

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



BRUCE KING
GOVERNOR

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

August 28, 1991

Marathon Oil Company
P.O. Box 552
Midland, Texas 79702

Attention: Mark A. Skrabacz

Re: Amendment of Division Order No. SWD-416 ✓

Dear Mr. Skrabacz:

Reference is made to your request dated August 7, 1991, to amend Division Order No. SWD-416, which order authorized Marathon to utilize the Indian Basin Gas Com Well No. 1 located in Unit E of Section 23, Township 21 South, Range 23 East, NMPM, Eddy County, New Mexico, as a disposal well, injection to occur into the Wolfcamp formation at approximately 6574 feet to 6768 feet. It is our understanding that you wish to amend the injection interval to include only the Devonian formation from a depth of 10,100 feet to 10,400 feet, and that the Wolfcamp perforations described above will be squeeze cemented to assure isolation.

The injection interval for the subject well is hereby amended to include only the Devonian formation from a depth of approximately 10,100 feet to 10,400 feet subject to the following conditions:

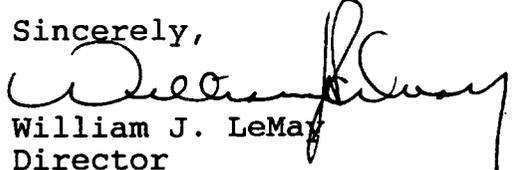
1) The Wolfcamp perforations from a depth of 6574 feet to 6768 feet shall be squeeze cemented and the casing subsequently pressure tested from the surface to the proposed packer setting depth to assure the integrity of such casing;

2) 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 2,020 psi;

3) 2 3/8 inch plastic lined tubing shall be installed in a packer set at approximately 10,000 feet;

4) All other provisions of Division Order No. SWD-416 shall remain in full force and effect.

Sincerely,



William J. LeMay
Director

xc: OCD-Artesia
BLM-Carlsbad
R. Brown



P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 7, 1991

State of New Mexico
Oil Conservation Division
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87503

Rec'd August 8, 1991
Amendment
Sub #16

AIRBORNE EXPRESS

Aug 9
1991

Attention: Mr. David Catanach

Re: Application for Authorization to Inject
1980' FNL & 660' FWL Section 23,
T-21-S, R-23-E, N.M.P.M.,
Indian Basin Gas Com Well #1
Conversion to SWD in Devonian Formation
Our Lease NM-4761 - U.S. Lease NM-0384628
Eddy County, New Mexico

Dear David:

In accordance with your conversation with Tim Robertson of our office on August 5, 1991, we are enclosing for administrative approval a C-108 for the captioned. This application will look familiar since you recently approved one for the same well in the Wolfcamp formation which would not take the necessary produced water.

Attachment I to the C-108 reflects that Public Notices have been requested. These will be forwarded to you as soon as available. Also enclosed are copies of certified letters of notification to the BLM as surface owner and to Santa Fe Energy Company as offset leasehold operator (in Section 14). The remaining offsetting leases are Marathon operated.

Should you have any questions regarding the engineering and geological aspects of the enclosed C-108 please contact Robin Tracy or Neal Hoover at the letter-head telephone number.

As soon as you can give us a verbal of special authorization to commence recompletion operations on our own liability, please call me or Tim Robertson.

Thank you for your cooperation.

Very truly yours,

MARATHON OIL COMPANY

A handwritten signature in cursive script, appearing to read 'Mark A. Skrabacz'.

Mark A. Skrabacz
Contract Landman

MAS;mmc'
Encl.

xc: Mr. R. W. Tracy (w/Encl.)
Mr. T. N. Tipton (w/Encl.)
Mr. L. N. Hoover (w/Encl.)

State of New Mexico Oil Conservation Division
811 South 1st Street
Artesia, New Mexico 88210

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: Secondary Recovery Pressure Maintenance Disposal Storage
Application qualifies for administrative approval? yes no
- II. Operator: Marathon Oil Company
Address: P. O. Box 552, Midland, Texas 79702
Contact party: T. N. Tipton Phone: (915) 682-1626
- III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? yes no
If yes, give the Division order number authorizing the project _____.
- 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.
- * 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.
- 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.).
- *VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological 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 source known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- * X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)
- * 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.
- 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 source of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- 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: T. N. Tipton Title Operations Superintendent
Signature: T. N. Tipton Date: 5/8/91
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) the formation name and depth with expected maximum injection rates and pressures; and
- (4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

ATTACHMENT A
(ITEM III, FORM C 108)

WELLBORE INFORMATION IN TABULAR FORM

INDIAN BASIN GAS COM NO. 1 (SWD)
1,980' FNL and 660' FWL
Section 23, T-21-S, R-23-E
Eddy County, New Mexico

Surface Casing: 9-5/8" set @ 2,250'. Cemented w/1,000 sx. Circulated cement
12-1/4" hole size.

Production Casing: 7" set @ 10,100'. Cemented w/1,350 sx. TOC @ 6,070' by
temperature survey. 7-13/16" hole size.

Production Tubing/BHA: 2-3/8", 4.7#, J-55, 8rd EUE internally plastic coated
tbg @ ±10,000'. 2-3/8" x 7" Nickel-plated Baker Model
AD-1 tension packer @ ±10,000'.

PROPOSED COMPLETION

INDIAN BASIN GAS COM NO. 1 SWD
1980' FNL & 660' FWL
SECTION 23, T-21S, R-23E
EDDY COUNTY, NEW MEXICO
GL: 3831' DF: 3842' KB: 3843'

9-5/8" @ 2250'
W/1000sx (CIRC'D)

WOLFCAMP PERFS: 6574'-6768'. SQUEEZED.

UPPER PENN PEFS: 7376'-7538', SQUEEZED.

UPPER PENN PERFS: 7560'-88', SQUEEZED.

SQUEEZED PERFS: 7670'-74', 7681'-88', 7710'-18',
7725'-27', 7736'-40', 7748'-54',
7760'-64'.

MORROW PERFS: 9039'-49', 9199'-9207', 9227'-35', 9238'-
46', 9251'-63', W/4 JSPF. SQUEEZED.

RESHOT: 9227'-63', W/4 JSPF. SQUEEZED.

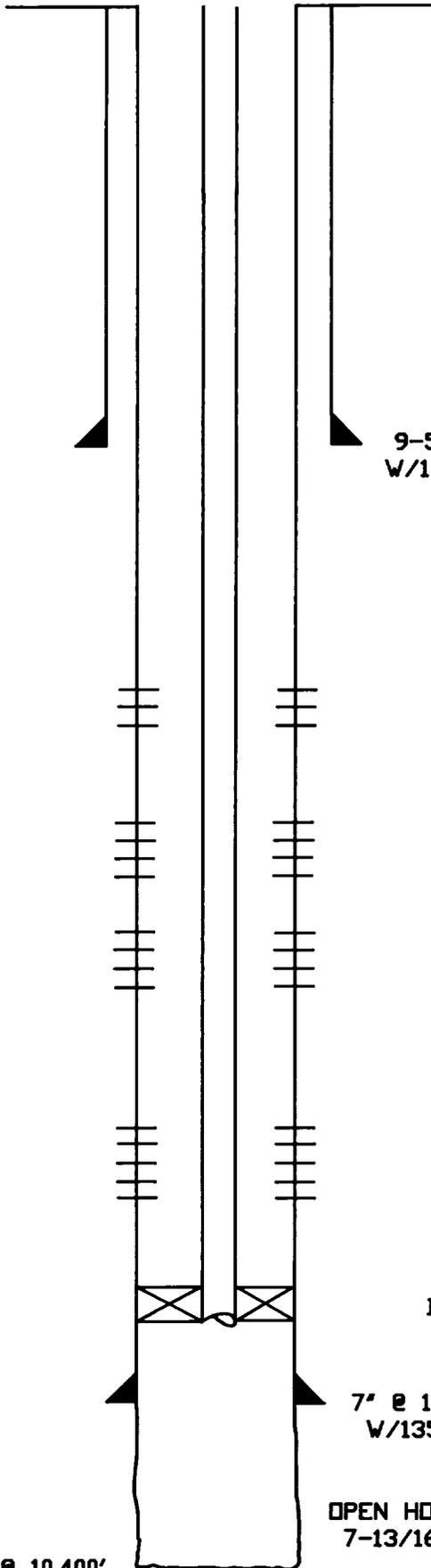
BAKER MODEL AD-1 PKR @ 10,000'

7" @ 10,100'
W/1350sx

TDC @ 6070' BY TEMP. SURVEY

OPEN HOLE 10,100'-10,400'
7-13/16" HOLE SIZE

TD @ 10,400'



ATTACHMENT B (ITEM V, FORM C 108)

6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35
36	37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63	64	65
66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85
86	87	88	89	90	91	92	93	94	95
96	97	98	99	100	101	102	103	104	105

Santa Fe Ener 76919

Santa Fe Ener 76919

INDIAN BASIN UNIT
1892
MARATHON (OPER)

INDIAN BASIN UNIT
WEST

ENFIELD (OPER)

CA 1298
Fed 18C Gas Com

Union

32

5

8

HONDO

25

Bill Fenn

36

6

23

24

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2

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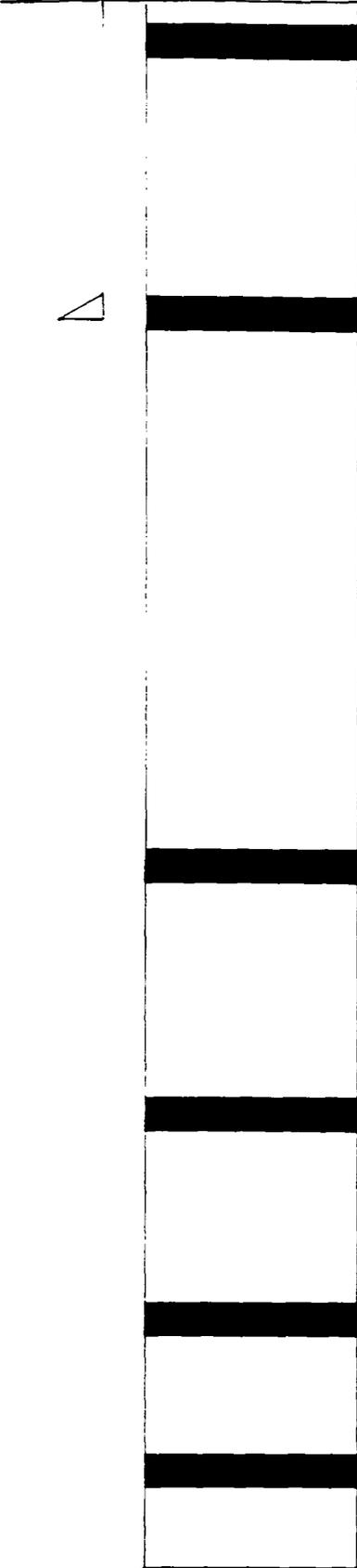
19

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ATTACHMENT C
(ITEM VI, FORM C 108)

1. Marathon Oil Company
Indian Basin Gas Com No. 2
732' FSL and 1,173' FWL, Section 23, T-21-S, R-23-E
Date Drilled: May 25, 1990
Dry hole - Plugged and Abandoned June 25, 1990
Total Depth - 9,500'
Plugging Record and Schematic: See attached

2. Marathon Oil Company
Indian Basin "A" No. 1
1,650' FSL and 1,650' FEL, Section 22, T-21-S, R-23-E
Date Drilled: October 8, 1962
Temporarily abandoned gas well (Upper Penn 7,360'-7,420')
(Morrow 9,118'-9,266' is depleted and abandoned)
Total depth: 9,450'
Surface Casing: 9-5/8" set to 1,925'. Cemented w/1,000 sx. Circulated
cement.
Production Casing: 7" set to 9,385'. Cemented w/625 sx. TOC 7,350'
(1962) 1,988 squeezed w/900 sx cmt. Shot perms @
6,750'-6,768' (had isolation) TOC unknown.



PLUG #6:220'-320' (30SX)

8 5/8" CASING TO @ 2000'

PLUG #5:1945'-2135' (70SX)

INDIAN BASIN GAS COM NO. 2
732' FSL & 1173' FWL
SECTION 23, T-21-S, R-23-E
INDIAN BASIN FIELD
EDDY COUNTY, NEW MEXICO
(PLUGGED AND ABANDONED - 6/25/90)

PLUG #4:5975'-6150' (62SX)

PLUG #3:7145'-7495' (150SX)

PLUG #2:7600'-8750' (154SX)

PLUG #1:8910'-9085' (64SX)

TD:9500'

7 7/8" HOLE SIZE

ATTACHMENT D
(ITEM VII, FORM C 108)

1. Proposed average and maximum injection rates: 1,500 BWPD and 2,000 BWPD, respectively.
2. Type of system: This will be a closed system.
3. Proposed average and maximum injection pressures: 1,200 psig and 2,080 psig, respectively (estimated).

*A step rate test will be performed following conversion of the aforementioned well to better define expected average injection and maximum pressures.

4. See attached (Attachment D-1). The source water is from the Upper Penn formation from wells in the Indian Basin Field.
5. No water analysis is presently available for the Devonian. A sample will be obtained at the time of conversion.

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES

ARTESIA DISTRICT

LABORATORY REPORT

No. W2-90

TO Marathon Oil Company
P. O. Box 552
Midland, TX 79702

Date January 2, 1990

This report is the property of Halliburton Services and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management. It may however, be used in the course of regular business operations by any person or persons and employees thereof receiving such report from Halliburton Services.

Submitted by Darrell Fear Date Rec. January 2, 1990

Well No. Marathon Federal SWD #1 Depth _____ Formation _____

Field _____ County Eddy Source _____

Resistivity	<u>0.26 @ 70°</u>	_____	_____
Specific Gravity ..	<u>1.012</u>	_____	_____
pH	<u>8.7</u>	_____	_____
Calcium	<u>652</u>	_____	_____
Magnesium	<u>264</u>	_____	_____
Chlorides	<u>10,000</u>	_____	_____
Sulfates	<u>200</u>	_____	_____
Bicarbonates	<u>397</u>	_____	_____
Soluble Iron	<u>0</u>	_____	_____
-----	_____	_____	_____
-----	_____	_____	_____
-----	_____	_____	_____

Remarks:

Rocky Chambers
Respectfully submitted

Analyst: Rocky Chambers - Field Engineer

HALLIBURTON SERVICES

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES

MIDLAND DIVISION

HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W83-908

Union Oil Company

Date 7-28-83

Box 2409

Hobbs, New Mexico

ATTN: Mr. Calvin Saathoff

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by _____ Date Rec. 7-28-83

Well No. J. Indian Basin #5 Depth _____ Formation Cisco

County _____ Field _____ Source _____

Resistivity _____ 0.272 @ 74°F.

Specific Gravity _____ 1.022

pH _____ 7.1

Calcium (Ca) _____ 1,400 *MPL

Magnesium (Mg) _____ 60

Chlorides (Cl) _____ 14,000

Sulfates (SO₄) _____ 3,650

Bicarbonates (HCO₃) _____ 875

Soluble Iron (Fe) _____ Nil

Remarks: _____ *Milligrams per liter

RECEIVED

Respectfully submitted,

Analyst: Brewer

HALLIBURTON COMPANY

CC: _____

By W. J. Brewer
CHEMIST

NOTICE

THIS REPORT IS LIMITED TO THE DESCRIBED SAMPLE TESTED. ANY USER OF THIS REPORT AGREES THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE INCURRED BY ANY USER OF THIS REPORT.

ATTACHMENT E
(ITEM VIII, FORM C 108)

1. Injection zone: Devonian

Lithology: Limestone

Top: 10,100'

Bottom: 11,090'

Thickness: 990'

Openhole Completion: 10,100' - 10,400'.

2. Fresh Water Zone: Grayburg

Depth to bottom: $\pm 181'$ to 217' (Section 22, 23, 9 - 17 ppm, Cond 728-822 M-Mhos).

Fresh water data obtained from Ken Fresquez, Water Specialist, with the State Engineers Office, Roswell, New Mexico.

Aquifer w/dissolved solids concentration less than 10,000 mg/L: Paddock
Depth to bottom $\pm 2,800'$ (Section 23, 3,600 ppm, 1.009 specific gravity).

ATTACHMENT F
(ITEM IX, FORM C 108)

STIMULATION PROGRAM

The proposed stimulation will consist of one treatment.

Acidized Devonian openhole completion with 7,500 gallons 15% HCl acid.

ATTACHMENT G
(ITEM XI, FORM C 108)

Fresh Water Zone: Grayburg

Chlorides: Ranges from 9-17 ppm.

Conductivity: Ranges from 728-822 M-Mhos

Fresh water data obtained from Ken Fresquez, Water Specialist, with the State Engineers Office, Roswell, New Mexico.

ATTACHMENT H
(ITEM XII, FORM C 108)

Marathon Oil Company has examined available geologic and engineering data. Marathon finds no evidence of open faults or any other hydrologic connection between the proposed disposal zone (Devonian), and the underground source of drinking water (Grayburg).

ATTACHMENT I
(ITEM XIII, FORM C 108)

Marathon Oil Company has published Legal Notices in the Artesia Daily Press and Carlsbad Current-Argus; however, the papers have not yet furnished Marathon with affidavits of publications. These will be forthcoming.

Mid-Continent Region
Exploration United States



P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 7, 1991

Bureau of Land Management
P. O. Box 1778
Carlsbad, New Mexico 88220-1778

CERTIFIED MAIL & RETURN
RECEIPT REQUESTED

Attention: Mr. Shannon Shaw

Re: Application for Authorization to Inject
Our Lease NM-4761 - U. S. Lease NM-0384628
1980' FNL & 660' FWL Section 23,
T-21-S, R-23-E, N.M.P.M.,
Indian Basin Gas Com Well #1
Conversion to SWD in Devonian formation
Eddy County, New Mexico

Gentlemen:

Attached is a copy of our Application for Authorization to Inject (C-108) filed for administrative approval with the Oil Conservation Division per the enclosed letter.

Should the BLM have any objections or desire a hearing, please contact the NMOCD within 15 days of your receipt of this notice.

Please note that our recent recompletion attempt of this well in the Wolfcamp was unsuccessful, so we are reapplying for the Devonian.

Should we obtain special authorization of the NMOCD to commence our operations, we will notify you immediately with a Sundry Notice.

Should you have any questions, please advise.

Very truly yours,

MARATHON OIL COMPANY


Mark A. Skrabacz
Contract Landman

MAS;mmc'
Encls.

xc: Mr. T. N. Tipton (w/o Encl.)

State of New Mexico
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501-2088
Attention: Mr. David Catanach

Mid-Continent Region
Exploration United States



P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 7, 1991

Santa Fe Energy Company
550 West Texas, Suite 1330
Midland, Texas 79701

CERTIFIED MAIL & RETURN
RECEIPT REQUESTED

Attention: Mr. Gary V. Green

Re: Application for Authorization to Inject
Indian Basin Gas Com #1 Well
Conversion to SWD in Devonian
1980' FNL & 660' FWL Section 23, T-21-S, R-23-E,
Eddy County, New Mexico

Gentlemen:

Attached is a copy of our Application for Authorization to Inject (Form C-108) to be filed for administrative approval with the New Mexico Oil Conservation Division. This notice is being sent to you as offset leasehold operator in Section 14, T-21-S, R-23-E, one-half mile north of the proposed SWD well.

Should you have any objections or desire a hearing, please contact the NMOCD within 15 days. However, if you have no objections, Marathon requests that you sign the attached waiver and forward it to the NMOCD. Thereby enabling Marathon to expedite this matter.

Very truly yours,

MARATHON OIL COMPANY


Mark A. Skrabacz
Contract Landman

MAS;mmc'
Attachment

xc: State of New Mexico
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501-2088

WAIVER

As an offset operator, SANTA FE ENERGY COMPANY has no objections to Marathon Oil Company's Application for Authorization to Inject as described in the attached letter dated August 7, 1991.

SANTA FE ENERGY COMPANY

By:
Its:
Date: