CASE NO.

7687

APPLICATION,

TRANSCRIPTS,

SMALL EXHIBITS,

ETC.

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date SEPTEMBER 29, 1982 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
Jeff Edmister	[illegible]	Aztec
Clyde A Mote	Amoco Prod Co.	Houston
Ernest L Padilla	Mountain States Petroleum Corp.	SF
Kay Havemor	Mountain States Pet Corp	Roswell
Jack Ahlen	Mountain States Pet Corp and Depco Inc	Roswell
Jack Ahlen	Depco Inc	Roswell
James C. Allen	Amoco Prod. Co.	Houston
Larry W Sheppard	Amoco Prod Co.	Houston
[illegible]	Enserch	[illegible]
[illegible]	Enserch	Midland
William F. Carr	Campbell, Byrd & Black	Santa Fe
Joel Carson	Losee Carson & Dickerson	Artesia
[illegible]	Gibbs Energy Corporation	Albuquerque
[illegible]	[illegible] Energy Corp	"
Harry Yates		
JT Hutchison	DEPCO	MIDLAND
Lorenzo Rash	Enserch	Midland
David R. Vandiver	[illegible] Petroleum	Hobbs

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE , NEW MEXICO

Hearing Date SEPTEMBER 29, 1982 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
Tom Kellahin	Kellahin & Kellahin	Santa Fe
Jas. [illegible] Jennings	Jennings [illegible]	Roswell
Wm. R. Speer	Consulting Geologist	Farmington
R.L. Richards	Unichem Intl. Inc	HOBBS
Kevin H. McCord	Consulting Engineer	Farmington
[illegible]	Foristes & Sweatt	[illegible]
Tim Kelly	Geohydrology Assoc	Albuq.
E F Patterson, Jr	[illegible]	Hobbs
Michael A. [illegible]	C&K Petroleum	MIDLAND, TX
Bobby [illegible]	Rosebud Ranch	Clayton N.M.
[illegible]	[illegible]	Santa Fe
Paul W. Burchell	El Paso Natural Gas Co	El Paso
Harvey [illegible]	MMS	ABQ

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
29 September 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of Amoco Production Company for salt water disposal, Union County, New Mexico. CASE 7687

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: Clyde Mote, Esq.
Amoco Production Company
Houston, Texas

I N D E X

E X H I B I T S

MR. STAMETS: We will call Case 7687.

MR. PEARCE: That is on the application of Amoco Production Company for salt water disposal, Union County, New Mexico.

MR. MOTE: Mr. Examiner, I'm Clyde Mote, attorney, representing Amoco Production Company, in association with Mr. Bill Carr, New Mexico, and we're ready to proceed.

MR. STAMETS: Are there any other appearances in this case?

Mr. Mote, you may proceed.

(Witness sworn.)

MR. MOTE: Mr. Examiner, I'm Clyde Mote, attorney, representing Amoco Production Company and we'll have one witness, Larry Sheppard.

LARRY W. SHEPPARD

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. MOTE:

Q If you would, please, state your name, by

whom employed, and in what capacity and location?

A. My name is Larry W. Sheppard. I'm employed by Amoco Production Company as a staff petroleum engineer in our Houston West Region Proration Group.

Q. Would you please relate your educational experience?

A. I received a Bachelor of Science degree in petroleum engineering from Texas Tech University in May of 1977.

Q. And what has been your work experience since that date?

A. Since that time I've been employed by Amoco Production Company. I've worked in various engineering capacities at Andrews, Houston, Hobbs, and now again in Houston.

Q. And what's been the general categories of your employment with Amoco?

A. I've been employed in the areas of production engineering, reservoir engineering, drilling and completion, and now proration.

Q. Are you familiar with the Brave Dome area in New Mexico?

A. Yes, I am.

MR. MOTE: Is there any question concern-

ing the witness' qualifications?

MR. STAMETS: The witness is considered qualified.

Q. You'll be asked to testify concerning certain exhibits. Were these exhibits either prepared by you or under your supervision and direction?

A. Yes.

Q. Turn to your first exhibit, please, sir. I believe this is the administrative application for the well which is the subject of this hearing, is that not true?

A. Yes, sir.

Q. And this is the same petition, or application, the C-108, with all attachments that was filed with the Oil Conservation Division in an attempt to get administrative approval, is that correct?

A. That's correct.

Q. And certain protests were filed and that is the reason why we're here today, is that correct?

A. Yes, sir.

Q. All right, go to your Exhibit Number Two. I believe these are the notices that were given in connection with the administrative application, is that correct?

A. Yes, sir.

Q. Is it true that the State owns all the

minerals as well as all the surface on the tract on which the application is made for the injection well?

A. Yes, sir.

Q. And I notice Mike Hutchison was also given notice. Why was he given notice?

A. Mr. Hutchison is the lessee of the surface from the State, and upon the suggestion of the State, we did send him a letter advising him of the proposed disposal.

Q. All right. Go to your Exhibit Number Three, if you would. I believe this is the map of the specific area involved, is it not?

A. Yes, sir.

Q. And what's the radius circle you've got drawn around the well with the arrow?

A. That circle is a one-half mile radius drawn from our proposed disposal well, and this sets up the area of review as required in the criteria of the State regulations governing disposal.

Q. All right, and the red arrow, is that the injection well, proposed injection well?

A. Yes, sir, that is correct.

Q. And I notice there are only three wells in this radius, is that true?

A. Yes, sir, we have the proposed disposal

well and two other wells.

Q. All right, go to your Exhibit Number Four. This is the current well status summary, is it not?

A. Yes, sir, this is the summary of the well status of the three wells within the area of review.

Q. All right, point out all the information which you feel might be of special importance to the Examiner on this exhibit.

A. This is just a tabular summary of the pertinent data concerning the completions and the current status of these wells. It lists the well name, the dates drilled, the depth of surface and production casing, the legal location, the total depth of the well, and the completion interval.

This data is presented in a more complete fashion on exhibits that we will present.

Q. All right, and one of those, I believe, is Exhibit Five, is it not?

A. Yes, sir.

Q. I believe Exhibit Number Five is a well-bore sketch and a well history of what we'll call Well Number One. By the way, Well Number One was known as what now before, F-1-1?

A. It was known as the State FI No. 1. It's

currently Brave Dome Unit No. 20343610.

Q. All right.

MR. STAMETS: This is the simple system that Amoco worked out to identify the wells in the unit, is that correct?

A. Yes, sir, that is correct.

MR. STAMETS: It certainly seems to be --

A. For the record, may we refer to them as Wells One, Two, and Three?

MR. STAMETS: Let us hope so.

Q. All right, if you would, point out the -- at least the material -- the information shown on here with regard to circulation of the cement to surface.

A. As far as the pertinent data, you'll see that both our surface casing and production casing strings have been circulated to surface with cement. We, within the last month, completed the circulation of the production string, as you can see. We perforated at 980 feet and did circulate the cement to the surface, and so that string is now completely isolated, also.

Q. All right, go to your Exhibit Number Six. I believe this is the same type of exhibit but it's with regard to Well Number Two, is that correct?

A. Yes, sir, it is.

Q. And is this the proposed injection well?

A. Yes, sir.

Q. All right, point out any information on here about circulation, also.

A. Okay, as you again can see, both the surface casing and the long string production casing have been circulated with cement to surface.

Q. All right, go to Exhibit Number Seven, if you will. Is this the same type of exhibit as Exhibits Five and Six but in connection with Well Number Three?

A. Yes, sir.

Q. All right, discuss the circulation of cement in this exhibit as well.

A. Again, as in the previous two cases, both the surface and production string have been circulated to the surface with cement.

Q. All right, go to your Exhibit Number Eight. I believe this is a summary of the water analyses which you've made, is that correct?

A. Yes, sir, it is.

Q. All right, go through there and explain to the Examiner what you show on this exhibit.

A. This exhibit is the summary of water analyses data for the Glorieta, which is our proposed dis-

posal horizon; for the Tubb, which is the water to be disposed of; and we also include two analyses from fresh water wells that are within the vicinity of the proposed disposal well.

Of particular interest, it should be noted that the Glorieta water samples show the total dissolved solids of 29,332. The Tubb water analysis shows the total dissolved solids of 44,937, and the fresh water samples, which were taken from the Ogallala with -- from two wells within a mile of the proposed disposal well, show total dissolved solids of between 4 and 700 parts per million.

Q. Does the 29,332 parts per million total dissolved solids in the Glorieta meet State specifications for a water in which to inject?

A. Yes, sir, it is nearly three times in excess of the minimum requirements of the State of 10,000 milligrams per liter total dissolved solids.

Q. All right, now have you determined whether or not the Glorieta formation and the water in the Glorieta formation are compatible with the water from the Tubb to be injected?

A. Yes, sir, all the data that we have indicates that both the water and the formation would be compatible with the Tubb disposal water.

Q. All right, go to your Exhibit Number Nine, if you would. I believe these are your calculations for maximum surface injection pressure, are they not?

A. That is correct.

Q. Would you please go through these calculations and explain to the Examiner what you've done?

A. Okay, the calculations are broken up into three parts. First of all, I have the qualification for my calculations, and that is that the fracture gradient of the Glorieta would be approximately equivalent to that of the Tubb.

Using that as a qualification, I backed out the calculated fracture gradient for the Tubb, which was based on actual fracture stimulations of six wells within the vicinity of the proposed disposal well.

As you can see, the fracture gradient calculated to be .79 psi per foot of depth.

Again now, using my qualification of assuming that the Glorieta would have the same, approximately the same fracture gradient, I calculated that the bottom hole fracture pressure for the Glorieta would be 1382 psi. That converts to a wellhead fracture pressure of 596 psi.

As you can see, dividing that by the average depth of the injection well would give us a surface limit of .34 psi per foot. This is well in excess of what has been

a standard guideline of approximately 2.2 psi per foot, and therefor we are recommending that we adopt the .2 psi per foot which would give us a maximum surface limit pressure of 350 psi, or approximately 250 psi below our calculated fracture pressure.

Q. In substance, what this exhibit shows is that you think that the Glorieta would take about 596, or more, in order to obtain parting pressure from the wellhead, is that true?

A. Yes, sir, that's correct.

Q. And you are recommending 300, a maximum of 350 psi at this time.

A. Yes, sir, that's correct.

Q. And does this differe from the psi maximum requested in your administrative application?

A. Yes, sir, this is the only point where we deviate from what was requested through the administrative application.

Our Hobbs office, when they submitted that, based their pressure, really, upon just an arbitrary pick, because all of the stimulation tests that we have on the Glorieta and Bravo Dome indicate that it would take the necessary water on a vacuum, but we do want to go ahead and request the 350 psi limit so we do not have to come back for

another hearing if indeed we do need to exceed the 100 psi.

Q. All right, get out your Exhibits Ten and Eleven and we'll discuss both of those at the same time.

I believe Exhibit Number Ten is a pertinent data sheet and Exhibit Number Eleven is a log of the proposed disposal well, is that correct?

A. Yes, sir.

Q. All right, if you would, go through and point out matters of interest on both these exhibits.

A. Okay. First of specific interest in our pertinent data sheet are our proposed operation parameters. As far as volumes of water to be disposed of, we initially anticipate disposing of no more than 50 barrels of water per day; however, in the future we possibly foresee that there would be need of disposing of up to 600 barrels of water a day, but in no case can we envision that we would need to exceed 900 barrels of water per day.

The system will be closed and again we're recommending a maximum surface limit of 350 psi; however, we do expect our average injection pressure to less than 100 psi.

The next area that I'd like to briefly touch on would be the geology of the disposal horizon, and of fresh water sands within the vicinity of this well.

First of all, the Glorieta top is located

on the logs at 1702 feet. The lithology of the proposed disposal horizon is a fine to coarse-grained sandstone that is well cemented by calcereous material.

Now, as you can also see, I've marked the other tops, the tops of the San Andres, Santa Rosa, and of the Triassic on the log that I have. The deepest fresh water sand in the area is the Morrison Exeter Sand where the base of the sand is located at 620 feet, which is at the top of the Triassic. This does agree with areal ground water studies which have done and that indicated that the probable depth of the deepest fresh water zone would be somewhere between 550 and 600 feet.

Q. How far is the base of the Exeter from the perforations that you intend to place in your disposal well?

A. We have separation of about 1100 feet.

Q. All right, is the Glorieta at a low pressure and able to take water easily?

A. Yes, sir, as I have previously mentioned, all of the stimulations that I have seen were done on a vacuum and we do have bottom hole pressures that indicate that the Glorieta is an abnormally low pressure horizon, and therefor should not have any problem taking the water that we wish to dispose in it.

Q. Have you examined all available geologic and engineering data and find no evidence of open faults or any other hydrological connection between the disposal zone and any underground source of drinking water?

A. I have examined the data and I do find that there is no evidence of such.

Q. All right, go to your Exhibits Twelve and Thirteen and we'll discuss those two together.

I believe your Exhibit Number Twelve is your planned method of conversion of the disposal well and Exhibit Thirteen is a graphical level sketch showing this conversion. Is that true?

A. Yes, sir.

Q. Would you please go through and describe the method which you intend to use in converting this existing well into a salt water disposal well?

A. Our Exhibit Number Twelve is a copy of the C-103 which will be submitted to the Commission for approval to convert the well. We intend to go in, set a cast iron bridge plug approximately 100 feet above the Tubb perforations, cap that bridge plug with 35 feet of cement, which is in accordance with the Commission regulations for permanent abandonment of horizon.

Upon completion of that we will perforate

the proposed Glorieta interval from 1718 to 1780 feet. We will then acidize it with 1000 gallons of 7-1/2 percent hydrochloric acid. We will run an injection packer, which will be internally and externally coated with 2-3/8th internally coated injection tubing, circulate the tubing-casing annulus with inhibited water, set our packer, and then we will be completed and ready for disposal.

Q. Does that complete your testimony?

A. Yes, sir, it does.

MR. MOTE: We offer all Exhibits One through Thirteen into evidence and submit the witness for examination.

MR. STAMETS: The exhibits will be admitted.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Sheppard, what's the location of the two water wells that you've sampled?

A. Sir, the first well is located almost on the same -- as I understand, it's located within about 200 feet of the proposed disposal well. It's within sight of it.

The other well is located approximately

one mile to the southeast of the proposed disposal well.

Q. And what's the approximate depth of the water from those wells? Do you know that?

A. Sir, all I have is hearsay and the staff feels that it is probably Ogallala and the depth would be between 100 -- between 50 and 100 feet.

Q. Now you indicated that the .2 of a pound per foot pressure is acceptable. I presume that you would like to have a provision in that order which would allow for higher pressures, if needed, and based upon evidence that you would not fracture the confining strata.

A. Yes, sir. that is correct.

Q. And I understand that the San Andres contains water in this area in poor quality. Do you know anything about the San Andres?

A. Yes, sir, I have seen some data on the San Andres water samples.

Q. Is that correct, that the water is not usable quality?

A. The San Andres does have very brackish waters and it's somewhat suspect in this well. As you can see on the logs, through the upper portion of the San Andres there are about eight or ten stringers of anhydrite and I only saw one place in the San Andres that could possibly give

up water, which would be at about 1600 feet and I think our experience in the past has been that we've not ever been able to get very prolific either water or any other production from the San Andres.

Q. How wide an area do you expect this injection well to serve in the industry?

A. I'm not certain. Could you please rephrase your question? I'm not certain.

Q. Does this have to be the only injection well for the unit or is this just one of probably what will be quite a number before the unit is completely developed?

A. I think that we will have to see what happens during our testing phase to see how much water we actually are going to make. Right now this is our only planned disposal well but we could possibly anticipate that a full scale operation of the unit that we would need future disposal wells, but I can't make a definitive statement on that now because I just don't know.

Q. Are there any questions of the witness? He may be excused.

Does anyone have anything that they wish to add in the case?

It will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7687 heard by me on 9-29, 1982.

Richard L. Stamets, Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.
Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

October 8, 1982

Mr. Clyde Mote, Attorney
Amoco Production Company
P. O. Box 3092
Houston, Texas 77001

Re: CASE NO. 7637
ORDER NO. R-7096

Applicant:

Amoco Production Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 7687
Order No. R-7096

APPLICATION OF AMOCO PRODUCTION
COMPANY FOR SALT WATER DISPOSAL,
UNION COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on September 29, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 7th day of October, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Amoco Production Company, is the owner and operator of the Bravo Dome Carbon Dioxide Unit Tract 2034 Well No. 362, formerly known as the State FI Well No. 2 located 660 feet from the South line and 1320 feet from the East line of Section 36, Township 20 North, Range 34 East, NMPM, Union County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Glorieta formation, with injection into the perforated interval from approximately 1718 feet to 1780 feet.

(4) That the injection should be accomplished through 2 3/8-inch plastic lined tubing installed in a packer set at approximately 1650 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the

annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 350 psi.

(6) That the Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the Glorieta formation.

(7) That the operator should notify the supervisor of the Santa Fe district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(8) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(9) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Amoco Production Company, is hereby authorized to utilize its Bravo Dome Carbon Dioxide Gas Unit Tract 2034 Well No. 362 located 660 feet from the South line and 1320 feet from the East line of Section 36, Township 20 North, Range 34 East, NMPM, Union County, New Mexico, to dispose of produced salt water into the Glorieta formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 1650 feet, with injection into the perforated interval from approximately 1718 feet to 1780 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pressure limiting switch or other acceptable device

which will limit the wellhead pressure on the injection well to no more than 350 psi.

(3) That the Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Glorieta formation.

(4) That the operator shall notify the supervisor of the Santa Fe district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(5) That the operator shall immediately notify the supervisor of the Division's Santa Fe district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 702, 703, 704, 705, 706, 708, and 1120 of the Division Rules and Regulations.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

Amoco

7687

Amoco
9-29-82

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Amoco Production Company

Address: P. O. Box 68, Hobbs, NM 88240

Contact party: Steven Lesikar Phone: (505) 393-1781

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

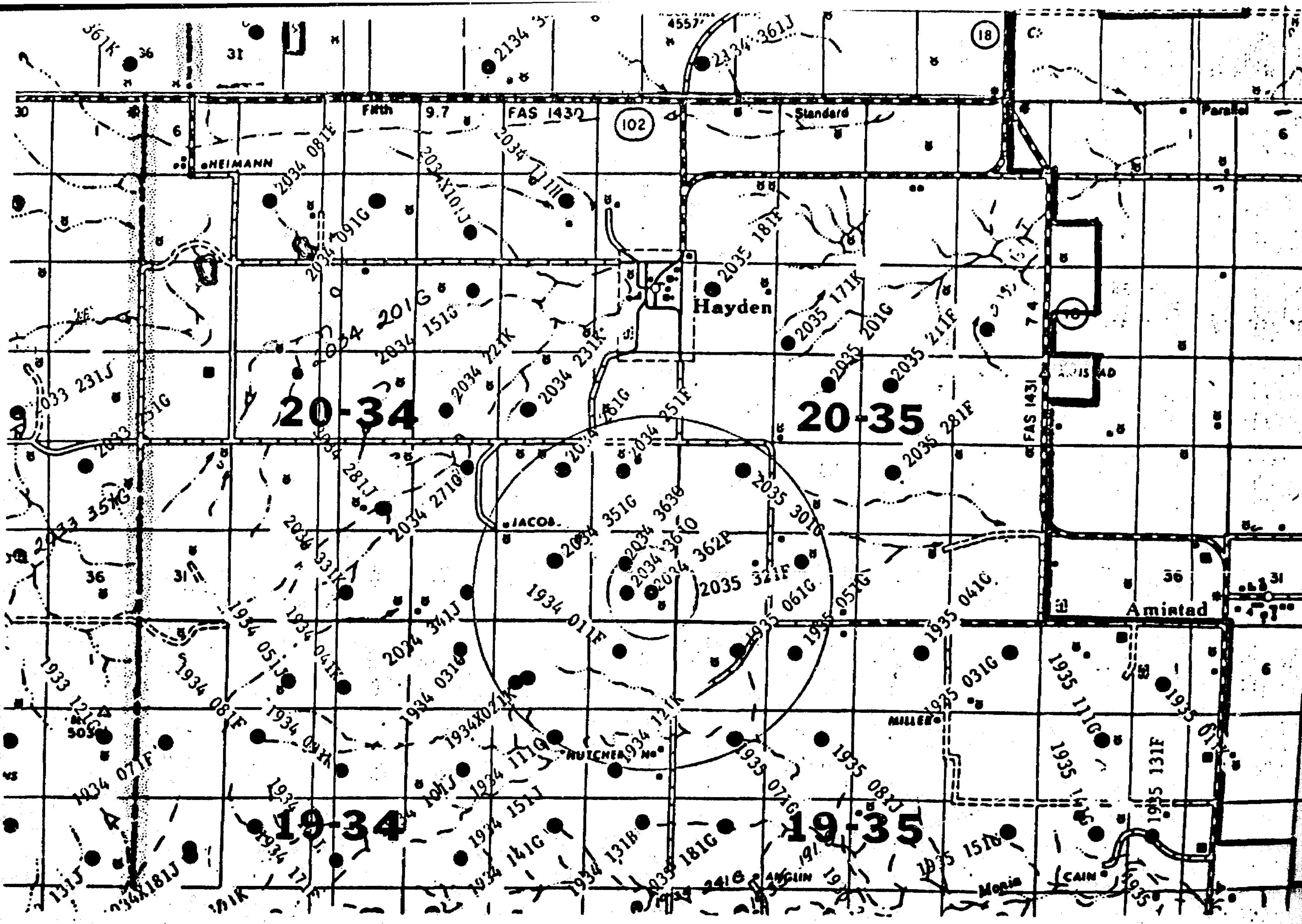
I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Cathy L. Forman Title Asst. Administrative Analyst

