

CHECKLIST for ADMINISTRATIVE INJECTION APPLICATIONS

Operator: APACHE CORP Well: SALT MOUNTAIN 25' No. 57

Contact: FRANCES BUYERS Title: ENG. TECH. Phone: 713-296-6361

DATE IN 4-14-97 RELEASE DATE 4-25-97 DATE OUT 5-4-97

Proposed Injection Application is for: ☐ WATERFLOOD ☐ Expansion ☐ Initial

Original Order: R- ☐ Secondary Recovery ☐ Pressure Maintenance

SENSITIVE AREAS

☒ SALT WATER DISPOSAL ☐ Commercial Well

☐ WIPP ☐ Capitan Reef ☐ Other _____

Data is complete for proposed well(s)? YES Additional Data Req'd _____

AREA of REVIEW WELLS

7 Total # of AOR

1 # of Plugged Wells

YES Tabulation Complete

YES Schematics of P & A's

YES Cement Tops Adequate

NO AOR Repair Required

INJECTION FORMATION

Injection Formation(s) DELAWARE

Source of Water or Injectate AREA PRODUCTION Compatible Analysis YES

PROOF of NOTICE

☒ Copy of Legal Notice

☒ Information Printed Correctly

☒ Correct Operators

☒ Copies of Certified Mail Receipts

☒ Objection Received

☒ Set to Hearing _____ Date

NOTES: _____

APPLICATION QUALIFIES FOR ADMINISTRATIVE APPROVAL? YES

COMMUNICATION WITH CONTACT PERSON:

1st Contact: ☐ Telephoned ☐ Letter _____ Date _____ Nature of Discussion _____

2nd Contact: ☐ Telephoned ☐ Letter _____ Date _____ Nature of Discussion _____

3rd Contact: ☐ Telephoned ☐ Letter _____ Date _____ Nature of Discussion _____

SWD

4/29/97

656

2000 POST OAK BOULEVARD / SUITE 100 / HOUSTON, TEXAS 77056-4400

CORPORATION

April 9, 1997

(713) 296-6000

Mr. Ben Stone
State of New Mexico
Energy and Minerals Department
P.O. Box 6429
Sante Fe, New Mexico 87605

**RE: Application to Convert to Salt Water Disposal
Salt Mountain 25 Federal Well No. 3Y
Brushy Draw Delaware Field
Eddy County, New Mexico**

Gentlemen:

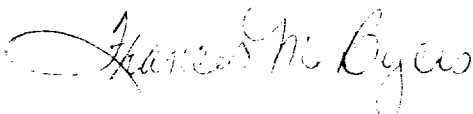
Apache Corporation proposes to initiate water disposal into the Delaware formation on our Salt Mountain 25 lease.

To support this request we have attached the following:

- 1) Forms C-108
- 2) Exhibits I - XIV
- 3) Map with surveys showing location of all wells of public record.
- 4) Table of wells showing dates and pertinent data.
- 5) Chemical and Water Analysis
- 6) Copies of the letters and certified receipts sent to the Surface Owner and Offset Operators.
- 7) Copy of the publication notice sent to the County Newspaper. **A signed Affidavit by the publisher, with a copy of the publication notice will be forward.**

Please contact Frances Byers at (713) 296-6361 with any questions regarding this application.

Sincerely,
APACHE CORPORATION



Frances M. Byers
Sr. Engineering Tech

Attachments

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

ADMINISTRATIVE APPLICATION COVERSHEET

THIS COVERSHEET IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS

Application Acronyms:

[NSP-Non-Standard Proration Unit] [NSL-Non-Standard Location]
 [DD-Directional Drilling] [SD-Simultaneous Dedication]
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Directional Drilling

☐ NSL ☐ NSP ☐ DD ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement

☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery

☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply[A] ☐ Working, Royalty or Overriding Royalty Interest Owners[B] ☒ Offset Operators, Leaseholders or Surface Owner[C] ☒ Application is One Which Requires Published Legal Notice[D] ☒ Notification and/or Concurrent Approval by BLM or SLO

U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or.[F] ☐ Waivers are Attached

[3] INFORMATION / DATA SUBMITTED IS COMPLETE - Statement of Understanding

I hereby certify that I, or personnel under my supervision, have read and complied with all applicable Rules and Regulations of the Oil Conservation Division. Further, I assert that the attached application for administrative approval is accurate and complete to the best of my knowledge and where applicable, verify that all interest (WI, RI, ORRI) is common. I further verify that all applicable API Numbers are included. I understand that any omission of data, information or notification is cause to have the application package returned with no action taken.

Note: Statement must be completed by an individual with supervisory capacity.

Frances Byers
 Print or Type Name

Frances Byers
 Signature

Sr. Eng. Tech
 Title

4-8-97
 Date

2000 POST OAK BOULEVARD / SUITE 100 / HOUSTON, TEXAS 77056-4400

CORPORATION

April 8, 1997

(713) 296-6000

Surface Owner

Mr. Gary Bowers
Bureau of Land Management
P. O. Box 1778
Carlsbad, New Mexico 88221

Offset Operator

J. C. Williamson
P. O. Box 16
Midland, Texas 79702

Curtis Hankamer Corporation
9039 Katy Freeway - Suite 430
Houston, Texas 77024

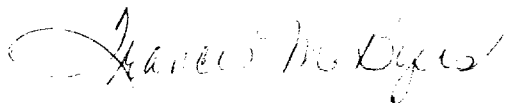
**RE: Application to Convert to Salt Water Disposal
Salt Mountain 25 Federal Well No. #3Y
Brushy Draw Delaware Field
Eddy County, Texas**

Gentlemen:

Attached is a copy of a completed C-108 form, along with a plat of Apache Corporation's lease, which we have filed with the State of New Mexico Energy and Minerals Department. The plat shows the referenced wells in relation to your offset operations.

