CF 10063

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

March 28, 1994

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

OXY USA, Inc.
P.O. Box 50250
Midland, TX 79710

Attention: Richard E. Foppiano

RE: Injection Pressure Increase Central Corbin-Queen Unit, Lea County, New Mexico

Dear Mr. Foppiano:

Reference is made to your request dated January 30, 1994, to increase the surface injection pressure on three wells in your Central Corbin-Queen Unit. This request is based on step rate tests conducted on these wells between January 12 and January 14, 1994. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

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

Well and Location	**Maximum Injection Surface Pressure**
CCQU Well No. 203W 660' FSL & 660' FWL Unit M, Section 4, Township 18 South, Range 33 East API No. 30-025-29364	1685 PSIG
CCQU Well No. 209W 660' FNL & 1980' FWL Unit C, Section 4, Township 18 South, Range 33 East API No. 30-025-29777	1910 PSIG
CCQU Well No. 212W 1980' FNL & 560' FWL Unit E, Section 3, Township 18 South, Range 33 East API No. 30-025-29798	2100 PSIG
All wells located in Lea County, New Mexico.	

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/BES/amg

cc: Oil Conservation Division - Hobbs
File: Case No. 10063

NO WAITING PERIOD

COMPANY: **OXY USA, INC.**

ADDRESS: **P.O. Box 50250**

CITY, STATE, ZIP: **Midland, Texas 79710**

ATTENTION: **Mr. Richard E. Foppiano**

Re: Injection Pressure Increase
Central Corbin-Queen Unit
Lea County, New Mexico

Dear Sir:

Reference is made to your request dated **January 30**, 1994, to increase the surface injection pressure on **3 wells in your Central Corbin-Queen Unit.** This request is based on step rate tests conducted on these wells between **January 12** and **January 14,** 1994. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

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

Well & Location	Maximum Injection Surface Pressure
CCQU Well No.203W **660' FSL & 660' FWL** **Unit M, Section 4-T18S-R33E** **API NO.30-025029364**	**1685 psig**
CCQU Well No.209W **660' FNL & 1980' FWL** **Unit C, Section 4-T18S-R33E** **API NO.30-025-29777**	**1910 psig**
CCQU Well No.212W **1980' FNL & 560' FWL** **Unit E, Section 3-T18S-R33E** **API NO.30-025-29798**	**2100 psig**

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.

William J. LeMay
Director

WJL/BES

xc: OCD - **Hobbs** FILE - **Case No.10063**

OXY USA INC.
Box 50250, Midland, TX 79710

January 30, 1994

Oil Conservation Commission
State of New Mexico
P. O. Box 2088
Santa Fe, NM 87504

Attention: Mr. William J. Lemay, Director

Re: Application of OXY USA Inc. for an Increase in the Authorized Injection Pressure for the Central Corbin-Queen Unit, Central Corbin Queen Pool, Lea County New Mexico.

Dear Sir:

OXY USA Inc. respectfully requests an increase in the authorized injection pressure for three (3) wells in the referenced waterflood unit:

Well	Requested Authorized Injection Pressure*
CCQU Well #203W	1850 psi 1685
CCQU Well #209W	1970 psi 1910
CCQU Well #212W	2100 psi [illegible]

* fracture pressure from step-rate tests less 50 psi.

Injection in this Unit was originally granted in Order No. R-9337 on 10/29/90 (copy attached). Paragraph (8) of this Order allows for the NMOCD to authorize a higher pressure based on evidence that such pressure will not result in migration of the injection fluid out of the Queen formation. To satisfy this requirement, OXY commissioned John West Engineering Company to perform step-rate tests on selected wells within the Unit. Included with this request are copies of the results of these tests on wells 203W, 209W & 212W.

As required by Statewide Rule 704 (C) (1) and Division instructions, OXY gave notice of the date and time the step-rate tests were to be run to the NMOCD District Office in Hobbs and the BLM District Office in Carlsbad. By copy of this letter, we are also giving notice of our application for an increase in the authorized injection pressure on these three wells.

If you require any additional information relating to this request, please contact the undersigned @ 915/685-5913 or Scott Gengler @ 915/685-5825. Thank you for consideration of this request.

