State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

New Mexico DRUG FREE It's a State of Mind!

January 9, 1995

CF 10063
R-9337

OXY USA, Inc.
P.O. Box 50250
Midland, Texas 79710-0250

Attn: Mr. Richard E. Foppiano

RE: Injection Pressure Increase Corbin Queen Unit Waterflood Project Lea County, New Mexico

Dear Mr. Foppiano:

Reference is made to your request dated December 6, 1994 to increase the surface injection pressure on four wells. This request is based on step rate tests conducted on these wells on or between September 28 and October 26, 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
Corbin Queen Unit No.104W, Unit Letter A, Section 9	1490 PSIG
Corbin Queen Unit No.204W, Unit Letter I, Section 4	1710 PSIG
Corbin Queen Unit No.404W, Unit Letter K, Section 9	1430 PSIG
Corbin Queen Unit No.601W, Unit Letter M, Section 3	1600 PSIG
All wells located in Township 18 South, Range 33 East, 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.

VILLAGRA BUILDING - 408 Galisteo
Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830
Park and Recreation Division
P.O. Box 1147 87504-1147
827-7465

2040 South Pacheco
Office of the Secretary
827-5950
Administrative Services
827-5925
Energy Conservation & Management
827-5900
Mining and Minerals
827-5970
Oil Conservation
827-7131

Sincerely,

William J. LeMay
Director

WJL/BES

cc: Oil Conservation Division - Hobbs
File: 1st Quarter PSI-X;
Case File 10063

OXY USA Inc.
P.O. Box 50250, Midland, TX 79710-0250

December 6, 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 NM.

Dear Sir:

OXY USA Inc. respectfully requests an increase in the authorized injection pressure for four (4) wells in the referenced waterflood unit:

Well	Requested Authorized Injection Pressure*
CCQU #104W AA #4	1490 psi
CCQU #204W AE #4	1710 psi
CCQU #404W AD #4	1430 psi
CCQU #601W CORBIN #1	1600 psi

*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 104W, 204W, 404W & 601W.

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 application for an increase in the authorized injection pressure on these four 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/drs
enclosures

XC: Scott Gengler, w/ enclosures
David Stewart, w/ enclosures

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

Bureau of Land Management
Carlsbad Resource Area
P.O. Box 1778
Carlsbad, NM 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

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	212W Federal "AE" Well No. 12*	1980' FNL - 560' FWL	E	3	4211' - 4215'
2	601W Corbin Fee Well No. 1	330' FS & WL	M	3	4219' - 4266'
3	209W Federal "AE" Well No. 9	660' FNL - 1980' FWL	C	4	4152' - 4166'
4	214 Federal "AI" Well No. 3	2310' FN & EL	G	4	4163' - 4260'
5	204W Federal "AE" Well No. 4	1980' FSL - 660' FEL	I	4	4200' - 4217'
6	205W Federal "AE" Well No. 5	1980' FS & WL	K	4	4174' - 4180'
7	203W Federal "AE" Well No. 3	660' FS & WL	M	4	4243' - 4247'
8	201W Federal "AE" Well No. 1	660' FSL - 1980' FEL	O	4	4221' - 4241'
9	104W Federal "AA" Well No. 4	660' FNL - 790' FEL	A	9	4213' - 4242'
10	401W Federal "AD" Well No. 1	660' FNL - 1980' FWL	C	9	4206' - 4232'
11	103W Federal "AA" Well No. 3	1980' FN & EL	G	9	4236' - 4262'
12	404W Federal "AD" Well No. 4	1980' FS & WL	K	9	4258' - 4271'