Sincerely,

APACHE CORPORATION



Frances M. Byers
Sr. Engineering Technician

Attachments

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Gary Bauers
Bureau of Land Mgmt
P.O. Box 1778
Carlsbad, New Mexico 88221

4a. Article Number

P894 555 480

4b. Service Type

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ★U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

J.C. Williamson
P.O. Box 16
Midland, Tx 79702

4a. Article Number

P894 555 474

4b. Service Type

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ★U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

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- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Curtis Hankamer Corp.
9039 Katy Freeway - Suite 430
Houston, Tx 77024

4a. Article Number

P894 555 471

4b. Service Type

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ★U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE
USE TO AVOID PAYMENT
OF POSTAGE, \$300



Print your name, address and ZIP Code here

Frances Byers - Room 381
c/o Apache Corporation
2000 Post Oak Blvd - Ste 100
HOUSTON, TX 77056-4400

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE
USE TO AVOID PAYMENT
OF POSTAGE, \$300



Print your name, address and ZIP Code here

Frances Byers - Room 381
c/o Apache Corporation
2000 Post Oak Blvd - Ste 100
HOUSTON, TX 77056-4400

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE
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Print your name, address and ZIP Code here

Frances Byers Room 381
c/o Apache Corporation
2000 Post Oak Blvd - Ste 100
HOUSTON, TX 77056-4400



2000 POST OAK BOULEVARD / SUITE 100 / HOUSTON, TEXAS 77056-4400

[713] 296-6000

April 8, 1997

Attn: LEGAL NOTICE
Carlsbad Current Argas
P. O. Box 629
Carlsbad, New Mexico 88221- 1629

RE: LEGAL NOTICE
Eddy County, New Mexico
Delaware - Salt Mountain 25 Federal Well No. #3Y

Gentlemen:

Attached is a Legal Notice that we would like to have published. After publishing, please provide a fax and a paper copy of the Undersigned with an affidavit to:

Attn: Frances M. Byers
Apache Corporation
2000 Post Oak Blvd. - Suite 100
Houston, Tx 77056-4400
Fax No. (713) 296-6156

Please advise as to the cost of publishing and we will forward you a check to cover this cost. If you have any questions please feel free to call me at (713) 296-6361.

Sincerely,

APACHE CORPORATION

A handwritten signature in cursive script that reads "Frances M. Byers".

Frances M. Byers
Sr. Engineering Tech

Attachments

NOTICE OF APPLICATION FOR FLUID INJECTION WELL PERMIT

APACHE CORPORATION, 2000 POST OAK BLVD., SUITE 100, HOUSTON, TEXAS 77056-4400 has applied to the New Mexico Oil Conservation Division and to the Bureau of Land Management for a permit to inject fluid into a formation which is productive of oil and gas.

The applicant proposes to inject fluid into Delaware formation -Salt Mountain 25 Federal Well Number #3Y. The proposed injection well is located in Section 25, T26S, R29E, Unit Letter G. in 1d in Eddy County. Fluid will be injected into strata in the subsurface depth interval from 3172' to 5266' feet.

Requests for public hearing from persons who can show they are adversely affected, or requests for further information concerning any aspect of the application should be submitted in writing, within fifteen days of publication, to the State of New Mexico Energy and Minerals Department, P. O. Box 6429, Santa Fe, New Mexico 87605 (Telephone 505/827-7131).

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

POST OFFICE BOX 2018
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☐ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☐ no
- II. Operator: Apache Corporation
Address: 2000 Post Oak Blvd Rm 381 Houston TX 77056-4400
Contact party: Frances Byers Phone: (713) 296-6361
- III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? ☐ yes ☒ no
If yes, give the Division order number authorizing the project _____.
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- * VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
 2. Whether the system is open or closed;
 3. Proposed average and maximum injection pressure;
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
 5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- * VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- * X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)
- * XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification
- I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- Name: Frances M. Byers Title: St. Eng. Tech
Signature: Frances M. Byers Date: 4-8-97
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

FORM C-100 Side 2

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) the formation name and depth with expected maximum injection rates and pressures; and
- (4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED:

NOTICE: Surface owners or offset operators must file any objections or requests for hearing or administrative applications within 15 days from the date this application was mailed to them.

*Legal
Notice
must
be
in
pay
for
1st*

III. WELL DATA

EXHIBIT A

LEASE NAME: SALT MOUNTAIN 25 FEDERAL #3Y
BRUSHY DRAW DELAWARE
EDDY COUNTY, NEW MEXICO

LOCATION: UNIT G - SECTION 25, T26S, R29E
1746 FNL & 2121 FEL

CASING: 11-3/4 42# H-40 CSA 500 W/650 SXS CIRC. TO SURFACE IN 14-3/4 HOLE
8-5/8 32# J-55 CSA 3000 W/1250 SXS CIRC. TO SURFACE IN 11 HOLE
5-1/2 15.5# J-55 CSA 5405 W/1500 SXS CIRC. TO SURFACE IN 7-7/8 HOLE
TOC @2785 TEMP. SURVEY

TUBING: 2-7/8 N-80 EUE PLASTIC COATED @ +/-3100 - 3150

PACKER: GUIBERSON UNIPKR VI @ +/- 3100 - 3150

EXHIBIT B

INJECTION FORMATION: DELAWARE SANDS
BRUSHY DRAW DELAWARE FIELD

INJECTION INTERVALS: 3172 - 3179 , 3224 - 3232
5241 - 43 , 5251 - 54 , 5258 - 60, 5263 - 66
PERFORATED INTERVALS

ORIGINAL PURPOSE: DELAWARE PRODUCER - GAS WELL

OTHER PERF. INTERVALS: N/A
CURRENTLY PLUGGED (SEE SCHEMATIC OF CURRENT
STATUS)