Yours truly,

Richard E. Foppiano

Richard E. Foppiano
Regulatory Affairs Advisor
Western Region - Midland

REF/ref
enclosures

XC: Scott Gengler, w/enclosures
Sharon Haggard, w/enclosures
Terry Lindquist, w/enclosures
David Stewart, w/enclosures

New Mexico Oil Conservation Division
District I Office
P. O. Box 1980
Hobbs, New Mexico 88240

Bureau of Land Management
Carlsbad Resource Area
P. O. Box 1778
Carlsbad, New Mexico 88220

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 10063
ORDER NO. R-9337

APPLICATION OF OXY USA, INC. FOR A
WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on September 5, 1990 at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 29th day of October, 1990, the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

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

(2) At the time of the hearing, this case was consolidated with Division Case Nos. 10062 and 10064 for the purpose of testimony.

(3) The applicant, OXY USA, Inc., seeks authority to institute a waterflood project on its proposed Central Corbin Queen Unit Area (Division Case No. 10062), Lea County, New Mexico, by the injection of water into the Central Corbin-Queen Pool through twelve certain wells as listed in Exhibit "A", attached hereto and made a part hereof, to be converted from producing Queen oil wells to injection wells.

(4) It is proposed that the waterflood project area coincide with the boundary of the Central Corbin Queen Unit Area in Lea County, New Mexico as further described below, which was the subject of Division Case No. 10062 and was heard in conjunction with this case:

TOWNSHIP 18 SOUTH, RANGE 33 EAST, NMPM

Section 3: Lot 4, SW/4 NW/4, and W/2 SW/4
Section 4: Lots 1, 2 and 3, S/2 N/2, and S/2
Section 8: E/2 NE/4
Section 9: N/2, N/2 SW/4, SE/4 SW/4, and SE/4
Section 10: W/2 NW/4 and NW/4 SW/4

(5) The wells in the proposed project area are in an advanced state of depletion and should therefore be properly classified as "stripper wells."

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

(7) 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 into other formations or onto the surface from injection, production or plugged and abandoned wells.

(8) The applicant's testimony indicates that the following two previously abandoned wells are located within one-half mile of the proposed Federal "AE" Well No. 12 injection well located in Unit E of said Section 3:

Well Name and No.	*Footage Location (Unit)*	*Section - Township - Range*
Henderson, Dexter, Black - Wyatt Well No. 1	330' FS & WL (Unit M)	34-17S-33E
Carper Drilling Company - Corbin Well No. 3-B	660' FNL - 1980' FWL (Unit C)	3-18S-33E

(9) Prior to commencement of injection into said Federal "AE" Well No. 12, the operator should demonstrate that the wells described in Finding Paragraph No. 8 above have either been replugged or have been previously plugged and abandoned in such a manner as to ensure that they do not provide an avenue of escape for waters from the proposed injection zone and in accordance with a program that is satisfactory to the supervisor of the Division's district office in Hobbs.

(10) Injection into each well should be accomplished through plastic-lined tubing installed in a packer set at approximately 100 feet above the uppermost perforation; the casing-tubing annulus in each well should be filled with an inert fluid; and a pressure gauge or approved leak-detection device should be attached to the annulus in order to determine leaks in the casing, tubing or packer.

(11) The injection wells or pressurization system for each well should be so equipped as to limit injection pressure at the wellhead to no more than 840 psi.

(12) Prior to commencing injection operations, the casing in each of the subject wells should be pressure-tested throughout the interval, from the surface down to the proposed packer-setting depth, to assure integrity of such casing.

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

(14) The operator should give advance notice to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(15) The subject application should be approved and the project should be governed by the provisions of Rules 702 through 708 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, OXY USA Inc., is hereby authorized to institute a waterflood project on its proposed Central Corbin Queen Unit Area (Division Case No. 10062), by the injection of water into the Central Corbin-Queen Pool through twelve wells listed in Exhibit "A", attached hereto and made a part hereof, which will be converted from producing Queen oil wells to injection wells.

(2) The waterflood project, hereby designated the Central Corbin Queen Unit Waterflood Project, shall be comprised of the following described area in Lea County, New Mexico:

TOWNSHIP 18 SOUTH, RANGE 33 EAST, NMPM

Section 3:	Lot 4, SW/4 NW/4, and W/2 SW/4
Section 4:	Lots 1, 2 and 3, S/2 N/2, and S/2
Section 8:	E/2 NE/4
Section 9:	N/2, N/2 SW/4, SE/4 SW/4, and SE/4
Section 10:	W/2 NW/4 and NW/4 SW/4

PROVIDED HOWEVER THAT:

(3) Injection into the Federal "AE" Well No. 12, located in Unit E of said Section 3, shall not commence until the Henderson, Dexter, Black-Wyatt Well No. 1, located in Unit M of Section 34, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico, and the Carper Drilling Company - Corbin Well No. 3B, located in Unit C of Section 3, Township 18 South, Range 33 East, NMPM, Lea County, New Mexico, have either been properly replugged or are shown to have been adequately plugged and abandoned in a manner that is satisfactory to the supervisor of the Division's district office at Hobbs.

