

LAW OFFICES

LOSEE, CARSON & DICKERSON, P. A.

300 AMERICAN HOME BUILDING

P. O. DRAWER 239

ARTESIA, NEW MEXICO 88211-0239

AREA CODE 505

746-3508

A. J. LOSEE

JOEL M. CARSON

CHAD DICKERSON

DAVID R. VANDIVER

ELIZABETH LOSEE

REBECCA DICKERSON

August 24, 1984

RECEIVED
AUG 25 1984
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SANTA FE, NEW MEXICO

Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Federal "AZ" No. 1 Well

Gentlemen:

Enclosed for filing, please find the following:

1. Three copies of the Application of BBC, Inc. to Inject Water for the Purpose of Water Disposal, Eddy County, New Mexico.
2. Three copies of the Application of BBC, Inc. for Authorization to Inject (Oil Conservation Division Form C-108).
3. Proof of Notice reflecting the mailing of true copies of the above Applications to the surface owner and offset operators of the well.

We ask that this case be set for hearing before an examiner and that you furnish us with a docket of said hearing.

Thank you.

Sincerely yours,

LOSEE, CARSON & DICKERSON, P.A.



Chad Dickerson

CD:pvm
Enclosures

cc w/enclosures: Mr. Arthur R. Brown

BEFORE THE OIL CONSERVATION DIVISION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION :
OF BBC, INC. TO INJECT WATER FOR :
THE PURPOSE OF WATER DISPOSAL, : CASE NO. _____
EDDY COUNTY, NEW MEXICO :
_____ :

APPLICATION

COMES NOW BBC, Inc., by its attorneys, pursuant to Rule 701, and in support hereof, respectfully states:

1. Applicant proposes to dispose of water into its Federal "AZ" No. 1 Well, located 2,080 feet from the south line and 660 feet from the east line of Section 29, Township 26 South, Range 30 East, N.M.P.M., Eddy County, New Mexico, through perforations from 3,350 and 3,396 feet, and into an open hole interval from 3,555 feet to 3,700 feet, in the Delaware formation.

2. Form C-108 showing the location of the proposed disposal well, and the location of all other wells within a radius of two miles from said proposed disposal well, and the formation from which said wells are producing or have produced, and indicating the lessees within said two mile radius, is filed with this application. The log of the proposed disposal well and a diagrammatic sketch thereof with other pertinent information concerning the proposed project are a part thereof.

WHEREFORE, Applicant prays:

A. That this Application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Division enter its order authorizing Applicant to dispose of water into its Federal "AZ" No. 1 Well, located 2,080 feet from the south line and 660 feet from the east line of Section 29, Township 26 South, Range 30 East, N.M.P.M., Eddy County, New Mexico, through perforations from 3,350 and 3,396 feet, and into an open hole interval from 3,555 feet to 3,700 feet, in the Delaware formation.

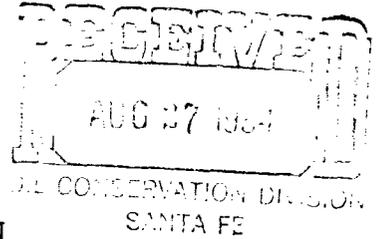
C. And for such other and further relief as may be just in the premises.

BBC, INC.

By: 
Chad Dickerson

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210
(505) 746-3508

Attorneys for Applicant



BEFORE THE OIL CONSERVATION DIVISION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION :
OF BBC, INC. TO INJECT WATER FOR :
THE PURPOSE OF WATER DISPOSAL, : CASE NO. 8346
EDDY COUNTY, NEW MEXICO :
:

APPLICATION

COMES NOW BBC, Inc., by its attorneys, pursuant to Rule 701, and in support hereof, respectfully states:

1. Applicant proposes to dispose of water into its Federal "AZ" No. 1 Well, located 2,080 feet from the south line and 650 feet from the east line of Section 29, Township 26 South, Range 30 East, N.M.P.M., Eddy County, New Mexico, through perforations from 3,350 and 3,396 feet, and into an open hole interval from 3,555 feet to 3,700 feet, in the Delaware formation.