HIGHER OIL/GAS ZONE: N/A

LOWER OIL/GAS ZONE: NO DEEPER ZONES ACTIVE IN AREA

VI. TABULATION OF WELLS WITHIN THE AREA OF REVIEW

WELL : UCBHWW FEDERAL #7
OPERATOR: J. C. WILLIAMSON
LOCATION: 660 FNL & 1980 FWL - SECTION 25-T26S-R29E
SPUD: 7-30-85 **COMP:** 9-1-85 **ELEV:** 2977 KB **TD:** 6350 **PBTD:** 6305
STATUS: OIL **FORMATION COMP:** DELAWARE **API#:** 30-015-25313
CASING: 13-3/8 @ 476 W/675 SX **TUBING:** 2-7/8 @ 4976
8-5/8 @ 2920 W/150 SX
5-1/2 @ 6350 W/900 SX

WELL : UCBHWW FEDERAL #4
OPERATOR: J. C. WILLIAMSON
LOCATION: 1980 FWL & 1980 FSL - SECTION 25-T26S-R29E
SPUD: 9-24-83 **COMP:** 11-29-83 **ELEV:** 2937 GR **TD:** 6250 **PBTD:** 5600
STATUS: OIL **FORMATION COMP:** DELAWARE **API#:** 30-015-24552
CASING: 12-3/4 @ 370 W/425 SX **TUBING:** 2-3/8 @ 5210
8-5/8 @ 2870 W/150 SX
4-1/2 @ 6300 W/1300 SX

WELL : UCBHWW FEDERAL #6
OPERATOR: J. C. WILLIAMSON
LOCATION: 2080 FNL & 1880 FWL - SECTION 25-T26S-R29E
SPUD: 7-17-85 **COMP:** 8-9-85 **ELEV:** 2954 KB **TD:** 6350 **PBTD:** 6305
STATUS: OIL **FORMATION COMP:** DELAWARE **API#:** 30-015-24958
CASING: 13-3/8 @ 500 W/500 SX **TUBING:** 2-7/8 @ 5054
8-5/8 @ 2890 W/150 SX
5-1/2 @ 6350 W/850 SX

WELL : UCBHWW FEDERAL #5
OPERATOR: J. C. WILLIAMSON
LOCATION: 660 FWL & 1980 FNL - SECTION 25-T26S-R29E
SPUD: 4-11-85 **COMP:** 5-6-85 **ELEV:** 2941 GR **TD:** 6334 **PBTD:** 6294
STATUS: OIL **FORMATION COMP:** DELAWARE **API#:** 30-015-24841
CASING: 12-3/4 @ 350 W/450 SX **TUBING:** 2-3/8 @ 4950
8-5/8 @ 2898 W/150 SX
5-1/2 @ 6326 W/900 SX

WELL : UCBHWW FEDERAL #10
OPERATOR: J. C. WILLIAMSON
LOCATION: 1737 FSL & 1675 FWL - SECTION 25-T26S-R29E
SPUD: 2-1-86 **COMP:** 3-14-86 **ELEV:** 2949 KB **TD:** 3188 **PBTD:** 3120
STATUS: OIL **FORMATION COMP:** DELAWARE **API#:** 30-015-25543
CASING: 8-5/8 @ 433 W/250 SX **TUBING:** 2-3/8 @ 2981
4-1/2 @ 3135 W/500 SX

VI. TABULATION OF WELLS WITHIN THE AREA OF REVIEW

(cont)

PAGE 2

WELL : SALT MOUNTAIN 25 FEDERAL #2

OPERATOR: APACHE CORPORATION

LOCATION: 1655 FSL & 2325 FEL - SECTION 25-T26S-R29E

SPUD: 3-8-87 **COMP:** 4-20-87 **ELEV:** 2930 KB **TD:** 6320 **PBTD:** 6300

STATUS: OIL **FORMATION COMP:** DELAWARE **API#:** 30-015-25731

CASING: 11-3/4 @ 500 W/500 SX **TUBING:** 2-7/8 @ 5291

8-5/8 @ 3055 W/1150 SX

5-1/2 @ 6320 W/1350 SX

WELL : PIPKIN #1

OPERATOR: CURTIS HANKAMER CORPORATION

LOCATION: 660 FNL & 1980 FEL - SECTION 25-T26S-R29E

SPUD: 11-16-60 **COMP:** 1-12-61 **ELEV:** 2988 DF **TD:** 3190 **PBTD:**

STATUS: D&A/OIL **API#:** 30-015-03743

CASING: 13-3/8 @ 624 W/ N/A SX

7 @ 2190 W/ N/A SX

ALL CASING SPRINGS WERE PULLED FROM HOLE - SCHEMATIC ATTACHED.

