NSL 3/17/99

BURLINGTON RESOURCES

SAN JUAN DIVISION

February 23, 1999

Sent Federal Express

Mr. Michael Stogner
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

Re: San Juan 29-7 Unit #47C
345'FNL, 490'FEL Section 2, T-29-N, R-7-W, Rio Arriba County
30-039-26074

Dear Mr. Stogner:

Burlington Resources is applying for administrative approval of an unorthodox gas well location for the Blanco Mesa Verde pool. This well is part of the increased density Mesa Verde program for Burlington Resources.

However, the referenced location was staked non-standard outside the parameters of the increased density order, R-10987A. This location is due to the drastic relief in topography at a standard location and for geological reasons as shown on the attached maps and narrative. The drastic topographic relief lends itself to both a poor site for a well location and steep access which is difficult to adequately maintain. Significant amounts of archaeology are also present in the northeast quarter of this section.

Production from the Blanco Mesa Verde pool is to be included in a 318.14 acre gas spacing and proration unit for the east half (E/2) in Section 2. Production from the Blanco Mesa Verde is to be dedicated to the San Juan 29-7 Unit #47 (30-039-07709) located at 890' FNL, 1750' FEL of Section 2, San Juan 29-7 Unit #47A (30-039-21613) located at 1160' FSL, 1680' FEL of Section 2, and San Juan 29-7 Unit #47B (30-039-25622) located at 2610' FSL, 2200' FEL of Section 2.

The following attachments are for your review:

- Application for Permit to Drill.
- Completed C-102 at referenced location.
- Offset operators/owners plat – Burlington is the offsetting operator.
- Geological narrative and maps
- 7.5 minute topographic map.

(Pull R-10720)

We appreciate your earliest consideration of this application.

Sincerely,

Peggy Bradfield

Peggy Bradfield
Regulatory/Compliance Administrator

xc: NMOCD - Aztec District Office
Bureau of Land Management

3535 East 30th St., 87402-8801, P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700, Fax 505-326-9833

District I
PO Box 1980, Hobbs, NM 88241-1980
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-101
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

☐ AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

[1] Operator Name and Address.	[2] OGRID Number
Burlington Resources Oil & Gas Company PO Box 4289, Farmington, NM 87499	14538
	[3] API Number 30 - 039-26074

RECEIVED
JAN 2000
OIL CON. DIV.
DIST. 3

[4] Property Code	[5] Property Name	[6] Well No.
7465	San Juan 29-7 Unit	47C

[7] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	2	29N	7W		345'	North	490'	East	Rio Arriba

[8] Proposed 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

[9] Proposed Pool 1	[10] Proposed Pool 2
Blanco Mesaverde	

[11] Work Type Code	[12] Well Type Code	[13] Cable/Rotary	[14] Lease Type Code	[15] Ground Level Elevation
N	G	Rotary	State	6823' GR

[16] Multiple	[17] Proposed Depth	[18] Formation	[19] Contractor	[20] Spud Date
N	6300'	Mesaverde	N/a	N/a

[21] Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
12 ¼"	9 5/8"	32.3#	320'	301 cu ft	Surface
8 ¾"	7"	20#	2950'	887 cu ft	Surface
6 ¼"	4 ½"	10.5#	2850-6300'	531 cu ft	Surface

[22] Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

11" 2000 psi minimum double gate BOP

[23] I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: Peggy Bradfield
Printed name: Peggy Bradfield
Title: Regulatory/Compliance Administrator
Date: 1-18-99 Phone: 505-326-9700

OIL CONSERVATION DIVISION

Approved by: [illegible]
Title: DEPUTY OIL & GAS INSPECTOR, DIST. #3
Approval Date: [illegible] Expiration Date: JAN 21 2000
Conditions of Approval: HOLD C104 FOR NSL
Attached ☐

District I
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-10
Revised February 21, 199
Instructions on bac
Submit to Appropriate District Offic
State Lease - 4 Copie
Fee Lease - 3 Copie

☐ AMENDED REPOR

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-039-26074	72319	Blanco Mesaverde

4 Property Code	5 Property Name	6 Well Number
7465	SAN JUAN 29-7 UNIT	47C

7 OGRID No.	8 Operator Name	9 Elevation
14538	BURLINGTON RESOURCES OIL & GAS COMPANY	6823'

10 Surface Location

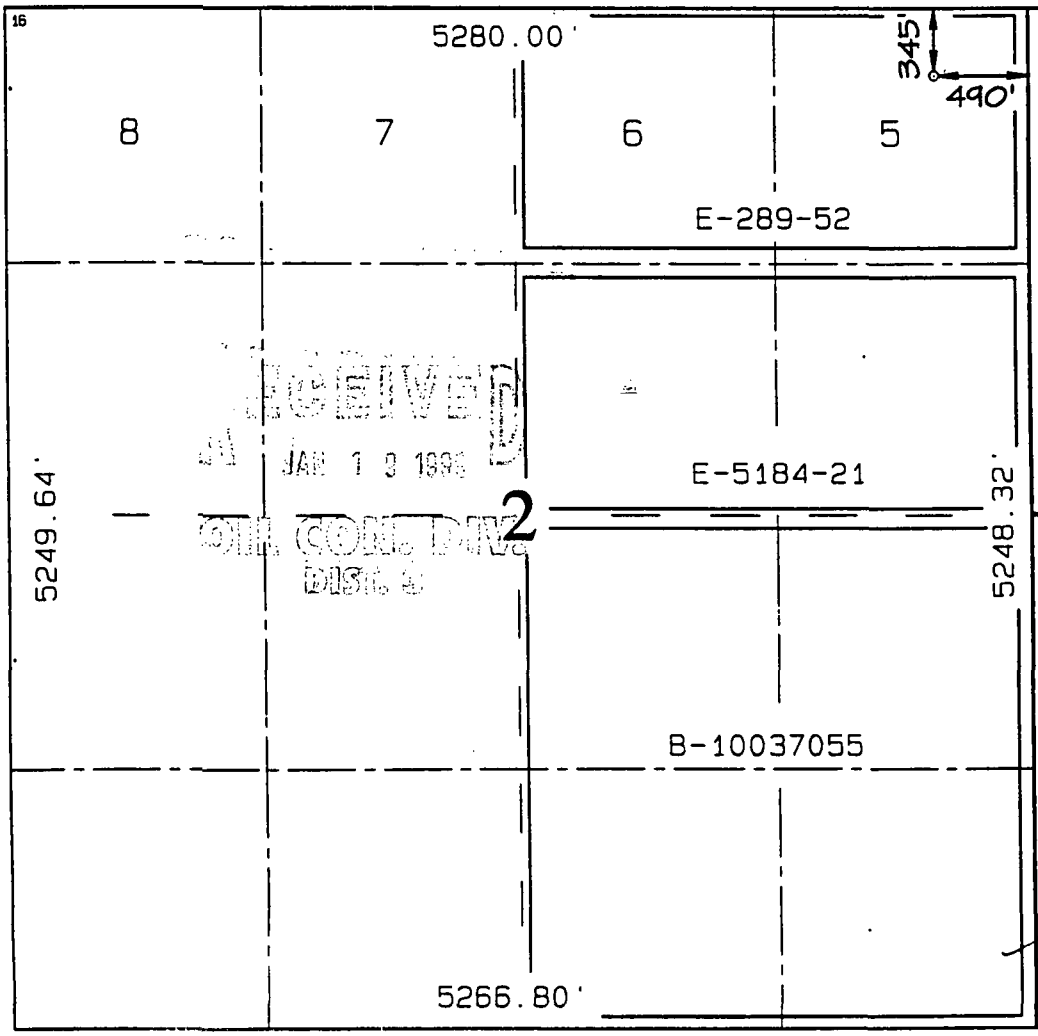
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	2	29N	7W		345	NORTH	490	EAST	RIO ARRIBA

11 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

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
E/318.14			

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



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein i true and complete to the best of my knowledge and belie

Signature
Peggy Bradfield

Printed Name
Regulatory Administratc

Title
1-18-99

Date

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this p was plotted from field notes of actual surveys made by or under my supervision, and that the same is true and correct to the best of my belief.

DECEMBER 3, 1998

Date of Survey

Signature and Seal of Professional Surveyor

NEALE C. EDWARDS
NEW MEXICO
6857
REGISTERED PROFESSIONAL SURVEYOR

6857

Certificate Number

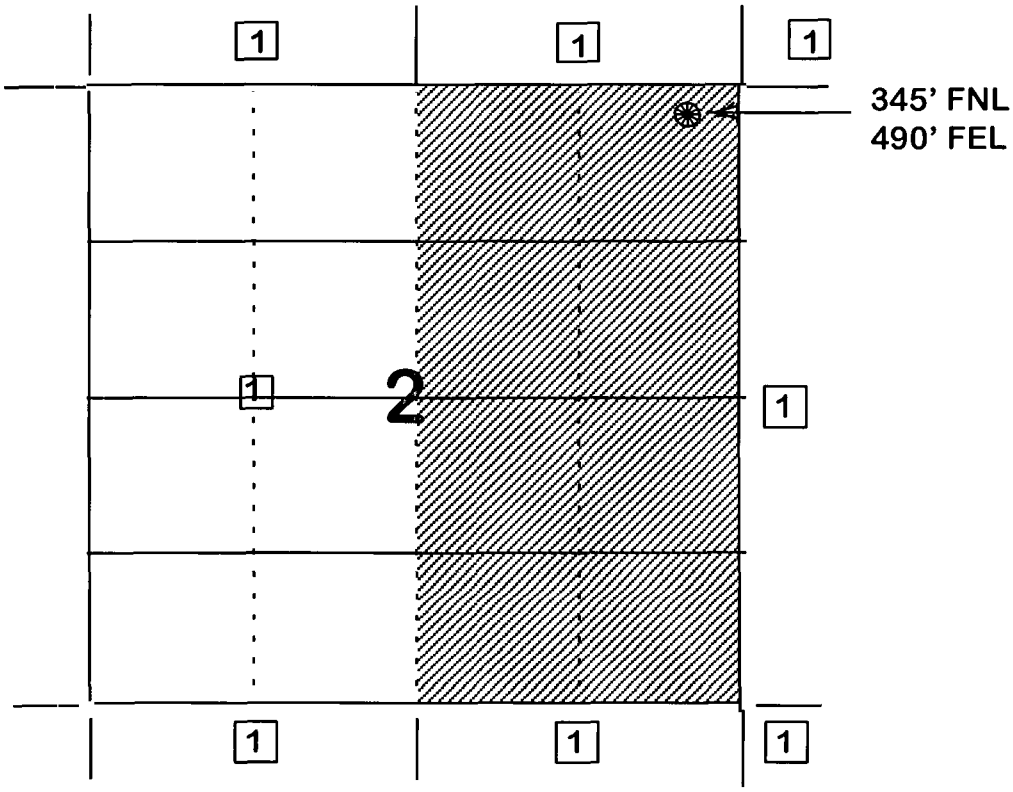
BURLINGTON RESOURCES OIL AND GAS COMPANY

OFFSET OPERATOR \ OWNER PLAT
San Juan 29-7 Unit #47C

Mesaverde Formation

Non-standard location

Township 29 North, Range 7 West

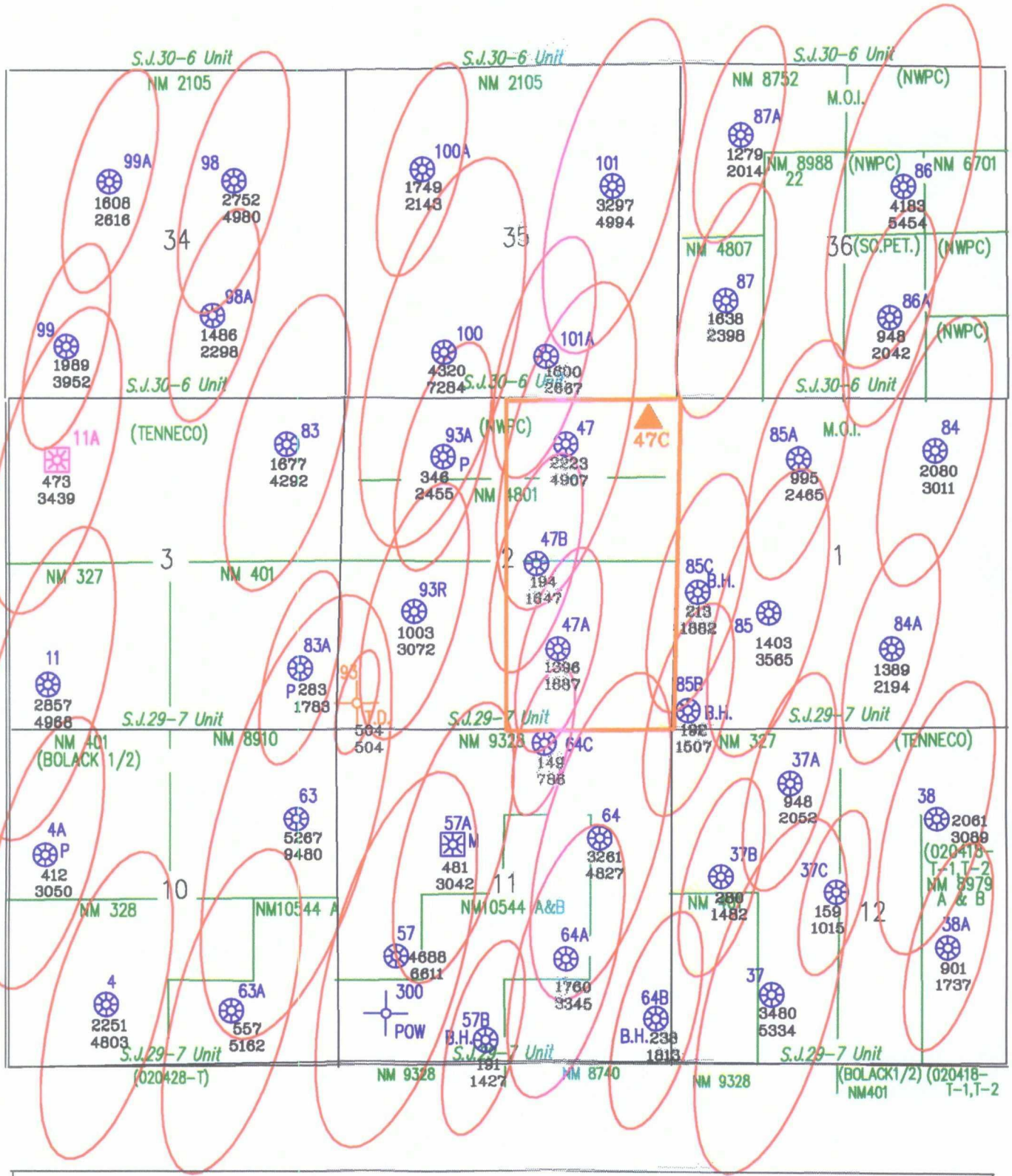


1) Burlington Resources

Proposed San Juan 29-7 Unit Well Number 47C
345' FNL & 490' FEL
Section 2, T29N, R7W
Rio Arriba County, New Mexico
Blanco Mesaverde Pool
Estimated TD 6300'

The location of the proposed test was selected to optimize recovery from the Mesaverde Group. The primary control on productivity in the Mesaverde is the density of natural fractures. Fracture orientation ranges from due north to north 30 degrees east. Gas drainage areas are elliptical in shape with the long axis parallel to the direction of fracture orientation. A drainage ellipse map of the project vicinity indicates that undeveloped gas reserves remain to be exploited in the E/2NE/4 of Section 2, T29N, R7W. The drainage ellipse map is based upon data derived from a larger study of the entire Blanco Mesaverde Pool (estimated ultimate recovery calculated for all wells in the Blanco Mesaverde Pool, original gas in place values calculated for entire Blanco Mesaverde Pool, etc.). Gross recoverable reserves of 1.718 BCFG are projected from the Mesaverde producing interval for the proposed test. Due to topographic and archeological restrictions, it is not possible to exploit the remaining gas reserves in the Mesaverde in E/2NE/4 of Section 2, T29N, R7W from a standard surface location.

San Juan 29-7 Unit #47C
29N - 07W - 02
Blanco Mesaverde

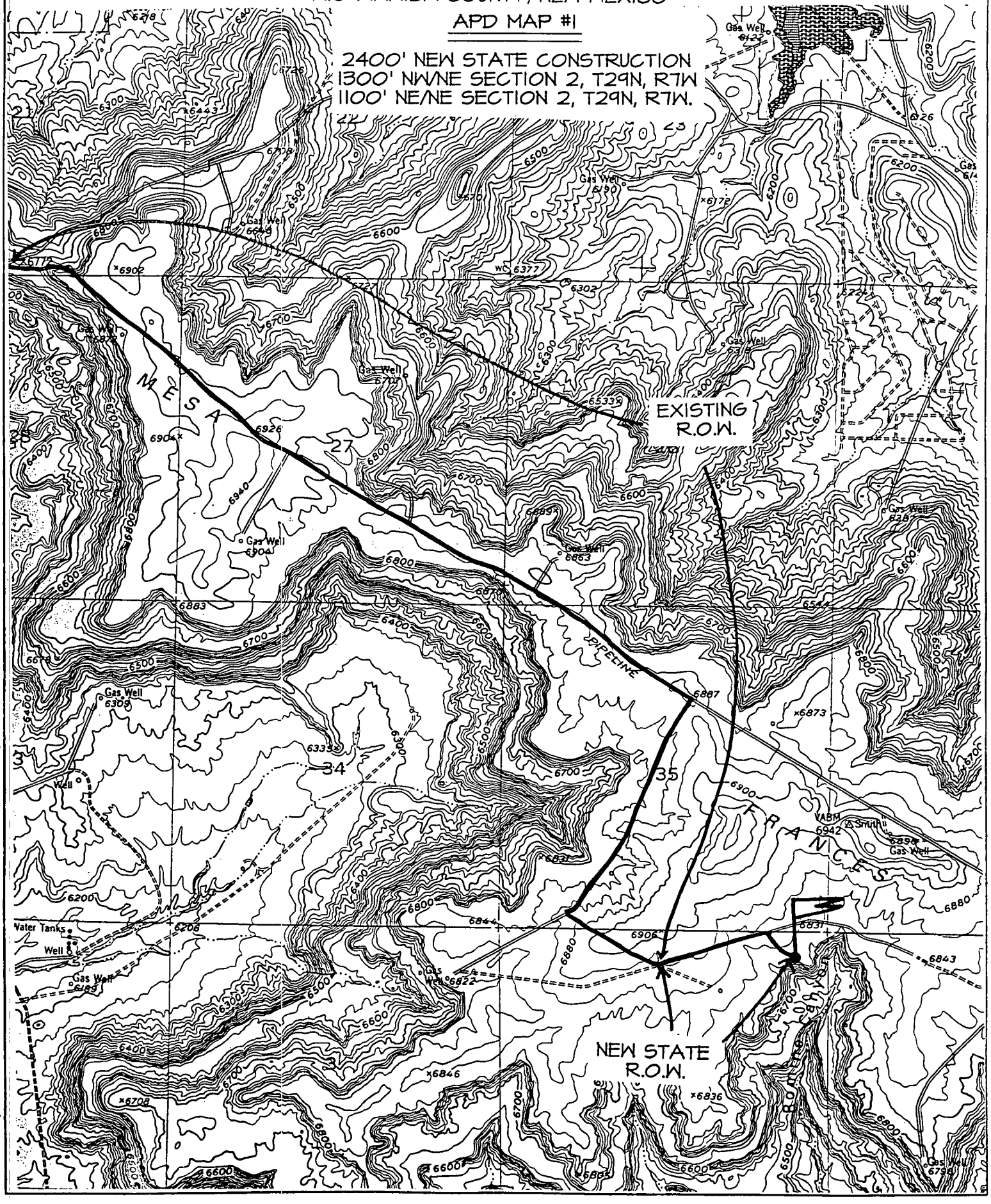


BURLINGTON RESOURCES OIL & GAS COMPANY SAN JUAN 29-7 UNIT #47C

345' FNL & 490' FEL, SECTION 2, T29N, R7W, N.M.P.M.
RIO ARRIBA COUNTY, NEW MEXICO

APD MAP #1

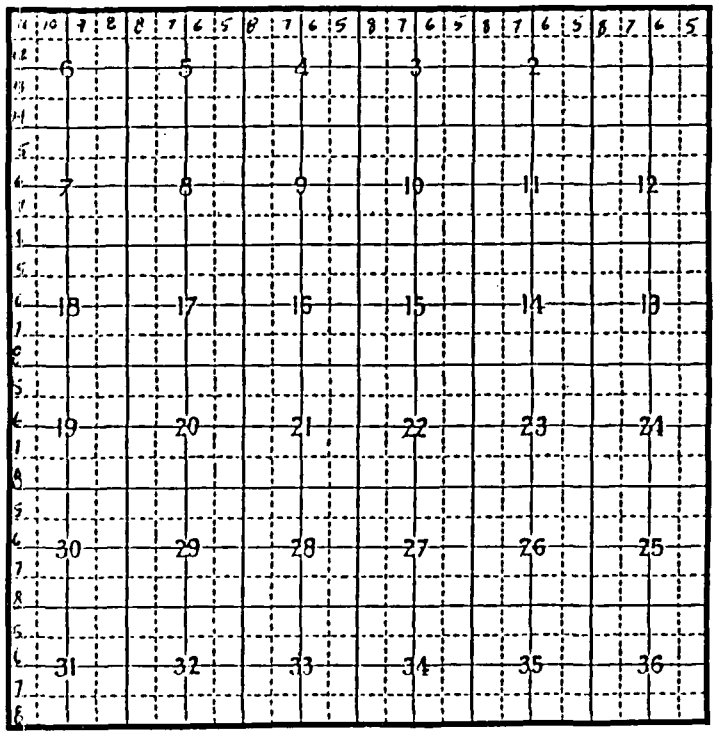
2400' NEW STATE CONSTRUCTION
1300' NW/NE SECTION 2, T29N, R7W
1100' NE/NE SECTION 2, T29N, R7W.



SAN JUAN 29-7

RIO ARRIBA COUNTY
NEW MEXICO

No. 14-08-001-1650 EFFECTIVE 9-3-54



gulram, inc.

petroleum engineering and government regulation consultants

1·1·87

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. 11625
ORDER NO. R-10720

APPLICATION OF BURLINGTON RESOURCES OIL & GAS COMPANY FOR APPROVAL OF A PILOT PROJECT INCLUDING AN EXCEPTION FROM RULE 2(b) OF THE SPECIAL RULES AND REGULATIONS FOR THE BLANCO-MESAVERDE GAS POOL FOR PURPOSES OF ESTABLISHING A PROGRAM IN ITS SAN JUAN 29-7 UNIT TO DETERMINE PROPER WELL DENSITY AND WELL LOCATION REQUIREMENTS IN MESAVERDE WELLS, RIO ARRIBA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on October 17, 1996, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 9th day of January, 1997, the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being 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) The Blanco-Mesaverde Gas Pool is currently governed by the General Rules for the Prorated Gas Pools of New Mexico/Special Rules and Regulations for the Blanco-Mesaverde Gas Pool as contained within Division Order No. R-8170, as amended. Rule Nos. 2(a) and 2(b) of the Special Rules and Regulations for the Blanco-Mesaverde Gas Pool require that a standard gas proration unit (GPU) comprise 320 acres, that the initial well on a GPU be located no closer than 790 feet from the outer boundary of the quarter section on which the well is located nor closer than 130 feet from any quarter-quarter section line or subdivision inner boundary, and that the infill well within a standard GPU be located in the quarter section not containing a Mesaverde well at a location which conforms to the setback requirements described above.

(3) The applicant, Burlington Resources Oil & Gas Company (Burlington), seeks authority to institute a pilot infill drilling program within its San Juan 29-7 Unit whereby up to four wells may be drilled on a standard gas proration unit. The applicant further seeks:

a) to establish a ½ mile buffer zone within the outer boundary of the San Juan 29-7 Unit in which area standard well density for the Blanco-Mesaverde Gas Pool shall apply in order to protect the correlative rights of offset operators;

b) an exception to Rule No. 2(b) of the Special Rules and Regulations for the Blanco-Mesaverde Gas Pool whereby the applicant may locate the proposed infill wells anywhere within the proration unit provided that such wells are located no closer than 10 feet from any section, quarter-section or quarter-quarter section line;

c) authority to commence drilling the following described eight wells within Phase I of its proposed infill drilling program:

WELL NAME	WELL LOCATION
SJ 29-7 Unit No. 37B	2370' FNL & 805' FWL (E) 12-29N-7W
SJ 29-7 Unit No. 37C	2630' FNL & 2630' FWL (F) 12-29N-7W
SJ 29-7 Unit No. 47B	2610' FSL & 2200' FEL (J) 2-29N-7W
SJ 29-7 Unit No. 57B	(Surf.) 1500' FSL & 1660' FEL (J) 11-29N-7W (BH) 465' FSL & 2340' FWL (N) 11-29N-7W
SJ 29-7 Unit No. 64B	(Surf.) 1510' FSL & 1640' FEL (J) 11-29N-7W (BH) 820' FSL & 150' FEL (P) 11-29N-7W
SJ 29-7 Unit No. 64C	225' FNL & 1995' FEL (B) 11-29N-7W
SJ 29-7 Unit No. 85B	(Surf.) 1795' FSL & 1510' FWL (K) 1-29N-7W (BH) 285' FSL & 245' FWL (M) 1-29N-7W
SJ 29-7 Unit No. 85C	(Surf.) 1820' FSL & 1520' FWL (K) 1-29N-7W (BH) 2630' FNL & 300' FWL (E) 1-29N-7W

d) no increase in the gas allowable or in the method of calculating gas allowables in the Blanco-Mesaverde Gas Pool for any of the standard gas proration units targeted for the proposed infill drilling.

(4) The applicant is the current operator of the San Juan 29-7 Unit, a Federal exploratory unit comprising some 22,500 acres and encompassing Sections 1 through 36, Township 29 North, Range 7 West, NMPM, Rio Arriba County, New Mexico.

(5) According to applicant's testimony, its plan of development for the San Juan 29-7 Unit includes drilling fourteen (14) 160-acre infill Mesaverde wells in 1997, at which point the unit will be fully developed in the Blanco-Mesaverde Gas Pool.

(6) Applicant testified that the Mesaverde Participating Area (PA) and consequently the Mesaverde interest ownership within the San Juan 29-7 Unit has been fixed since 1959 and is not subject to further revisions.

(7) The evidence and testimony presented indicates that the applicant has undertaken a study to analyze the drainage efficiency of Mesaverde gas wells in the San Juan Basin. As part of this study, the applicant has examined various geologic and engineering factors which may affect ultimate gas recoveries.

(8) In its investigation, the applicant gathered initial shut-in wellhead pressure data from both the initial and infill wells on approximately 1,200 standard gas proration units within the San Juan Basin. Applicant then utilized this data to construct pressure drop maps.

(9) Applicant's data indicates that there are considerable pressure drop differences between areas in the San Juan Basin. Pressure drops range from greater than 30 psi/year to less than 5 psi/year.

(10) The pressure drop within the San Juan 29-7 Unit is relatively low ranging from approximately 5-15 psi/year.

(11) Applicant, utilizing core data from the Mesaverde formation taken from wells in both the high and low pressure drop areas of the basin, as well as other geologic data, has reached the following geologic conclusions:

a) the calculated pressure drops are a good indication of effective permeability in the Mesaverde reservoir;

b) areas with low pressure drops are most likely not being efficiently and effectively drained by existing well density;

c) the difference between areas of high and low pressure drop cannot be attributed to differences in matrix porosity and permeability, reservoir structure or reservoir thickness;

d) the presence and density of natural fractures in the Mesaverde reservoir appear to account for the differences between areas of high and low pressure drop, and resulting differences in drainage efficiency;

e) data from applicant's Mesaverde Strat Test Well No. 2, a pressure observation well, indicates that the Menefee interval, one of the primary producing intervals in the Mesaverde formation, exhibits near virgin reservoir pressure even though this interval has been produced in offset wells for a considerable period of time; and,

f) the Menefee, Cliffhouse and Point Lookout to a lesser extent, can be laterally discontinuous from one well location to another.

(12) Applicant testified that in its reservoir modeling for the proposed pilot project, it will utilize geostatistics and stochastic modeling to input geologic parameters. According to applicant's evidence and testimony, this method of analyzing geologic data allows you to capture and quantify the correlatability and directionality of existing data, and distribute this data in a non-averaging method between data points.

(13) Utilizing geostatistics and stochastic modeling allows the input of more realistic geologic data which should ultimately result in a much more accurate and realistic flow simulation within the Mesaverde reservoir.

(14) Applicant presented engineering evidence and testimony which indicates that:

a) in high pressure drop areas, (i.e. those areas containing natural fractures in the Mesaverde formation), the recovery rates of gas, based upon volumetrics and decline curve analysis, range from approximately 60-80 percent of the original gas in place. Correspondingly, those areas of low pressure drop typically exhibit low recovery rates of gas in the range of approximately 20-50 percent of original gas in place;

b) the recovery rate of gas from the San Juan 29-7 Unit, subsequent to the completion of 160-acre infill drilling, will be approximately 51 percent of the original gas in place.

(15) Due to the low recovery rates within the San Juan 29-7 Unit, applicant has determined this to be an ideal location to conduct the pilot infill drilling study.

(16) The applicant presented the results of a reservoir simulation study conducted on that portion of the San Juan 29-7 Unit comprising Sections 1, 2, 11 and 12. The simulation was conducted using runs which assume 1, 2, 3 and 4 additional wells are drilled per section. The results indicate that significant increases in ultimate gas recovery are achieved by drilling one and two additional wells per section, and that lesser increases in ultimate gas recovery are achieved by drilling more than two additional wells per section.

(17) Applicant estimates that by drilling an additional two wells per section within the San Juan 29-7 Unit, ultimate gas recovery from the unit will increase from approximately 63 BCFG to approximately 74 BCFG.

(18) Applicant has notified all interest owners in the San Juan 29-7 Unit as well as all operators in the Blanco-Mesaverde Gas Pool of its application in this case.

(19) No offset operator and/or interest owner appeared at the hearing in opposition to the application.

(20) Preliminary geologic and engineering data indicate that the proposed pilot infill drilling program within the San Juan 29-7 Unit will allow the applicant the opportunity to test the effectiveness of its geostatistics and stochastic modeling, will allow the applicant the opportunity to gather additional geologic and engineering data to determine proper well density in this portion of the Blanco-Mesaverde Gas Pool, will allow the recovery of additional gas reserves from the San Juan 29-7 Unit which may otherwise not be recovered, thereby preventing waste, and will not violate correlative rights.

(21) The applicant should be authorized to conduct its pilot infill drilling program within its entire San Juan 29-7 Unit area with the exception of the following described "buffer zone":

TOWNSHIP 29 NORTH, RANGE 7 WEST, NMPM
Section 1: N/2, SE/4
Sections 2 through 5: N/2
Section 6: N/2, SW/4
Sections 7, 18, 19, 30: W/2
Section 31: W/2, SE/4
Sections 32 through 35: S/2
Section 36: S/2, NE/4
Sections 12, 13, 24, 25: E/2

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Burlington Resources Oil & Gas Company, is hereby authorized to conduct a pilot infill drilling program within its San Juan 29-7 Unit whereby up to four wells may be drilled on a standard gas proration unit in the Blanco-Mesaverde Gas Pool.

(2) The pilot project area shall comprise applicant's entire San Juan 29-7 Unit area with the exception of the following described "buffer zone", in which area standard well density for the Blanco-Mesaverde Gas Pool shall apply:

TOWNSHIP 29 NORTH, RANGE 7 WEST, NMPM
Section 1: N/2, SE/4
Sections 2 through 5: N/2
Section 6: N/2, SW/4
Sections 7, 18, 19, 30: W/2
Section 31: W/2, SE/4
Sections 32 through 35: S/2
Section 36: S/2, NE/4
Sections 12, 13, 24, 25: E/2

(3) As an exception to Rule No. 2(b) of the Special Rules and Regulations for the Blanco-Mesaverde Gas Pool, the applicant is hereby authorized to drill the infill wells within the pilot project area anywhere within a standard gas proration unit provided that such wells are located no closer than 10 feet from any section, quarter-section or quarter-quarter section line.

(4) The applicant is hereby further authorized to commence drilling the following described infill wells within Phase I of its pilot project, provided however, that such wells shall be located at a location in conformance with the setback requirements described above:

WELL NAME	WELL LOCATION
SJ 29-7 Unit No. 37B	2370' FNL & 805' FWL (E) 12-29N-7W
SJ 29-7 Unit No. 37C	2630' FNL & 2630' FWL (F) 12-29N-7W
SJ 29-7 Unit No. 47B	2610' FSL & 2200' FEL (J) 2-29N-7W
SJ 29-7 Unit No. 57B	(Surf.) 1500' FSL & 1660' FEL (J) 11-29N-7W (BH) 465' FSL & 2340' FWL (N) 11-29N-7W
SJ 29-7 Unit No. 64B	(Surf.) 1510' FSL & 1640' FEL (J) 11-29N-7W (BH) 820' FSL & 150' FEL (P) 11-29N-7W
SJ 29-7 Unit No. 64C	225' FNL & 1995' FEL (B) 11-29N-7W
SJ 29-7 Unit No. 85B	(Surf.) 1795' FSL & 1510' FWL (K) 1-29N-7W (BH) 285' FSL & 245' FWL (M) 1-29N-7W
SJ 29-7 Unit No. 85C	(Surf.) 1820' FSL & 1520' FWL (K) 1-29N-7W (BH) 2630' FNL & 300' FWL (E) 1-29N-7W

(5) The wells and/or standard gas proration units within the pilot project area shall not receive a gas allowable greater than that which would normally be assiged a proration unit containing two wells in the Blanco-Mesaverde Gas Pool.

(6) 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

S E A L

CMD : ONGARD 02/25/99 16:14:49
OG5SECT INQUIRE LAND BY SECTION OGOMES -TP7I
PAGE NO: 1

Sec : 02 Twp : 29N Rng : 07W Section Type : NORMAL

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E 40.00 CS E05184 0049 04/61 CONOCO INC U	F 40.00 CS E05184 0049 04/61 CONOCO INC U	G 40.00 CS E05184 0049 04/61 CONOCO INC U	H 40.00 CS E05184 0049 04/61 CONOCO INC U

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PAGE NO: 2

Sec : 02 Twp : 29N Rng : 07W Section Type : NORMAL

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AMOCO PRODUCTION	AMOCO PRODUCTION	AMOCO PRODUCTION	AMOCO PRODUCTION
U	U	U	U
A		A	

M	N	O	P
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PF01 HELP PF02 PF03 EXIT PF04 GoTo PF05 PF06
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