(4) Injection into each well described in Exhibit "A" shall be accomplished through plastic-lined tubing installed in a packer set at approximately 100 feet above the uppermost perforation.

(5) The casing-tubing annulus in each injection well shall be filled with an inert fluid; and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak-detection device in order to determine leakage in the casing, tubing or packer.

(6) Prior to commencing injection operations, the casing in each of the subject wells shall be pressure-tested to assure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's Hobbs District Office.

(7) Each injection well or pressurization system for each well shall be equipped with a pressure-limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 840 psi.

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

(9) The operator shall notify the supervisor of the Hobbs District Office of the Division in advance of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(10) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing, casing or packer, in any of said injection wells or the leakage of water 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.

(11) Said waterflood project shall be governed by the provisions of Rules 701 through 708 of the Division Rules and Regulations.

(12) Monthly progress reports shall be submitted to the Division in accordance with Rules 706 and 1115.

(13) 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

WILLIAM J. LEMAY
Director

SEAL

203
209
212

Exhibit "A"
OXY USA, Inc.
Case No. 10063
Order No. R-9337

	Well Name and Number	Footage Location	Unit Letter	Section	Injection Interval (feet)
1	Federal "AE" Well No. 12*	1980' FNL - 560' FWL	E	3	4211' - 4215'
2	Corbin Fee Well No. 1	330' FS & WL	M	3	4219' - 4266'
3	Federal "AE" Well No. 9	660' FNL - 1980' FWL	C	4	4152' - 4166'
4	Federal "AI" Well No. 3	2310' FN & EL	G	4	4163' - 4260'
5	Federal "AE" Well No. 4	1980' FSL - 660' FEL	I	4	4200' - 4217'
6	Federal "AE" Well No. 5	1980' FS & WL	K	4	4174' - 4180'
7	Federal "AE" Well No. 3	660' FS & WL	M	4	4243' - 4247'
8	Federal "AE" Well No. 1	660' FSL - 1980' FEL	O	4	4221' - 4241'
9	Federal "AA" Well No. 4	660' FNL - 790' FEL	A	9	4213' - 4242'
10	Federal "AD" Well No. 1	660' FNL - 1980' FWL	C	9	4206' - 4232'
11	Federal "AA" Well No. 3	1980' FN & EL	G	9	4236' - 4262'
12	Federal "AD" Well No. 4	1980' FS & WL	K	9	4258' - 4271'

212
29798

209
30-025-
29777

203
29364

All in Township 18 South, Range 33 East, NMPM
Lea County, New Mexico.

* well located within 1/2 mile of two potential inadequately plugged and abandoned wells.

WEST – TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA, INC.