WELL: PIPKEN FEDERAL #1
CURTIS HANKAMER CORPORATION

FIELD: BRUSHY DRAW DELAWARE

LOCATION: 660 FNL & 1980 FEL
SECTION 25, T26S-R29E
EDDY COUNTY, NEW MEXICO

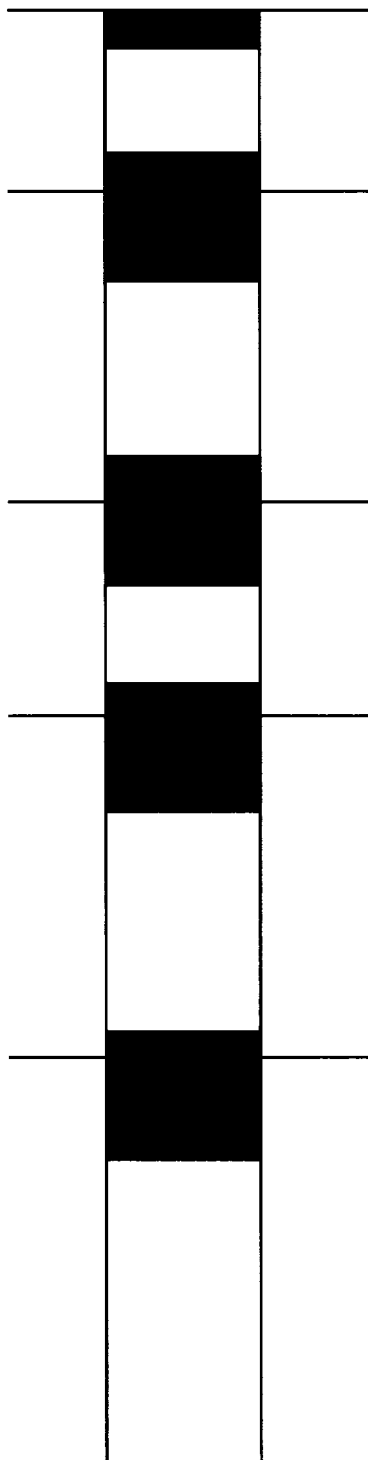
CEMENT PLUG @0 - 50
W/50 CEMENT

CEMENT PLUG @300 - 350
W/150 CEMENT

CEMENT PLUG @700 - 750
W/150 CEMENT

CEMENT PLUG @800 - 1000
W/150 CEMENT

CEMENT PLUG @3069 - 3219
W/150 CEMENT



VII. PROPOSED OPERATIONS

1. AVERAGE DAILY RATE: 2500 BWPD
MAXIMUM DAILY RATE: 4000 BWPD

APACHE CORP. HAS REQUESTED PERMISSION TO TEST THE REFERENCED WELL TO DETERMINE AN AVERAGE AND MAXIMUM RATE. WILL LET KNOW IF THERE IS A CHANGE.

2. SYSTEM OPEN OF CLOSED: CLOSED

3. AVERAGE INJ. PRESSURE: 1500#
MAXIMUM INJ. PRESSURE: 2000#

4. SOURCES: DELAWARE, DEVONIAN : ANALYSIS ATTACHED.

5. CHEMICAL ANALYSIS: ANALYSIS ATTACHED

VIII. GEOLOGICAL DATA

INJECTION ZONE:

DELAWARE - DEPTH	3172
THICKNESS	2095
LITHOLOGY	SAND & SHALE

UNDERGROUND SOURCES OF DRINKING WATER:

GEOLOGIC NAME - OGALLALA
DEPTH TO BOTTOM - 300

X. STIMULATION PROGRAM:

TREAT DELAWARE WITH 5000 GALLONS 15% NEFE HCL ACID

XI. CHEMICAL ANALYSIS OF FRESH WATER;

[SEE ATTACHED ANALYSIS]

XII.

PLEASE USE THIS DOCUMENT AS AN AFFIRMATIVE STATEMENT THAT I HAVE EXAMINED AVAILABLE GEOLOGIC AND ENGINEERING DATA AND FOUND NO EVIDENCE OF OPEN FAULTS OR ANY OTHER HYDROLOGIC CONNECTION BETWEEN THE DISPOSAL ZONE IN THE STATE MOUNTAIN 25 FEDERAL NO. 3Y AND ANY UNDERGROUND SOURCE OF DRINKING WATER.

APACHE CORPORATION

BY: Charlie Titus
CHARLIE TITUS

TITLE: Staff Geologist

DATE: 4-8-97

XIII. PROOF OF NOTICE

ATTACHED ARE COPIES OF CERTIFIED RECEIPTS AND LETTERS SENT TO THE SURFACE OWNER AND OFFSET OPERATOR THAT WERE IN THE HALF MILE RADIUS IN THE AREA OF REVIEW.

