

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work DRILL	2001 552 21 AM 9:00	5. Lease Number SF-077730 Unit Reporting Number
1b. Type of Well GAS		6. If Indian, All. or Tribe
2. Operator <b>BURLINGTON RESOURCES</b> Oil & Gas Company		7. Unit Agreement Name
3. Address & Phone No. of Operator PO Box 4289, Farmington, NM 87499 (505) 326-9700	NOV 2001	8. Farm or Lease Name Sunray E 9. Well Number #2M
4. Location of Well 2365' FSL, 1935' FWL  Latitude 36° 49.6, Longitude 107° 53.5		10. Field, Pool, Wildcat Blanco Mesaverde/ Basin Dakota 11. Sec., Twn, Rge, Mer. (NMPM) K Sec. 9, T-30-N, R-10-W API # 30-045-30830
14. Distance in Miles from Nearest Town 6 miles from Aztec, NM		12. County San Juan 13. State NM
15. Distance from Proposed Location to Nearest Property or Lease Line 1935'		
16. Acres in Lease		17. Acres Assigned to Well W/303.04
18. Distance from Proposed Location to Nearest Well, Drlg, Compl, or Applied for on this Lease 900'		
19. Proposed Depth 7593'		20. Rotary or Cable Tools Rotary
21. Elevations (DF, FT, GR, Etc.) 6376' GR		22. Approx. Date Work will Start
23. Proposed Casing and Cementing Program See Operations Plan attached		
24. Authorized by: <u>[Signature]</u> Regulatory/Compliance Supervisor		Date <u>9-4-01</u>

PERMIT NO.

APPROVAL DATE

11/14/01

APPROVED BY

[Signature]

TITLE

AFM

DATE

11/14/01

Archaeological Report to be submitted

Threatened and Endangered Species Report to be submitted

NOTE: This format is issued in lieu of U.S. BLM Form 3160-3

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or presentations as to any matter within its jurisdiction

HOLD C104 FOR

NSL in Basin Dakota

District I  
PO Box 1980, Hobbs, NM 88241-1980

District II  
PO Drawer DD, Artesia, NM 88211-0719

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

District IV  
PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico  
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

PO Box 2088  
Santa Fe, NM 87504-2088

Form C-102  
Revised February 21, 1994  
Instructions on back  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045- 30838		*Pool Code 72319/71599	*Pool Name Blanco Mesaverde/Basin Dakota
*Property Code 7567	*Property Name SUNRAY E		*Well Number 2M
*OGRID No. 14538	*Operator Name BURLINGTON RESOURCES OIL & GAS COMPANY		*Elevation 6376'

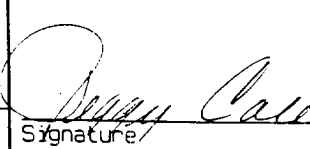
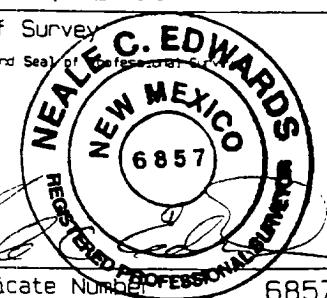
<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	9	30N	10W		2365	SOUTH	1935	WEST	SAN JUAN

<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<sup>12</sup> Dedicated Acres W/303.04		<sup>13</sup> Joint or Infill		<sup>14</sup> Consolidation Code		<sup>15</sup> Order No.			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

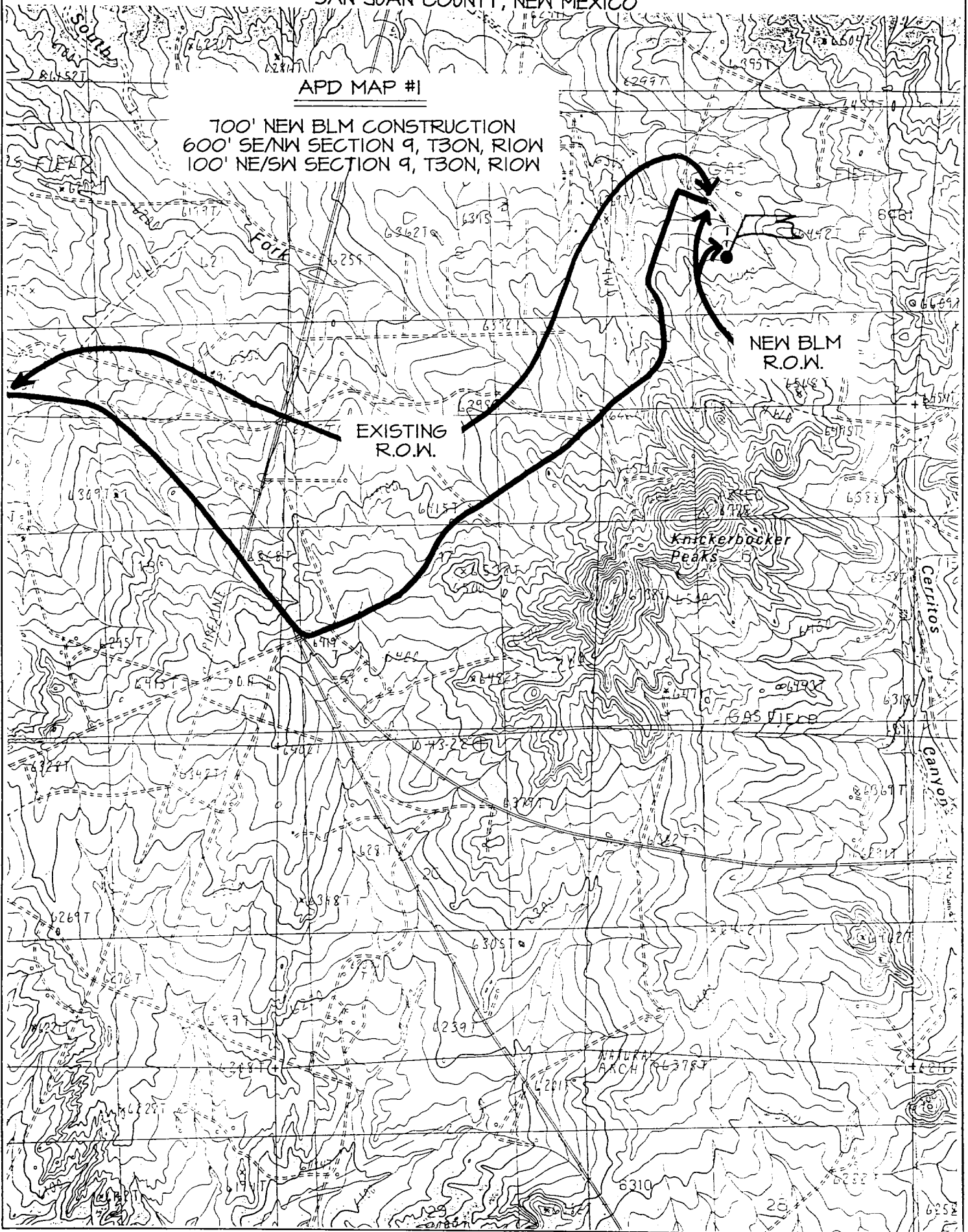
2635.38'		2663.76'		<sup>17</sup> OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.	
LOT 4	LOT 3	LOT 2	LOT 1	 Signature Peggy Cole Printed Name Regulatory Supervisor Title 9-4-01 Date	
LOT 5	LOT 6	LOT 7	LOT 8		
USA-SF-077730					
5103.12'	1935'	660'	5045.04'	<sup>18</sup> SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.	
LOT 12	LOT 11	LOT 10	LOT 9	MAY 30, 2000 Date of Survey Signature and Seal of Professional Surveyor  Certificate Number 6857	
LOT 13	LOT 14	LOT 15	LOT 16		
5141.40'					

BURLINGTON RESOURCES OIL & GAS COMPANY SUNRAY E #2M

2365' FSL & 1935' FWL, SECTION 9, T30N, R10W, N.M.P.M.  
SAN JUAN COUNTY, NEW MEXICO

APD MAP #1

700' NEW BLM CONSTRUCTION  
600' SE/NW SECTION 9, T30N, R10W  
100' NE/SW SECTION 9, T30N, R10W



## OPERATIONS PLAN

**Well Name:** Sunray E #2M  
**Location:** 2365' FSL, 1935' FWL, Sec 9, T-30-N, R-10-W  
San Juan County, NM  
Latitude 36° 49.6, Longitude 107° 53.5  
**Formation:** Blanco Mesaverde/Basin Dakota  
**Elevation:** 6376' GL

<u>Formation Tops:</u>	<u>Top</u>	<u>Bottom</u>	<u>Contents</u>
Surface	San Jose	1688'	
Ojo Alamo	1688'	1818'	aquifer
Kirtland	1818'	2468'	gas
Fruitland	2468'	3023'	gas
Pictured Cliffs	3023'	3163'	gas
Lewis	3163'	3738'	gas
<b>Intermediate TD</b>	<b>3263'</b>		
Mesa Verde	3738'	4038'	gas
Chacra	4038'	4628'	gas
Massive Cliff House	4628'	4838'	gas
Menefee	4838'	5238'	gas
Massive Point Lookout	5238'	5713'	gas
Mancos	5713'	6533'	gas
Gallup	6533'	7268'	gas
Greenhorn	7268'	7318'	gas
Graneros	7318'	7373'	gas
Dakota	7373'		gas
<b>TD</b>	<b>7593'</b>		

### Logging Program:

Cased hole - CBL-CCL-GR - TD to surface  
Open hole - Array Induction, Neutron-Density, Temp - TD to intermediate casing  
Mudlog - none  
Cores - none

### Mud Program:

<u>Interval</u>	<u>Type</u>	<u>Weight</u>	<u>Vis.</u>	<u>Fluid Loss</u>
0- 200'	Spud	8.4-9.0	40-50	no control
200- 3263'	LSND	8.4-9.0	30-60	no control
3263- 7593'	Air/N2	n/a	n/a	n/a

Pit levels will be visually monitored to detect gain or loss of fluid control.

### Casing Program (as listed, the equivalent, or better):

<u>Hole Size</u>	<u>Depth Interval</u>	<u>Csg. Size</u>	<u>Wt.</u>	<u>Grade</u>
12 1/4"	0' - 200'	9 5/8"	32.3#	H-40
8 3/4"	0' - 3263'	7"	20.0#	J-55
6 1/4"	3163' - 7593'	4 1/2"	10.5#	J-55

### Tubing Program:

0' - 7593'      2 3/8"      4.7#      J-55

### BOP Specifications, Wellhead and Tests:

#### **Surface to Intermediate TD -**

11" 3000 psi minimum double gate BOP stack (Reference Figure #1).  
After nipple-up prior to drilling out surface casing, rams and casing will be tested to 600 psi for 30 minutes.

#### **Intermediate TD to Total Depth -**

11" 3000 psi minimum double gate BOP stack (Reference Figure #1).  
After nipple-up prior to drilling out intermediate casing, rams and casing will be tested to 1500 psi for 30 minutes.

**Surface to Total Depth -**

2" nominal, 3000 psi minimum choke manifold (Reference Figure #3).

**Completion Operations -**

7 1/16" 3000 psi double gate BOP stack (Reference Figure #2). After nipple-up prior to completion, pipe rams, casing and liner top will be tested to 2000 psi for 15 minutes.

**Wellhead -**

9 5/8" x 7" x 2 3/8" x 3000 psi tree assembly.

**General -**

- Pipe rams will be actuated once each day and blind rams will be actuated once each trip to test proper functioning.
- An upper kelly cock valve with handle available and drill string valves to fit each drill string will be available on the rig floors at all times.
- BOP pit level drill will be conducted weekly for each drilling crew.
- All BOP tests and drills will be recorded in daily drilling reports.
- Blind and pipe rams will be equipped with extension hand wheels.

**Cementing:**

9 5/8" surface casing - cement with 159 sx Class "B" cement with 1/4# celloflake/sx and 3% calcium chloride (188 cu.ft. of slurry, 200% excess to circulate to surface) WOC 8 hrs. Test casing to 600 psi for 30 minutes.

Saw tooth guide shoe on bottom. Bowspring centralizers will be run in accordance with Onshore Order #2.

**7" intermediate casing -**

Lead w/336 sx 50/50 Class G/TXI lightweight w/2.5% sodium metasilicate, 2% calcium chloride, 10# gilsonite/sx and 1/2# celloflake/sx. Tail w/90 sx 50/50 Class "G" Poz w/2% calcium chloride, 2% gel, 1/4 pps celloflake, 5 pps gilsonite, 0.1% antifoam agent (980 cu.ft. of slurry, 100% excess to circulate to surface.) WOC minimum of 8 hours before drilling out intermediate casing. If cement does not circulate to surface, a CBL will be run during completion operations to determine TOC. Test casing to 1500 psi for 30 minutes.

**See attached alternative intermediate lead slurry.**

7" intermediate casing alternative two stage: Stage collar at 2368'. First stage: cement with 210 sx 50/50 Class "G" Poz w/2% calcium chloride, 2% gel, 1/4 pps celloflake, 5 pps gilsonite, 0.1% antifoam agent. Second stage: 276 sx 50/50 Class G/TXI lightweight w/2.5% sodium metasilicate, 2% calcium chloride, 10# gilsonite/sx and 1/2# celloflake/sx (980 cu.ft., 100% excess to circulate to surface).

Cement nose guide shoe on bottom with float collar spaced on top of shoe joint. Bowspring centralizers spaced every other joint off bottom, to the base of the Ojo Alamo at 1818'. Two turbolating centralizers at the base of the Ojo Alamo at 1818'. Bowspring centralizers spaced every fourth joint from the base of the Ojo Alamo to the base of the surface casing.

## 4 1/2" Production Casing -

Cement to cover minimum of 100' of 4 1/2" x 7" overlap. Lead with 442 sx 50/50 Class "G" Poz with 5% gel, 0.25# celloflake/sx, 5# gilsonite/sx, 0.1% retardant and 0.25% fluid loss additive, 0.15% dispersant, 0.1% antifoam agent (636 cu.ft.), 40% excess to cement 4 1/2" x 7" overlap). WOC a minimum of 18 hrs prior to completing.

4 1/2" production casing alternative: Lead w/186 sx 9.5 PPG Litecrete Blend w/0.11% dispersant, 0.5% fluid loss. Tail w/147 sx Class G 50/50 poz w/5% gel, 0.25 pps celloflake, 5 pps gilsonite, 0.25% fluid loss, 0.15% dispersant, 0.1% retarder, 0.1% antifoam (681 cu.ft., 50% excess to cement 4 1/2" x 7" overlap).

Note: If open hole logs are run, cement volumes will be based on 25% excess over caliper volumes.

Cement float shoe on bottom with float collar spaced on top of float shoe.

Note: To facilitate higher hydraulic stimulation completion work, no liner hanger will be used. In its place, a long string of 4 1/2" casing will be run and cemented with a minimum of 100' of cement overlap between the 4 1/2" x 7" casing strings. After completion of the well, a 4 1/2" retrievable bridge plug will be set below the top of cement in the 4 1/2" x 7" overlap. The 4 1/2" casing will then be backed off above the top of cement in the 4 1/2" x 7" overlap and laid down. The 4 1/2" bridge plug will then be retrieved and the production tubing will be run to produce the well.

- If hole conditions permit, an adequate water spacer will be pumped ahead of each cement job to prevent cement/ mud contamination or cement hydration.

**Special Drilling Operations (Gas/Mist Drilling):**

The following equipment will be operational while gas/mist drilling:

- An anchored blooie line will be utilized to discharge all cuttings and circulating medium to the blow pit a minimum of 100' from the wellhead.
- The blooie line will be equipped with an automatic igniter or pilot light.
- Compressors will be located a minimum of 100' from the wellhead in the opposite direction from the blooie line.
- Engines will have spark arresters or water cooled exhaust.
- Deduster equipment will be utilized.
- The rotating head will be properly lubricated and maintained.
- A float valve will be utilized above the bit.
- Mud circulating equipment, water, and mud materials will be sufficient to maintain control of the well.