Signature: Cathy L. Forman Date: 8-24-82

* 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



20-34
20-35
19-34
19-35
Hayden
Amistad
Fifth
9.7
FAS 1430
FAS 1431
102
18
Standard
Parallel
HEIMANN
JACOB
HUTCHER
CAIN
2034 081F
2034 091G
2035 181F
2035 171K
2035 201G
2035 211F
2034 201G
2034 151G
2034 221K
2034 231K
2033 231J
2035 281F
2034 271G
2034 351G
2035 301G
2035 321F
2034 362P
1934 011F
1935 061G
1935 051G
1935 041G
1935 031G
1934 031G
1934 081F
1934 051J
1934 071F
1935 081J
1935 131F
1934 151J
1934 141G
1935 151G

WELL NAME	WELL TYPE	DATE DRILLED	SURF. CSG.	SET @ (FT)	TOP OF CMT	PROD CSG.	SET @ (FT)	TOP OF CMT	LOCATION*	TOTAL DEPTH (Ft)	COMPLETION INTERVAL
BDCDGU 1934 011F	Gas	11-11-80	8-5/8"	714	Circ	5-1/2"	2626	Circ	1968' FNL x 1990' FWL, Sec. 1, T-19-N, R-34-E	2625	2172-2372
BDCDGU 1934 021K	PxA	10-18-80	8-5/8"	700	Circ	N/A	N/A	N/A	1980' FSL x 1980' FWL, Sec. 2, T-19-N, R-34-E	2614	N/A
BDCDGU 1934X021K	Gas	10-24-80	8-5/8"	701	Circ	5-1/2"	2633	412'	1980' FSL x 2055' FWL, Sec. 2, T-19-N, R-34-E	2587	2198-2433
BDCDGU 1934 111G	Gas	11-21-80	8-5/8"	741	Circ	5-1/2"	2506	Circ	1980' FNL x 1984' FEL, Sec. 11, T-19-N, R-34-E	2530	2142-2354
BDCDGU 1934 121K	Gas	1-28-81	8-5/8"	718	Circ	5-1/2"	2553	Circ	1980' FSL x 1972' FWL, Sec. 12, T-19-N, R-34-E	2552	2176-2478
BDCDGU 1935 051G	Gas	5-26-81	8-5/8"	703	Circ	5-1/2"	2465	Circ	1980' FNL x 1980' FEL, Sec. 5, T-19-N, R-35-E	2465	2130-2265
BDCDGU 1935 061G	Gas	1-1-80	8-5/8"	701	Circ	5-1/2"	2450	Circ	2044' FNL x 1980' FEL, Sec. 6, T-19-N, R-35-E	2450	2126-2322
BDCDGU 1935 071G	Gas	12-23-80	8-5/8"	698	Circ	5-1/2"	2451	Circ	1980' FNL x 1980' FEL, Sec. 7, T-19-N, R-35-E	2451	20[illegible]-2290
BDCDGU 2034 251F+	Gas	12-23-80	8-5/8"	705	Circ	5-1/2"	2763	Circ	1980' FNL x 1980' FWL, Sec. 25, T-20-N, R-34-E	2763	2262-2422
BDCDGU 2034 261G	Gas	1-23-81	8-5/8"	733	Circ	5-1/2"	2757	Circ	1980' FNL x 1980' FEL, Sec. 26, T-20-N, R-34-E	2760	2220-2421
BDCDGU 2034 351G	Gas	12-8-80	8-5/8"	703	Circ	5-1/2"	2647	Circ	1980' FNL x 1980' FEL, Sec. 35, T-20-N, R-34-E	2650	2220-2438
BDCDGU 2034 3610++	Gas	7-12-74	8-5/8"	328	Circ	4-1/2"	2665	----	660' FSL x 1980' FEL, Sec. 36, T-20-N, R-34-E	2670	2186-2404
BDCDGU 2034 362P**	Gas	10-7-74	8-5/8"	307	Circ	4-1/2"	2600	Circ	660' FSL x 1320' FEL, Sec. 36, T-20-N, R-34-E	2625	2198-2369
BDCDGU 2034 3630	Gas	5-22-79	8-5/8"	322	Circ	4-1/2"	2600	Circ	1315' FSL x 1980' FEL, Sec. 36, T-20-N, R-34-E	2600	2190-2359
BDCDGU 2035 301G	Gas	3-28-81	8-5/8"	723	Circ	5-1/2"	2670	Circ	1980' FNL x 1980' FEL, Sec. 30, T-20-N, R-35-E	2670	2243-2348
BDCDGU 2035 321F	Gas	3-25-81	8-5/8"	705	Circ	5-1/2"	2663	Circ	1980' FNL x 1980' FWL, Sec. 32, T-20-N, R-35-E	2663	2146-2300

*Every location is in Union County, New Mexico
**Proposed injection well (prior to workover)
+Cmt tie back performed 7/17/80
++Cmt tie back to be performed

RDB/mjh
EB01-C

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

DATE 2/25/81

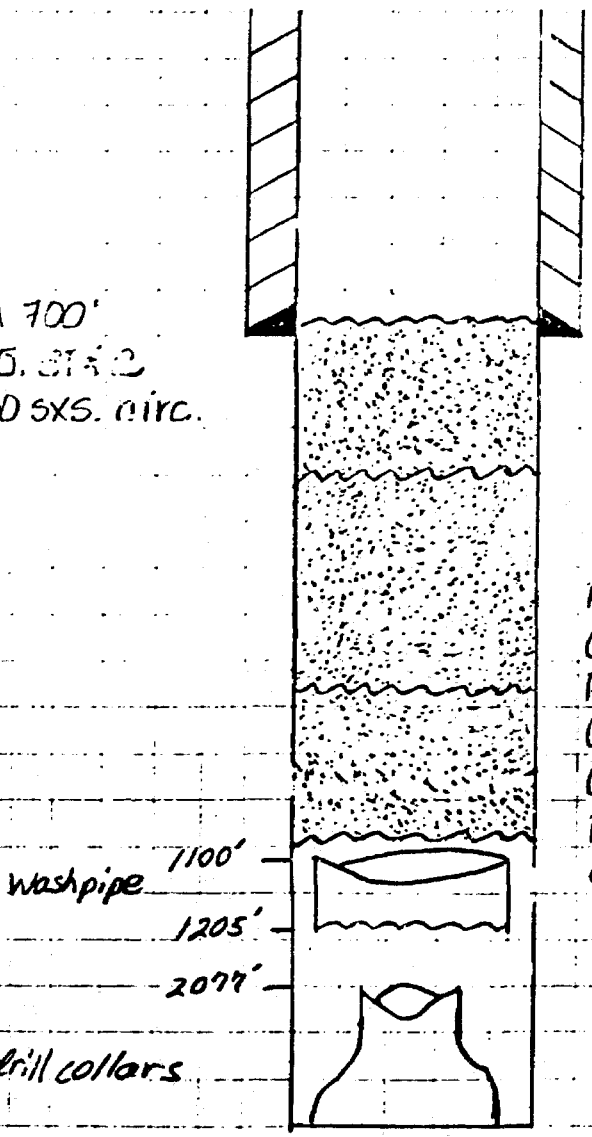
BY RAB

SUBJECT HUTCHERSON "B" No. 5 (1934 021K)

BRAVO DOME (W.D. TUBB

UNIT K. 1980 FSL x 1980 FWL. SEC. 2. T-19-N. R-34 E.
UNION COUNTY. NEW MEXICO.
P&A

ELEV: 4785' G.L.



PLUG to 656' circ 10 sxs Class C neat OUT
CMT w/ 75 SXS. Class C neat.
PLUG FROM 860-650
CMT w/ 150 SXS. Class C neat.
PLUG FROM 1060'-910'.
CMT w/ 95 SXS.
Class C neat.
PLUG FROM 1105'-1060'.
CMT w/ 150 SXS.
Class C neat.

BDCDGU
1934 021K
Well History
Hutcherson B No. 5

10/7/80 8-5/8", 24#, K-55, ST&C casing set at 700' in a 12-1/4" hole. Cemented with 400 sacks Class C with 1% $CaCl_2$. Circulated 45 sacks.

10/10/80 Stuck drill pipe for 8 hours. TD 2614'.

10/11/80 Stuck drill pipe at 2614'. (24 hours)

10/12/80 Stuck drill pipe and all drill collars stuck except 1/2 of last drill collar on top. (7-3/4 hours) TD 2614'.

10/13/80 Fishing (18 hours). Bridge at 950'. Washing and reaming from 950' to 1040'. TD 2614'.

10/14/80 Washing from 1124'-1295'. Stuck wash pipe. Fishing for 23 hours. TD 2614'.

10/15/80 Ream from 767'-1300'. Fish for 24 hours. TD 2614'.

10/16/80 Wash and ream from 1100' to 2077'. Wash through bridge at 1205'. Fish for 24 hours for wash pipe. TD 2614'.

10/17/80 Fishing for 12 hours. Pump 150 sacks Class C neat cement to set plug from 1105'-1060' (6 hours).

10/18/80 Pump 95 sacks Class C neat to set plug from 1060'-910' (6 hours). Pump 150 sacks Class C neat to set plug from 910'-860'. Pump 75 sacks Class C neat to set plug from 860'-650'. Circulate 10 sacks cement out. Top of cement at 656'.

2/25/81
RAB/sas

VII. Proposed Operation Data

1. The proposed average and maximum daily rate and volume of fluids to be injected: Avg: 600 BWPD; Max 900 BWPD

2. The system is closed.

3. The proposed average and maximum injection pressure: Avg: ≤100 psi; Max: 100 psi

4. See attached water analysis

5. See attached water analysis

VIII. Geology Of Injection Zone

1. Sandstone formation

2. Glorietta zone

3. Net Pay: 98'

4. Depth: 1702' (+3043' subsea)

5. The Exador sand, located at approximately 560' (+4185' subsea), is the closest known fresh water source in the area.

IX. Proposed Stimulation

1. See attached C-103

XI. Chemical analysis

1. Water samples have been shipped for analysis from two (2) nearby water wells (see attached analysis).

XII. All available geologic and engineering data has been examined and no hydrologic connection between the Glorietta formation and the Exador formation have been found.

RDB/mjh
EBD1-P

INJECTION WELL DATA SHEET

OPERATION	LEASE			
Amoco Production Company	Bravo Dome Carbon Dioxide Gas Unit			
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
2034 362P	660' FSL x 1320' FEL	Sec. 36	T-20-N	R-34-E

Schematic

See attachment

Tabular Data

Surface Casing

Size 8-5/8 " Cemented with 108 sx.

TOC surface feet determined by (circ 75 sx)

Hole size 12-1/4"

Intermediate Casing

Size _____ " Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 4-1/2 " Cemented with 625 sx.

TOC surface feet determined by (circ 70 sx)

Hole size 7-7/8"

Total depth 2625'

Injection interval

1718 feet to 1780 feet

(perforated or open-hole, indicate which)

perforated

Tubing size 2-3/8 lined with _____ (material) set in a

Guiberson Uni-packer VI (brand and model) packer at 1650 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Glorietta

2. Name of Field or Pool (if applicable) N/A

3. Is this a new well drilled for injection? ☐ Yes ☒ No

If no, for what purpose was the well originally drilled? This well was drilled for use as an interference test & observation well

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) Yes. Tubb perforations 2385-2408', cast iron bridge plug set at 2377', perfs 2198-2369', cast iron bridge plug set at 2100' w/35' cmt cap

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Tubb 2180' (+2565' subsea)

Post Conversion Sketch

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

DATE 5-24-82

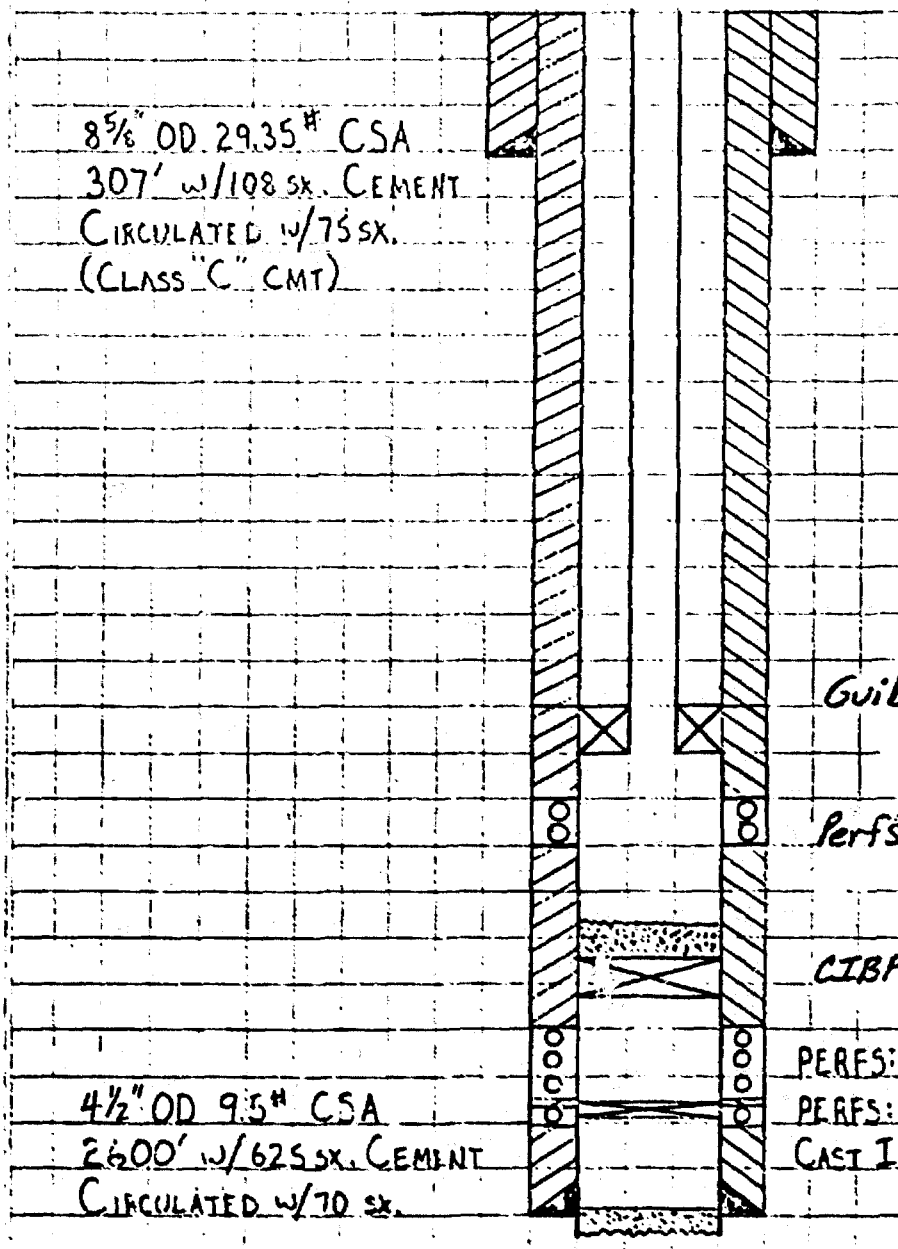
BY SFL

SUBJECT STATE "FI" #2 (2034 362 P)

BRAVO DOME

660 FSL & 1320 FEL
Sec. 36 ; T-20-N R-34-E
UNION CO. NEW MEXICO

ELEVATION: 4745' RDB
GL: 4734'



8⅝" OD 29.35# CSA
307' w/108 sx. CEMENT
CIRCULATED w/75 SX.
(CLASS "C" CMT)

Guiberson Uni-packer II SA 1651

Perfs: 1718-1754', 1770-1780'
w/2 JSPF

CIBP sa 2100' x cap w/35' cmt

PERFS: 2198'-2369' w/1 JSPF (NC)
PERFS: 2385'-2408' w/2 JSPF (NC)
CAST IRON BP @ 2377'

4½" OD 9.5# CSA
2600' w/625 SX. CEMENT
CIRCULATED w/70 SX.

TD 2625'
PBD 2377'

PHONE 683-3234 OR 683-1849
MONAHANS, TEXAS 79756

RESULT OF WATER ANALYSES

PHONE 683-4521
MIDLAND, TEXAS 79701

LABORATORY NO. 881413 (Page 2)

TO: Mr. Eric Trigg
P.O.Box 68, Hobbs, New Mexico

SAMPLE RECEIVED 8-26-81
RESULTS REPORTED 9-4-81

COMPANY Amoco Production Company LEASE Bravo Dome
FIELD OR POOL Bravo Dome
SECTION BLOCK SURVEY COUNTY STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1
NO. 2
NO. 3
NO. 4 Tubb water flowed from 1934 121K (Hutch B 10)-(32 BNW recovered). 6-26-81

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.				1.0220
pH When Sampled				
pH When Received				7.67
Bicarbonate as HCO_3				9,516
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$				3,450
Calcium as Ca				50
Magnesium as Mg				808
Sodium and/or Potassium				7,956
Sulfate as SO_4				7,920
Chloride as Cl				3,764
Iron as Fe				50.3
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated				30,484
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide				0.0
Resistivity, ohms/m at 77° F.				0.390
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
~~Resistivity, ohms/m @ 77°F-measured~~				0.357
~~Potassium, as K~~				470
~~Potassium Chloride, as KCl~~				898

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks

Form No. 3

By

Box 68

Hobbs, New Mexico

Submitted by _____ Date Rec. 8-12-74

Well No. As Marked Depth As Marked Formation Tubbs

County _____ Field _____ Source _____

	2034 3610 State F.J. #1 2330-2505	1614 1614A State F.J. #1 2542-2609	
Resistivity	0.340 @ 74°F.	0.046 @ 74°F.	
Specific Gravity	1.015	1.163	
pH	7.4	6.3	
Calcium (Ca)	1,600 x .05 80	6,400 x .05 320.0	*MPL
Magnesium (Mg)	60 x .0822 4.9	350 x .0822 29.6	
Chlorides (Cl)	7,000 x .0282 197.4	154,000 x .0282 4342.8	
Sulfates (SO_4)	4,620 x .0208 96.1	7,800 x .0208 162.2	
Bicarbonates (HCO_3)	(8,420) x .0164 138.1	2,070 x .0164 33.9	
Soluble Iron (Fe)	Nil	Nil	
		Alkalinity as	
Na Calc	346.7 x 23 = 7974	4189.3 x 23 = 96354	

Remarks: Apx 30 SFW recovered from FI #1 on 8-3-74 — all load recovered on FI #1 and 99% load recovered on FJ #1

*Milligrams per liter

CARY JONES' OPERATIONS REPORT FOR 8-3-74 (FI #1 WELL FILE) SHOWS THESE TWO SAMPLES TAKEN ON SAME DAY.

R_w = .26 @ 100°

Respectfully submitted,

Analyst: Brewer

cc:

HALLIBURTON COMPANY

By W. L. 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.

NOW BUDGO 1834 1810 (STATE EL #1)

Martin Water Laboratories
P. O. BOX 1468 PHONE 943-3234
MONAHANS, TEXAS 79756
606 W. ILLINOIS PHONE 683-6631
MIDLAND, TEXAS 79701

RESULT OF WATER ANALYSES

LABORATORY NO. 1071187 page 5

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

SAMPLE RECEIVED 10-26-71
RESULTS REPORTED 10-30-71

API WATER ANALYSIS REPORT FORM

Company		Sample No.	Date Sampled
Humble Oil & Refining Company			10-22-71
Field	**Legal Description**	**County or Parish**	**State**
Wildcat		Union	N. M.
Lease or Unit	**Well**	**Depth**	**Formation**	**Water, B/D**
State "CN"	#1	1702'-1810'	Glorieta	
Type of Water (Produced, Supply, etc.)	**Sampling Point**		**Sampled By**
DST #2	Sample Chamber		

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	5,321	231.4
* Calcium, Ca	140	7.0
* Magnesium, Mg	3.9	0.3
Barium, Ba	0	0.0

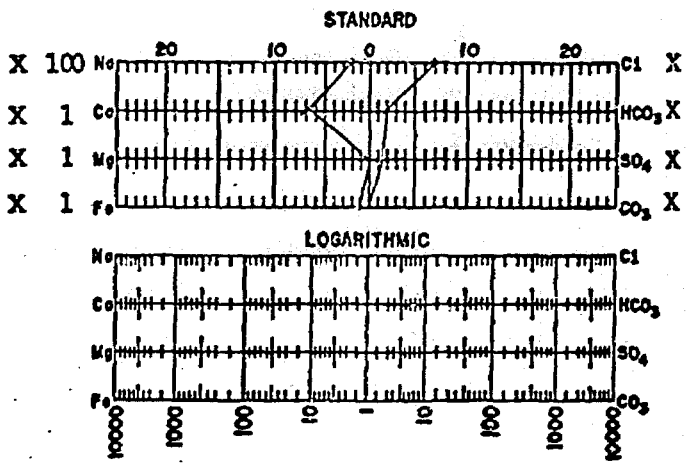
ANIONS		
Chloride, Cl	2,379	67.1
Sulfate, SO_4	7,085	147.4
Carbonate, CO_3	0	0.0
Bicarbonate, HCO_3	1,476	24.2

Total Dissolved Solids (calc.)	16,405	
Iron, Fe (total)	18.7	0.6
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	7.6
Specific Gravity, 60/60 F.	1.0148
Resistivity (ohm-meters) 77 F.	0.746
Total Hardness as $CaCO_3$	366

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

* Determined by Atomic Absorption Spectrophotometry.