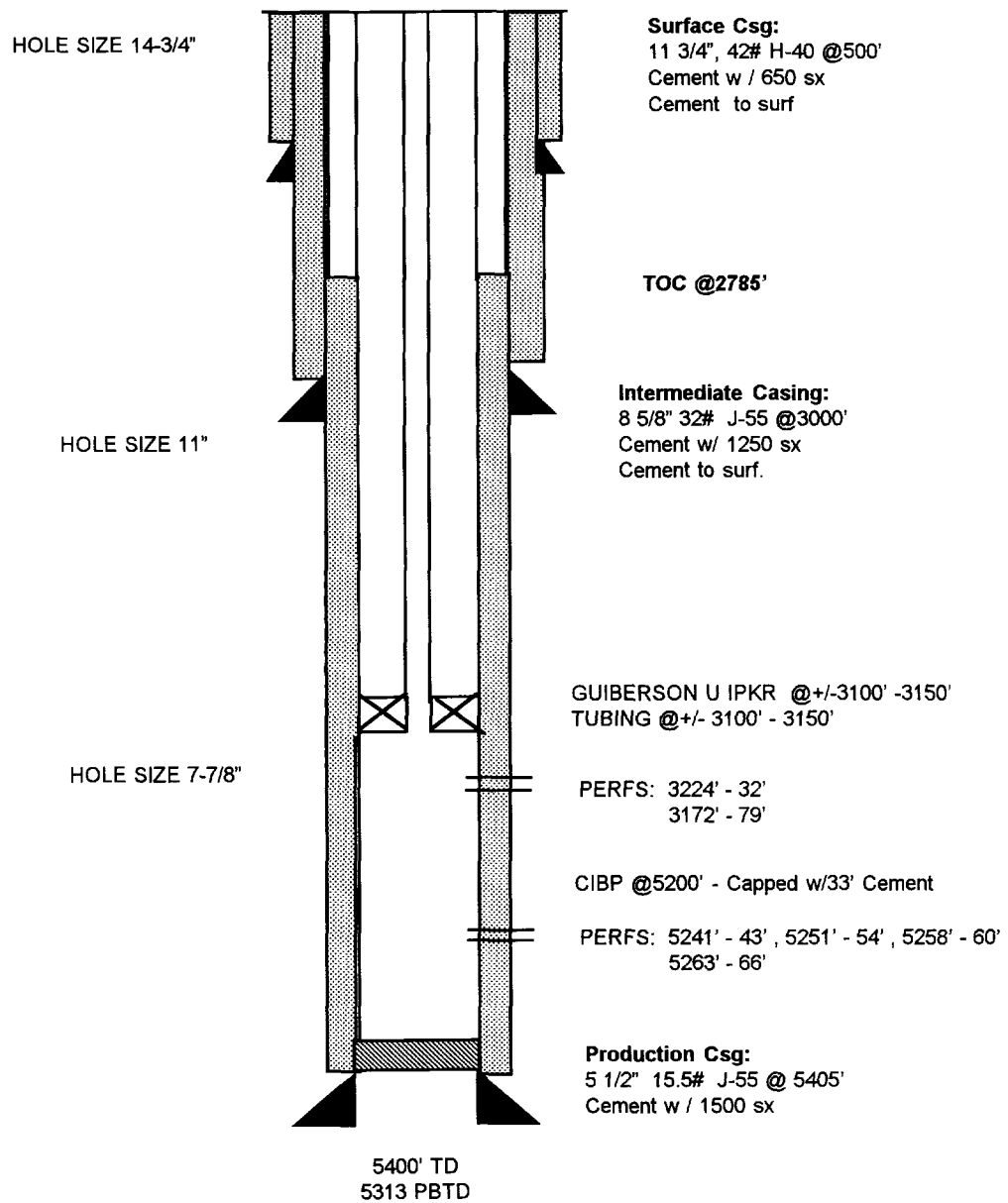
Well: SALT MOUNTAIN 25 FEDERAL #3-Y

PROPOSED STATUS

Field: BRUSHY DRAW DELAWARE FIELD

Location: 1746' FnL & 2121' FEL
Unit G, Sec 25 - T26S- R29E
Eddy County, New Mexico

Elev. 2877' GR
Completed : 12/8/87
API #30-015-25821



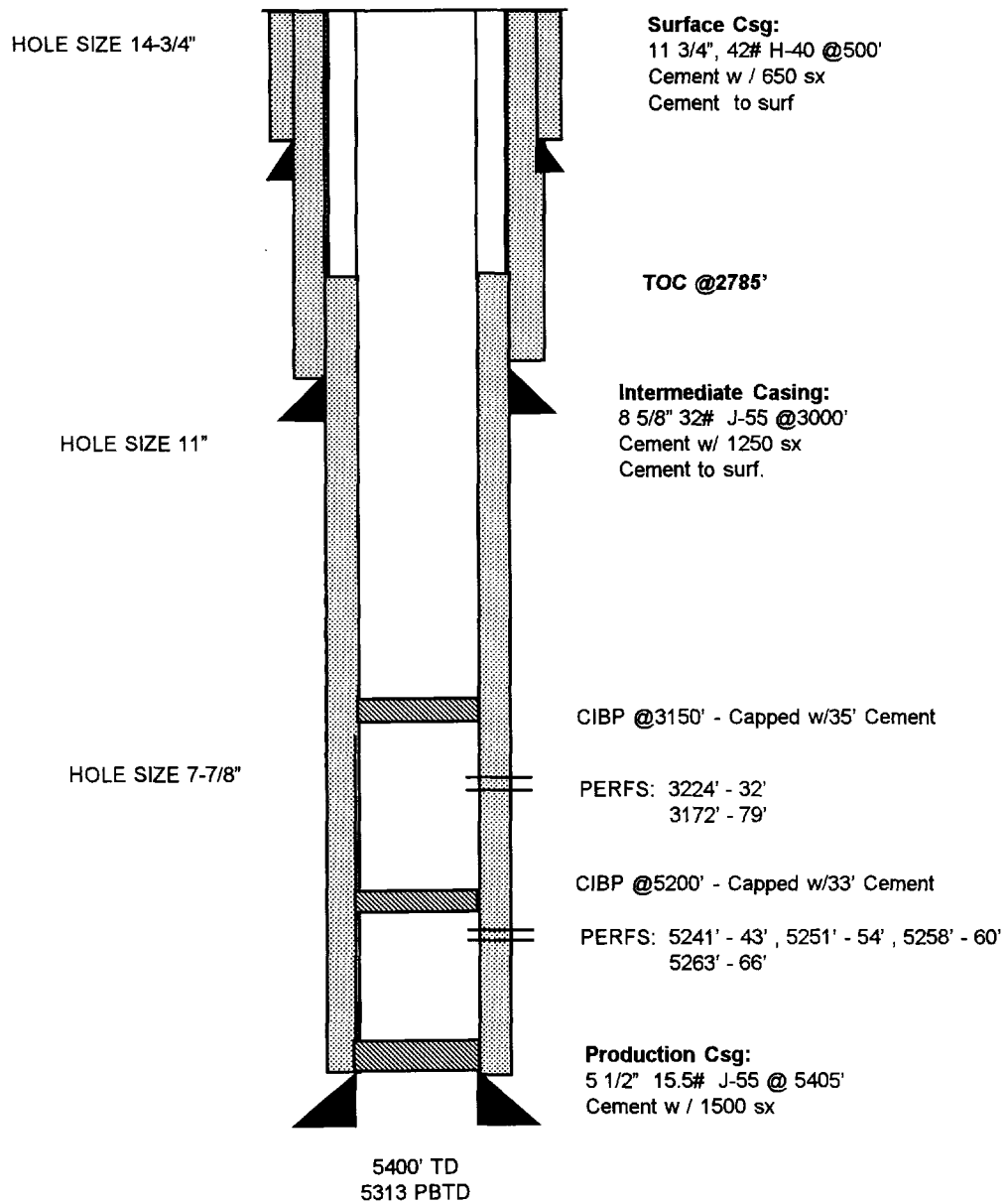
Well: SALT MOUNTAIN 25 FEDERAL #3-Y

CURRENT STATUS

Field: BRUSHY DRAW DELAWARE FIELD

Location: 1746' FnL & 2121' FEL
Unit G, Sec 25 - T26S- R29E
Eddy County, New Mexico

Elev. 2877' GR
Completed : 12/8/87
API #30-015-25821



Dwight's Energydata Inc.
TX - NM Permian
New Mexico Oil

Run Date: 4/10/97
Published 2/97
(#150,015,26S29E25G00DL)

Operator:	APACHE CORP	First Production Date:	01/88
Well/Lease Name:	SALT MOUNTAIN 25 FEDERAL	Last Production Date:	08/96
Well #:	3Y	Cum. Thru L. P. Date Oil:	326
Location:	25G 26S 29E	Cum. Thru L. P. Date Gas:	887
State:	NM		
District:	002		
County:	EDDY		
Regulatory #:	69743		
API #:	30-015-2582100		
Field:	BRUSHY DRAW (DELAWARE) DL		
Reservoir:	DELAWARE		
Basin:	PERMIAN BASIN		
Gas Gatherer:	CONTL		
Liquid Gatherer:	NAVAJ		
Status Date:			
Status:	ACT		

Year	Oil Prod BBLS	Gas Prod MCF	Water BBLS	# of Wells	Days On	Allowables
1988	326	800	868	1	32	
1996		87				

Date MO/YR	Oil Prod BBLs	BBLs /Day	Cum. Oil Prod. BBLs	Gas Prod MCF	Cum. Gas MCF	GOR SCF/BBLs	Water	% Water	# of Wells	Days On	Allowables
01/88	326	10	326	0	0	0	868	72.70	1	31	
02/88	0	0	326	800	800		0		1	1	
03/88	0	0	326	0	800		0		0	0	
04/88	0	0	326	0	800		0		0	0	
05/88	0	0	326	0	800		0		0	0	
06/88	0	0	326	0	800		0		0	0	
07/88	0	0	326	0	800		0		0	0	
08/88	0	0	326	0	800		0		0	0	
09/88	0	0	326	0	800		0		0	0	
10/88	0	0	326	0	800		0		0	0	
11/88	0	0	326	0	800		0		0	0	
12/88	0	0	326	0	800		0		0	0	
Totals	326			800			868			32	
01/96				0	800						
02/96				0	800						
03/96				0	800						
04/96				0	800						
05/96				0	800						
06/96				0	800						
07/96				0	800						
08/96				87	887						
09/96				0	887						
10/96				0	887						
11/96				0	887						
12/96				0	887						
Totals				87							

Saturation Index Calculations

Champion Technologies, Inc.
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache
Field	Williamson
Point	Fresh Water Tank
Date	3/1/97

Water Analysis (mg/L)

Calcium	1,444
Magnesium	292
Barium	0
Strontium	0
Sodium*	1024
Bicarbonate Alkalinity	183
Sulfate	2,545
Chloride	3,000

* - Calculated Value

Appended Data

CO2	110 mg/L
H2S	0 mg/L
Iron	1 mg/L

Physical Properties

Ionic Strength*	0.22
pH†	6.50
Temperature	85°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	6.50
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.32	N/A
Gypsum (Calcium Sulfate)	-0.22	N/A
Hemihydrate (Calcium Sulfate)	-0.07	N/A
Anhydrite (Calcium Sulfate)	-0.50	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A

John Deane



Saturation Index Calculations
Champion Technologies, Inc.
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Loving "AY"
Point	Fee #1
Date	9/18/96

Water Analysis (mg/L)

Calcium	34,486
Magnesium	7,290
Barium	0
Strontium	0
Sodium*	66667
Bicarbonate Alkalinity	42
Sulfate	61
Chloride	185,000

Appended Data

Dissolved CO2	943 mg/L
Dissolved O2	N/A PTB
H2S	0 mg/L
Iron	10.0 mg/L
TDS	293913 mg/L
Total Hardness	116000 mg/L

* - Calculated Value

Physical Properties

Ionic Strength*	6.38
pH†	5.70
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.70
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.45	N/A
Gypsum (Calcium Sulfate)	-0.74	N/A
Hemihydrate (Calcium Sulfate)	-0.70	N/A
Anhydrite (Calcium Sulfate)	-0.36	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestine (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations
Champion Technologies, Inc.
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Salt Mountain
Point	#36-1
Date	9/18/96

Water Analysis (mg/L)

Calcium	36,491
Magnesium	7,776
Barium	0
Strontium	0
Sodium*	73176
Bicarbonate Alkalinity	24
Sulfate	76
Chloride	200,000

* - Calculated Value

Appended Data

Dissolved CO2	1097 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	8.0 mg/L
TDS	317934 mg/L
Total Hardness	123000 mg/L

Physical Properties

Ionic Strength*	6.87
pH†	5.33
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.33
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.89	N/A
Gypsum (Calcium Sulfate)	-0.59	N/A
Hemihydrate (Calcium Sulfate)	-0.53	N/A
Anhydrite (Calcium Sulfate)	-0.15	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations
Champion Technologies, Inc.
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Salt Mountain
Point	#25-1
Date	9/18/96

Water Analysis (mg/L)

Calcium	34,887
Magnesium	8,262
Barium	0
Strontium	0
Sodium*	80584
Bicarbonate Alkalinity	36
Sulfate	72
Chloride	210,000

* - Calculated Value

Appended Data

Dissolved CO2	1668 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	6.0 mg/L
TDS	334258 mg/L
Total Hardness	121000 mg/L

Physical Properties

Ionio Strength*	7.14
pH†	5.20
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.20
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.77	N/A
Gypsum (Calcium Sulfate)	-0.60	N/A
Heptahydrate (Calcium Sulfate)	-0.53	N/A
Anhydrite (Calcium Sulfate)	-0.14	N/A
Berite (Barium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations
Champion Technologies, Inc.
(Based on the Tompson-Olko Model)

Site Information

Company	Apache Corporation
Field	Salt Mountain
Point	#36-3
Date	9/18/96

Water Analysis (mg/L)

Calcium	33,283
Magnesium	8,503
Barium	0
Strontium	0
Sodium*	65748
Bicarbonate Alkalinity	30
Sulfate	69
Chloride	185,000

* - Calculated Value

Appended Data

Dissolved CO2	899 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	8.0 mg/L
TDS	293036 mg/L
Total Hardness	118000 mg/L

Physical Properties

Ionic Strength*	6.40
pH†	5.40
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.40
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.91	N/A
Gypsum (Calcium Sulfate)	-0.70	N/A
Hemihydrate (Calcium Sulfate)	-0.66	N/A
Anhydrite (Calcium Sulfate)	-0.32	N/A
Berite (Barium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A



