CF 10063

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

DRUG FREE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

December 6, 1993

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

Attention: Richard Foppiano

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

Dear Mr. Foppiano:

Reference is made to your request dated November 21, 1993 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 September 29 and October 2, 1993. 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. 201 Unit O, Section 4, Township 18 South, Range 33 East	1450 PSIG
CCQU Well No. 205 Unit K, Section 4, Township 18 South, Range 33 East	1530 PSIG
CCQU Well No. 214 Unit G, Section 4, Township 18 South, Range 33 East	1510 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
PSI-X 4th Quarter

NO WAITING PERIOD

COMPANY: **OXY USA, INC.**

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

CITY, STATE, ZIP: **Midland, Texas 79710-0250**

ATTENTION: **Mr. Richard Foppiano**

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

Dear Sir:

Reference is made to your request dated **November 21**, 1993, 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 **September 29 and October 2,** 1993. 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.201 Unit O	**1450 psig**
CCQU Well No.205 Unit K	**1530 psig**
CCQU Well No.214 Unit G	**1510 psig**

All in Section 4, 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.

William J. LeMay
Director

WJL/BES

xc: OCD - **Hobbs**
FILE - **Case File No.10063; PSI-X 4th Quarter**

N/A PSI-X

OXY USA INC.
Box 50250, Midland, TX 79710

OIL CONSERVATION DIVISION
RECEIVED
'93 NO 24 AM 9 31

November 21, 1993

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 #201W	1450 psi
CCQU Well #205W	1530 psi
CCQU Well #214W	1510 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 201W, 205W & 214W.

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 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

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'

214
205
201

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.

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA, INC.

OCTOBER 2, 1993

WELL NAME: CENTRAL CORBIN QUEEN UNIT 214

Lea County, New Mexico

WO#: 93-14-1908

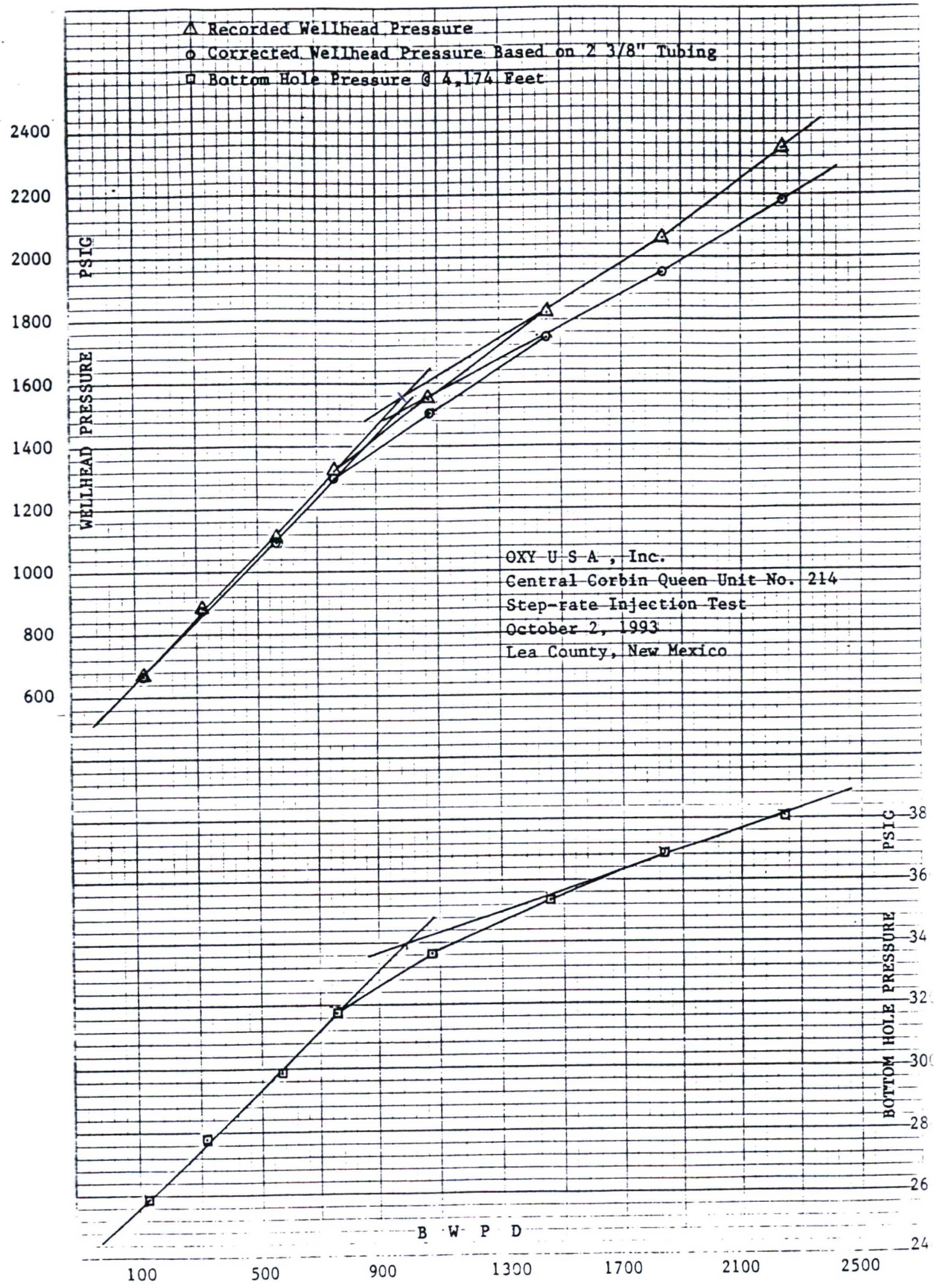
MID-PERFS. = 4163-4185

PACKER DEPTH = 4016.9

BHP GAUGE DEPTH =4174

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)
	9:10	530.4				530.4		2446
	9:15	613.9	0.5	144.0	0.999	612.9	4.20	2526
	9:20	638.0	1.0	144.0	0.999	637.0	4.20	2562
1	9:25	677.3	1.4	115.2	0.661	676.6	3.36	2586
				134.4				
	9:30	773.4	2.5	316.8	4.294	769.1	9.24	2676
	9:35	826.5	3.6	316.8	4.294	822.2	9.24	2737
2	9:40	879.7	4.7	316.8	4.294	875.4	9.24	2782
				316.8				
	9:45	1001.0	6.8	604.8	14.203	986.8	17.64	2887
	9:50	1068.1	8.7	547.2	11.802	1056.3	15.96	2948
3	9:55	1108.7	10.7	576.0	12.977	1095.7	16.80	2995
				576.0				
	10:00	1229.0	13.3	748.8	21.085	1207.9	21.84	3083
	10:05	1273.4	16.0	777.6	22.610	1250.8	22.68	3134
4	10:10	1320.3	18.6	748.8	21.085	1299.2	21.84	3177
				758.4				
	10:15	1453.3	22.3	1065.6	40.499	1412.8	31.08	3267
	10:20	1511.6	26.0	1065.6	40.499	1471.1	31.08	3321
5	10:25	1556.0	29.8	1094.4	42.547	1513.5	31.92	3362
				1075.2				
	10:30	1738.3	34.8	1440.0	70.692	1667.6	42.00	3455
	10:35	1787.8	40.0	1497.6	76.012	1711.8	43.68	3504
6	10:40	1819.5	45.0	1440.0	70.692	1748.8	42.00	3541
				1459.2				
	10:45	1986.7	51.5	1872.0	114.858	1871.8	54.60	3616
	10:50	2029.8	57.9	1843.2	111.611	1918.2	53.76	3654
7	10:55	2056.4	64.2	1814.4	108.406	1948.0	52.92	3684
				1843.2				

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)
	11:00	2288.2	72.0	2246.4	160.934	2127.3	65.52	3749
	11:05	2333.8	79.7	2217.6	157.138	2176.7	64.68	3780
8	11:10	2349.0	87.6	2275.2	164.772	2184.2	66.36	3804
				2246.4				
FALLOFF	11:11	1785.6				1785.6		3716
	11:12	1764.1				1764.1		3695
	11:13	1747.7				1747.7		3678
	11:14	1732.5				1732.5		3662
	11:15	1718.6				1718.6		3647
	11:20	1659.1				1659.1		3581
	11:25	1607.2				1607.2		3526


△ Recorded Wellhead Pressure
ϕ Corrected Wellhead Pressure Based on 2 3/8" Tubing
□ Bottom Hole Pressure @ 4,174 Feet
WELLHEAD PRESSURE PSIG
2400
2200
2000
1800
1600
1400
1200
1000
800
600
OXY U S A , Inc.
Central Corbin Queen Unit No. 214
Step-rate Injection Test
October 2, 1993
Lea County, New Mexico
BOTTOM HOLE PRESSURE PSIG
38
36
34
32
30
28
26
24
B W P D
100
500
900
1300
1700
2100
2500

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA, INC.

DATE: 10/1/93

WELL NAME: CENTRAL CORBIN QUEEN UNIT 205

Lea County, New Mexico

WO#: 93-14-1907

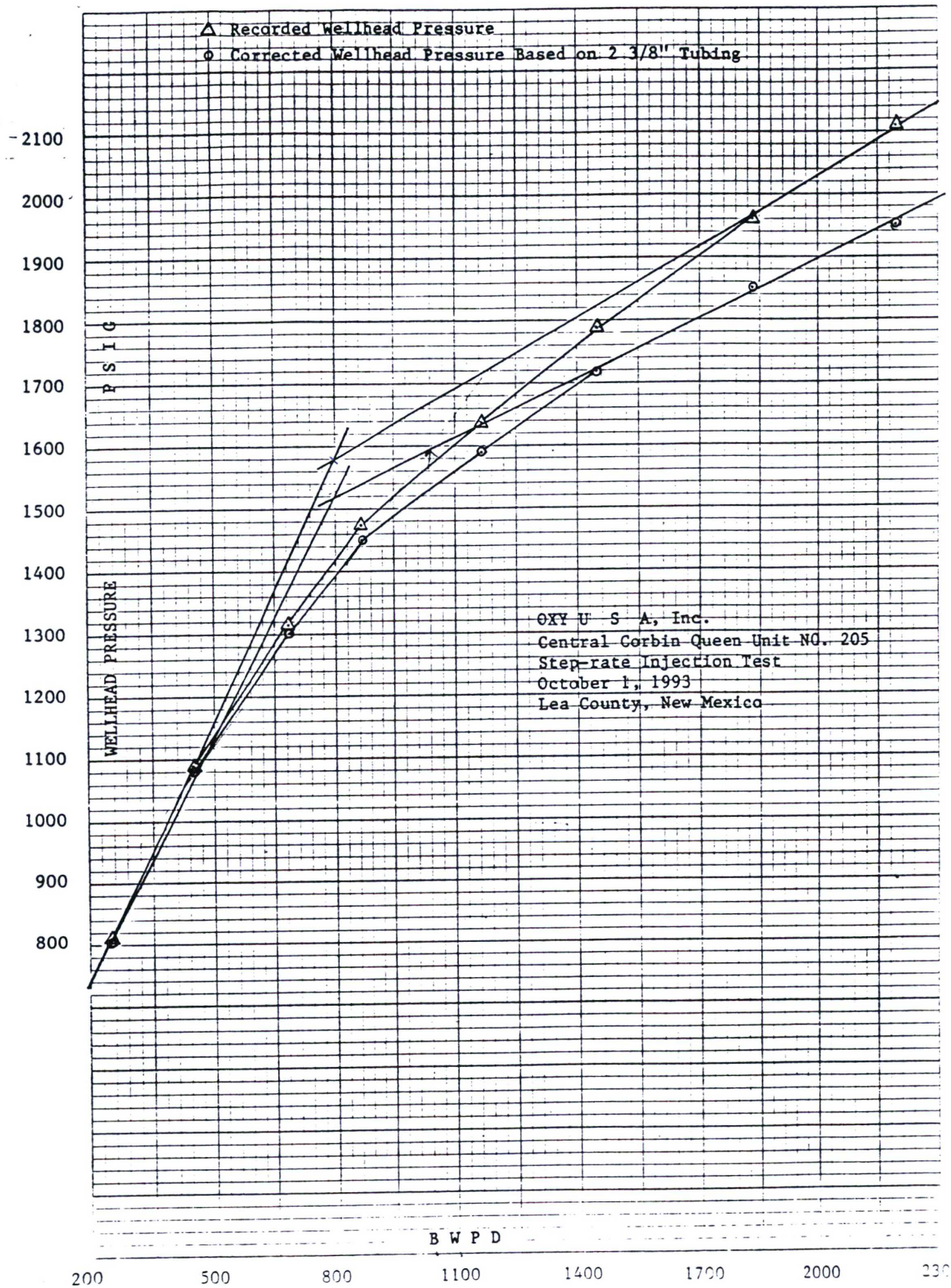
MID-PERFS. = 4174 - 4180

PACKER DEPTH = 4086

BHP GAUGE DEPTH = 4179

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	493.0				493.0		
	1:30	677.2	0.8	230.4	2.385	674.8	6.72	
	1:35	768.1	1.7	259.2	2.966	765.1	7.56	
1	1:40	809.7	2.6	259.2	2.966	806.7	7.56	
				249.6				
	1:45	981.3	4.1	432.0	7.631	973.7	12.60	
	1:50	1024.2	5.7	460.8	8.598	1015.6	13.44	
2	1:55	1087.5	7.3	460.8	8.598	1078.9	13.44	
				451.2				
	2:00	1249.5	9.7	691.2	18.205	1231.3	20.16	
	2:05	1276.1	12.1	691.2	18.205	1257.9	20.16	
3	2:10	1316.6	14.4	662.4	16.826	1299.8	19.32	
				681.6				
	2:15	1411.5	17.4	864.0	27.509	1384.0	25.20	
	2:20	1448.2	20.4	864.0	27.509	1420.7	25.20	
4	2:25	1477.3	23.4	864.0	27.509	1449.8	25.20	
				864.0				
	2:30	1577.3	27.4	1152.0	46.839	1530.5	33.60	
	2:35	1639.3	31.4	1152.0	46.839	1592.5	33.60	
5	2:40	1639.3	35.5	1180.8	49.028	1590.3	34.44	
				1161.6				
	2:45	1740.5	40.6	1468.8	73.417	1667.1	42.84	
	2:50	1762.0	45.6	1440.0	70.776	1691.2	42.00	
6	2:55	1790.0	50.6	1440.0	70.776	1719.2	42.00	
				1449.6				
	3:00	1906.3	57.0	1843.2	111.745	1794.6	53.76	
	3:05	1935.4	63.3	1814.4	108.536	1826.9	52.92	
7	3:10	1960.7	69.7	1843.2	111.745	1849.0	53.76	
				1833.6				

STEP NO. & REMARKS	TIME	(1) SURFACE TUBING PRESS. (psig)	(2) CUMMULATIVE VOL. INJECTED (bbls)	(3) INJECTION RATE (bbl/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	2058.2	77.3	2188.8	153.567	1904.6	63.84	
	3:20	2084.8	84.9	2188.8	153.567	1931.2	63.84	
8	3:25	2111.4	92.6	2217.6	157.326	1954.1	64.68	
				2198.4				
FALLOFF	3:26	1850.6				1850.6		
	3:27	1827.8				1827.8		
	3:28	1808.9				1808.9		
	3:29	1803.8				1803.8		
	3:30	1794.9				1794.9		
	3:35	1751.9				1751.9		
	3:40	1722.8				1722.8		


△ Recorded Wellhead Pressure
⊙ Corrected Wellhead Pressure Based on 2 3/8" Tubing
WELLHEAD PRESSURE P S I G
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
OXY U S A, Inc.
Central Corbin Queen Unit NO. 205
Step-rate Injection Test
October 1, 1993
Lea County, New Mexico
B W P D
200
500
800
1100
1400
1700
2000

JOHN WEST ENGINEERING COMPANY

Hobbs, New Mexico

STEP RATE INJECTION TEST

CLIENT: OXY USA INC.

DATE: SEPTEMBER 29, 1998

WELL NAME: CENTRAL CORBIN QUEEN UNIT 201

Lea County, New Mexico

WO#: 98-14-1905

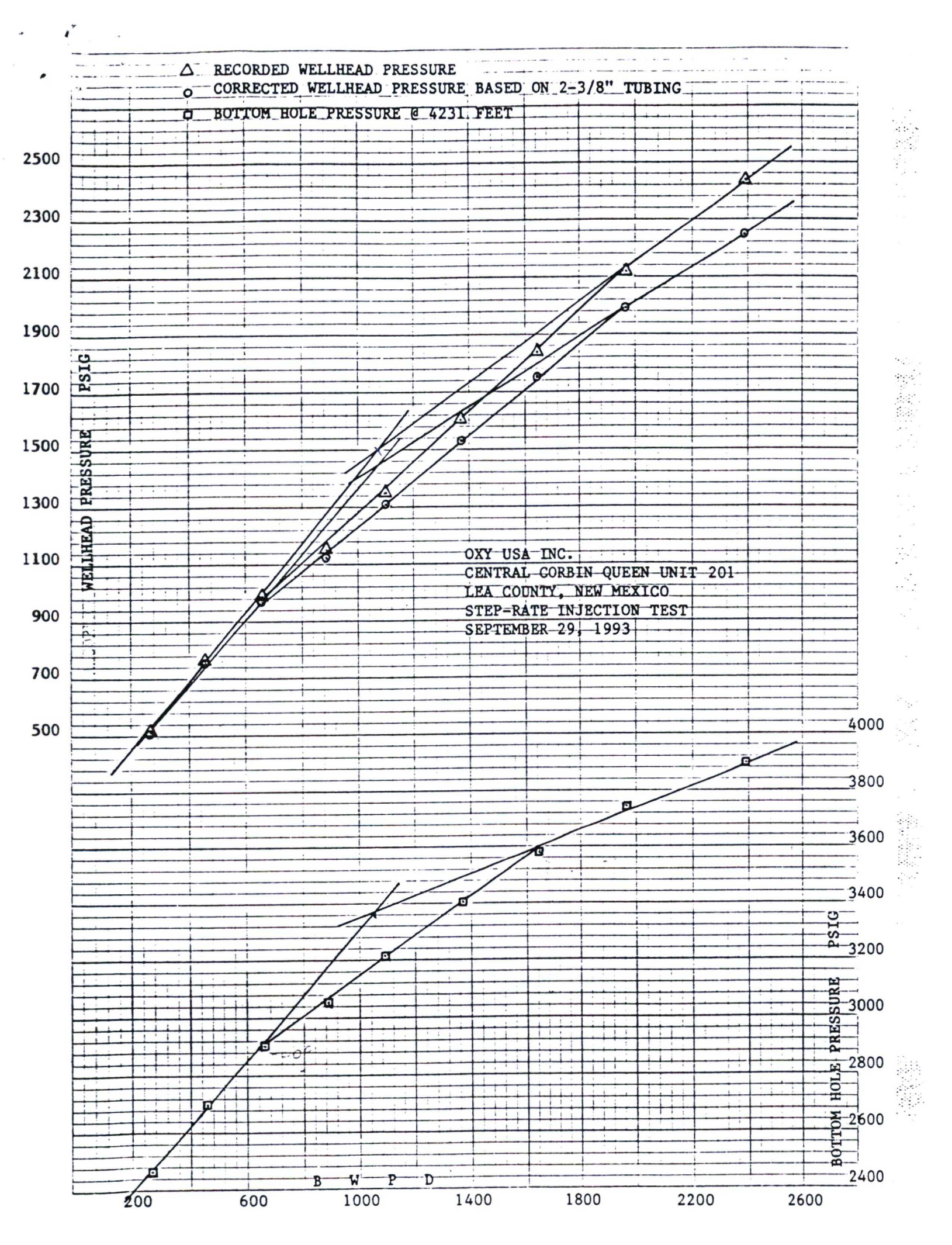
MID-PERFS. = 4221-4241

PACKER DEPTH = 4224

BHP GAUGE DEPTH = 4231

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	159.0				159.0		2118
	11:00	455.8	1.0	288.0	3.649	452.2	8.40	2406
	11:05	476.0	1.9	259.2	3.003	473.0	7.56	2429
1	11:10	507.7	2.8	259.2	3.003	504.7	7.56	2461
				268.8				
	11:15	723.5	4.5	489.6	9.739	713.8	14.28	2661
	11:20	746.3	6.1	460.8	8.705	737.6	13.44	2685
2	11:25	767.7	7.6	432.0	7.726	760.0	12.60	2701
				460.8				
	11:30	944.4	10.0	691.2	18.431	926.0	20.16	2870
	11:35	982.3	12.2	633.6	15.691	966.6	18.48	2890
3	11:40	984.8	14.5	662.4	17.036	967.8	19.32	2907
				662.4				
	11:45	1131.5	17.6	892.8	29.593	1101.9	26.04	3019
	11:50	1130.2	20.7	892.8	29.593	1100.6	26.04	3035
4	11:55	1145.4	23.7	864.0	27.851	1117.5	25.20	3045
				883.2				
	12:00	1316.3	27.5	1094.4	43.128	1273.2	31.92	3180
	12:05	1340.4	31.3	1094.4	43.128	1297.3	31.92	3200
5	12:10	1349.3	35.1	1094.4	43.128	1306.2	31.92	3213
				1094.4				
	12:15	1563.2	39.8	1353.6	63.906	1499.3	39.48	3359
	12:20	1587.2	44.6	1382.4	66.445	1520.8	40.32	3383
6	12:25	1603.7	49.4	1382.4	66.445	1537.3	40.32	3406
				1372.8				
	12:30	1815.1	55.2	1670.4	94.299	1720.8	48.72	3533
	12:35	1815.0	60.8	1612.8	88.371	1726.6	47.04	3557