DATE: JANUARY 14, 1994

WELL NAME: CENTRAL CORBIN QUEEN UNIT NO. 203
LEA COUNTY, NEW MEXICO

WO#: 94-14-0056

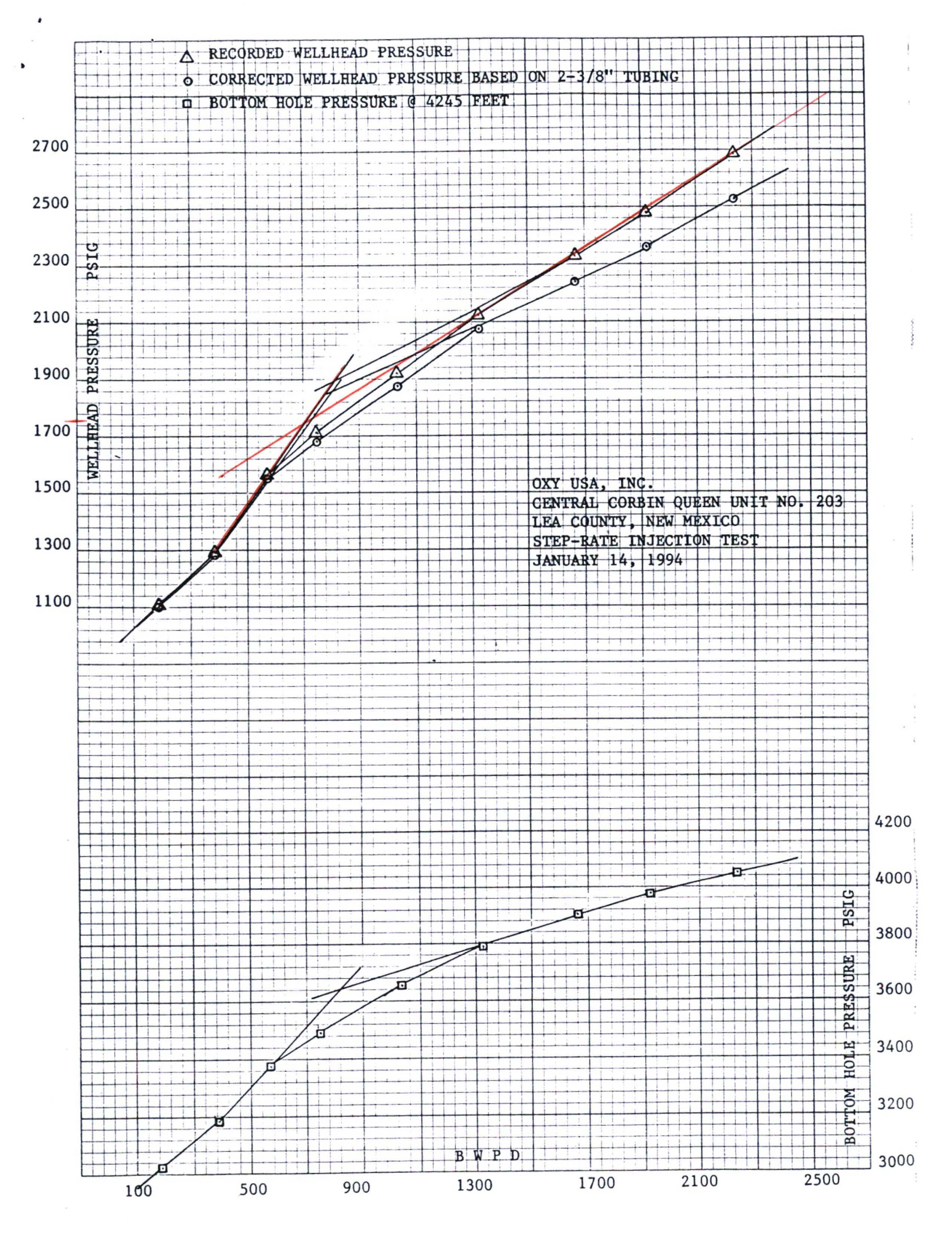
MID-PERFS. = 4243-4247

PACKER DEPTH = 4141

BHP GAUGE DEPTH = 4245

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
	9:05	733.8				733.8		2683
	9:10	1036.4	0.4	115.2	0.672	1035.7	3.36	2968
	9:15	1041.3	1.2	230.4	2.423	1038.9	6.72	2982
1	9:20	1102.6	2.0	230.4	2.423	1100.2	6.72	3022
				192.0				
	9:25	1211.3	3.4	403.2	6.822	1204.5	11.76	3119
	9:30	1262.3	4.7	374.4	5.948	1256.4	10.92	3166
2	9:35	1296.7	6.0	374.4	5.948	1290.8	10.92	3188
				384.0				
	9:40	1475.8	7.9	547.2	12.003	1463.8	15.96	3307
	9:45	1501.3	10.0	604.8	14.445	1486.9	17.64	3333
3	9:50	1562.7	12.0	576.0	13.198	1549.5	16.80	3375
				576.0				
	9:55	1662.4	14.6	748.8	21.444	1641.0	21.84	3441
	10:00	1681.5	17.3	777.6	22.994	1658.5	22.68	3463
4	10:05	1707.1	19.8	720.0	19.943	1687.2	21.00	3487
				748.8				
	10:10	1857.0	23.5	1065.6	41.188	1815.8	31.08	3591
	10:15	1894.2	27.0	1008.0	37.164	1857.0	29.40	3638
5	10:20	1918.4	30.6	1036.8	39.152	1879.2	30.24	3655
				1036.8				
	10:25	2061.7	35.2	1324.8	61.617	2000.1	38.64	3726
	10:30	2083.4	39.9	1353.6	64.118	2019.3	39.48	3762
6	10:35	2128.4	44.5	1324.8	61.617	2066.8	38.64	3794
				1334.4				
	10:40	2282.3	50.2	1641.6	91.615	2190.7	47.88	3857
	10:45	2310.5	56.0	1670.4	94.611	2215.9	48.72	3885
7	10:50	2337.3	61.8	1670.4	94.611	2242.7	48.72	3908
				1660.8				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1) – (4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
	10:55	2455.1	68.4	1900.8	120.159	2334.9	55.44	3946
	11:00	2470.4	75.1	1929.6	123.548	2346.9	56.28	3967
8	11:05	2486.9	81.8	1929.6	123.548	2363.4	56.28	3979
				1920.0				
	11:10	2625.6	89.7	2275.2	167.575	2458.0	66.36	4016
	11:15	2679.4	97.3	2188.8	155.993	2523.4	63.84	4031
9	11:20	2694.7	105.1	2246.4	163.672	2531.0	65.52	4046
				2236.8				
FALLOFF	11:21	2126.2				2126.2		3963
	11:22	2100.6				2100.6		3941
	11:23	2085.2				2085.2		3924
	11:24	2068.5				2068.5		3907
	11:25	2054.3				2054.3		3892
	11:30	1987.5				1987.5		3825
	11:35	1929.7				1929.7		3766


