

DATE 08/02/13	SUSPENSE	ENGINEER PG	LOGGED IN 08/05/13	TYPE IPI	APP NO. 1321741678
---------------	----------	-------------	--------------------	----------	--------------------

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
 - Engineering Bureau -
 1220 South St. Francis Drive, Santa Fe, NM 87505



ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☒ IPI ☐ EOR ☐ PPR

[D] Other: Specify SWD - 518

RECEIVED OGD
2013 AUG - 2 P.M.

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or Does Not Apply

- [A] ☐ Working, Royalty or Overriding Royalty Interest Owners
- [B] ☐ Offset Operators, Leaseholders or Surface Owner
- [C] ☐ Application is One Which Requires Published Legal Notice
- [D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
- [E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,
- [F] ☐ Waivers are Attached

Copy Mailed 7/30/13

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

<u>David Stewart</u> Print or Type Name	<u>[Signature]</u> Signature	<u>Sp. Regulatory Advisor</u> Title	<u>7/30/13</u> Date
--	---------------------------------	--	------------------------

OK USA Inc. - 16696
 Nel Federal SWD #4
 30-015-24424

SWD-518

david.stewart@okusa.com
 e-mail Address 432-685-5217

To: New Mexico Oil Conservation Division
Attn: Phillip R. Goetze, P.G.

OXY USA Inc. (16696) formally requests an increase in maximum injection pressure to 1084 psi for the following approved SWD permit. The justification will be presented herein.

NELL n- NEL
Well Name: ~~NEL~~ Federal SWD #4
API#: 30-015-24424
1980 FNL 720 FEL SENE(H) Sec 9 T23S R28E
Administrative Order SWD-518 6/9/93

The SWD well is completed in the Bell Canyon and Upper Cherry Canyon (2956-3576') with 2.875" composite lined tubing (2.25" ID) set at a depth of 2924'. See Figure 1 below:

Well Name	Nell 0004 SWD
API	3001524424
Location	Sec 9-23S-28E
Spud	4/10/1983
Convert to SWD	12/2/1993

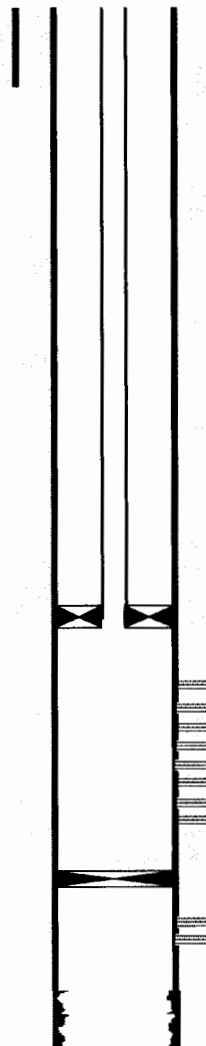
KB	14'
----	-----

Hole size	12-1/4"
Surface casing	8-5/8"
Set @	445'
Cement	Surface

Hole size	7-7/8"
Production Casing	5-1/2"
Set @	3769'
Cement	Surface

<u>Tubing String</u>	
2-7/8" set @	2924'
On/Off tool. Set @	2926'
Packer. Set @	2932'

PBTD	3589
TD	4135



2956-2984
3064-3102
3176-3190
3380-3384
3388-3398
3498-3522
3536-3562
3568-3576

CMT at 3589'
CIBP @ 3660'

3695-3699
3710-3718

$\frac{1084 \text{ psi}}{2956 \text{ ft}} = 0.366$
Delaware
- Bell & Upper Cherry

Figure 1: NEL Federal SWD No. 4 SWD Well Schematic.

On 7/17/2013 a planned step rate test was performed on the NEL Federal SWD No. 4 to identify the formation parting pressure, thus determining a maximum allowable injection pressure. The well was back flowed for 4hrs, then shut-in for an additional 12 hrs to ensure accurate testing results. The step-rate test was then conducted at the below rates utilizing treated water and a mobile pump truck. Pump rates were maintained for 15 minutes or until we achieved a stable injection pressure. Table 1 displays the injection rate for each step along with the corresponding surface treating pressure at the well head.

Rate [bbls/day]	Rate [bbls/min]	Cumulative Volume Pumped [bbls]	Tubing Head Pressure [psi]
576	0.40	10	833
720	0.50	17	916
864	0.60	26	963
1008	0.70	35	1007
1152	0.80	45	1042
1296	0.90	60	1099
1440	1.00	76	1134
1584	1.10	92	1164
1728	1.20	109	1190
2160	1.50	133	1245
2520	1.75	158	1276
2880	2.00	189	1326
3240	2.25	222	1366
3960	2.75	247	1444

Table 1: NEL Federal SWD No. 4 Step Rate test data.

The formation parting pressure was determined to be 2394 psi during the step-rate test (See Figure 2.) The corresponding surface treating pressure when the formation parted was 1134 psi. The requested increase to 1084 psi surface injection pressure represents an equivalent bottom-hole pressure well below the formation parting pressure. A conservative approach was taken in regards to injection rates in order to eliminate the possibility of fracture propagation into a non-disposal zone, thus the step rate test was terminated once it was apparent that the formation parted.

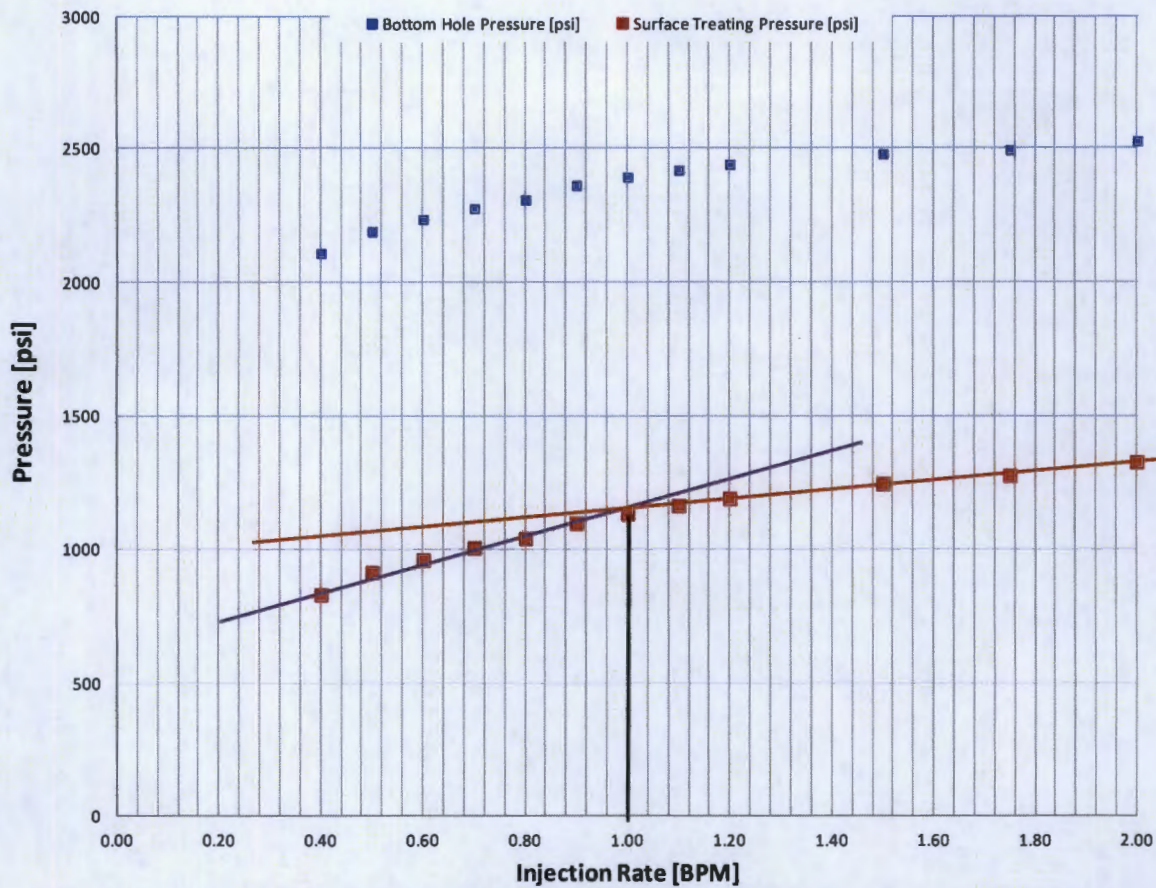


Figure 2: Surface Treating Pressure & Calculated Bottom Hole Pressure versus injection rate.

Please advise if any additional data is required in order to make a ruling of the proposed increase in permitted injection pressure.

Best regards

Joseph M. Evans
 Production Engineer
 SE New Mexico Reservoir Management Team
 OXY Permian Primary Development.
 Office - 713-350-4640
 Cell - 713-855-0624
joseph_evans@oxy.com

cc: NMOCD-Artesia, BLM-Carlsbad



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



BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

ADMINISTRATIVE ORDER SWD-518

***APPLICATION OF POGO PRODUCING COMPANY FOR SALT WATER DISPOSAL,
EDDY COUNTY, NEW MEXICO.***

**ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION**

Under the provisions of Rule 701(B), Pogo Producing Company made application to the New Mexico Oil Conservation Division on May 11, 1993, for permission to complete for salt water disposal its NEL Federal Well No. 4 located 1980 feet from the North line and 720 feet from the East line (Unit H) of Section 9, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico.

THE DIVISION DIRECTOR FINDS THAT:

- (1) The application has been duly filed under the provisions of Rule 701(B) of the Division Rules and Regulations;
- (2) Satisfactory information has been provided that all offset operators and surface owners have been duly notified;
- (3) The applicant has presented satisfactory evidence that all requirements prescribed in Rule 701 will be met; and
- (4) No objections have been received within the waiting period prescribed by said rule.

IT IS THEREFORE ORDERED THAT:

The applicant herein, Pogo Producing Company is hereby authorized to complete its NEL Federal Well No. 4 located 1980 feet from the North line and 720 feet from the East line (Unit H) of Section 9, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico, in such manner as to permit the injection of salt water for disposal purposes into the Bell Canyon and Upper Cherry Canyon formations at approximately 2652 feet to 3576 through 2 7/8-inch plastic-lined tubing set in a packer located at approximately 2560 feet.

IT IS FURTHER ORDERED THAT:

The operator shall 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.

Prior to commencing injection operations into the well, the casing shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

The casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate detection of leakage in the casing, tubing, or packer.

The injection well or system shall be equipped with a pressure limiting device which will limit the wellhead pressure on the injection well to no more than 530 psi.

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 Bell Canyon and Upper Cherry Canyon formations. Such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to this office.

The operator shall notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment and of the mechanical integrity test so that the same may be inspected and witnessed.

The operator shall immediately notify the supervisor of the Artesia district office of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

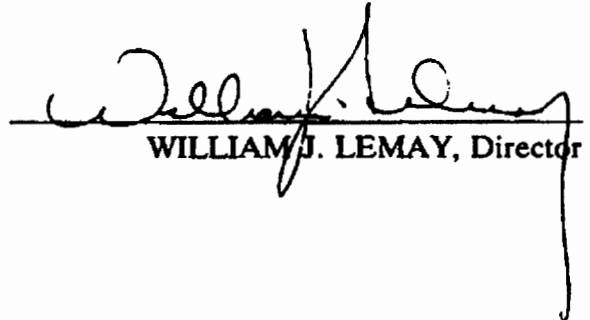
PROVIDED FURTHER THAT, jurisdiction of this cause is hereby retained by the Division for the entry of such further order or orders as may be deemed necessary or convenient for the prevention of waste and/or protection of correlative rights; upon failure of the operator to conduct operations in a manner which will ensure the protection of fresh water or in a manner inconsistent with the requirements set forth in this order, the Division may, after notice and hearing, terminate the injection authority granted herein.

The operator shall submit monthly reports of the disposal operations in accordance with Rule Nos. 706 and 1120 of the Division Rules and Regulations.

Administrative Order SWD-518
Pogo Producing Company
June 9, 1993
Page 3

The injection authority granted herein shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

Approved at Santa Fe, New Mexico, on this 9th day of June, 1993.


WILLIAM J. LEMAY, Director

WJL/BES/amg

xc: Oil Conservation Division - Artesia
US Bureau of Land Management - Carlsbad