

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



BRUCE KING  
GOVERNOR

June 26, 1992

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

ANITA LOCKWOOD  
CABINET SECRETARY

Meridian Oil, Inc.  
P.O. Box 51810  
Midland, Texas 79710-1810

Attention: Joe Small

RE: *Injection Pressure Increase  
Shugart "A" Well No. 4  
Shugart Yates - SR-Q-G Waterflood Project  
Eddy County, New Mexico*

Dear Sir:

Reference is made to your request dated June 4, 1992, to increase the surface injection pressure on the Sugart "A" Well No. 4. This request is based on a step rate test conducted on the well on June 2, 1992. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on the well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well:

**WELL AND LOCATION**

**MAXIMUM INJECTION  
SURFACE PRESSURE**

Shugart "A" Well No. 4  
Unit K, Section 29, T-18 South,  
R-31 East, NMPM

880 PSIG

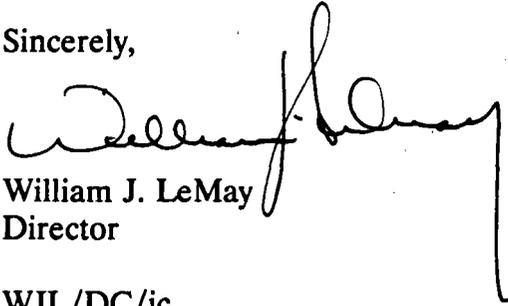
Eddy County, New Mexico

Meridian Oil, Inc.  
June 26, 1992  
Page 2

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The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



William J. LeMay  
Director

WJL/DC/jc

cc: Oil Conservation Division - Artesia  
File: WFX - 628  
Rick Brown  
David Catanach

NO WAITING PERIOD

COMPANY: Santa Fe Energy Operating Partners, L.P.  
ADDRESS: 550 W. Texas Suite 1330  
CITY, STATE, ZIP: Midland, Texas 79701  
ATTENTION: A. J. Welker

*OK* 6/26/92

Re: Injection Pressure Increase  
Shinnery "14" Federal No. 5  
Lea County, New Mexico

Dear Sir:

Reference is made to your request dated June 1, 1992, to increase the surface injection pressure on the Shinnery "14" Federal Well No. 5. This request is based on a step rate test conducted on the well on May 15, 1992. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on the well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well:

<u>Well &amp; Location</u>	<u>Maximum Injection Surface Pressure</u>
<u>Shinnery "14" Federal No. 5</u> <u>Unit H, Section 14, T-18 South, R-32 East, WPM</u> <u>Lea County, New Mexico</u>	<u>1320 PSIG</u>

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

R. Brown  
xc: T. GALLEGOS  
D. CATANACH  
FILE- 540-436  
OCD- Hobbs



**Santa Fe Energy Operating Partners, L.P.**

Santa Fe Pacific Exploration Company  
Managing General Partner

OIL CONSERVATION DIVISION

RECEIVED

'92 JUN 5 AM 9:06

June 1, 1992

State of New Mexico  
Energy and Minerals Department  
Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87504

Attention: David Catnach

RE: Application for Increased Disposal Pressure  
Shinnery 14 Federal No. 5  
Section 14, T-18S, R-32E, Lea County, New Mexico

Dear Mr. Catnach:

Administrative Order No. SWD-436 was issued on the subject well August 8, 1991. It provided for a maximum disposal pressure of 998 psi, based on a standard default limitation of 0.2 psi per foot, and contained a stipulation that the Division Director may authorize an increase in the pressure limitation upon the showing of a valid step-rate test.

We began disposal operations on December 26, 1991, and by April of 1992, we were approaching our disposal pressure limitation. On May 15, 1992, we ran a step-rate test using John West Engineering Company. We obtained six (6) rates/pressures below the fracture pressure and three (3) rates/pressures above the fracture pressure. The test was witnessed by Mr. Charlie Perrin with the District OCD office. A copy of the step-rate test is attached. Also attached for your convenience, is a wellbore schematic.

Our disposal perforations are 4990' to 6790'. Our initial permit application included a tracer survey which was run on the well during testing, which showed 1) the perforations from 4990' to 5000' were not taking water, and 2) proper confinement of the injection water at pressures higher than the authorized 998 psi.

Accordingly, we request an increase in our maximum authorized disposal pressure. The step-rate test indicates a surface fracture pressure of approximately 1370 psi, friction considered. This value is consistent with our tracer survey testing, and with the results of a hydraulic fracture stimulation which we performed on perforations 5992' to 6180' in preparation for our disposal application. The instantaneous shut-in pressure on that stimulation was 1800 psi with a tubing fluid gradient of 0.433 psi/ft.

Please advise if you have questions, or if additional information is necessary to effect an increase in the disposal pressure limitation.

Sincerely,

SANTA FE ENERGY OPERATING PARTNERS, L.P.  
By Santa Fe Pacific Exploration Company  
as Managing General Partner

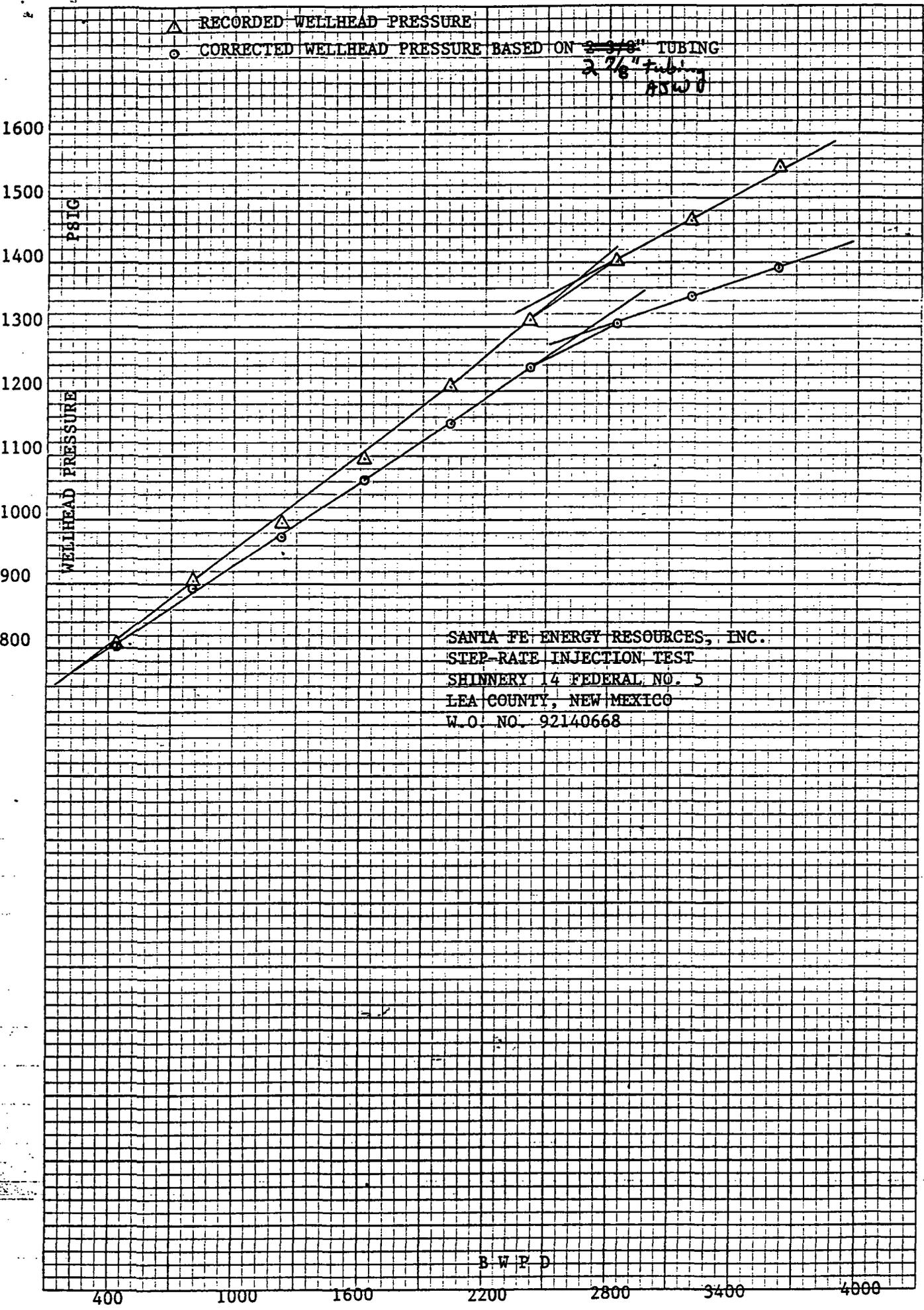
By



A. J. (Joe) Welker  
Sr. Staff Engineer

AJW/tjm

cc: OCD-Hobbs  
R. Winkler  
M. Burton  
J. Moore  
P. Stull  
File



# JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

## STEP RATE INJECTION TEST

CLIENT: Santa Fe Energy Resources, Inc.