Committed To Improvement

Saturation Index Calculations

Champlon Technologies, Inc.¹
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Salt Mountain
Point	#25-2
Date	9/18/96

Water Analysis (mg/L)

Calcium	35,288
Magnesium	8,262
Barium	0
Strontium	0
Sodium*	70387
Bicarbonate Alkalinity	18
Sulfate	66
Chloride	195,000

Appended Data

Dissolved CO ₂	1141 mg/L
Dissolved O ₂	N/A PPB
H ₂ S	0 mg/L
Iron	6.0 mg/L
TDS	309433 mg/L
Total Hardness	122000 mg/L

* - Calculated Value

Physical Properties

Ionic Strength*	6.72
pH†	5.11
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.11
Bicarbonate Alkalinity Correction(s)	Value
Name Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-1.30	N/A
Gypsum (Calcium Sulfate)	-0.67	N/A
Hemihydrate (Calcium Sulfate)	-0.62	N/A
Anhydrite (Calcium Sulfate)	-0.25	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestine (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations
Champion Technologies, Inc.,
(Based on the Thomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Loving #AY
Point	Fee #3
Date	9/18/96

Water Analysis (mg/L)

Calcium	34,085
Magnesium	7,533
Barium	0
Strontium	0
Sodium*	69908
Bicarbonate Alkalinity	24
Sulfate	70
Chloride	190,000

Appended Data

Dissolved CO2	921 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	9.0 mg/L
TDS	301999 mg/L
Total Hardness	116000 mg/L

* - Calculated Value

Physical Properties

Ionic Strength*	6.52
pH†	5.24
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.24
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-1.12	N/A
Gypsum (Calcium Sulfate)	-0.67	N/A
Hemihydrate (Calcium Sulfate)	-0.63	N/A
Anhydrite (Calcium Sulfate)	-0.28	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestine (Strontium Sulfate)	N/A	N/A



Committed to Improvement

Saturation Index Calculations

Champion Technologies, Inc.,
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Loving *AY
Point	Fos #6
Date	9/18/96

Water Analysis (mg/L)

Calcium	35,087
Magnesium	8,748
Barium	0
Strontium	0
Sodium*	66461
Bicarbonate Alkalinity	24
Sulfate	73
Chloride	190,000

Appended Data

Dissolved CO2	921 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	7.0 mg/L
TDS	300826 mg/L
Total Hardness	123500 mg/L

* - Calculated Value

Physical Properties

Isos Strength*	6.60
pH†	5.19
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.19
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-1.13	N/A
Gypsum (Calcium Sulfate)	-0.64	N/A
Hemihydrate (Calcium Sulfate)	-0.60	N/A
Anhydrite (Calcium Sulfate)	-0.24	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A



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Saturation Index Calculations

Champion Technologies, Inc.
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	"BD" Federal
Point	#2
Date	9/18/96

Water Analysis (mg/L)

Calcium	36,491
Magnesium	7,333
Barium	0
Strontium	0
Sodium*	67152
Bicarbonate Alkalinity	36
Sulfate	70
Chloride	190,000

Appended Data

Dissolved CO2	987 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	5.0 mg/L
TDS	301660 mg/L
Total Hardness	122000 mg/L

* - Calculated Value

Physical Properties

ionic Strength*	6.58
pH†	5.50
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.50
Bicarbonate Alkalinity Correction(s)	Value
1 1 1	

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.63	N/A
Gypsum (Calcium Sulfate)	-0.64	N/A
Hemihydrate (Calcium Sulfate)	-0.60	N/A
Anhydrite (Calcium Sulfate)	-0.24	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestine (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations
Champion Technologies, Inc. ;
(Based on the Thomas-Oddo Model)

Site Information

Company	Apache Corporation
Field	"BD" Federal
Point	#1
Date	9/18/96

Water Analysis (mg/L)

Calcium	37,694
Magnesium	7,168
Barium	0
Strontium	0
Sodium*	69696
Bicarbonate Alkalinity	24
Sulfate	60
Chloride	195,000

* - Calculated Value

Appended Data

Dissolved CO2	1053 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	7.0 mg/L
TDS	310003 mg/L
Total Hardness	123500 mg/L

Physical Properties

Ionic Strength*	6.74
pH†	5.55
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.55
Bicarbonate Alkalinity Correction(s)	Value
None Used	—

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.70	N/A
Opalium (Calcium Sulfate)	-0.69	N/A
Hemihydrate (Calcium Sulfate)	-0.63	N/A
Anhydrite (Calcium Sulfate)	-0.26	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestine (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations

Champion Technologies, Inc.
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Loving "BE"
Point	Fee #1
Date	9/18/96

Water Analysis (mg/L)

Calcium	8,220
Magnesium	2,673
Berium	0
Strontium	0
Sodium*	37619
Bicarbonate Alkalinity	134
Sulfate	363
Chloride	80,000

* - Calculated Value

Appended Data

Dissolved CO ₂	285 mg/L
Dissolved O ₂	N/A PPB
H ₂ S	12 mg/L
Iron	0 mg/L
TDS	129149 mg/L
Total Hardness	31500 mg/L

Physical Properties

Isotic Strength*	2.59
pH†	7.28
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	7.28
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	0.24	18.6
Gypsum (Calcium Sulfate)	-0.68	N/A
Hemihydrate (Calcium Sulfate)	-0.72	N/A
Anhydrite (Calcium Sulfate)	-0.73	N/A
Berite (Berium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations

Champion Technologies, Inc.
(Based on the Thomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Loving "AY"
Point	For #4
Date	9/18/96

Water Analysis (mg/L)

Calcium	34,486
Magnesium	8,019
Barium	0
Strontium	0
Sodium*	65292
Bicarbonate Alkalinity	48
Sulfate	65
Chloride	185,000

