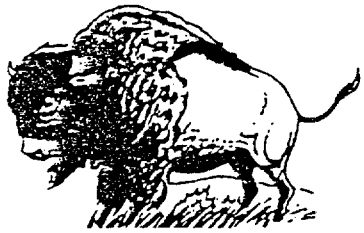
BISON
PETROLEUM
CORPORATION



5809 South Western, Suite 200
Amarillo, Texas 79110-3607
Phone: (806) 358-0181

Shell Western E&P Inc.
P.O. Box 576
Houston, TX 77001
Attn: Mr. J.H. Smitherman

Re: N.E. Drinkard Unit

September 15, 1987

Gentlemen:

Bison Petroleum Corporation respectfully requests that its Stephens Estate lease, Tract 31, be removed from the proposed subject Unit boundary. This tract is on the edge of the productive limits and is not likely to produce any economic secondary production.

Yours very truly,

Bruce O. Barthel
President

BOB/ll

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. 9232
Order No. R-8541

THE APPLICATION OF SHELL WESTERN
E & P, 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 24, 1987, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 9th day of November, 1987, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and having been 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) Division Cases Nos. 9230, 9231, and 9232 were consolidated at the time of the hearing for the purpose of testimony.

(3) The applicant, Shell Western E & P, Inc. (Shell), seeks authority to institute a waterflood project in its Northeast Drinkard Unit Area by the injection of water into the unitized interval which shall include the oil-bearing portions of the Blinebry, Tubb, and Drinkard formations which extend from an upper limit of 5530 feet (2101 feet sub-sea) to a lower limit of 6680 feet (3251 feet sub-sea), on the log run June 21, 1951 on the Shell Argo Well No. 8 located 660 feet from the South line and 2310 feet from the West line of Section 15, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico, through 37 initial injection wells as shown on Exhibit "A" attached to this order.

(4) The proposed initial injection wells are planned conversions of existing producing wells.

(5) The applicant proposes to utilize a five spot injection pattern within the proposed waterflood project.

(6) The producing formations in the proposed project area are in an advanced stage of depletion and the area is suitable for waterflooding.

(7) The proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste, and should otherwise protect correlative rights.

(8) The applicant should be required, insofar as is practical, to avoid injection into any gas-bearing zones undergoing primary production within any or all of the three formations and to otherwise restrict injection to the oil-bearing portions of the pool.

(9) Evidence presented at the hearing shows the gas-bearing portions of the Blinebry formation are limited to the upper two producing zones but that gas-bearing portions in the Tubb formation are distinct zones which are separated from the oil-bearing zones by permeability barriers.

(10) Water injection into the several formations comprising the unitized formation can be conducted without endangering the gas reserves and said gas reserves can be recovered concurrently with the enhanced oil recovery project provided adequate precautions are taken.

(11) Said gas wells should continue to be prorated as Blinebry or Tubb, as the case may be, gas wells and receive allowables equal to the wells in said pools as shown on the monthly proration schedules.

(12) In order to prevent loss of recoverable gas reserves, no gas well in the Tubb or Blinebry formations should be entered for recompletion to other use until a suitable replacement well has been completed and connected to the appropriate gas gathering facility.

(13) There are twelve wells, shown on Exhibit "B" attached to this order, which are located within or adjacent to the proposed project which may not have been completed or cemented in such a manner which will assure that their wellbores will not serve as a conduit for movement of injected fluid out of the injection interval.

(14) Prior to initiating injection within one-half mile of any of the wells shown on Exhibit "B", the applicant should be required to perform remedial cement operations on said wells in a manner which will assure that these wellbores will not serve as a conduit for migration of injected fluid to the satisfaction of the supervisor of the Hobbs district office of the Division.

(15) There are also nine wells, shown on Exhibit "C" attached to this order, located within or adjacent to the proposed project which require further investigation in order to determine if they are completed and cemented in such a manner that will assure that their wellbores will not serve as a conduit for movement of injected fluid out of the injection interval.

(16) Prior to initiating injection within one-half mile of any of the wells shown on Exhibit "C", the applicant should be required to present additional calculations, temperature surveys, cement bond logs, or other pertinent information to the supervisor of the Division's district office in Hobbs who, after review of such additional information, may require additional testing, logging, or remedial cement operations to be conducted on the subject wells.

(17) The operator should otherwise 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 from injection, production, or plugged and abandoned wells.