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B. That upon hearing the Division enter its order authorizing Applicant to dispose of water into its Federal "AZ" No. 1 Well, located 2,080 feet from the south line and 660 feet from the east line of Section 29, Township 26 South, Range 30 East, N.M.P.M., Eddy County, New Mexico, through perforations from 3,350 and 3,396 feet, and into an open hole interval from 3,555 feet to 3,700 feet, in the Delaware formation.

C. And for such other and further relief as may be just in the premises.

BBC, INC.

By: 
Chad Dickerson

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210
(505) 746-3508

Attorneys for Applicant

RECEIVED
OIL CONSERVATION DIVISION
MAY 27 1954
S. H. HARRIS

BEFORE THE OIL CONSERVATION DIVISION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION :
OF BBC, INC. TO INJECT WATER FOR :
THE PURPOSE OF WATER DISPOSAL, : CASE NO. 8346
EDDY COUNTY, NEW MEXICO :
_____ :

APPLICATION

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C. And for such other and further relief as may be just in the premises.

BBC, INC.

By: 
Chad Dickerson

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210
(505) 746-3508

Attorneys for Applicant

Amoco Production Company
P. O. Box 68
Hobbs, New Mexico 88240

El Paso Exploration Company
1800 Wilco Building
Midland, Texas 79701

Estoril Producing Corporation
11th Floor, Vaughn Building
Midland, Texas 79701

Patti Menefee
Patti Menefee

SUBSCRIBED AND SWORN TO before me this 24th day of
August, 1984.

My commission expires:
11-3-84

Patricia Ferguson
Notary Public

Case 8346

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: Secondary Recovery Pressure Maintenance Disposal Storage
Application qualifies for administrative approval? yes no

II. Operator: BBC, INC.

Address: 101 E. Marland, Suite 112, Hobbs, New Mexico 88240

Contact party: Arthur R. Brown, Agent Phone: 505-397-2767

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.

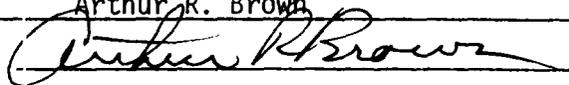
XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

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: Arthur R. Brown Title Agent

Signature:  Date: _____

* 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.

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 of administrative applications within 15 days from the date this application was mailed to them.

APPLICATION FOR AUTHORITY TO INJECT

SUPPLEMENTAL INFORMATION

BBC, INC.
WELL NO. 1 FEDERAL AZ
EDDY COUNTY, NEW MEXICO

ITEM:

III. INJECTION WELL DATA:

- A. (1) Well Name: BBC, Inc. Federal AZ No. 1
2080' FSL & 660' FEL of Section 29,
T.26 S., R.30 E., Eddy County, New Mexico.

This well was originally drilled by Amoco Production Company as well No. 1 Federal AZ to a total depth of 3580 feet during the period 6-18-80 to 6-29-80. After the initial testing period, the well was shut in 10-27-80. Additional testing during June 1982 failed to indicate commercial production, and the well was plugged and abandoned 12-30-82.

(2) Casing Data:

13-3/8" Casing:

13-3/8" 48# casing set at 950 feet in 17-1/2" hole.
Cemented with 1100 sacks of Class "C" cement with 2% CaCl.
Plug down at 2:25 A.M. 6-20-80. Circulated 216 sacks.

9-5/8" Casing:

9-5/8" 36# casing set at 3555 feet in 12-1/4" hole.
Cemented with 1700 sacks of Lite with 5% Gilsonite, 1/4#
Flocele/sack, and 18# salt/sack followed with 200 sacks of
Class "C". Plug down at 5:00 A.M. 7-1-80. Top cement at
approx. 410 feet by temperature survey.

(3) Injection Tubing:

Size: 4-1/2"

Lining Material: Plastic.

Setting Depth: 3300 feet.

(4) Injection Packer:

Type: Baker Lok-Set, Model A-3 Packer, or equivalent.

Setting Depth: 3300 feet.

B. (1) Injection Formation: Delaware formation. The proposed injection well is not in a defined oil or gas pool. It is 1-1/8 mile west of the defined limits of the Ross Draw Delaware Gas Pool.

