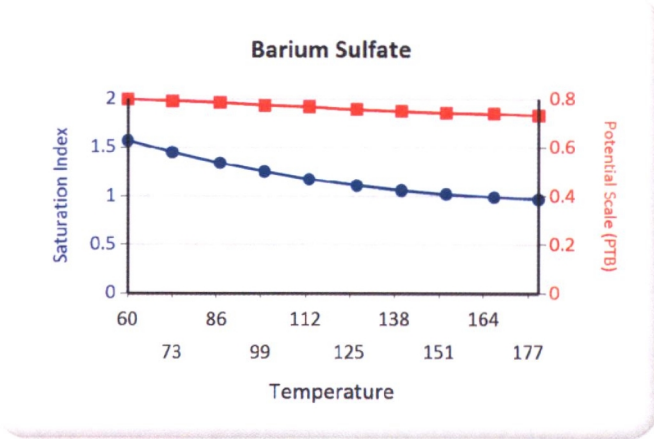
Water Analysis Report

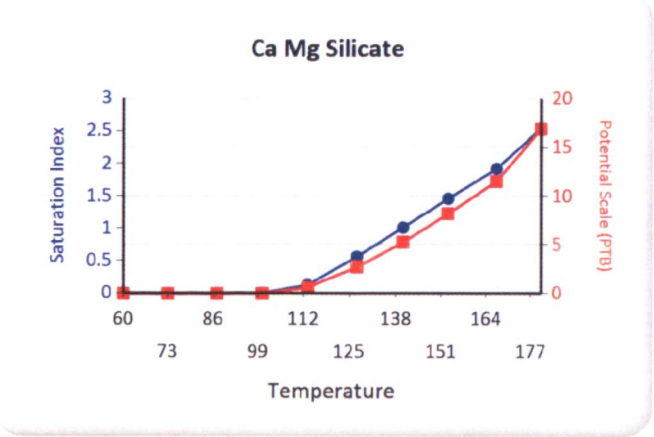
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69	1.78	0.00	0.00	4.78	33.36	2.54	16.91	8.01	3.26
167.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	1.75	0.00	0.00	3.78	23.17	1.92	11.54	7.16	3.24
153.00	483.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	1.72	0.00	0.00	3.02	16.85	1.46	8.19	6.57	3.23
140.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	1.66	0.00	0.00	2.26	11.40	1.01	5.25	5.99	3.21
127.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	1.58	0.00	0.00	1.50	6.83	0.56	2.71	5.41	3.17
113.00	1133.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	1.43	0.00	0.00	0.74	3.06	0.12	0.56	4.84	3.12
100.00	1350.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	1.19	0.00	0.00	0.00	0.00	0.00	0.00	4.29	3.04
87.00	1567.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.78	0.00	0.00	0.00	0.00	0.00	0.00	3.74	2.92
73.00	1783.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	3.21	2.76
60.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.69	2.54

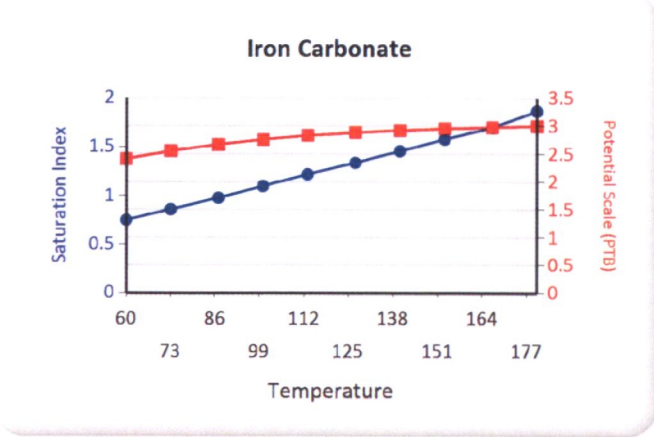
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

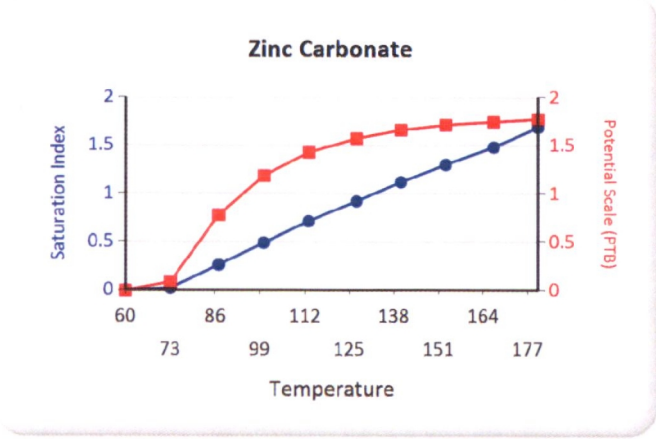
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Fe Silicate

