

DHC 1778



COMMERCIAL RESOURCES
(505)-827-5724

SURFACE RESOURCES
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State of New Mexico
Commissioner of Public Lands

Ray Powell, M.S., D.V.M.
310 Old Santa Fe Trail, P. O. Box 1148
Santa Fe, New Mexico 87504-1148
Phone (505)-827-5760, Fax (505)-827-5766

PUBLIC AFFAIRS
(505)-827-5765

ADMINISTRATIVE MGMT.
(505)-827-5700

LEGAL
(505)-827-5715

PLANNING
(505)-827-5752

February 18, 1998

Union Oil Company of California (UNOCAL)
1004 North Big Spring
Midland, Texas 79702

Attn: Ms. Heather Dahlgren

Re: Downhole Commingling Application
Rincon Unit Well No. 168
Unit Letter A, Section 36-27N-07W
Rincon Unit Well No. 139
Unit Letter K, Section 25-27N-07W
Rincon Unit Well No. 181
Unit Letter G, Section 22-27N-06W
Blanco Mesaverde and Basin Dakota Pools
Rio Arriba County, New Mexico

Dear Ms. Dahlgren:

Your applications to downhole commingle the Blanco Mesaverde and Basin Dakota production from within the wellbore of the above-captioned wells was received on January 30, 1998.

Since it appears that all the New Mexico Oil Conservation Division's rules and regulations have been complied with, and there will be no loss of revenue to the State of New Mexico as a result of your proposed operation, your request for downhole commingling is hereby approved. Any deviation from the substance of your request will be sufficient grounds for rescinding our approval. Our approval is subject to like approval by the New Mexico Oil Conservation Division and the Bureau of Land Management.

Please submit your \$30.00 dollar filing fee.

If you have any questions or if we may be of further help, please contact Pete Martinez at (505) 827-5791.

Very truly yours,

RAY POWELL, M.S., D.V.M.
COMMISSIONER OF PUBLIC LANDS

BY: 
JAMI BAILEY, Director
Oil, Gas and Minerals Division
(505) 827-5744

RP/JB/cpm
Enclosure
pc: Reader File

OCD-Attention: David Catanach, Ben Stone

production over the last two years of actual production. Please see attachment 3. for 24 months of forecasted liquid volumes.

January 24, 1998

Supplemental Data for C-107-A, Rincon Unit Well No. 168

Union Oil Company of California d.b.a. UNOCAL requests approval to down-hole commingle hydrocarbon production from the Blanco Mesa Verde and Basin Dakota formations in the following Rincon Unit well, Rio Arriba County, New Mexico.

Well	Lease	Legal Location
168	State	1190' FNL, 1190' FEL, NE Sec 36, T27N, R7W

A revised C-107-A is attached.

As provided by Order No. R-9893, administrative approval may be granted without notice and hearing.

Well History: This well was drilled and completed with 4-1/2" casing, in November 1962, in the Dakota formation. The Mesaverde was completed December 23rd, 1997. Both zones are currently shut-in.

Production History: Average Dakota production prior to commingling was 148 Mcfd with trace oil and water production. Based on actual IP's and production from recent Mesaverde recompletions on the Rincon Unit, an estimated initial rate for the first 30 days of Mesaverde production is 338 Mcfd and 4 Bopd.

Pressure Data: Bottom hole pressures were obtained from surface shut-in casing pressure measurements. Please see attachments 1a. through 1d. for the bottom hole calculation, date and duration of each test. The pressures measured in this well are consistent with bottom hole pressure measurements that have been taken in new and existing Mesaverde and Dakota formations on the Rincon Unit and should accurately reflect current reservoir pressures.

Allocation of Production: Unocal proposes to use an allocation method based on an established Dakota annual decline rate of 4.5%. Dakota production will be extrapolated monthly based on this decline with the remainder of the commingled production being allocated to the Mesaverde formation. See attachments 2a. and 2b. for the Dakota forecast. Tabular data has been provided for the first five years of the Dakota forecast. Please note that initial flush production volumes have been added to the Dakota forecast due to the extended shut-in period. We anticipate being able to convert to a fixed allocation factor within 12 to 24 months of commingled production. Unocal also proposes to use a yield factor for allocating liquid production. This factor represents the average yield for oil and water production over the last two years of actual production. Please see attachment 3. for 24 months of forecasted liquid volumes.

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II
811 South First St., Artesia, NM 88210-2835

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410-1693

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 S. Pacheco
Santa Fe, New Mexico 87505-8429

Form C-107-A
New 3 12-96

APPROVAL PROCESS:

☒ Administrative ☐ Hearing

EXISTING WELLBORE

☒ YES ☐ NO

APPLICATION FOR DOWNHOLE COMMINGLING

Union Oil Company of California P.O. Box 3100 Midland, Texas 79702
Operator Address

Rincon Unit 168 A-36-27N-7W Rio Arriba
Lease Well No. Unit (Tr. - Sec. - Twp. - Rge. County)

OGRID NO. 023708 Property Code 011510 API NO. 30-039-82377
Spacing Unit Lease Types: (check 1 or more)
Federal ☐ State ☒ Landlord Fee ☐

The following facts are submitted in support of downhole commingling:	Upper Zone	Intermediate Zone	Lower Zone
1. Pool Name and Pool Code	Blanco Mesaverde 72319		Basin Dakota 71599
2. Top and Bottom of Pay Section (Perforations)	Proposed 5263-5354		7262-7462
3. Type of production (Oil or Gas)	Gas		Gas
4. Method of Production (Flowing or Artificial Lift)	Flowing		Flowing
5. Bottomhole Pressure Oil Zones - Artificial Lift: Estimated Current Gas & Oil - Flowing: Measured Current All Gas Zones: Estimated Or Measured Original	a. (Current) 761 b. (Original)	a. b.	a. 516 b.
6. Oil Gravity (° API) or Gas BTU Content	1200 BTU		1141 BTU
7. Producing or Shut-In?			Producing
Production Marginal? (yes or no)	Yes		Yes
* If Shut-In, give date and oil/gas/water rates of last production Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data	Date: Rates:	Date: Rates:	Date: Rates:
* If Producing, give date and oil/gas/water rates of recent test (within 60 days)	Date: Rates:	Date: Rates:	Date: September 1997 Rates: 0 BOPD 144 MCFD 0 BWPD
8. Fixed Percentage Allocation Formula - % for each zone	Oil: % Gas: %	Oil: % Gas: %	Oil: % Gas: %

9. If allocation formula is based upon something other than current or past production, or is based upon some other method, submit attachments with supporting data and/or explaining method and providing rate projections or other required data.
10. Are all working, overriding, and royalty interests identical in all commingled zones? ☒ Yes ☐ No
If not, have all working, overriding, and royalty interests been notified by certified mail? ☒ Yes ☐ No
Have all offset operators been given written notice of the proposed downhole commingling? ☒ Yes ☐ No
11. Will cross-flow occur? ☐ Yes ☒ No If yes, are fluids compatible, will the formations not be damaged, will any cross-flowed production be recovered, and will the allocation formula be reliable. ☐ Yes ☐ No (If No, attach explanation)
12. Are all produced fluids from all commingled zones compatible with each other? ☒ Yes ☐ No
13. Will the value of production be decreased by commingling? ☐ Yes ☒ No (If Yes, attach explanation)
14. If this well is on, or communitized with, state or federal lands, either the Commissioner of Public Lands or the United States Bureau of Land Management has been notified in writing of this application. ☒ Yes ☐ No
15. NMOCD Reference Cases for Rule 303(D) Exceptions: ORDER NO(S). See Attached
16. ATTACHMENTS:
- * C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
 - * Production curve for each zone for at least one year. (If not available, attach explanation.)
 - * For zones with no production history, estimated production rates and supporting data.
 - * Data to support allocation method or formula.
 - * Notification list of all offset operators.
 - * Notification list of working, overriding, and royalty interests for uncommon interest cases.
 - * Any additional statements, data, or documents required to support commingling.

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

SIGNATURE Heather Dahlgren TITLE Engineering Tech DATE 11/25/97

TYPE OR PRINT NAME Heather Dahlgren TELEPHONE NO. (915) 685-7665

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-102
Revised October 18, 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

1API Number 30-039-82377	2Pool Code 71599	3Pool Name Basin Dakota
4Property Code 011510	5Property Name Rincon Unit	6Well Number 168
7GRID No. 023708	8Operator Name Spirit Energy 76/A Business Unit of UNOCAL	9Elevation 6586

10Surface Location

UL or lot no. A	Section 36	Township 27-N	Range 7-W	Lot Idn	Feet from the 1190	North/South line North	Feet from the 1190	East/West Line East	County Rio Arriba
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11Bottom 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
12Dedicated Acres 320.00	13Joint or Infill Y	14Consolidation Code U	15Order No. Unitized						

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

16					17 OPERATOR CERTIFICATION <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief</i> Signature <u>Heather Dahlgren</u> Printed Name Heather Dahlgren Title Engineering Technician Date November 28, 1997
18 SURVEYOR CERTIFICATION <i>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.</i> Date of Survey Signature and Seal of Professional Surveyer: Certificate Number					

District I
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811 South First, Artesia, NM 88210

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4Property Code 011510	5Property Name Rincon Unit	6Well Number 168
7OGRID No. 023708	8Operator Name Spirit Energy 76/A Business Unit of UNOCAL	9Elevation 6586

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	36	27-N	7-W		1190	North	1190	East	Rio Arriba

„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 320.00	¹³ Joint or Infill Y	¹⁴ Consolidation Code U		¹⁵ Order No. Unitized					

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

16				1190'	1190'	17. OPERATOR CERTIFICATION	
						I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.	
							
						Signature	
						Heather Dahlgren	
						Printed Name	
						Engineering Technician	
						Title	
						November 28, 1997	
						Date	
						18. 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.	
						Date of Survey	
						Signature and Seal of Professional Surveyor:	
						Certificate Number	

NMOCD Reference Cases for Rule 303(D) Exceptions

Unocal, Rincon Unit, Rio Arriba County, New Mexico

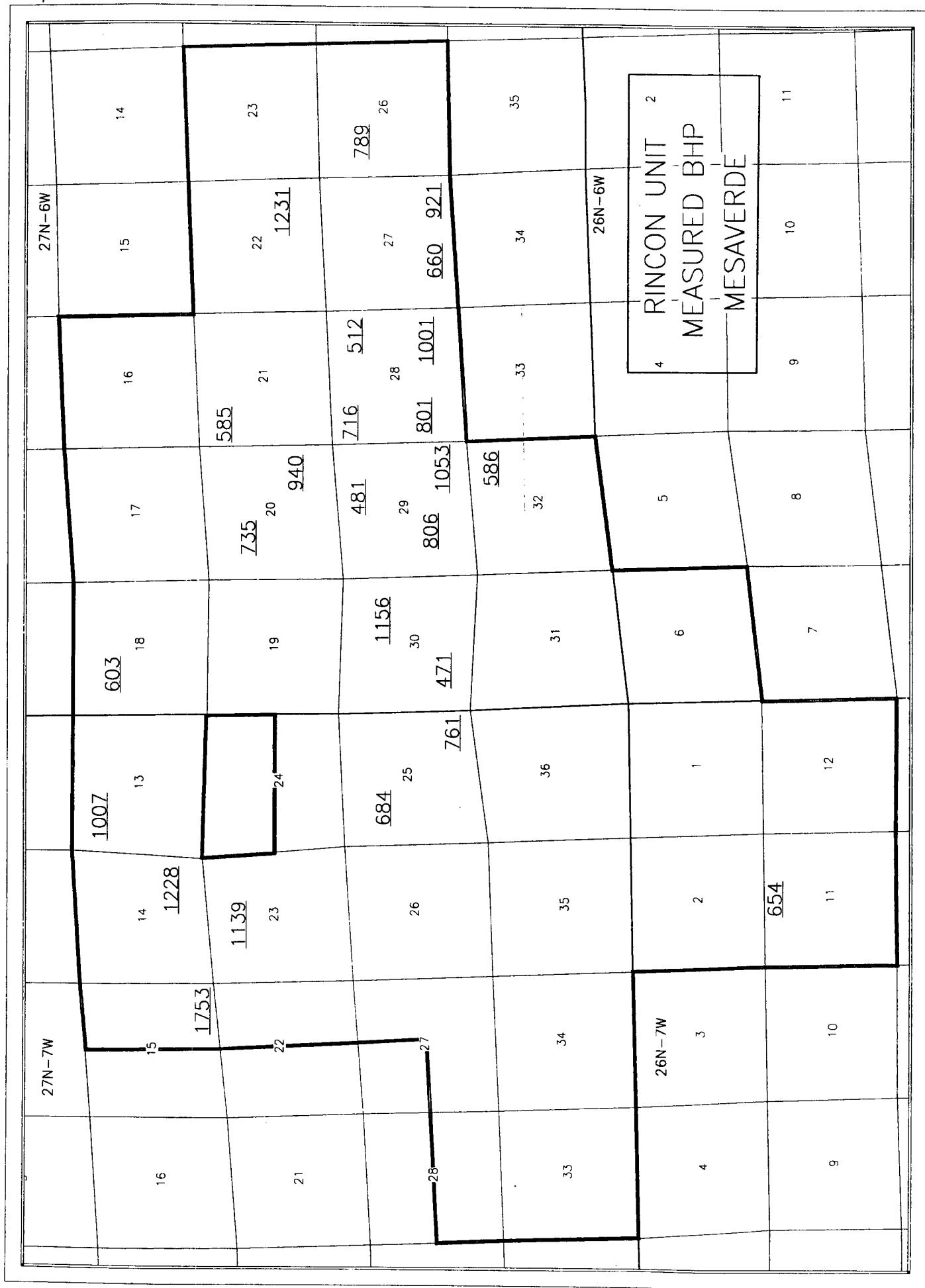
Rincon Unit Well	Legal Description	NMOCD Order No.	Issue Date
302	C S 11 T 26 N R 7 W	DHC-1050	11/3/94
134	B S 12 T 26 N R 7 W	DHC-1190	3/7/96
159M	F S 18 T 27 N R 6 W	DHC-904	6/18/93
174M	F S 19 T 27 N R 6 W	DHC-966	1/31/94
170	M S 20 T 27 N R 6 W	DHC-1192	3/7/96
170M	I S 20 T 27 N R 6 W	DHC-920	9/17/93
175M	F S 20 T 27 N R 6 W	DHC-864	11/24/92
171M	J S 21 T 27 N R 6 W	DHC-1101	3/7/95
180M	D S 21 T 27 N R 6 W	DHC-940	10/25/93
158M	J S 22 T 27 N R 6 W	DHC-909	4/27/93
125M	F S 26 T 27 N R 6 W	DHC-95	9/17/93
126M	P S 27 T 27 N R 6 W	DHC-914	9/17/93
127M	D S 28 T 27 N R 6 W	DHC-916	8/17/93
128M	O S 28 T 27 N R 6 W	DHC-1042	8/31/94
129M	P S 29 T 27 N R 6 W	DHC-903	6/18/93
1E	G S 30 T 27 N R 6 W	DHC-902	6/18/93
303	E S 33 T 27 N R 6 W	DHC-1086	2/3/95
186M	L S 33 T 27 N R 6 W	DHC-1176	12/21/95
167M	C S 13 T 27 N R 7 W	DHC-863	11/5/92
151M	O S 14 T 27 N R 7 W	DHC-918	9/17/93
133E	D S 14 T 27 N R 7 W	DHC-1043	8/31/94
184M	P S 15 T 27 N R 7 W	DHC-911	8/25/93
185E	J S 22 T 27 N R 7 W	DHC-1038	8/31/94
136E	D S 23 T 27 N R 7 W	DHC-912	9/17/93
178E	I S 23 T 27 N R 7 W	DHC-1040	8/31/94
138E	P S 25 T 27 N R 7 W	DHC-1044	8/31/94
139E	F S 25 T 27 N R 7 W	DHC-1041	8/31/94
203	M S 27 T 27 N R 7 W	DHC-1261	5/23/96
149M	F S 30 T 27 N R 7 W	DHC-1037	8/31/94
229E	M S 34 T 27 N R 7 W	DHC-1124	5/16/95
187E	P S 35 T 27 N R 7 W	DHC-1176	12/21/95
131E	C S 36 T 27 N R 7 W	DHC-1039	8/31/94
168E	I S 36 T 27 N R 7 W	DHC-1191	3/7/96
183	K S 31 T 27 N R 6 W	DHC-1376	10/16/96

RINCON UNIT DK/MV COMMINGLE BOTTOMHOLE PRESSURE DATA
(Measured - 7 day SI)

	<u>WELL</u>	<u>MV BHP (PSI)</u>	<u>DK BHP ADJ TO MV DATUM (PSI)</u>	<u>% DIFF</u>
*	1E	1156	1690	32
*	125M	789	1548	49
*	126	660	850	22
*	126M	921	1607	43
*	127	512	580	12
*	127M	716	1280	44
*	128	801	781	2
**	128M	1001	1000	0
*	129	806	836	4
*	129M	1053	935	11
*	130	586	622	6
*	135	481	736	35
*	136E	1139	2199	48
*	137	400	686	42
**	138E	684	1100	38
**	139E	761	1300	41
*	149	471	521	10
*	151M	1228	1862	34
*	158M	1231	766	38
*	159M	603	583	3
*	167M	1007	1909	47
*	170M	940	1752	46
*	175M	735	1108	34
*	180M	585	788	26
*	184M	1753	1708	3
**	302	654	1225	47

DK ZONE TAKEN AS DATUM

- * 1993 TEST DATA
- ** 1994 TEST DATA



GAS ANALYSIS

WELL NAME	ZONE	TEST DATE	NITROGEN	CO2	METHANE	ETHANE	PROPANE	I-BUTANE	N-BUTANE	I-PENTANE	N-PENTANE	HEXANE	BTU/S	GPM	SPEC GRAV
RINCON #1E	DK	11/23/84	0.310	1.150	88.570	8.880	2.780	0.500	0.730	0.270	0.20	0.530	1159.0	3.424	0.670
	MV	11/23/84	0.310	1.150	88.570	8.880	2.760	0.800	0.730	0.270	0.20	0.530	1159.0	3.424	0.670
	DK	08/10/84	0.280	1.160	85.010	7.870	3.850	0.630	0.850	0.350	0.23	0.590	1184.0	3.690	0.685
RINCON #125M	MV	08/10/84	0.280	1.160	85.010	7.870	3.250	0.630	0.850	0.350	0.23	0.590	1184.0	3.690	0.686
	DK	11/17/84	0.210	1.320	87.850	8.430	2.000	0.610	0.820	0.280	0.18	0.820	1141.0	3.034	0.660
RINCON #188	MV	11/18/84	0.460	1.070	83.080	8.230	4.220	0.790	1.090	0.370	0.24	0.480	1207.0	4.390	0.701
	DK	12/07/83	0.290	1.050	87.640	6.480	2.770	0.540	0.850	0.270	0.17	0.230	1140.4	3.139	0.658
RINCON #128M	MV	12/07/83	0.280	1.050	87.640	6.480	2.770	0.540	0.850	0.270	0.17	0.230	1140.4	3.139	0.658
	DK	09/15/83	0.280	1.180	84.870	8.010	2.940	0.680	0.800	0.430	0.25	0.580	1182.1	3.927	0.688
RINCON #127	MV	05/13/82	0.380	1.020	81.780	10.520	4.220	0.800	0.840	0.280	0.19	0.160	1188.0	4.878	0.694
	DK	11/17/84	0.300	1.240	84.850	8.010	3.050	0.800	0.800	0.340	0.23	0.560	1180.0	3.892	0.684
RINCON #127M	MV	11/17/84	0.300	1.240	84.850	8.010	3.050	0.800	0.800	0.340	0.23	0.560	1180.0	3.892	0.684
	DK	11/18/84	0.830	1.280	84.080	8.480	3.180	0.840	0.890	0.370	0.38	0.800	1192.0	4.138	0.692
RINCON #128	MV	11/18/84	0.450	0.780	79.710	10.320	5.030	0.880	1.380	0.470	0.35	0.520	1260.0	5.443	0.730
	DK	04/15/84	0.260	1.000	86.830	7.120	2.350	0.820	0.850	0.280	0.19	0.480	1181.0	3.317	0.668
RINCON #128	MV	03/28/84	0.550	0.690	78.100	11.220	5.500	0.840	1.080	0.430	0.35	0.560	1259.0	5.589	0.727
	DK	10/23/84	0.270	1.190	81.230	9.950	4.130	0.780	1.120	0.480	0.31	0.680	1232.0	4.849	0.717
RINCON #128M	MV	10/23/84	0.270	1.190	81.230	9.950	4.130	0.780	1.120	0.480	0.31	0.680	1232.0	4.849	0.717
	DK	04/15/84	0.200	1.180	81.380	10.020	4.920	0.740	1.180	0.470	0.33	0.470	1226.0	4.902	0.712
RINCON #130	MV	04/15/84	0.580	0.730	78.650	10.230	5.830	1.020	1.470	0.480	0.34	0.740	1281.0	5.763	0.744
	DK	04/13/84	0.430	1.240	84.220	8.730	2.970	0.830	0.780	0.340	0.22	0.840	1184.0	4.038	0.698
RINCON #135	MV	04/13/84	0.330	1.210	84.030	9.890	3.110	0.840	0.820	0.350	0.22	0.800	1188.0	4.120	0.690
	DK	08/15/83	0.220	1.080	83.800	9.320	3.440	0.580	0.880	0.330	0.22	0.340	1189.0	4.254	0.687
RINCON #138E	MV	12/12/83	0.219	1.072	84.804	8.487	3.185	0.484	0.824	0.307	0.24	0.376	1177.1	3.830	0.678
	DK	11/11/84	0.210	1.120	84.920	8.400	3.100	0.520	0.850	0.280	0.18	0.410	1176.0	3.888	0.678
RINCON #137	MV	11/11/84	0.440	0.800	77.270	12.180	5.690	0.840	1.600	0.480	0.32	0.480	1288.0	6.138	0.744
	DK	11/19/84	0.380	1.200	88.310	9.080	1.900	0.850	0.680	0.250	0.19	0.450	1134.0	2.905	0.655
RINCON #140	MV	11/30/84	0.360	1.180	84.820	7.900	3.110	0.810	0.860	0.390	0.27	0.680	1188.0	3.864	0.688
	DK	10/07/84	0.830	1.010	82.800	8.810	3.930	0.850	1.020	0.370	0.38	0.410	1180.0	4.903	0.698
RINCON #161M	MV	10/07/84	0.230	1.010	82.800	9.810	3.930	0.860	1.020	0.370	0.28	0.410	1200.0	4.603	0.699
	DK	12/08/83	0.290	1.040	86.780	7.010	2.800	0.850	0.710	0.300	0.18	0.330	1152.0	3.371	0.683
RINCON #168M	MV	12/08/83	0.300	1.040	86.780	7.010	2.800	0.850	0.710	0.300	0.18	0.330	1152.0	3.371	0.683
	DK	11/10/84	0.210	1.080	83.010	8.160	3.690	0.710	0.830	0.380	0.24	0.650	1207.0	4.458	0.698
RINCON #189M	MV	11/10/84	0.210	1.090	83.010	8.160	3.690	0.710	0.830	0.380	0.24	0.650	1207.0	4.458	0.698
	DK	10/14/84	0.230	1.010	86.060	7.820	2.690	0.540	0.770	0.280	0.19	0.410	1165.0	3.805	0.671
RINCON #187M	MV	10/14/84	0.230	1.010	86.060	7.820	2.690	0.540	0.770	0.280	0.19	0.410	1165.0	3.805	0.671
	DK	10/31/84	0.330	1.120	83.840	8.800	3.640	0.870	0.890	0.340	0.21	0.380	1190.0	4.214	0.689
RINCON #170M	MV	10/31/84	0.330	1.120	83.840	8.800	3.640	0.870	0.890	0.340	0.21	0.380	1190.0	4.214	0.689
	DK	11/28/84	0.360	1.140	82.250	8.280	3.890	0.710	1.040	0.410	0.28	0.640	1217.0	4.844	0.707
RINCON #175M	MV	11/28/84	0.360	1.140	82.250	8.280	3.890	0.710	1.040	0.410	0.28	0.640	1217.0	4.844	0.707
	DK	09/28/84	0.270	1.170	85.810	7.490	2.630	0.600	0.740	0.310	0.19	0.590	1171.0	3.852	0.677
RINCON #180M	MV	08/28/84	0.270	1.170	85.810	7.490	2.630	0.600	0.740	0.310	0.19	0.590	1171.0	3.852	0.677
	DK	12/30/83	0.260	1.010	81.930	9.880	4.090	0.680	1.060	0.400	0.28	0.710	1226.0	4.807	0.711
RINCON #184M	MV	12/30/83	0.280	1.010	81.930	9.880	4.090	0.680	1.060	0.400	0.28	0.710	1226.0	4.807	0.711

EXHIBIT 'A'

To allow for flush production for a period of less than 24 months:

$$Q1n = q_i(e^{-D(t-0.5)})(365/12) \text{ and } Q2n = Qn - Q1n;$$

When: $Qn < Q1n$;

$$\text{Then: } Q1n = Qn(Q1(n-1)/(Q1(n-1) + Q2(n-1))) \text{ and } Q2n = Qn(Q2(n-1)/(Q1(n-1) + Q2(n-1)));$$

And to allow for flush production for a period of more than 24 months:

$$Q1n = Qn(Q1(24)/(Q1(24) + Q2(24))) \text{ and } Q2n = Qn(Q2(24)/(Q1(24) + Q2(24)));$$

Where:

q_i	Average three month production rate of the existing completion prior to downhole commingling in Mcfd
D	Effective monthly decline rate of the existing completion (1/months)
Qn	Total commingled production, for the n th month, after n months of commingled production in Mcfd.
$Q1n$	Total production for the existing completion, for the n th month, after n months of commingled production in Mcfd.
$Q2n$	Total production for the new completion, for the n th month, after n months of commingled production in Mcfd.
t	Time from beginning of commingled production (months)

RINCON MESAVERDE RECOMPLETIONS
MONTHLY GAS PRODUCTION DATA - SEPARATELY METERED VOLUMES

WELL:
ZONE:
COMPL:
1st Deliv:
IP (MCFD):

11E	150E	187E	188	231	180M
MV	MV	MV	MV	MV	MV
DUAL	DUAL	DUAL	SINGLE	SINGLE	DHC*
04/01/97	12/18/95	01/31/96	12/27/96	01/10/97	10/29/92
253	150	490	350	185	450

AVG IP	MIN IP	MAX IP
310	150	490

MONTH	GAS VOLUME	PDGAS RATE	GAS VOLUME	PDGAS RATE	GAS VOLUME	PDGAS RATE	GAS VOLUME	PDGAS RATE	GAS VOLUME	PDGAS RATE	WELLS ON	AVG VOL	AVG RATE	MIN RATE	MAX RATE	MON VOL**
IP																
1	9151	305	4291	390	486	486	960	192	8116	386	6	5035	338	192	486	5065
2	4288	143	7988	258	8238	284	6283	203	8140	291	6	7099	257	143	365	7205
3	3678	123	4969	171	4544	147	4850	173	7198	232	6	5482	182	123	247	5847
4	2631	138	4809	155	2922	104	4768	154	5828	194	6	4276	152	104	194	4565
5	3161	132	3883	155	3296	132	3922	131	5157	172	6	4212	152			4707
6	2488	104	4003	129	2969	99	4332	144	3665	244	6	3666	145			4355
7			3493	116	2882	93	3593	120	4375	141	5	3534	115			3577
8			2989	96	2807	91	3134	157	3655	332	5	3032	152			3288
9			2885	93	2293	92	3620	117			4	2852	97			2895
10			2672	107	2184	70					3	2269	87			2707
11			2652	86	2059	69					3	2191	72			2170
12			2396	80	2259	73					3	2197	72			2222

* 180M MV produced for 12 months prior to DHC with DK
** Monthly volumes used to forecast first 12 months of Mesaverde production

1996 MV RECOMPLETION - EXAMPLE CASE FOR OIL FORECAST

WELL:	183
ZONE:	DK/MV
COMPL:	DHC
MV 1st Deliv:	12/20/96
MV IP (BOPD):	0.5

MONTH	OIL VOLUME	PDOIL RATE	WATER VOLUME	PDWAT RATE	AVG PDOIL	AVG PDWAT
1	16	0.5	17	0.5		
2	32	1.1	17	0.6		
3	26	0.8	23	0.7		
4	10	0.3	7	0.2		
5	25	0.8	17	0.5		
6	27	0.9	3	0.1		
7	22	0.7	2	0.1		
8	20	0.6	9	0.3		
9	8	0.3	3	0.1		
10	9	0.3	8	0.3		
11	4	0.7	3	0.5	0.6	0.4
12	0	0	0	0.0		
13	137	4.4	25	0.8		
14	43	1.5	33	1.2		
15	50	1.6	17	0.5		
16	44	1.5	20	0.7		
17	26	0.9	20	0.7		
18	0	0	20	0.7		
19	31	1	20	0.6		
20	24	0.8	20	0.6		
21	27	0.9	20	0.6	1.4	0.7

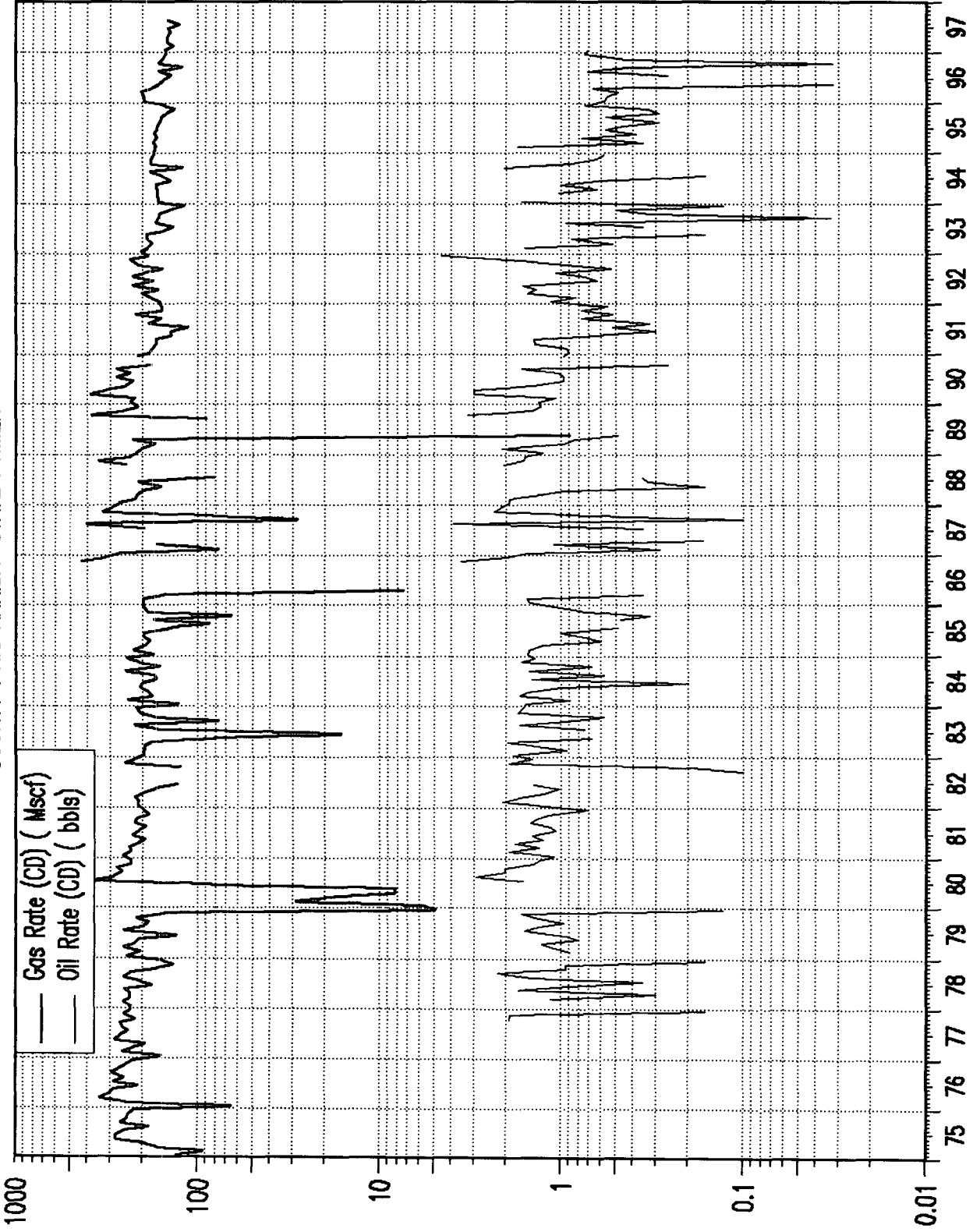
Dakota volumes prior to commingling

DK/MV commingle oil / water volumes

WELL: RINCON UNIT 168:DK

LOCATION : N027 W007 36 NENE

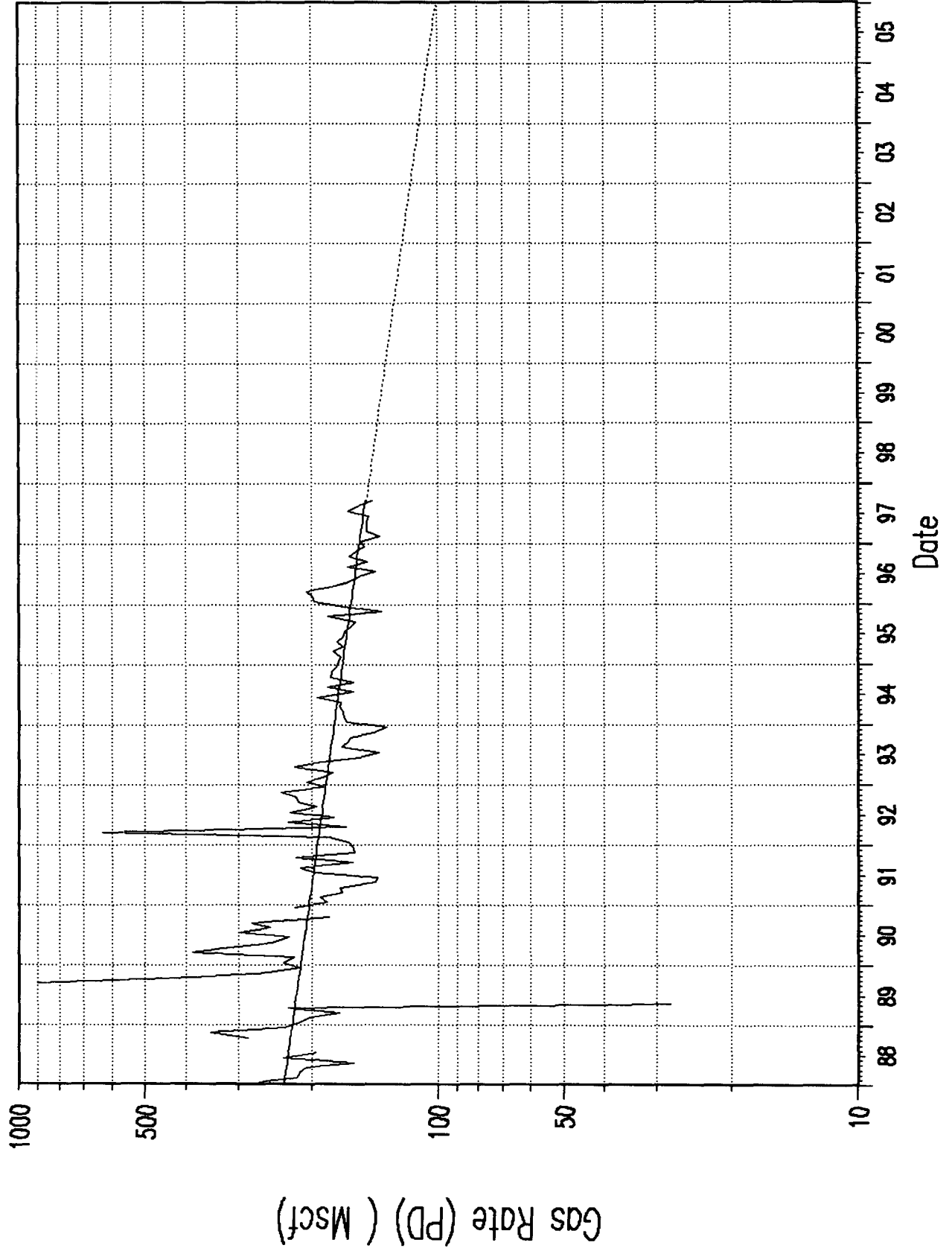
COUNTY : RIO ARriba STATE : NMEX



WELL: RINCON UNIT 168:DK
LOCATION : N027 W007 36 NENE
COUNTY : RIO ARRIBA STATE : NMEX

DATE	DAYS ON PROD Days	OIL VOL PROD bbls	GAS VOL PROD Mscf	WATER VOL PROD bbls	OIL RATE (PD) bbls	GAS RATE (PD) Mscf	WATER RATE (PD) bbls	CUM OIL PROD bbls	CUM GAS PROD Mscf
9601	31	18	6102	12	0.6	197	0	18046	2647287
9602	29	16	5785	10	0.6	199	0	18062	2653072
9603	31	15	6387	9	0.5	206	0	18077	2659459
9604	30	20	5384	9	0.7	179	0	18097	2664843
9605	31	1	5073	14	0.0	164	0	18098	2669916
9606	30	0	4635	4	0.0	155	0	18098	2674551
9607	31	8	4378	1	0.3	141	0	18106	2678929
9608	31	22	5077	9	0.7	164	0	18128	2684006
9609	25	13	3681	3	0.5	147	0	18141	2687687
9610	31	1	5045	2	0.0	163	0	18142	2692732
9611	30	13	4689	3	0.4	156	0	18155	2697421
9612	31	23	4620	10	0.7	149	0	18178	2702041
9701	31	22	4730	11	0.7	153	0	18200	2706771
9702	28	0	3850	10	0.0	138	0	18200	2710621
9703	31	22	4584	15	0.7	148	0	18222	2715205
9704	30	0	4439	6	0.0	148	0	18222	2719644
9705	30	0	4437	6	0.0	148	0	18222	2724081
9706	30	0	4392	6	0.0	146	0	18222	2728473
9707	24	0	3925	6	0.0	164	0	18222	2732398
9708	29	0	4528	6	0.0	156	0	18222	2736926
9709	28	0	4019	6	0.0	144	0	18222	2740945

WELL: RINCON UNIT 168:DK
LOCATION : N027 W007 36 NENE
COUNTY : RIO ARriba STATE : NMEX



WELL: RINCON UNIT 168:DK

	Case Name :	New	
	Case Analyst :		
	Case Comment :		
	Cum. Gas Production:	2736926.00	Mscf
Remaining Recoverable Gas Reserves:		872956.51	Mscf
Ultimate Recoverable Gas Reserves:		3609882.51	Mscf

Decline Equation: $Q = Q_i * \exp(-D_i * t)$		t = Elapsed Months from 7501
	Qi:	424.27 Mscf
	Di:	0.003886
	Hyperbolic B:	0.0000
	Start Date:	1997/09
Monthly Effective Decline (De):	0.003879	
Yearly Effective Decline (De):	0.045564	
Initial Forecast Rate:	148.00	Mscf
Economic Limit:	15.00	Mscf
Capacity Limit:	0.00	Mscf
Cumulative Produced:	2736926.00	Mscf
Schedule Forecasted Reserves:	872956.51	Mscf
Total Forecasted Reserves:	872956.51	Mscf
Total Recovered Reserves:	3609882.51	Mscf

DATE	INSTANT. DAILY RATE Mscf	AVERAGE DAILY RATE Mscf	MONTHLY FORECAST PROD. Mscf	CUM. PROD. Mscf	REMAINING RECOV. RESERVES Mscf
1997/09	147.43	147.71	4431.43	2741357.50	868525.06
1997/10	146.85	147.14	4561.25	2745918.75	863963.81
1997/11	146.28	146.57	4397.15	2750315.75	859566.69
1997/12	145.72	146.00	4525.95	2754841.75	855040.69
1998/01	145.15	145.43	4508.43	2759350.25	850532.31
1998/02	144.59	144.87	4056.41	2763406.50	846475.88
1998/03	144.03	144.31	4473.62	2767880.25	842002.25
1998/04	143.47	143.75	4312.46	2772192.75	837689.81
1998/05	142.91	143.19	4438.93	2776631.50	833250.88
1998/06	142.36	142.63	4279.01	2780910.75	828971.88
1998/07	141.81	142.08	4404.60	2785315.25	824567.25
1998/08	141.26	141.53	4387.44	2789702.75	820179.81
1998/09	140.71	140.98	4229.54	2793932.25	815950.31
1998/10	140.16	140.43	4353.48	2798285.75	811596.81
1998/11	139.62	139.89	4196.67	2802482.25	807400.13
1998/12	139.08	139.35	4319.77	2806802.00	803080.38
1999/01	138.54	138.81	4303.09	2811105.25	798777.31
1999/02	138.00	138.27	3871.60	2814976.75	794905.69
1999/03	137.47	137.73	4269.62	2819246.50	790636.06
1999/04	136.93	137.20	4115.98	2823362.50	786520.06
1999/05	136.40	136.67	4236.75	2827599.25	782283.31
1999/06	135.87	136.14	4084.07	2831683.25	778199.25
1999/07	135.35	135.61	4203.88	2835887.00	773995.38
1999/08	134.82	135.08	4187.58	2840074.75	769807.81
1999/09	134.30	134.56	4036.72	2844111.50	765771.06
1999/10	133.78	134.04	4155.20	2848266.50	761615.88

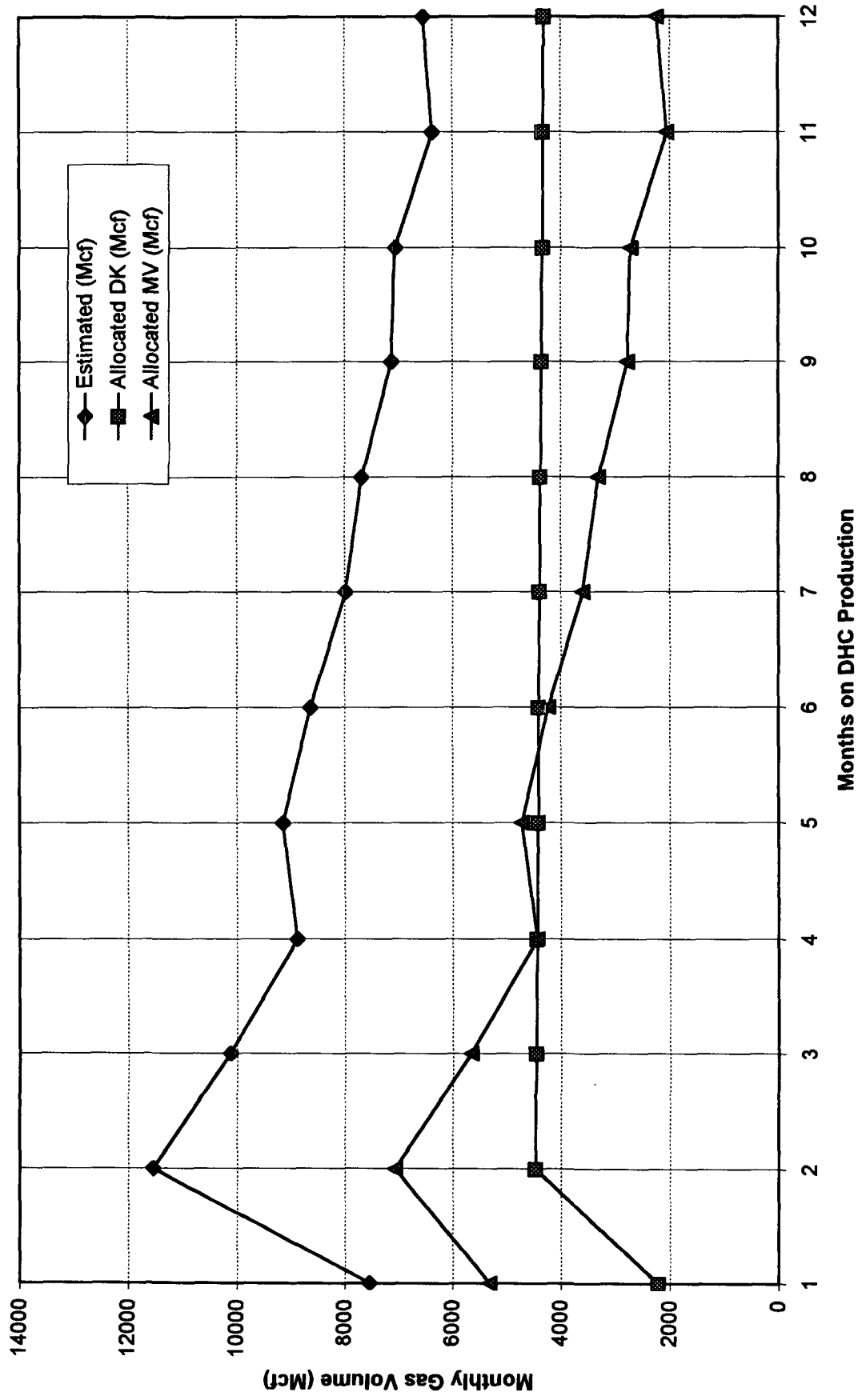
Gas Forecast

Well	RU 168	Comments
First Delivery Date (As DHC)	16-Jan-98	
Days on First Month	15	
Existing Completion Prior to DHC	DK	
Effective Monthly Decline	0.0039	4.5% Annual Decline
Average 3 month rate (Mcf) prior to DHC	148	Apr-June Average per Day (full months)
New Completion	MV	
Initial Test (Mcf)	310	Avg. IP (New MV metered separately - 6)

Month	Estimated (Mcf)	DK Forecast (Mcf)	MV Forecast (Mcf)	Allocated DK (Mcf)	Allocated MV (Mcf)	Allocated MV (%)	Est. flush DK rate 165 mcfd	Est. flush DK rate 155 mcfd
1	7540	2475	5065	2216	5324	71		
2	11545	4340	7205	4476	7069	61		
3	10121	4474	5647	4458	5663	56		
4	8877	4312	4565	4441	4436	50		
5	9146	4439	4707	4424	4722	52		
6	8634	4279	4355	4407	4227	49		
7	7982	4405	3577	4390	3592	45		
8	7673	4387	3286	4373	3300	43		
9	7125	4230	2895	4356	2769	39		
10	7060	4353	2707	4339	2721	39		
11	6367	4197	2170	4322	2045	32		
12	6542	4320	2222	4305	2237	34		

Chart2

RU 168



Oil Forecast

RU 168
16-Jan-98
15
DK
0.0019
0.2
MV
5

Estimated
Estimated

Estimated

Well
First Delivery Date (As DHC)
Days on First Month
Existing Completion Prior to DHC
Yield (bbls/mcf)
Average 1997 rate (BOPD) prior to DHC