(18) The injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 0.2 psi per foot of depth from the surface to the top injection perforation in any injection well, but the Division Director should have authority to increase said pressure limitation upon a proper showing that said pressure increase would not result in the fracturing of the injection formation or confining strata.

(19) Prior to initiating injection into any of the injection wells, the applicant should be required to pressure test the casing in each of the proposed injection wells from the surface to the proposed packer-setting depth to assure the integrity of said casing.

(20) Subsequent to the hearing, J. R. Cone, an offset operator to the proposed project who appeared at the hearing, requested that the applicant not be allowed to inject into Wells Nos. 615, 709, and 808 until such time as the applicant files with the Division an approved lease line agreement between Shell and J. R. Cone.

(21) This request is fair and reasonable and should be granted.

(22) The application should be approved and the project should be governed by the provisions of Rules 701 through 708 of the Oil Conservation Division Rules and Regulations.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Shell Western E & P, Inc., is hereby authorized to institute a waterflood project in the Northeast Drinkard Unit Area (described in Ordering Paragraph No. (2) of Division Order No. R-8540), by the injection of water into the unitized interval which shall include the Blinebry, Tubb, and Drinkard formations which extend from an upper limit of 5530 feet (2101 feet sub-sea) to a lower limit of 6680 feet (3251 feet sub-sea), on the log run June 21, 1951 on the Shell Argo Well No. 8 located 660 feet from the South line and 2310 feet from the West line of Section 15, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico, through 37 initial injection wells as shown on Exhibit "A" attached to this order.

(2) The injection wells herein authorized and/or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 0.2 psi per foot of depth from the surface to the top injection perforation, provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such higher pressure will not result in fracturing of the injection formation or confining strata.

(3) Injection into each of said wells shall be through plastic or cement-lined tubing set in a packer which shall be located as near as practicable to the uppermost perforations, or, in the case of open hole completions, as near as practicable to the casing-shoe; the casing-tubing annulus shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak-detection device.

(4) Prior to initiating injection within one-half mile of any of the wells shown on Exhibit "B" attached to this order, the applicant shall perform remedial cement operations on said wells shown on Exhibit "B" in a manner which will assure that these wellbores will not serve as a conduit for migration of injected fluid to the satisfaction of the supervisor of the Hobbs district office of the Division.

(5) Prior to initiating injection within one-half mile of any of the wells shown on Exhibit "C" attached to this order, the applicant shall present additional calculations, temperature surveys, cement bond logs, or other pertinent information to the supervisor of the Division's district office in Hobbs who, after review of such additional information, may require additional testing, logging, or remedial cement operations to be conducted on the subject wells.

(6) Prior to initiating injection into any of the injection wells shown on Exhibit "A", the applicant shall pressure-test the casing in each of the proposed injection wells from the surface to the proposed packer setting depth to assure the integrity of said casing.

(7) The applicant shall notify the supervisor of the Hobbs district office of the Division prior to performing any remedial cement operations on the wells shown on Exhibit "B" or Exhibit "C" or prior to conducting any casing pressure-test on any injection well shown on Exhibit "A".

(8) The applicant shall, insofar as is practical, avoid injection into any gas-bearing zones undergoing primary production within any or all of the three formations and otherwise restrict injection to the oil-bearing portions of the pool.

(9) No gas well in the Blinebry or Tubb formation shall be entered for recompletion for other use until a suitable replacement well has been completed and connected to the appropriate gas gathering facility.

(10) The applicant shall immediately notify the supervisor of the Hobbs district office of the Division of the failure of the tubing or packer in any of the injection wells, the leakage of water or oil 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) The authorized subject waterflood is hereby designated the Northeast Drinkard Unit Waterflood Project and shall be governed by the provisions of Rules 701 through 708 of the Division Rules and Regulations.

(12) Injection into Unit Well Nos. 615, 709, and 808 shall not commence until such time that the applicant files with the Division a signed lease line agreement between Shell and J. R. Cone.

(13) Monthly progress reports of the waterflood project herein authorized shall be submitted to the Division in accordance with Rules 704 and 1120 of the Division Rules and Regulations.

(14) 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

EXHIBIT "A"
CASE NO. 9232
ORDER NO. R-8541
NORTHEAST DRINKARD UNIT (NEDU)
UNIT INJECTION WELLS

| WELL | UNIT WELL DESIGNATION | LOCATION (ALL IN T-21S, R-37E) |
|---|---|---|
| SECTION 2: | | |
| Meridian Oil State "2" No. 6 | 114 | 906 FNL, 660 FWL, Unit D |
| Meridian Oil State "2" No. 2 | 115 | 1896 FNL, 660 FWL, Unit E |
| Chevron Leonard No. 10 | 121 | 2220 FNL, 2307 FEL, Unit G |
| Meridian Oil State "2" No. 1 | 214 | 3300 FSL, 660 FWL, Unit M |
| Shell Western State "2" No. 16 | 218 | 3546 FNL, 1700 FWL, Unit K |
| Chevron Leonard No. 6 | 221 | 2983 FSL, 2317 FEL, Unit O |
| Shell Western State "2" No. 9 | 315 | 1980 FSL, 1880 FWL, Unit S |
| SECTION 3: | | |
| Shell Western Taylor Glenn No. 11 | 105 | 2080 FNL, 660 FWL, Unit E |
| Conoco Hawk B-3 No. 15 | 109 | 660 FNL, 1980 FEL, Unit B |
| Conoco Hawk B-3 No. 24 | 111 | 2232 FNL, 2310 FEL, Unit H |
| Shell Western Livingston No. 11 | 205 | 3300 FSL, 660 FWL, Unit M |
| Shell Western Taylor Glenn No. 1 | 206 | 3226 FNL, 1980 FWL, Unit K |
| Conoco Hawk B-3 No. 2 | 209 | 3150 FSL, 1650 FEL, Unit O |
| Shell Western Taylor Glenn No. 2 | 211 | 4620 FSL, 660 FEL, Unit I |
| Shell Western Livingston No. 1 | 303 | 1980 FSL, 1980 FWL, Unit S |
| Shell Western Livingston No. 2 | 307 | 660 FSL, 1980 FEL, Unit W |
| Conoco Hawk B-3 No. 7 | 309 | 1830 FSL, 660 FEL, Unit Q |

EXHIBIT "A"

SECTION 10

| | | |
|---|---|---|
| Conoco<br>Hawk B-10 No. 10 | 403 | 460 FNL, 1980 FWL, Unit C |
| Conoco<br>Hawk B-10 No. 8 | 407 | 1980 FNL, 2310 FEL, Unit G |
| Exxon<br>NM "V" State No. 11 | 503 | 2080 FSL, 2080 FWL, Unit K |
| Exxon<br>NM "V" State No. 3 | 506 | 660 FSL, 1980 FEL, Unit O |

SECTION 11

| | | |
|---|---|---|
| Conoco<br>Nolan No. 1 | 511 | 660 FSL, 660 FWL, Unit E |

SECTION 14

| | | |
|---|---|---|
| Bravo Energy<br>Eva Owen No. 1 | 615 | 1980 FNL, 660 FWL, Unit E |

SECTION 15

| | | |
|---|---|---|
| Texaco<br>State "S" No. 6 | 605 | 760 FNL, 1980 FWL, Unit C |
| Shell Western<br>State "15" No. 3 | 610 | 2210 FNL, 2310 FEL, Unit G |
| Texaco<br>State "S" No. 8 | 612 | 660 FNL, 660 FEL, Unit A |
| Shell Western<br>Argo No. 3 | 703 | 1980 FSL, 1980 FWL, Unit K |
| Marathon<br>Warlick No. 2 | 708 | 660 FSL, 1980 FEL, Unit O |
| Marathon<br>Warlick No. 4 | 709 | 1980 FSL, 660 FEL, Unit I |

SECTION 22

| | | |
|---|---|---|
| Shell Western<br>Argo "A" No. 3 | 803 | 660 FNL, 1980 FWL, Unit C |
| Chevron<br>Eubank No. 8 | 807 | 1750 FNL, 2310 FEL, Unit G |
| Chevron<br>Eubank No. 2 | 808 | 660 FNL, 660 FEL, Unit A |
| Shell Western<br>Turner No. 12 | 904 | 2065 FSL, 1700 FWL, Unit K |
| Shell Western<br>Turner No. 5 | 909 | 1980 FSL, 660 FEL, Unit I |

EXHIBIT "A"

SECTION 23

| | | |
|---|---|---|
| Texaco<br>Williamson No. 2 | 811 | 1980 FNL, 660 FWL, Unit E |
| Arco<br>Barton No. 4 | 815 | 1750 FNL, 1980 FEL, Unit G |
| Arco<br>Sarkeys No. 1 | 915 | 1980 FSL, 1980 FEL, Unit J |

EXHIBIT "B"
CASE NO. 9232
ORDER NO. R-8541

| OPERATOR, WELL NAME, AND NUMBER | LOCATION |
|---|---|
| Leonard Oil<br>Elliot Federal No. 1 | 1659 FSL & 330 FWL<br>Section 1, T-21S, R-37E |
| Stanolind<br>Southland Royalty "C" No. 5 | 1980 FSL & 660 FEL<br>Section 4, T-21S, R-37E |
| Conoco Inc.<br>Hawk B-10 Federal No. 3 | 1980 FNL & 1980 FEL<br>Section 10, T-21S, R-37E |
| Cities Service<br>States No. 4 | 3390 FSL & 4520 FEL<br>Section 15, T-21S, R-37E |
| Tidewater Oil<br>State "S" No. 7 | 600 FNL & 990 FWL<br>Section 15, T-21S, R-37E |
| Cities Service<br>State "S" No. 6 | 2310 FNL & 990 FWL<br>Section 15, T-21S, R-37E |
| Cities Service<br>State "S" No. 3 | 3375 FSL & 3225 FEL<br>Section 15, T-21S, R-37E |
| Gulf Oil Corporation<br>Leonard "E" No. 5 | 2310 FNL & 330 FEL<br>Section 16, T-21S, R-37E |
| Mid-Continent Petroleum<br>State "15" No. 5 | 330 FSL & 330 FEL<br>Section 16, T-21S, R-37E |
| Sunray Oil<br>Elliott Federal "A" No. 3 | 980 FNL & 330 FEL<br>Section 21, T-21S, R-37E |
| Sunray Oil<br>Elliott Federal "A" No. 4 | 2030 FNL & 330 FEL<br>Section 21, T-21S, R-37E |
| Gulf Oil Corporation<br>Eubank "C" No. 8 | 1750 FNL & 2310 FEL<br>Section 22, T-21S, R-37E |

EXHIBIT "C"
CASE NO. 9232
ORDER NO. R-8541

| OPERATOR, WELL NAME, AND NUMBER | LOCATION |
|---|---|
| Gulf Oil Corporation<br>Harry Leonard "E" No. 6 | 1980 FSL & 1980 FEL<br>Section 2, T-21S, R-37E |
| Shell Western E & P<br>State "2" No. 20 | 990 FSL & 2300 FWL<br>Section 2, T-21S, R-37E |
| Shell Western E & P<br>State "2" No. 21 | 2205 FSL & 988 FWL<br>Section 2, T-21S, R-37E |
| Shell Western E & P<br>Livingston No. 3 | 560 FSL & 2030 FEL<br>Section 3, T-21S, R-37E |
| Shell Western E & P<br>Livingston No. 5 | 660 FSL & 330 FWL<br>Section 3, T-21S, R-37E |
| Aztec<br>Dauron No. 3 | 330 FNL & 990 FEL<br>Section 10, T-21S, R-37E |
| Humble<br>NM State "V" No. 11 | 2080 FSL & 2080 FWL<br>Section 10, T-21S, R-37E |
| Tidewater Oil<br>State "S" No. 6 | 760 FNL & 1980 FWL<br>Section 15, T-21S, R-37E |
| Conoco Inc.<br>Lockhart A-27 No. 3 | 330 FNL & 1650 FWL<br>Section 27, T-21S, R-37E |

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

CASE NO. 9232
Order No. R-8541-A

APPLICATION OF SHELL WESTERN E & P, INC. FOR A WATERFLOOD PROJECT, LEA COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R-8541, dated November 9, 1987, does not correctly state the intended order of the Division;

IT IS THEREFORE ORDERED THAT:

(1) The reference to the Chevron Eubank Well No. 8, described as being located 1750 feet from the North line and 2310 feet from the East line (Unit G) of Section 22, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico, on page 2 of Exhibit "A" in Division Order No. R-8541 is hereby amended to read "Chevron Eubank Well No. 3 located 1980 feet from the North line and 2080 feet from the East line (Unit G) of said Section 22."

(2) The corrections set forth in this order be entered nunc pro tunc as of November 9, 1987.

DONE at Santa Fe, New Mexico, on this 11th day of October, 1988.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

S E A L
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