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
BOTTOM HOLE PRESSURE @ 4245 FEET
WELLHEAD PRESSURE PSIG
2700
2500
2300
2100
1900
1700
1500
1300
1100
OXY USA, INC.
CENTRAL CORBIN QUEEN UNIT NO. 203
LEA COUNTY, NEW MEXICO
STEP-RATE INJECTION TEST
JANUARY 14, 1994
BOTTOM HOLE PRESSURE PSIG
4200
4000
3800
3600
3400
3200
3000
B W P D
100
500
900
1300
1700
2100
2500

WEST-TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA, INC.

DATE: JANUARY 13, 1994

WELL NAME: CENTRAL CORBIN QUEEN UNIT NO. 209
LEA COUNTY, NEW MEXICO

WO#: 94-14-0055

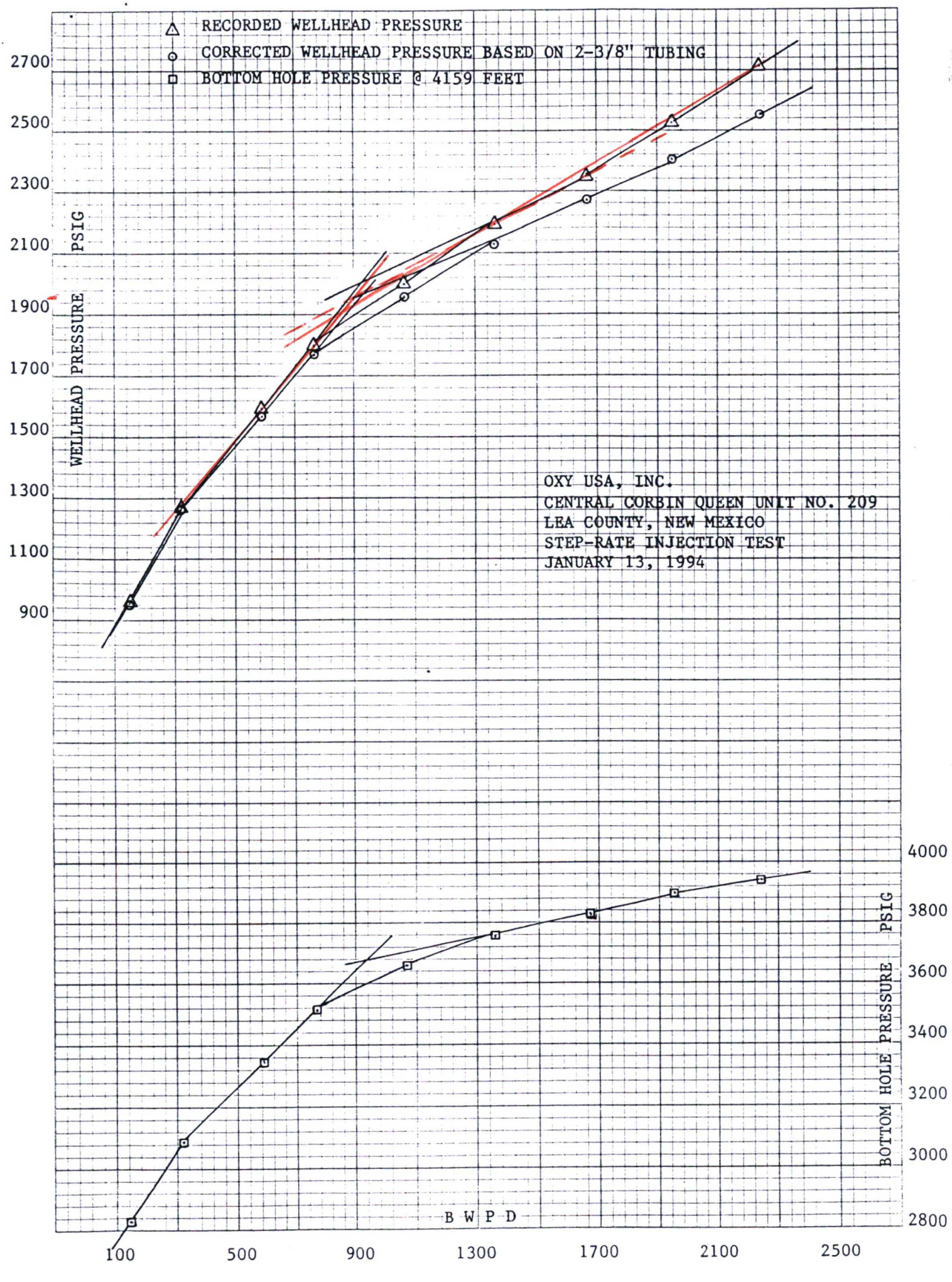
MID-PERFS. = 4152-4166

PACKER DEPTH = 4057

BHP GAUGE DEPTH = 4159

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
	9:05	450.3				450.3		2334
	9:10	790.2	0.5	144.0	0.995	789.2	4.20	2668
	9:15	820.7	1.0	144.0	0.995	819.7	4.20	2703
1	9:20	963.5	1.5	144.0	0.995	962.5	4.20	2830
				144.0				
	9:25	1124.5	2.5	288.0	3.587	1120.9	8.40	2977
	9:30	1189.6	3.7	345.6	5.026	1184.6	10.08	3035
2	9:35	1262.4	4.9	345.6	5.026	1257.4	10.08	3084
				326.4				
	9:40	1456.9	6.9	576.0	12.931	1444.0	16.80	3239
	9:45	1547.7	9.0	604.8	14.152	1533.5	17.64	3309
3	9:50	1587.3	11.0	576.0	12.931	1574.4	16.80	3347
				585.6				
	9:55	1722.9	13.7	777.6	22.529	1700.4	22.68	3443
	10:00	1753.6	16.3	748.8	21.009	1732.6	21.84	3478
