CASE 6726: TESORO PETROLEUM CORPORATION FOR A WATERFLOOD PROJECT, McKINLEY COUNTY, NEW MEXICO

Case Number

6726

Application

Transcripts.

Small Exhibits

ETC.

TESORO

TEXACO

TESORO

0553739

0557107

TESORO

S F P R R

TESORO

map 1

isopach map

TOP U. HOSPAH SAND

C. I. = 10'

6

5

DK gas well

P&A

Hanson - Federal U.S.N.M. No. 052931

S F P R.R. "B"

T.A.

P&A

TESORO

Tennaco West Springs

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
EXHIBIT NO. B
CASE NO. 6726

TESORO PETROLEUM CORP.

SFRR "B" AREA

WATERFLOOD HEARING

NOVEMBER 14, 1979

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Tesoro EXHIBIT NO. A
CASE NO. 6726

Table of Contents

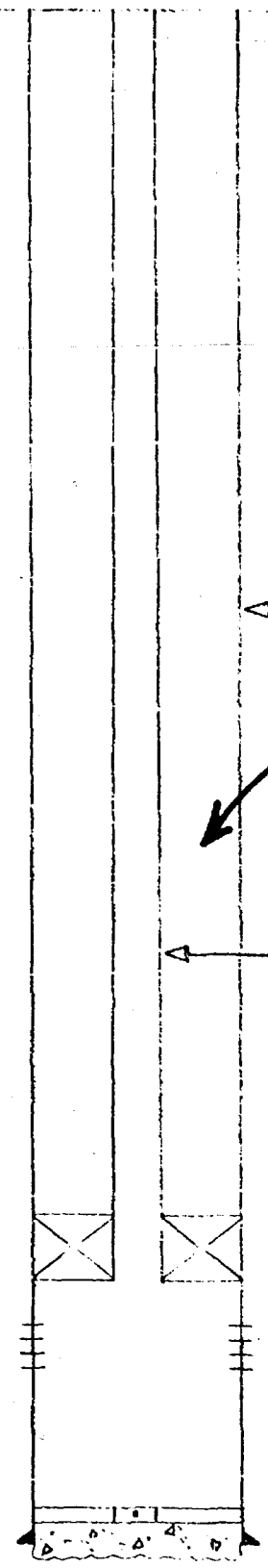
EXHIBIT 2

Wells Within 1/2 Mile of Proposed Injection Wells

Operator	Well Name	Location	Casing Strings	Setting Depth	Cement Volume	Cement Top	Total Depth	Producing Interval	Producing Formation
Tesoro	SFRR "B" #30	SE-SW Sec 5-17N-8W	8-5/8"	137'	100 sx	surface	2736'	P & A	--
Tesoro	SFRR "B" #32	SW-SW Sec 5-17N-8W	9-5/8" 5-12"	97' 2634'	90 sx 200 sx	surface 1780'	2648'	2634'-48'	Dakota
Tesoro	SFRR "B" #33	NW-SW Sec 5-17N-8W	8-5/8" 5-1/2"	102' 2636'	100 sx 385 sx	surface 1494'	2652'	1578'-82'	U. Hospah
Tesoro	SFRR "B" #34	SW-SW Sec 5-17N-8W	8-5/8" 5-12"	105' 1632'	90 sx 100 sx	surface 800'	1638'	1588'-96'	U. Hospah
Tesoro	SFRR "B" #36	NW-SW Sec 5-17N-8W	8-5/8" 5-1/2"	94' 1599'	100 sx 100 sx	surface 1050'	1600'	1564'-70'	U. Hospah
Tesoro	SFRR "B" #37	SW-SW Sec 5-17N-8W	8-5/8" 5-1/2"	107' 1613'	100 sx 100 sx	surface 1060'	1614'	1574'-80'	U. Hospah
Tesoro	Hanson Fed. #23	SE-SE Sec 6-17N-8W	8-5/8" 5-1/2"	144' 2724'	100 sx 325 sx	surface 1350'	2725'	2627'-31' 2638'-50'	Dakota Dakota
Tesoro	Hanson Fed. #25	NW-NW Sec 8-17N-8W	8-5/8" 5-1/2"	107' 2741'	75 sx 385 sx	surface 1100'	2750'	2673'-78' 2683'-93'	Dakota Dakota
Tesoro	Hanson Fed. #26	NW-NW Sec 8-17N-8W	8-5/8" 5-1/2"	104' 1653'	100 sx 100 sx	surface 1170'	1654'	1620'-26' 1632'-35'	U. Hospah U. Hospah
Tesoro	Hanson Fed. #27	SW-SE Sec 6-17N-8W	8-5/8" 5-1/2"	103' 1644'	100 sx 100 sx	surface 1130'	1645'	1519'-32' 1535'-50'	U. Hospah U. Hospah
Tesoro	Hanson Fed. #28	NW-SE Sec 6-17N-8W	8-5/8" 5-1/2"	103' 1687'	100 sx 100 sx	surface 1140'	1699'	1576'-82'	L. Hospah
Tesoro	Hanson Fed. #30	SE-NW Sec 6-17N-8W	8-5/8" 5-1/2"	103' 1643'	100 sx 100 sx	surface 1090'	1643'	1576'-84'	L. Hospah

Operator	Well Name	Location	Casing Strings	Setting Depth	Cement Volume	Cement Top	Total Depth	Producing Interval	Producing Formation
Tesoro	Hanson Fed. #31	SE-NW Sec 6-17N-8W	8-5/8" 5-1/2"	85' 1617'	100 sx 100 sx	surface 1070'	1620'	1550'-58'	L. Hospah
Tesoro	Hanson Fed. #21	SE-NW Sec 6-17N-8W	7" 4-1/2"	75' 1541'	40 sx 65 sx	surface 1060'	1542'	1508'-11' 1515'-19' 1525'-28'	Injection
Tesoro	SFRR #2	NE-NE Sec 7-17N-8W	8-5/8" 4-1/2"	45' 1621'	15 sx 35 sx	surface 1440'	1625'	TA	--
Burr & Cooley	Coleman #2	NE-NW Sec 8-17N-8W	8-5/8" 5-1/2"	97' 2841'	100 sx 315 sx	surface 1190'	2842'	P & A	--

Exhibit 3



Elevation: 6911' KB - 6899' GL

8-5/8", 24#, K-55, STC csg set @ 108'
Cemented to surface w/ 90sx

Well presently temporarily abandoned

Cement Top @ 900'

inert fluid

will inject produced water (Tesoro's coastal tbg pw trtg'd)

2-3/8", 4.7#, J-55, EUE tbg.

Baker Model AD-1 Packer @ 1600' KB

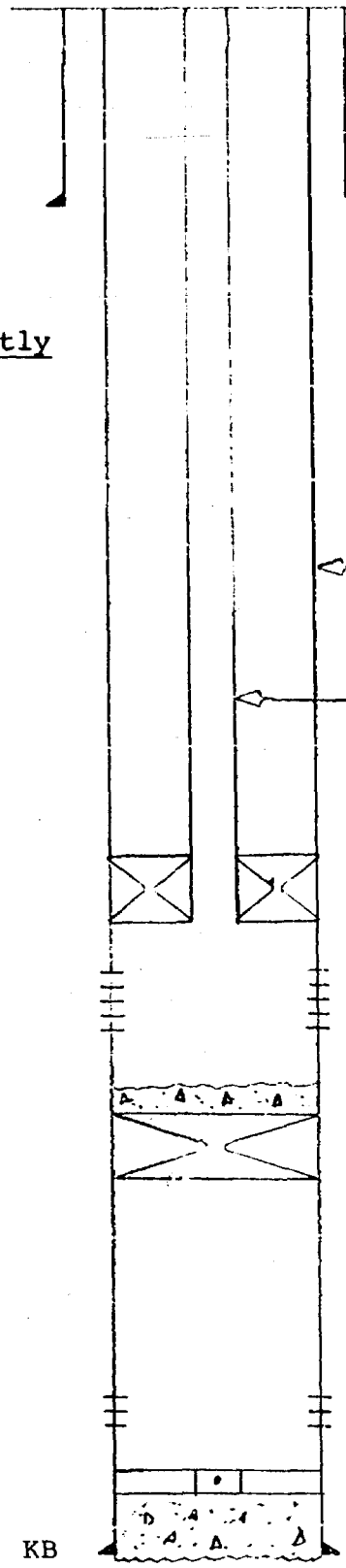
U. Hospah perfs. 1611' - 1615' KB

PBTD-1633'
TD-1643' KB

5-1/2", 14#, K-55, STC set @ 1643' KB
w/ 100 sx cement

Tesoro Petroleum Corp.
SFRR "B" #35
Proposed Injection Well
Section 5-17N-8W

Exhibit 3



Elevation: 6902' KB - 6890' GL

8-5/8", 24#, K-55, STC csg set @ 138' KB
cemented to surface w/ 150 sx

Well presently
temporarily
abandoned

Cement top @ approx. 1200'
(CBL will be run)

2-3/8", 4.7#, J-55, EUE tbg.

Same as
it 35

Baker Model AD-1 packer @ 1660' KB

Perf. U. Hospah 1607'-1612' KB

PBTD-1648' KB

Set Baker Model P-1 CIBP @ 1660' KB
Top w/ 2 sx cement

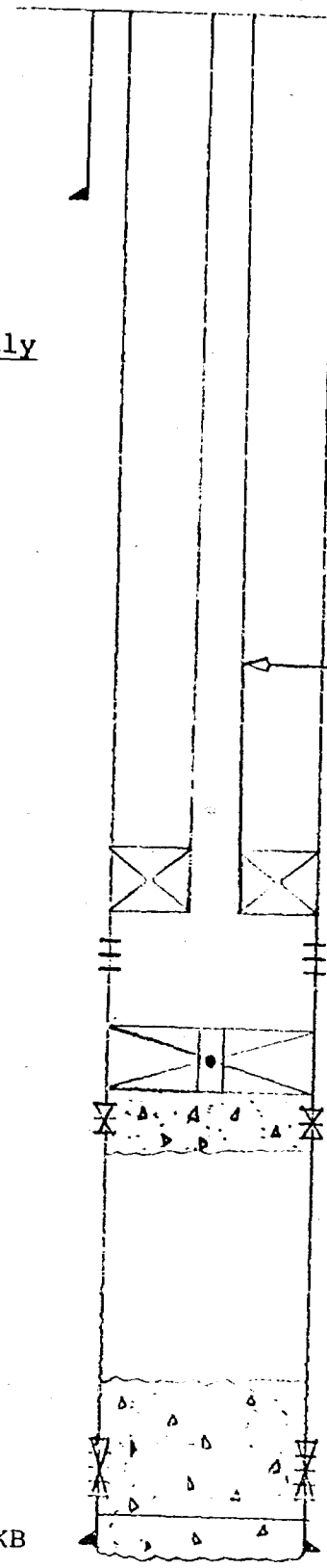
Dakota perfs. 2670'-76' KB

TD-2741' KB

5-1/2", 14#, & 15.5#, J-55, STC csg.
set @ 2740' KB w/ 360 sx cement

Tesoro Petroleum Corp.
SFRR "B" #38
Proposed Injection Well
Section 5-17N-8W

Exhibit 3



Elevation: 6871' KB - 6860' GL

8-5/8", 24#, K-55, STC csg. set @ 100' KB
Cemented to surface w/ 100 sx

Well presently temporarily abandoned

Cement Top @ 800'

2-3/8", 4.7#, J-55, EUE tbg.

Name as #35

Baker Model AD-1 Packer @ 1540' KB

Perf. U. Hospah 1554' - 60" KB

Baker Model K Cement Retainer @ 1570' KB

Squeeze U. Hospah perfs. 1580' - 85' KB
w/ 5 sx cement

Present PBTD - 2443' KB

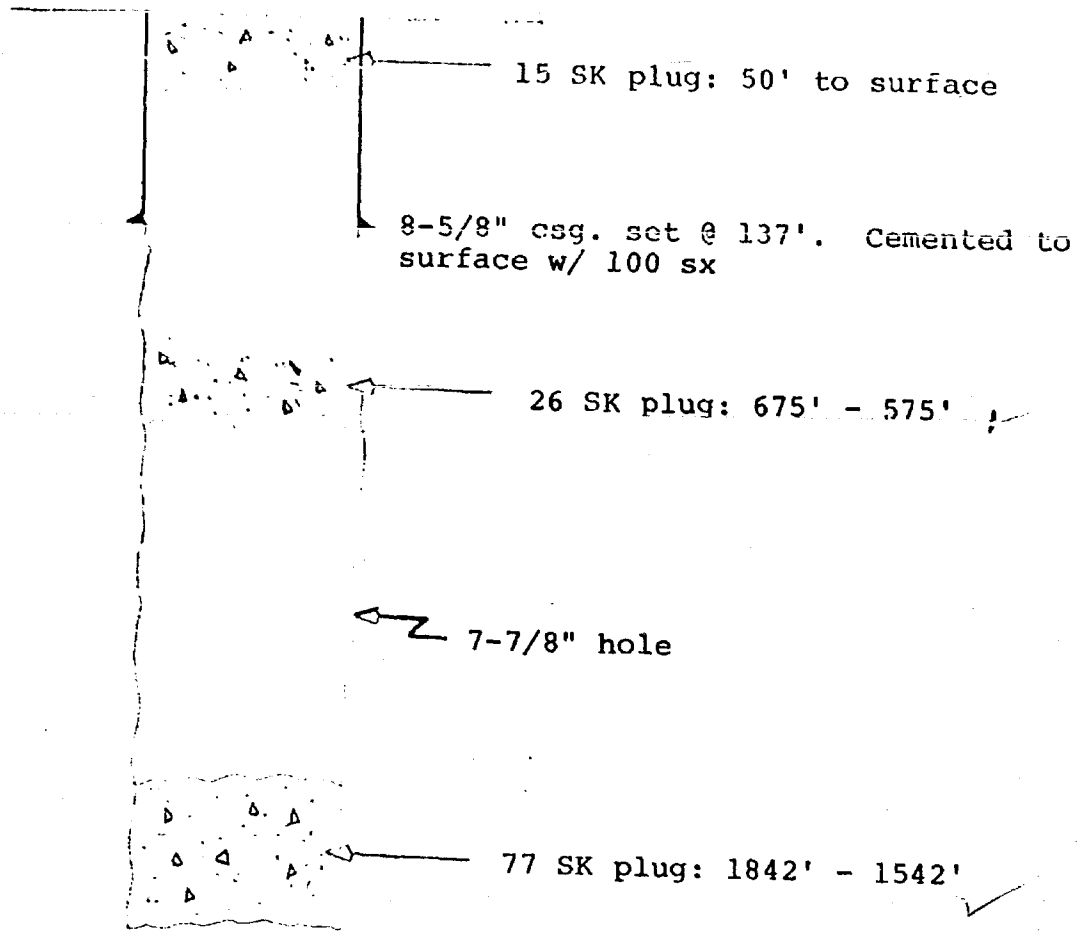
Dakota perfs. 2608' - 15' & 2625' - 30' KB
squeezed w/ 75 sx cement

TD-2657' KB

5-1/2", 14#, K-55, STC csg. set @ 2657' KB
w/ 250 sx cement

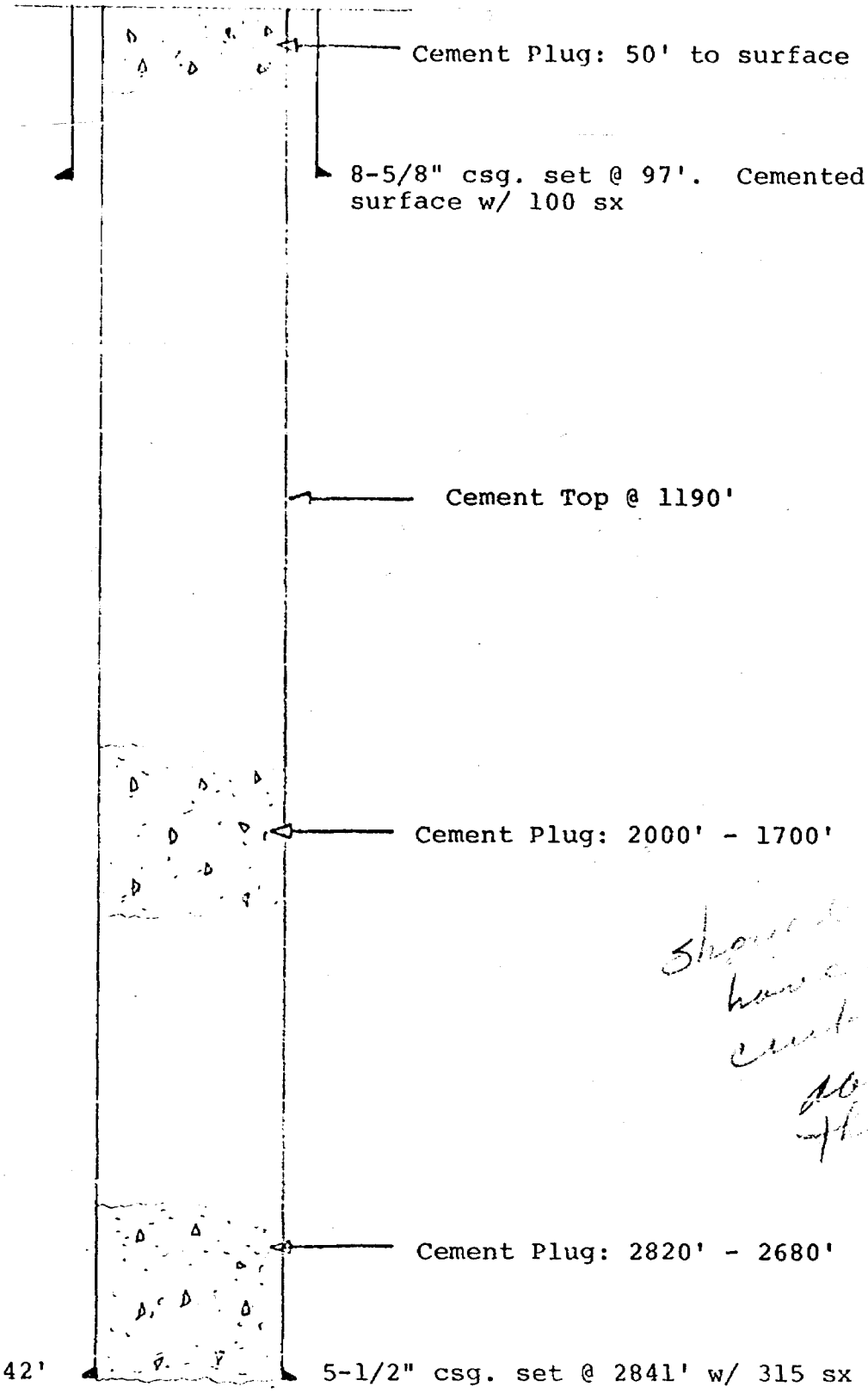
Tesoro Petroleum Corp.
Hanson Federal ~~#24~~ 6
Proposed Injection Well
Section 6-17N-8W

Exhibit 4



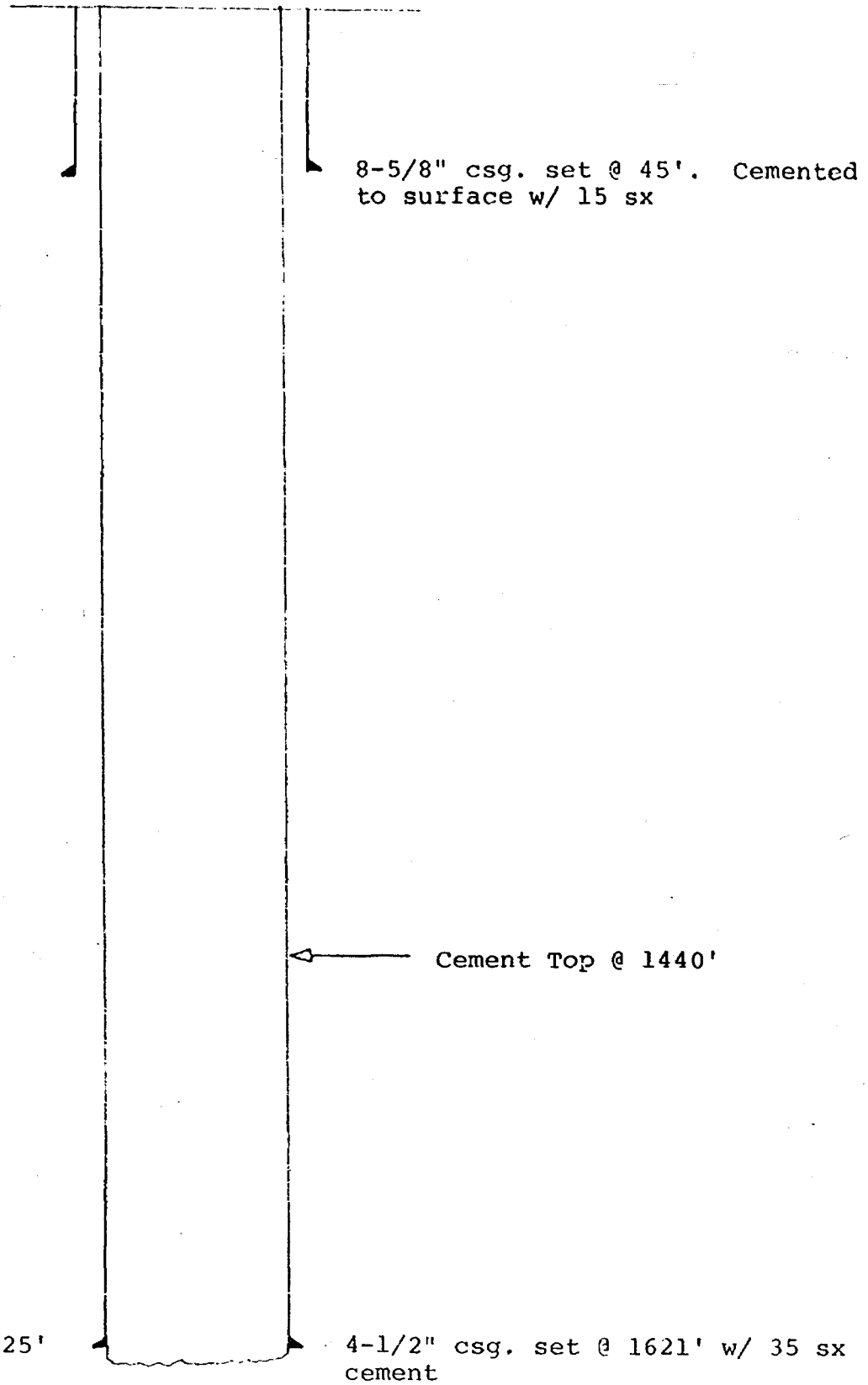
Tesoro Petroleum Corp.
SFRR "B" #30
Abandoned Well
Section ~~6~~ 5 17N-8W

Exhibit 4



Burr and Cooley
Colemen #2
Abandoned Well
Section 8-17N-8W

Exhibit 4



Tesoro Petroleum Corp.
SFRR #2
Temp. Abandoned Well
Section 7-17N-8W

Exhibit 5

I. Injection Zone

Name - Upper Hospah Sand
Depth - 1550'-1620'

II. Injection Fluid

Type - Fresh Water (Resistivity 1.0-4.0 ohm-meters)
Source - Produced water from Upper and Lower Hospah Sands in Hospah Field

III. Injection Data

Expected Injection Pressure - 1000 psi
Expected Injection Volume - 200 BWPD per well

IV. Fracture Gradient

Upper Hospah Sand - .65 to .90 psi/ft.

Injection pressure into the Upper Hospah Sand on the west side of the Hanson Fed. and SFRR leases is 950 psi without any breakdown of the formation.

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. 6726
Order No. R-6227

APPLICATION OF TESORO PETROLEUM CORPORATION FOR A WATERFLOOD PROJECT, McKINLEY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 14, 1979, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 9th day of January, 1980, 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, Tesoro Petroleum Corporation, seeks authority to institute a waterflood project on its Hanson Federal and Santa Fe Pacific Railroad Leases, South Hospah-Upper Sand Oil Pool, by the injection of water into the Upper Hospah Sand formation through three injection wells in Units E and M of Section 5 and Unit I of Section 8, Township 17 North, Range 8 West, NMPM, McKinley County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) 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 from injection, production, or plugged and abandoned wells.

(6) That the injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to 1000 psi, but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.

(7) That there are two wells in the vicinity of the proposed waterflood project that may require remedial work prior to commencement of injection operations, those wells being the Tesoro SFPRR "B" Well No. 32 located in Unit P of Section 5 and the Burr and Cooley Coleman Well No. 2 located in Unit C of Section 8, both in Township 17 North, Range 8 West, NMPM, McKinley County, New Mexico.

(8) That subject to the above conditions, the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tesoro Petroleum Corporation, is hereby authorized to institute a waterflood project on its Hanson Federal and Santa Fe Pacific Railroad Leases, South Hospah-Upper Sand Oil Pool, by the injection of water into the Upper Hospah Sand formation through the following-described wells in Township 17 North, Range 8 West, NMPM, McKinley County, New Mexico:

Lease	Well No.	Unit Letter	Section
Santa Fe Pacific Railroad	35	E	5
Santa Fe Pacific Railroad	38	M	5
Hanson Federal	6	I	6

(2) That injection into each of said wells shall be through tubing, set in a packer which shall be located as near as practicable to the uppermost perforation; that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(3) That the injection wells herein authorized or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 1000 psi, provided however, that the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(4) That the operator shall immediately notify the supervisor of the Division's Aztec district office of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(5) That the subject waterflood project is hereby designated the Tesoro Santa Fe Hanson Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

(6) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Division in accordance with Rules 704 and 1120 of the Division Rules and Regulations.

(7) That prior to commencement of water injection into the herein authorized wells, applicant shall consult with the supervisor of the Aztec District Office of the Division, and shall take such remedial action as the District Supervisor shall require on the Tesoro Santa Fe Pacific Railroad "B" Well No. 32 located in Unit P of Section 5 and the Burr and Cooley Coleman Well No. 2 located in Unit C of Section 8, both in Township 17 North, Range 8 West, NMPM, McKinley County, New Mexico.

(8) 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
Directro

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

March 12, 1980

Mr. Jason Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Re: CASE NO. 6726
ORDER NO. R-6227-A

Applicant:

Tesoro Petroleum Corporation

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 x

Other _____

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

CASE NO. 6726
Order No. R-6227-A

APPLICATION OF TESORO PETROLEUM CORPORATION FOR A WATERFLOOD PROJECT, McKINLEY COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R-6227, dated January 9, 1980, does not correctly state the intended order of the Division,

IT IS THEREFORE ORDERED:

(1) That the 6th line of Finding No. (2) should be changed to read in its entirety as follows:

"and M of Section 5 and Unit I of Section 6, Township 17 North,"

(2) That the last line of Order (1) should be changed to read in its entirety as follows:

"Hanson Federal 24 I 6"

That this order shall be effective nunc pro tunc as of January 9, 1980.

DONE at Santa Fe, New Mexico, this 11th day of March, 1980.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E A L
fd/

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

January 10, 1980

Mr. Jason Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Re: CASE NO. 6726
ORDER NO. R-6227

Applicant:

Tesoro Petroleum Corporation

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 x

Other _____

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
14 November 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of Tesoro Petroleum Corporation for a waterflood project, McKinley County, New Mexico. CASE 6726

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:	Ernest L. Padilla, Esq. Legal Counsel for the Division State Land Office Bldg. Santa Fe, New Mexico 87503
For the Applicant:	Jason Kellahin, Esq. KELLAHIN & KELLAHIN 500 Don Gaspar Santa Fe, New Mexico 87501

I N D E X

KARY KALTENBACHER

E X H I B I T S

MR. NUTTER: Call next Case Number 6726.

MR. PADILLA: Application of Tesoro Petroleum Corporation for a waterflood project, McKinley County, New Mexico.

MR. KELLAHIN: If the Examiner please, Jason Kellahin, appearing for the applicant, and I have one witness to be sworn.

(Witness sworn.)

KARY KALTENBACHER

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you state your name, please?

A. Kary Kaltenbacher.

Q. By whom are you employed and in what position, Mr. Kaltenbacher?

A. I'm a District Engineer for Tesoro Petroleum in Denver, Colorado.

Q. Would you spell your name, please?

A. First name is Kary, K-A-R-Y. Last name is K-A-L-T-E-N-B-A-C-H-E-R.

Q. Have you testified before the Oil Conservation Division and had your qualifications made a matter of record?

A. No.

Q. For the benefit of the Examiner, would you briefly outline your education and experience?

A. I graduated from Colorado School of Mines in May of 1976 with a BS in petroleum engineering. From there I went to work with Getty Oil Company in Casper, Wyoming, as a drilling and production engineer. I was there for a year and a half before I went to work for American Quazar Petroleum as a division drilling engineer for the Rocky Mountains. I was there for a year and eight months, and I went to work for Tesoro Petroleum four months ago.

Q. In connection with your work for Tesoro, does the area involved in this application fall under your jurisdiction?

A. Yes, it does.

MR. KELLAHIN: Are the witness qualifications acceptable?

MR. NUTTER: Yes, they are.

Q. Briefly, what does the applicant propose in this case?

A. I'd like to refer to map number one and Exhibit One and explain what we'd like to do.

Q. You are referring to Exhibit, which has been marked as Exhibit A, a multi-page exhibit, and Exhibit ONe, is that the exhibit you're talking about?

Is that correct?

A. Exhibit One and map one, which is at the front of the folder when we started.

MR. KELLAHIN: Is this the one?

A. Yes, that's the one.

MR. KELLAHIN: I don't believe that has been marked.

(Thereupon a discussion was had off the record.)

Q. Now, would you continue, please?

A. Right. Exhibit B is a Isopach map of the upper Hospah Sand in the Hospah Field. As you can see, this is a thin, offshore bar type deposit that's separated from the main part of the Hospah Field, which is to the west. This bar type deposit is very thin and pinches out to the east/west and to the north and is bordered by a fault on the south.

And presently there are five producing wells, Santa Fe Railroad "B" 33, 36, 37, 34, and Hansen Federal No. 25 are upper Hospah producers; Santa Fe Railroad "B" No. 32, Hansen Federal 23 and 25 are Dakota producers, which are a deeper pool; and there are three temporarily

abandoned wells which are Santa Fe Railroad "B" No. 35, and 38, and Hansen Federal No. 24.

What we propose to do is to form a cooperative waterflood by converting those three temporarily abandoned wells to water injectors.

That's basically what we'd like to do.

Q. Now, referring to Exhibit One of Exhibit A, would you discuss the information contained in that?

A. Exhibit One shows all wells within a 2-mile radius of the proposed injection wells and the wells that will be producing in the Upper Hospah Sand.

Q. Do you have anything else to add to that?

A. No.

Q. Now, thumbing through Exhibit A, turning to the next page, which is Exhibit Two, would you identify that, please?

A. Exhibit Two is a tabulated form that shows all wells within a 1/2 mile radius of the proposed injection wells and it's self-explanatory.

Q. It gives the casing string setting depth, cement, cement tops, is that correct?

A. Cement tops, cement bottoms, total depth, producing interval, and producing formation.

Q. And then what are the remaining exhibits in Exhibit A?

A. Page four shows Exhibit Three, which is the Santa Fe Railroad "B" No. 35 diagrammatic sketch. This is a temporarily abandoned well which we propose to turn into a water injection well.

Q. Is this the present status of the well?

A. It is presently temporarily abandoned.

Q. Yes, sir, but I mean --

A. Oh, this diagrammatic sketch shows what we propose what the final sketch will be when we complete the work to change it to an injector.

Q. And you will be injecting through the tubing and under a packer, is this correct?

A. That's correct.

Q. Will you fill the casing-tubing annulus with an inert fluid?

A. Yes.

Q. And as I understand, you're going to be injecting fresh water, is this correct?

A. It will be produced water from the Upper and Lower Hospah Sands from the Hospah Field.

Q. Is that a fresh water --

A. Yes, it is a fresh water.

Q. So it will not be necessary to use an internally coated tubing, is this correct?

A. That's correct.

Page five is also Exhibit Three, which shows Santa Fe Railroad "B" Well No. 38, which is also a temporarily abandoned well which we propose to change to an injection well.

Q. And there again, you will put in inert fluid in the casing-tubing annulus?

A. Right, it will be done the same as the previous well.

Q. Okay.

A. Page six is also part of Exhibit Three, which is the Hansen Federal Well No. 24, which is also temporarily abandoned, which we propose to change to a water injection well. It will be completed in the same way as the previous two wells.

Page seven is part of Exhibit Four, it is a schematic of Santa Fe Railroad "B" Well No. 30, which is just to the east of the bar-type deposit, and it is an abandoned well right now.

Q. Are the -- is the zone that you'll be injecting in covered by cement in that well?

A. Yes, it is.

Q. And page eight?

A. Page eight is also part of Exhibit Four. It is Burr and Cooley's Colemen Well No. 2, which is just across the fault from the water injection area. This well

is also abandoned.

Q. Does the cement cover the Hospah?

A. Now, casing was run in this hole and cement in the annulus does cover the proposed injection formation.

Q. And page nine?

A. Page nine is part of Exhibit Four. This is Santa Fe Railroad No. 2, which is to the -- is to the southwest of the proposed area. This well is temporarily abandoned. It's still open right now. Cement casing is in the hole and the proposed injection formation is covered by cement.

Q. Now, Exhibit Number Five, would you identify that exhibit?

A. Exhibit Five is general injection information. The injection zone is the Upper Hospah Sand at a depth of 1550 to 1620. The injection fluid will be fresh water, produced water from the Upper and Lower Hospah Sands. The expected injection pressure will be less than 1000 psi with volume somewhere around 200 barrels of water per day per well.

The fracture gradient in the Hospah area is .65 to .90 psi per foot, and at 1000 psi we would be about .63 psi per foot injection.

Q. Now, according to your notes here, the Santa Fe Railroad leases to the west are sustaining 950

pound pressures, is that correct?

A. That's correct.

Q. And you've had no problem with those?

A. We've had no problem to date.

Q. Do you know what the pressure per foot would be in those wells?

A. It would be about the same as I said before, somewhere around .6 psi per foot.

Q. So you wouldn't anticipate breaking down the formation by using that high a pressure in your injection wells, is this correct?

A. That's correct.

Q. And you're asking the Commission for authority to utilize pressure higher than is established by the general rule, is that correct?

A. Yes.

Q. Have you anything else to add?

A. No, I don't.

Q. Were Exhibit A and B prepared by you or under your supervision?

A. Yes.

MR. KELLAHIN: At this time I'll offer Exhibits A and B.

MR. NUTTER: Tesoro Exhibits A and B will be admitted in evidence.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Kaltenbacher, your Exhibit Number Five in Exhibit A states that the fracture gradient for the Upper Hospah Sand is .65 to .90 psi per foot, and you also make the statement there that your injection into the Upper Hospah on the west side is 950 psi without any breakdown of formation. Now, how do we know that the Upper Hospah Sand fracture gradient is .65 to .90?

A. There have been frac jobs, small frac jobs done on some wells in the area.

Q. You know but we don't. Can you send us --

A. Yes, I --

Q. -- a detailed analysis of those frac jobs and what the instantaneous shut-in pressures were and what the frac pressure was?

A. Yes, I can.

Q. And also, if you're injecting at 950 psi in the Hospah Sand on the west without any evidence -- without any breakdown, how do you know you don't have breakdown?

A. Well, due to the volumes that we're injecting, a very small amount of volume that we're injecting into the Upper Hospah Sand in that area, we just don't believe that there could be any breakdown with the small

volumes. We're talking about somewhere around 20 to 50 barrels of water per day.

Q. But you're talking about 200 barrels per day in these wells.

A. Well, this is a much better developed sand in this bar-type deposit to the east that we're talking about starting a pilot flood. It's a much better sand, thicker and cleaner.

Q. Now, what is your proposed disposition of this temporarily abandoned well down to the southwest here, this No. 2 Well?

A. Well, we don't know right now. There's a possibility that we may do something with it at a later date.

Q. Did it ever produce?

A. No, it didn't. They tried -- the well was originally they tried to produce it in the Lower Hospah Sand. They ran casing through the Upper Hospah Sand and then drilled out about four feet below into the Lower Hospah Sand and tried to produce, but they didn't get anything out of it.

But the Upper has never been tested or anything else.

Q. Well, including that well, there are ten wells shown inside your Isopach map; three of them are temporarily abandoned, being the proposed injection wells.

Now, are the other six wells currently

producing? The No. 33, 36, 32, 37, 34, and --

A. 26, 25, 23. As I stated previously, five of those are Upper Hospah producers and three of them are Dakota producers.

Q. Okay, the ones with the stars are gas wells in the Dakota, I presume?

A. Yes, sir, that's correct. There's three of them and five Upper Hospah producers.

Q. And all these others are still producing in the Hospah, then?

A. Which ones are that?

Q. Well, it would --

A. Okay, it would be --

Q. -- remain the No. 33, 36, 37, 34, and 26 or 25.

A. 26, are Upper Hospah producers.

Q. And they're still producing?

A. Yes, they are. They're producing 35 barrels of oil per day combined.

Q. Okay. Are there any other questions of the witness?

MR. KELLAHIN: I'd like to bring out one thing, if I may, Mr. Nutter.