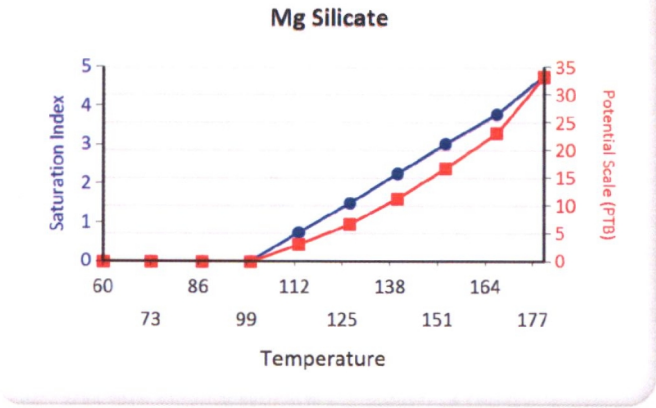


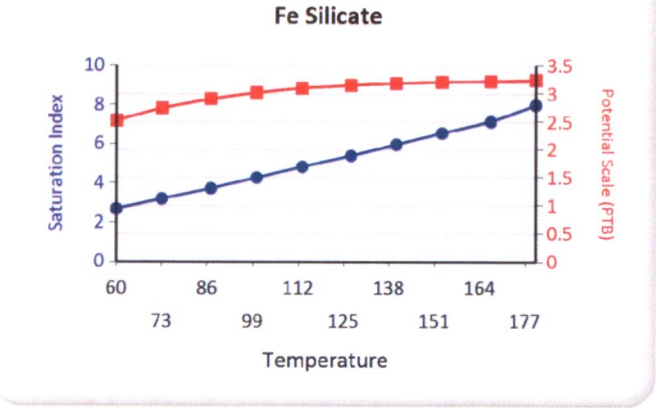







Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
60
86
112
138
164
73
99
125
151
177


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
60
86
112
138
164
73
99
125
151
177


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
60
86
112
138
164
73
99
125
151
177

OMB No. 2040-0042 Approval Expires 12/31/2011

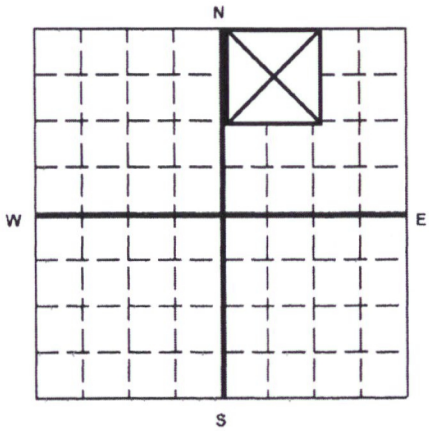
United States Environmental Protection Agency
Washington, DC 20460

EPA

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee	Name and Address of Surface Owner
Petroglyph Operating Company, Inc. 2258 P.O. Box 7608 Boise, Idaho 83709	Ute Indian Tribe P.O. Box 70 Ft. Duchesne, Utah 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT20736-07114

Surface Location Description

____ 1/4 of ____ 1/4 of NW 1/4 of NE 1/4 of Section 20 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 404 ft. frm (N/S) N Line of quarter section and 1539 ft. from (E/W) E Line of quarter section.

WELL ACTIVITY
- [ ] Brine Disposal
- [X] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [X] Area

Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 20-02

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING -- CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	14	1573	1612	1554		0	0
February	14	1593	1606	1364		0	0
March	14	1577	1599	1526		0	0
April	14	1587	1604	1449		0	0
May	14	1572	1573	1510		0	0
June	14	1556	1579	1405		0	0
July	14	1448	1586	996		0	0
August	14	1542	1568	1073		0	0
September	14	1483	1570	1011		0	0
October	14	1521	1531	1256		0	0
November	14	1499	1556	1249		0	0
December	14	1576	1592	1532		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		2/10/2015

EPA Form 7520-11 (Rev. 12-08)

U2 Entered
Date 3/30/15
Initial GW

	GREEN	BLUE	CBI
TAB		2	

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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A HALLIBURTON SERVICE

Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 20-02 INJ, DUCHESNE**	Lab Tech:	**Gary Winegar**
Sample Point:	**WELLHEAD**		
Sample Date:	**1/7/2015**		
Sample ID:	**WA-297511**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	1/14/2015
System Temperature 1 (°F):	160
System Pressure 1 (psig):	1300
System Temperature 2 (°F):	80
System Pressure 2 (psig):	15
Calculated Density (g/ml):	1.0035
pH:	8.30
Calculated TDS (mg/L):	9522.19
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	5.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	2393.00	Chloride (Cl):	4000.00
Potassium (K):	39.96	Sulfate (SO_4):	285.00
Magnesium (Mg):	28.56	Bicarbonate (HCO_3):	2684.00
Calcium (Ca):	46.73	Carbonate (CO_3):	
Strontium (Sr):	4.94	Acetic Acid (CH_3COO)	
Barium (Ba):	6.44	Propionic Acid (C_2H_5COO)	
Iron (Fe):	6.42	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	5.23	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.08	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.09	Silica (SiO_2):	21.74

Notes:
B=6.08 Al=.06 Li=1.14

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	1.63	38.74	1.96	3.79	3.75	3.54	2.72	4.66	0.00	0.00	0.00	0.00	0.00	0.00	11.67	2.73
88.00	157.00	1.62	38.59	1.87	3.79	3.66	3.54	2.75	4.66	0.00	0.00	0.00	0.00	0.00	0.00	11.48	2.73
97.00	300.00	1.64	38.71	1.79	3.77	3.60	3.54	2.80	4.66	0.00	0.00	0.00	0.00	0.00	0.00	11.32	2.73
106.00	443.00	1.66	38.83	1.72	3.76	3.55	3.54	2.84	4.66	0.00	0.00	0.00	0.00	0.00	0.00	11.16	2.73
115.00	585.00	1.68	38.96	1.66	3.75	3.51	3.54	2.89	4.66	0.00	0.00	0.00	0.00	0.00	0.00	11.02	2.73
124.00	728.00	1.70	39.09	1.60	3.74	3.48	3.54	2.93	4.66	0.00	0.00	0.00	0.00	0.00	0.00	10.89	2.73
133.00	871.00	1.72	39.22	1.54	3.73	3.45	3.54	2.98	4.66	0.00	0.00	0.00	0.00	0.00	0.00	10.76	2.73
142.00	1014.00	1.75	39.34	1.50	3.71	3.43	3.54	3.02	4.67	0.00	0.00	0.00	0.00	0.00	0.00	10.65	2.73
151.00	1157.00	1.78	39.47	1.45	3.70	3.42	3.54	3.06	4.67	0.00	0.00	0.00	0.00	0.00	0.00	10.54	2.73
160.00	1300.00	1.81	39.59	1.42	3.69	3.41	3.54	3.11	4.67	0.00	0.00	0.00	0.00	0.00	0.00	10.44	2.73

		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80	3.46	12.13	0.03	1.16	8.96	0.24	2.09	8.25	4.98
88.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90	3.47	11.82	0.03	1.41	10.30	0.35	2.81	8.33	4.98
97.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	2.02	3.48	11.55	0.03	1.79	12.74	0.55	4.15	8.55	4.98
106.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	2.14	3.49	11.30	0.03	2.18	15.08	0.76	5.44	8.78	4.98
115.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	3.49	11.06	0.03	2.57	17.28	0.98	6.67	9.02	4.99
124.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	2.36	3.50	10.84	0.03	2.97	19.30	1.19	7.81	9.27	4.99
133.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46	3.51	10.63	0.03	3.38	21.08	1.42	8.84	9.52	4.99
142.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	2.56	3.51	10.43	0.03	3.78	22.58	1.64	9.76	9.79	4.99
151.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	2.66	3.51	10.24	0.03	4.19	23.77	1.87	10.56	10.06	4.99
160.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	2.75	3.51	10.06	0.03	4.60	24.66	2.10	11.24	10.34	4.99

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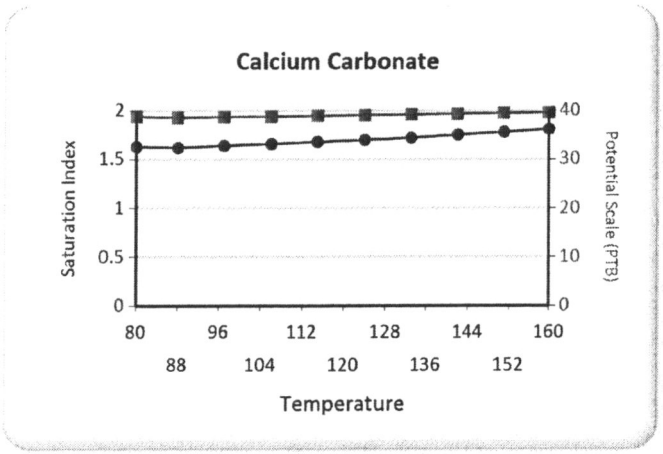
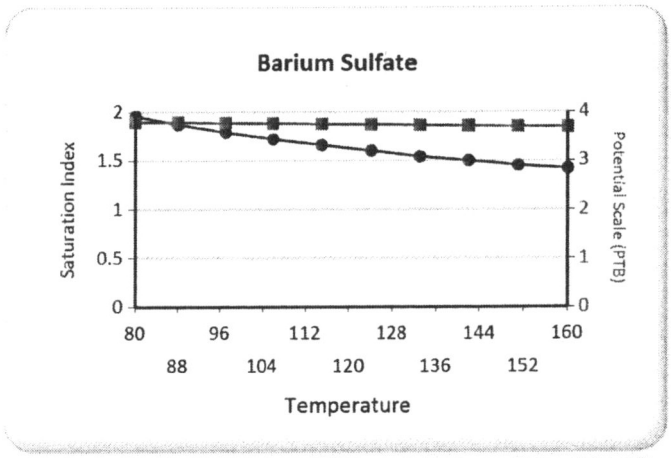
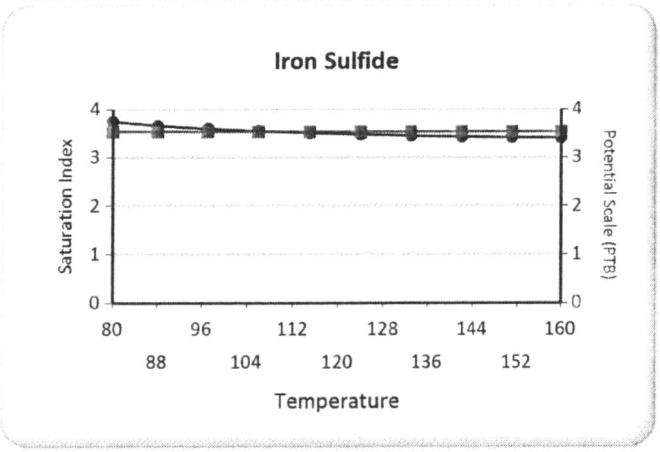
Water Analysis Report

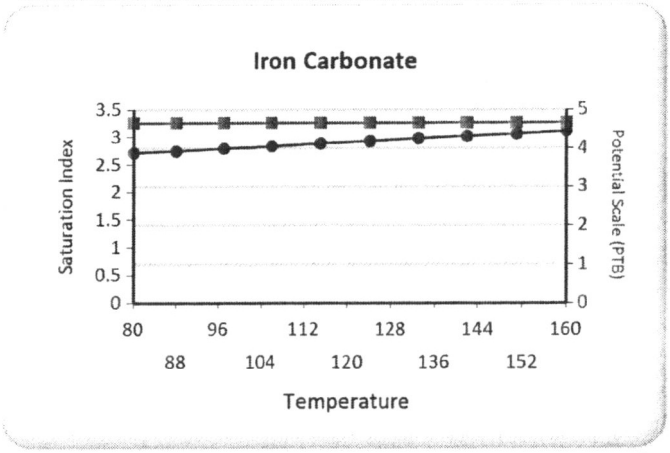
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

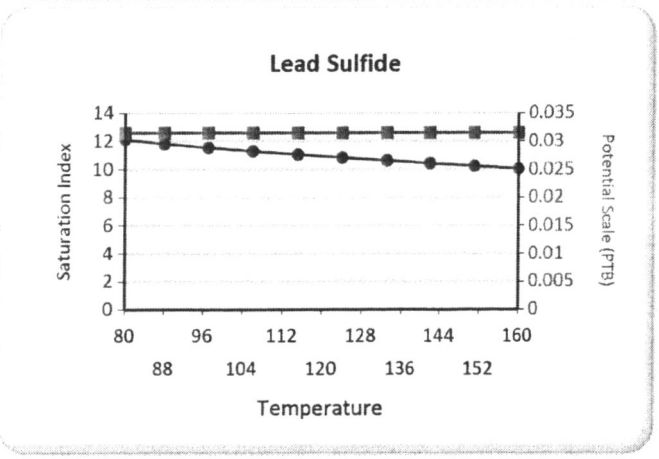
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

