STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

HOBBS DISTRICT OFFICE

9-1-89

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Swd 378

RE: Proposed:
MC_____
DHC_____
NSL_____
NSP_____
SWD X
WFX_____
PMX_____

Gentlemen:

I have examined the application for the:

Marathon Oil Co. Aetna Eavest #2-A 26-16-38
Operator Lease & Well No. Unit S-T-R

and my recommendations are as follows:

OK

Yours very truly,

Jerry Sexton

Jerry Sexton
Supervisor, District 1

/ed

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPAR

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

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: Allen Wilson 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: Jack R. Jenkins Title Hobbs Production Superintendent

Signature: _____ Date: 8-24-89

* 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. Section X - Filed with initial completion 10/8/82

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

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.

INJECTION WELL DATA SHEET

SIDE 1

Marathon Oil Company — OPERATOR

Aetna Eaves — LEASE

2 — WELL NO.

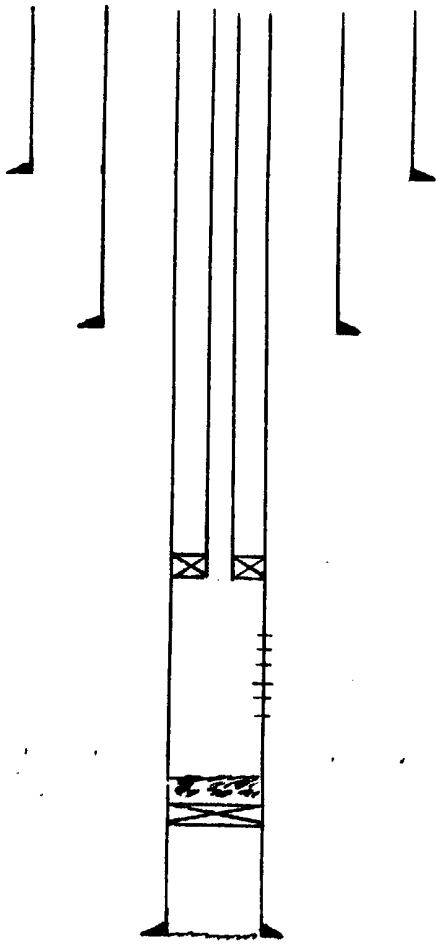
330' FNL & 990' FEL — FOOTAGE LOCATION

26 — SECTION

16 South — TOWNSHIP

38 East — RANGE

Proposed
Schematic



Tabular Data

Surface Casing Set to 371'

Size 13 3/8 " Cemented with 400 sx.

TOC Surface feet determined by Circulated

Hole size 17 1/2"

Intermediate Casing Set to 4653'

Size 9 5/8 " Cemented with 1800 sx.

TOC Surface feet determined by circulated

Hole size 12 1/4"

Long string Set to 8500'

Size 5 1/2 " Cemented with 940 sx.

TOC 3430 feet determined by Temp. Survey

Hole size 8 1/2"

Total depth 8500'

Injection interval

5968 feet to 6241 feet Perforations
(perforated or open-hole, indicate which)

Tubing size 2 3/8" or 2 7/8"* lined with Duo-Line or equivalent (material) set in a Guiberson ER-VI or equivalent (brand and model) packer at ± 5900 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres

2. Name of Field or Pool (if applicable) N/A

3. Is this a new well drilled for injection? [ ] Yes [X] No

   If no, for what purpose was the well originally drilled? Oil

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

   Yes; Drinkard formation at 8119' - 8274', Plan to isolate be setting CIBP @ ± 8000' & dump bailing 35' cement on top.

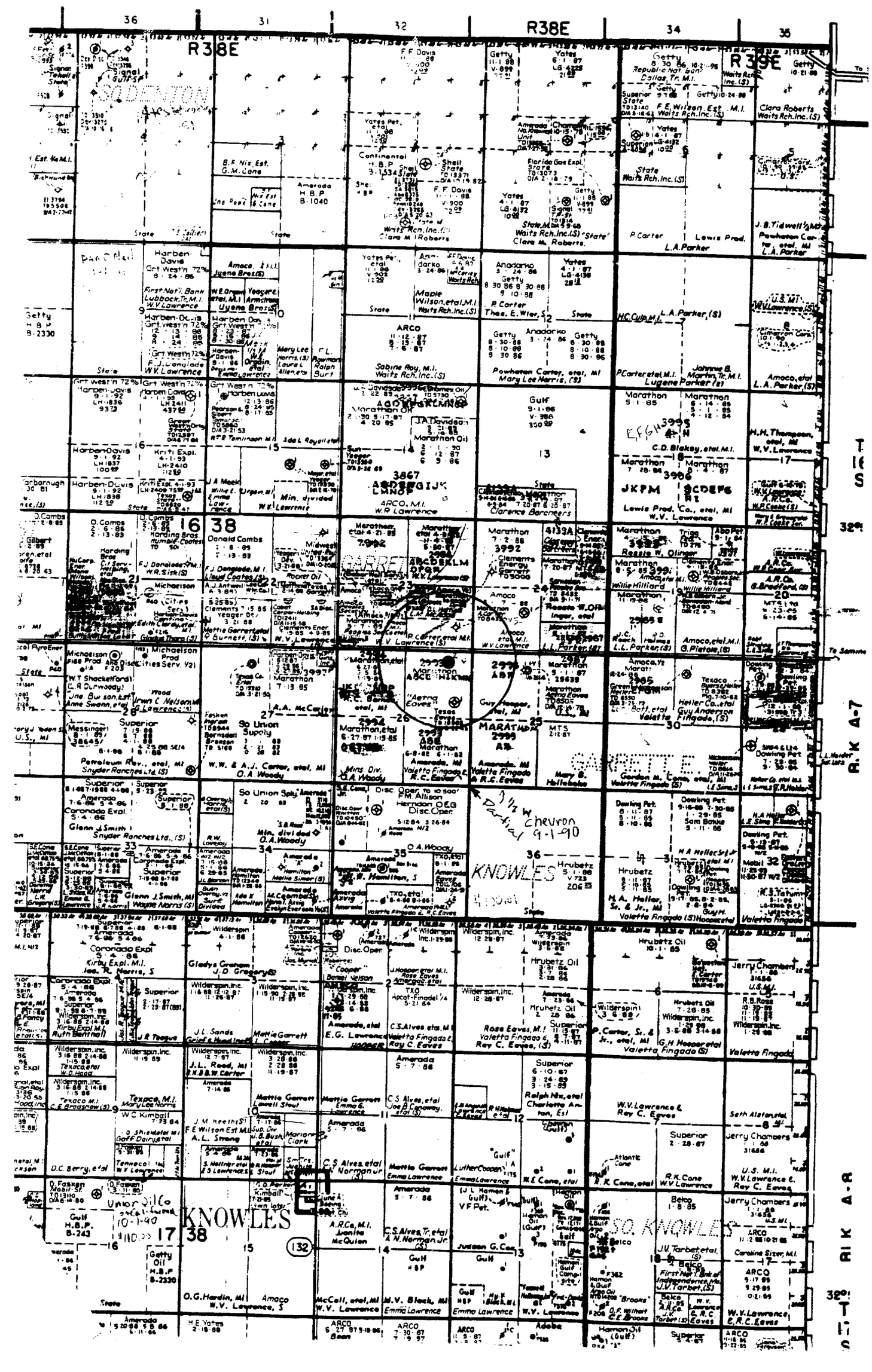
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

   North Knowles (Devonian) Pool @ 13,072'; East Garrett (Drinkard) Pool @ 8119'; & Garrett (ABO Reef) Pool @ 8314'

* Depending on injection pressure & rate.

PART V

LEA, Northeast



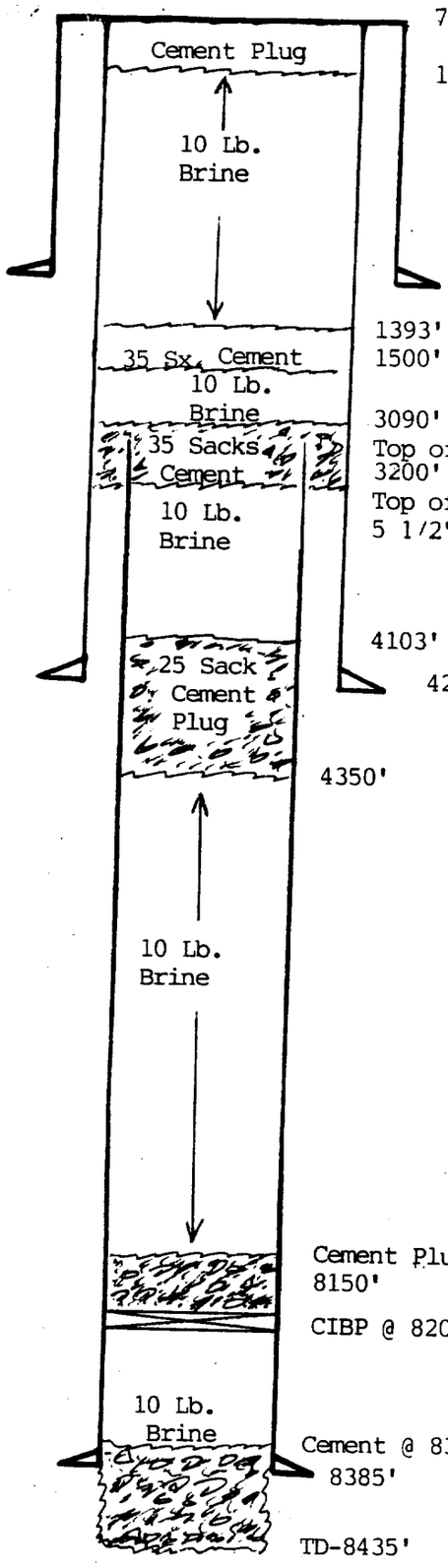
FORM C - 108
PART VI

1. Marathon Oil Company
Delmont L. Hatfield Well No. 1
1980' FSL & 1765' FEL, Section 23, T16S, R38E
Producing Oil Well (Abo Reef @ 8314 - 8337)
Date Drilled: 9-4-81
Total Depth: 9000'
Surface Casing: 13 3/8" 48# H-40
Set to 342'. Cemented with 375 sacks - circulated.
Intermediate Casing: 9 5/8" 36 & 40#
K-55 & N-80 to 4229'
Cemented with 1700 sacks - circulated.
Production Casing - 5 1/2" 15.5 & 17#
K-55 Set to 8625'. Cemented with 3025 sacks - circulated.
3025 sacks - circulated.

2. Marathon Oil Company
Anderson Carter Well No. 1
660' FEL & 990' FSL Section 23, T16S, R38E
Dry Hole - Plugged & abandoned 2-29-83
Total Depth: 8435'
Plugging Record & Schematic: See attached.

075-89/ASW

WELL DATA SHEET



FIELD Undesignated

LEASE AND WELL NO. Anderson Carter Well No. 1

LOCATION 990'FSL & 660' FEL, Sec. 23, T16S, R38E

COUNTY AND STATE Lea, New Mexico

STATUS Plugged and Abandoned

TD 8435' PBTD 8379' KB 3707' GL 3692'

SURFACE CASING 13 3/8", 48#, H40, ST&C at 374'
Cemented w/400 Sacks - Circulated

INTERMEDIATE CASING 9 5/8", 36# & 40#, K55, LT&C
4299' Cemented w/1710 Sacks - Circulated

PRODUCTION CASING 5 1/2", 15.5# & 17#, K55, LT&C at 8385'. Cemented w/1230 sacks. Top of cement at 3450'.

TUBING

RODS

PUMPING UNIT

PRESENT COMPLETION: N/A

HISTORY Drilled in March 1982. Tested following zones:
Abo (8367 - 72). (8350 - 63). (8340 - 47).
Drinkard (8234 - 42). Perfs from 8367 - 72 are still open, all others are squeezed.
Plugged & Abandoned 2/9/83

PREPARED BY: Allen S. Wilson DATE August 8, 1989

004-89wds

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SANTA FE		
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LAND OFFICE		
OPERATOR		

Form C-105
Revised 11-1-58

NEW MEXICO OIL CONSERVATION COMMISSION
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease: State [ ] Fee [X]

5. State Oil & Gas Lease No.

1a. TYPE OF WELL

b. TYPE OF COMPLETION: NEW WELL [ ] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER

OIL WELL [ ] GAS WELL [ ] DRY [X] OTHER

7. Unit Agreement Name

8. Farm or Lease Name: Anderson Carter

2. Name of Operator: Marathon Oil Company

9. Well No.: 1

3. Address of Operator: P.O. Box 2409, Hobbs, New Mexico 88240

10. Field and Pool, or Wildcat: Undesignated

4. Location of Well

UNIT LETTER P LOCATED 990 FEET FROM THE South LINE AND 660 FEET FROM THE East LINE OF SEC. 23 TWP. 16S RGE. 38E NMPM

12. County: Lea

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
2-2-82	3-12-82		GR 3692 KB 3707	3692'

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
8435	Surface		→	All	

24. Producing Interval(s), of this completion — Top, Bottom, Name

25. Was Directional Survey Made: Deviation Survey

26. Type Electric and Other Logs Run: CNL- FDC- GR- Cal., DLL-MSFL-GR, BHC- Sonic-GR

27. Was Well Cored: Yes

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	48#	374'	17 1/2"	400 sx	
9 5/8"	36# & 40#	4299'	12 1/4"	1710 sx	
5 1/2"	15.5# & 17#	8385'	8 1/2"	1230 sx	3165'

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET

31. Perforation Record (Interval, size and number)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED

33. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping — Size and type pump)	Well Status (Prod. or Shut-in)
		Plug & Abandoned

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Gas—Oil Ratio

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Oil Gravity — API (Corr.)

34. Disposition of Gas (Sold, used for fuel, vented, etc.)

Test Witnessed By

35. List of Attachments

CNL - FDC - GR-C; DLL - MSFL - GR; BHC - Sonic - GR; Deviation Survey

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED Thomas F. Zapatka TITLE Production Engineer DATE March 9, 1983

DIST.: NRD, SRB, WBM, FILE

...D MINERALS DEPARTMENT

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LAND OFFICE		
OPERATOR		

...L CONSERVATION DIVISI
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1-7...

5a. Indicate Type of Lease: State ☐ Fee ☒
5. 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. OIL WELL ☒ GAS WELL ☐ OTHER-
7. Unit Agreement Name
2. Name of Operator: Marathon Oil Company
8. Farm or Lease Name: Anderson Carter
3. Address of Operator: P.O. Box 2409 Hobbs, NM 88240
9. Well No.: 1
4. Location of Well: UNIT LETTER P, 990 FEET FROM THE South LINE AND 660 FEET FROM THE East LINE, SECTION 23 TOWNSHIP 16S RANGE 38E NMPM.
10. Field and Pool, or Wildcat: Undesignated
15. Elevation (Show whether DF, RT, GR, etc.): 3692 GL
12. County: Lea

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☒
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER ☐	

17. 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.

PLUG AND ABANDON (Tony Plattsmier, NMOCD representative present for witnessing.)

02-24-83 Rigged up Baber casing pulling rig, installed BOP and pulled out of the hole with 271 joints of 2 3/8" tubing and seating nipple. Ran a cast iron bridge plug on wireline and set it at 8200'. Ran in the hole with 2 3/8" tubing open ended to 8196'. Shut down for the night.

02-25-83 Loaded the hole with mud laden 10# brine. Spotted 5 sacks Class "C" neat cement on top of the cast iron bridge plug. Pulled the tubing up to 4350' and spotted 25 sacks of Class "C" neat cement. Pulled out of the hole laying down the tubing. Removed BOP and wellhead. Welded lift nipple into 5 1/2" casing. Shut down for the night.

02-26-83 Rigged up casing jacks, pulled slips free and found the 5 1/2" casing free at 3150'. Rigged down casing jacks and installed BOP. Rigged up wireline truck and casing cutter failed to cut casing. Pulled out of the hole with the casing cutter. Shut down for the night.

(cont.)

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

SIGNED Steven A. Pohler TITLE Production Engineer DATE 3-01-83

APPROVED BY David R. Catanach TITLE OIL & GAS INSPECTOR DATE JUN 1 1983

CONDITIONS OF APPROVAL, IF ANY:

DIST.: NRD, BRB, WDH, FILE

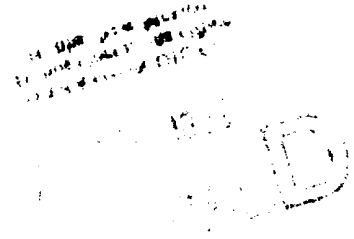
02-27-83 Went in the hole with a casing cutter and cut the 5 1/2" casing off at 3150' and pulled 79 joints of 5 1/2" casing. Ran in the hole with 2 3/8" tubing to 3200' and spotted 35 sacks of Class "C" cement. Pulled the tubing up the hole. Shut down for the night.

02-28-83 Shut down for Sunday.

02-29-83 Went back in the hole with the tubing and tagged the top of the cement at 3090'. Pulled up the hole with the tubing to 1500' and spotted 35 sacks of Class "C" cement. Pulled out of the hole with the tubing. Removed the BOP's, dug out the cellar and cut off the wellhead. Mixed 3 sacks of Class "C" cement and spotted a 10' plug at the surface in the 9 5/8" hole on top of empty mud sacks. Welded on 7/16" metal plate over 13 3/8" surface pipe and installed dry hole marker. Rigged down Baker casing pulling rig.

Class "C" cement was used for plugging operation. 371' of 13 3/8", 48# casing set at 374' and 4296' of 9 5/8", 36# casing set at 4299' and 5235' of 5 1/2", 15.5# and 17# casing set at 8385' were left in the hole.

Waiting on pits to dry out before leveling and inspection.



Form C-108
Part VII

1. Proposed average and maximum injection rates:

   300 BWPD & 1000 BWPD respectively.

2. Type of system:

   This will be a closed system.

3. Proposed average and maximum injection pressures:

   300 psig and 1000 psig respectively.

4. See attached.

5. See attached.

068-89/ASW

No, 4+5

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Marathon Oil Company
Date : 11-14-1988
Location: V. E. Roddy - Heater (on 11-10-1988)

	Sample 1
Specific Gravity:	1.036
Total Dissolved Solids:	51030
pH:	0.00
IONIC STRENGTH:	0.964

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	100	2000
Magnesium	(Mg^{+2})	44.0	535
Sodium	(Na^{+1})	734	16900
Iron (total)	(Fe^{+2})	0.183	5.10
Barium	(Ba^{+2})	0.022	1.50
ANIONS:			
Bicarbonate	(HCO_3^{-1})	6.00	366
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	26.0	1250
Chloride	(Cl^{-1})	846	30000

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	-6.9	-29

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Marathon Oil Company
Date : 11-14-1988
Location: Benson - Heater (on 11-10-1988)

	Sample 1
Specific Gravity:	1.034
Total Dissolved Solids:	47746
pH:	0.00
IONIC STRENGTH:	0.912

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	84.0	1680
Magnesium	(Mg^{+2})	60.0	729
Sodium	(Na^{+1})	680	15600
Iron (total)	(Fe^{+2})	14.6	409
Barium	(Ba^{+2})	0.013	0.900
ANIONS:			
Bicarbonate	(HCO_3^{-1})	5.00	305
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	29.1	1400
Chloride	(Cl^{-1})	790	28000

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	-7.0	-30

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : Marathon Oil Company
Date : 11-14-1988
Location: Hatfield - Heater (on 11-10-1988)

	Sample 1
Specific Gravity:	1.050
Total Dissolved Solids:	70258
pH:	0.00
IONIC STRENGTH:	1.281

		me/liter	mg/liter
CATIONS:			
Calcium	(Ca^{+2})	60.0	1200
Magnesium	(Mg^{+2})	52.0	632
Sodium	(Na^{+1})	1080	24800
Iron (total)	(Fe^{+2})	0.039	1.10
Barium	(Ba^{+2})	0.009	0.600
ANIONS:			
Bicarbonate	(HCO_3^{-1})	21.0	1280
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	60.4	2900
Chloride	(Cl^{-1})	1110	39400

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	-6.5	-33

TYPICAL SAN ANDRES WATER

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : MARATHON
Date : 08-21-1989
Location: LEA UNIT #7 (on 9-27-82)
LEA SAN ANDRES FIELD

	Sample 1
Specific Gravity:	1.173
Total Dissolved Solids:	242214
pH:	5.73
IONIC STRENGTH:	5.083

		me/liter	mg/liter
CATIONS:			
Calcium	(Ca^{+2})	1200	24000
Magnesium	(Mg^{+2})	400	4860
Sodium	(Na^{+1})	2670	61500
Iron (total)	(Fe^{+2})	19.6	547
Barium	(Ba^{+2})	0.014	0.980
ANIONS:			
Bicarbonate	(HCO_3^{-1})	3.00	183
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	14.6	700
Chloride	(Cl^{-1})	4260	151000

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	1.3	6.7

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : MARATHON
Date : 08-21-1989
Location: COMMINGLED @ 33.3% EACH - RODDY/BENSON/HATFIELD (on 11-10-88)

	Sample 1
Specific Gravity:	1.040
Total Dissolved Solids:	56234
pH:	6.10
IONIC STRENGTH:	1.051

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	81.5	1630
Magnesium	(Mg^{+2})	51.9	631
Sodium	(Na^{+1})	830	19100
Iron (total)	(Fe^{+2})	4.94	138
Barium	(Ba^{+2})	0.014	0.990
ANIONS:			
Bicarbonate	(HCO_3^{-1})	10.7	650
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	38.5	1850
Chloride	(Cl^{-1})	914	32400

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	-0.65	-29

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : MARATHON
Date : 08-21-1989
Sample 1: COMMINGLED = 50% LEA UNIT #7 = 50%
Sample 2: COMMINGLED = 60% LEA UNIT #7 = 40%
Sample 3: COMMINGLED = 70% LEA UNIT #7 = 30%

		Sample 1		Sample 2		Sample 3	
Specific Gravity:		1.107		1.093		1.080	
Total Dissolved Solids:		149224		130626		112028	
pH:		5.92		5.95		5.99	
IONIC STRENGTH:		3.067		2.664		2.260	
CATIONS:		me/liter	mg/liter	me/liter	mg/liter	me/liter	mg/liter
Calcium	(Ca^{+2})	642	12800	530	10600	418	8360
Magnesium	(Mg^{+2})	226	2750	191	2320	156	1900
Sodium	(Na^{+1})	1750	40300	1570	36000	1380	31800
Iron (total)	(Fe^{+2})	12.3	343	10.8	302	9.34	261
Barium	(Ba^{+2})	0.014	0.985	0.014	0.986	0.014	0.9
ANIONS:							
Bicarbonate	(HCO_3^{-1})	6.83	417	7.59	463	8.36	510
Carbonate	(CO_3^{-2})	0	0	0	0	0	0
Hydroxide	(OH^{-1})	0	0	0	0	0	0
Sulfate	(SO_4^{-2})	26.5	1280	28.9	1390	31.3	1510
Chloride	(Cl^{-1})	2590	91700	2250	79800	1920	68000
DISSOLVED GASES							
Carbon Dioxide	(CO_2)		0		0		0
Hydrogen Sulfide	(H_2S)		0		0		0
Oxygen	(O_2)		0		0		0

Temperature		SCALING INDEX (positive value indicates scale)					
		Calcium	Calcium	Calcium	Calcium	Calcium	Calcium
86°F	30°C	Carbonate	Sulfate	Carbonate	Sulfate	Carbonate	Sulfate
		0.33	7.1	0.18	6.1	0.02	3.1

Comments:
COMMINGLED = 33.3% EACH RODDY/BENSON/HATFIELD (ON 11-10-99)
LEA UNIT #7 (ON 9-27-82)

Form C-108
Part VIII

1. Injection zone: San Andres

   Lithology : Dolomite

   Top : 4695'

   Bottom : 6315'

   Thickness : 1620'

   Perforations : 5968' - 6241'

2. Fresh water zone: Ogallala Formation
   Depth to bottom : ± 60' to 120'

069-89/ASW

FORM C - 108
PART IX

The proposed stimulation program is a ball-out acid job with 5000 gallons of 15% HCl Acid.

067-89/ASW