MR. NUTTER: Yes, sir.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Are there other waterfloods in the area here?

A. Yes. There's the area on the southwest quarter of Section 6; the northwest quarter of Section 7, is an Upper Hospah injection area.

The -- if you refer to Exhibit One, the wells that are on the corners of the quarter quarters with the -- that are blank on the inside, those are Upper Hospah injectors. There are about nine of them.

Q. Now, in your opinion, will approval of the water injection program result in recover of oil that would not otherwise be recovered?

A. Yes.

MR. KELLAHIN: That's all I have.

MR. NUTTER: Are there any further questions of the witness? He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir, Mr. Nutter, thank you.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 6726?

We'll take the case under advisement.

REPORTER'S CERTIFICATE

I, SALLY W. BOYD, a Certified Shorthand Reporter, DO HEREBY CERTIFY that the foregoing and attached 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, from my notes taken at the time of the hearing.

Sally W. Boyd C.S.R.
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. 6724 heard by me on 11/14 1979.

, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
14 November 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of Tesoro Petroleum Corporation for a waterflood project, McKinley County, New Mexico. CASE 6726

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:	Ernest L. Padilla, Esq. Legal Counsel for the Division State Land Office Bldg. Santa Fe, New Mexico 87503
For the Applicant:	Jason Kellahin, Esq. KELLAHIN & KELLAHIN 500 Don Gaspar Santa Fe, New Mexico 87501

I N D E X

KARY KALTENBACHER

E X H I B I T S

MR. NUTTER: Call next Case Number 6726.

MR. PADILLA: Application of Tesoro Petroleum Corporation for a waterflood project, McKinley County, New Mexico.

MR. KELLAHIN: If the Examiner please, Jason Kellahin, appearing for the applicant, and I have one witness to be sworn.

(Witness sworn.)

KARY KALTENBACHER

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you state your name, please?

A. Kary Kaltenbacher.

Q. By whom are you employed and in what position, Mr. Kaltenbacher?

A. I'm a District Engineer for Tesoro Petroleum in Denver, Colorado.

Q. Would you spell your name, please?

A. First name is Kary, K-A-R-Y. Last name is K-A-L-T-E-N-B-A-C-H-E-R.

Q Have you testified before the Oil Conservation Division and had your qualifications made a matter of record?

A No.

Q For the benefit of the Examiner, would you briefly outline your education and experience?

A I graduated from Colorado School of Mines in May of 1976 with a BS in petroleum engineering. From there I went to work with Getty Oil Company in Casper, Wyoming, as a drilling and production engineer. I was there for a year and a half before I went to work for American Quazar Petroleum as a division drilling engineer for the Rocky Mountains. I was there for a year and eight months, and I went to work for Tesoro Petroleum four months ago.

Q In connection with your work for Tesoro, does the area involved in this application fall under your jurisdiction?

A Yes it does.

MR. KELLAHIN: Are the witness qualifications acceptable?

MR. NUTTER: Yes, they are.

Q Briefly, what does the applicant propose in this case?

A I'd like to refer to map number one and Exhibit One and explain what we'd like to do.

Q. You are referring to Exhibit, which has been marked as Exhibit A, a multi-page exhibit, and Exhibit One, is that the exhibit you're talking about?

Is that correct?

A. Exhibit One and map one, which is at the front of the folder when we started.

MR. KELLAHIN: Is this the one?

A. Yes, that's the one.

MR. KELLAHIN: I don't believe that has been marked.

(Thereupon a discussion was had off the record.)

Q. Now, would you continue, please?

A. Right. Exhibit B is a Isopach map of the upper Hospah Sand in the Hospah Field. As you can see, this is a thin, offshore bar type deposit that's separated from the main part of the Hospah Field, which is to the west. This bar type deposit is very thin and pinches out to the east/west and to the north and is bordered by a fault on the south.

And presently there are five producing wells, Santa Fe Railroad "B" 33, 36, 37, 34, and Hansen Federal No. 25 are upper Hospah producers; Santa Fe Railroad "B" No. 32, Hansen Federal 23 and 25 are Dakota producers, which are a deeper pool; and there are three temporarily

abandoned wells which are Santa Fe Railroad "B" No. 35, and 38, and Hansen Federal No. 24.

What we propose to do is to form a cooperative waterflood by converting those three temporarily abandoned wells to water injectors.

That's basically what we'd like to do.

Q. Now, referring to Exhibit One of Exhibit A, would you discuss the information contained in that?

A. Exhibit One shows all wells within a 2-mile radius of the proposed injection wells and the wells that will be producing in the Upper Hospah Sand.

Q. Do you have anything else to add to that?

A. No.

Q. Now, thumbing through Exhibit A, turning to the next page, which is Exhibit Two, would you identify that, please?

A. Exhibit Two is a tabulated form that shows all wells within a 1/2 mile radius of the proposed injection wells and it's self-explanatory.

Q. It gives the casing string setting depth, cement, cement tops, is that correct?

A. Cement tops, cement bottoms, total depth, producing interval, and producing formation.

Q. And then what are the remaining exhibits in Exhibit A?

A. Page four shows Exhibit Three, which is the Santa Fe Railroad "B" No. 35 diagrammatic sketch. This is a temporarily abandoned well which we propose to turn into a water injection well.

Q. Is this the present status of the well?

A. It is presently temporarily abandoned.

Q. Yes, sir, but I mean --

A. Oh, this diagrammatic sketch shows what we propose what the final sketch will be when we complete the work to change it to an injector.

Q. And you will be injecting through the tubing and under a packer, is this correct?

A. That's correct.

Q. Will you fill the casing-tubing annulus with an inert fluid?

A. Yes.

Q. And as I understand, you're going to be injecting fresh water, is this correct?

A. It will be produced water from the Upper and Lower Hospah Sands from the Hospah Field.

Q. Is that a fresh water --

A. Yes it is a fresh water.

Q. So it will not be necessary to use an internally coated tubing, is this correct?

A. That's correct.

Page five is also Exhibit Three, which shows Santa Fe Railroad "B" Well No. 30, which is also a temporarily abandoned well which we propose to change to an injection well.

Q. And there again, you will put in inert fluid in the casing-tubing annulus?

A. Right, it will be done the same as the previous well.

Q. Okay.

A. Page six is also part of Exhibit Three, which is the Hansen Federal Well No. 24, which is also temporarily abandoned, which we propose to change to a water injection well. It will be completed in the same way as the previous two wells.

Page seven is part of Exhibit Four, it is a schematic of Santa Fe Railroad "B" Well No. 30, which is just to the east of the bar-type deposit, and it is an abandoned well right now.

Q. Are the -- is the zone that you'll be injecting in covered by cement in that well?

A. Yes, it is.

Q. And page eight?

A. Page eight is also part of Exhibit Four. It is Burr and Cooley's Colemen Well No. 2, which is just across the fault from the water injection area. This well

is also abandoned.

Q. Does the cement cover the Hospah?

A. Now, casing was run in this hole and cement in the annulus does cover the proposed injection formation.

Q. And page nine?

A. Page nine is part of Exhibit Four. This is Santa Fe Railroad No. 2, which is to the -- is to the southwest of the proposed area. This well is temporarily abandoned. It's still open right now. Cement casing is in the hole and the proposed injection formation is covered by cement.

Q. Now, Exhibit Number Five, would you identify that exhibit?

A. Exhibit Five is general injection information. The injection zone is the Upper Hospah Sand at a depth of 1550 to 1620. The injection fluid will be fresh water, produced water from the Upper and Lower Hospah Sands. The expected injection pressure will be less than 1000 psi with volume somewhere around 200 barrels of water per day per well.

The fracture gradient in the Hospah area is .65 to .90 psi per foot, and at 1000 psi we would be about .63 psi per foot injection.

Q. Now, according to your notes here, the Santa Fe Railroad leases to the west are sustaining 950

pound pressures, is that correct?

A. That's correct.

Q. And you've had no problem with those?

A. We've had no problem to date.

Q. Do you know what the pressure per foot would be in those wells?

A. It would be about the same as I said before, somewhere around .6 psi per foot.

Q. So you wouldn't anticipate breaking down the formation by using that high a pressure in your injection wells, is this correct?

A. That's correct.

Q. And you're asking the Commission for authority to utilize pressure higher than is established by the general rule, is that correct?

A. Yes.

Q. Have you anything else to add?

A. No, I don't.

Q. Were Exhibit A and B prepared by you or under your supervision?

A. Yes.

MR. KELLAHIN: At this time I'll offer Exhibits A and B.

MR. NUTTER: Tesoro Exhibits A and B will be admitted in evidence.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Kaltenbacher, your Exhibit Number Five in Exhibit A states that the fracture gradient for the Upper Hospah Sand is .65 to .90 psi per foot, and you also make the statement there that your injection into the Upper Hospah on the west side is 950 psi without any breakdown of formation. Now, how do we know that the Upper Hospah Sand fracture gradient is .65 to .90?

A. There have been frac jobs, small frac jobs done on some wells in the area.

Q. You know but we don't. Can you send us --

A. Yes, I --

Q. -- a detailed analysis of those frac jobs and what the instantaneous shut-in pressures were and what the frac pressure was?

A. Yes, I can.

Q. And also, if you're injecting at 950 psi in the Hospah Sand on the west without any evidence -- without any breakdown, how do you know you don't have breakdown?

A. Well, due to the volumes that we're injecting, a very small amount of volume that we're injecting into the Upper Hospah Sand in that area, we just don't believe that there could be any breakdown with the small

volumes. We're talking about somewhere around 20 to 50 barrels of water per day.

Q But you're talking about 200 barrels per day in these wells.

A Well, this is a much better developed sand in this bar-type deposit to the east that we're talking about starting a pilot flood. It's a much better sand, thicker and cleaner.

Q Now, what is your proposed disposition of this temporarily abandoned well down to the southwest here, this No. 2 Well?

A Well, we don't know right now. There's a possibility that we may do something with it at a later date.

Q Did it ever produce?

A No, it didn't. They tried -- the well was -- originally they tried to produce it in the Lower Hospah Sand. They ran casing through the Upper Hospah Sand and then drilled out about four feet below into the Lower Hospah Sand and tried to produce, but they didn't get anything out of it.

But the Upper has never been tested or anything else.

Q Well, including that well, there are ten wells shown inside your Isopach map; three of them are temporarily abandoned, being the proposed injection wells.

Now, are the other six wells currently

producing? The No. 33, 36, 22, 37, 34, and --

A. 26, 25, 23. As I stated previously, five of those are Upper Hospah producers and three of them are Dakota producers.

Q. Okay, the ones with the stars are gas wells in the Dakota, I presume?

A. Yes, sir, that's correct. There's three of them and five Upper Hospah producers.

Q. And all these others are still producing in the Hospah, then?

A. Which ones are that?

Q. Well, it would --

A. Okay, it would be --

Q. -- remain the No. 33, 36, 37, 34, and 26 or 25.

A. 26, are Upper Hospah producers.

Q. And they're still producing?

A. Yes, they are. They're producing 35 barrels of oil per day combined.

Q. Okay. Are there any other questions of the witness?

MR. KELLAHIN: I'd like to bring out one thing, if I may, Mr. Hutter.

MR. HUTTER: Yes, sir.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Are there other waterfloods in the area here?

A. Yes. There's the area on the southwest quarter of Section 6; the northwest quarter of Section 7, is an Upper Hospah injection area.

The -- if you refer to Exhibit One, the wells that are on the corners of the quarter quarters with the -- that are blank on the inside, those are Upper Hospah injectors. There are about nine of them.

Q. Now, in your opinion, will approval of the water injection program result in recover of oil that would not otherwise be recovered?

A. Yes.

MR. KELLAHIN: That's all I have.

MR. NUTTER: Are there any further questions of the witness? He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir, Mr. Nutter, thank you.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 6726?

We'll take the case under advisement.

REPORTER'S CERTIFICATE

I, SALLY W. BOYD, a Certified Shorthand Reporter, DO HEREBY CERTIFY that the foregoing and attached 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, from my notes taken at the time of the hearing.

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. 6726 heard by me on 11/14 1979.

, Examiner
Oil Conservation Division

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
8910 Plaza Blanca (505) 471-2462
Santa Fe, New Mexico 87501

DRAFT

dr/

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. 6726

Order No. R- 6227

APPLICATION OF TESORO PETROLEUM CORPORATION

FOR A WATERFLOOD PROJECT, McKinley

COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 14, 19 79, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of November, 1979, 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, Tesoro Petroleum Corporation, seeks authority to institute a waterflood project on its Hanson Federal and Santa Fe Pacific Railroad leases, South Hospah-Upper Sand Oil Pool ~~xxxxxxxxx~~ pool, by the injection of water into the Upper Hospah Sand formation through three injection wells in ~~Sections~~ Units E and M of Section 5 and Unit I of Section 8, Township 17 North, Range 8 West, NMPM, McKinley County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(6) That the injection well or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to 1000 psi, but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.

(5) 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 from injection, production, or plugged and abandoned wells.

(7) That there are two wells in the vicinity of the proposed waterflood project that may require remedial work prior to commencement of injection operations, these wells being the Tesoro SFP RR "B" Well No. 32 located in Unit P of Section 5 and the Burr and Conley Coleman Well No. 2 located in Unit C of Section 8, both in Township 17 North, Range 8 West, NMPM, McKinley County, New Mexico.

subject to the above conditions,

(8) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tesoro Petroleum Corporation, is hereby authorized to institute a waterflood project on its Harrison Federal and Santa Fe Pacific Railroad Leases, South Hospah-Upper Sand Oil Pool, by the injection of water into the Upper Hospah Sand formation through the following-described wells in Township 17 North, Range 8 West, NMPM, McKinley County, New Mexico:

Lease	Well No.	Unit Letter	Section
Santa Fe Pacific Railroad	35	E	5
Santa Fe Pacific Railroad	38	M	5
Harrison Federal	6	I	6

(2) That injection into each of said wells shall be through ~~internally coated~~ tubing, set in a packer which shall be located as near as practicable to the uppermost perforation; that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(4) That the operator shall immediately notify the supervisor of the Division's Aztec district office of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(3) That the injection wells herein authorized ~~for the injection~~ pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 1000 psi, provided however, that the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(5) That the subject waterflood project is hereby designated the Tesoro Santa Fe Hanson Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

(6) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Division in accordance with Rules 704 and 1120 of the Division Rules and Regulations.

(8) 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.

(7) That prior to commencement of water injection into the herein authorized wells, applicant shall consult with the Supervisor of the Aztec District Office of the Division, and shall take such remedial action as the District Supervisor shall require on the Tesoro Santa Fe Pacific Railroad "B" well No. 32 located in Unit P of Section 5 and the Burr and Cooley Coleman Well No. 2 located in Unit C of Section 8, both in Township 17 North, Range 8 West, NMPM, McKinley County, New Mexico.

DRAFT

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

CASE NO. 6726

Order No. R- 6227-A

APPLICATION OF TESORO PETROLEUM CORPORATION FOR A WATERFLOOD PROJECT, McKINLEY COUNTY, ~~COUNTY~~, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R- 6227, dated January 9, 19 80, does not correctly state the intended order of the Division,

IT IS THEREFORE ORDERED:

(1) That the 6th line of Finding No. (2) should be changed to read in its entirety as follows:

"and M of Section 5 and Unit I of Section 6, Township 17 North,"

(2) That the last line of Order (1) should be changed to read in its entirety as follows:

"Hanson Federal 24 I 6"

That this order shall be effective nunc pro tunc as of January 9, 1980.

DONE at Santa Fe, New Mexico, this _____ day of March, 1980.

CASE 6721: Application of Aminoil USA, Inc. for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp-Pennsylvanian formations underlying the N/2 of Section 10, Township 24 South, Range 28 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. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6684: (Continued from October 31, 1979, Examiner Hearing)

Application of CO_2-In-Action, Inc. for creation of a new carbon dioxide gas pool and special pool rules, Harding County, New Mexico. Applicant, in the above-styled cause, seeks the creation of the North Bueyeros-Santa Rosa CO_2 Gas Pool and the promulgation of special pool rules therefor, including a provision for 40-acre spacing and proration units. Said pool would comprise all or parts of Sections 1 thru 4, Township 20 North, Range 30 East, and Sections 8, 9, 10, 15, 16, 17, 20, 21, 22, 27, 28, 32, 33 and 34, Township 21 North, Range 30 East.

CASE 6722: Application of Lloyd Davidson for an unorthodox oil well location, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of his Santa Fe Pacific Well No. 1, a Gallup-Entrada-Dakota test 960 feet from the South line and 1230 feet from the East line of Section 29, Township 16 North, Range 6 West, the SE/4 SE/4 of said Section 29 to be dedicated to the well.

CASE 6723: Application of Merrion & Bayless for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pictured Cliffs formation underlying the SW/4 of Section 27, Township 24 North, Range 2 West, South Blanco-Pictured Cliffs 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. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6713: (Continued from October 31, 1979, Examiner Hearing)

Application of Depco Inc. for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the White Ranch Unit Area, comprising 18,962 acres, more or less, of State, Federal, and fee lands in Townships 12 and 13 South, Ranges 29 and 30 East.

CASE 6724: Application of Coquina Oil Corporation for a non-standard gas proration unit and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 660 feet from the South line and 1650 feet from the East line of Section 7, Township 19 South, Range 32 East, Lusk-Morrow Gas Pool, the S/2 of said Section 7 to be dedicated to the well as a non-standard 320-acre proration unit.

CASE 6725: Application of Tenneco Oil Company for three non-standard gas proration units, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 291.23-acre non-standard gas proration unit comprising the W/2 of Section 6 and the NW/4 of Section 7, a 347.58-acre unit comprising the W/2 of Section 19 and the NW/4 of Section 30, and a 375.17-acre unit comprising the SW/4 of Section 30 and the W/2 of Section 31, all in Township 29 North, Range 8 West, Basin-Dakota Pool, each unit to be dedicated to a well to be drilled at a standard location thereon.

CASE 6726: Application of Tesoro Petroleum Corporation for a waterflood project, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the South Hospah-Upper Sand Oil Pool by the injection of water into the Upper Hospah Sands through three wells located in Units E and M of Section 5 and Unit I of Section 8, Township 17 North, Range 8 West. Applicant further seeks an administrative procedure for expansion of said project.

CASE 6727: Application of Conoco Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in its Anderson Ranch Unit Well No. 8 located in Unit I of Section 11, Township 16 South, Range 32 East, Anderson Ranch Field. Applicant would dispose into the Wolfcamp, Mississippian, and Devonian formations in the overall interval from 9775 feet to 13,620 feet through selective perforations.