When we compare these analyses from the mud pit down to the sample chamber, we see some ver distinct similarities in the waters, especially in the sulfate level. We do note a progres sive increase in calcium, sodium, chloride, and bicarbonate along with a fluctuating but general decline in pH. These changes tend to indicate some exterior influence but generall most of the water appears to originate from the pit. We note a substantially lower sulfate (though it is still higher than usual) than we found on analysis #1071166 (10-26-71).

Waylan C. Martin, M. A.

Martin Water Laboratories

P. O. BOX 1468 PHONE 563-3234
MONAHANS, TEXAS 79756

RESULT OF WATER ANALYSES

406 W. ILLINOIS PHONE 683-4621
MIDLAND, TEXAS 79701

LABORATORY NO. 1071187 page 4

TO: Mr. R. A. Belknap
P. O. Box 1600, Midland, Texas

SAMPLE RECEIVED 10-26-71
RESULTS REPORTED 10-30-71

API WATER ANALYSIS REPORT FORM

Company		Sample No.	Date Sampled
Humble Oil & Refining Company			10-22-71
Field	**Legal Description**	**County or Parish**	**State**
Wildcat		Union	N. M.

Lease or Unit	Well	Depth	Formation	Water, B/D
~~State "CN"~~	#1	1702'-1810'	Glorieta	

Type of Water (Produced, Supply, etc.)	Sampling Point	Sampled By
DST #2	Drill pipe - Bottom	

BDC063
1934 161L

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	4,557	198.1
* Calcium, Ca	36	1.8
* Magnesium, Mg	2,5	0.2
Barium, Ba	0	0.0

ANIONS		
Chloride, Cl	1,094	30.8
Sulfate, SO_4	7,582	157.7
Carbonate, CO_3	24	0.8
Bicarbonate, HCO_3	659	10.8

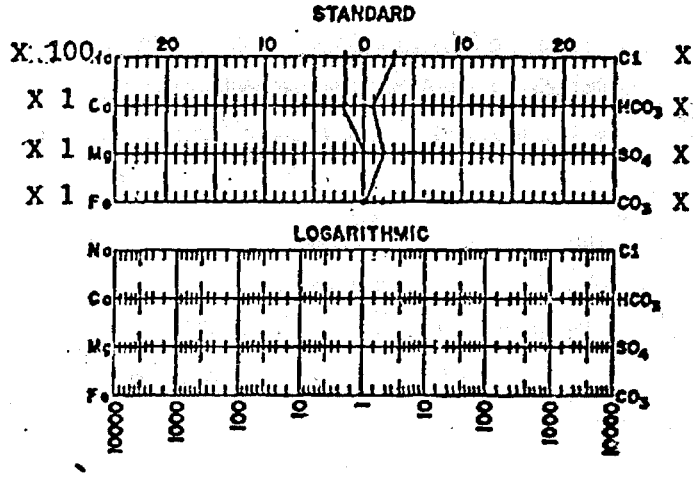
Total Dissolved Solids (calc.) 13,955

Iron, Fe (total)	3.0	0.1
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	8.5
Specific Gravity, 60/60 F.	1.0134
Resistivity (ohm-meters) 77° F.	0.862
Total Hardness as $CaCO_3$	100

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

Martin Water Laboratories

P. O. BOX 1468 PHONE 943-3234
MONAHANS, TEXAS 79756

406 W. ILLINOIS PHONE 683-4621
MIDLAND, TEXAS 79701

RESULT OF WATER ANALYSES

LABORATORY NO. 1071187
SAMPLE RECEIVED 10-26-71
RESULTS REPORTED 10-30-71

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

API WATER ANALYSIS REPORT FORM

Company	Sample No.	Date Sampled
Humble Oil & Refining Company		10-22-71

Field	Legal Description	County or Parish	State
Wildcat		Union	N. M.

Lease or Unit	Well	Depth	Formation	Water, B/D
~~State "CN"~~	#1	1702'-1810'	Glorieta	

Type of Water (Produced, Supply, etc.)	Sampling Point	Sampled By
DST #2	Drill pipe - Middle	

BDCDGU
1934 161L

DISSOLVED SOLIDS

CATIONS	*mg/l*	*me/l*
– Sodium, Na (calc.)	4,180	181.7
± Calcium, Ca	34.5	1.7
* Magnesium, Mg	2.5	0.2
Barium, Ba	0	0.0

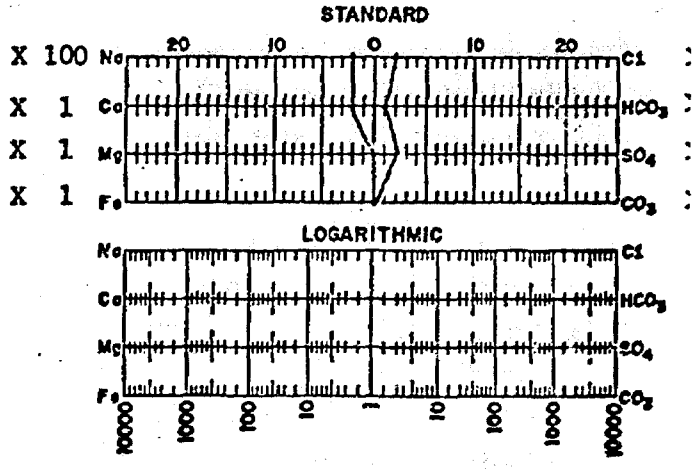
ANIONS		
Chloride, Cl	703	19.8
Sulfate, SO_4	7,458	155.1
Carbonate, CO_3	24	0.8
Bicarbonate, HCO_3	482	7.9

Total Dissolved Solids (calc.)	12,884	
Iron, Fe (total)	5.0	0.2
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	8.7
Specific Gravity, 60/60 F.	1.0129
Resistivity (ohm-meters) 77 F.	0.930
Total Hardness as $CaCO_3$	97

WATER PATTERNS — *me/l*



REMARKS & RECOMMENDATIONS:

Martin Water Laboratories

P. O. BOX 1468 PHONE 943-3234
MONAHANS, TEXAS 79756

406 W. ILLINOIS PHONE 683-4621
MIDLAND, TEXAS 79701

RESULT OF WATER ANALYSES

LABORATORY NO. 10?1187 page 2

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

SAMPLE RECEIVED 10-26-71

RESULTS REPORTED 10-30-71

BDCDGU
1934 101L

API WATER ANALYSIS REPORT FORM

Company		Sample No.	Date Sampled
Humble Oil & Refining Company			10-22-71
Field	**Legal Description**	**County or Parish**	**State**
Wildcat		Union	N. M.
Lease or Unit	**Well**	**Depth**	**Formation**	**Water, B/D**
~~State "ON"~~	#1	1702'-1810'	Glorieta	
Type of Water (Produced, Supply, etc.)	**Sampling Point**		**Sampled By**
DST #2	Top		

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	4,143	180.1
* Calcium, Ca	29	1.5
* Magnesium, Mg	1.6	0.1
Barium, Ba	0	0.0

ANIONS		
Chloride, Cl	540	15.2
Sulfate, SO_4	7,582	157.7
Carbonate, CO_3	0	0.0
Bicarbonate, HCO_3	537	8.8

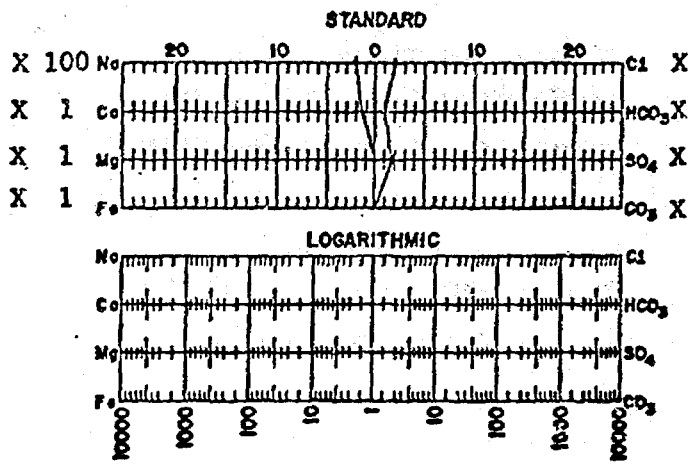
Total Dissolved Solids (calc.) 12,833

Iron, Fe (total)	1.3	0.0
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	8.4
Specific Gravity, 60/60 F.	1.0128
Resistivity (ohm-meters) 77° F.	0.962
Total Hardness as $CaCO_3$	79

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

P. O. BOX 1468 PHONE 943-3234
MONAHANS, TEXAS 79756

RESULT OF WATER ANALYSES

406 W. ILLINOIS PHONE 683-4621
MIDLAND, TEXAS 79701

LABORATORY NO. 1071187
SAMPLE RECEIVED 10-26-71
RESULTS REPORTED 10-30-71

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

API WATER ANALYSIS REPORT FORM

Company		Sample No.	Date Sampled
Humble Oil & Refining Company			10-22-71
Field	**Legal Description**	**County or Parish**	**State**
Wildcat		Union	N. M.
Lease or Unit	**Well**	**Depth**	**Formation**	**Water, B/D**
~~State "CN"~~	#1	1702'-1810'	Glorieta	
Type of Water (Produced, Supply, etc.)	**Sampling Point**		**Sampled By**
DST #2	Mud Pit		

BCCOGU
1934 161L

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	3,950	171.7
*Calcium, Ca	27.5	1.4
*Magnesium, Mg	1.6	0.1
Barium, Ba	0	0.0

ANIONS		
Chloride, Cl	387	10.9
Sulfate, SO_4	7,582	157.7
Carbonate, CO_3	24	0.8
Bicarbonate, HCO_3	329	5.4

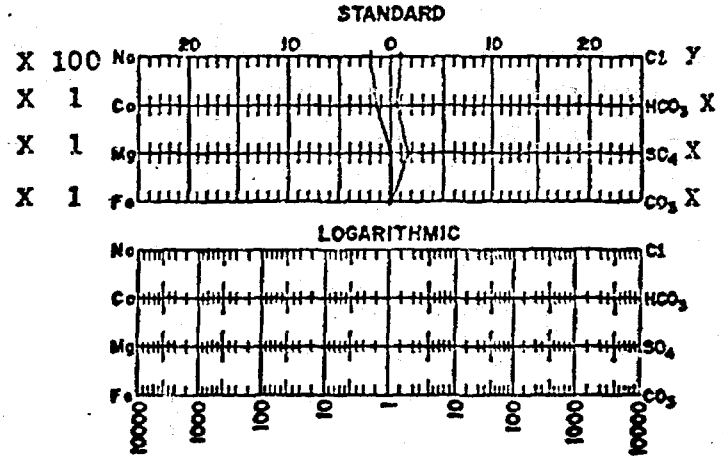
Total Dissolved Solids (calc.) 12,301

Iron, Fe (total)	3.2	0.1
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	8.8
Specific Gravity, 60/60 F.	1.0122
Resistivity (ohm-meters) 77° F.	1.00
Total Hardness as $CaCO_3$	75

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-

5a. Indicate Type of Lease: State [ ] Fee [ ]

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL [ ] GAS WELL [X] CO2 OTHER-

7. Unit Agreement Name: BDCDGU

2. Name of Operator: Amoco Production Company

8. Farm or Lease Name: BDCDGU 2034

3. Address of Operator: P. O. Box 68, Hobbs, NM 88240

9. Well No.: 362

4. Location of Well
UNIT LETTER P, 660 FEET FROM THE South LINE AND 1320 FEET FROM THE East LINE, SECTION 36 TOWNSHIP 20-N RANGE 34-E NMPM.

10. Field and Pool, or Wildcat: Und. Tubb

15. Elevation (Show whether DF, RT, GR, etc.): 4734' GL

12. County: Union

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING
TEMPORARILY ABANDON [ ]		COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT
PULL OR ALTER CASING [ ]	CHANGE PLANS [ ]	CASING TEST AND CEMENT JOB [ ]	
OTHER Convert to salt water disposal [X]		OTHER	

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

Propose to convert to salt water disposal well per the following method:

Kill well with brine water and pull tubing. Set a cast iron bridge plug at approx 2100' and cap with 35' cement. Perforate Glorietta intervals 1718'-54' and 70'-80' with 2 DPJSPF. Run 3 joints tailpipe, packer, and 2-3/8" tubing to 1650'. Set packer and acidize with 1000 gal 7-1/2% HCL. Flush with 30 bbls brine water. Pull tubing and packer. Run internally and externally coated packer and internally coated tubing to 1650'. Pump annular volume of fresh inhibited water down backside, then set packer. Finish loading backside to surface. Pressure test backside for leaks. Install wellhead equipment and prepare for salt water disposal.

O+2-NMOCD, SF 1-Hou 1--Susp 1-CLF 1-Amerada 1-UGI 1-Cities Service
1-Conoco 1-CO2-in-Action 1-Excelsior 1-Sun Tex

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Cathy L. Forman TITLE Asst. Admin. Analyst DATE 8-24-82

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Schlumberger

COMPENSATED NEUTRON FORMATION DENSITY

COUNTY	
FIELD	
LOCATION	S.O. #18232
WELL	
COMPANY	

COMPANY Amoco Production Company

WELL State FI #2 (Interference Test Well) 2034 362P

FIELD CO2 Development

COUNTY Union STATE New Mexico

LOCATION	660 FSL & 1330 FEL			Other Services: S-DLL
	Sec 36	Twp 20-N	Range 34-E	

Permanent Datum: G.L. ; Elev.: 4734

Log Measured From K.B. 11 Ft. Above Perm. Datum

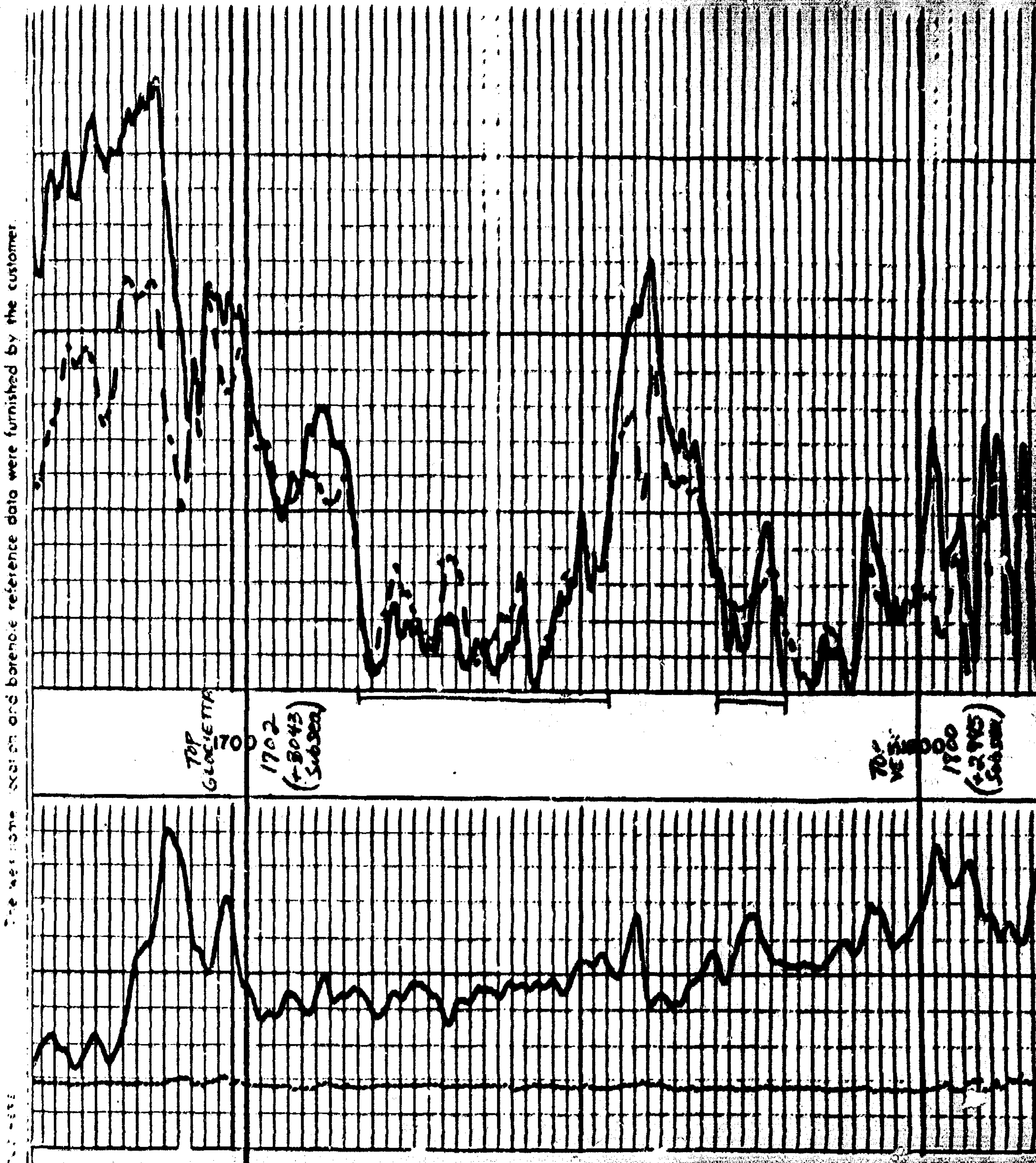
Drilling Measured From K.B.

Elev.: K.B. 4745
D.F. →
G.L. 4734

Date	10-5-74			
Run No.	ONE			
Depth Driller	2625			
Depth Logger	2627			
Btm. Log Interval	2626			
Top Log Interval	Surface			
Casing Driller	8 5/8 @ 307	@	@	@
Casing Logger	310			
Bit Size	7 7/8			
Type Fluid in Hole	Brenio Dextrid			
Dens. | Visc.	8.85 | 42	|	|	|
pH | Fluid Loss	9.0 | 40 ml	| ml	| ml	| ml
Source of Sample	Circulated			
Rm @ Meas. Temp.	.208 @ 76 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.156 @ 76 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	.312 @ 76 °F	@ °F	@ °F	@ °F
Source: Rmf | Rmc	M | C	|	|	|
Rm @ BHT	.14 @ 108 °F	@ °F	@ °F	@ °F
Circulation Stopped	10-4 2130			
Logger on Bottom	10-5 0010			
Max. Rec. Temp.	108 °F	°F	°F	°F
Equip. | Location	H-15 | Hobbs	|	|	|
Recorded By	[illegible]			
Witnessed By				

FILE COPY

The well name, location and borehole reference data were furnished by the customer.



Schlumberger

COMPANY Amoco Production Company

WELL State FI #2 (Interference Test Well) 2034 3629

FIELD CO_2 Development

COUNTY Union STATE New Mexico

LOCATION 660 FSL & 1820 FEL

API SERIAL NO	SEC	TWP	RANGE
	36	20-N	34-E

Other Services: CNL-FDC/GR

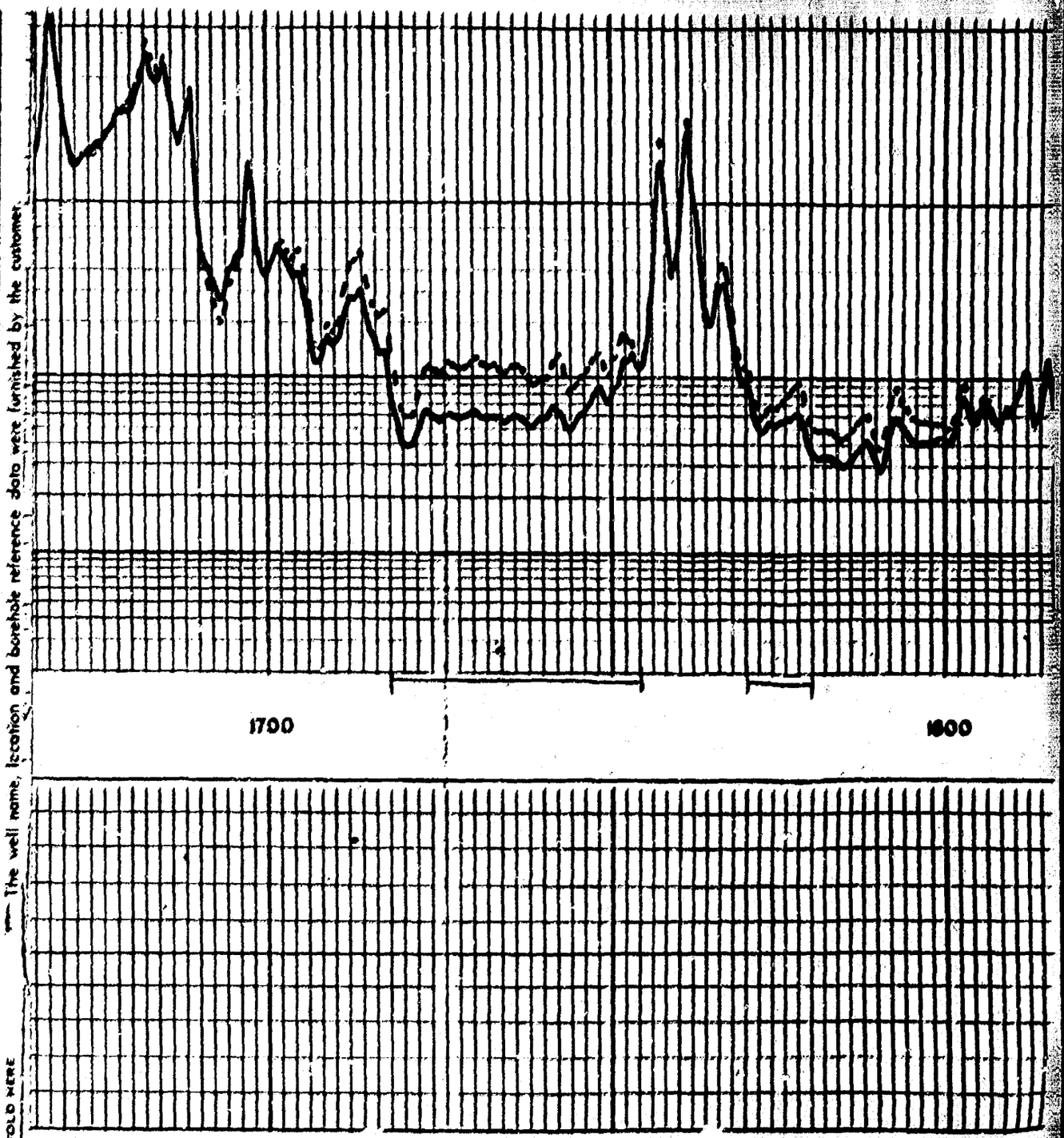
Permanent Datum: G.L. ; Elev.: 4734

Log Measured From K.B. 11 Ft. Above Perm. Datum

Drilling Measured From K.B.

Elev.: K.B. 4745 D.F. — G.L. 4734

Date	10-5-74			
Run No.	ONE			
Depth—Driller	2625			
Depth—Logger (Schl.)	2627			
Btm. Log Interval	2603			
Top Log Interval	310			
Casing—Driller	8 5/8 @ 307	@	@	@
Casing—Logger	310			
Bit Size	7 7/8			
Type Fluid in Hole	BARoid Dextrid			
Dens. / Visc.	8.35 / 42			
pH / Fluid Loss	9.0 / 4.0 ml	ml	ml	ml
Source of Sample	Circulated			
Rm @ Meas. Temp.	.209 @ 76 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.156 @ 76 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	.312 @ 76 °F	@ °F	@ °F	@ °F
Source: Rmf / Rmc	m / c			
Rm @ BHT	.14 @ 108 °F	@ °F	@ °F	@ °F
Time Circulation Stopped	10-4 2130			
Time Logger on Bottom	10-5 0730			
Max Rec. Temp.	108 °F	°F	°F	°F
Equip. / Location	7645 / Hobbs			
Recorded By	I. R. Kitts			
Witnessed By	Mr. [illegible] - Amoco			



FOLD HERE

Show the well name, location and borehole reference data were furnished by the customer.

P O BOX 1468
MONAHANS TEXAS 79756
PH 943-3234 OR 563-1040

Martin Water Laboratories, Inc.

709 W INDIANA
MIDLAND TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 882207
SAMPLE RECEIVED 8-18-82
RESULTS REPORTED 8-24-82

TO: Mr. Steven Lesikar
P.O.Box 68, Hobbs, NM

COMPANY Amoco Production Company LEASE Bravo Dome
FIELD OR POOL Bravo Dome
SECTION ___ BLOCK ___ SURVEY ___ COUNTY ___ STATE ___
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Fresh water well due east of BDCDGU #2034 362P.
NO. 2 Fresh water well due one mile southeast of BDCDGU #2034 362P.
NO. 3
NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0021	1.0016		
pH When Sampled				
pH When Received	8.78	8.40		
Bicarbonate as HCO_3	156	185		
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	252	134		
Calcium as Ca	25	18		
Magnesium as Mg	46	21		
Sodium and Potassium	145	107		
Sulfate as SO_4	276	104		
Chloride as Cl	38	28		
Iron as Fe	0.23	0.17		
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	759	518		
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0	0.0		
Resistivity, ohms/m at 77° F. - Calculated	10.50	17.00		
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Carbonate, as CO_3	67	46		
Potassium, as K	9	9		
Potassium Chloride, as KCl	17	17		
Results Reported As Milligrams Per Liter				
Additional Determinations And Remarks				
Resistivity, ohms/m @ 77°F. (measured)	11.90	19.05		

Please contact us if we can be of any assistance in interpretation of the above results.

Form No. 3

By
Waylan C. Martin, M. A.

Union County Legals

LEGAL NOTICE

August 11, 1982

NOTICE

TO WHOM IT MAY CONCERN:

AMOCO PRODUCTION COMPANY PROPOSES TO CONVERT THE FOLLOWING WELL TO SALT WATER DISPOSAL:

BRAVO DOME CARBON DIOXIDE GAS UNIT WELL NO. 2034 362 P
LOCATION: SEC. 36, T-20-N, R-34-E; 660' FSL x 1320', FEL, TD 2625'

THE INTENDED PURPOSE OF THE WELL IS FOR DISPOSAL OF SALT WATER WITH AN EXPECTED MAXIMUM INJECTION RATE OF 900 BWPD AND PRESSURE LESS THAN 100 PSI. INTERESTED PARTIES MUST FILL OBJECTIONS OR REQUESTS FOR HEARING WITH THE OIL CONSERVATION DIVISION, P.O. BOX 2088, SANTA FE, NEW MEXICO 87501 WITHIN 15 DAYS FROM DATE OF THIS PUBLICATION.

FOR FURTHER INFORMATION, CONTACT STEVEN F. LESIKAR AT AMOCO PRODUCTION COMPANY, P.O. BOX 68, HOBBS, NEW MEXICO 88240, OR TELEPHONE (505) 393-1781.

8-11

"Proof of Notice"

CLF

August 24, 1982

File: SJO-020.1-1118

Re: Bravo Dome CO_2 Gas Unit
Well No. 2034 362 P
Union County, New Mexico

Mr. Mike Hutcherson
710 W. 11th Street
Plainview, TX 79072

Mr. Hutcherson:

This is to inform you, as leaseholder of the surface land, that Amoco Production Company proposes to convert Bravo Dome CO_2 Gas Unit Well No. 2034 362P to salt water disposal. Attached is a copy of the application to convert subject well. Any objections or requests for hearing of administrative applications must be filed with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501, within fifteen days from the date this application was mailed to you.

Yours very truly,

Original Signed by:
S.J. OKERSON

Attachments

CLF/kic
APRD01-S

Amoco 2
7687
Amoco
9-29-82

CLF

August 20, 1982

File: SJO-020.1-1117

Re: Bravo Dome CO_2 Gas Unit
Well No. 2034 362 P
Union County, New Mexico

State Land Office
P. O. Box 1148
Santa Fe, NM 87504

Gentlemen:

This is to inform you, as owner of the surface land, that Amoco Production Company proposes to convert Bravo Dome CO_2 Gas Unit Well No. 2034 362P to salt water disposal. Attached is a copy of the application to convert subject well. Any objections or requests for hearing of administrative applications must be filed with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501, within fifteen days from the date this application was mailed to you.

Yours very truly,

Original Signed By
S. J. OKERSON

Attachments

CLF/kic
APRD01-SS

P 335 767 531
RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
State Land Office
STREET AND NO.
P.O. Box 1148
P.O., STATE AND ZIP CODE
Santa Fe, NM 87504

POSTAGE		$
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢
OPTIONAL SERVICES	SPECIAL DELIVERY	¢
OPTIONAL SERVICES	RESTRICTED DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES		$ 2.20
POSTMARK OR DATE		

AUG 30 1982

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1978

● SENDER: Complete items 1, 2, and 3.
• Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- ☒ Show to whom and date delivered..... ¢
- ☐ Show to whom, date and address of delivery.... ¢
- ☐ RESTRICTED DELIVERY
  Show to whom and date delivered..... ¢
- ☐ RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery.$

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
State Land Office
P.O. Box 1148
Santa Fe, NM 87504

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P335 767 531	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐Addressee ☐Authorized agent
Horacio Mascarenas

4. DATE OF DELIVERY — POSTMARK: AUG 30 1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-288-848

P 335 767 530
RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Mr. Mike Hutcherson
STREET AND NO.
710 W. 11th St.
P.O., STATE AND ZIP CODE
Plainview, Tx 79702

POSTAGE		$
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢
OPTIONAL SERVICES	SPECIAL DELIVERY	¢
OPTIONAL SERVICES	RESTRICTED DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES		$ 2.20
POSTMARK OR DATE		

AUG 31 1982

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1978

● SENDER: Complete items 1, 2, and 3.
• Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- ☒ Show to whom and date delivered..... ¢
- ☐ Show to whom, date and address of delivery.... ¢
- ☐ RESTRICTED DELIVERY
  Show to whom and date delivered..... ¢
- ☐ RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery.$

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
MR. Mike Hutcherson
710 W. 11th Street
Plainview, Tx 79702

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P335 767 530	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐Addressee ☐Authorized agent
Mary Nell Hutcherson

4. DATE OF DELIVERY — POSTMARK: PLAINVIEW TX AUG 31 1982 USPO

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-288-848

CURRENT WELL STATUS SUMMARY

WELL NAME	WELL TYPE	DATE DRILLED	SURF. CSG.	SET @ (FT)	TOP OF CMT	PROD CSG.	SET @ (FT)	TOP OF CMT	LOCATION*	TOTAL DEPTH (Ft)	COMPLETION INTERVAL
BDCDGU 2034 3610++	Gas	7-12-74	8-5/8"	328	~~Circ~~	4-1/2"	2665	?	660' FSL X 1980' FEL, Sec. 36, T-20-N, R-34-E	2670	2186-2404
BDCDGU 2034 362P**	Gas	10-07-74	8-5/8"	307	Circ	4-1/2"	2600	Circ	660' FSL X 1980' FEL, Sec. 36, T-20-N, R-34-E	2625	2198-2369
BDCDGU 2034 3630	Gas	5-22-79	8-5/8"	322	Circ	4-1/2"	2600	Circ	1315' FSL X 1980' FEL, Sec. 36, T-20-N, R-34-E	2600	2190-2359

*All locations are in Union County, New Mexico
**Proposed injection well

++Cmt tie back completed 9/16/82

LWS/lrd

Amoco 4
7687
Amoco
9-29-82

SHEET NO. OF

FILE

APPN

DATE

BY

Amoco Production Company

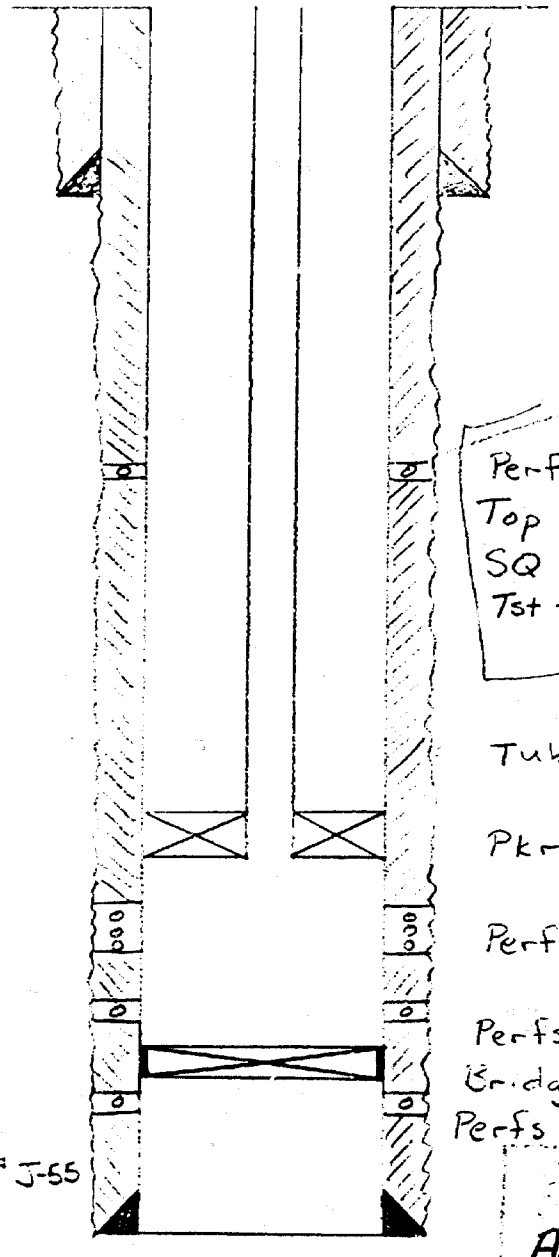
ENGINEERING CHART

SUBJECT STATE "FI" #1 (2034 361 0)

KEMP LAKE

600' FSL x 1980' FEL
Sec 36, T-20-N, R-34-E
Union County, New Mexico

Elevation: 4750' KB
4739' GL



8 5/8" 29.35#
Set @ 328'
Cmt w/ 200 sx
Class "C"
Circ 85 sx

Perf 980'
Top Cmt 1000' by CBL
SQ w/ Total 435 sx Cmt - Circ 25 sx
Tst to 900 psi - Held for 1 hr

Tubing 2 3/8 EUE 8 RD

Pkr Set @ 2136'

Perfs 2186' - 2346 (NC) w/ 2 JSPF

Perfs 2362 - 2404' (NC) w/ 2 JSPF
Bridge Plug @ 2417'
Perfs 2423 - 91' (NC) w/ 2 JSPF

4 1/2" 9.5# - 10.5# J-55
CSA 2665'
Cmt w/ 650 sx
Class "C"

TD: 2670'
PBTD: 2417'

COMMENTS

Amoco 5

7687

Amoco

9-29-82

Form 371 8-71

BDCDGU 2034 3610
State "FI" #1
Bravo Dome Well History

Cementing Record:

6-24-74: Set 8 5/8" OD 29.35#, LW ST&C casing in 12¼" hole at 328' w/200 sx class "C" 2% Cacl. Cement Circulated w/85 sx cement.

7-12-74: Set 4½" OD 9.5# & 10.5#, K-55 ST&C casing in a 7 7/8" hole at 2665' w/650 sx class "C" Neat.

Well History:

Initial History:

8-1-74: Perforated intervals 2362'-64, 2375'-81, 2388'-90, 2394'-2404' 2423'-2436', 2462'-64 & 2488'-91' w/2 JSPF. Acidized interval 2417'-2491' w/500 gallons 7½% MCA. Acidized interval 2330'-2417' w/750 gallson 7½% MCA. Set bridge plug @ 2417.

8-19-74: Perforated intervals 2186'-88, 2204'-11', 2234'-48', 2252'-62', 2266'-81', 2285'-91', 2295'-2304', 2308'-12', 2316'-20', 2326'-32', & 2336'-46', w/2 JSPF.

8-20-74: Acidized interval 2283'-2352' w/1000 gallons 7½% MCA. Acidized interval 2175'-2283' w/1000 gallson 7½% MCA. PT - 1575 MCF in 24 hours. 48/64" choke

Workovers:

9-2-82: Pull pkr X tbg. Set RBP @ 2011' x test to 1000 psi. Run CBL/VDL Log x top of cmt. approx. 1000'. Perf 980' with 4 shots.

9-3-82: Est. in rate of 2 BPM @ 400 psi. SQ with 300 sx cmt x Circ 5 bbls.

9-8-82: Drl out x test to 800 psi x bled to 500 psi in 2 mins.

LS/cps
980/D/1

9-9-82: Spot 4 bbls acid. Est inj rate of 1.5 BPM @ 1200 psi. SQ with 100 sx cmt.

9-10-82: Drl out x test to 800 psi x bled to 500 psi in 2 mins.

9-13-82: Spot 2 bbls acid. Est inj rate of 2 BPM @ 1400 psi. SQ with 35 sx Thixset cmt.

9-15-82: Drl out x test to 900 psi x held for 1 hour.

9-16-82: Pull RBP x run pkr x tbg. Pkr set @ 2136 x load annulus with inhibited wtr.

LS/cps
980/D/2

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

DATE

BY

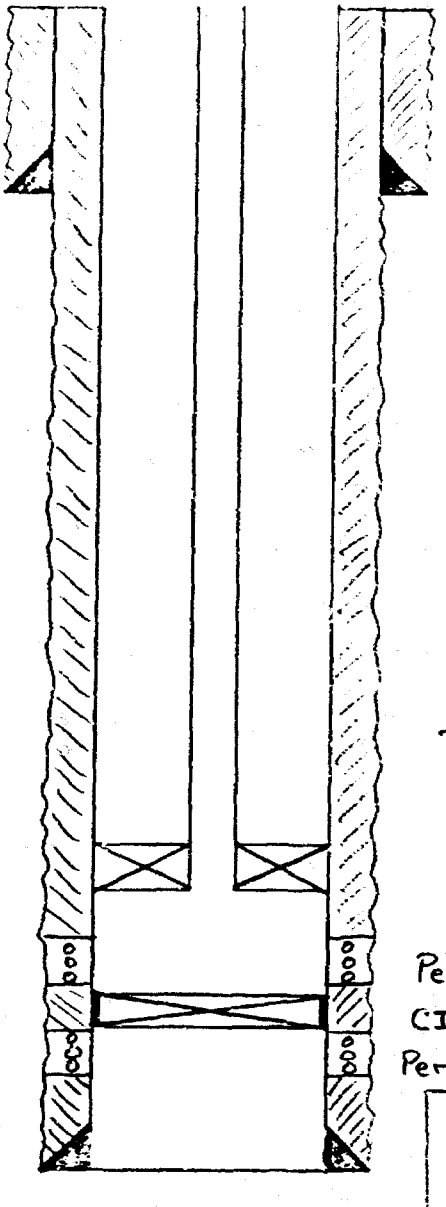
SUBJECT STATE "FI" #2 (2034 362 P)

BRAVO DOME

660' FSL x 1320' FEL
Sec 36, T-20-N, R-34-E
Union County, New Mexico

Elevation @ 4745' KB
4734' GL

8 5/8" 23.95# CSA
307' Cmt w/
108 sx Class "C"
Circ 75 sx



Tubing 2 3/8" EUE 8RD
Pkr set @ ± 2000'

Perfs 2198-2369' (NC) w/ 1 JSPF
CIBP set @ 2377'
Perfs 2385-2408' (NC) w/ 2JSPF

4½" 9.5# CSA 2600'
Cmt 625 sx Class "C"
Circ 70 sx

TD: 2625'
PBTD: 2377'

BEFORE THE OIL CONSERVATION DIVISION
Amoco EXHIBIT NO. 6
CASE NO. 7687
Submitted by Amoco
Hearing Date 9-29-82

BDCOGU 2034 362 P
State "FI" #2
Bravo Dome

Cementing Record:

9-27-74: Set 8 5/8" OD 29.35#, Line casing in a 12¼" hole at 307' w/108 sx class "C" cement. Circulated to Surface w/75 sx.

10-7-74: Set 4½" OD 9.5#, ST&C casing in a 7 7/8" hole at 2600' w/625 sx. Cement Circulated w/70 sx.

Well History:

Initial Completion:

10-8-74: Perforated intervals 2385'-86', 2392'-97, & 2404'-08' w/2 JSPF.

10-21-74: Acidized 2385'-2408' w/500 gallons 7½% MCA.

10-23-74: Perforated intervals 2198'-2230', 2240'-47, 2256'-58, 2261'-64, 2275'-83, 2287'-98, 2303'-28, 2332'-34, 2339'-42, 2348'-62, 2366'-69 w/1 JSPF. Set cast iron bridge plug @ 2377'.
PT - 2207 MCF in 24 hours 48/64" choke

Workovers:

Flow test 7 days. Flw 1.79 MMCFD x OBW TPF 114 psi x CPC 0 psi on 2" valve. SI for 72-hr. BHP Build-up test 12-16-81.