DATE: 5/16/82

WELL NAME: Shinnery 14 Federal No. 5  
Lea County, New Mexico

WO#: 82140868

PERFS = 4990 - 6790

PACKER DEPTH = 4960

PBTD = 8515

STEP NO. #	REMARKS	TIME	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			SURFACE TUBING PRESS. (psig)	CUMULATIVE VOL. INJECTED (bbls)	INJECTION RATE (bbls/day)	FRICTION HEAD LOSS (psf)	CORRECTED TUBING PRESS. (psf) (5)-(6)	INJECTION RATE (gpm) (0.158503)	MEASURED BHP (psf)
		2:10	740.6					740.6	
1		2:15	802.4	1.6	460.8	3.359	799.0	13.44	
		2:20	806.2	3.1	432.0	2.981	803.2	12.60	
		2:25	805.0	4.7	460.8	3.359	801.6	13.44	
					451.2				
2		2:30	878.1	7.6	835.2	10.092	868.0	24.36	
		2:35	889.4	10.4	806.4	9.458	879.9	23.52	
		2:40	903.3	13.2	806.4	9.458	893.8	23.52	
3					816.0				
		2:45	976.4	17.5	1238.4	20.916	955.5	36.12	
		2:50	1000.3	21.8	1238.4	20.916	979.4	36.12	
		2:55	998.0	26.1	1238.4	20.916	977.1	36.12	
4					1238.4				
		3:00	1076.3	31.7	1612.8	34.096	1042.2	47.04	
		3:05	1085.1	37.4	1641.6	35.231	1049.9	47.88	
5		3:10	1097.8	43.0	1612.8	34.096	1063.7	47.04	
					1622.4				
		3:15	1172.5	50.0	2016.0	51.521	1121.0	58.80	
		3:20	1190.1	57.0	2016.0	51.521	1138.6	58.80	
6		3:25	1205.1	64.1	2044.8	52.891	1152.2	59.64	
					2025.6				
		3:30	1275.8	72.5	2419.2	72.189	1203.6	70.56	
		3:35	1289.5	80.8	2390.4	70.607	1218.9	69.72	
		3:40	1312.0	89.3	2448.0	73.787	1238.2	71.40	
7					2419.0				
		3:45	1381.5	99.1	2822.4	96.012	1285.5	82.32	
		3:50	1396.6	109.0	2851.2	97.832	1298.8	83.16	
		3:55	1404.2	118.9	2851.2	97.832	1306.4	83.16	
				2841.6					

STEP NO. S REMARKS	TIME	(1) SURFACE TUBING PRESS (psig)	(2) CUMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (p.s.f.)	(5) CORRECTED TUBING PRESS (psig) (3)-(4)	(6) INJECTION RATE (gpm) (bbls/day) (3)/(7.48)	(7) MEASURED BHP (p.s.f.)
8	4:00	1451.0	130.1	3225.6	122.916	1328.1	94.08	
	4:05	1461.1	141.2	3196.8	120.893	1340.2	93.24	
	4:10	1467.4	152.3	3196.8	120.893	1346.5	93.24	
9				3206.4				
	4:15	1552.1	164.7	3571.2	148.383	1403.7	104.16	
	4:20	1538.2	177.4	3657.6	155.093	1383.1	106.68	
	4:25	1548.2	190.0	3628.8	152.841	1395.4	105.84	
				3619.2				
Fall-Off	4:26	1243.2				1243.2		
	4:27	1209.0				1209.0		
	4:28	1179.9				1179.9		
	4:29	1159.6				1159.6		
	4:30	1141.9				1141.9		
	4:31	1124.1				1124.1		
	4:32	1110.2				1110.2		
	4:33	1097.5				1097.5		
	4:34	1084.9				1084.9		
4:35	1074.7				1074.7			

Spud 10-89

Ref Point: KB 3834' or 15' AGL

Schematic for Disposal Well

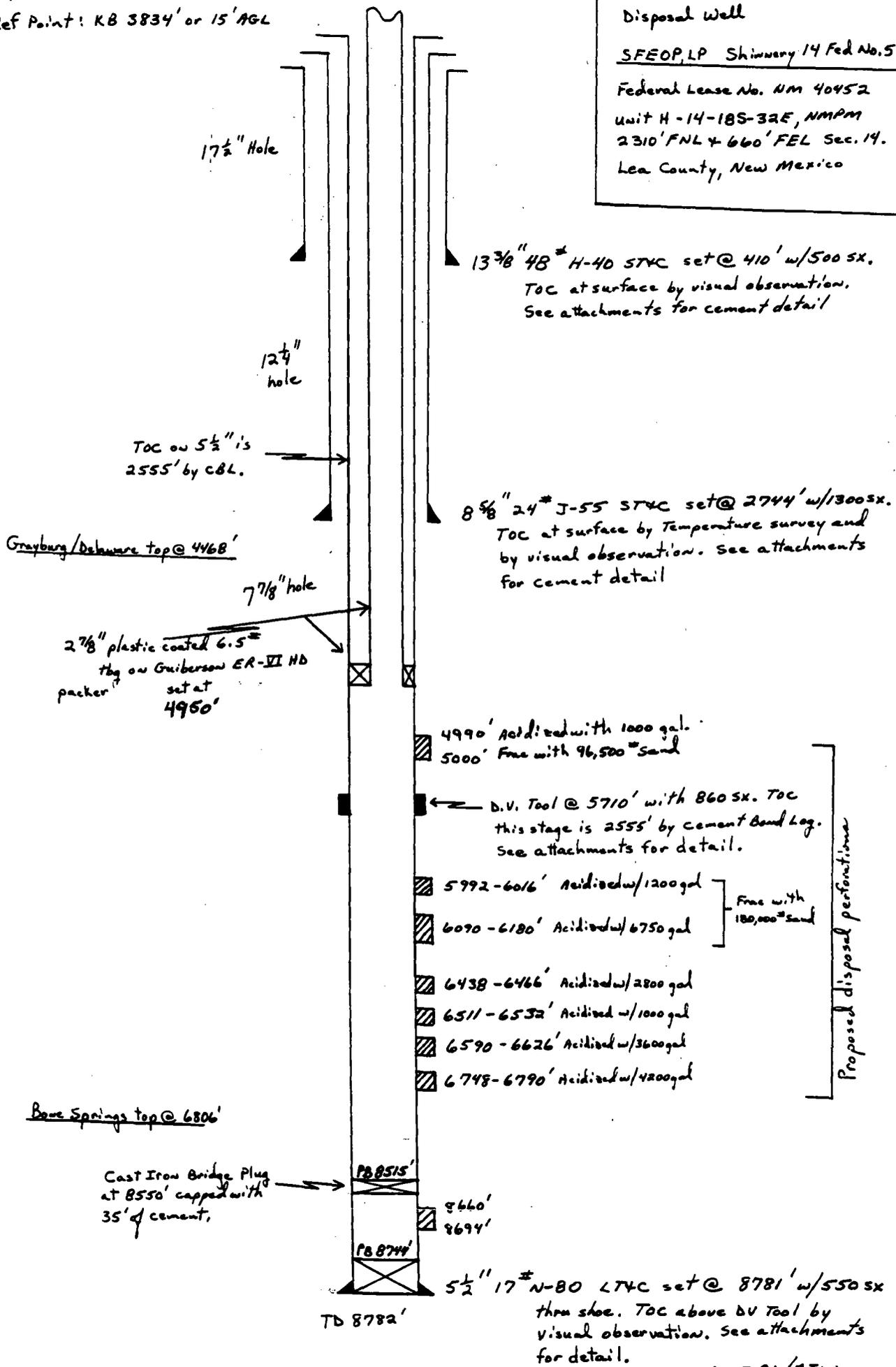
SFEOP, LP Shinyery 14 Fed No. 5

Federal Lease No. NM 40452

Unit H-14-185-32E, NMPM

2310' FNL + 660' FEL Sec. 14.

Lea County, New Mexico



6-27-91/AJW



STATE OF NEW MEXICO OIL CONSERVATION DIVISION  
**ENERGY AND MINERALS DEPARTMENT**

OIL CONSERVATION DIVISION  
HOBBS DISTRICT OFFICE  
June 8, 1992

JUN 11 AM 9 06

BRUCE KING  
GOVERNOR

POST OFFICE BOX 1980  
HOBBS, NEW MEXICO 88240  
(505) 393-6161

OIL CONSERVATION DIVISION  
P.O. BOX 2088  
SANTA FE, NEW MEXICO 87504-2088

RE: APPLICATION FOR PRESSURE LIMIT INCREASE FOR DISPOSAL & INJECTION WELLS

Gentlemen:

I have examined the step rate test for the:

Santa Fe Energy Oper Partners Inc	Shinnery 14 Fed #5-H	14-18-32
Operator	Lease & Well No.	Unit
		S-T-R

and my recommendations are as follows:

*OK*

Very truly yours

Jerry Sexton  
Supervisor, District I

/bp