CASE 6728: Application of Conoco Inc. for pressure maintenance expansion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the expansion of its Scarborough Eaves PM Project by the conversion of its Eaves "A" Well No. 7 located in Unit J of Section 19, Township 26 South, Range 37 East, to water injection in the Yates-Seven Rivers formations.

KELLAHIN and KELLAHIN
Attorneys at Law
500 Don Gaspar Avenue
Post Office Box 1769
Santa Fe, New Mexico 87501

Jason Kellahin
W. Thomas Kellahin

Karen Aubrey

Telephone 982-4285
Area Code 505

October 23, 1979

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

Re: Tesoro Waterflood Application

Dear Dan:

This will confirm our telephone conversation today correcting paragraph 2 of Tesoro's application which should read as follows:

"Applicant proposes to convert three temporarily abandoned wells, the SFRR "B" #35 well, the SFRR "B" #38 well and the Hanson Federal #24 well to injection with production to continue from the five producing wells: SFRR "B" Wells No. 33, 34, 36 and 37, and the Hanson Federal #26 well."

I appreciate you bringing this matter to my attention.

Very truly yours,

W. Thomas Kellahin

WTK:mm
cc: Kary J. Kaltenbacher

TESORO PETROLEUM CORPORATION

Suite 2000 First of Denver Plaza Building

633 Seventeenth Street

DENVER, COLORADO 80202

Rocky Mountain District

(303)--825-2000

November 15, 1979

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

RE: Tesoro Waterflood Application
Case No. 6726

Dear Mr. Nutter:

As requested by you during our hearing of November 14, 1979, attached is a list of frac jobs and corresponding pressure data of the Upper Hospah Sand in the Hospah Field. The available data indicates a fracture gradient of .65 to .97 psi/ft.

If you require any additional information please contact me.

Very truly yours,

Kary Kaltenbacher

Kary Kaltenbacher
District Engineer

KK:dt

cc: Jason Kellahin

Enc.

UPPER HOSPAH FRAC JOBS IN HOSPAH FIELD

Well	Location	Date of Job	Depth	Break Down Pressure	Frac Gradient (psi/ft.)
Hanson #15	SW/SW Sec. 6-17N-8W	5/25/71	1539'	1500 psi	.97
SFRR #9	SE/NW Sec. 7-17N-8W	5/19/71	1605'	1100 psi	.69
SFRR #18	NW/NW Sec. 7-17N-8W	5/24/77	1551'	1000 psi	.65

Injection well perfs

#35 1611-1615

38 1607-1612

6 1554-60

1554

x .65

1010

STATE OF NEW MEXICO

DEPARTMENT OF ENERGY AND MINERALS

OIL CONSERVATION DIVISION

IN THE MATTER OF THE APPLICATION
OF TESORO PETROLEUM CORPORATION
FOR WATERFLOOD PROJECT, SOUTH HOSPAH
FIELD, MCKINLEY COUNTY, NEW MEXICO

Case 6726

APPLICATION

COMES NOW, Tesoro Petroleum Corporation, and applies to the Oil Conservation Division of New Mexico for authority to install and operate a waterflood project in the Upper Hospah Sand of the South Hospah Field, McKinley County, New Mexico by the conversion of three temporarily abandoned wells to injection, for approval of adminstrative procedures for expansion of modification of said waterflood project and in support thereof would show:

1. Applicant seeks permission to institute a waterflood project in the Upper Hospah Sands of its SFRR "B" and Hanson Federal Leases, located in Sections 5, 6, and 8 of T17M, R8W, McKinley County, New Mexico.

2. Applicant proposes to convert three temporarily abandoned wells, the SFRR "B" #35 and 38 and Hanson Federal ~~#23~~ 24 ~~and #25~~, to injection with production to continue from the five producing wells: SFRR "B" No.'s 33, 34, 36 and 37, and Hanson Federal #26.

3. That the wells are located as set forth in Exhibits "A" attached hereto and incorporated by reference.

4. The producing wells are in an advanced stage of depletion only producing 35 barrels per day from the Upper Hospah sands at an average depth of 1585 feet.

5. The approval of this applciation will result in the additional recovery of oil estimated to be 91,635 STB.

6. That Applicant proposes to inject produced Upper and Lower Hospah water into the subject injection wells at a maximum surface injection pressure of 1000 psi to avoid fracturing the formation at an estimated rate of 600 barrels per day.

7. The Applicant proposes additional wells for injection or production may be necessary depending upon response of this pilot flood and seeks administrative procedures be authorized whereby modification or expansion of the project including the drilling of additional injection wells and/or producing wells, and the conversion of existing wells to injection at both unorthodox and orthodox locations may be approved without further notice and hearing.

8. Attached as Exhibit B is a tabular summary of all wells located within a 12 mile of the subject wells.

9. Attached as Exhibit C are diagrammatic sketches of the three proposed injection wells.

10. Attached as Exhibit D are diagrammatic sketches of the other temporary plugged and abandoned wells within a one-half mile radius.

11. The proposed waterflood project will result in the recovery of otherwise unrecoverable oil, thereby preventing waste and the granting of this application will not impair the correlative rights of others.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing and that after notice and hearing the application be granted.

TESORO PETROLEUM CORPORATION

By _____
W. Thomas Kellahin

KELLAHIN & KELLAHIN
P. O. Box 1769
Santa Fe, New Mexico 87501
Phone: (505) 982-4285

WALKER

TESORO

TEXACO

TESORO

0556687

0553739

0557107

TESORO

map 3

u. hospah well

dakota well

injector

inj. lines

6

5

SFRR B
TANK BATTERY

WATER INJECTION PLANT

Hanson - Federal U.S.N.M. No. 052931

SFP R.R. "B"

TESORO

Exhibit A

Santa Fe R.R.

7

8

Wells within ½ mile of proposed injection wells

Operator	Name	Location	Casing strings	Setting Depths	Sacks cement volume	Cement top	Total Depth	Producing Intervals	Producing Formation
Texaco	SFRR 5" #30	SE-SW Sec 5-17N-8W	8 5/8"	137'	100 SX	surface	2736'	P & A	—
	SFRR 5" #32	SW-SW Sec. 5-17N-8W	9 5/8"	97'	90 SX	surface	2648'	2634'-48'	Dakota
			5 1/2"	2634'	200 SX	1780'			
	SFRR "5" #33	NW-SW Sec. 5-17N-8W	8 5/8"	102'	100 SX	surface	2652'	1578'-82'	U. Hospah
			5 1/2"	2636'	335 SX	[illegible]			
	SFRR "5" #34	SW-SW Sec. 5-17N-8W	8 5/8"	105'	70 SX	surface	1636'	1588'-96'	U. Hospah
			5 1/2"	1632'	100 SX	800'			
	SFRR "8" #36	NW-SW Sec. 8-17N-8W	8 5/8"	94'	100 SX	surface	1630'	1564'-70'	U. Hospah
			5 1/2"	1599'	100 SX	1050'			
	SFRR "8" #37	SW-SW Sec. 8-17N-8W	8 5/8"	107'	100 SX	surface	1574'	1574'-80'	U. Hospah
			5 1/2"	1613'	100 SX	1060'			
	[illegible]son Fed. #23	SE-SE Sec. 6-17N-8W	8 5/8"	144'	100 SX	surface	2725'	2627'-31'	Dakota
			5 1/2"	2724'	325 SX	1350'		2638'-50'	Dakota
	Hanson Fed. #25	NW-NE Sec. 5-17N-8W	8 5/8"	107'	75 SX	surface	2750'	2673'-78'	Dakota
			5 1/2"	2741'	335 SX	1100'		2683'-93'	Dakota
	Hanson Fed #26	NE-NE Sec. 7-17N-8W	8 5/8"	104'	100 SX	surface	1654'	1620'-26'	U. Hospah
			5 1/2"	1653'	130 SX	1170'		1532'-35'	U. Hospah
	Hanson Fed #27	SW-SE Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1645'	1519'-32'	U. Hospah
			5 1/2"	1644'	100 SX	1130'		1535'-50'	U. Hospah
	Hanson Fed # 28	NW-SE Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1699'	1576'-80'	L. Hospah
			5 1/2"	1637'	100 SX	1140'			
	Hanson Fed. # 30	SE-NW Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1643'	1576'-84'	L. Hospah
			5 1/2"	1643'	100 SX	1090'			
	Hanson Fed #31	SE-NW Sec. 6-17N-8W	8 5/8"	85'	100 SX	surface	1620'	1550'-58'	L. Hospah
			5 1/2"	1617'	100 SX	1070'			
	Hanson Fed #21	SE-NW Sec. 6-17N-8W	7"	75'	40 SX	surface	1542'	1508'-11'	Injection
			4 1/2"	1541'	65 SX	1060'		1515'-19'	
								1525'-28'	
X	SFSS #2	NE-NE Sec. 7-17N-8W	8 5/8"	45'	15 SX	surface	1625'	TA	—
			4 1/2"	1621'	35 SX	1440'			
Barr & Cooley	Coleman # 2	NE-NW Sec. 8-17N-8W	8 5/8"	97'	100 SX	surface	2842'	P & A	—
			5 1/2"	2841'	[illegible] SX	1169'			

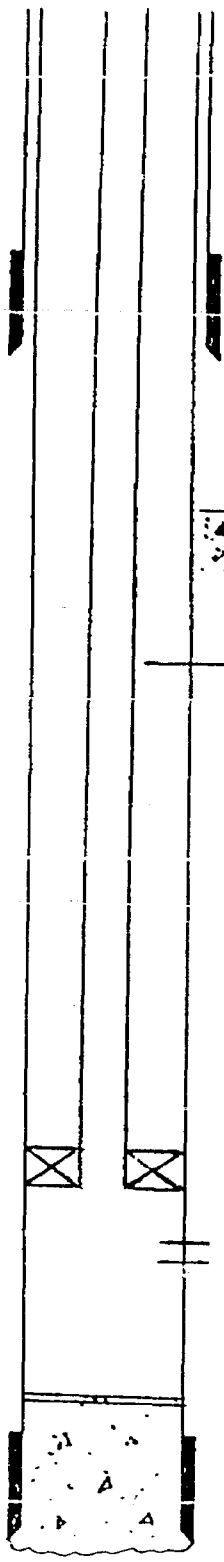
B

BAKER I. A. TOOLS, INC.

SETTING THE WORLD

DATE 8/15/79 WELL NO. 35 LEASE SFRR "B" FIELD So. Hospah

well to be converted to injector.
Presently T.A.



8 5/8", 24# K-55, STC @ 108' w/ 90 sx Class "A" in 12¼" hole. Cemented to surface.

Cement Top - 900'

2 3/8" OD tubing

Set:
Packer @ 1600', Baker Model AD-1

1611'-1615' 4 JSPF (0.41")

PBTD - 1633'

5½", 14# K-55, STC @ 1643' w/ 100 sx Class "B" 50/50 Poz w/ 2% CaCl₂. Top of cement @ 900' from CBL.

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

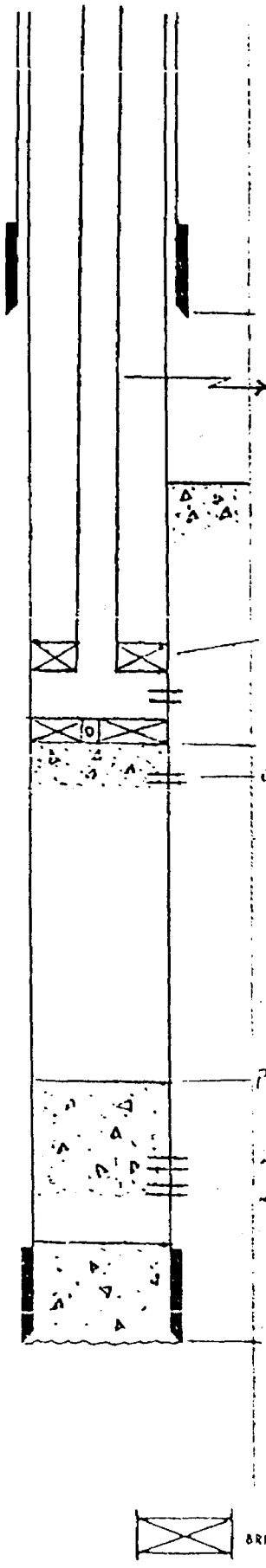
Exhibit C-1

BAKER I.R. TOOLS, INC.

SETTING THE WORLD

DATE 8/15/79 WELL NO. 24 LEASE Hanson FIELD So Hospah

Well converted to injector-
Presently T.A.



8 5/8", 24#, K-55, STC @ 100' w/ 100 sx Class "A" + 2% CaCl in 12¼" hole. Cement Circ to surface.

2⅜" OD tubing

Cement Top @ 800'

Set Baker Model AD-1 Packer @ 1540'

Perforate 1554' - 1560' w/ 4 JSPF

1570' - Cement Retainer

Will squeeze open perfs 1580' - 1585' w/ 5 sx Class "A"

PBTD - 2443'

2608' - 15' } Squeezed w/ 75 sx Class "A"
2625' - 30' }

5½", 24# K-55, STC @ 2657' w/ 350 sx Class "C" cement, in 7⅞" hole. Top of cement @ 800' from CBL

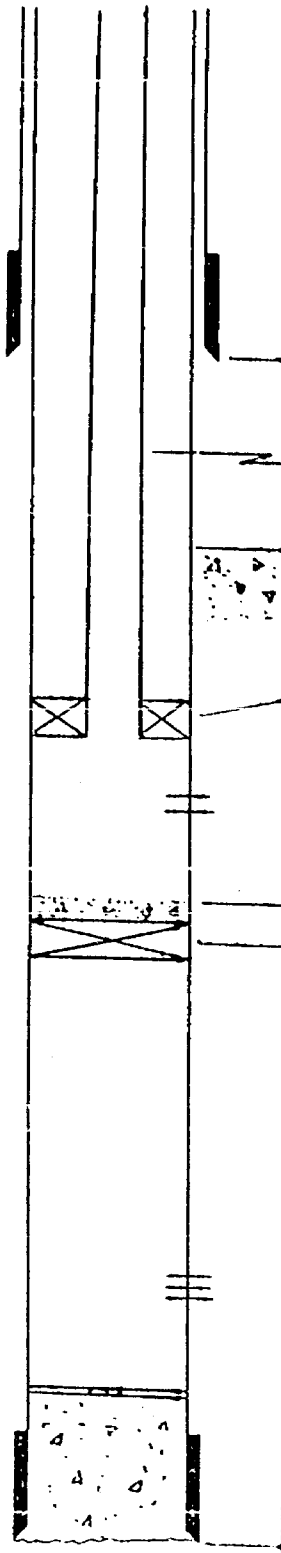
BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Exhibit C - 2

BAKER OIL TOOLS, INC.

SETTING THE WORLD

DATE 8/15/79 WELL NO. 38 LEASE SERR "B" FIELD So Hospah



Well to be converted to injector
Presently T.A.

8 5/8", 24#, K-55, STC @ 138' w/ 150sx Class "A" + 2% $CaCl_2$ in 12¼" hole. Cement circ. to surface.

2 3/8" OD tubing

Calculated cement top @ 1200'. CBL will be run.

Set a Baker Model AD-1 Packer @ 1590'

Perforate 1607'-1612' w/ 4JSPF

1648'

Set a Baker Model D-1 BP @ 1660' w/ 2sx of Class "G" cement on top. (16')

2670'-2676' w/ 2JSPF. Dakota watered out.

PBTD- 2730'

5 1/2", 14 & 15.5 #, J-55, STC @ 2740' w/ 360 sx Class "A" Pozmix in 7 7/8" hole. Top of cement calculated to be @ 1200'. CBL will be run.

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Exhibit C-3

BAKER OIL TOOLS, INC.

SETTING THE WORLD

DATE 10/17/79 WELL NO. 30 LEASE SERB "B" FIELD Haspark

Operator Tesoro Pet.

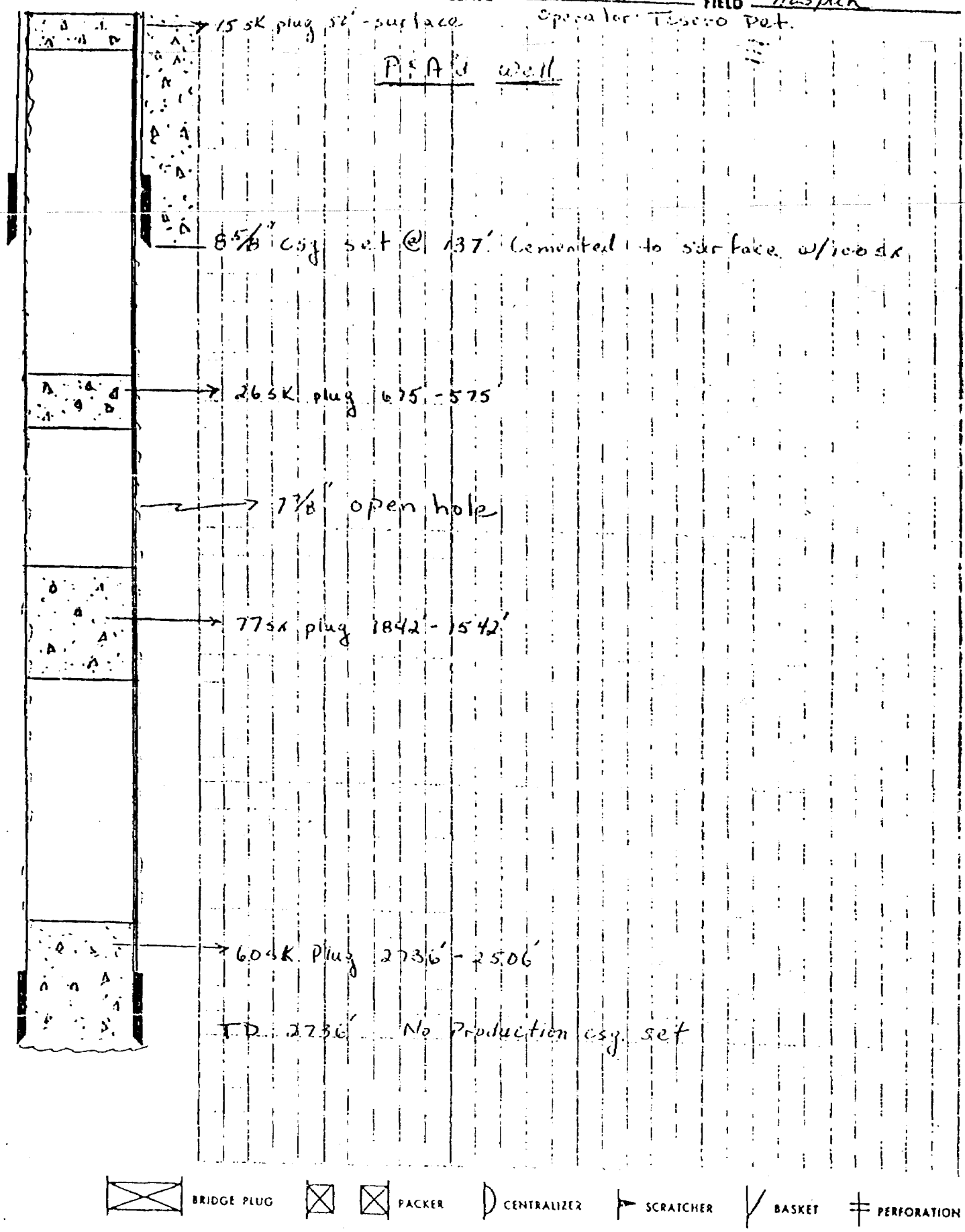


Exhibit P-1

BAKER I.N. TOOLS, INC.

SEI ING THE WORLD

DATE 10/17/79 WELL NO. 2 LEASE Coleman FIELD Hooper

Operator: Barr & Cooley

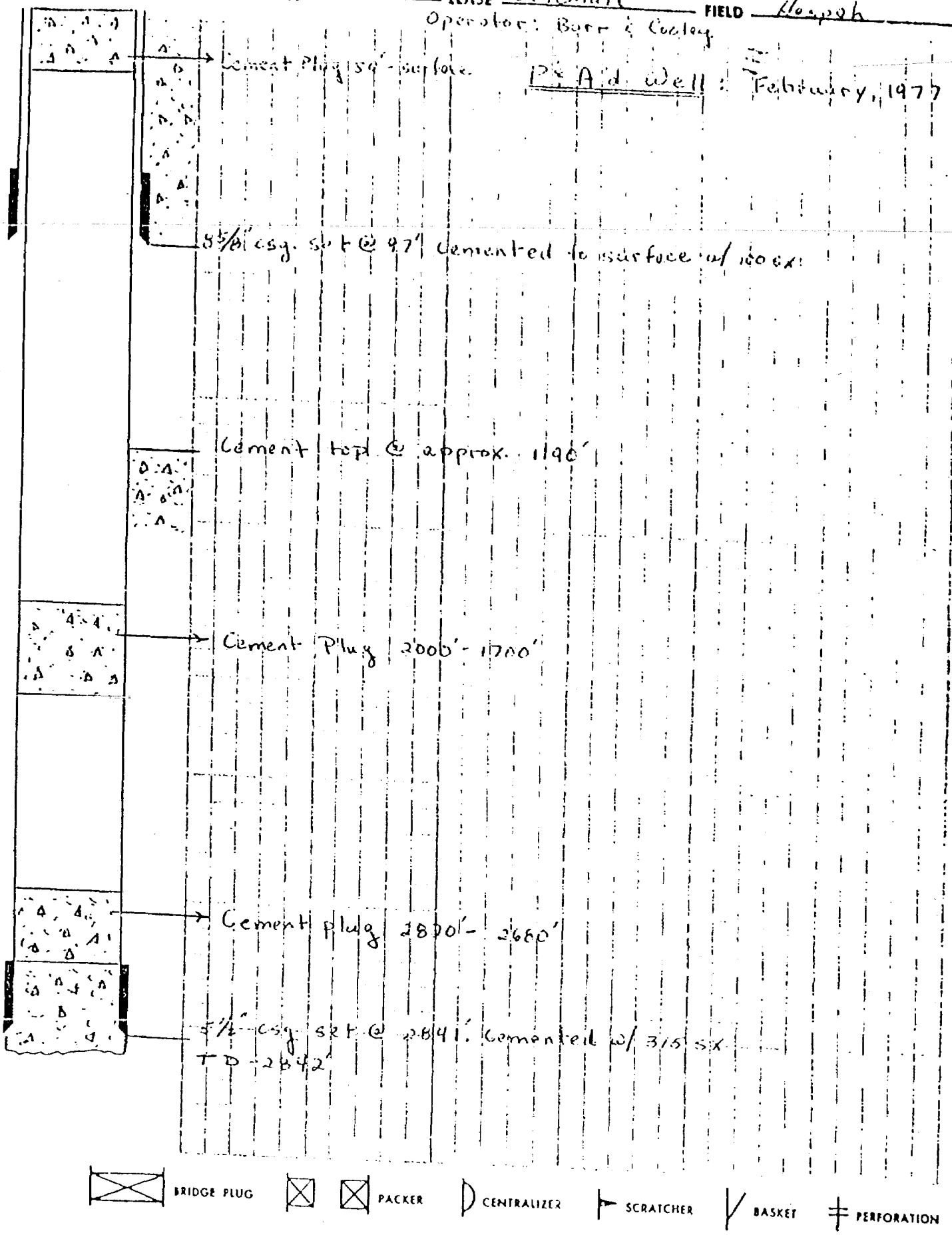


Exhibit D-2

SERVING THE WORLD

DATE 10/2/72 WELL NO. 2 LEASE SERR FIELD Waipuk

shut in

Operator: Tesoro Pet.

T.A. Well

8 5/8" csg. set @ 45' Cemented to surface w/ 15 sx

Cement top @ approx 1440'

4½" csg. set @ 1621' Cemented w/ 35 sx

TD - 1625'

BRIDGE PLUG | PACKER | CENTRALIZER | SCRATCHER | BASKET | PERFORATION

Exh. 6.5 D-3

STATE OF NEW MEXICO

DEPARTMENT OF ENERGY AND MINERALS

OIL CONSERVATION DIVISION

Case 6726

RECEIVED
OCT 23 1979
OIL CONSERVATION DIVISION
SANTA FE

IN THE MATTER OF THE APPLICATION OF TESORO PETROLEUM CORPORATION FOR WATERFLOOD PROJECT, SOUTH HOSPAH FIELD, MCKINLEY COUNTY, NEW MEXICO

APPLICATION

COMES NOW, Tesoro Petroleum Corporation, and applies to the Oil Conservation Division of New Mexico for authority to install and operate a waterflood project in the Upper Hospah Sand of the South Hospah Field, McKinley County, New Mexico by the conversion of three temporarily abandoned wells to injection, for approval of adminstrative procedures for expansion of modification of said waterflood project and in support thereof would show:

1. Applicant seeks permission to institute a waterflood project in the Upper Hospah Sands of its SFRR "B" and Hanson Federal Leases, located in Sections 5, 6, and 8 of T17M, R8W, McKinley County, New Mexico.

2. Applicant proposes to convert three temporarily abandoned wells, the SFRR "B" #35 and Hanson Federal ~~#33~~ #24 ~~and #25,~~ to injection with production to continue from the five producing wells: SFRR "B" No.'s 33, 34, 36 and 37, and Hanson Federal #26.

3. That the wells are located as set forth in Exhibits "A" attached hereto and incorporated by reference.

4. The producing wells are in an advanced stage of depletion only producing 35 barrels per day from the Upper Hospah sands at an average depth of 1585 feet.

5. The approval of this applciation will result in the additional recovery of oil estimated to be 91,635 STB.

6. That Applicant proposes to inject produced Upper and Lower Hospah water into the subject injection wells at a maximum surface injection pressure of 1000 psi to avoid fracturing the formation at an estimated rate of 600 barrels per day.

7. The Applicant proposes additional wells for injection or production may be necessary depending upon response of this pilot flood and seeks administrative procedures be authorized whereby modification or expansion of the project including the drilling of additional injection wells and/or producing wells, and the conversion of existing wells to injection at both unorthodox and orthodox locations may be approved without further notice and hearing.

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9. Attached as Exhibit C are diagrammatic sketches of the three proposed injection wells.

10. Attached as Exhibit D are diagrammatic sketches of the other temporary plugged and abandoned wells within a one-half mile radius.

11. The proposed waterflood project will result in the recovery of otherwise unrecoverable oil, thereby preventing waste and the granting of this application will not impair the correlative rights of others.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing and that after notice and hearing the application be granted.

TESORO PETROLEUM CORPORATION

By _____
W. Thomas Kellahin

KELLAHIN & KELLAHIN
P. O. Box 1769
Santa Fe, New Mexico 87501
Phone: (505) 982-4285

map 3

u. hospah well
dakota well
injector
inj. lines

TESORO
TEXACO
TESORO
WALKER
0556687
0553739
0557107
TESORO
SFRR & TANK BATTERY
WATER INJECTION PLANT
Hanson - Federal U.S.N.M. No. 052931
S.F.P.R.R. "B"
TESORO
Santa Fe R.R.
Tenneco Little
Kennedy 95X Esso

Exhibit A

Wells within ½ mile of proposed injection wells

Operator	Name	Location	Casing Strings	Setting Depth	Sacks Volume	Cement Top	Total Depth	Producing Interval	Producing Formation
Tesco	SFRR 3 #30	SE-SW Sec 5-17N-9W	8 5/8"	137'	100 SX	surface	2736'	P & A	—
	SFRR 3 #32	SW-SW Sec. 5-17N-8W	9 5/8"	97'	90 SX	surface	2648'	2634'-48'	Dakota
			5 1/2"	2634'	200 SX	1780'			
	SFRR 3 #33	NW-SW Sec. 5-17N-8W	8 5/8"	102'	100 SX	surface	2652'	1578'-82'	U. Hospah
			5 1/2"	2636'	385 SX	1490'			
	SFRR 3 #34	SW-SW Sec. 5-17N-8W	8 5/8"	105'	90 SX	surface	1638'	1588'-96'	U. Hospah
			5 1/2"	1632'	100 SX	800'			
	SFRR 3 #36	NW-SW Sec. 5-17N-8W	8 5/8"	94'	100 SX	surface	1630'	1564'-70'	U. Hospah
			5 1/2"	1599'	100 SX	1050'			
	SFRR 3 #37	SW-SW Sec. 5-17N-8W	8 5/8"	107'	100 SX	surface	1614'	1574'-80'	U. Hospah
			5 1/2"	1613'	100 SX	1060'			
	Hanson Fed. #23	SE-SE Sec. 6-17N-8W	8 5/8"	144'	100 SX	surface	2725'	2627'-31'	Dakota
			5 1/2"	2724'	325 SX	1350'		2638'-50'	Dakota
	Hanson Fed. #25	NW-NW Sec. 5-17N-8W	8 5/8"	127'	75 SX	surface	2750'	2673'-78'	Dakota
			5 1/2"	2741'	385 SX	1100'		2683'-93'	Dakota
	Hanson Fed #26	NW-NW Sec. 6-17N-8W	8 5/8"	104'	100 SX	surface	1654'	1620'-26'	U. Hospah
			5 1/2"	1653'	100 SX	1170'		1632'-35'	U. Hospah
	Hanson Fed #27	SW-SE Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1645'	1519'-52'	U. Hospah
			5 1/2"	1644'	100 SX	1130'		1535'-50'	U. Hospah
	Hanson Fed #28	NW-SE Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1699'	1576'-82'	L. Hospah
			5 1/2"	1637'	100 SX	1140'			
	Hanson Fed. #30	SE-NW Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1643'	1576'-84'	L. Hospah
			5 1/2"	1643'	100 SX	1090'			
	Hanson Fed #31	SE-NW Sec. 6-17N-8W	8 5/8"	85'	100 SX	surface	1620'	1550'-58'	L. Hospah
			5 1/2"	1617'	100 SX	1070'			
	Hanson Fed #21	SE-NW Sec. 6-17N-8W	7"	75'	40 SX	surface	1542'	1508'-11'	Injection
			4 1/2"	1541'	655 SX	1060'		1515'-19'	
								1525'-28'	
Y	SFSR #2	NE-NE Sec. 7-17N-8W	8 5/8"	45'	15 SX	surface	1625'	T A	—
			4 1/2"	1621'	355 SX	1440'			
Barr & Cooley	Coleman #2	NE-NW Sec. 8-17N-8W	8 5/8"	97'	100 SX	surface	2042'	P & A	—
			5 1/2"	2041'	315 SX	1180'			

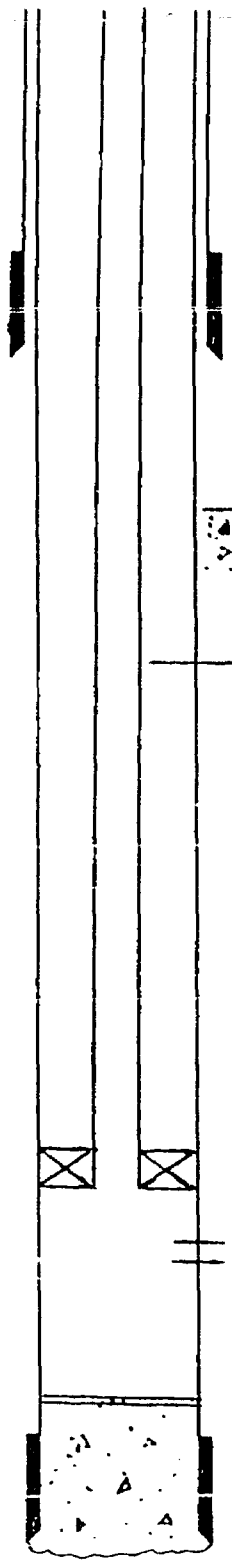
EX 4.6.1 B

BAKER O. A. TOOLS, INC.

SETTING THE WORLD

DATE 8/15/79 WELL NO. 35 LEASE BERR "B" FIELD So. Hospah

well to be converted to injector.
Presently T.A.



8 5/8", 24# K-55, STC @ 108' w/ 90sx Class "A" in 12¼" hole. Cemented to surface.

Cement Top - 900'

2 3/8" OD tubing

Set:
Packer @ 1600', Baker Model AD-1

1611'-1615' 4 JSPF (0.41")

PBTD - 1653'

5½", 14#, K-55, STC @ 1643' w/ 100sx Class "B" 50/50 Poz w/ 2% $CaCl_2$. Top of cement @ 900' from CBL.

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Exhibit C-1

BAKER OIL TOOLS, INC.
SETTING THE WORLD

DATE 8/15/79 WELL NO. 24 LEASE Hinson FIELD So Hospah

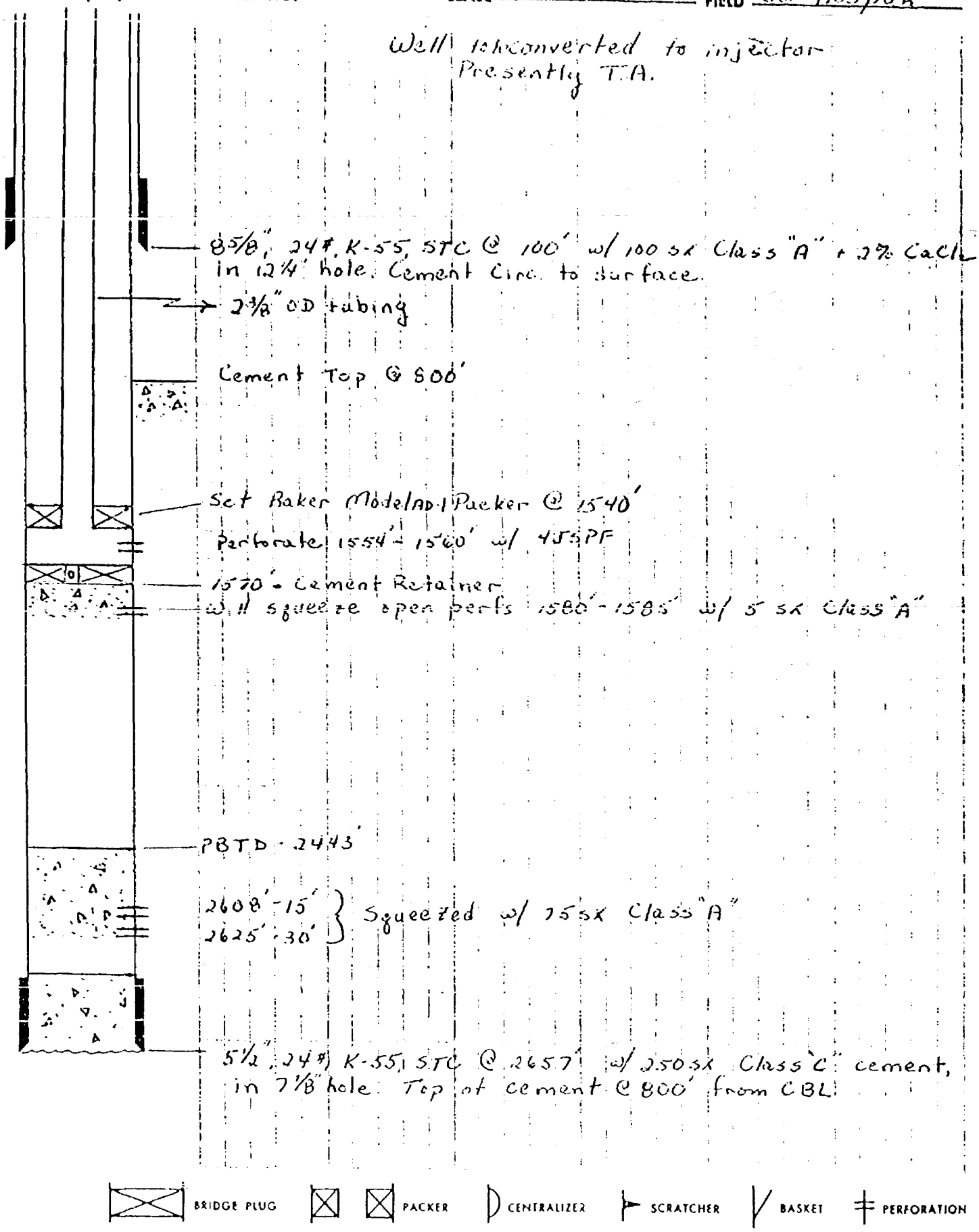
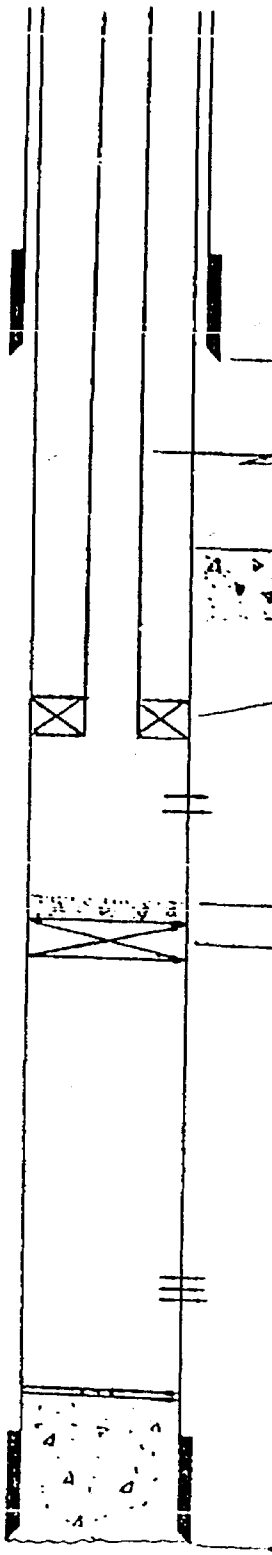


Exhibit C - 2

BAKER OIL TOOLS, INC.
SETTING THE WORLD

DATE 8/15/79 WELL NO. 38 LEASE SERR "B" FIELD So Hospah



Well to be converted to injector
Presently T.A.

8 5/8", 24# K-55, STC @ 138' w/ 150sx Class "A" + 2% $CaCl_2$ in 12¼" hole. Cement circ. to surface.

2 3/8" OD tubing

Calculated cement top @ 1200'. CBL will be run.

Set a Baker Model AD-1 Packer @ 1590'

Perforate 1607' - 1612' w/ 4 JSPF

1648'

Set a Baker Model P-1 BP @ 1660' w/ 2sx of Class "G" cement on top. (16')

2670' - 2676' w/ 2 JSPF. Dakota watered out.

PBTD - 2730'

5½", 14 & 15.5#, J-55, STC @ 2740' w/ 360 sx Class "A" Pozmix in 7⅞" hole. Top of cement calculated to be @ 1200'. CBL will be run.

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Exhibit C-3

BAKER OIL TOOLS, INC.

SETTING THE WORLD

DATE 10/17/79 WELL NO. 30 LEASE SERB "B" FIELD Haspah

Operator Texaco Pet.

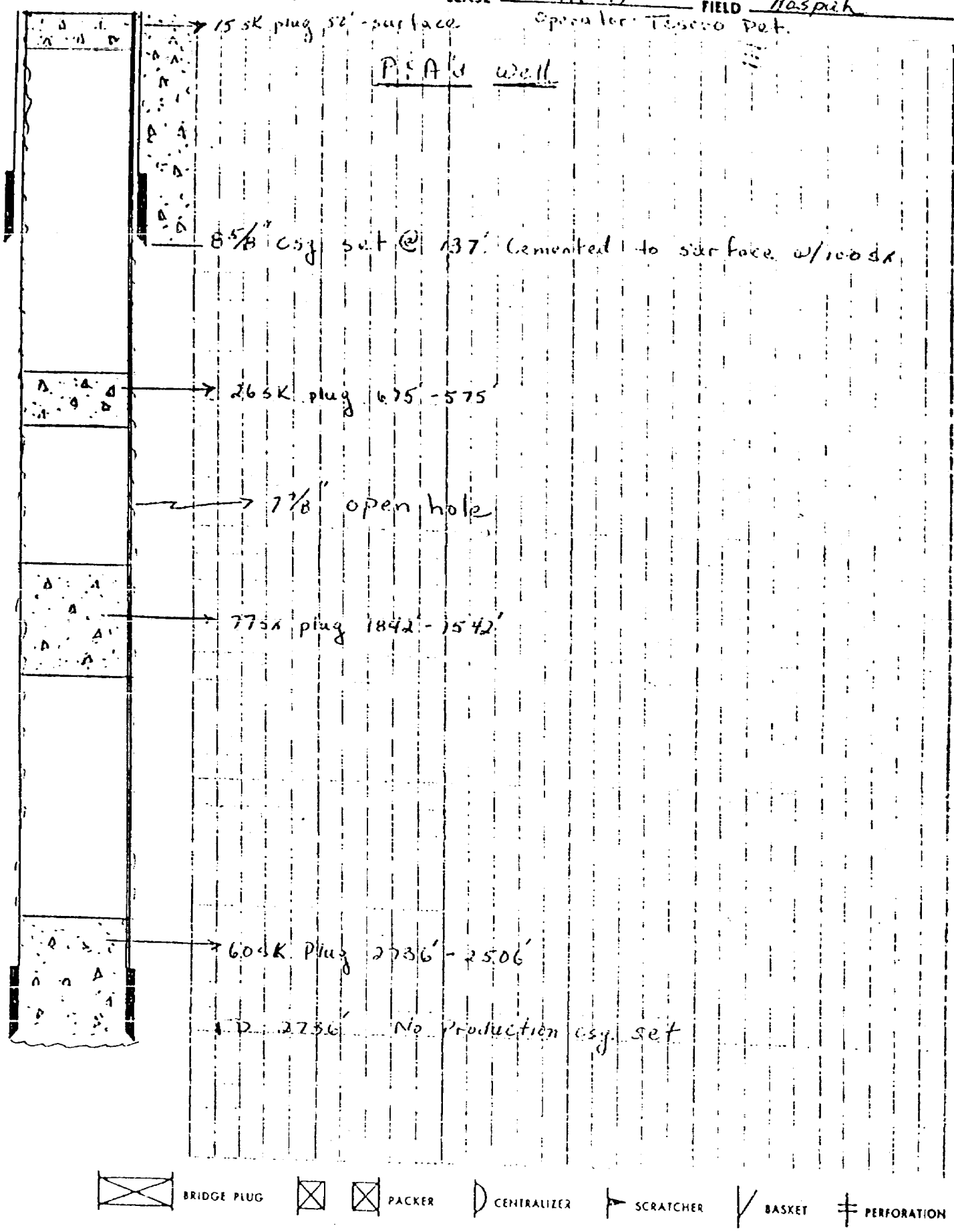


Exhibit D-1

BAKER I.N. TOOLS, INC.
SETTING THE WORLD

DATE 10/17/79 WELL NO. 2 LEASE Coleman FIELD Hospah

Operator: Burr & Cooley

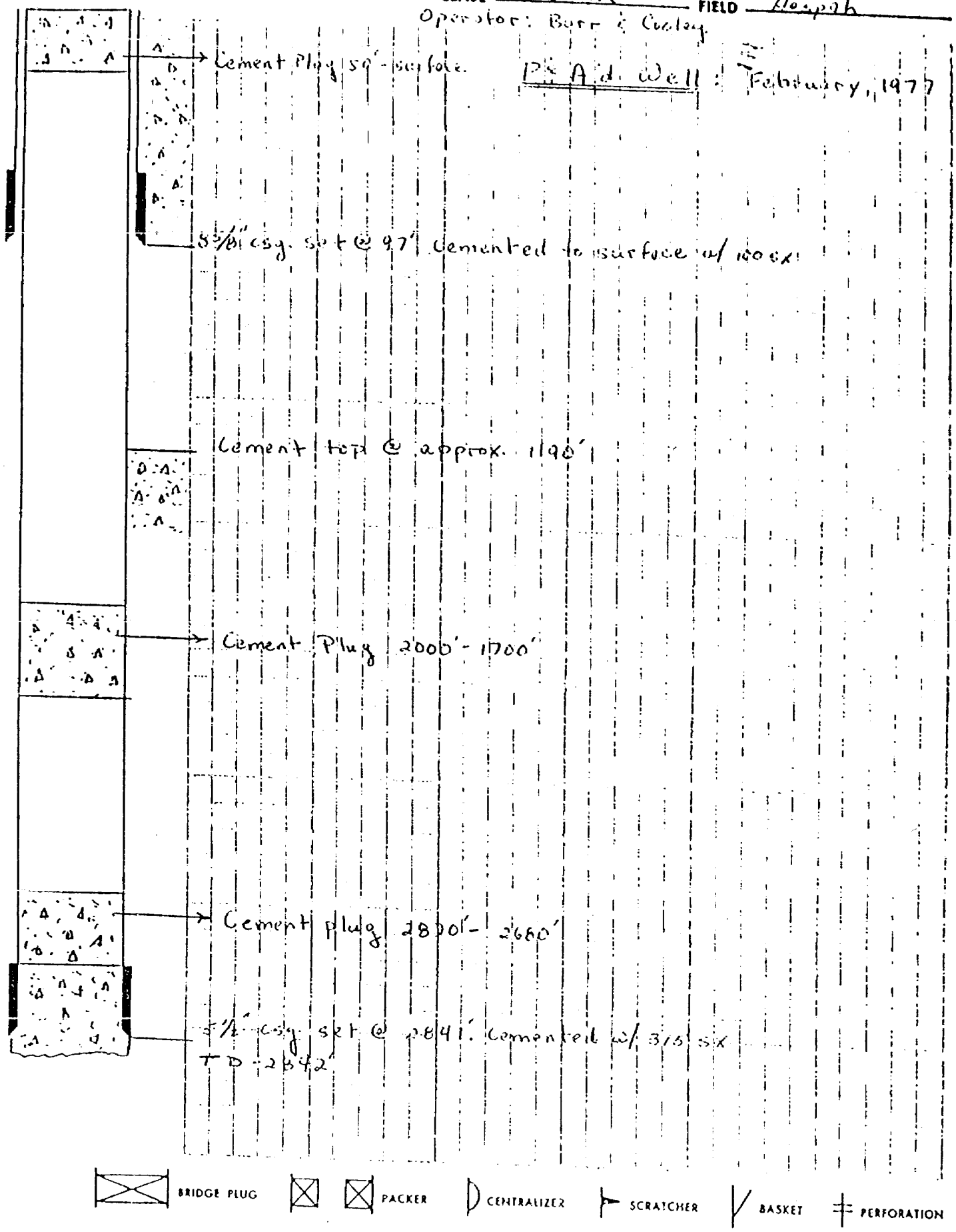


EXHIBIT D-2

SI ING THE WORLD

DATE 10/17/72 WELL NO. 2 LEASE SERR FIELD Coupeb

shut in

Operator: Tesoro Pet.

T. A. well

8 5/8" csg. set @ 45' Cemented to surface w/ 45sx

Cement top @ approx 1400'

4½" csg. set @ 1621' Cemented w/ 35-sx

TD - 1625'

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Exhibit D-3

STATE OF NEW MEXICO

DEPARTMENT OF ENERGY AND MINERALS

OIL CONSERVATION DIVISION

Case 6726

IN THE MATTER OF THE APPLICATION
OF TESORO PETROLEUM CORPORATION
FOR WATERFLOOD PROJECT, SOUTH HOSPAH
FIELD, MCKINLEY COUNTY, NEW MEXICO

APPLICATION

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3. That the wells are located as set forth in Exhibits "A" attached hereto and incorporated by reference.

It appears to me that the Hanson #2 & #3 are both Dakota wells which would req a plug-back or deepen to make Upper Sand injectors of them.

4. The producing wells are in an advanced stage of depletion only producing 35 barrels per day from the Upper Hospah sands at an average depth of 1585 feet.

5. The approval of this applciation will result in the additional recovery of oil estimated to be 91,635 STB.

6. That Applicant proposes to inject produced Upper and Lower Hospah water into the subject injection wells at a maximum surface injection pressure of 1000 psi to avoid fracturing the formation at an estimated rate of 600 barrels per day.

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8. Attached as Exhibit B is a tabular summary of all wells located within a 12 mile of the subject wells.

9. Attached as Exhibit C are diagrammatic sketches of the three proposed injection wells.

10. Attached as Exhibit D are diagrammatic sketches of the other temporary plugged and abandoned wells within a one-half mile radius.

11. The proposed waterflood project will result in the recovery of otherwise unrecoverable oil, thereby preventing waste and the granting of this application will not impair the correlative rights of others.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing and that after notice and hearing the application be granted.

TESORO PETROLEUM CORPORATION

By _____
W. Thomas Kellahin

KELLAHIN & KELLAHIN
P. O. Box 1769
Santa Fe, New Mexico 87501
Phone: (505) 982-4285

map 3

u. hospah well
dakota well
injector
inj. lines

TESORO
TEXACO
TESORO
WALKER
0556687
0553739
0557107
TESORO
6
5
SFRR 8
TANK BATTERY
WATER INJECTION PLANT
Hanson - Federal U.S.N.M. No. 052931
S.F.P.R.R. "B"
TESORO
Santa Fe R.R.
7
8
Tenneco
Little
1
Kennedy
BSX Edna
1
Exhibit A

Wells within ½ mile of proposed injection wells

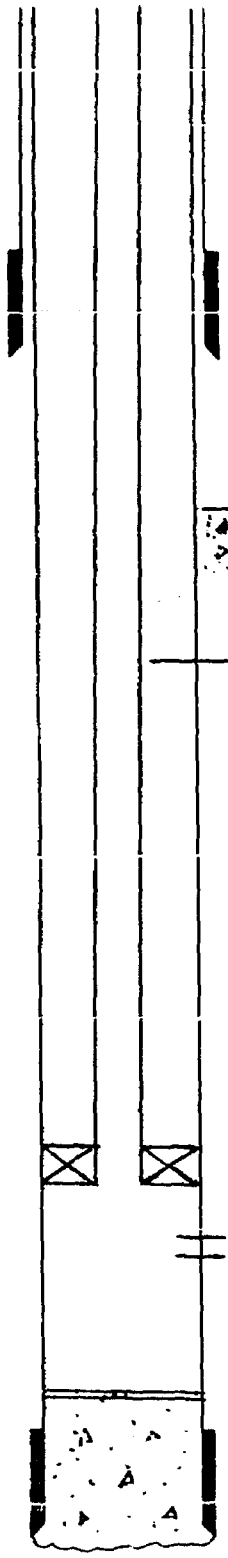
	Operator	Name	Location	Casing Strings	Setting Depth	Cmt Volume	Cement Top	Total Depth	Producing Interval	Producing Formation
	Tesoro	SFRR 3 #30	SE-SW Sec 5-17N-8W	8 5/8"	137'	100 SX	surface	2736'	P & A	—
		SFRR B #32	SW-SW Sec. 5-17N-8W	9 5/8"	97'	90 SX	surface	2648'	2634'-48'	Dakota
				5 1/2"	2634'	200 SX	1780'			
		SFRR B #33	NW-SW Sec. 5-17N-8W	8 5/8"	102'	100 SX	surface	2652'	1578'-82'	U. Hospah
				5 1/2"	2636	385 SX	1474'			
		SFRR "B" #34	SW-SE Sec. 5-17N-8W	8 5/8"	105'	90 SX	surface	1638'	1588'-96'	U. Hospah
				5 1/2"	1632'	100 SX	800'			
		SFRR "B" #36	NW-SW Sec. 5-17N-8W	8 5/8"	94'	100 SX	surface	1600'	1564'-70'	U. Hospah
				5 1/2"	1599'	100 SX	1050'			
		SFRR "B" #37	SW-SW Sec. 5-17N-8W	8 5/8"	107'	100 SX	surface	1614'	1574'-80'	U. Hospah
				5 1/2"	1613'	100 SX	1060'			
		Hanson Fed. #23	SE-SE Sec. 6-17N-8W	8 5/8"	144'	100 SX	surface	2725'	2627'-31'	Dakota
				5 1/2"	2724'	325 SX	1350'		2638'-50'	Dakota
		Hanson Fed. #25	NW-NW Sec. 8-17N-8W	8 5/8"	107'	75 SX	surface	2750'	2673'-78'	Dakota
				5 1/2"	2714'	385 SX	1100'		2683'-93'	Dakota
		Hanson Fed #26	NW-NW Sec. 8-17N-8W	8 5/8"	104'	100 SX	surface	1654'	1620'-26'	U. Hospah
				5 1/2"	1653'	130 SX	1170'		1632'-35'	U. Hospah
		Hanson Fed #27	SW-SE Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1645'	1519'-32'	U. Hospah
				5 1/2"	1644'	100 SX	1130'		1535'-50'	U. Hospah
		Hanson Fed # 28	NW-SE Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1699'	1576'-82'	L. Hospah
				5 1/2"	1687'	100 SX	1140'			
		Hanson Fed. # 30	SE-NW Sec. 6-17N-8W	8 5/8"	103'	100 SX	surface	1643'	1576'-84'	L. Hospah
				5 1/2"	1643'	100 SX	1090'			
		Hanson Fed #31	SE-NW Sec. 6-17N-8W	8 5/8"	85'	100 SX	surface	1620'	1550'-58'	L. Hospah
				5 1/2"	1617'	130 SX	1070'			
		Hanson Fed #21	SE-NW Sec. 6-17N-8W	7"	75'	40 SX	surface	1542'	1508'-11' 1515'-19'	Injection
				4 1/2"	1541'	65 SX	1060'		1525'-28'	
X		SFRR # 2	NE-NE Sec. 7-17N-8W	8 5/8"	45'	15 SX	surface	1625'	TA	—
				4 1/2"	1621'	35 SX	1440'			
	Barr & Coolam	Coleman # 2	NE-NW Sec. 8-17N-8W	8 5/8"	97'	100 SX	surface	2842'	P & A	—
				5 1/2"	2841'	315 SX	1190'			

EX 4.17.B

BAKER OIL TOOLS, INC.
SERVING THE WORLD

DATE 8/15/79 WELL NO. 35 LEASE SFRR "B" FIELD So. Hospah

Well to be converted to injector.
Presently T.A.



8 5/8", 24# K-55, STC @ 108' w/ 90sx Class "A" in 12¼" hole. Cement to surface.

Cement Top - 900'

2 3/8" OD tubing

Set:
Packer @ 1600', Baker Model AD-1

1611'-1615' 4 JSPF (0.41")

PBTD - 1633'

5½", 14#, K-55, STC @ 1643' w/ 100sx Class "B" 50/50 Poz w/ 2% $CaCl_2$, Top of cement @ 900' from CBL.

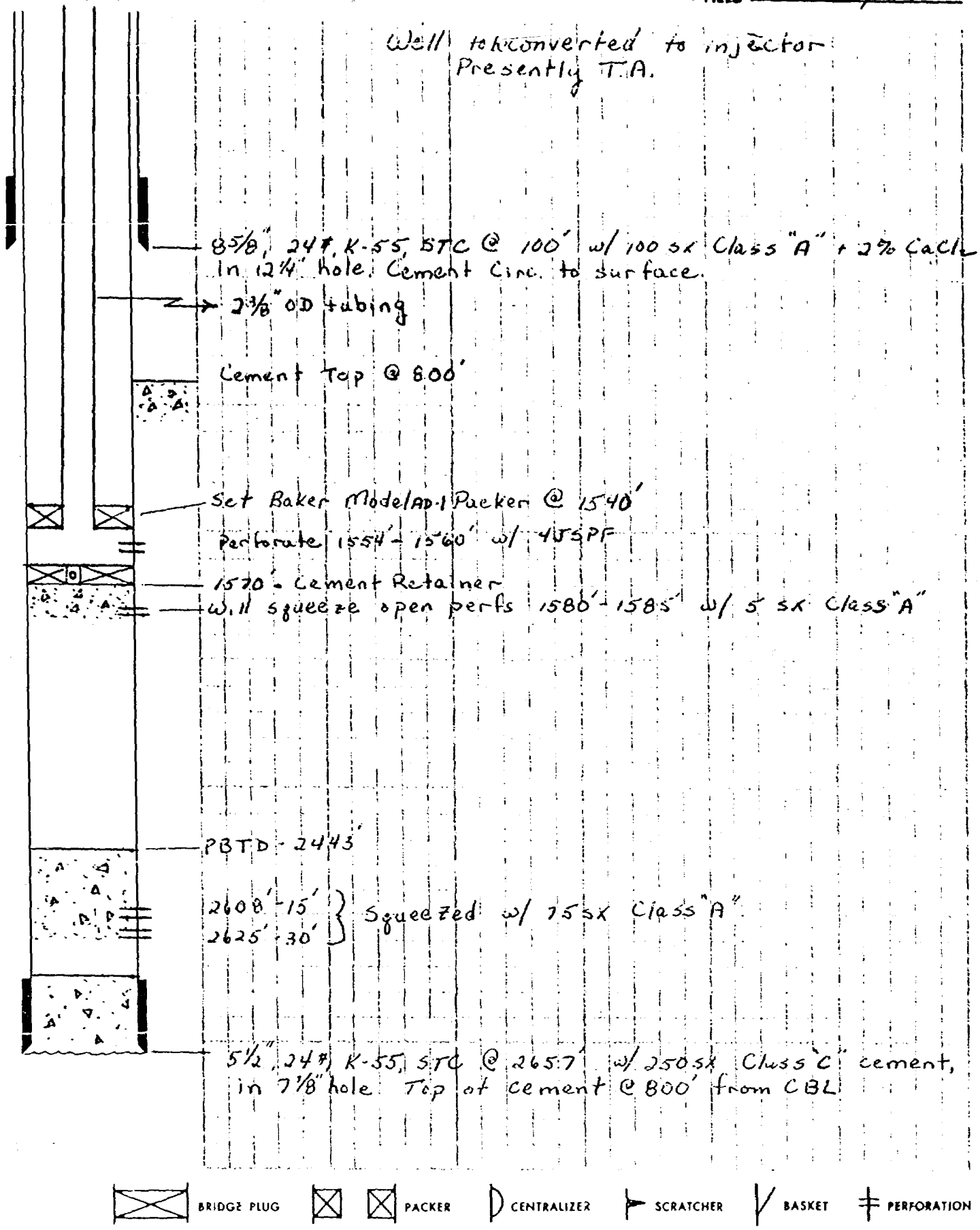
BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Exhibit C-1

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 8/15/79 WELL NO. 24 LEASE Hanson FIELD So. Hospah



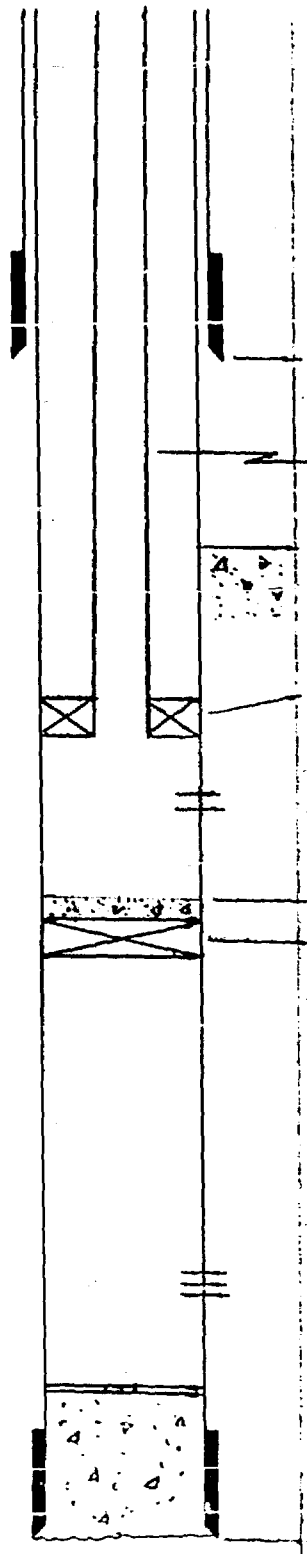
BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Exhibit e - 2

BAKER OIL TOOLS, INC.

SETTING THE WORLD

DATE 8/15/79 WELL NO. 38 LEASE SFRR "B" FIELD So Hospah



Well to be converted to injector
Presently T.A.

8 5/8", 24 #, K-55, STC @ 138' w/ 150sx Class "A" + 2% $CaCl_2$ in 12¼" hole. Cement circ. to surface.

2 3/8" OD tubing

Calculated cement top @ 1200', CBL will be run.

Set a Baker Model AD-1 Packer @ 1590'

Perforate 1607' - 1612' w/ 4 JSPF

1648'

Set a Baker Model D-1 BP @ 1660', w/ 2sx of Class "G" cement on top. (16')

2670' - 2676' w/ 2 JSPF. Dakota watered out.

PBTD 2730'

5½", 14 & 15.5 #, J-55, STC @ 2740' w/ 360 sx Class "A" Pozmix in 7⅞" hole. Top of cement calculated to be @ 1200'. CBL will be run.

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Exhibit C-3

BAKER OIL TOOLS, INC.

SETTING THE WORLD

DATE 10/17/79 WELL NO. 30 LEASE SFRR "B" FIELD Haspah

Operator Tesoro Pet.

P & A'd well

15 sk plug 50' - surface

8 5/8" csg set @ 137' Cemented to surface w/100 sx

26 sk plug 625 - 575

7 7/8" open hole

77 sx plug 1842 - 1542'

60 sk Plug 2736' - 2506'

TD 2736' No Production csg. set

BRIDGE PLUG | PACKER | CENTRALIZER | SCRATCHER | BASKET | PERFORATION

Exhibit P-1

BAKER TOOLS, INC.

SEEING THE WORLD

DATE 10/17/79 WELL NO. 2 LEASE Coleman FIELD Hospah

Operator: Burr & Cooley

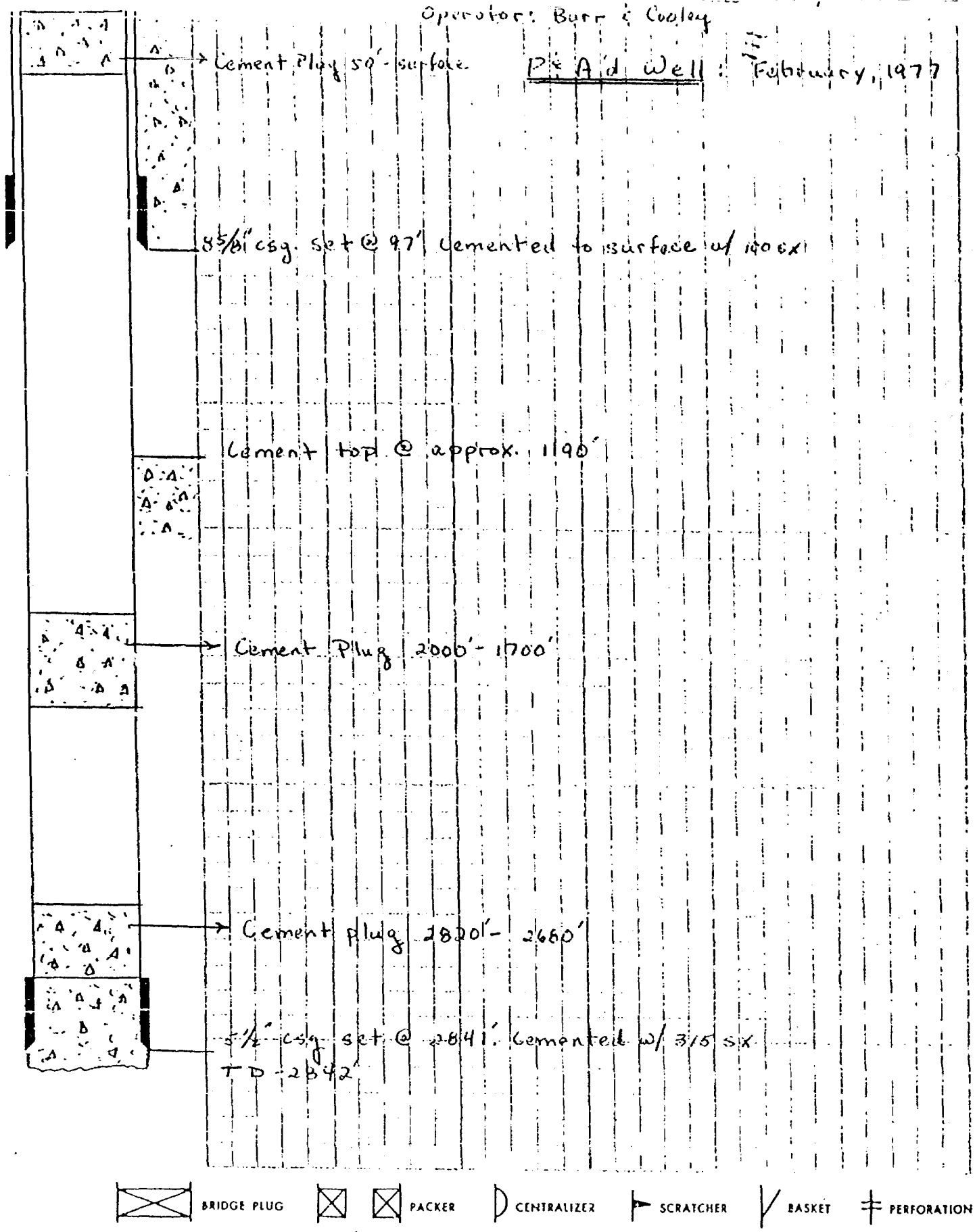


EXHIBIT D-2

SETTING THE WORLD

DATE 10/7/79 WELL NO. 2 LEASE SFRB FIELD Hoopa

shut in

Operator: Tesoro Pet.

T. A. Well

8 5/8" csg. set @ 45'. Cemented to surface w/ 15 sx

Cement top @ approx 1440'

4½" csg. set @ 1621'. Cemented w/ 3 – sx

TD - 1625'

BRIDGE PLUG | PACKER | CENTRALIZER | SCRATCHER | BASKET | PERFORATION

Exh. 6.5 D-3

TESORO PETROLEUM CORP.

SFRR "B" AREA

WATERFLOOD HEARING

NOVEMBER 14, 1979

Tesoro SFR
Cy 6726

Table of Contents

R. 9 W. R. 8 W.

26 25 30 29 28

35 36 1 32 33

TESORO

S.F.P.R.R.

TENNECO

TESORO

WALKER

0556687

TESORO

0553739

TESORO

TEXACO

0557107

TESORO

S.F.P.R.R.

TESORO

2 6 5 4

● Upper Hospah Producer

• Dakota Producer

Proposed Injection Wells

N.M. 0870

TESORO

TENNECO

Santa Fe R.R.

Hospah

Present Limits of
LONE PINE DAKOTA "D" Pool

S F P No. 9750

TENNECO

LONE PINE DAKOTA "D" UNIT

S F P No. 9750

Alloted Navajo

TESORO PETROLEUM CORPORATION

HOSPAH AREA

McKinley County, New Mexico

EXHIBIT 1

1000 500 0 1000 2000

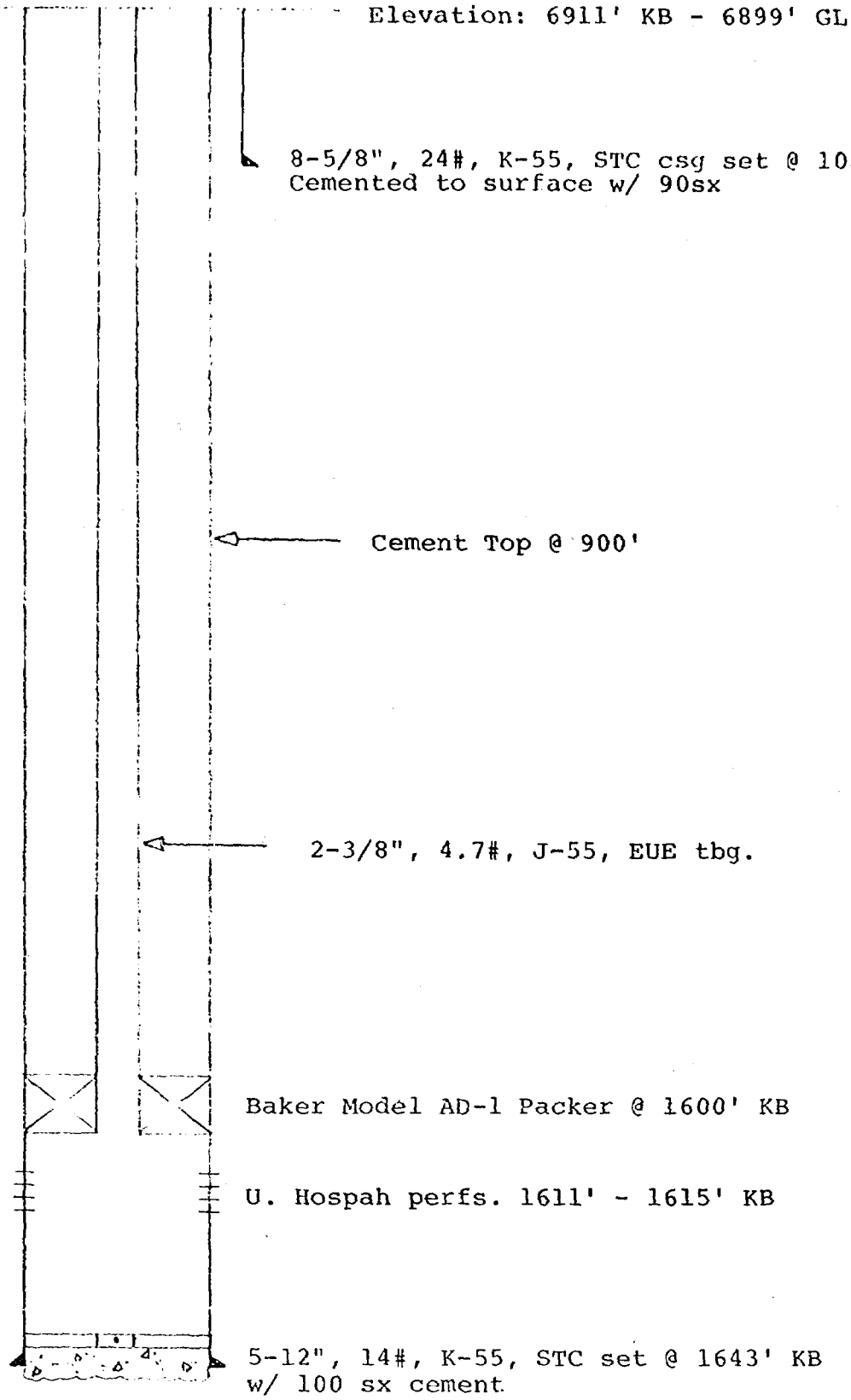
EXHIBIT 2

Wells Within 1/2 Mile of Proposed Injection Wells

Operator	Well Name	Location	Casing Strings	Setting Depth	Cement Volume	Cement Top	Total Depth	Producing Interval	Producing Formation
Tesoro	SFRR "B" #30	SE-SW Sec 5-17N-8W	8-5/8"	137'	100 sx	surface	2736'	P & A	--
Tesoro	SFRR "B" #32	SW-SW Sec 5-17N-8W	9-5/8" 5-12"	97' 2634'	90 sx 200 sx	surface 1780'	2648'	2634'-48'	Dakota
Tesoro	SFRR "B" #33	NW-SW Sec 5-17N-8W	8-5/8" 5-1/2"	102' 2636'	100 sx 385 sx	surface 1494'	2652'	1578'-82'	U. Hospah
Tesoro	SFRR "B" #34	SW-SW Sec 5-17N-8W	8-5/8" 5-12"	105' 1632'	90 sx 100 sx	surface 800'	1638'	1588'-96'	U. Hospah
Tesoro	SFRR "B" #36	NW-SW Sec 5-17N-8W	8-5/8" 5-1/2"	94' 1599'	100 sx 100 sx	surface 1050'	1600'	1564'-70'	U. Hospah
Tesoro	SFRR "B" #37	SW-SW Sec 5-17N-8W	8-5/8" 5-1/2"	107' 1613'	100 sx 100 sx	surface 1060'	1614'	1574'-80'	U. Hospah
Tesoro	Hanson Fed. #23	SE-SE Sec 6-17N-8W	8-5/8" 5-1/2"	144' 2724'	100 sx 325 sx	surface 1350'	2725'	2627'-31' 2638'-50'	Dakota Dakota
Tesoro	Hanson Fed. #25	NW-NW Sec 8-17N-8W	8-5/8" 5-1/2"	107' 2741'	75 sx 385 sx	surface 1100'	2750'	2673'-78' 2683'-93'	Dakota Dakota
Tesoro	Hanson Fed. #26	NW-NW Sec 8-17N-8W	8-5/8" 5-1/2"	104' 1653'	100 sx 100 sx	surface 1170'	1654'	1620'-26' 1632'-35'	U. Hospah U. Hospah
Tesoro	Hanson Fed. #27	SW-SE Sec 6-17N-8W	8-5/8" 5-1/2"	103' 1644'	100 sx 100 sx	surface 1130'	1645'	1519'-32' 1535'-50'	U. Hospah U. Hospah
Tesoro	Hanson Fed. #28	NW-SE Sec 6-17N-8W	8-5/8" 5-1/2"	103' 1687'	100 sx 100 sx	surface 1140'	1699'	1576'-82'	L. Hospah
Tesoro	Hanson Fed. #30	SE-NW Sec 6-17N-8W	8-5/8" 5-1/2"	103' 1643'	100 sx 100 sx	surface 1090'	1643'	1576'-84'	L. Hospah

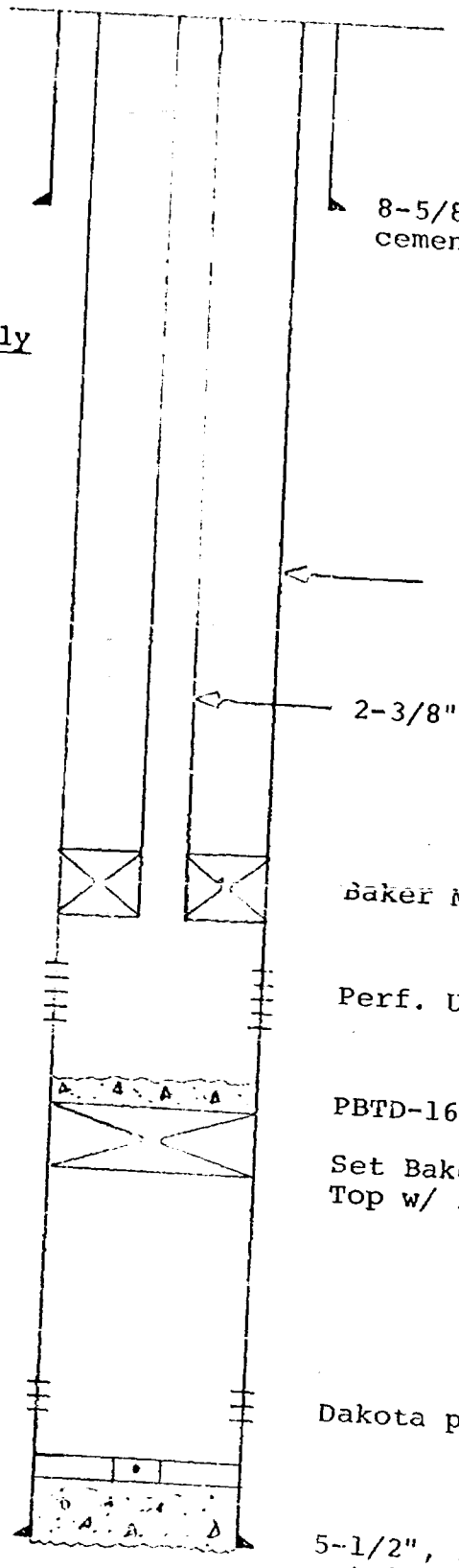
Operator	Well Name	Location	Casing Strings	Setting Depth	Cement Volume	Cement Top	Total Depth	Producing Interval	Producing Formation
Tesoro	Hanson Fed. #31	SE-NW Sec 6-17N-8W	8-5/8" 5-1/2"	85' 1617'	100 sx 100 sx	surface 1070'	1620'	1550'-58'	L. Hospah
Tesoro	Hanson Fed. #21	SE-NW Sec 6-17N-8W	7" 4-1/2"	75' 1541'	40 sx 65 sx	surface 1060'	1542'	1508'-11' 1515'-19' 1525'-28'	Injection
Tesoro	SFRR #2	NE-NE Sec 7-17N-8W	8-5/8" 4-1/2"	45' 1621'	15 sx 35 sx	surface 1440'	1625'	TA	--
Burr & Cooley	Coleman #2	NE-NW Sec 8-17N-8W	8-5/8" 5-1/2"	97' 2841'	100 sx 315 sx	surface 1190'	2842'	P & A	--

Exhibit 3



Tesoro Petroleum Corp.
SFRR "B" #35
Proposed Injection Well
Section 5-17N-8W

Exhibit 3



Elevation: 6902' KB - 6890' GL

8-5/8", 24#, K-55, STC csg set @ 138' KB
cemented to surface w/ 150 sx

Well presently
temporarily
abandoned

Cement top @ approx. 1200'
(CBL will be run)

2-3/8", 4.7#, J-55, EUE tbg.

Baker Model AD-1 packer @ 1660' KB

Perf. U. Hospah 1607'-1612' KB

PBTD-1648' KB

Set Baker Model P-1 CIBP @ 1660' KB
Top w/ 2 sx cement

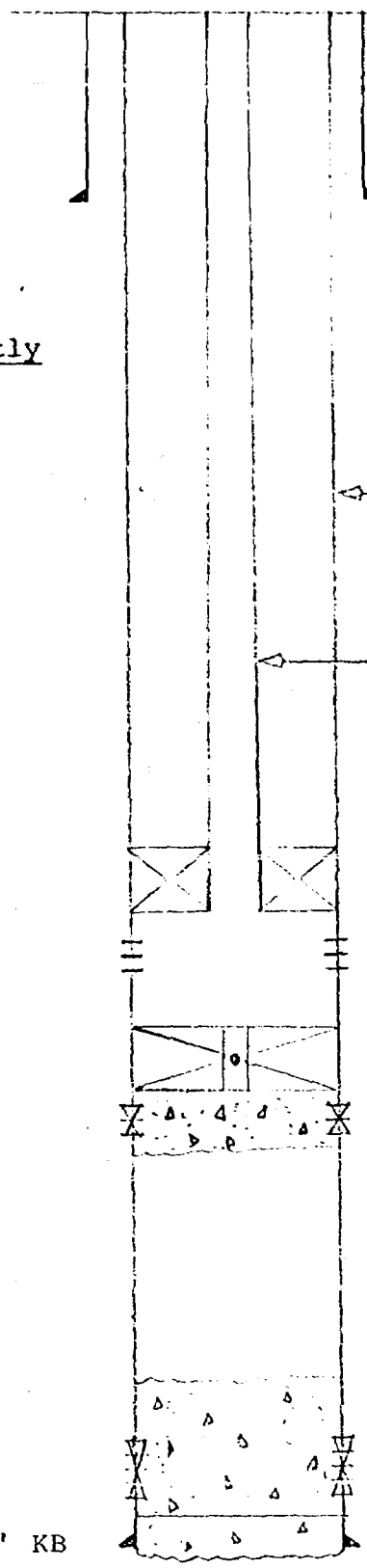
Dakota perfs. 2670'-76' KB

TD-2741' KB

5-1/2", 14#, & 15.5#, J-55, STC csg.
set @ 2740' KB w/ 360 sx cement

Tesoro Petroleum Corp.
SFRR "B" #38
Proposed Injection Well
Section 5-17N-8W

Exhibit 3



Elevation: 6871' KB - 6860' GL

8-5/8", 24#, K-55, STC csg. set @ 100' KB
Cemented to surface w/ 100 sx

Well presently temporarily abandoned

Cement Top @ 800'

2-3/8", 4.7#, J-55, EUE tbg.

Baker Model AD-1 Packer @ 1540' KB

Perf. U. Hospah 1554' - 60" KB

Baker Model K Cement Retainer @ 1570' KB

Squeeze U. Hospah perfs. 1580' - 85' KB
w/ 5 sx cement

Present PBTD - 2443' KB

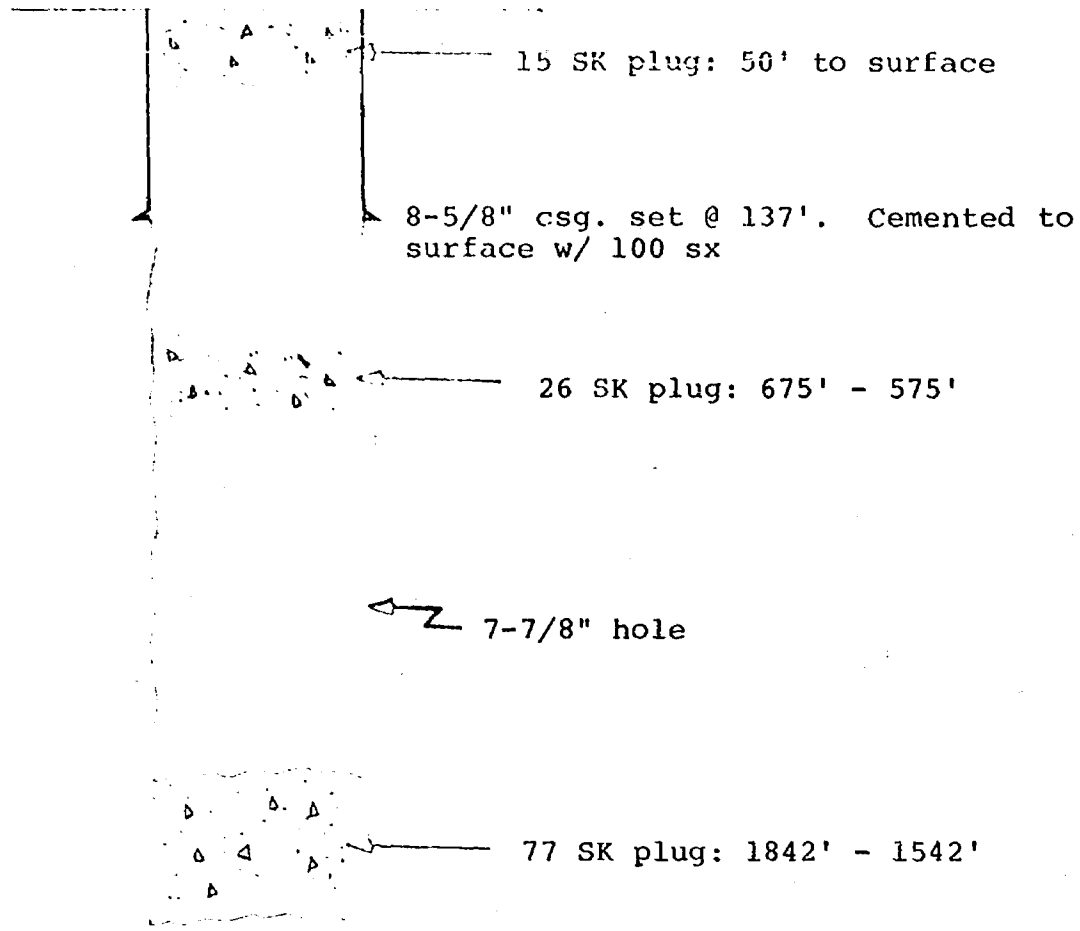
Dakota perfs. 2608' - 15' & 2625' - 30' KB
squeezed w/ 75 sx cement

TD-2657' KB

5-1/2", 14#, K-55, STC csg. set @ 2657' KB
w/ 250 sx cement

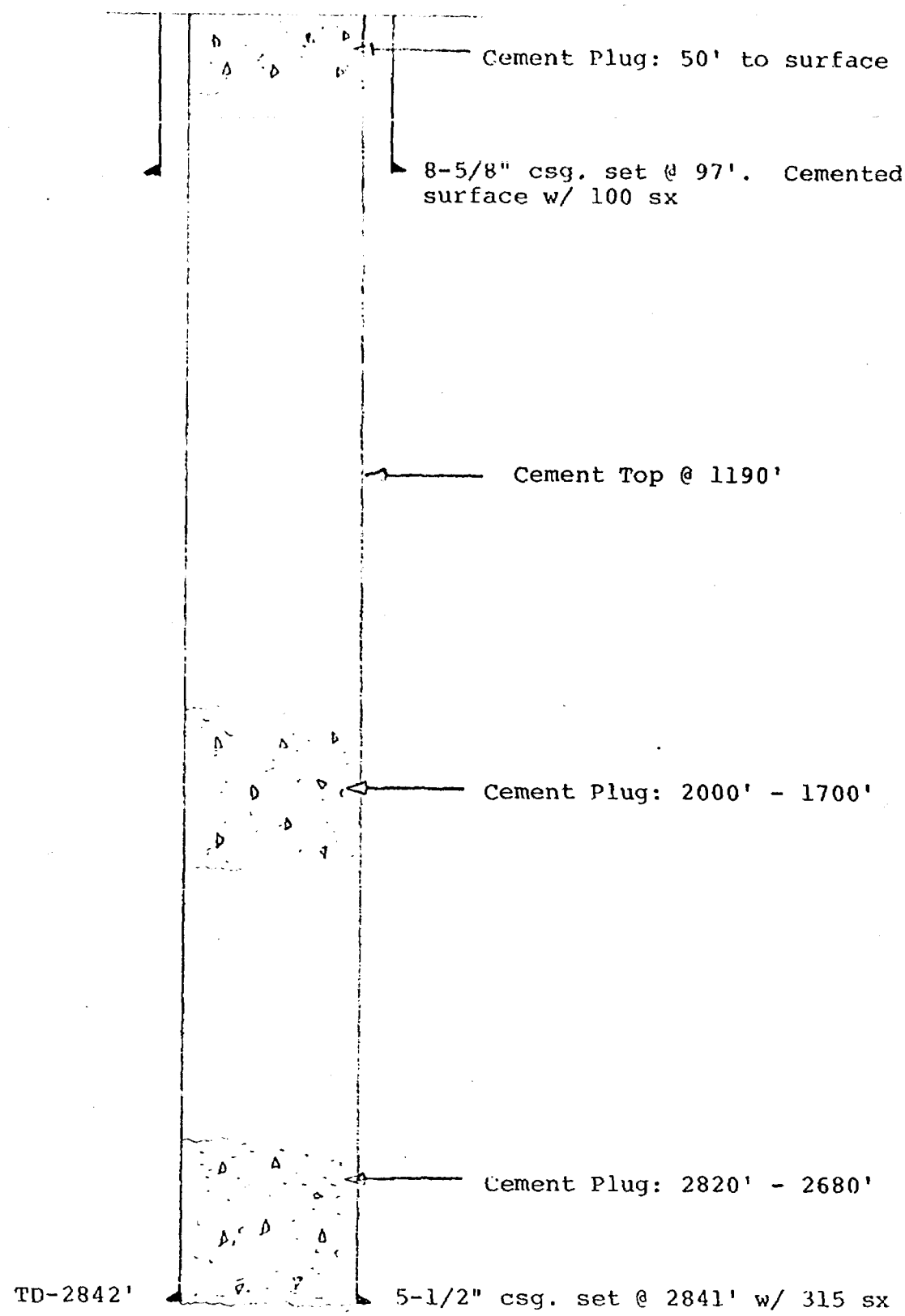
Tesoro Petroleum Corp.
Hanson Federal #24
Proposed Injection Well
Section 6-17N-8W

Exhibit 4



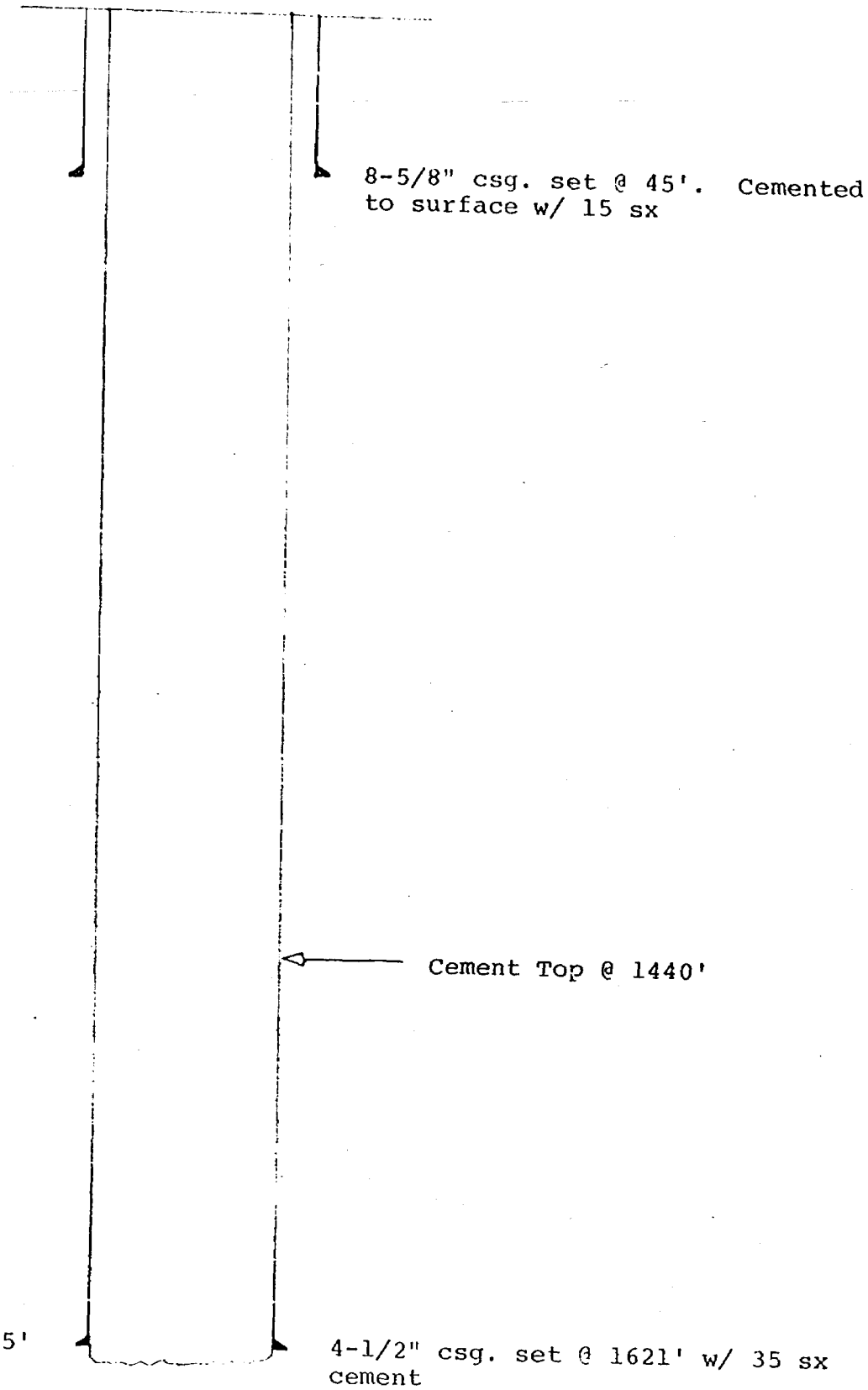
Tesoro Petroleum Corp.
SFRR "B" #30
Abandoned Well
Section 6-17N-8W

Exhibit 4



Burr and Cooley
Colemen #2
Abandoned Well
Section 8-17N-8W

Exhibit 4



Tesoro Petroleum Corp.
SFRR #2
Temp. Abandoned Well
Section 7-17N-8W

Exhibit 5

I. Injection Zone

Name - Upper Hospah Sand
Depth - 1550'-1620'

II. Injection Fluid

Type - Fresh Water (Resistivity 1.0-4.0 ohm-meters)
Source - Produced water from Upper and Lower Hospah Sands in Hospah Field

III. Injection Data

Expected Injection Pressure - 1000 psi
Expected Injection Volume - 200 BWPD per well

IV. Fracture Gradient

Upper Hospah Sand - .65 to .90 psi/ft.

Injection pressure into the Upper Hospah Sand on the west side of the Hanson Fed. and SFRR leases is 950 psi without any breakdown of the formation.

map 1

isopach map

TOP U. HOSPAH SAND

C.I. = 10'

TESORO

TEXACO

TESORO

0553739

0557107

TESORO

S F P R R

S F P R R "B"

Hanson - Federal U.S.N.M. No. 052931

TESORO

Tenneco
West Springs

Tesoro Ex B
Ls 6726