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: SEPTEMBER 28, 1994

WELL NAME: CENTRAL CORBIN QUEEN UNIT NO. 104
LEA COUNTY, NEW MEXICO

WO#: 94 – 14 – 1606

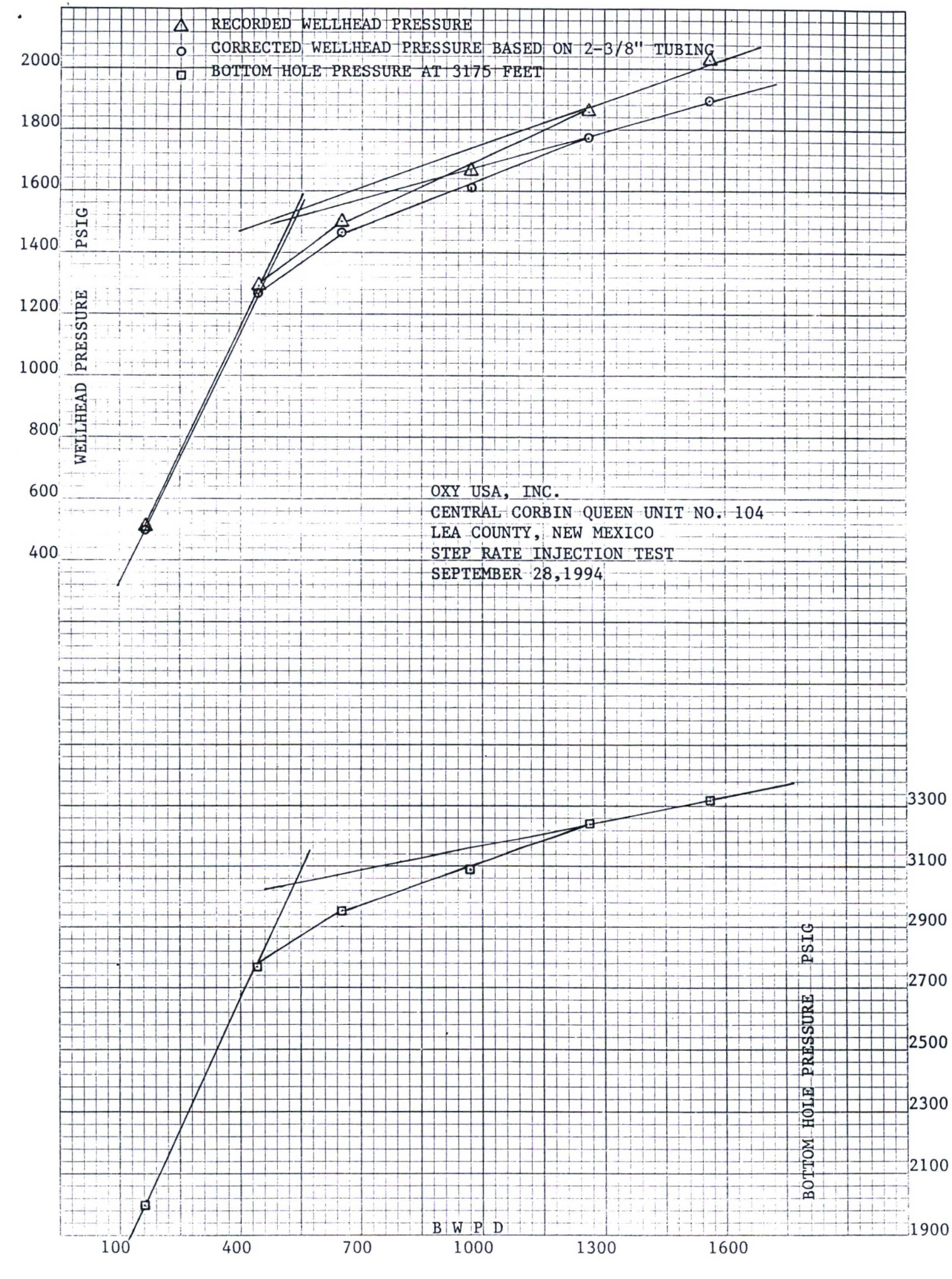
PERFS = 4213 – 4242

PACKER DEPTH = 3880

BHP GAUGE DEPTH = 31 75 **MAX. DEPTH REACHED = 3204**

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)
	10:00	18.7				18.7		1524.9
	10:05	399.5	0.7	201.6	3.173	396.3	5.88	1898.2
	10:10	506.6	1.2	144.0	1.703	504.9	4.20	2006.2
1	10:15	515.3	1.7	144.0	1.703	513.6	4.20	1992.9
				163.2				
	10:20	1034.9	3.3	460.8	14.645	1020.3	13.44	2491.6
	10:25	1182.2	4.8	432.0	12.996	1169.2	12.60	2663.1
2	10:30	1284.6	6.3	432.0	12.996	1271.6	12.60	2772.6
				441.6				
	10:35	1530.0	8.6	662.4	28.658	1501.3	19.32	2999.5
	10:40	1503.0	10.8	633.6	26.396	1476.6	18.48	2962.5
3	10:45	1500.5	13.1	662.4	28.658	1471.8	19.32	2957.7
				652.8				
	10:50	1652.8	16.4	950.4	55.886	1596.9	27.72	3093.6
	10:55	1675.2	19.8	979.2	59.060	1616.1	28.56	3095.7
4	11:00	1660.2	23.2	979.2	59.060	1601.1	28.56	3096.7
				969.6				
	11:05	1848.7	27.6	1267.2	95.157	1753.5	36.96	3209.8
	11:10	1859.9	32.0	1267.2	95.157	1764.7	36.96	3222.9
5	11:15	1858.6	36.4	1267.2	95.157	1763.4	36.96	3241.2
				1267.2				
	11:20	2030.8	41.9	1584.0	143.789	1887.0	46.20	3325.3
	11:25	2033.3	47.3	1555.2	138.990	1894.3	45.36	3329.0
6	11:30	2035.8	52.7	1555.2	138.990	1896.8	45.36	3323.0
				1564.8				

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)
FALLOFF	11:31	660.2				660.2		2148.0
	11:32	524.5				524.5		2003.9
	11:33	427.5				427.5		1900.3
	11:34	357.8				357.8		1827.7
	11:35	305.5				305.5		1770.8
	11:40	138.9				138.9		1593.7
	11:45	33.3				33.3		1481.0
								3093.0
								3085.0
								3058.0
								3040.0


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
BOTTOM HOLE PRESSURE AT 3175 FEET
WELLHEAD PRESSURE PSIG
2000
1800
1600
1400
1200
1000
800
600
400
OXY USA, INC.
CENTRAL CORBIN QUEEN UNIT NO. 104
LEA COUNTY, NEW MEXICO
STEP RATE INJECTION TEST
SEPTEMBER 28,1994
BOTTOM HOLE PRESSURE PSIG
3300
3100
2900
2700
2500
2300
2100
1900
B W P D
100
400
700
1000
1300
1600

WEST – TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA, INC.

DATE: SEPTEMBER 28, 1994

WELL NAME: CENTRAL CORBIN QUEEN UNIT 204
LEA COUNTY, NEW MEXICO

WO#: 94 – 14 – 1607

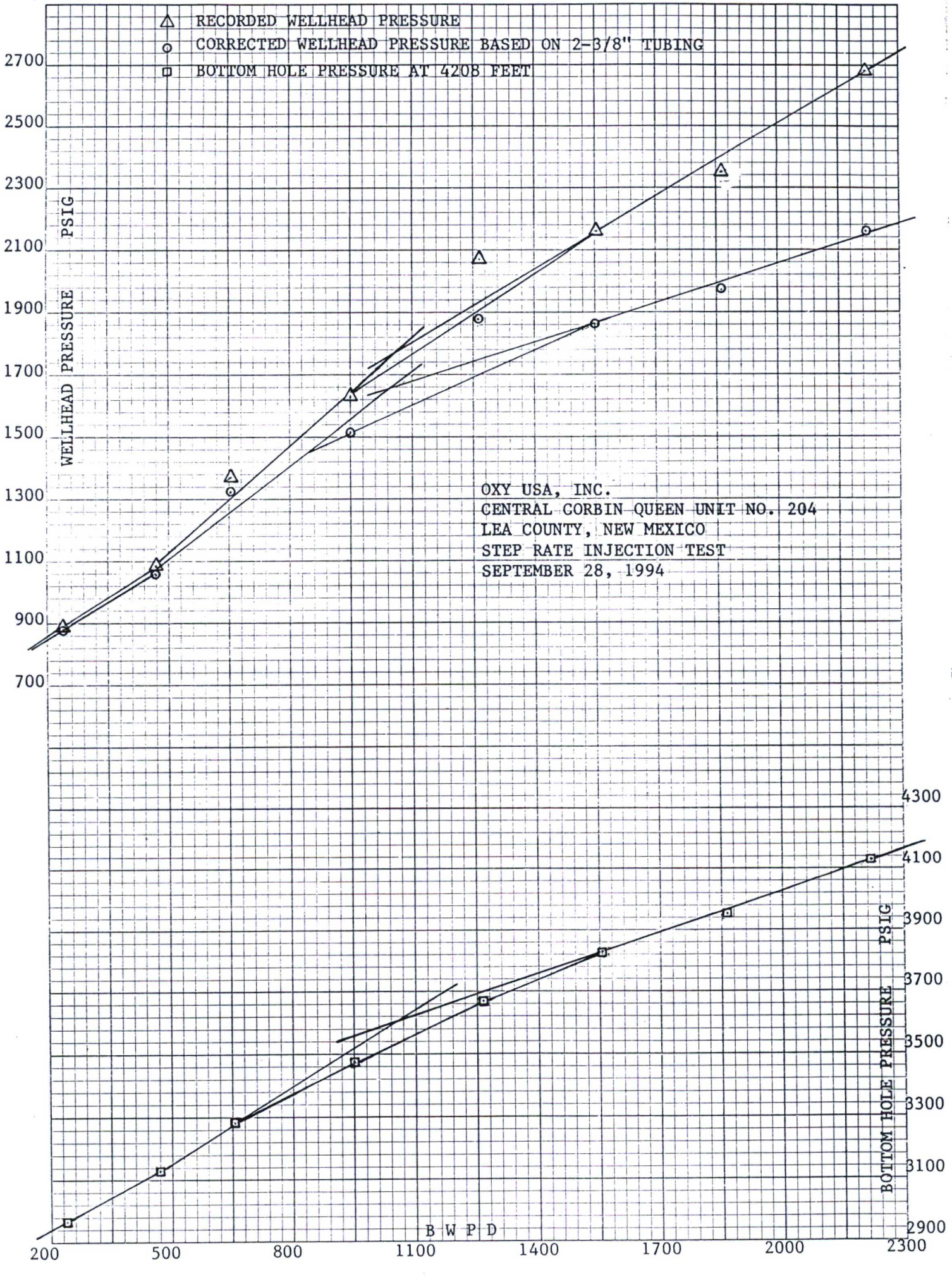
PERFS = 4200 – 4217

PACKER DEPTH = 4087

BHP GAUGE DEPTH = 4208

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)
	1:25	315.8				315.8		2433.6
	1:30	879.4	0.9	259.2	9.883	869.5	7.56	2979.1
	1:35	890.6	1.7	230.4	7.948	882.7	6.72	3010.3
1	1:40	891.8	2.5	230.4	7.948	883.9	6.72	2966.4
				240.0				
	1:45	1038.7	4.2	489.6	32.052	1006.6	14.28	3115.4
	1:50	1086.1	5.8	460.8	28.651	1057.4	13.44	3112.6
2	1:55	1087.3	7.4	460.8	28.651	1058.6	13.44	3130.1
				470.4				
	2:00	1323.1	9.7	662.4	56.068	1267.0	19.32	3276.0
	2:05	1364.2	12.0	662.4	56.068	1308.1	19.32	3270.6
3	2:10	1375.5	14.2	633.6	51.642	1323.9	18.48	3283.6
				652.8				
	2:15	1576.3	17.5	950.4	109.338	1467.0	27.72	3433.4
	2:20	1598.7	20.8	950.4	109.338	1489.4	27.72	3449.6
4	2:25	1623.7	24.1	950.4	109.338	1514.4	27.72	3473.8
				950.4				
	2:30	1829.5	28.5	1267.2	186.170	1643.3	36.96	3610.7
	2:35	1854.5	32.9	1267.2	186.170	1668.3	36.96	3639.1
5	2:40	2069.2	37.3	1267.2	186.170	1883.0	36.96	3663.5
				1267.2				
	2:45	2076.7	42.8	1584.0	281.314	1795.4	46.20	3777.5
	2:50	2107.9	48.1	1526.4	262.683	1845.2	44.52	3806.1
6	2:55	2130.4	53.5	1555.2	271.925	1858.5	45.36	3822.9
				1555.2				
	3:00	2336.6	60.1	1900.8	394.164	1942.4	55.44	3901.8
	3:05	2351.6	66.5	1843.2	372.352	1979.2	53.76	3934.2
7	3:10	2347.9	72.9	1843.2	372.352	1975.5	53.76	3955.2
				1862.4				

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)
	3:15	2636.9	80.6	2217.6	524.239	2112.7	64.68	4072.8
	3:20	2683.3	88.3	2217.6	524.239	2159.1	64.68	4112.8
8	3:25	2685.9	96.0	2217.6	524.239	2161.7	64.68	4136.5
				2217.6				
FALLOFF	3:26	1608.8				1608.8		3605.9
	3:27	1485.3				1485.3		3475.1
	3:28	1415.4				1415.4		3400.2
	3:29	1365.5				1365.5		3348.9
	3:30	1325.6				1325.6		3306.9
	3:35	1200.8				1200.8		3174.5
	3:40	1127.2				1127.2		3097.6


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
BOTTOM HOLE PRESSURE AT 4208 FEET
WELLHEAD PRESSURE PSIG
2700
2500
2300
2100
1900
1700
1500
1300
1100
900
700
OXY USA, INC.
CENTRAL CORBIN QUEEN UNIT NO. 204
LEA COUNTY, NEW MEXICO
STEP RATE INJECTION TEST
SEPTEMBER 28, 1994
BOTTOM HOLE PRESSURE PSIG
4300
4100
3900
3700
3500
3300
3100
2900
B W P D
200
500
800
1100
1400
1700
2000
2300

WEST – TEST, INC.

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA, INC.