Appended Data

Dissolved CO2	965 mg/L
Dissolved O2	N/A PFB
H2S	0 mg/L
Iron	12.0 mg/L
TDS	293310 mg/L
Total Hardness	119000 mg/L

* - Calculated Value

Physical Properties

Ionic Strength*	6.41
pH†	5.83
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.83
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.26	N/A
Gypsum (Calcium Sulfate)	-0.71	N/A
Hemihydrate (Calcium Sulfate)	-0.67	N/A
Anhydrite (Calcium Sulfate)	-0.33	N/A
Barite (Barium Sulfate)	N/A	N/A
Calcite (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations
Champion Technologies, Inc.
(Based on the Tomsen-Oddo Model)

Site Information

Company	Apache Corporation
Field	Loving "AY"
Point	Oil Unit #1
Date	9/18/96

Water Analysis (mg/L)

Calcium	36,090
Magnesium	7,290
Barium	0
Strontium	0
Sodium*	68065
Bicarbonate Alkalinity	30
Sulfate	60
Chloride	190,000

* - Calculated Value

Appended Data

Dissolved CO2	965 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	8.0 mg/L
TDS	301901 mg/L
Total Hardness	120000 mg/L

Physical Properties

Ionic Strength*	6.56
pH†	5.27
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.27
Bicarbonate Alkalinity Correction(s)	Value
None Used	—

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.96	N/A
Gypsum (Calcium Sulfate)	-0.71	N/A
Hemihydrate (Calcium Sulfate)	-0.67	N/A
Anhydrite (Calcium Sulfate)	-0.31	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A



Committed To Improvement

Saturation Index Calculations

Champion Technologies, Inc.
(Based on the Tomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Loving "AY"
Point	Oil Unit #2
Date	9/18/96

Water Analysis (mg/L)

Calcium	34,887
Magnesium	8,019
Barium	0
Strontium	0
Sodium*	68064
Bicarbonate Alkalinity	18
Sulfate	65
Chloride	190,000

* - Calculated Value

Appended Data

Dissolved CO2	899 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	9.0 mg/L
TDS	301453 mg/L
Total Hardness	120000 mg/L

Physical Properties

Ionic Strength*	6.56
pH†	5.13
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.13
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-1.33	N/A
Gypsum (Calcium Sulfate)	-0.69	N/A
Hemihydrate (Calcium Sulfate)	-0.65	N/A
Anhydrite (Calcium Sulfate)	-0.29	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A



Saturation Index Calculations

Champlon Technologies, Inc.
(Based on the Thomson-Oddo Model)

Site Information

Company	Apache Corporation
Field	Loving "AY"
Point	Fos #2
Date	9/18/96

Water Analysis (mg/L)

Calcium	27,268
Magnesium	5,467
Barium	0
Strontium	0
Sodium*	52471
Bicarbonate Alkalinity	36
Sulfate	97
Chloride	145,000

* - Calculated Value

Appended Data

Dissolved CO2	680 mg/L
Dissolved O2	N/A PPB
H2S	0 mg/L
Iron	18.0 mg/L
TDS	230614 mg/L
Total Hardness	90500 mg/L

Physical Properties

Ionio Strength*	5.00
pH†	5.94
Temperature	86°F
Pressure	100 psia

* - Calculated Value † - Known/Specified Value

Calcite Calculation Information

Calculation Method	Value
pH	5.94
Bicarbonate Alkalinity Correction(s)	Value
None Used	---

SI & PTB Results

Scale Type	SI	PTB
Calcite (Calcium Carbonate)	-0.77	N/A
Gypsum (Calcium Sulfate)	-0.71	N/A
Hemihydrate (Calcium Sulfate)	-0.72	N/A
Anhydrite (Calcium Sulfate)	-0.49	N/A
Barite (Barium Sulfate)	N/A	N/A
Celestite (Strontium Sulfate)	N/A	N/A

Ranged Data
Champion Technologies, Inc.

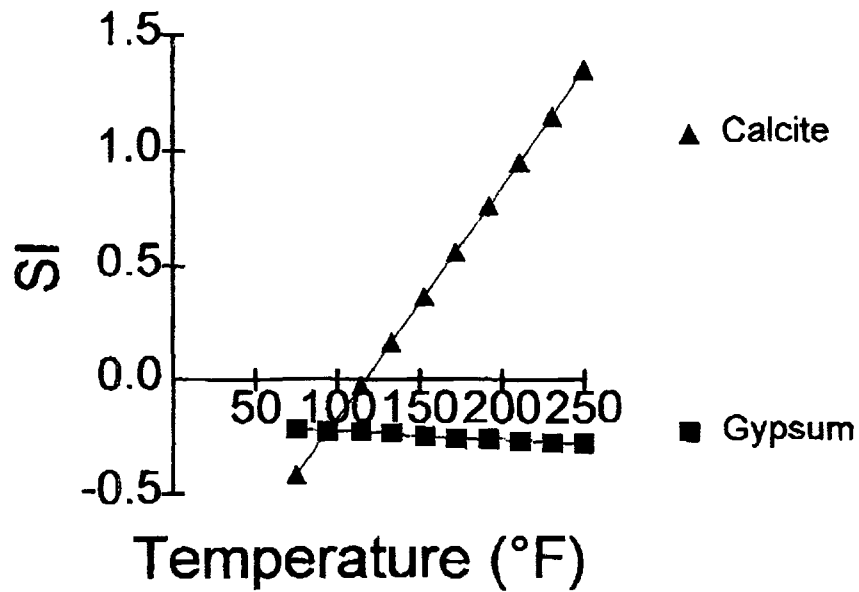
Site Information

Company	Apache
Field	Williamson
Point	Fresh Water Tank
Date	3/7/97

SI Results

Temperature (°F)	Calcite	Gypsum
75	-0.42	-0.22
94	-0.23	-0.23
114	-0.03	-0.23
133	0.16	-0.24
153	0.36	-0.25
172	0.56	-0.26
192	0.76	-0.26
211	0.95	-0.27
231	1.15	-0.28
250	1.35	-0.28

SI



LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE