

February 13, 2007

2007 FEB 13 PM 2 01

Case 13891

Mr. David Catanach
NM Oil Conservation Division
1220 South St. Francis Drive
Santa Fe NM 87505

HAND DELIVERED

RE: C108 APPLICATION FOR AUTHORIZATION TO REACTIVATE A WATERFLOOD
ON BEHALF OF PETROHAWK ENERGY CORPORATION (PETROHAWK)
SECTIONS 8 AND 9, T22S, R36E; LEA COUNTY, NEW MEXICO

Dear Mr. Catanach:

Enclosed you will find an application on behalf of PETROHAWK to reactivate a former waterflood project in Sections 8 and 9 of T22S, R36E, Lea County, New Mexico. Some of these wells were part of a previously-approved waterflood project in the same area (NMOCD Orders WFX-518 and WFX-530) in the Queen Formation. This partial reactivation of the waterflood will include a total of 5 injection wells located in these sections that were part of the original waterflood which have been temporarily abandoned.

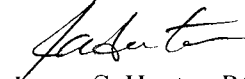
While we are confident that the detail provided in the application would allow NMOCD to evaluate and administratively approve the application, it is our understanding that NMOCD has determined that an OCD hearing will be required for waterflood projects that have been inactive for more than fifteen months. Bill Carr from Holland and Hart has worked with your office to schedule this hearing for March 15, 2007. We have contacted all of the operators within the area of review, and the land owner where the applicable wells are located to advise them of PETROHAWK's intentions to reactivate the above-referenced wells. As you will see from the application, proof-of-notice is provided that details our formal notification of the operators in the area of review. A legal notice will be placed in the Hobbs newspaper and we will submit the affidavit of publication along with the return receipts from the affected operators and the surface owners at the hearing.

I trust that you will find everything you need herein to evaluate the application and I would encourage that if you have any questions, please contact me at the address below or at my office in Albuquerque: 505-842-8000.

Mr. David Catanach
February 13, 2007
Page 2

I look forward to working with you to assure the prompt and adequate review of this application and its timely approval after the required hearing.

Sincerely,
Geolex, Inc.

 FOR Alberto A. Gutierrez
James C. Hunter, RG for
Alberto A. Gutiérrez, C.P.G.
President

AAG/lh

Enclosures

cc (w/enclosures): Nancy Gatti – PETROHAWK
Chris Morro- PETROHAWK
William Carr, Esq. – Holland & Hart

I hereby certify that I have received this letter and the attached C-108 application on behalf of the NM Oil Conservation Division on

Date and Time

Signature and Printed Name

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Commission not later than 30 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico

Northwestern New Mexico

T. Anhy <u>1439</u>	T. Canyon	T. Ojo Alamo	T. Penn. "B"
T. Salt	T. Strawn	T. Kirtland-Fruitland	T. Penn. "C"
B. Salt	T. Atoka	T. Pictured Cliffs	T. Penn. "D"
T. Yates <u>3148</u>	T. Miss	T. Cliff House	T. Leadville
T. 7 Rivers <u>3331</u>	T. Devonian	T. Menefee	T. Madison
T. Queen <u>3719</u>	T. Silurian	T. Point Lookout	T. Elbert
T. Grayburg	T. Montoya	T. Mancos	T. McCracken
T. San Andres	T. Simpson	T. Gallup	T. Ignacio Qtzite
T. Glorieta	T. McKee	Base Greenhorn	T. Granite
T. Paddock	T. Ellenburger	T. Dakota	T.
T. Blinbry	T. Gr. Wash	T. Morrison	T.
T. Tubb	T. Granite	T. Todilto	T.
T. Drinkard	T. Delaware Sand	T. Entrada	T.
T. Abo	T. Bone Springs	T. Wingate	T.
T. Wolfcamp	T. Tansill <u>2985</u>	T. Chinle	T.
T. Penn.	T.	T. Permian	T.
T. Cisco (Bough C)	T.	T. Penn. "A"	T.

OIL OR GAS SANDS OR ZONES

No. 1, from <u>3763</u> to <u>3877</u>	No. 4, from _____ to _____
No. 2, from _____ to _____	No. 5, from _____ to _____
No. 3, from _____ to _____	No. 6, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from _____ to _____ feet.
No. 2, from _____ to _____ feet.
No. 3, from _____ to _____ feet.
No. 4, from _____ to _____ feet.

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
1439	2985	1546'	Anhydrite, Thin Shales				
2985	3148	163'	Dolomite Some Interbedded Sands				
3148	3331	183'	Dolomite, Sandstone				
3331	3719	388'	Thin Laminated Shales				
			Sandstone, Dolomite, Sandy Dolomites and Dolomite Sands				
3719	3890	171'	Dolomite with interbedded Sandstone and Sandy Dolomites				

RECEIVED
NOV 15 1983
G.C.D.
HOBBS OFFICE

WELL COMPLETION SKETCHES

LOCATION

Sec 9-225-36E
1295' FSL + 25' FWL

WELL

Account 2 # 71

FIELD

Eunice SR Qv, South

DATE

12-8-92

☐ PRESENT COMPLETION

☐ SUGESSTED COMPLETION

PERMANENT WELL BORE DATA

WELL HISTORY

8 5/8" 24" @ 588' cmt w/ 375sx

8 5/8" @ 588'

Tops: Tansill - 2985'

Yates - 3148'

Seven Rivers - 3331'

Queen - 3719'

2 3/8" cmt lined thg

PKR @ 3716'

3763-75

3783-3835

3847-77

5 1/2" 14" @ 3900' cmt w/ 950sx

3890

5 1/2" @ 3900'

10/83 - Perf 3847-77A/1800

Perf 3783-3835 A/3000g

Perf 3763-75 A/750g

W.I.W.

9/92 - Found Hole in thg

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
2040 Pacheco St.
Santa Fe, NM 87505

WELL API NO. 30-025-28280

5. Indicate Type of Lease
STATE ☒ FEE ☐

6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"
(FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
OIL WELL ☐ GAS WELL ☐ OTHER Water Injection Well

2. Name of Operator
Raptor Resources, Inc.

3. Address of Operator
901 Rio Grande, Austin, Texas 78701

4. Well Location
Unit Letter M : 1295 Feet From The South Line and 25 Feet From The West Line

Section 9 Township 22S Range 36E NMPM Lea County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
GR-3569'

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐
OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ PLUG AND ABANDONMENT ☐
CASING TEST AND CEMENT JOB ☐
OTHER: T/A Status Test ☒

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

Test Date: 3-14-03

1. Load casing with 2% KCl water and corrosion inhibitor. (Packer @ 3716')

2. Pressure test casing from surface to 3716' to 500 psi for 30 minutes.
(Record test on chart for OCD subsequent report.)

3. Request TA status for 5 years.

Removal of Temporary
Abandonment Expires 3/19/08

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Joel Sisk TITLE Production Foreman DATE 3-17-03
TYPE OR PRINT NAME Joel Sisk (505) TELEPHONE NO. 394-2574

(This space for State Use)

APPROVED BY

ORIGINAL SIGNED BY
GARY W. WINK
OC FIELD REPRESENTATIVE II/STAFF MANAGER

MAR 19 2003
MAR 19 2003

CONDITIONS OF APPROVAL, IF ANY:

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-104A
Revised June 10, 2003

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit 1 copy of the final affected wells
list along with 1 copy of this form per
number of wells on that list to appropriate
District Office

Change of Operator

Previous Operator Information:

OGRID: 162791
Name: Raptor Resources, Inc.
Address: 901 Rio Grande
Address: _____
City, State, Zip: Austin, Texas 78701

New Operator Information:

Effective Date: 02/01/04
New Ogrid: 148381
New Name: Mission Resources Corporation
Address: 1331 Lamar, Suite 1455
Address: _____
City, State, Zip: Houston, Texas 77010-3039

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information on this form and the attached list of wells is true and complete to the best of my knowledge and belief.

New Operator

Signature: Nancy K. Gatti

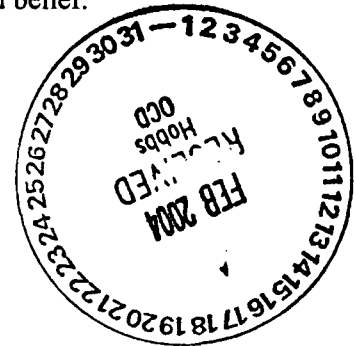
Printed name: Nancy K. Gatti

Title: Regulatory Coordinator

E-mail

Address: nancy.gatti@mrcorp.com

Date: 02/11/04 Phone: (713) 495-3000



Previous operator complete below:

Previous
Operator: Raptor Resources, Inc.
Previous
OGRID: 162791
Signature: Russell Douglass
Printed
Name: RUSSELL DOUGLASS
E-mail
Address: RAPTORRESOURCES@SBC GLOBE

NMOCD Approval

Signature: Paul F. Korte
Printed
Name: PAUL F. KORTE
PETROLEUM ENGINEER
District: FEB 23 2004
Date: _____

L. NET

Injection Permit Checklist 2/8/07

SWD Order Number _____ Dates: Division Approved _____ District Approved _____

Well Name/Num: _____ Date Spudded: _____

API Num: (30-) _____ County: _____

Footages _____ Sec _____ Tsp _____ Rge _____

Operator Name: PETRO HAWK OPERATING CO. Contact NANCY K. GattiOperator Address: 1100 LOUISIANA, Suite 4400, Houston, TX 77002

Current Status of Well: _____ Planned Work: _____ Inj. Tubing Size: _____

	Hole/Pipe Sizes	Depths	Cement	Top/Method
Surface				
Intermediate				
Production				
Last DV Tool				
Open Hole/Liner				
Plug Back Depth				

Diagrams Included (Y/N): Before Conversion _____ After Conversion _____

Checks (Y/N): Well File Reviewed _____ ELogs in Imaging _____

Intervals:	Depths	Formation	Producing (Yes/No)
Salt/Potash			
Capitan Reef			
Cliff House, Etc:			
Formation Above			
Top Inj Interval			
Bottom Inj Interval			
Formation Below			

_____ PSI Max. WHIP

_____ Open Hole (Y/N)

_____ Deviated Hole (Y/N)

Fresh Water: Depths: _____ Wells(Y/N) _____ Analysis Included (Y/N): _____ Affirmative Statement _____**Salt Water Analysis:** Injection Zone (Y/N/NA) _____ DispWaters (Y/N/NA) _____ Types: _____**Notice:** Newspaper(Y/N) _____ Surface Owner _____ Mineral Owner(s) _____

Other Affected Parties: _____

AOR/Repairs: NumActiveWells _____ Repairs? _____ Producing in Injection Interval in AOR _____

AOR Num of P&A Wells _____ Repairs? _____ Diagrams Included? _____ RBDMS Updated (Y/N) _____

Well Table Adequate (Y/N) _____ AOR STRs: Sec _____ Tsp _____ Rge _____ UIC Form Completed (Y/N) _____

New AOR Table Filename _____ Sec _____ Tsp _____ Rge _____ This Form completed _____

Conditions of Approval: Sec _____ Tsp _____ Rge _____ Data Request Sent _____**AOR Required Work:** _____**Required Work to this Well:** _____

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: Petrohawk Operating Company (Petrohawk) proposes to use 5 existing wells in Sections 8 and 9, Township 22 South, Range 36 East in Lea County, New Mexico, as injection wells for a waterflood project in the Queen formation.

Application qualifies for administrative approval: Yes; however, NMOCD has determined that all new waterflood applications will be required to go to hearing.

- II. OPERATOR:
Petrohawk Operating Company
1100 Louisiana, Suite 4400
Houston, Texas 77002

Contact: Ms. Nancy K. Gatti, Regulatory Manager
Telephone: 832-369-2126

- III. WELL DATA:

Schematics of the proposed injection wells are enclosed as Attachment A: *Supplemental Well Data for C-108, Section III: Proposed Well Schematics*. The proposed waterflood comprises wells State A A/C 2 #61, #64, #65, #68 and #71 to be completed as injection wells. Locations of these wells can be found in Attachment B: *Figure 2- Wells Within One Half-Mile Radii of Proposed Waterflood Wells*. Injection fluids will be produced water from other wells also completed in the Queen Formation, and will exhibit the same chemistry as the formation fluids.

- IV. IS THIS AN EXPANSION OF AN EXISTING PROJECT?

This is an application to reactivate portions of a previously permitted waterflood project (NMOCD Orders No. WXF-518 and WFX-530) which was temporarily abandoned.

- V. ATTACH A MAP THAT IDENTIFIES ALL WELLS AND LEASES WITHIN TWO MILES OF ANY PROPOSED INJECTION WELL WITH A ONE-HALF MILE RADIUS CIRCLE DRAWN AROUND EACH PROPOSED INJECTION WELL. THIS CIRCLE IDENTIFIES THE WELL'S AREA OF REVIEW.

The locations of all wells within the 2-mile radius and ½-mile area of review of the proposed injection wells are provided in the attached Attachment B: *Supplemental Data for C-108, Section V: Figure 1 – Wells Within Two-Mile Radii of Proposed Waterflood Wells* and *Figure 2- Wells Within One Half-Mile Radii of Proposed Waterflood Wells*.

Locations of adjacent leases are provided in Attachment C: *Supplemental data for C-108, Section V: Figure 3-Locations of Leases Within One Half Mile of Proposed Waterflood Wells* and *Supplemental data for C-108, Section V: Figure 4-Locations of Leases Within Two Miles of the Proposed Waterflood Wells*.

- VI. ATTACH A TABULATION OF DATA ON ALL WELLS OF PUBLIC RECORD WITHIN THE AREA OF REVIEW WHICH PENETRATE THE PROPOSED INJECTION ZONE. SUCH DATA SHALL INCLUDE A DESCRIPTION OF EACH WELL'S TYPE, CONSTRUCTION, DATE DRILLED, LOCATION, DEPTH, RECORD OF COMPLETION, AND A SCHEMATIC OF ANY PLUGGED WELL ILLUSTRATING ALL PLUGGING DETAIL.

The tabulation of the available public data on wells within the area of review are presented in Attachment D: *Supplemental Data for C-108, Section VI: Tabulation of Wells*. The requested data for the wells in the ½-mile radius are included in Attachment E1: *Supplemental Data for C-108, Section VI: Documentation of Active and Temporarily Abandoned Wells* and Attachment E2: *Supplemental Data for C-108, Section VI: Documentation of Plugged Wells*.

VII. ATTACH DATA ON THE PROPOSED OPERATION, INCLUDING:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
 2. Whether the system is open or closed;
 3. Proposed average and maximum injection pressure;
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
 5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
-
1. The proposed total amount of produced water injection received by the 5 wells will be an average of 1000 barrels per day, with a maximum rate of 2000 barrels per day. The amount of produced water injected into any specific well will be determined by engineering considerations for the waterflood operation and may vary on a per well basis as needed to optimize the performance of the waterflood.
 2. At the location the Queen Formation is a closed system. Additional geological data for the area of the proposed injection well is included as the attached Attachment E: *Supplemental Data for C-108, Section VII - Geology*.
 3. The proposed average injection pressure may range from zero ("Vacuum") to a maximum is 750 psi. At the depth of the proposed injection zone (3780 to 3900 feet), the lithostatic pressure is approximately 3800 pounds per square inch, preventing any potential for fracturing or formation damage.
 4. The injection fluid is produced water from wells in the existing field and is compatible with fluid in the Queen Formation. Detailed analyses are included as Attachment F: *Supplemental Data for C-108, Section VII – Injection Fluid Analyses*.
 5. Formation water in the proposed injection wells in the Queen Formation ranges from 10,400 to 47,700 mg/l Total Dissolved Solids. These are the same waters proposed to be injected into in the proposed waterflood wells. The formation water characterization is included as Attachment H: *Supplemental Data for C-108, Section VII – Formation Fluid Analyses*.

*VIII. ATTACH APPROPRIATE GEOLOGIC DATA ON THE INJECTION ZONE INCLUDING APPROPRIATE LITHOLOGIC DETAIL, GEOLOGIC NAME, THICKNESS, AND DEPTH. GIVE THE GEOLOGIC NAME, AND DEPTH TO BOTTOM OF ALL UNDERGROUND SOURCES OF DRINKING WATER (AQUIFERS CONTAINING WATERS WITH TOTAL DISSOLVED SOLIDS CONCENTRATIONS OF 10,000 MG/L OR LESS) OVERLYING THE PROPOSED INJECTION ZONE AS WELL AS ANY SUCH SOURCES KNOWN TO BE IMMEDIATELY UNDERLYING THE INJECTION INTERVAL.

The general stratigraphy in the vicinity of the proposed wells is summarized as:

Unit	From (feet)	To (feet)	Thickness (feet)
Sand & Redbeds	0	1380	1380
Anhydrite	1380	1683	303
Salt	1683	3040	1357
Yates	3040	3400	360
Seven Rivers	3400	3723	323
Queen	3723	3991	268

There are no sources of underground drinking water below the Queen Formation.

The target zone for the proposed waterflood wells is:

Geological Name: Queen Formation
Lithologies: Dolomite and Limestone
Thicknesses: 250' to 300'
Depths: 3700' to 3900'

The geometry of the overlying salt and the Seven Rivers – Queen interval are shown in Appendix F: *Supplemental Data for C-108, Section VII: Geology*. Map 1 shows that the thickness of the salt overlying the target zone is continuous in the area of interest, and ranges from approximately 1100 to 1300 feet. Map 2 shows the thickness of the salt. The overall thickness of the Queen interval, ranges from 250 to 300 feet.

The only drinking water aquifer in the area is in the surficial, alluvial deposits of the Ogallala Formation. This unit is locally 100 to 200 feet thick, and the unconfined aquifer in this formation is encountered at 40 to 80 feet below the surface. Analyses of drinking water samples from published representative water wells (Sections 1, 2 and 11, T22S, R36E) are included as Appendix I: *Supplemental Data for Section VIII: Local Groundwater Analyses*. These analyses show that the Total Dissolved Solids for the analyzed drinking water in the area ranges from 1090 to 6170 milligrams per liter.

IX. DESCRIBE THE PROPOSED STIMULATION PROGRAM, IF ANY.

No stimulation is proposed.

*X. ATTACH APPROPRIATE LOGGING AND TEST DATA ON THE WELL. (IF WELL LOGS HAVE BEEN FILED WITH THE DIVISION, THEY NEED NOT BE RESUBMITTED).

Schematics of the proposed injection wells are enclosed as Attachment A: *Supplemental Well Data for C-108, Section III: Proposed Well Schematics*. Logs, well reports and other applicable information have been previously submitted to NMOCD on these wells which are as follows:

API NUMBER	WELL NAME	STATUS
3002523507	STATE A A/C 2 061	Temporarily Abandoned
3002528273	STATE A A/C 2 064	Temporarily Abandoned
3002528274	STATE A A/C 2 065	Temporarily Abandoned
3002528277	STATE A A/C 2 068	Temporarily Abandoned
3002528278	STATE A A/C 2 069	Temporarily Abandoned
3002528280	STATE A A/C 2 071	Temporarily Abandoned

The drilling and completion information on these wells is available in the NMOCD's files and has been summarized on the well diagrams included as Attachment A: *Supplemental Well Data for C-108, Section III: Proposed Well Schematics*.

*XI. ATTACH A CHEMICAL ANALYSIS OF FRESH WATER FROM TWO OR MORE FRESH WATER WELLS (IF AVAILABLE AND PRODUCING) WITHIN ONE MILE OF ANY INJECTION OR DISPOSAL WELL SHOWING LOCATION OF WELLS AND DATES SAMPLES WERE TAKEN.

Data on water wells received from the State Engineer is included as Appendix J: *Supplemental Data for C-108, Section XI: Water Wells*, and locations are plotted on a map included in the same section. The required analyses of groundwater in the area are included in *Supplemental Data for C-108, Section XI: Groundwater Analyses*.

- XII. APPLICANTS FOR DISPOSAL WELLS MUST MAKE AN AFFIRMATIVE STATEMENT THAT THEY HAVE EXAMINED AVAILABLE GEOLOGIC AND ENGINEERING DATA AND FIND NO EVIDENCE OF OPEN FAULTS OR ANY OTHER HYDROLOGIC CONNECTION BETWEEN THE DISPOSAL ZONE AND ANY UNDERGROUND SOURCES OF DRINKING WATER.

We have analyzed the available geological and engineering data and affirm that there are no open faults or other hydrogeological connections between the proposed injection zone(s) and the known sources of drinking water (see Sections VII and VIII also).

- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

Notices are being prepared for adjacent operators, and a public notice for interested parties will be published in Lea County, New Mexico. Copies of all certified notices are provided in Appendix K: *Supplemental Data for C-108, Section XIII: Return Receipt from notices and copies of the publication affidavits will be submitted upon receipt.*

- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Alberto A. Gutierrez, RG

TITLE: President, Geolex, Inc.* consultant to Petrohawk

SIGNATURE: 

DATE: 2/12/07

E-MAIL ADDRESS: aag@geolex.com

- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: N/A

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Petrohawk Pilot Scale Injection Project Objectives Summary
Petrohawk Operating Company
State A A/C 2 Pilot Waterflood
Summary of Objectives

The proposed pilot scale waterflood project which was the subject of the hearing on Case # 13891 heard on March 15 and 29th 2007 is a pilot project to evaluate the performance of a waterflood on Petrohawk's adjacent production wells and to evaluate the optimal injection rates and potential spacing of wells for a potential future full-scale waterflood project in the area. This pilot project consists of injection of variable amounts of produced water from the Queen Formation back into the Queen Formation in the following wells:

- State A A/C 2 061
- State A A/C 2 064
- State A A/C 2 065
- State A A/C 2 068
- State A A/C 2 071

Within the limits on the C-108 application as discussed on the record of the testimony provided on the hearing of March 15, 2007. The pilot scale project will evaluate the effects on the surrounding Petrohawk producing wells including:

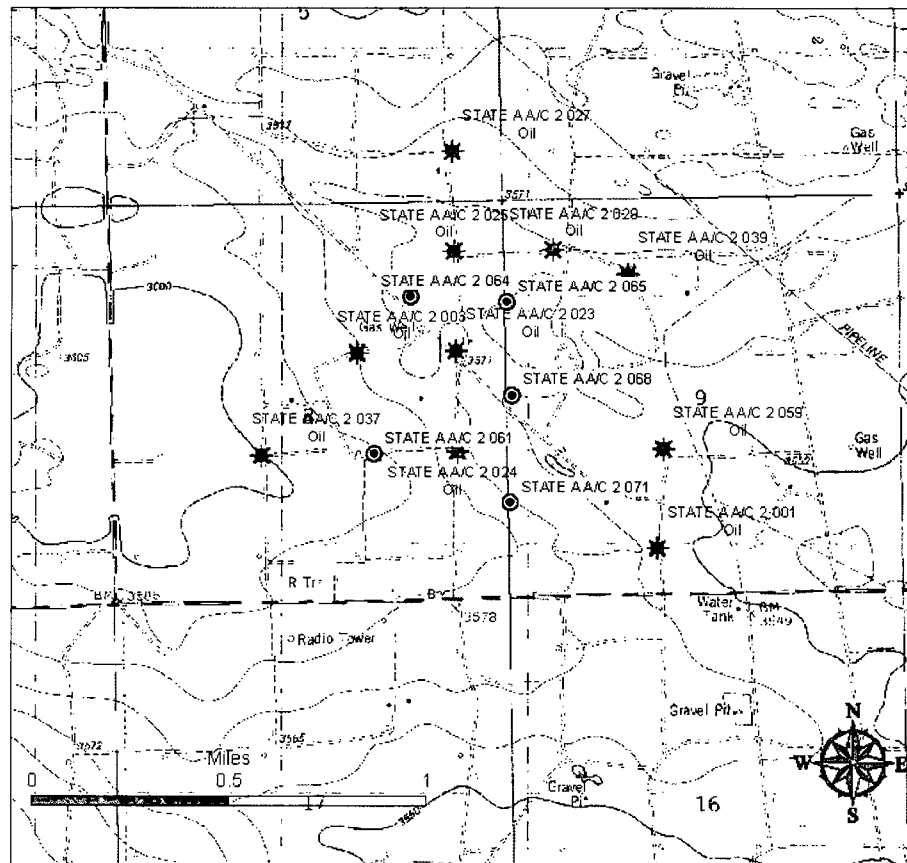
- State A A/C 2 027
- State A A/C 2 003
- State A A/C 2 023
- State A A/C 2 024
- State A A/C 2 025
- State A A/C 2 001
- State A A/C 2 029
- State A A/C 2 059

These wells are located in the immediate vicinity of the pilot injection wells and are all currently producing wells that have had significant declines in the gas/oil ratio and increases in water production. The project will evaluate changes in the gas/oil ratios in these wells and the overall changes in oil and gas production and reservoir pressure in the producing wells. The detailed testing program has not yet been finalized and in part will be developed after initiation of injection and when the preferential pathways for fluid flow in the reservoir are established. The results of the pilot scale waterflood will be incorporated in a complete reservoir study to determine the feasibility of a full scale waterflood of the unit which will be the subject of a separate waterflood application to NMOCD if the results of the pilot scale project are encouraging. Petrohawk has no data on the previous waterfloods as they were conducted by other companies over 20 and 40 years ago (1983 and 1967).

Petrohawk Pilot Scale Injection Project Objectives Summary

Below are included a table which summarizes the recent production data on the adjacent production wells and a map that shows the location of the proposed pilot scale injection wells (which are all a subset of the prior approved waterfloods as detailed in the application and the hearing testimony) and the adjacent production wells which will be evaluated by Petrohawk as part of the pilot project.

API	WELL_NAME	STATUS	OPERATOR	WELL TYPE	2006 Gas Prod.	2006 Oil Prod.	2006 Water Prod
3002508789	STATE A A/C 2 027	Active	PETROHAWK OPERATING COMPANY	Oil	1679	0	0
3002508829	STATE A A/C 2 003	Active	PETROHAWK OPERATING COMPANY	Oil	2249	24	151
3002508832	STATE A A/C 2 023	Active	PETROHAWK OPERATING COMPANY	Oil	0	0	0
3002508833	STATE A A/C 2 024	Active	PETROHAWK OPERATING COMPANY	Oil	10603	9	244
3002508834	STATE A A/C 2 025	Active	PETROHAWK OPERATING COMPANY	Oil	27815	0	361
3002508849	STATE A A/C 2 001	Active	PETROHAWK OPERATING COMPANY	Oil	5776	0	0
3002508854	STATE A A/C 2 029	Active	PETROHAWK OPERATING COMPANY	Oil	15048	0	0
3002520970	STATE A A/C 2 059	Active	PETROHAWK OPERATING COMPANY	Oil	0	0	0



07-004/GIS/ArcMaps/OilProducersByWaterflood.mxd