LS/cps
980/D/3

Amoco Production Company

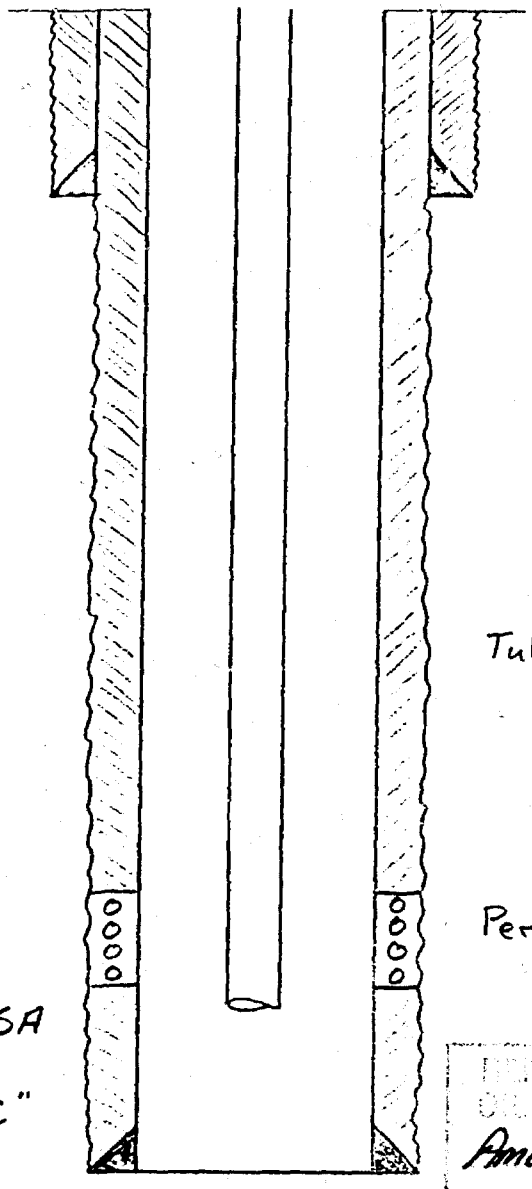
ENGINEERING CHART

SHEET NO. OF
FILE
APPN
DATE
BY

SUBJECT STATE "FI" #3 (2034 363 0)
BRAVO DOME

1315' FSL X 1980' FEL
Sec 36, T-20-N, R-34-E
Union County, New Mexico

Elevation: 4749' KB
4740' GL



8⅝" 24# K-55 CSA
322' Cmt w/
200 sx Class "C"
Circ 40 sx

Tubing: 2⅜" 4.7# EUE 8RD
set @ 2366'

Perfs: 2190 - 2359'

4½" 9.5# K-55 CSA
2600' Cmt w/
700 sx Class "C"
Circ 5 sx

TD: 2600'
PBTD 2541'

Amoco	7
	7687
	Amoco
	9-29-82

Form 221 R-71

BDCDGU 2034 363 0
STATE "FI" #3
Bravo Dome

Cementing Record:

5-13-79: Set 8 5/8" OD 24# ST*C casing in 12¼" hole at 322' w/200 sx Class C x 3% Cacl. Circ. 40 sx cmt.

5-22-79: Set 4½" OD 9.5# ST*C casing in 7 7/8" hole at 2600 ft. w/700 sx Class C x 9½# salt per sx. Circ. 5 sx cm.

Well History:

Initial History

6-20-79: Perforated interval 2190'-98, 2202'-08, 2211'-21, 2229'-31, 2252'-58, 2271'-75, 2300'-04, 2330'-34, 2339'-59, w/2 JSPF. Run 2½" x 2" swage, seating nipple and 2 3/8" tubing to 2366.

6-21-79: Spot acid across perfs w/1300 gals 7½% MCA max TP1400# min 800# AIR 1 BPM swb 35 BLW 16 BL WTR.

6-25-79: Well flowing. SI 72 BHP Build-up test.

6-27-79: Pull bomb. Well SI.

12-5-80: Initial potential 250 MCF on 10/64" CH x TPF 247 psi x slugs of water.

Workovers:

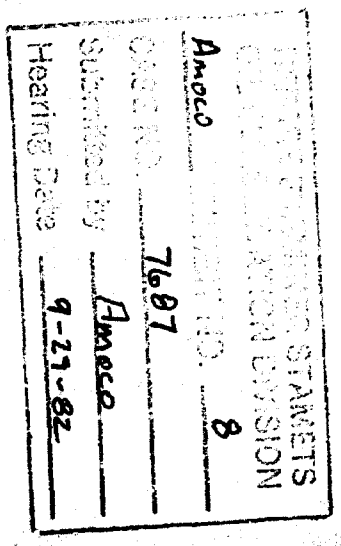
None

LS/cps
980/D/4

SUMMARY OF WATER ANALYSIS

Well Name Formation	BDCDGU 1932 041D Glorieta	BDCDGU 2034 081F Tubb	Fresh Water Well #1 Ogallala	Fresh Water Well #2 Ogallala
Na	2,864	8,537	145	107
Ca	5,120	6,120	25	18
Mg	1,848	1,420	46	21
Cl	17,500	26,600	38	28
SO_4	2,000	1,430	276	104
CO_3	N/A	0	N/A	N/A
HCO_3	0	830	156	185
TDS	29,332	44,937	686	463
Total Iron	N/A	N/A	0.23	0.17
Ph	4.0	6.3	8.78	8.40
Specific Gravity	1.020	1.037	1.0021	1.0016
Resistivity	0.23 ohm-meters @ 67° F	0.149 ohm-meters @ 77° F	10.50 ohm-meters @ 77° F	17.00 ohm-meters @ 77° F

LS/zb
940/I



Amoco Production Company

ENGINEERING CHART

FILE

APPN

DATE 9-21-82

BY DWS

SUBJECT BDCDGU Glorieta SWD

Calculations for Max Surf Inj Pressure

I. Qualifications

Fracture gradient for Glorieta will be approximately equivalent to that of the Tubb.

II. Tubb Fracture Gradient Determination

A. Basis: Six (6) wells in the immediately area that have been fracture stimulated.

ISIP's ranged from 650 - 1400 psi
Avg ISIP = 800 psi
Avg depth = 2300'

B. Calculation:

$$FG = \frac{ISIP + .052(PPG)(D)}{D}$$

$$FG = \frac{800 + .052(8.5\ PPG)(2300')}{2300}$$

$$\boxed{FG = 0.7912\ psi/ft}$$

III. Glorieta Fracture Pressure Determination

A. Basis: ~~FG = 0.790 psi/ft~~

Avg depth = 1749' (depth to mid-point of perfs)

Specific Gravity of Inj Water = 1.037

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Amoco EXHIBIT NO. 9
CASE NO. 7687
Submitted by Amoco
Hearing Date 9-29-82

Form 391 2-81

Amoco Production Company

ENGINEERING CHART

FILE

APPN

SUBJECT BDCDGU SWD Inj Limit (con't)

DATE 9-21-82

BY LWS

B. Calculations:

(1) $BHFP = FG \times D = (0.790\ psi/ft)(1749\ ft)$

$BHFP = 1382\ psi$

(2) $WHFP = BHFP - [8.33(\gamma_w) \times D \times 0.052] - Friction$

$WHFP = 1382\ psi - \left[8.33\ \frac{lbs}{gal}(1.037) \times (1749\ ft) \times \left(0.052\ \frac{psi \cdot gal}{ft \cdot lb}\right)\right]$

$- 0\ psi$

$WHFP = 596\ psi$ ✓

*Note: Since inj rates are to be moderately low friction drop was considered negligible and therefore excluded from calculations

(3) Gradient for Max Surf Limit = WHFP ÷ D

" " " " " = 596 psi ÷ 1749 ft

0.341 psi/ft

(4) Standard Max Surf Limit = 0.20 psi/ft

Standard Limit = 0.20 psi/ft × 1749 ft

Standard Limit = 350 psi

PROPOSED BDCDGU SWD
PERTINENT DATA SHEET

I. Proposed Operation Data

A. Anticipated volumes of water to be disposed:

Initial = 50 BWPD
Average = 600 BWPD
Maximum = 900 BWPD

B. The system will be closed.

C. Surface injection pressure:

Average = 100 psi
Limit = 350 psi

II. Geology of Disposal Horizon

A. Lithology: Fine to coarse grain sandstone. Grains are composed of clean, semi-rounded quartz which are well cemented by calcareous material.

B. Geologic name: Glorieta

C. Horizon thickness (gross): 148'
Net pay: 66'

D. Depth: 1702' (+3043') to top of Glorieta
1749' (+2996') to mid-point of perfs

E. Fresh water sand: The deepest fresh water sand in this area is the Morrison-Exeter sandstone which is of Jurassic age and sometimes referred to as the Entrada, which is probably equivalent. Areal studies indicate the base of the Exeter to be approximately 560' (+4185') and the logs show it to be approximately 620' (+4125').

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Amoco EXHIBIT NO. 10
CASE NO. 7687
Submitted by Amoco
Hearing Date 9-29-83

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-

5a. Indicate Type of Lease: State ☐ Fee ☐

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL ☐ GAS WELL ☒ CO2 OTHER.

7. Unit Agreement Name: BDCDGU

2. Name of Operator: Amoco Production Company

8. Farm or Lease Name: BDCDGU 2034

3. Address of Operator: P. O. Box 68, Hobbs, NM 88240

9. Well No.: 362

4. Location of Well: UNIT LETTER P, 660 FEET FROM THE South LINE AND 1320 FEET FROM THE East LINE, SECTION 36 TOWNSHIP 20-N RANGE 34-E NMPM.

10. Field and Pool, or Wildcat: Und. Tubb

15. Elevation (Show whether DF, RT, GR, etc.): 4734' GL

12. County: Union

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER Convert to salt water disposal ☒		OTHER	

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

Propose to convert to salt water disposal well per the following method:

Kill well with brine water and pull tubing. Set a cast iron bridge plug at approx 2100' and cap with 35' cement. Perforate Glorietta intervals 1718'-54' and 70'-80' with 2 DPJSPF. Run 3 joints tailpipe, packer, and 2-3/8" tubing to 1650'. Set packer and acidize with 1000 gal 7-1/2% HCL. Flush with 30 bbls brine water. Pull tubing and packer. Run internally and externally coated packer and internally coated tubing to 1650'. Pump annular volume of fresh inhibited water down backside, then set packer. Finish loading backside to surface. Pressure test backside for leaks. Install wellhead equipment and prepare for salt water disposal.

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
CASE NO. 7687
Submitted by Amoco
Hearing Date 9-29-82

O+2-NMOCD, SF 1-Hou 1--Susp 1-CLF 1-Amerada Hess 1-UGI 1-Cities Service
1-Conoco 1-CO2-in-Action 1-Excelsior 1-Sun Tex

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Cathy L. Foreman TITLE Asst. Admin. Analyst DATE 8-24-82

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

DATE

BY

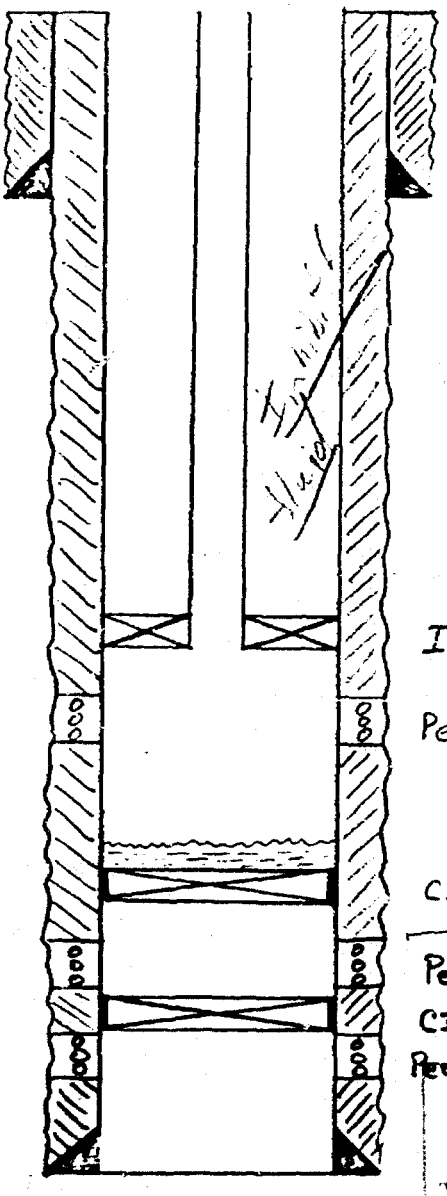
SUBJECT STATE "FI" #2 (2034 362 P)

BRAVO DOME

660' FSL x 1320' FEL
Sec 36, T-20-N, R-34-E
Union County, New Mexico

Elevation: 4745' KB
4734' GL

PROPOSED POST-CONVERSION CONFIGURATION



8 5/8" 23.95# CSA
307' Cmt w/
108 sx Class "C"
Circ 75 sx

Inj Pkr Set @ 1650'

Perfs ~~1718-54' w/ 2 JSPF~~ & 1770-80'
1K & H

CIBP set @ 2100' x cap 35' cmt

Perfs 2198-2369' (NC) w/ 1 JSPF

CIBP set @ 2377'

Perfs ~~2385-2408' (NC) w/ 2 JSPF~~

4 1/2" 9.5# CSA 2600'
Cmt 625 sx Class "C"
Circ 70 sx

TD: 2625'
PBTD: 2377'

Amoco	13
CASE NO.	7687
Submitted by	Amoco
Hearing Date	9-29-82

Docket No. 31-82

Dockets Nos. 32-82 and 33-82 are tentatively set for October 13 and October 27, 1982. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 29, 1982

9 A.M. - MORGAN HALL, STATE LAND OFFICE BUILDING,
SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 7686: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Energetics Corporation, United States Fidelity and Guaranty Company, and all other interested parties to appear and show cause why the Hanes Corporation Well No. 1, located in Unit F of Section 9, Township 24 South, Range 2 East, Dona Ana County, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7687: Application of Amoco Production Company for salt water disposal, Union County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Glorieta formation in the perforated interval from 1715 feet to 1780 feet in its former State FI Well No. 2 (2034 362P) located 660 feet from the South line and 1320 feet from the East line of Section 36, Township 20 North, Range 34 East.

CASE 7688: Application of Mountain States Petroleum Corporation for an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 990 feet from the North and East lines of Section 19, Township 15 South, Range 28 East, Buffalo Valley-Penn Gas Pool, the N/2 of said Section 19 to be dedicated to the well.

CASE 7689: Application of Tesoro Petroleum Corporation for a tertiary oil recovery project, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to convert its Hospah Sand Unit Waterflood Project to a polymer-augmented waterflood and, pursuant to Section 212.78 of the U. S. Department of Energy Regulations and Section 4993 of the Internal Revenue Code, seeks certification of said project as a qualified tertiary oil recovery project.

CASE 7690: Application of C & K Petroleum, Inc. for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formations underlying the E/2 SW/4 of Section 27, Township 16 South, Range 37 East, Casey-Strawn Pool, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7679: (Continued from September 15, 1982, Examiner Hearing)

Application of C & K Petroleum, Inc. for the amendment of Order No. R-4857-A and for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Division Order No. R-4857-A to provide that the lands pooled by said order shall be the W/2 SE/4 of Section 27, Township 16 South, Range 37 East, dedicated to its Shipp 27 Well No. 2 located in Unit O in said Section 27. Applicant, further seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the E/2 SE/4 of the aforesaid Section 27, to be dedicated to a well to be drilled in Unit P of said Section 27. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7680: (Continued and Readvertised)

Application of Unichem International, Inc. for an exception to Order No. R-3221, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221 to permit the commercial disposal of produced brine into several unlined surface pits located in Section 2, Township 23 South, Range 29 East.

CASE 7691: Application of Dugan Production Corporation for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Basin-Dakota Pool underlying the W/2 of Section 5, Township 24 North, Range 9 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7692: Application of Forister & Sweatt for an unorthodox well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location 990 feet from the North line and 1650 feet from the East line of Section 5, Township 13 South, Range 31 East, Southeast Chaves Queen Gas Area, the E/2 of said Section 5 to be dedicated to the well.

CASE 7693: Application of Forister & Sweatt for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Southeast Chaves Queen Gas Area underlying the E/2 of Section 5, Township 13 South, Range 31 East, to be dedicated to a well to be drilled at an unorthodox location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of of applicant, as operator of the well and a charge for risk involved in drilling said well.

CASE 7681: (Continued from September 15, 1982, Examiner Hearing)

Application of Cibola Energy Corporation for an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of an Ordovician gas well to be drilled 330 feet from the North line and 990 feet from the East line of Section 13, Township 9 South, Range 27 East, the E/2 of said Section 13 to be dedicated to the well.

CASE 7682: (Continued from September 15, 1982, Examiner Hearing)

Application of Cibola Energy Corporation for an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Mississippian gas well drilled 330 feet from the North line and 330 feet from the West line of Section 34, Township 11 South, Range 28 East, the W/2 of said Section 34 to be dedicated to the well.

CASES 7694 and 7695: Application of Depco, Inc. for compulsory pooling, Chaves County, New Mexico. Applicant, in each of the following two cases, seeks an order pooling all mineral interests from the surface down through the Abo formation underlying the lands specified in each case, each to form a standard 160-acre gas spacing and proration unit to be dedicated to a well to be drilled at a standard location thereon. Also to be considered in each case will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells and a charge for risk involved in drilling said wells:

CASE 7694: NW/4 Section 21; and

CASE 7695: NE/4 Section 21

Both in Township 5 South, Range 25 East.

CASE 7696: Application of Arco Oil and Gas Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Mississippian through Ellenburger formations underlying the S/2 of Section 31, Township 20 South, Range 36 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASES 7528 and 7529: (Continued and Readvertised)

Application of JJ-CC, Limited for compulsory pooling, Chaves County, New Mexico. Applicant, in each of the following two cases, seeks an order pooling all mineral interests down through the Abo formation underlying the lands specified in each case, each to form a standard 160-acre gas spacing and proration unit to be dedicated to a well to be drilled at a standard location thereon. Also to be considered in each case will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells and a charge for risk involved in drilling said wells:

CASE 7528: NW/4 Section 4, Township 5 South, Range 24 East

CASE 7529: NE/4 Section 4, Township 5 South, Range 24 East

CASE 7697: Application of Oxoco Production Corp. for designation of a tight formation, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Mesaverde formation underlying Sections 7, 8, 17, 18, 19 and 20, Township 32 North, Range 8 West, containing 3160 acres, more or less, as a tight formation pursuant to Section 107 of the Natural Gas Policy Act and 18 CFR Section 271.701-705.

BEFORE THE

OIL CONSERVATION DIVISION

NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

IN THE MATTER OF THE APPLICATION
OF AMOCO PRODUCTION COMPANY FOR
SALT WATER DISPOSAL, UNION COUNTY,
NEW MEXICO

CASE 7687

ENTRY OF APPEARANCE

Comes now Campbell, Byrd & Black, P.A. and hereby enters its appearance in the above-styled cause for Amoco Production Company.

CAMPBELL, BYRD & BLACK, P.A.

By William F. Carr

William F. Carr
Post Office Box 2208
Santa Fe, New Mexico 87501
Attorneys for Amoco Production Company

Set for hearing 9/29

C-108 & attachments coming.

A.L.

Case 7687

ENERGY AND MINERALS DEPARTMENT

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SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1-7

5a. Indicate Type of Lease: State ☐ Fee ☐

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL ☐ GAS WELL ☒ CO2 OTHER.

7. Unit Agreement Name: BDCDGU

2. Name of Operator: Amoco Production Company

8. Farm or Lease Name: BDCDGU 2034

3. Address of Operator: P. O. Box 68, Hobbs, NM 88240

9. Well No.: 362

4. Location of Well: UNIT LETTER P, 660 FEET FROM THE South LINE AND 1320 FEET FROM THE East LINE, SECTION 36 TOWNSHIP 20-N RANGE 34-E NMPM.

10. Field and Pool, or Wildcat: Und. Tubb

15. Elevation (Show whether DF, RT, GR, etc.): 4734' GL

12. County: Union

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER Convert to salt water disposal ☒		OTHER ☐	

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

Propose to convert to salt water disposal well per the following method:

Kill well with brine water and pull tubing. Set a cast iron bridge plug at approx 2100' and cap with 35' cement. Perforate Glorietta intervals 1718'-54' and 70'-80' with 2 DPJSPF. Run 3 joints tailpipe, packer, and 2-3/8" tubing to 1650'. Set packer and acidize with 1000 gal 7-1/2% HCL. Flush with 30 bbls brine water. Pull tubing and packer. Run internally and externally coated packer and internally coated tubing to 1650'. Pump annular volume of fresh inhibited water down backside, then set packer. Finish loading backside to surface. Pressure test backside for leaks. Install wellhead equipment and prepare for salt water disposal.

0+2-NMOCD, SF 1-Hou 1--Susp 1-CLF 1-Amerada 1-UGI 1-Cities Service
1-Conoco 1-CO2-in-Action 1-Excelsior 1-Sun Tex

RECEIVED
AUG 25 1982
OIL CON. DIV.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Cathy L. Forman TITLE Asst. Admin. Analyst DATE 8-24-82

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

To: NMOCD, Santa Fe Bldg. Mail Code or Rm. No.

To: Bldg. Mail Code or Rm. No.

To: Bldg. Mail Code or Rm. No.

Location:

Route Ticket

Please Handle	X
Please Approve	
Please Note and return	
For Your Information	
Please See Me	
Please Advise	
Your File	

Form 9-8-73

Remarks: Reference our application to convert BDCDGU 2039 362 P to salt water disposal, dated 8-24-82. The attached copies of receipts for certified mail should be indluded in subject application.

Thank You

From: CLF ext 254 Date 9-3-82

Case 7687

P 335 767 531

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED--
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
State Land Office
STREET AND NO.
P.O. Box 1148
P.O., STATE AND ZIP CODE
Santa Fe, NM 87504

POSTAGE	$
CERTIFIED FEE	¢
SPECIAL DELIVERY	¢
RESTRICTED DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED	¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$ 22
POSTMARK OR DATE	

CONSULT POSTMASTER FOR FEES
OPTIONAL SERVICES
RETURN RECEIPT SERVICE

SEP 1982

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1979

● SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
☒ Show to whom and date delivered..... ¢
☐ Show to whom, date and address of delivery..... ¢
☐ RESTRICTED DELIVERY
Show to whom and date delivered..... ¢
☐ RESTRICTED DELIVERY.
Show to whom, date, and address of delivery.$ ____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
State Land Office
P.O. Box 1148
Santa Fe, NM 87504

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P335 767 531	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐Addressee ☐Authorized agent
4. Horacio Mascarenas
DATE OF DELIVERY AUG 30 1982 POSTMARK
5. ADDRESS (Complete only if requested)
6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-288-848

OIL CONSERVATION DIVISION
SEP - 8 1982
SANTA FE

P 335 767 530

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Mr. Mike Hutcherson
STREET AND NO.
710 W. 11th St.
P.O., STATE AND ZIP CODE
Plainview, Tx 79702

POSTAGE	$
CERTIFIED FEE	¢
SPECIAL DELIVERY	¢
RESTRICTED DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED	¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$ 22
POSTMARK OR DATE	

CONSULT POSTMASTER FOR FEES
OPTIONAL SERVICES
RETURN RECEIPT SERVICE

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1979

● SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
☒ Show to whom and date delivered..... ¢
☐ Show to whom, date and address of delivery..... ¢
☐ RESTRICTED DELIVERY
Show to whom and date delivered..... ¢
☐ RESTRICTED DELIVERY.
Show to whom, date, and address of delivery.$ ____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Mr. Mike Hutcherson
710 W. 11th Street
Plainview, Tx 79702

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P335 767 530	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐Addressee ☐Authorized agent
4. Mary Nell Hutcherson
DATE OF DELIVERY AUG 31 1982 POSTMARK PLAINVIEW TX USPO
5. ADDRESS (Complete only if requested)
6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-288-848

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

Case 7687

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Amoco Production Company

Address: P. O. Box 68, Hobbs, NM 88240

Contact party: Steven Lesikar Phone: (505) 393-1781

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.

RECEIVED
AUG 27 1982
OIL CONSERVATION DIVISION
SANTA FE

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 compatibility with the receiving formation if other than reinjected produced waters;
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: Cathy L. Forman Title Asst. Administrative Analyst

Signature: Cathy L. Forman Date: 8-24-82

* 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.

INJECTION WELL DATA SHEET

Amoco Production Company	Bravo Dome Carbon Dioxide Gas Unit			
OPERATOR	LEASE			
2034 362P	660' FSL x 1320' FEL	Sec. 36	T-20-N	R-34-E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Schematic

See attachment

Tabular Data

Surface Casing

Size 8-5/8 " Cemented with 108 sx.

TOC surface feet determined by (circ 75 sx)

Hole size 12-1/4"

Intermediate Casing

Size _____ " Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 4-1/2 " Cemented with 625 sx.

TOC surface feet determined by (circ 70 sx)

Hole size 7-7/8"

Total depth 2625'

Injection interval

1718 feet to 1780 feet

(perforated or open-hole, indicate which)

perforated

Tubing size 2-3/8 lined with _____ (material) set in a

Guiberson Uni-packer VI (brand and model) packer at 1650 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Glorietta

2. Name of Field or Pool (if applicable) N/A

3. Is this a new well drilled for injection? [ ] Yes [X] No

If no, for what purpose was the well originally drilled? This well was drilled for use as an interference test & observation well

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) Yes. Tubb perforations 2385-2408', cast iron bridge plug set at 2377', perfs 2198-2369', cast iron bridge plug set at 2100' w/35' cmt cap

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Tubb 2180' (+2565' subsea)

Post Conversion Sketch

Amoco Production Company

ENGINEERING CHART

SHEET NO. OF

FILE

APPN

DATE 5-24-82

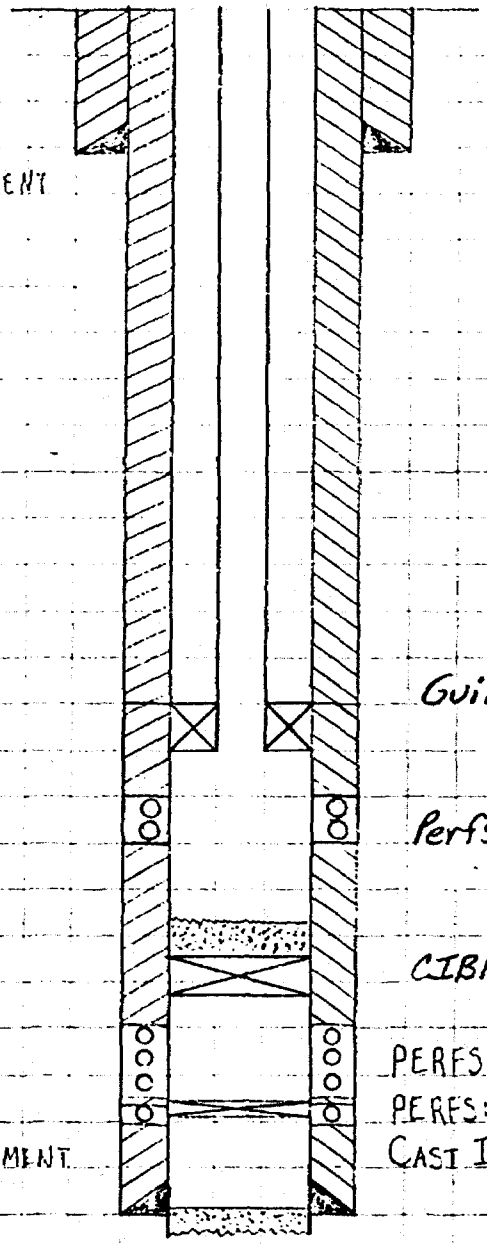
BY SFL

SUBJECT STATE "FI" #2 (2024 362 P)

BRAVO DOME

660 FSL & 1320 FEL
Sec. 36 ; T-20-N R-34-E
UNION CO. NEW MEXICO

ELEVATION: 4745' RDB
GL: 4734'



8⅝" OD 29.35# CSA
307' w/108 sx. CEMENT
CIRCULATED w/75 SX.
(CLASS "C" CMT)

Guiberson Uni-packer VII SA 1650

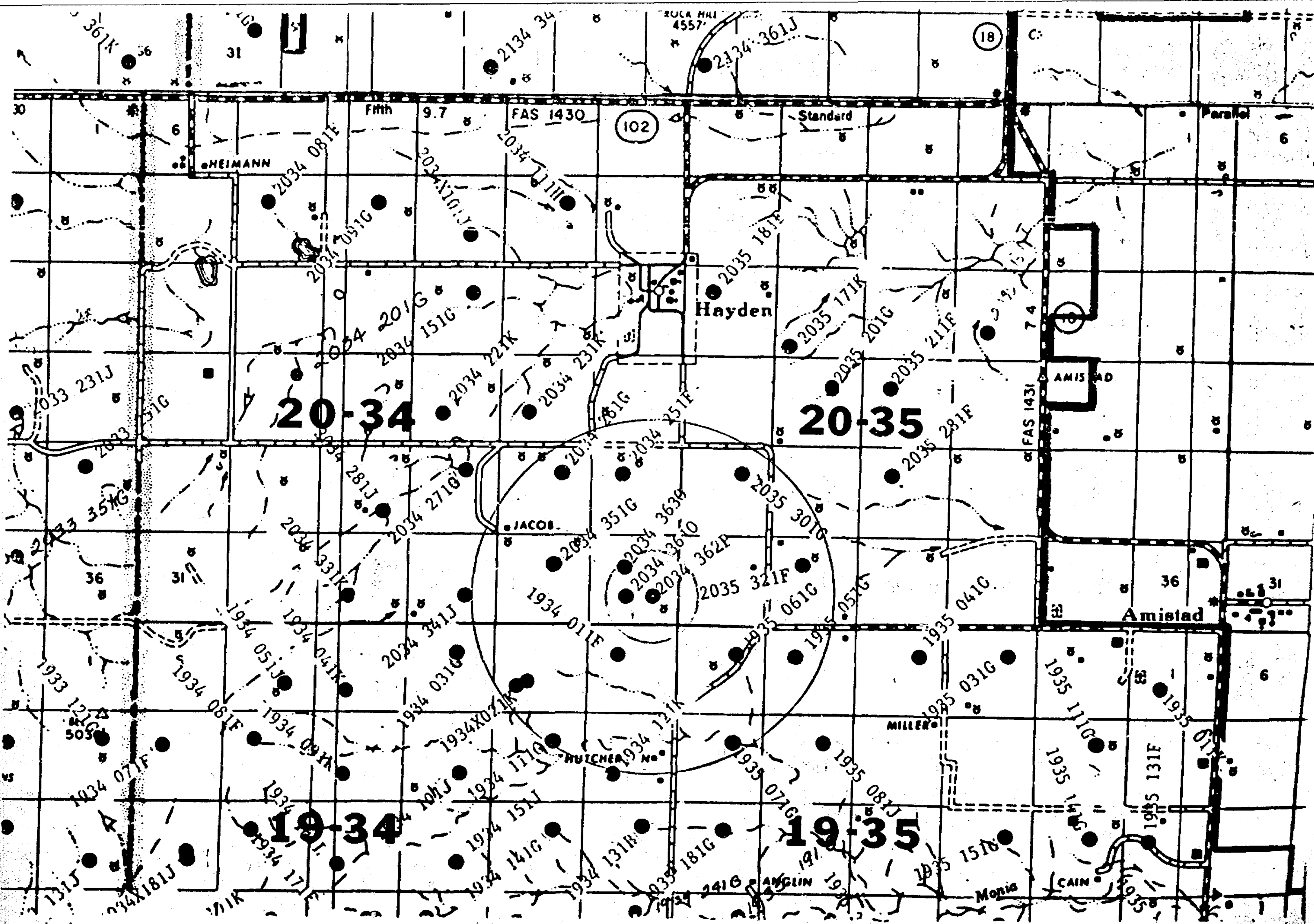
Perfs: 1718-1754', 1770-1780'
w/2 JSPF

CIBP SA 2100' x cap w/35' cmt

PERFS: 2198'-2369' w/1 JSPF (NC)
PERFS: 2385'-2408' w/2 JSPF (NC)
CAST IRON BP @ 2377'

4½" OD 9.5# CSA
2600' w/625 sx. CEMENT
CIRCULATED w/70 sx.

TD 2625'
PBD 2377'



20-34
20-35
19-34
19-35
Hayden
Amistad
AMISTAD
FAS 1430
FAS 1431
102
18
Fifth
9.7
Standard
Parallel
HEIMANN
JACOB
MILLER
HUTCHER
ANGLIN
CAIN
2034 081F
2034 091G
2034 201G
2034 151G
2034 221K
2034 231K
2035 181F
2035 171K
2035 201G
2035 211F
2035 281F
2035 301G
2035 321F
2034 351G
2034 362P
2034 271G
2034 331K
2034 341J
1934 011F
1934 051J
1934 041K
1934 031G
1934 081F
1934 111G
1934 151J
1934 141G
1935 061G
1935 051G
1935 041G
1935 031G
1935 111G
1935 081J
1935 071G
1935 151G
1935 131F
2033 231J
1933 121G
1934 071F

WELL NAME	WELL TYPE	DATE DRILLED	SURF. CSG.	SET @ (FT)	TOP OF CMT	PROD CSG.	SET @ (FT)	TOP OF CMT	LOCATION*	TOTAL DEPTH (Ft)	COMPLETION INTERVAL
BDCDGU 1934 011F	Gas	11-11-80	8-5/8"	714	Circ	5-1/2"	2626	Circ	1968' FNL x 1980' FWL, Sec. 1, T-19-N, R-34-E	2625	2172-2372
BDCDGU 1934 021K	PxA	10-18-80	8-5/8"	700	Circ	N/A	N/A	N/A	1980' FSL x 1980' FWL, Sec. 2, T-19-N, R-34-E	2614	N/A
BDCDGU 1934X021K	Gas	10-24-80	8-5/8"	701	Circ	5-1/2"	2633	412'	1980' FSL x 2055' FWL, Sec. 2, T-19-N, R-34-E	2587	2198-2433
BDCDGU 1934 111G	Gas	11-21-80	8-5/8"	741	Circ	5-1/2"	2506	Circ	1980' FNL x 1984' FEL, Sec. 11, T-19-N, R-34-E	2530	2142-2354
BDCDGU 1934 121K	Gas	1-28-81	8-5/8"	718	Circ	5-1/2"	2553	Circ	1980' FSL x 1972' FWL, Sec. 12, T-19-N, R-34-E	2552	2176-2478
BDCDGU 1935 051G	Gas	5-26-81	8-5/8"	703	Circ	5-1/2"	2465	Circ	1980' FNL x 1980' FEL, Sec. 5, T-19-N, R-35-E	2465	2130-2265
BDCDGU 1935 061G	Gas	1-1-80	8-5/8"	701	Circ	5-1/2"	2450	Circ	2044' FNL x 1980' FEL, Sec. 6, T-19-N, R-35-E	2450	2126-2322
BDCDGU 1935 071G	Gas	12-23-80	8-5/8"	698	Circ	5-1/2"	2451	Circ	1980' FNL x 1980' FEL, Sec. 7, T-19-N, R-35-E	2451	2081-2290
BDCDGU 2034 251F+	Gas	12-23-80	8-5/8"	705	Circ	5-1/2"	2763	Circ	1980' FNL x 1980' FWL, Sec. 25, T-20-N, R-34-E	2763	2262-2422
BDCDGU 2034 261G	Gas	1-23-81	8-5/8"	733	Circ	5-1/2"	2757	Circ	1980' FNL x 1980' FEL, Sec. 26, T-20-N, R-34-E	2760	2220-2421
BDCDGU 2034 351G	Gas	12-8-80	8-5/8"	703	Circ	5-1/2"	2647	Circ	1980' FNL x 1980' FEL, Sec. 35, T-20-N, R-34-E	2650	2220-2438
BDCDGU 2034 3610++	Gas	7-12-74	8-5/8"	328	Circ	4-1/2"	2665	----	660' FSL x 1980' FEL, Sec. 36, T-20-N, R-34-E	2670	2186-2404
BDCDGU 2034 362P**	Gas	10-7-74	8-5/8"	307	Circ	4-1/2"	2600	Circ	660' FSL x 1320' FEL, Sec. 36, T-20-N, R-34-E	2625	2198-2369
BDCDGU 2034 3630	Gas	5-22-79	8-5/8"	322	Circ	4-1/2"	2600	Circ	1315' FSL x 1980' FEL, Sec. 36, T-20-N, R-34-E	2600	2190-2359
BDCDGU 2035 301G	Gas	3-28-81	8-5/8"	723	Circ	5-1/2"	2670	Circ	1980' FNL x 1980' FEL, Sec. 30, T-20-N, R-35-E	2670	2243-2348
BDCDGU 2035 321F	Gas	3-25-81	8-5/8"	705	Circ	5-1/2"	2663	Circ	1980' FNL x 1980' FWL, Sec. 32, T-20-N, R-35-E	2663	2146-2300

*Every location is in Union County, New Mexico
**Proposed injection well (prior to workover)
+Cmt tie back performed 7/17/80
++Cmt tie back to be performed

RDB/mjh
EBD1-C

SHEET NO. C

Amoco Production Company

ENGINEERING CHART

FILE

APPN

DATE 2/25/81

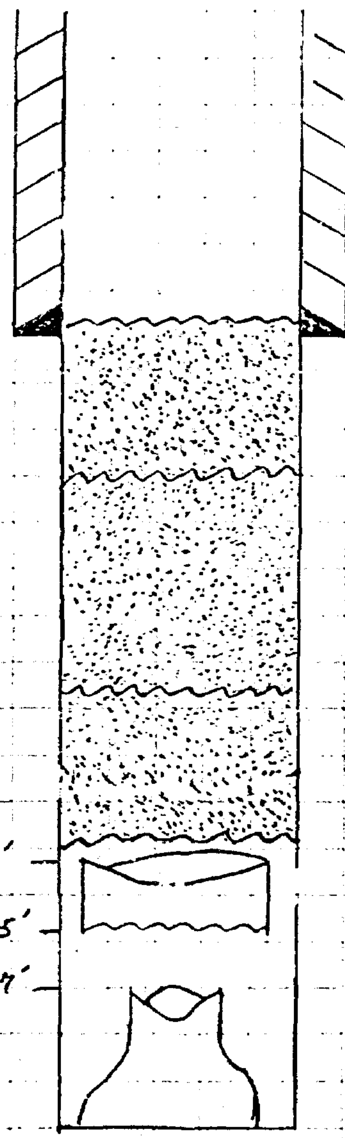
BY RAB

SUBJECT HUTCHERSON "B" No. 5 (1934 021K)

BRAVO DOME UND TUBB

UNIT K 1980 FSL x 1980 FWL. SEC. 2. T-19-N. R-34-E.
UNION COUNTY. NEW MEXICO
P&A

ELEV: 4780' G.L.



8 5/8" CSA 700'
24#. K-55. ST&C
CMT w/400 SXS. circ.
12 1/4" hole

PLUG to 656' circ 10 sxs Class C r out
CMT w/75 SXS. Class C neat.
PLUG FROM 860 - 650
CMT w/150 SXS. Class C neat.
PLUG FROM 1060' - 910'.
CMT w/95 SXS.
Class C neat.
PLUG FROM 1105' - 1060'.
CMT w/150 SXS.
Class C neat.

Washpipe 1100' - 1205'

2077'

drill collars

TD: 2614'

BDCDGO
1931 021K

Well History
Hutcherson B No. 5

10/7/80 8-5/8", 24#, K-55, ST&C casing set at 700' in a 12-1/4" hole. Cemented with 400 sacks Class C with 1% $CaCl_2$. Circulated 45 sacks.

10/10/80 Stuck drill pipe for 8 hours. TD 2614'.

10/11/80 Stuck drill pipe at 2614'. (24 hours)

10/12/80 Stuck drill pipe and all drill collars stuck except 1/2 of last drill collar on top. (7-3/4 hours) TD 2614'.

10/13/80 Fishing (18 hours). Bridge at 950'. Washing and reaming from 950' to 1040'. TD 2614'.

10/14/80 Washing from 1124'-1295'. Stuck wash pipe. Fishing for 23 hours. TD 2614'.

10/15/80 Ream from 767'-1300'. Fish for 24 hours. TD 2614'.

10/16/80 Wash and ream from 1100' to 2077'. Wash through bridge at 1205'. Fish for 24 hours for wash pipe. TD 2614'.

10/17/80 Fishing for 12 hours. Pump 150 sacks Class C neat cement to set plug from 1105'-1060' (6 hours).

10/18/80 Pump 95 sacks Class C neat to set plug from 1060'-910' (6 hours). Pump 150 sacks Class C neat to set plug from 910'-860'. Pump 75 sacks Class C neat to set plug from 860'-650'. Circulate 10 sacks cement at top of cement at 656'.

2/25/81
RAB/sas

VII. Proposed Operation Data

1. The proposed average and maximum daily rate and volume of fluids to be injected: Avg: 600 BWPD; Max 900 BWPD

2. The system is closed.

3. The proposed average and maximum injection pressure: Avg: <100 psi; Max: 100 psi

4. See attached water analysis

5. See attached water analysis

VIII. Geology Of Injection Zone

1. Sandstone formation

2. Glorietta zone

3. Net Pay: 98'

4. Depth: 1702' (+3043' subsea)

5. The Exador sand, located at approximately 560' (+4185' subsea), is the closest known fresh water source in the area.

IX. Proposed Stimulation

1. See attached C-103

XI. Chemical analysis

1. Water samples have been shipped for analysis from two (2) nearby water wells (see attached analysis).

XII. All available geologic and engineering data has been examined and no hydrologic connection between the Glorietta formation and the Exador formation have been found.

RDB/mjh
EBD1-P

MONAHANS, TEXAS
PHONE 943-3234 OR 563-1040

RESULT OF WATER ANALYSES

MIDLAND, TEXAS 79701
PHONE 683-4521

LABORATORY NO. 831413 (Page 2)

TO: Mr. Eric Trigg
P.O.Box 68, Hobbs, New Mexico

SAMPLE RECEIVED 8-26-81
RESULTS REPORTED 9-4-81

COMPANY Amoco Production Company LEASE Bravo Dome
FIELD OR POOL Bravo Dome
SECTION BLOCK SURVEY COUNTY STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1
NO. 2
NO. 3
NO. 4 Tubb water flowed from 1934 121K (Hutch B 10)-(32 BNW recovered). 6-26-81

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.				1.0220
pH When Sampled				
pH When Received				7.67
Bicarbonate as HCO_3				9,516
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$				3,450
Calcium as Ca				50
Magnesium as Mg				808
Sodium and/or Potassium				7,955
Sulfate as SO_4				7,920
Chloride as Cl				3,764
Iron as Fe				50.3
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated				30,484
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide				0.0
Resistivity, ohms/m at 77° F.				0.390
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
~~Resistivity, ohms/m @ 77°F-measured~~				0.357
~~Potassium, as K~~				470
~~Potassium Chloride, as KCL~~				898

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks

Form No. 3

By

Box 68

Hobbs, New Mexico

Submitted by _____ Date Rec. 8-12-74

Well No. As Marked Depth As Marked Formation Tubbs

County _____ Field _____ Source _____

	State F.D. #1 2330-2505		State F.J. #1 2542-2609		
Resistivity	0.340 @ 74°F.		0.046 @ 74°F.		
Specific Gravity	1.015		1.163		
pH	7.4		6.3		
Calcium (Ca)	1,600 x .05	80	6,400 x .05	320.0	*MPL
Magnesium (Mg)	60 x .0822	4.9	360 x .0822	29.6	
Chlorides (Cl)	7,000 x .0282	197.4	154,000 x .0282	4343.8	
Sulfates (SO_4)	4,620 x .0208	96.1	7,800 x .0208	162.2	
Bicarbonates (HCO_3)	8,420 x .0164	138.1	2,070 x .0164	33.9	
Soluble Iron (Fe)	Nil		Nil		
			Alkalinity		
NaCl calc	346.7 x 23 = 7974		4189.3 x 23 = 96354		

Remarks: Apx 30 BFW recovered from FJ #1 on 8-3-74 — all load recovered on FI #1 and 89% load recovered on FJ #1

*Milligrams per liter

GARY JONES' OPERATIONS REPORT FOR 8-3-74 (FJ #1 WELL FILE) SHOWS THESE TWO SAMPLES TAKEN ON SAME DAY.

Rw = .26 @ 100°

Respectfully submitted,

Analyst: Brewer

cc:

HALLIBURTON COMPANY

By W. L. 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.

Martin Water Laboratories
P. O. BOX 1468 PHONE 915-3234
MONAHANS, TEXAS 79756
501 N. ILLINOIS PHONE 683-4521
MIDLAND, TEXAS 79701

RESULT OF WATER ANALYSES

LABORATORY NO. 1071187

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

SAMPLE RECEIVED 10-26-71

RESULTS REPORTED 10-30-71

API WATER ANALYSIS REPORT FORM

Company		Sample No.	Date Sampled
Humble Oil & Refining Company			10-22-71
Field	**Legal Description**	**County or Parish**	**State**
Wildcat		Union	N. M.
Lease or Unit	**Well**	**Depth**	**Formation**	**Water, B/D**
State "CN"	#1	1702'-1810'	Glorieta	
Type of Water (Produced, Supply, etc.)	**Sampling Point**		**Sampled By**
DST #2	Sample Chamber		

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	5,321	231.4
* Calcium, Ca	140	7.0
* Magnesium, Mg	3.9	0.3
Barium, Ba	0	0.0

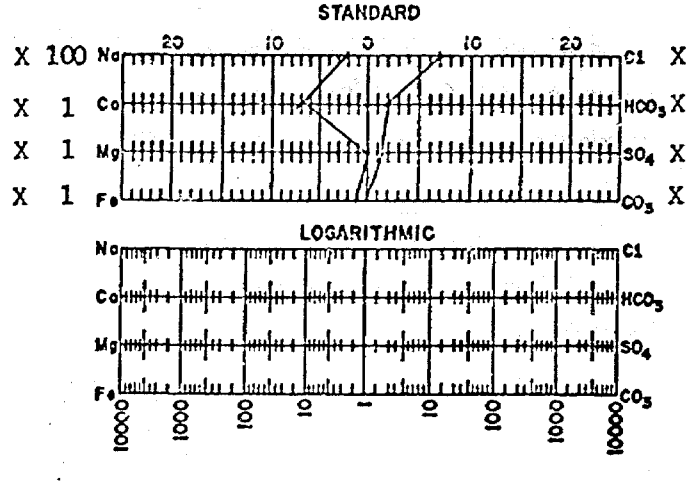
ANIONS		
Chloride, Cl	2,379	67.1
Sulfate, SO_4	7,085	147.4
Carbonate, CO_3	0	0.0
Bicarbonate, HCO_3	1,476	24.2

Total Dissolved Solids (calc.)	16,405	
Iron, Fe (total)	18.7	0.6
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	7.6
Specific Gravity, 60/60 F.	1.0148
Resistivity (ohm-meters) 77 F.	0.746
Total Hardness as $CaCO_3$	366

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

* Determined by Atomic Absorption Spectrophotometry.

When we compare these analyses from the mud pit down to the sample chamber, we see some ver distinct similarities in the waters, especially in the sulfate level. We do note a progres sive increase in calcium, sodium, chloride, and bicarbonate along with a fluctuating but general decline in pH. These changes tend to indicate some exterior influence but generall most of the water appears to originate from the pit. We note a substantially lower sulfate (though it is still higher than usual) then we found on analysis #1071166 (10-26-71).

Waylan C. Martin, M. A.

Martin Water Laboratories

P. O. BOX 1468 PHONE 943-3234
MONAHANS, TEXAS 79756

406 W. ILLINOIS PHONE 683-4621
MIDLAND, TEXAS 79701

RESULT OF WATER ANALYSES

LABORATORY NO. 1071187

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

SAMPLE RECEIVED 10-26-71

RESULTS REPORTED 10-30-71

API WATER ANALYSIS REPORT FORM

Company		Sample No.	Date Sampled
Humble Oil & Refining Company			10-22-71
Field	**Legal Description**	**County or Parish**	**State**
Wildcat		Union	N. M.
Lease or Unit	**Well**	**Depth**	**Formation**	**Water, B/D**
~~State "CN"~~	#1	1702'-1810'	Glorieta	
Type of Water (Produced, Supply, etc.)	**Sampling Point**		**Sampled By**
DST #2	Drill pipe - Bottom		

BDCDGU
1934 161L

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	4,557	198.1
* Calcium, Ca	36	1.8
* Magnesium, Mg	2.5	0.2
Barium, Ba	0	0.0

ANIONS		
Chloride, Cl	1,094	30.8
Sulfate, SO_4	7,582	157.7
Carbonate, CO_3	24	0.8
Bicarbonate, HCO_3	659	10.8

Total Dissolved Solids (calc.) 13,955

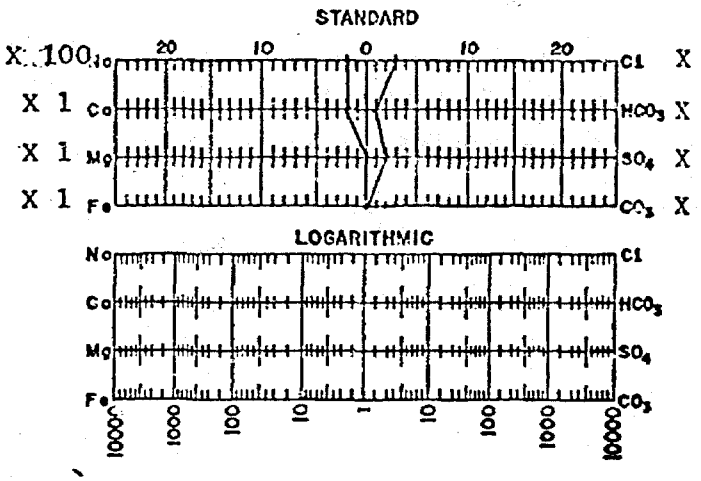
Iron, Fe (total) 3.0 0.1

Sulfide, as H_2S 0.0

OTHER PROPERTIES

pH	8.5
Specific Gravity, 60/60 F.	1.0134
Resistivity (ohm-meters) 77° F.	0.862
Total Hardness as $CaCO_3$	100

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

Martin Water Laboratories

P. O. BOX 1468 PHONE 943-3234
MONAHANS, TEXAS 79756

406 W. ILLINOIS PHONE 683-4621
MIDLAND, TEXAS 79701

RESULT OF WATER ANALYSES

LABORATORY NO. 1071187
SAMPLE RECEIVED 10-26-71
RESULTS REPORTED 10-30-71

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

API WATER ANALYSIS REPORT FORM

Company	Sample No.	Date Sampled
Humble Oil & Refining Company		10-22-71

Field	Legal Description	County or Parish	State
Wildcat		Union	N. M.

Lease or Unit	Well	Depth	Formation	Water, B/D
~~State "CN"~~	#1	1702'-1810'	Glorieta	

Type of Water (Produced, Supply, etc.)	Sampling Point	Sampled By
DST #2	Drill pipe - Middle	

BDCDGU
1934 161L

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
– Sodium, Na (calc.)	4,180	181.7
* Calcium, Ca	34.5	1.7
* Magnesium, Mg	2.5	0.2
Barium, Ba	0	0.0

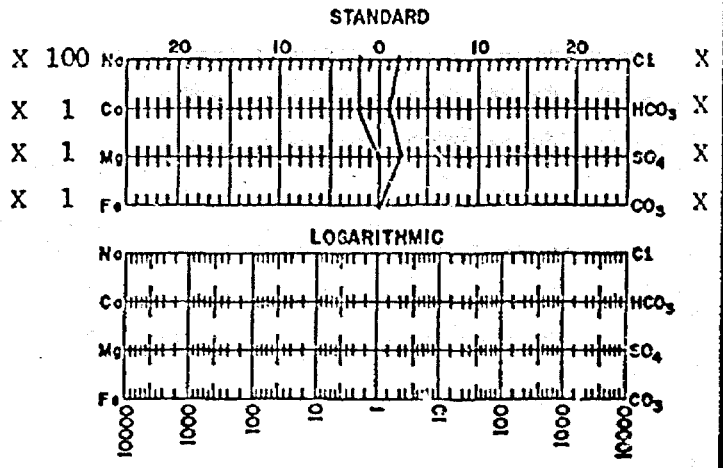
ANIONS		
Chloride, Cl	703	19.8
Sulfate, SO_4	7,458	155.1
Carbonate, CO_3	24	0.8
Bicarbonate, HCO_3	482	7.9

Total Dissolved Solids (calc.)	12,884	
Iron, Fe (total)	5.0	0.2
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	8.7
Specific Gravity, 60/60 F.	1.0129
Resistivity (ohm-meters) 77 F.	0.930
Total Hardness as $CaCO_3$	97

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

Martin Water Laboratories

P. O. BOX 1468 PHONE 915-3234
MONAHANS, TEXAS 79756

406 W. ILLINOIS PHONE 683-4521
MIDLAND, TEXAS 79701

RESULT OF WATER ANALYSES

LABORATORY NO. 1071187 page 2

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

SAMPLE RECEIVED 10-26-71

RESULTS REPORTED 10-30-71

API WATER ANALYSIS REPORT FORM

Company		Sample No.	Date Sampled
Humble Oil & Refining Company			10-22-71
Field	**Legal Description**	**County or Parish**	**State**
Wildcat		Union	N. M.

BDCDGU
1934 1611.

Lease or Unit	Well	Depth	Formation	Water, B/D
~~State "CX"~~	#1	1702'-1810'	Glorieta	
Type of Water (Produced, Supply, etc.)	**Sampling Point**			**Sampled By**
DST #2	Top			

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	4,143	180.1
* Calcium, Ca	29	1.5
* Magnesium, Mg	1.6	0.1
Barium, Ba	0	0.0

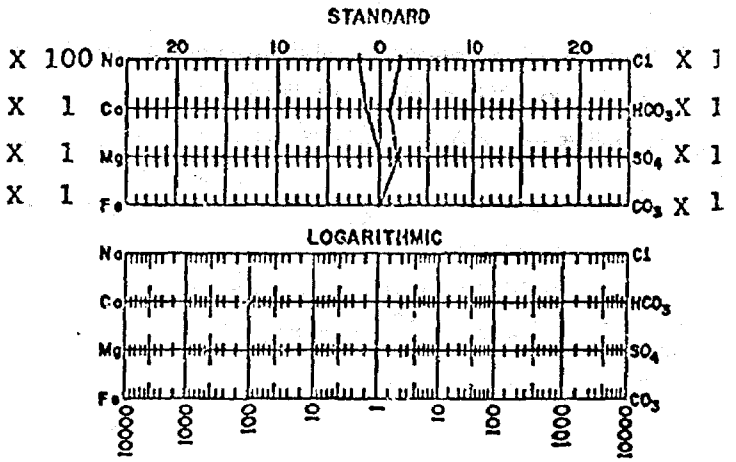
ANIONS		
Chloride, Cl	540	15.2
Sulfate, SO_4	7,582	157.7
Carbonate, CO_3	0	0.0
Bicarbonate, HCO_3	537	8.8

Total Dissolved Solids (calc.)	12,833	
Iron, Fe (total)	1.3	0.0
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	8.4
Specific Gravity, 60/60 F.	1.0128
Resistivity (ohm-meters) 77° F.	0.962
Total Hardness as $CaCO_3$	79

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

P. O. BOX 1468 PHONE 943-3234
MONAHANS, TEXAS 79756

RESULT OF WATER ANALYSES

406 W. ILLINOIS PHONE 683 4621
MIDLAND, TEXAS 79701

LABORATORY NO. 1071187
SAMPLE RECEIVED 10-26-71
RESULTS REPORTED 10-30-71

TO: Mr. B. A. Belknap
P. O. Box 1600, Midland, Texas

API WATER ANALYSIS REPORT FORM

Company		Sample No.	Date Sampled
Humble Oil & Refining Company			10-22-71
Field	**Legal Description**	**County or Parish**	**State**
Wildcat		Union	N. M.
Lease or Unit	**Well**	**Depth**	**Formation**	**Water, B/D**
~~State "CN"~~	#1	1702'-1810'	Glorieta	
Type of Water (Produced, Supply, etc.)	**Sampling Point**		**Sampled By**
DST #2	Mud Pit		

BDCDGU
1934 1611

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	3,950	171.7
*Calcium, Ca	27.5	1.4
*Magnesium, Mg	1.6	0.1
Barium, Ba	0	0.0

ANIONS		
Chloride, Cl	387	10.9
Sulfate, SO_4	7,582	157.7
Carbonate, CO_3	24	0.8
Bicarbonate, HCO_3	329	5.4

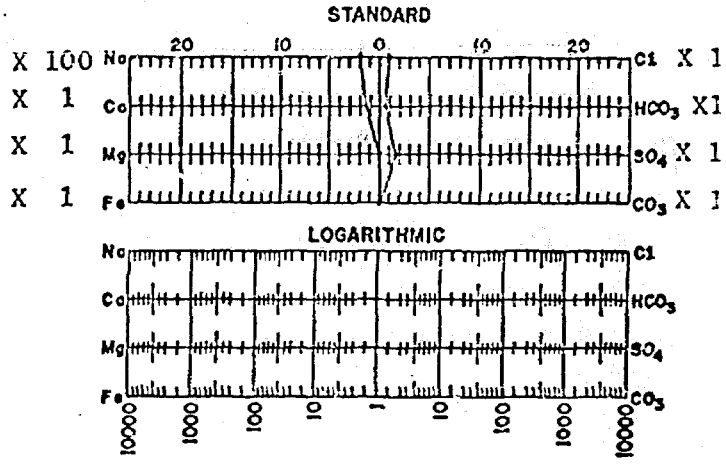
Total Dissolved Solids (calc.) 12,301

Iron, Fe (total)	3.2	0.1
Sulfide, as H_2S	0.0	

OTHER PROPERTIES

pH	8.8
Specific Gravity, 60/60 F.	1.0122
Resistivity (ohm-meters) 77° F.	1.00
Total Hardness as $CaCO_3$	75

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

NO. OF COPIES RECEIVED		
DISTRIBUTION		
SANTA FE		
FILE		
U.S.G.S.		
LAND OFFICE		
OPERATOR		

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1

5a. Indicate Type of Lease: State [ ] Fee [ ]

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" FOR SUCH PROPOSALS.)

1. OIL WELL [ ] GAS WELL [X] CO2 OTHER-

7. Unit Agreement Name: BDCDGU

2. Name of Operator: Amoco Production Company

8. Farm or Lease Name: BDCDGU 2034

3. Address of Operator: P. O. Box 68, Hobbs, NM 88240

9. Well No.: 362

4. Location of Well: UNIT LETTER P, 660 FEET FROM THE South LINE AND 1320 FEET FROM THE East LINE, SECTION 36, TOWNSHIP 20-N, RANGE 34-E, NMPM.

10. Field and Pool, or Wildcat: Und. Tubb

15. Elevation (Show whether DF, RT, GR, etc.): 4734' GL

12. County: Union

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]		COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [ ]
PULL OR ALTER CASING [ ]	CHANGE PLANS [ ]	CASING TEST AND CEMENT JOB [ ]	
OTHER Convert to salt water disposal [X]		OTHER [ ]	

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

Propose to convert to salt water disposal well per the following method:

Kill well with brine water and pull tubing. Set a cast iron bridge plug at approx 2100' and cap with 35' cement. Perforate Glorietta intervals 1718'-54' and 70'-80' with 2 DPJSPF. Run 3 joints tailpipe, packer, and 2-3/8" tubing to 1650'. Set packer and acidize with 1000 gal 7-1/2% HCL. Flush with 30 bbls brine water. Pull tubing and packer. Run internally and externally coated packer and internally coated tubing to 1650'. Pump annular volume of fresh inhibited water down backside, then set packer. Finish loading backside to surface. Pressure test backside for leaks. Install wellhead equipment and prepare for salt water disposal.

O+2-NMOCD, SF 1-Hou 1--Susp 1-CLF 1-Amerada 1-UGI 1-Cities Service
1-Conoco 1-CO2-in-Action 1-Excelsior 1-Sun Tex

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Cathy L. Forman TITLE Asst. Admin. Analyst DATE 8-24-82

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Schlumberger

COMPENSATED NEUTRON-FORMATION DENSITY

COUNTY
FIELD
LOCATION S.O. #18242
WELL
COMPANY

COMPANY Amoco Production Company

WELL State F I #2 (Interference Test Well) 2034 362P

FIELD CO2 Development

COUNTY Union STATE New Mexico

LOCATION 660 FSL & 1320 FEL

Other Services: S-DLL

SEC	TWP	RANGE
36	20-N	34-E

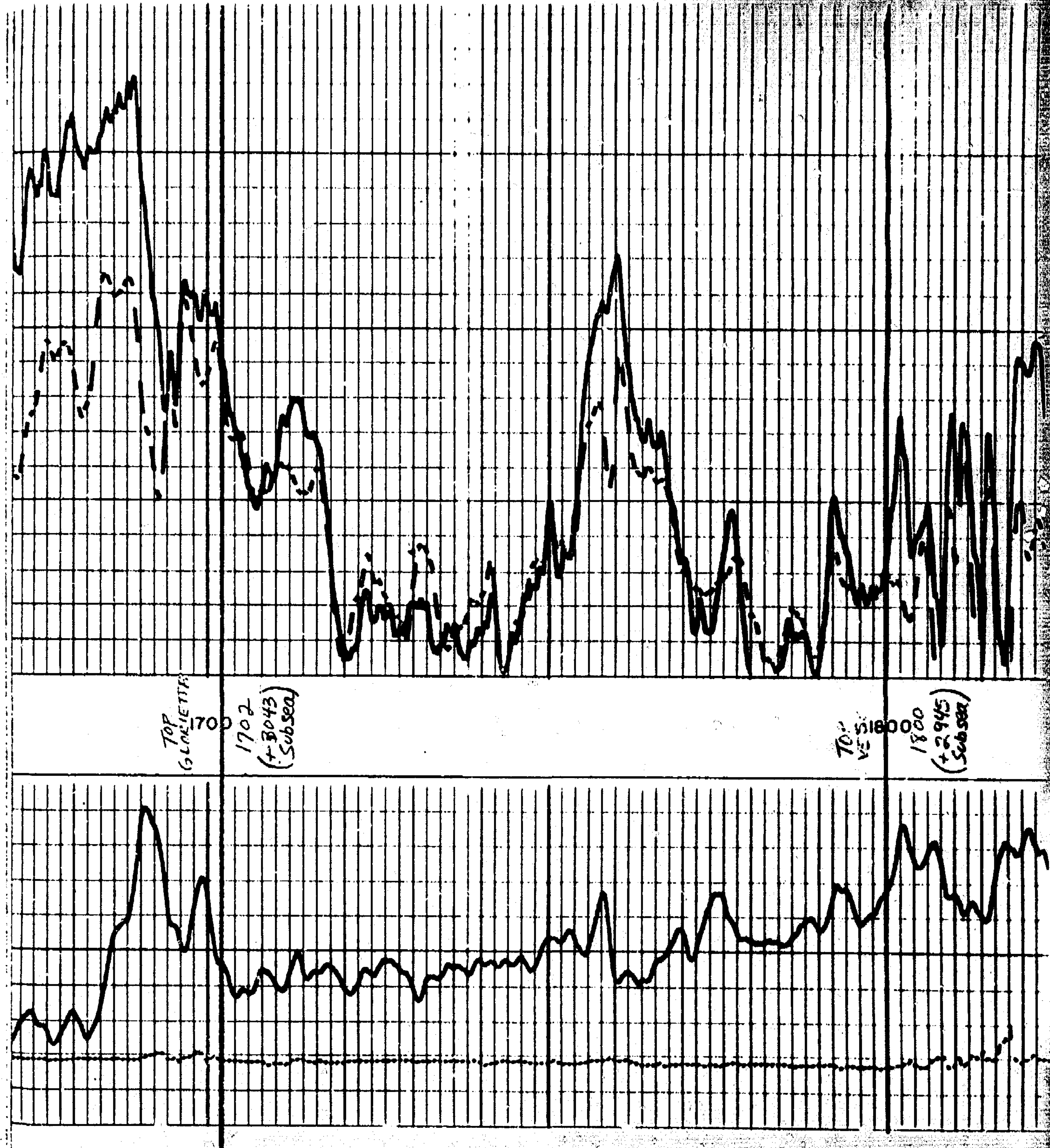
Permanent Datum: G.L. Elev.: 4734
Log Measured From K.B. 11 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 4745
D.F. —
G.L. 4734

Date	10-5-74			
Run No.	ONE			
Depth Driller	2625			
Depth Logger	2627			
Btm. Log Interval	2626			
Top Log Interval	Surface			
Casing Driller	8 5/8 @ 307	@	@	@
Casing Logger	310			
Bit Size	7 7/8			
Type Fluid in Hole	Baroid Dextrid			
Dens. | Visc.	8.85 | 42			
pH | Fluid Loss	9.0 | 40 ml	ml	ml	ml
Source of Sample	Circulated			
Rm @ Meas. Temp.	.208 @ 76 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.156 @ 76 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	.312 @ 76 °F	@ °F	@ °F	@ °F
Source: Rmf | Rmc	M | C			
Rm @ BHT	.14 @ 108 °F	@ °F	@ °F	@ °F
Circulation Stopped	10-4 2130			
Logger on Bottom	10-5 0010			
Max. Rec. Temp.	108 °F	°F	°F	°F
Equip. | Location	16-15 | Hobbs			
Recorded By	[illegible]			

COPY

The well name, location and borehole reference data were furnished by the customer.



Schlumberger

DUAL WATERFLOOD

COMPANY Amoco Production Company

WELL State FI #2 (Interference Test Well) 7034 3622

FIELD CO_2 Development

COUNTY Union STATE New Mexico

COUNTY FIELD LOCATION SO # 18242 WELL COMPANY

LOCATION 660 FSL & 1320 FEL

API SERIAL NO	SEC	TWP	RANGE
	36	20-N	34-E

Other Services: CNL-FDC/GR

Permanent Datum: G.L. ; Elev.: 4734

Log Measured From K.B. 11 Ft. Above Perm. Datum

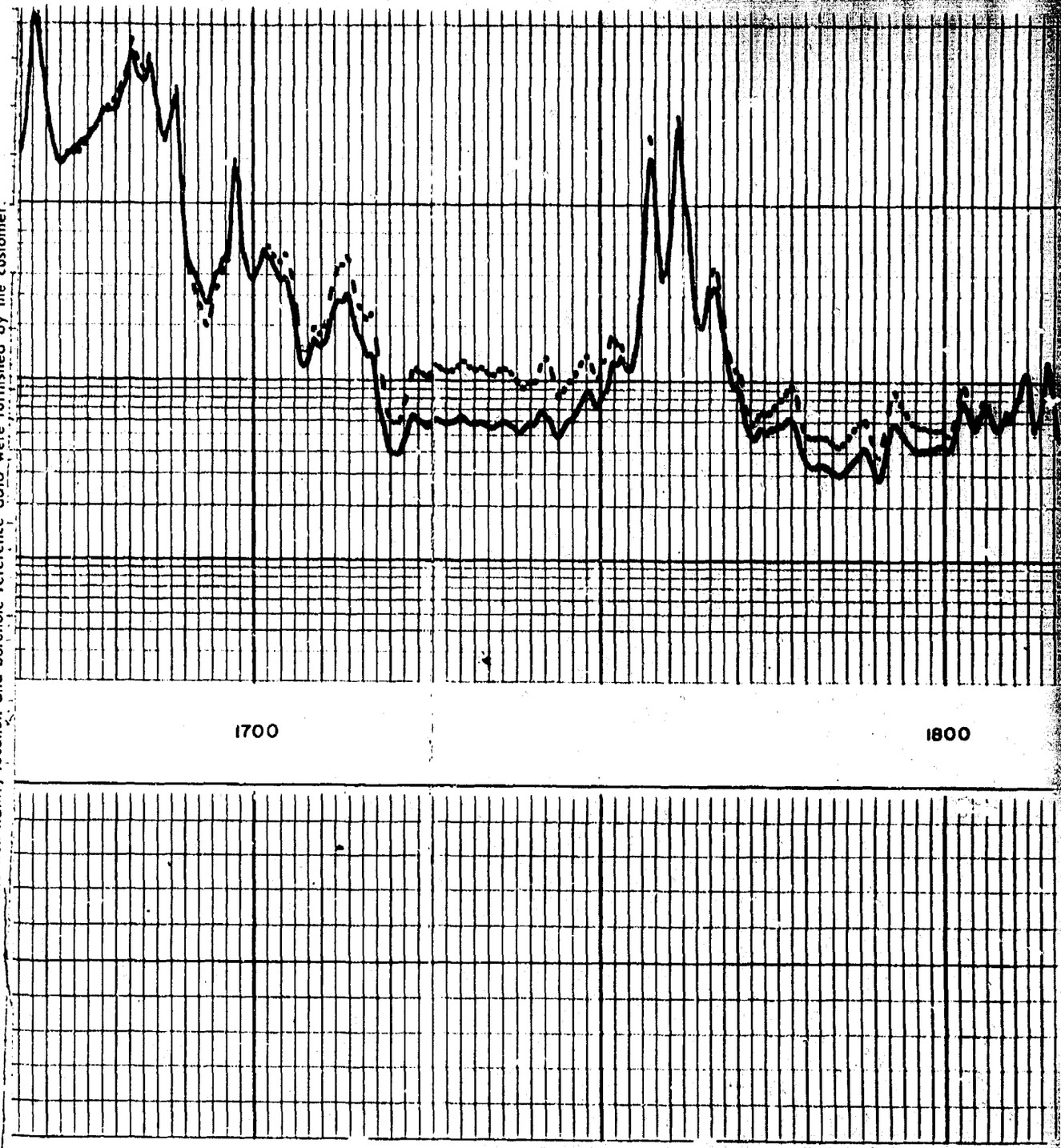
Drilling Measured From K.B.

Elev.: K.B. 4745
D.F. —
G.L. 4734

Date	10-5-74			
Run No.	ONE			
Depth—Driller	2625			
Depth—Logger (Schl.)	2627			
Btm. Log Interval	2603			
Top Log Interval	310			
Casing—Driller	8 5/8 @ 307	@	@	@
Casing—Logger	310			
Bit Size	7 7/8			
Type Fluid in Hole	BAROID DEFRID			
Dens. / Visc.	8.85 / 42			
pH / Fluid Loss	9.0 / 4.0 ml	ml	ml	ml
Source of Sample	CIRCULATED			
Rm @ Meas. Temp.	.208 @ 76 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.156 @ 76 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	.312 @ 76 °F	@ °F	@ °F	@ °F
Source: Rmf / Rmc	m / C			
Rm @ BHT	.14 @ 108 °F	@ °F	@ °F	@ °F
TIME Circulation Stopped	10-4 2130			
TIME Logger on Bottom	10-5 0230			
Max. Rec. Temp.	108 °F	°F	°F	°F
Equip. / Location	7645 / Hobbs			
Recorded By	J. R. Kitts			

The well name, location and borehole reference data were furnished by the customer.

FOLD HERE



P O BOX 1468
MONAHANS TEXAS 79756
PH 943-3234 OR 563-1040

Martin Water Laboratories, Inc.

709 W INDIANA
MIDLAND TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 882207

TO: Mr. Steven Lesikar
P.O.Box 68, Hobbs, NM

SAMPLE RECEIVED 8-18-82
RESULTS REPORTED 8-24-82

COMPANY Amoco Production Company LEASE Bravo Dome
FIELD OR POOL Bravo Dome
SECTION ___ BLOCK ___ SURVEY ___ COUNTY ___ STATE ___
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Fresh water well due east of BDCDGU #2034 362P.
NO. 2 Fresh water well due one mile southeast of BDCDGU #2034 362P.
NO. 3
NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0021	1.0016		
pH When Sampled				
pH When Received	8.78	8.40		
Bicarbonate as HCO_3	156	185		
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	252	134		
Calcium as Ca	25	18		
Magnesium as Mg	46	21		
Sodium ~~as Na~~	145	107		
Sulfate as SO_4	276	104		
Chloride as Cl	38	28		
Iron as Fe	0.23	0.17		
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	759	518		
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0	0.0		
Resistivity, ohms/m at 77° F. - Calculated	10.50	17.00		
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Carbonate, as CO_3	67	46		
Potassium, as K	9	9		
Potassium Chloride, as KCl	17	17		
Results Reported As Milligrams Per Liter				
Additional Determinations And Remarks				
Resistivity, ohms/m @ 77°F. (measured)	11.90	19.05		

Please contact us if we can be of any assistance in interpretation of the above results.

Form No. 3

By
Waylan C. Martin, M. A.

Union County Legals

LEGAL NOTICE

August 11, 1982

NOTICE

TO WHOM IT MAY CONCERN:

AMOCO PRODUCTION COMPANY PROPOSES TO CONVERT THE FOLLOWING WELL TO SALT WATER DISPOSAL:

BRAVO DOME CARBON DIOXIDE GAS UNIT WELL NO. 2034 362 P
LOCATION: SEC. 36, T-20-N, R-34-E; 660' FSL x 1320', FEL, TD 2625'

THE INTENDED PURPOSE OF THE WELL IS FOR DISPOSAL OF SALT WATER WITH AN EXPECTED MAXIMUM INJECTION RATE OF 900 BWPD AND PRESSURE LESS THAN 100 PSI. INTERESTED PARTIES MUST FILL OBJECTIONS OR REQUESTS FOR HEARING WITH THE OIL CONSERVATION DIVISION, P.O. BOX 2088, SANTA FE, NEW MEXICO 87501 WITHIN 15 DAYS FROM DATE OF THIS PUBLICATION.

FOR FURTHER INFORMATION, CONTACT STEVEN F. LESIKAR AT AMOCO PRODUCTION COMPANY, P.O. BOX 68, HOBBS, NEW MEXICO 88240, OR TELEPHONE (505) 393-1781.

8-11

"Proof of Notice"

Presumably we will get application for converting P-36-10N-34E to disposal well. Also, because of these objections, I presume it will have to go for hearing. I will plan to advise accordingly.

Carl

Logan N.M. 88426
Aug. 24 1982

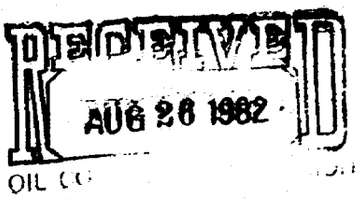
R.C. Carbon Dioxide Well No 2034-362-P

Oil Conservation Division
Box 2088
Santa Fe N.M. 87501

Dear Sir;

We hereby protest & Object to the Application by Amoco Production Co. The proposed well to be used For Salt water Disposal use Request A hearing on such Application.

By Copy of this letter to Stephen F. Lasiter. I am advising Amoco Production Co. of this Request Protest & Obvection.



Yours Sincerely
Newt James
Box 376
Logan New Mexico 88426

AUG 30 1982

OIL

Bueyeros, New Mexico
August 24, 1982

Case 7687

Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Bravo Dome Carbon Dioxide Gas Unit
Well No. 2034 362 P

Dear Sirs:

I hereby protest and object to the application of Amoco Production Company to convert the above referenced well to salt water disposal use, requesting a hearing on such application. By copy of this letter to Steven F. Lesikar, I'm advising Amoco Production Company of this protest, objection and request.

Very truly yours,

J Heimann

J Heimann

cc: Steven F. Lesikar

HOWARD W. ROBERTSON
IONE RANCH (505) 633-2296
NARA VISA, NEW MEXICO 88430

August 23, 1982

Re: Bravo Dome Carbon Dioxide Gas Unit
2034-362-P

Oil Conservation Division
Box 2088
Santa Fe, New Mexico 87501

Dear Sirs:

We hereby protest and object to the application of Amoco Production Company to convert the referenced well to salt water disposal use, requesting a hearing on such application.

By copy of this letter to Steven F. Lesikar, I am advising Amoco Production Company of this protest, objection and request.

Very truly yours,

Mr. & Mrs. Howard Robertson

Mr. and Mrs. Howard Robertson

cc: Steven F. Lesikar

August 23, 1982
Star Route
Nara Visa, NM 88430

Re: Bravo Dome Carbon Dioxide Gas Unit
Well #2034-362-P

To: Oil Conservation Division
Box 2088
Santa Fe, NM 87501

Dear Sir:

I hereby protest and object to the application of Amoco Production Company to convert the referenced well to salt water disposal use, requesting a hearing on such application.

By copy of this letter to Steven F. Lesikar, I'm advising Amoco Production Company of this protest, objection and request.

Very truly yours,

Don Kuper

Don Kuper

Bueyeros Route
Clayton, New Mexico
August 23, 1982

Oil Conservation Division
Box 2088
Santa Fe, New Mexico 87501

Re: Bravo Dome Carbon Dioxide Gas Unit
2034-362-P

Dear Sirs:

I hereby protest and object to the application of Amoco Production Company to convert the above referenced well to salt water disposal use, requesting a hearing on such application. By copy of this letter to Steven F. Lesikar, I'm advising Amoco Production Company of this protest, objection and request.

Very truly yours,

Mrs Allen Poling

Mrs. Allen Poling

cc: Steven F. Lesikar

Bueyeros Route
Clayton, New Mexico
August 23, 1982

Oil Conservation Division
Box 2088
Santa Fe, New Mexico 87501

RE: Bravo Dome Carbon Dioxide Gas Unit
2034-362-P

Dear Sirs:

I hereby protest and object to the application of Amoco Production Company to convert the above referenced well to salt water disposal use, requesting a hearing on such application by copy of this letter to Steven F. Lesikar, I'm advising Amoco Production Company of this protest, objection and request.

Very truly yours,

Wendle M. Seling

cc: Steven F. Lesikar
Amoco Production Company
Box 68
Hobbs, New Mexico 88240

Bueyeros Route
Clayton, New Mexico
August 23, 1982

Oil Conservation Division
Box 2088
Santa Fe, New Mexico 87501

RE: Bravo Dome Carbon Dioxide Gas Unit
2034-362-P

Dear Sirs:

I hereby protest and object to the application of Amoco Production Company to convert the above referenced well to salt water disposal use, requesting a hearing on such application by copy of this letter to Steven F. Lesikar, I'm advising Amoco Production Company of this protest, objection and request.

Very truly yours,

J. M. Polinz III

cc: Steven F. Lesikar
Amoco Production Company
Box 68
Hobbs, New Mexico 88240

Bueyeros Route
Clayton, New Mexico
August 23, 1982

Oil Conservation Division
Box 2088
Santa Fe, New Mexico 87501

RE: Bravo Dome Carbon Dioxide Gas Unit
2034-362-P

Dear Sirs:

I hereby protest and object to the application of Amoco Production Company to convert the above referenced well to salt water disposal use, requesting a hearing on such application by copy of this letter to Steven F. Lesikar, I'm advising Amoco Production Company of this protest, objection and request.

Very truly yours,

Harold V. O'Neal
by J. M. Poling III
(Manager)

cc: Steven F. Lesikar
Amoco Production Company
Box 68
Hobbs, New Mexico 88240

P.O. BOX 486 • CLAYTON, NEW MEXICO 88415 • PHONE (505) 374-2587

August 23, 1982

Oil Conservation Division
Box 2088
Santa Fe, New Mexico 87501

Re: Bravo Dome Carbon Dioxide
Gas Unit 2034-362-P

Dear Sirs,

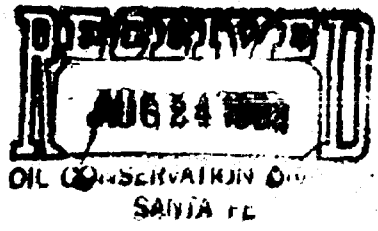
I hereby protest and object to the application of Amoco Production Company to convert the above referenced well to salt water disposal use, requesting a hearing on such application.

By copy of this letter to Steven F. Lesikar, I am advising Amoco Production Company of this protest, objection and request.

Sincerely,

Betty R. Sowers

cc: Steven F. Lesikar
Amoco Production Company
Box 68
Hobbs, New Mexico 88240



903 Walnut Street
Clayton, New Mexico
August 23, 1982

Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Bravo Dome Carbon Dioxide Unit
2034-362-P

Dear Sirs:

I hereby protest and object to the application of Amoco Production Company to convert the above referenced well to salt water disposal use, requesting a hearing on such application. By copy of this letter to Steven F. Lesikar, I'm advising Amoco Production Company of this protest, objection and request.

Very truly yours,

Winifred Blakely

Winifred Blakely

cc: Steven F. Lesikar

315 Monroe Street
Clayton, New Mexico
August 23, 1982

RE: Bravo Dome Carbon Dioxide Gas Unit
2034-362-P

Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico

Dear Sirs:

I hereby protest and object to the application of Amoco Production Company to convert the above referenced well to salt water disposal use, requesting a hearing on such application by copy of this letter to Steven F. Lesikar, I'm advising Amoco Production Company of this protest, objection and request.

Sincerely yours,

Bobby Adee

Bobby Adee

cc: Steven F. Lesikar

NARA VISA, NEW MEXICO

AUGUST 23,1982

RE-BRAVO DOME CARBONDIOXIDE GAS UNIT

2034-362-P OIL CONSERVATION DIVISION
BOX 2088

SANTA FE 87501

Dear Sirs;

We hereby protest and object to the application of Amoco Production Co. to convert the feferenced well to salt water disposal use,requesting a hearing on such application.

By copy of this letter to Steven F.Lesikar,I'm advising Amoco Production Co. of this protest,objection in request.

Very truly yours,

Addison and Kathryn Cammack

c.c Steven F. Lesikar
Amoco Production
Box 68
Hobbs,NM 88240

RECEIVED
AUG 26 1982
OIL CONSERVATION DIVISION
SANTA FE

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 7687

Order No. R- ~~7705~~ 7096

APPLICATION OF AMOCO PRODUCTION
COMPANY FOR SALT WATER DISPOSAL,
UNION COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on September 29, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this_____day of October, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Amoco Production Company, is the owner and operator of the State FI Well No. 2 ~~(2034 362P)~~, Bravo Dome Carbon Dioxide Unit Tract 2034 Well No 362, formerly known as Ke located 660 feet from the South line and 1320 feet from the East line of Section 36, Township 20 North, Range 34 East, NMPM, Union County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Glorieta formation, with injection into the perforated interval from approximately 1718 feet to 1780 feet.

(4) That the injection should be accomplished through 2 3/8 -inch plastic lined tubing installed in a packer set at approximately 1650 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 350 psi.

(6) That the Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that

such higher pressure will not result in migration of the injected waters from the Glorieta formation.

(7) That the operator should notify the supervisor of the Santa Fe district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(8) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(9) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Amoco Production Company, is hereby authorized to utilize its ~~former State PI Well No. 2~~ Bravo Dome Carbon Dioxide Gas Unit Tract 2034 Well No 362 ~~(2034-362P)~~ located 660 feet from the South line and 1320 feet from the East line of Section 36, Township 20 North, Range East, NMPM, Union County, New Mexico, to dispose of produced salt water into the Glorieta formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 1650 feet, with injection into the perforated interval from approximately 1718 feet to 1780 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert

fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 350 psi.

(3) That the Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Glorieta formation.

(4) That the operator shall notify the supervisor of the Santa Fe district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(5) That the operator shall immediately notify the supervisor of the Division's Santa Fe district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 702, 703, 704, 705, 706, 708, and 1120 of the Division Rules and Regulations.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

S E A L

APPLICATION FOR UNORTHODOX GAS WELL
LOCATION, CHAVES COUNTY, NEW MEXICO