7	12:40	1836.5	66.5	1641.6	91.313	1745.2	47.88	3581
				1641.6				

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
STEP NO. & REMARKS	TIME	SURFACE TUBING PRESS. (psig)	CUMMULATIVE VOL. INJECTED (bbls)	INJECTION RATE (bbls/day)	FRICTION HEAD LOSS (psi)	CORRECTED TUBING PRESS. (psi) (1)-(4)	INJECTION RATE (gpm) (3)/34.2857	MEASURED BHP (psi)
	12:45	2070.7	73.3	1958.4	126.563	1944.1	57.12	3701
	12:50	2101.1	80.1	1958.4	126.563	1974.5	57.12	3729
8	12:55	2117.5	87.0	1987.2	130.027	1987.5	57.96	3749
				1968.0				
	1:00	2388.4	95.3	2390.4	183.003	2205.4	69.72	3864
	1:05	2410.0	103.5	2361.6	178.945	2231.1	68.86	3883
9	1:10	2435.3	111.9	2419.2	187.103	2248.2	70.56	3896
				2390.4				
FALLOFF	1:11	1540.4				1540.4		3522
	1:12	1369.5				1369.5		3369
	1:13	1269.5				1269.5		3264
	1:14	1202.4				1202.4		3193
	1:15	1155.5				1155.5		3138
	1:20	987.3				987.3		2963
	1:25	890.1				890.1		2863


RECORDED WELLHEAD PRESSURE
CORRECTED WELLHEAD PRESSURE BASED ON 2-3/8" TUBING
BOTTOM HOLE PRESSURE @ 4231 FEET
WELLHEAD PRESSURE PSIG
2500
2300
2100
1900
1700
1500
1300
1100
900
700
500
OXY USA INC.
CENTRAL CORBIN QUEEN UNIT 201
LEA COUNTY, NEW MEXICO
STEP-RATE INJECTION TEST
SEPTEMBER 29, 1993
BOTTOM HOLE PRESSURE PSIG
4000
3800
3600
3400
3200
3000
2800
2600
2400
B W P D
200
600
1000
1400
1800
2200
2600

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