DATE: OCTOBER 26, 1994

WELL NAME: CENTRAL CORBIN QUEEN UNIT NO. 404
LEA COUNTY, NEW MEXICO

WO#: 94-14-1609

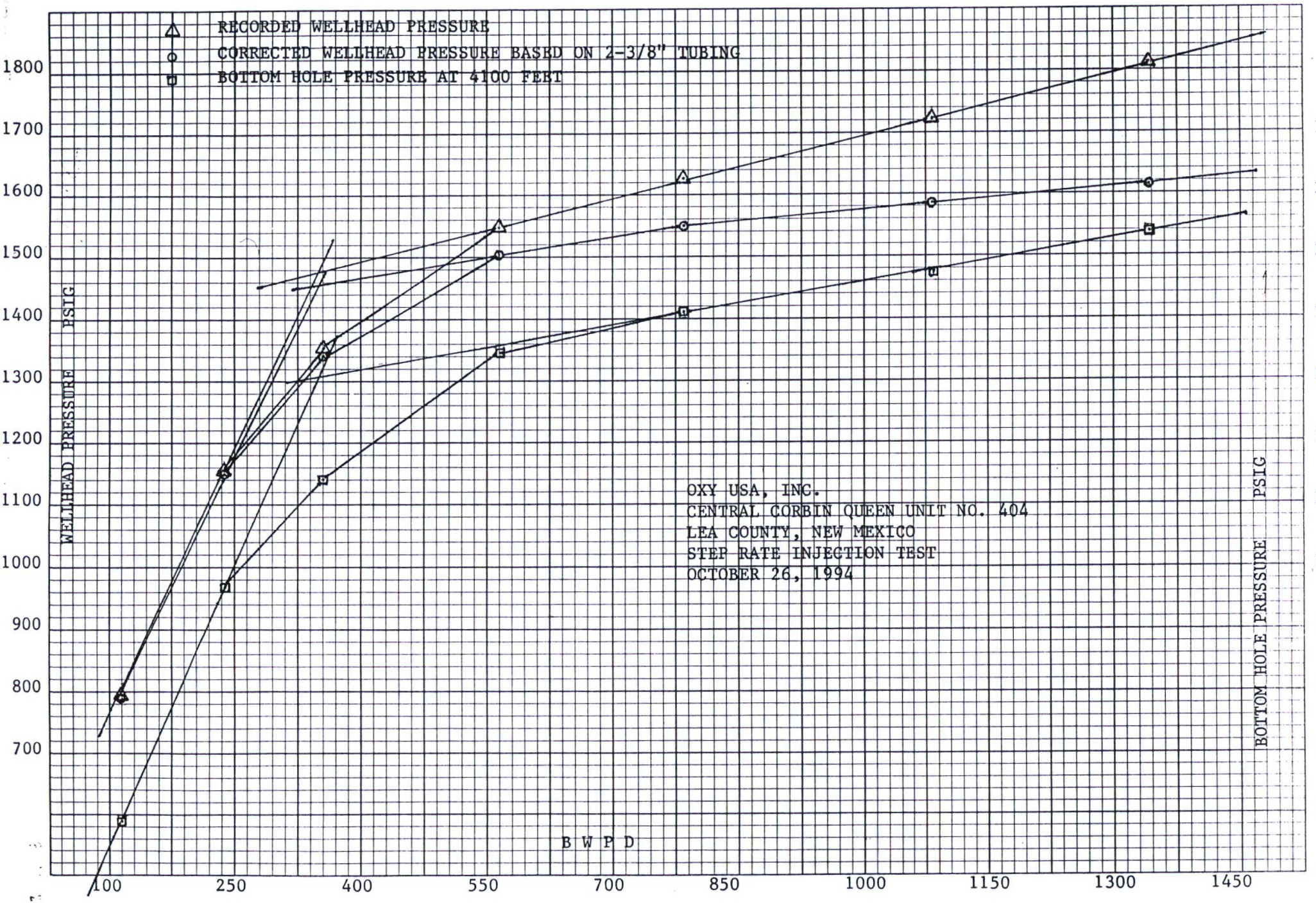
PERFS =

PACKER DEPTH = 4160

BHP GAUGE DEPTH = 4100

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)
	10:10	29.6				29.6		1927.3
	10:15	701.2	0.4	115.2	2.148	699.1	3.36	2632.3
	10:20	719.1	0.8	115.2	2.148	717.0	3.36	2651.2
1	10:25	795.7	1.2	115.2	2.148	793.6	3.36	2691.8
				115.2				
	10:30	1106.4	2.0	230.4	7.744	1098.7	6.72	3023.4
	10:35	1139.7	2.9	259.2	9.629	1130.1	7.56	3054.8
2	10:40	1156.3	3.7	230.4	7.744	1148.6	6.72	3070.5
				240.0				
	10:45	1327.9	5.0	374.4	19.012	1308.9	10.92	3213.5
	10:50	1347.1	6.2	345.6	16.395	1330.7	10.08	3229.8
3	10:55	1357.3	7.4	345.6	16.395	1340.9	10.08	3240.0
				355.2				
	11:00	1512.2	9.4	576.0	42.183	1470.0	16.80	3402.9
	11:05	1562.1	11.4	576.0	42.183	1519.9	16.80	3446.5
4	11:10	1544.2	13.3	547.2	38.364	1505.8	15.96	3444.5
				566.4				
	11:15	1632.5	16.1	806.4	78.609	1553.9	23.52	3509.1
	11:20	1619.7	18.8	777.6	73.494	1546.2	22.68	3506.3
5	11:25	1623.5	21.5	777.6	73.494	1550.0	22.68	3508.9
				787.2				
	11:30	1724.6	25.3	1094.4	138.302	1586.3	31.92	3574.3
	11:35	1711.7	29.0	1065.6	131.644	1580.1	31.08	3576.5
6	11:40	1720.6	32.8	1094.4	138.302	1582.3	31.92	3577.3
				1084.8				
	11:45	1811.4	37.5	1353.6	204.932	1606.5	39.48	3627.7
	11:50	1797.2	42.2	1353.6	204.932	1592.3	39.48	3628.0
7	11:55	1813.7	46.8	1324.8	196.939	1616.8	38.64	3639.0
				1344.0				

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)
FALLOFF	11:56	1214.5				1214.5		3152.4
	11:57	1124.8				1124.8		3054.8
	11:58	1060.7				1060.7		2986.9
	11:59	1010.8				1010.8		2934.1
	12:00	969.9				969.9		2888.7
	12:05	820.2				820.2		2723.7
	12:10	710.2				710.2		2601.6


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
BOTTOM HOLE PRESSURE AT 4100 FEET
WELLHEAD PRESSURE PSIG
BOTTOM HOLE PRESSURE PSIG
B W P D
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
3700
3600
3500
3400
3300
3200
3100
3000
2900
2800
2700
2600
100
250
400
550
700
850
1000
1150
1300
1450
OXY USA, INC.
CENTRAL CORBIN QUEEN UNIT NO. 404
LEA COUNTY, NEW MEXICO
STEP RATE INJECTION TEST
OCTOBER 26, 1994

A SUBSIDIARY OF JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA, INC.

DATE: SEPTEMBER 30, 1994

WELL NAME: CENTRAL CORBIN QUEEN UNIT NO. 601
LEA COUNTY, NEW MEXICO

WO#: 94-14-1610

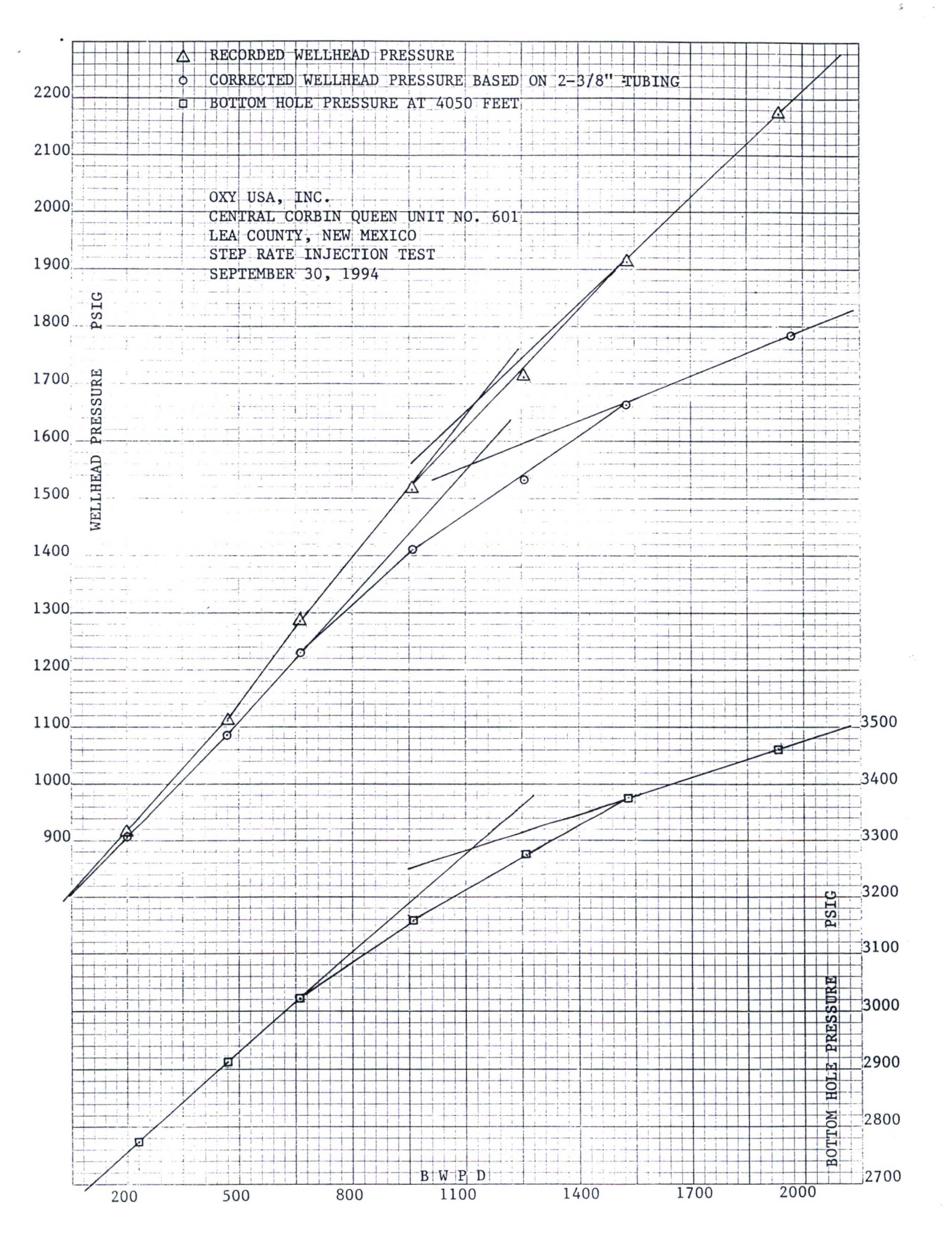
PERFS = 4219-4266

PACKER DEPTH = 4105

BHP GAUGE DEPTH = 4050

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)
	1:05	591.7				591.7		2453.5
	1:10	790.9	0.8	230.4	7.649	783.3	6.72	2646.7
	1:15	888.0	1.6	230.4	7.649	880.4	6.72	2755.7
1	1:20	914.2	2.4	230.4	7.649	906.6	6.72	2773.2
				230.4				
	1:25	1076.1	4.0	460.8	27.575	1048.5	13.44	2871.5
	1:30	1092.3	5.7	489.6	30.848	1061.5	14.28	2902.3
2	1:35	1111.0	7.3	460.8	27.575	1083.4	13.44	2914.1
				470.4				
	1:40	1259.5	9.6	662.4	53.963	1205.5	19.32	2968.5
	1:45	1262.0	11.9	662.4	53.963	1208.0	19.32	2976.9
3	1:50	1285.7	14.2	662.4	53.963	1231.7	19.32	3021.3
				662.4				
	1:55	1480.4	17.6	979.2	111.208	1369.2	28.56	3109.1
	2:00	1505.3	20.9	950.4	105.233	1400.1	27.72	3142.5
4	2:05	1515.3	24.2	950.4	105.233	1410.1	27.72	3158.9
				960.0				
	2:10	1685.0	28.6	1267.2	179.179	1505.8	36.96	3234.8
	2:15	1699.9	32.9	1238.4	171.718	1528.2	36.12	3260.9
5	2:20	1712.4	37.3	1267.2	179.179	1533.2	36.96	3277.5
				1257.6				
	2:25	1895.8	42.6	1526.4	252.820	1643.0	44.52	3343.9
	2:30	1903.3	48.0	1555.2	261.715	1641.6	45.36	3367.6
6	2:35	1913.3	53.3	1526.4	252.820	1660.5	44.52	3378.1
				1536.0				
	2:40	2151.8	60.0	1929.6	390.067	1761.7	56.28	3450.6
	2:45	2150.6	66.8	1958.4	400.905	1749.7	57.12	3455.3
7	2:50	2173.2	73.5	1929.6	390.067	1783.1	56.28	3460.1
				1939.2				

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)
FALLOFF	2:51	1471.6				1471.6		3223.9