4	10:05	1794.6	19.0	777.6	22.529	1772.1	22.68	3515
				768.0				
	10:10	1940.6	22.7	1065.6	40.354	1900.2	31.08	3598
	10:15	1973.8	26.4	1065.6	40.354	1933.4	31.08	3633
5	10:20	1996.8	30.1	1065.6	40.354	1956.4	31.08	3660
				1065.6				
	10:25	2142.8	34.9	1382.4	65.314	2077.5	40.32	3717
	10:30	2169.7	39.6	1353.6	62.819	2106.9	39.48	3739
6	10:35	2188.8	44.3	1353.6	62.819	2126.0	39.48	3758
				1363.2				
	10:40	2345.1	50.1	1670.4	92.694	2252.4	48.72	3804
	10:45	2351.4	56.0	1699.2	95.672	2255.7	49.56	3822
7	10:50	2351.3	61.7	1641.6	89.759	2261.5	47.88	3833
				1670.4				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1) – (4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
	10:55	2515.2	68.5	1958.4	124.409	2390.8	57.12	3868
	11:00	2526.6	75.3	1958.4	124.409	2402.2	57.12	3883
8	11:05	2529.0	82.0	1929.6	121.045	2408.0	56.28	3892
				1948.8				
	11:10	2702.4	89.8	2246.4	160.356	2542.0	65.52	3920
	11:15	2702.2	97.6	2246.4	160.356	2541.8	65.52	3930
9	11:20	2713.5	105.4	2246.4	160.356	2553.1	65.52	3940
				2246.4				3093
FALLOFF	11:21	2050.1				2050.1		3853
	11:22	2033.4				2033.4		3833
	11:23	2018.0				2018.0		3818
	11:24	2007.7				2007.7		3807
	11:25	1998.7				1998.7		3797
	11:30	1963.9				1963.9		3762
	11:35	1935.7				1935.7		3734