(2) Injection Interval: Injection will be into perforated interval 3350-3396 feet and into open hole interval 3555-3700 feet. (To prepare well for injection, the interval 3350-3396, originally perforated with 1 shot/foot, will be re-perforated with 4 shots/foot, and the well will be deepened from the original total depth of 3580 feet to a new total depth of 3700 feet.

EXHIBITS "A" and "B", attached, are schematics showing present well data for the proposed injection well and well data after re-completion for salt water disposal.

(3) Original Purpose of Well: This well was drilled originally as a 3580 foot Delaware test.

(4) Other Perforated Intervals: There are no perforated intervals in this proposed injection well other than the interval 3350-3396 feet mentioned above.

(5) Overlying and Underlying Oil and Gas Zones: There are no overlying oil and gas zones. Nearby oil and gas completions in underlying formations are as follows:

<u>WELL #</u>	<u>WELL LOCATION</u>	<u>COMPLETION INTERVAL</u>	<u>PRESENT STATUS</u>
1	UL.P-Sec.28	4888-4915 Lower Delaware	Oil Well
5	K 27	8235-8500 Bone Springs	Gas Well
1	F 29	11,680-11,918 Wolfcamp	Gas Well (SI)
10	E 27	14,305-14,405 Morrow	Gas Well

V. MAP: The attached land plat, Exhibit "C", shows wells and leases within two miles of the proposed injection well, and the proposed injection well's "area of review".

VI. WELLS IN AREA OF REVIEW:

There are two wells, both plugged and abandoned, in the area of review. One is near the center of the area of review and the other is near the north boundary. Well data for each well is as follows:

- (1) Well: Texas Pacific Coal and Oil Company well No. 1 U.S.A. (New Mexico) "A".

Well Type: Dry hole.

Well Location: 1980' FSL & 660' FEL of Section 29, T.26 S., R.30 E. Eddy County, New Mexico.

Drilling Method: Rotary.

Date Spudded: 8-9-55.

Drilling Completed: 8-25-55.

Total Depth: 3410 feet.

Casing Run: 9-5/8" 32# H-40 casing set at 350 feet in 12-1/4" hole. Cemented with 350 sacks of cement. Cement circulated.
5-1/2" 14# J-55 casing set at 3407 feet in 7-7/8" hole. Cemented with 150 sacks of cement.

Completion: Dry and abandoned 8-31-55. 5-1/2" casing cut and pulled from 2847 feet. 15-sack cement plug set at 2832 feet, 35-sack cement plug set at 350 feet, and a 10-sack cement plug set at surface with 4" pipe marker. Heavy mud between plugs.

Schematic: Exhibit "D" is a schematic showing plugging detail.

- (2) Well: Fred Pool Drilling Company well No. 1 Federal TP.

Well Type: Dry Hole.

Well Location: 660' FNL & 660' FEL of Section 29, T.26 S., R.30 E., Eddy County, New Mexico.

Drilling Method: Cable tools.

Date Spudded: 9-27-60.

Drilling Completed: 12-14-60.

Total Depth: 3407 feet.

Casing Run: 10-3/4" 36# casing mudded in at 575 feet.
8-5/8" 24# casing mudded in at 1132 feet.
All of above casing recovered prior to abandonment.

Completion: Plugged and Abandoned 1-15-61. All casing recovered. 60' cement plug at total depth. Hole filled with heavy mud to 8-5/8" casing. All of 8-5/8" casing pulled. 60' cement plug at 1132'. Hole filled with heavy mud to 10-3/4" casing. All of 10-3/4" casing pulled. 60' cement plug at 575'. Hole filled with heavy mud. Plug at surface with regulation marker.

Schematic: Exhibit "E" is a schematic showing plugging detail.

VII. PROPOSED OPERATIONS DATA:

- (1) Proposed Average Daily Injection Rate: 5000 bbls.
Proposed Maximum Daily Injection Rate: 7000 bbls.
 - (2) Type of System: Open.
 - (3) Proposed Average Injection Pressure: 500 psi.
Proposed Maximum Injection Pressure: *670 psi.
 - (4) Sources of Injection Water: Produced water from the Delaware and Wolfcamp formations. Water analyses are attached.
 - (5) Receiving Formation: Delaware formation. Attached water analyses are applicable.
- * Until fracture gradient is determined, maximum injection pressure will be based on a 0.2 psi/foot gradient.

VIII. INJECTION FORMATION:

- (1) The injection formation is the Delaware sand which is a very fine grained quartz sand with variable porosity and permeability and with occasional thin lime and shale beds. Top of the Delaware lime in the proposed injection well is 3300 feet, and the top of the Delaware sand is at 3330 feet. Although gross thickness of the Delaware formation is around 3900 feet, proposed injection is limited to the top 400 feet.
- (2) There are no known underground sources of drinking water in the area.

IX. STIMULATION PROGRAM:

- (1) 5000-gallon acid treatment.

X. WELL LOG AND TEST DATA:

- (1) A copy of a portion of the well log is attached showing the Delaware section penetrated by the proposed injection well when the well was drilled and the present perforated interval.
- (2) No production tests were reported during the initial test period following perforating the interval 3350-3396 feet and acid treatment totaling 6500 gallons. The operator began flow testing the well on 6-14-82, after the well had been shut in since 10-27-80, and reported "the well flowed 44 bbls. oil and 611 bbls. of water in first 48 hours. Well depleted during next 144 hours (6 days) to 0 bbls. of oil, 766 bbls. of water, and no show of gas."

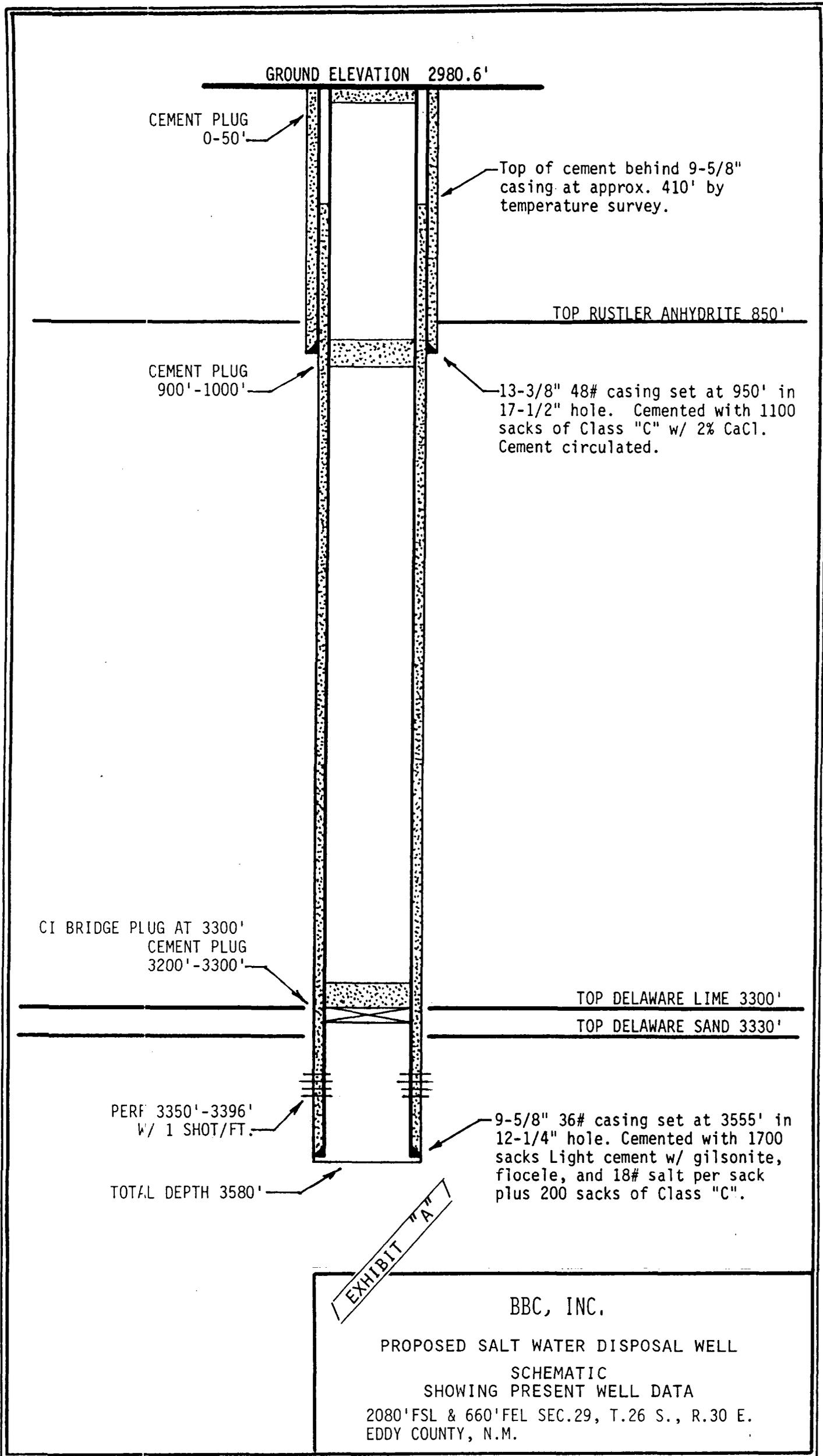
XI. FRESH WATER WELLS:

- (1) There are no fresh water wells within one mile of the proposed injection well.

XII. AFFIRMATIVE STATEMENT:

BBC, Inc. has examined available geologic and engineering data and found no evidence of open faults, or any other hydrologic connection between the proposed disposal zone and any underground source of drinking water.

XIII. PROOF OF NOTICE: Offset operators are being notified.



GROUND ELEVATION 2980.6'

Top of cement behind 9-5/8" casing at approx. 410' by temperature survey.

TOP RUSTLER ANHYDRITE 850'

13-3/8" 48# casing set at 950' in 17-1/2" hole. Cemented with 1100 sacks of Class "C" w/ 2% CaCl. Cement circulated.

ANNULUS FILLED WITH INERT FLUID

INJECTION PROPOSED THRU 4-1/2" TUBING AND BELOW PRODUCTION RETAINER PACKER SET AT ABOUT 3300 FEET

TOP DELAWARE LIME 3300'

TOP DELAWARE SAND 3330'

RE-PERFORATE INTERVAL 3350'-3396' W/ 4 SHOTS/FT.

PROPOSED INJECTION INTO PERFORATED INTERVAL AND INTO OPEN HOLE INTERVAL 3555'-3700'

9-5/8" 36# casing set at 3555' in 12-1/4" hole. Cemented with 1700 sacks Light cement w/ gilsonite, flocele, and 18# salt per sack plus 200 sacks of Class "C".

NEW TOTAL DEPTH 3700'

EXHIBIT "B"

BBC, INC.

PROPOSED SALT WATER DISPOSAL WELL
SCHEMATIC
SHOWING WELL DATA AFTER RE-COMPLETION
FOR SALT WATER DISPOSAL
2080' FSL & 660' FEL SEC. 29, T. 26 S., R. 30 E.
EDDY COUNTY, N.M.

SURFACE ELEVATION 2980'

10-SACK CEMENT PLUG
35-SACK CEMENT PLUG AT 350'
9-5/8" CASING SET AT 350' W/350 SACKS. CEMENT CIRCULATED.

HEAVY MUD BETWEEN PLUGS

15-SACK CEMENT PLUG AT 2832'
5-1/2" CASING CUT & PULLED FROM 2847'

PERFORATIONS 3349'-3357'
5-1/2" CASING SET AT 3407' W/150 SACKS

TOP DELA. LM. 3300'

TOTAL DEPTH 3410'

OPERATOR: Texas Pacific Coal and Oil Co.

WELL NAME: U.S.A. (New Mexico) "A" No. 1.

WELL LOCATION: 1980' FSL & 660' FEL
Sec. 29, T. 26 S., R. 30 E.,
Eddy County, New Mexico.

DATE SPURRED: 8-9-55.

FINISHED DRILLING: 8-25-55.

TOTAL DEPTH: 3410'.

DRILLING METHOD: Rotary.

PRESENT WELL STATUS: Plugged & Abd.

CASING DATA: 9-5/8" 32# H-40 casing set at 350 feet in 12-1/4" hole. Cemented with 350 sacks cement. Cement circulated.

5-1/2" 14# J-55 casing set at 3407 feet in 7-7/8" hole. Cemented with 150 sacks cement.

PLUGGING RECORD: Dry and abandoned 8-31-55. 5-1/2" casing cut and pulled from 2847 feet. 15-sack cement plug set at 2832 feet, 35-sack cement plug set at 350 feet, and a 10-sack cement plug set at surface with 4" pipe marker. Heavy mud between plugs.

EXHIBIT "D"

BBC, INC.

APPLICATION FOR AUTHORITY TO INJECT
PLUGGING DETAIL

TEXAS PACIFIC COAL AND OIL COMPANY
WELL NO. 1 U.S.A. (NEW MEXICO) "A"
1980' FSL & 660' FEL SEC. 29, T. 26 S., R. 30 E.
EDDY COUNTY, N.M.

SURFACE ELEVATION 2971'

SURFACE PLUG

60' CEMENT PLUG AT 575'

60' CEMENT PLUG AT 1132'

HEAVY MUD BETWEEN PLUGS

60' CEMENT PLUG AT 3407'

TOP DELAWARE LM 3328

TOP DELAWARE SD 3383

TOTAL DEPTH 3407'

OPERATOR: Fred Pool Drilling Company.

WELL NAME: Federal TP NO. 1.

WELL LOCATION: 660' FNL & 660' FEL
Sec.29, T.26 S., R.30 E.,
Eddy County, New Mexico.

DATE SPUDDED: 9-27-60.

FINISHED DRILLING: 12-14-60.

WELL COMPLETED: P.& Abd. 1-15-61.

TOTAL DEPTH: 3407'.

DRILLING METHOD: Cable Tools.

CURRENT WELL STATUS: Plugged & Abd.

CASING DATA: 10-3/4" Casing Mudded in
at 575'.

8-5/8" Casing Mudded in
at 1132'.

All of Above Casing Recovered
Prior to Abandonment.

PLUGGING RECORD: TD 3407. All Casing Recovered.
60' cement plug at total depth. Hole filled with
heavy mud to 8-5/8". 8-5/8" pulled. 60' cement
plug at 1132'. Hole filled with heavy mud to
10-3/4". 10-3/4" pulled. 60' cement plug at
575'. Hole filled with heavy mud. Plug in
surface w/ regulation marker.

EXHIBIT "E"

BBC, INC.

APPLICATION FOR AUTHORITY TO INJECT
PLUGGING DETAIL

FRED POOL DRILLING COMPANY
WELL NO.1 FEDERAL TP

660' FNL & 660' FEL SEC.29, T.26 S., R.30 E.
EDDY COUNTY, N.M.

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W83-929

To BBC, Inc.

Date 8-4-83

105 E. Marland

Hobbs, New Mexico

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by _____ Date Rec. 8-4-83

Well No. Not Designated Depth _____ Formation As Marked

County _____ Field _____ Source _____

	<u>Cherry Canyon</u>	<u>Bell Canyon</u>	
Resistivity	<u>0.049 @ 74°F.</u>	<u>0.070 @ 74°F.</u>	
Specific Gravity	<u>1.181</u>	<u>1.086</u>	
pH	<u>5.4</u>	<u>6.9</u>	
Calcium (Ca)	<u>23,700</u>	<u>8,000</u>	<u>*MPL</u>
Magnesium (Mg)	<u>6,240</u>	<u>1,500</u>	
Chlorides (Cl)	<u>169,000</u>	<u>76,000</u>	
Sulfates (SO ₄)	<u>310</u>	<u>1,640</u>	
Bicarbonates (HCO ₃)	<u>75</u>	<u>145</u>	
Soluble Iron (Fe)	<u>5</u>	<u>Nil</u>	
Sodium, Na (Calc.)	<u>70,766</u>	<u>38,122</u>	
Total Dissolved Solids (Calc.)	<u>270,096</u>	<u>125,407</u>	

Remarks: _____ *Milligrams per liter

Respectfully submitted,

Analyst: Brewer

HALLIBURTON COMPANY

cc:

By W. J. Brewer
CHEMIST

NOTICE

THIS REPORT IS LIMITED TO THE DESCRIBED SAMPLE TESTED. ANY USER OF THIS REPORT AGREES THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER IT BE TO ACT OR OMISSION, RESULTING FROM SUCH REPORT OR ITS USE.

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W83-928To BBC, Inc.Date 8-4-83103 5. MarlandHobbs, New Mexico

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by _____ Date Rec. 8-4-83Well No. Not Designated Depth _____ Formation As Marked

County _____ Field _____ Source _____

	<u>Brushy Canyon</u>	<u>Wolfcamp</u>	
Resistivity	<u>0.048 @ 74°F.</u>	<u>0.089 @ 74°F.</u>	
Specific Gravity	<u>1.209</u>	<u>1.057</u>	
pH	<u>5.3</u>	<u>6.0</u>	
Calcium (Ca)	<u>32,200</u>	<u>1,800</u>	<u>*MPL</u>
Magnesium (Mg)	<u>5,760</u>	<u>840</u>	
Chlorides (Cl)	<u>197,000</u>	<u>48,000</u>	
Sulfates (SO ₄)	<u>160</u>	<u>185</u>	
Bicarbonates (HCO ₃)	<u>95</u>	<u>230</u>	
Soluble Iron (Fe)	<u>Nil</u>	<u>5</u>	
Sodium, Na (Calc.)	<u>80,067</u>	<u>27,657</u>	
Total Dissolved Solids (Calc.)	<u>315,282</u>	<u>78,717</u>	

Remarks: _____ *Milligrams per liter

Respectfully submitted,

Analyst: Brewer

HALLIBURTON COMPANY

cc:

By W. D. Brewer
CHEMIST

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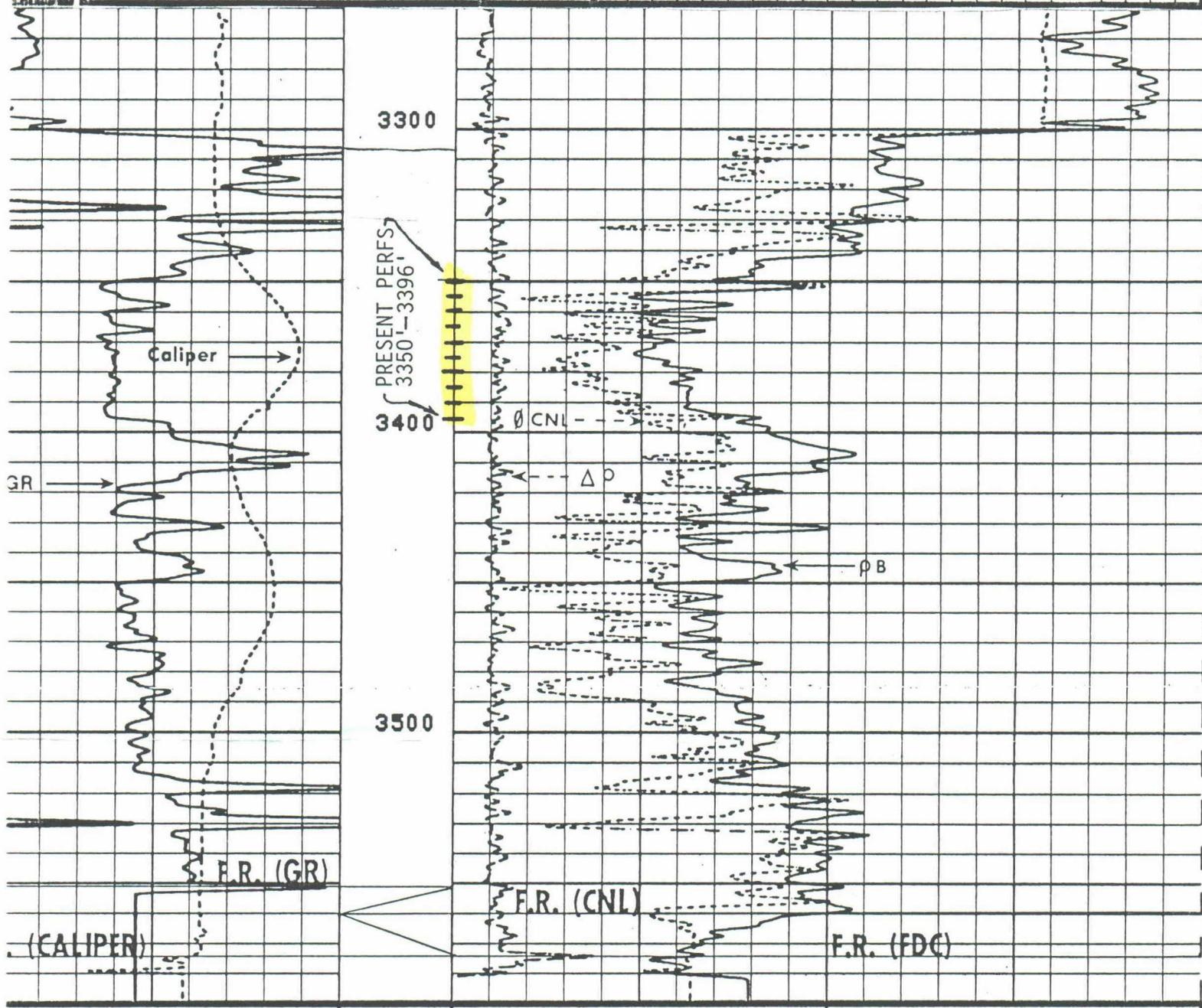
FORMATION DEPT.

COMPANY AMOCO PRODUCTION COMPANY RECEIVED
 API #30-015-23324
 WELL FEDERAL AZ #1 JUL 14 1980
 FIELD BRUSHY DRAW DELAWARE O. C. D.
 COUNTY EDDY STATE NEW MEXICO
 ARTESIA, OFFICE
 LOCATION 2080' FSL & 660' FEL 9
 API SERIAL NO. SEC. TWP. RANGE
 29 26-S 30-E
 Other Services:
 DLL LONG SPG
 NGT

Permanent Datum: CL OF 2" BHO ; Elev.: 2980.6
 Log Measured From RDB , 15 Ft. Above Perm. Datum
 Drilling Measured From RDB
 Elev.: RDB 2995
 D.F. 2980
 G.I. 2980

BBC, INC.
 (FORMERLY AMOCO PRODUCTION COMPANY)
 WELL NO. 1 FEDERAL AZ
 2080' FSL & 660' FEL SEC. 29, T. 26 S., R. 30 E.
 EDDY COUNTY, NEW MEXICO

Date	6-28-80
Run No.	ONE
Depth-Driller	3580
Depth-Logger	3576
Btm. Log Interval	3575
Top Log Interval	SURF
Casing-Driller	13 3/8 @ 950
Casing-Logger	946
Bit Size	12 1/4
Type Fluid in Hole	SALT MUD
Dens.	10.2
Visc.	36
pH	9.0
Fluid Loss	28 ml
Source of Sample	CIRC
Rm @ Meas. Temp.	.039 @ 96 °F
Rmf @ Meas. Temp.	.039 @ 96 °F
Rmc @ Meas. Temp.	@ °F
Source: Rmf Rmc	M
Rm @ BHT	.044 @ 85 °F
Circulation Stopped	0500
Logger on Bottom	1100
Max. Rec. Temp.	85 °F
Equip. Location	8185 HOBBS
Recorded By	MOBARAK
Witnessed By Mr.	BECHTOL



SGR (GAPI)	0	100.0
CAL (IN)	0.00	16.00
DRHO (G/C3)	-0.050	0.4500
NPHI ()	0.3000	-0.100
RHO (G/C3)	2.000	3.000