	2:52	1405.5				1405.5		3201.6
	2:53	1364.3				1364.3		3182.6
	2:54	1335.6				1335.6		3161.3
	2:55	1313.2				1313.2		3135.2
	3:00	1253.3				1253.3		3037.9
	3:05	1224.6				1224.6		2975.0


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
BOTTOM HOLE PRESSURE AT 4050 FEET
OXY USA, INC.
CENTRAL CORBIN QUEEN UNIT NO. 601
LEA COUNTY, NEW MEXICO
STEP RATE INJECTION TEST
SEPTEMBER 30, 1994
WELLHEAD PRESSURE PSIG
BOTTOM HOLE PRESSURE PSIG
B W P D
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
3500
3400
3300
3200
3100
3000
2900
2800
2700
200
500
800
1100
1400
1700
2000

CENTRAL CORBIN QUEEN UNIT

WELL CROSS REFERENCE

TRACT	PREVIOUS OPERATOR	LEASE NAME AND WELL NUMBER	UNIT DESIGNATION
5	SANTE FE	FEDERAL AG #1	NOT USED
5	SANTE FE	FEDERAL AG #2	NOT USED
4	OXY	FEDERAL AD #1	401W
4	OXY	FEDERAL AD #2	402
4	OXY	FEDERAL AD #3	403
4	OXY	FEDERAL AD #4	404W
4	OXY	FEDERAL AD #5	405
1A	OXY	FEDERAL AA #1	101
1A	OXY	FEDERAL AA #2	102
1A	OXY	FEDERAL AA #3	103W
1A	OXY	FEDERAL AA #4	104W
1B	OXY	FEDERAL AH #1	105
1B	OXY	FEDERAL AH #2	NOT USED
2A	OXY	FEDERAL AE #1	201W
2A	OXY	FEDERAL AE #2	202
2A	OXY	FEDERAL AE #3	203W
2A	OXY	FEDERAL AE #4	204W
2A	OXY	FEDERAL AE #5	205W
2A	OXY	FEDERAL AE #6	206
2A	OXY	FEDERAL AE #7	207
2A	OXY	FEDERAL AE #8	208
2A	OXY	FEDERAL AE #9	209W
2A	OXY	FEDERAL AE #10	210
2A	OXY	FEDERAL AE #12	212W
2B	OXY	FEDERAL AI #1	215
2B	OXY	FEDERAL AI #3	214
2B	OXY	FEDERAL AI #4	213W
3	CONOCO	FEDERAL (BHP) #1	NOT USED
6	SANTA FE	CORBIN FEE #1	601W
7	SANTA FE	CORBIN FEE #2	602

NOTE: FEDERAL AG #1 and #2 will be #501 and #502 if used.

EXHIBIT 5

Proposed well
numbering system