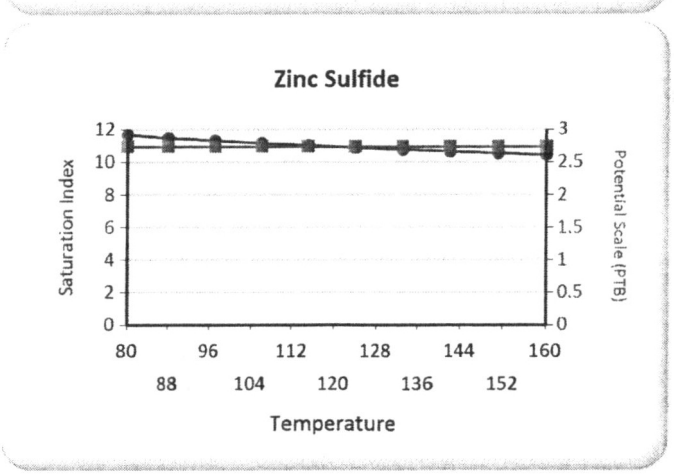


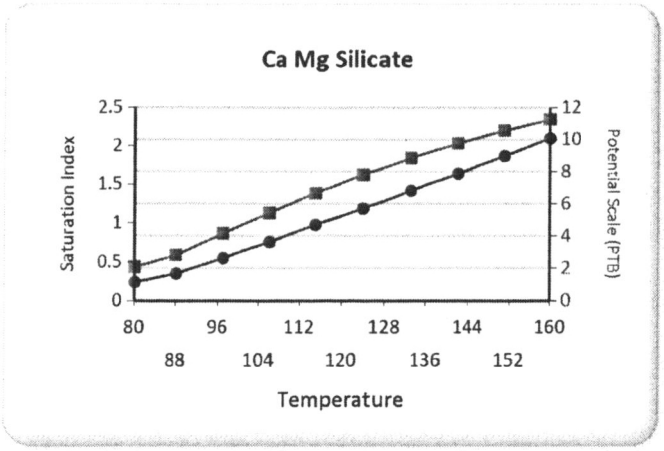


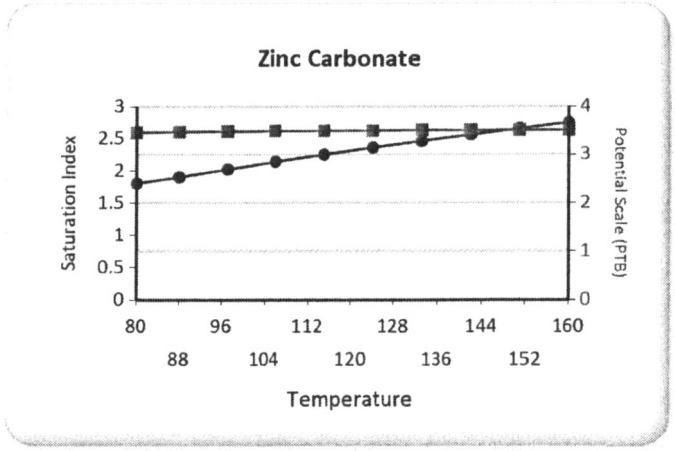


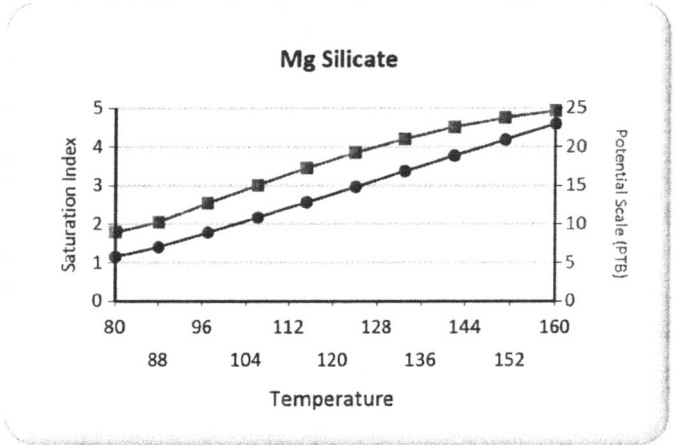







Ca Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
80 96 112 128 144 160
88 104 120 136 152


Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
80 96 112 128 144 160
88 104 120 136 152


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
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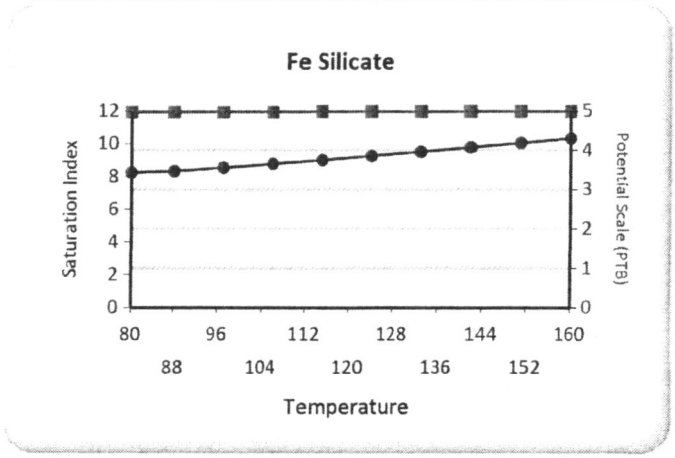
88 104 120 136 152


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
80 96 112 128 144 160
88 104 120 136 152

OMB No. 2040-0042 Approval Expires 12/31/2011

EPA

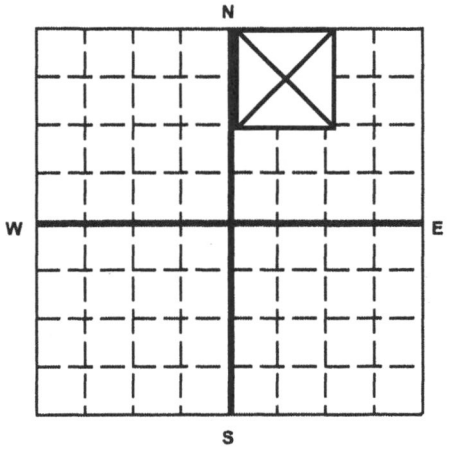
United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee
Petroglyph Operating Company, Inc. 2258
P.O. Box 7608
Boise, Idaho 83709

Name and Address of Surface Owner
Ute Indian Tribe
P.O. Box 70
Ft. Duchesne, Utah 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT20736-07114

Surface Location Description
___ 1/4 of ___ 1/4 of NW 1/4 of NE 1/4 of Section 20 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 404 ft. frm (N/S) N Line of quarter section
and 1539 ft. from (E/W) E Line of quarter section.

WELL ACTIVITY
- [ ] Brine Disposal
- [x] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [x] Area

Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 20-02

MONTH	YEAR	INJECTION PRESSURE AVERAGE PSIG	INJECTION PRESSURE MAXIMUM PSIG	TOTAL VOLUME INJECTED BBL	TOTAL VOLUME INJECTED MCF	TUBING -- CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MINIMUM PSIG	TUBING -- CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MAXIMUM PSIG
January	13	1545	1592	1478		0	0
February	13	1574	1607	1652		0	0
March	13	1540	1572	1622		0	0
April	13	1572	1590	1643		0	0
May	13	1558	1588	1611		0	0
June	13	1524	1585	1257		0	0
July	13	1488	1606	1025		0	0
August	13	1548	1591	1303		0	0
September	13	1520	1612	1166		0	0
October	13	1538	1597	1499		0	0
November	13	1023	1591	1140		0	0
December	13	1397	1615	1818		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor	Chad Stevenson	2/11/2014

EPA Form 7520-11 (Rev. 12-08)

TAB GREEN BLUE CBI
2

U2 Entered
Date 3/20/14
Initial DS

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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Units of Measurement: **Standard**

Water Analysis Report

Production Company: **PETROGLYPH ENERGY INC**
Well Name: **UTE TRIBAL 20-02 INJ**
Sample Point: **Wellhead**
Sample Date: **1/8/2014**
Sample ID: **WA-263035**

Sales Rep: **James Patry**
Lab Tech: **Gary Winegar**

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	1/15/2014
System Temperature 1 (°F):	180
System Pressure 1 (psig):	1300
System Temperature 2 (°F):	60
System Pressure 2 (psig):	15
Calculated Density (g/ml):	0.999
pH:	7.50
Calculated TDS (mg/L):	2907.12
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	0.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	731.88	Chloride (Cl):	1000.00
Potassium (K):	5.80	Sulfate (SO_4):	291.00
Magnesium (Mg):	62.00	Bicarbonate (HCO_3):	634.40
Calcium (Ca):	135.00	Carbonate (CO_3):	
Strontium (Sr):	3.70	Acetic Acid (CH_3COO)	
Barium (Ba):	1.20	Propionic Acid (C_2H_5COO)	
Iron (Fe):	20.00	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.39	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.10	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.25	Silica (SiO_2):	21.40

Notes:
B=.72 Al=.09 Li=.07

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum $CaSO_4 \cdot 2H_2O$		Celestite $SrSO_4$		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
60.00	14.00	0.68	33.07	1.76	0.70	0.00	0.00	1.59	13.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.00	157.00	0.67	31.90	1.62	0.70	0.00	0.00	1.63	13.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86.00	300.00	0.72	34.66	1.49	0.69	0.00	0.00	1.73	14.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	443.00	0.77	37.79	1.38	0.68	0.00	0.00	1.83	14.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113.00	585.00	0.83	41.26	1.28	0.68	0.00	0.00	1.93	14.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126.00	728.00	0.90	45.03	1.20	0.67	0.00	0.00	2.04	14.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	871.00	0.97	49.07	1.13	0.66	0.00	0.00	2.14	14.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153.00	1014.00	1.05	53.32	1.08	0.66	0.00	0.00	2.24	14.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166.00	1157.00	1.13	57.74	1.03	0.65	0.00	0.00	2.34	14.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.00	1300.00	1.22	62.29	0.99	0.64	0.00	0.00	2.44	14.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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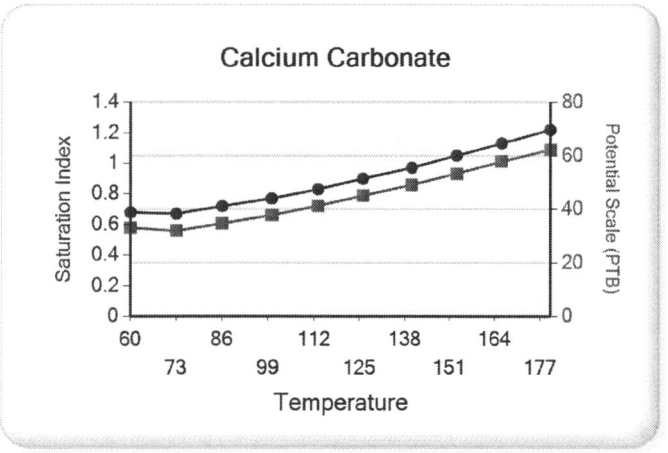
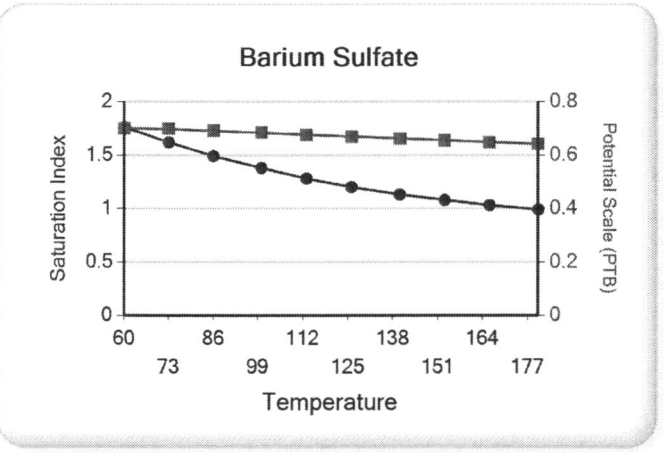
Water Analysis Report

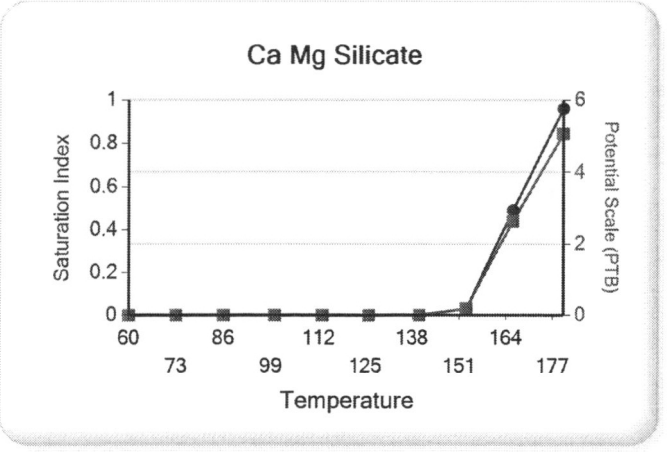
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
60.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.82	11.25
73.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.86	11.32
86.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.32	12.21
100.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.82	13.01
113.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.36	13.70
126.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.06	0.00	0.00	0.00	0.00	0.00	0.00	5.91	14.25
140.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.13	0.00	0.00	0.51	2.77	0.00	0.00	6.49	14.68
153.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.17	0.00	0.00	1.30	7.28	0.03	0.20	7.08	14.98
166.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.20	0.00	0.00	2.10	12.01	0.49	2.64	7.69	15.19
180.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.22	0.00	0.00	2.89	16.54	0.96	5.06	8.30	15.32

