

OIL CONSERVATION DIV
811 S. 1st ST.
ARTESIA, NM 88210-2834

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.

NM-62211

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

Hanagan APL Fed Com #1

9. API Well No.

30-015-28635

10. Field and Pool, or Exploratory Area

Hackberry Morrow

11. County or Parish, State

Eddy Co., NM

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

YATES PETROLEUM CORPORATION (505) 748-1471

3. Address and Telephone No.

105 South 4th St., Artesia, NM 88210

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1980' FNL & 1980' FEL of Section 31-T19S-R30E (Unit G, SWNE)

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☒ Notice of Intent
☐ Subsequent Report
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Abandonment
☐ Recompletion
☐ Plugging Back
☐ Casing Repair
☐ Altering Casing
☒ Other Commingling
☐ Change of Plans
☐ New Construction
☐ Non-Routine Fracturing
☐ Water Shut-Off
☐ Conversion to Injection
☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Please see attached documents for commingling the Atoka and Morrow formations.

RECEIVED

DEC 06 1995

OIL CON. DIV.
DIST. 2

14. I hereby certify that the foregoing is true and correct

Signed

Rusty Klen

Title Production Clerk

Date Nov. 22, 1995

(This space for Federal or State office use)

Approved by

John J. [Signature]

Title

Petroleum Engineer

Date

12/1/95

Conditions of approval, if any:

**Application for Downhole Commingling
Hanagan APL Federal #1
Unit G Sec. 31-T19S-R30E
Eddy County, New Mexico**

Reason for Application: Yates Petroleum Corporation respectfully requests approval to commingle the Atoka and Morrow formations. Our intention is to maximize gas recovery from the Atoka and Morrow and prevent mineral resource waste. The Atoka zones in this area historically are limited in size and deplete rapidly and the Morrow zone in this well appears to be marginally economic. Additional oil and gas will be produced by commingling the two zones because the economic limit, per zone, will be lower with both zones producing together.

1. Name and Address of the Operator:

Yates Petroleum Corporation
105 South Fourth Street
Artesia, NM 88210
ATTN: Brian Collins

2. Lease Name, Well Number, Well Location, Name of the Pools to be commingled:

Hanagan APL Federal #1
Unit G Sec. 31-T19S-R30E
1980'FNL & 1980'FEL
Pools: Undesignated Atoka
Undesignated Morrow

3. A plat of the area showing the acreage dedicated to the well and the ownership of all offsetting leases.

See Attachment A (map)

4. A current (within 30 days) 24-hour productivity test on Division Form C-116 showing the amount of oil, gas, and water produced from each zone.

See Attachment B (Atoka DST report and chronological of Morrow test).
Morrow capable of approximately 300 MCFD. Best engineering estimate is 100 MCFD against line pressure.
Morrow perf interval 11,491-11,878'.
Atoka capable of approximately 11,000 MCFD/negligible condensate from DST.
Approximate Atoka perf interval 11,086-11,173'.

5. A production decline curve for both zones showing that for a period of at least one year a steady rate of decline has been established for each zone which will permit a reasonable allocation of the commingled production to each zone for statistical purposes. (This requirement may be dispensed with in the case of a newly completed or recently completed well which has little or no production history. However, a complete description of treating, testing, etc., of each zone, and a prognostication of future production from each zone shall be submitted.)

See Attachment B.

Morrow : Assume 30%/yr. exponential decline behavior (best engineering estimate).

$$Q_i = 100 \text{ MCFD}$$

$$Q_{\text{abn}} = 5 \text{ MCFD}$$

$$d = 30\%/yr.$$

$$N_{\text{gas}} = 365 \frac{(5-100)}{\ln(1-.3)} = 97,217 \text{ MCF Morrow gas reserves.}$$

$$\text{Condensate} = 0$$

Atoka: Assume 99%/yr. exponential decline behavior (best engineering estimate), dry gas with 1 BBL/MMCF condensate per sample chamber.

$$Q_i = 11,000 \text{ MCFD}$$

$$Q_{\text{abn}} = 30 \text{ MCFD}$$

$$d = 99\%/yr.$$

$$N_{\text{gas}} = 365 \frac{(30 - 11,000)}{\ln(1 - .99)} = 869,468 \text{ MCF Atoka gas reserves.}$$

$$\text{Condensate} = (1 \text{ BPM}) (869 \text{ MMCF}) = 869 \text{ BC Atoka oil reserves.}$$

6. Estimated bottom-hole pressure for each artificially lifted zone. A current (within 30 days) measured bottom-hole pressure for each zone capable of flowing.

See Attachment B

A reasonable estimate of the Morrow BHP is 4674 psi @ 11,685' assuming a normal pressure gradient of 0.40 psi/ft. A reasonable estimate of the Atoka BHP is 5202 psi @ 11,058' taken from DST.

7. A description of the fluid characteristics of each zone showing that the fluids will not be incompatible in the well-bore.

Both Atoka and Morrow will produce sweet gas. Don't anticipate any compatibility problems.

8. A computation showing that the value of the commingled production will not be less than the sum of the values of the individual streams.

Both Atoka and Morrow will produce sweet gas. The value of the gas will not be affected by commingling.

9. A formula for the allocation of production to each of the commingled zones and a description of the factors or data used in determining such formula.

$$\text{Gas:} \quad \text{Atoka} = \frac{869,468 \text{ MCF}}{869,468 + 97,217 \text{ MCF}} = .8994 = 90\%$$

$$\text{Morrow} = 10\%$$

$$\text{Condensate:} \quad \text{Atoka} = 100\%$$

$$\text{Morrow} = 0\%$$

10. A statement that all offset operators and, in the case of a well on federal land, the US BLM, have been notified in writing of the proposed commingling.

The Offset Operators for this area and the BLM were notified of the proposed commingling of the Hanagan APL Federal #1.

ATTACHMENT A

U S

MS

5

9:30

14

30

1

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Atona

Attachment B

FIELD REPORT

TYPE OF SERVICE
OPEN HOLE DST

DATE
03-OCT-1995

**DISTRICT
HORSE TEST**

Page
1 of 2

WELL OWNER: YATES PETROLEUM CORPORATION

SERVICE ORDER NUMBER: 139286

REPORTS ADDRESS: 105 S. 4TH STREET / ARTESIA, NM 88210 ATTN: AL SPRINGER

WELL NAME & NO.: MANAGAN "APL" FED. COMM. #1

FIELD: WILDCAT

LEADS:

LOCATION: A31-198-30E

COUNTY: RDDY

STATE: NEW MEXICO

TEST NO. FIVE

TEST INTERVAL FROM 11066 FT TO 11173 FT = 27 FT

SURFACE DATA

EQUIPMENT SEQUENCE

[illegible][illegible]

SERVICE ORDER NUMBER:

139286

SCHLUMBERGER ENGINEER/TECHNICIAN

MARK LUNA

Atoka

FIELD REPORT

TYPE OF SERVICE
OPEN HOLE DSTDATE
03-OCT-1995DISTRICT
MOBBS TEST

Page

2 of 2

INSTRUMENT DATA

INSTRUMENT NO.	SB-20394	J-2047	J-1233		
CAPACITY (PSIG)	10000	6400	4700		
DEPTH	11058	11167	11039		
INSIDE-OUTSIDE	IN	OUT	ABV		
CLOCK CAP	ELECTRONIC	48 HR.	48 HR.		
TEMPERATURE °F	177	180			
I. MID. PSIG	5588	5684			
I. FLOW PSIG	2789-4866	3004-4584	no leaks		
I.S.I. PSIG	5201	5255			
2nd FLOW PSIG					
2nd S.I. PSIG					
P. FLOW PSIG					
P.S.I. PSIG					
P. MID. PSIG	5590	5671			

MUD DATA

MUD TYPE	DRISPAK/XC	MUD WT	9.7	lb/gal
VISCOSITY	33	WATER LOSS	2.5	cc
RESISTIVITY: OF MUD	0.071	• 60	• F	
RESISTIVITY: OF FILTRATE		•	• F	
CHLORIDES	135000	PPM		
H2S DURING TEST	0.0	PPM		

WELL BORE DATA

FORMATION TESTED	ATOKA		
NET PRODUCTIVE INTERVAL	11	ft	EST. POROSITY 14
ELEVATION	3319	ft	DEPTH MEASURED FROM GL
TOTAL MEASURED DEPTH	11173	ft	
O H SIZE	7.875	in	
CASING SIZE	8.625		
LINER SIZE			
PERF INTERVAL FROM		ft	TO
SHOT DENSITY			

CUSHION	LENGTH	AMOUNT	SURFACE PRESS	BOTTOM CHOKER SIZE
MOOR				0.94

SAMPLER DATA

RECOVERY	RESISTIVITY	CHLORIDES	
GAS	32.56 C.F. RECOVERED WATER	• deg F	PPM
OIL	5 C.C. RECOVERED MUD	• deg F	
WATER	C.C. REC. MUD FILTRATE	• deg F	PPM
MUD	C.C. PIT MUD	0.071 • 60 deg F	
GRAVITY	• API • F PIT MUD FILTRATE	• deg F	PPM
GOR -14269	C.F./BBL	SAMPLER PRESSURE 4867 psig	

REMARKS:

THIS DST ON THE ATOKA FORMATION WAS A SUCCESSFUL TEST.
INTERVAL TESTED MADE 11000 MCF PER DAY RATE. IF YOU HAVE
ANY QUESTIONS CALL SCHLUMBERGER AT (505)393-4107. THANK
YOU.

SERVICE ORDER NUMBER:

139286

SCHLUMBERGER ENGINEER/TECHNICIAN

MARK LUNA

REPORT NO.

139286

PAGE NO. 1

TEST DATE:

03-OCT-1995

S T A R

Schlumberger Testing Data Report

Pressure Data Report

Schlumberger

COMPANY: YATES PETROLEUM CORPORATION

WELL: HANAGAN "APL" FED. COMM. #1

TEST IDENTIFICATION

Test Type OPEN HOLE DST
 Test No. FIVE
 Formation ATOKA
 Test Interval (ft) 11086 to 11173
 Depth Reference GL

WELL LOCATION

Field WILCAT
 County EDDY
 State NEW MEXICO
 Sec/Twn/Rng S31-19S-30E
 Elevation (ft) 3319

HOLE CONDITIONS

Total Depth (MD/TVD) (ft) 11173
 Hole Size (in) 7.875
 Casing/Liner I.D. (in) 8.625
 Perf'd Interval/Net Pay (ft) .. / 11
 Shot Density/Diameter (in) ...

MUD PROPERTIES

Mud Type DRISPA/CX
 Mud Weight (lb/gal) 8.7
 Mud Resistivity (ohm.m) 0.071 @ 60F
 Filtrate Resistivity (ohm.m)..
 Filtrate Chlorides (ppm) 135000

INITIAL TEST CONDITIONS

Initial Hydrostatic (psi) 5588.81
 Gas Cushion Type
 Surface Pressure (psi)
 Liquid Cushion Type
 Cushion Length (ft)

TEST STRING CONFIGURATION

Pipe Length (ft)/I.D. (in) ... 10293 / 2.625
 Collar Length (ft)/I.D. (in) .. 803 / 2.44
 Packer Depth (ft) 11080, 11086,
 Bottomhole Choke Size (in) ... 0.94
 Gauge Depth (ft)/Type 11058/SB-20394

NET PIPE RECOVERY

Volume	Fluid Type	Properties

NET SAMPLE CHAMBER RECOVERY

Volume	Fluid Type	Properties
32.56 cuft	Gas	
5 cc	Oil	

Pressure: 4867 GOR: 1034308 GLR: 1034308

INTERPRETATION RESULTS

Model of Behavior
 Fluid Type Used for Analysis..
 Reservoir Pressure (psi)
 Transmissibility (md.ft/cp) ..
 Effective Permeability (md) ..
 Skin Factor/Damage Ratio
 Storativity Ratio, Omega
 Interporous Flow Coef., Lambda..
 Distance to an Anomaly (ft) ..
 Radius of Investigation (ft)..
 Potentiometric Surface (ft) ..

ROCK/FLUID/WELLBORE PROPERTIES

Oil Density (deg. API)
 Basic Solids (%)
 Gas Gravity
 GOR (scf/STB)
 Water Cut (%)
 Viscosity (cp)
 Total Compressibility (1/psi)..
 Porosity (%) 14
 Reservoir Temperature (F) 177
 Form. Vol. Factor (bbl/STB)

PRODUCTION RATE DURING TEST: Data Report

COMMENTS:

THIS DST ON THE ATOKA FORMATION WAS A SUCCESSFUL TEST. INTERVAL TESTED MADE 11000 MCF PER DAY RATE. IF YOU HAVE ANY QUESTIONS CALL SCHLUMBERGER AT (505) 393-4107. THANK YOU.

WELL TEST INTERPRETATION REPORT #: 139286		PAGE: 2, 3-OCT-95
CLIENT : YATES PETROLEUM CORPORATION		
REGION : CSD	SEQUENCE OF EVENTS	FIELD: WILDCAT
DISTRICT: HOBBS TEST		ZONE : ATOKA
BASE : MIDLAND		WELL : H. APL F.C. #1
ENGINEER: MARK LUNA		LOCATION: S31-19S-30E

DATE	TIME (HR:MIN)	DESCRIPTION	ET (MINS)	BHP (PSIA)	WHP (PSIG)
03-OCT	09:23	SET PACKERS	-1		
	09:24	START FLOW ON 1/4" CHOKE	0	2789	88
	09:27	GAS TO SURFACE STRONG BLOW	3		800
	09:29	READING IN PSI	5		1450
	09:39		15		3200
	09:44		20		3600
	09:49		25		3650
	09:54	REACHED HIGHEST PRESSURE ON 1/4" CHOKE	30		3700
	09:54	OPENED ON 3/8" CHOKE	30		3400
	09:59		35		3250
	10:04		40		3200
	10:09	PRESSURE STABLE ON 3/8"	45		3200
	10:14		50		3200
	10:19		55		3200
	10:24	END FLOW & START SHUT-IN	60	4505	3200
	12:58	END SHUT-IN	214	5202	
	12:30	PULLED LOOSE	188	5590	