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
BOTTOM HOLE PRESSURE @ 4159 FEET
WELLHEAD PRESSURE PSIG
2700
2500
2300
2100
1900
1700
1500
1300
1100
900
OXY USA, INC.
CENTRAL CORBIN QUEEN UNIT NO. 209
LEA COUNTY, NEW MEXICO
STEP-RATE INJECTION TEST
JANUARY 13, 1994
BOTTOM HOLE PRESSURE PSIG
4000
3800
3600
3400
3200
3000
2800
B W P D
100
500
900
1300
1700
2100
2500

WEST – TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA, INC.

DATE: JANUARY 12, 1994

WELL NAME: CENTRAL CORBIN QUEEN UNIT NO. 212
LEA COUNTY, NEW MEXICO

WO#: 94-14-0054

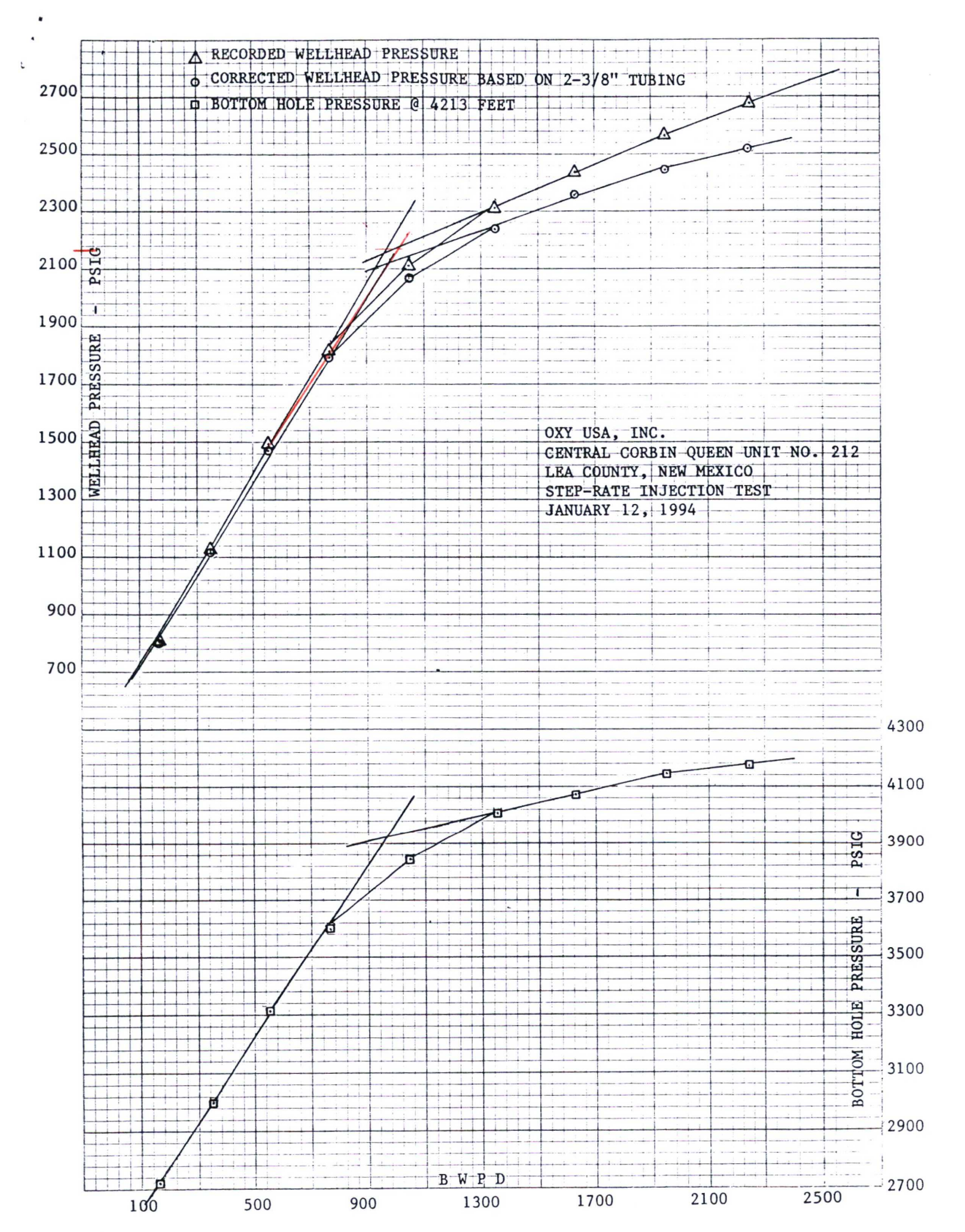
MID-PERFS. = 4211-4215

PACKER DEPTH = 4082

BHP GAUGE DEPTH = 4213

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)-(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
	9:15	542.4				542.4		2462
	9:20	708.4	0.6	172.8	1.412	707.0	5.04	2612
	9:25	747.9	1.2	172.8	1.412	746.5	5.04	2679
1	9:30	810.3	1.8	172.8	1.412	808.9	5.04	2718
				172.8				
	9:35	989.1	3.0	345.6	5.091	984.0	10.08	2867
	9:40	1045.2	4.2	345.6	5.091	1040.1	10.08	2946
2	9:45	1113.0	5.4	345.6	5.091	1107.9	10.08	3000
				345.6				
	9:50	1330.5	7.4	576.0	13.098	1317.4	16.80	3162
	9:55	1428.8	9.3	547.2	11.913	1416.9	15.96	3244
3	10:00	1497.5	11.2	547.2	11.913	1485.6	15.96	3311
				556.8				
	10:05	1666.2	13.8	748.8	21.282	1644.9	21.84	3448
	10:10	1751.9	16.5	777.6	22.821	1729.1	22.68	3533
4	10:15	1817.0	19.2	777.6	22.821	1794.2	22.68	3597
				768.0				
	10:20	1956.0	22.8	1036.8	38.857	1917.1	30.24	3719
	10:25	2055.2	26.5	1065.6	40.878	2014.3	31.08	3795
5	10:30	2109.8	30.2	1065.6	40.878	2068.9	31.08	3848
				1056.0				
	10:35	2228.7	34.8	1324.8	61.153	2167.5	38.64	3929
	10:40	2280.9	39.5	1353.6	63.635	2217.3	39.48	3975
6	10:45	2306.3	44.3	1382.4	66.162	2240.1	40.32	4006
				1353.6				
	10:50	2412.7	50.0	1641.6	90.924	2321.8	47.88	4054
	10:55	2426.8	55.8	1670.4	93.898	2332.9	48.72	4074
7	11:00	2439.6	61.3	1584.0	85.111	2354.5	46.20	4088
				1632.0				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbls/day)	(4) FRICTION HEAD LOSS (psi)	(5) CORRECTED TUBING PRESS. (psi) (1)−(4)	(6) INJECTION RATE (gpm) (3)/34.2857	(7) MEASURED BHP (psi)
	11:05	2538.3	68.0	1929.6	122.617	2415.7	56.28	4119
	11:10	2553.7	74.8	1958.4	126.024	2427.7	57.12	4134
8	11:15	2571.7	81.6	1958.4	126.024	2445.7	57.12	4142
				1948.8				
	11:20	2667.9	89.4	2246.4	162.438	2505.5	65.52	4164
	11:25	2670.3	97.3	2275.2	166.312	2504.0	66.36	4170
9	11:30	2679.2	105.1	2246.4	162.438	2516.8	65.52	4175
				2256.0				
FALLOFF	11:31	2285.2				2285.2		4127
	11:32	2262.1				2262.1		4092
	11:33	2240.3				2240.3		4068
	11:34	2217.2				2217.2		4046
	11:35	2198.0				2198.0		4025
	11:40	2109.5				2109.5		3936
	11:45	2033.9				2033.9		3858


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
BOTTOM HOLE PRESSURE @ 4213 FEET
WELLHEAD PRESSURE - PSIG
2700
2500
2300
2100
1900
1700
1500
1300
1100
900
700
OXY USA, INC.
CENTRAL CORBIN QUEEN UNIT NO. 212
LEA COUNTY, NEW MEXICO
STEP-RATE INJECTION TEST
JANUARY 12, 1994
BOTTOM HOLE PRESSURE - PSIG
4300
4100
3900
3700
3500
3300
3100
2900
2700
B W P D
100
500
900
1300
1700
2100
2500