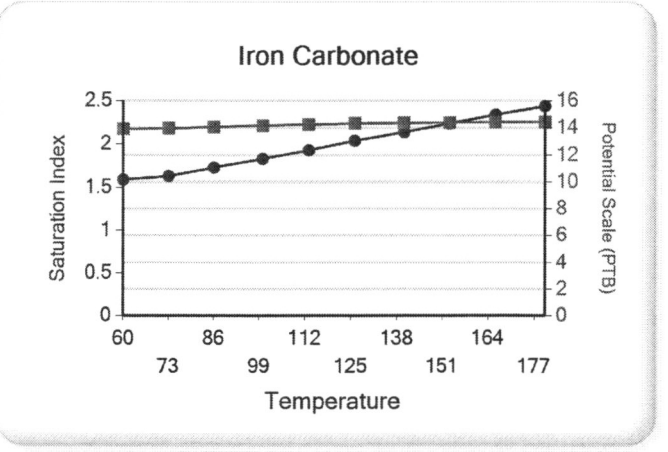
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Fe Silicate

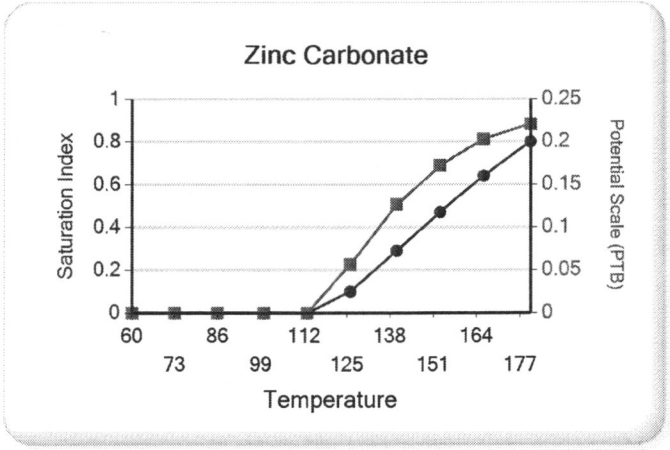
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

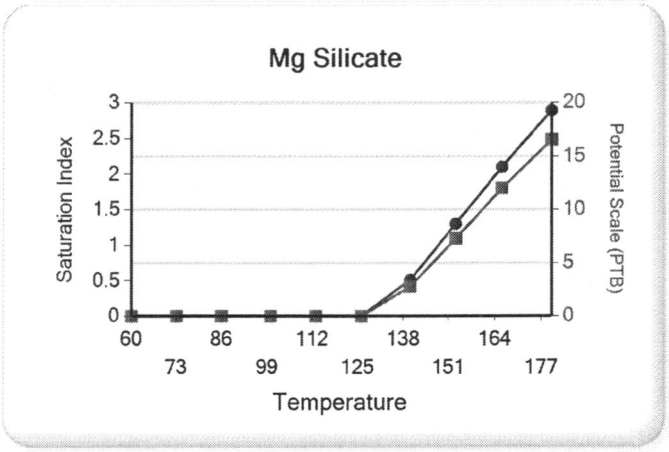


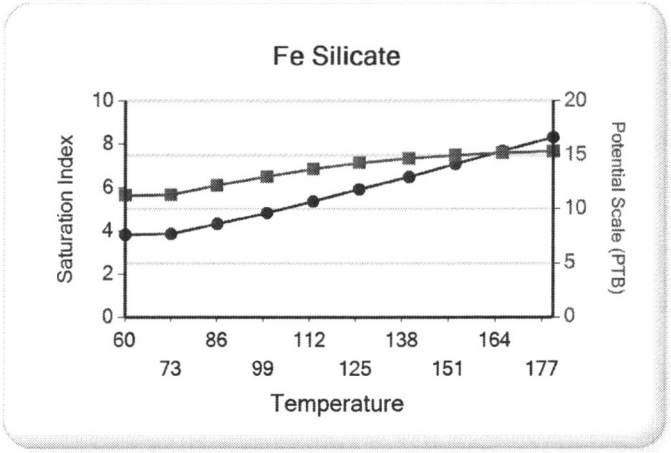







Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
1
0.8
0.6
0.4
0.2
0
0.25
0.2
0.15
0.1
0.05
0
60
73
86
99
112
125
138
151
164
177


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
3
2.5
2
1.5
1
0.5
0
20
15
10
5
0
60
73
86
99
112
125
138
151
164
177


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
10
8
6
4
2
0
20
15
10
5
0
60
73
86
99
112
125
138
151
164
177