New Completion
Initial Test (BOPD)

Month	Estimated (Bbl)	DK Forecast (Bbl)	MV Forecast (Bbl)	Est. MV (BOPD)	Allocated MV (%)	DK .003 (bbl/mcf)
1	82	7	75	5.0	91%	DK .003 (bbl/mcf)
2	75	13	62	2.2	83%	DK .003 (bbl/mcf)
3	40	9	31	1.0	78%	
4	19	4	15	0.5	77%	
5	12	4	8	0.3	64%	
6	10	4	6	0.2	58%	
7	11	4	6	0.2	59%	
8	9	4	5	0.2	52%	
9	9	4	5	0.2	51%	
10	7	4	3	0.1	41%	
11	7	4	3	0.1	41%	
12	7	4	3	0.1	40%	

RINCON UNIT NO. 168

After a 7 day SI period:

Mesaverde BHP = 761 psi 5308' (Mid perf) Measured MV BHP from offset well #139E

Dakota BHP = 516 psi 7362' (Mid perf) Calc BHP from 7 day SITP - Sept. 1996

$$\text{Gas Gradient} = \frac{(.0134)(.66)(2054)}{(.96)(655)} = 0.03 \text{ psi/ft}$$

Adjusting to a common datum of 5308':

Mesaverde BHP = 761 psi

$$\text{Dakota BHP} = 516 - [(0.03)(7362-5308)] = 454 \text{ psi}$$

Therefore the reservoir pressures fall within the 50% requirement.

--BHPCALC--

Calculate BHP and Z-factor from surface shut-in pressure 11/23/97

WELL NAME : RINCON UNIT #168
GAS GRAVITY: 0.66 % N2 0.25
CONDENSATE (YES=1): 1 % CO2 1.32 %
RESERVOIR TEMP: 195 F % H2S 0.00 %
SURFACE TEMP: 60 F PC = 672.74 %
DEPTH OF ZONE: 7362 Foot TC = 372.72

SURFACE PRES	BHP	Z	BHP/Z
psia	psia		psia
437	516	0.9578	538

Entity : RINCON UNIT (011510)
 Field : BASIN (4100)
 Reservoir: DAKOTA (604)
 Operator : UNION OIL COMPANY OF CALIFORNIA (34551)
 Location : S36 T27N R7W A RIO ARBA
 Basin : SAN JUAN (580)
 Zone : DAKOTA (602DKOT)
 District : AZTEC
 API : 30039823770000

Product: GAS
 Start : 196212
 Stop : 199703
 Status : ACTIVE
 Well # : 168
 Upper : 7370
 Lower : 7462
 Lat : 36.53494
 Lng : 107.52143

Test Information

Date	Gas MCFD	Liq Bbls	** SITP	Pressures FTP	CLP	P/Z	Factor Z	Cond Cum at Test	Gas Cum at Test
19621204	4885	0.0	2550	399	1108	3804	0.832	12184	1615412
19790628	181	0.0	669	268		906	0.905	13026	1746438
19810713	253	0.0	670	317		907	0.905	13956	1884390
19831121	247	0.0	862	640		1202	0.880	14722	2021632
19851209	234	0.0	721	359		984	0.898	15724	2182072
19881130	419	0.0	827	395		1148	0.884	16571	2322129
19901107	293	0.0	712	119		971	0.899	17157	2439328
19920921	284	0.0	672	383		910	0.905	17457	2478964
19930407	187	0.0	462	259		608	0.934	18120	2680443
19960913	156	0.0	437	81		573	0.937		



November 28, 1997

United States Department of the Interior
Bureau of Land Management
1235 La Plata Highway
Farmington, NM 87401

Gentlemen:

Union Oil Company of California (UNOCAL) has requested from the State of New Mexico Oil Conservation Division, approval to down hole commingle production from the Blanco Mesa Verde and Basin Dakota formations in the following Rincon Unit well, Rio Arriba County, New Mexico.

Well	Legal Location
139	1650' FSL, 1650' FWL, SW Sec 25, T27N, R7W
168	1190' FNL, 1190' FEL, NE Sec 36, T27N, R7W
181	1550' FNL, 1750' FEL, NE Sec 22, T27N, R6W

Attached for Bureau of Land Management review is this proposal. If there are any objections to the proposed action, please notify NMOCD within twenty days. If you have any questions regarding this application, please contact Tom Baiar at 915/685-6836.

Sincerely,

Spirit Energy 76
A Business Unit of UNOCAL

Heather Dahlgren
Engineering Technician

TEB:had:ss
Att.

Certified Receipt No. Z740626191

November 11, 1997

New Mexico Oil Conservation Division
Attn.: Mr. Frank Chavez
1000 Rio Brazos Road
Aztec, NM 87410

Dear Mr. Chavez:

Union Oil Company of California d.b.a. UNOCAL requests approval to down-hole commingle hydrocarbon production from the Blanco Mesa Verde and Basin Dakota formations in the following Rincon Unit well, Rio Arriba County, New Mexico.

<u>Well</u>	<u>Legal Location</u>
168	1190' FNL, 1190' FEL, NE Sec 36, T27N, R7W

a UNOCAL operated well located on Federal acreage.

This well was drilled and completed with 4-1/2" casing, in November 1962, in the Dakota formation. The Dakota is currently producing 90 Mcfd gas and a trace of oil. UNOCAL proposes to perforate, stimulate with a hydraulic fracture and isolate and test (with a production packer and 2-3/8" tubing) oil, gas and water production from the Mesa Verde formation. If production from the Mesa Verde is economic, the Mesa Verde would be downhole commingled with the Dakota. Allocation factors will be calculated from the Mesa Verde test and the Dakota's historical production.

Mesa Verde reserves in this acreage would be developed most economically if this well were granted downhole commingle approval. Approval prior to completion is being sought because production casing size will not support running dual production strings. Drilling a replacement well of larger casing size or a stand alone Mesa Verde well is not economical at this time.

One week shut-in surface pressures from off-set Mesa Verde wells were obtained in April, 1995 as follows:

<u>WELL</u>	<u>Location</u>	<u>SICP (psig)</u>
149 MV	SW, S30, T27N, R6W	237
23 MV	SW, S35, T27N, R7W	372
168 DK	NE, S36, T27N, R7W	437

UNOCAL is confident that production will not be wasted and the proposed method of completion will efficiently drain Dakota and Mesa Verde acreage around this wellbore.

Attachments:

- 1) Current well bore schematic.
- 2) Oil and gas production curves.
- 3) Lease map showing well locations for offset pressure data and offset lease operators.
- 4) Where applicable, letters to offset operators stating UNOCAL's proposal.

If you have any questions regarding this proposal please contact me at 915/685-6836.

Sincerely,

Spirit Energy 76
A Business Unit of UNOCAL



Thomas E. Baiar
Petroleum Engineer

TEB:had:ss

Att.

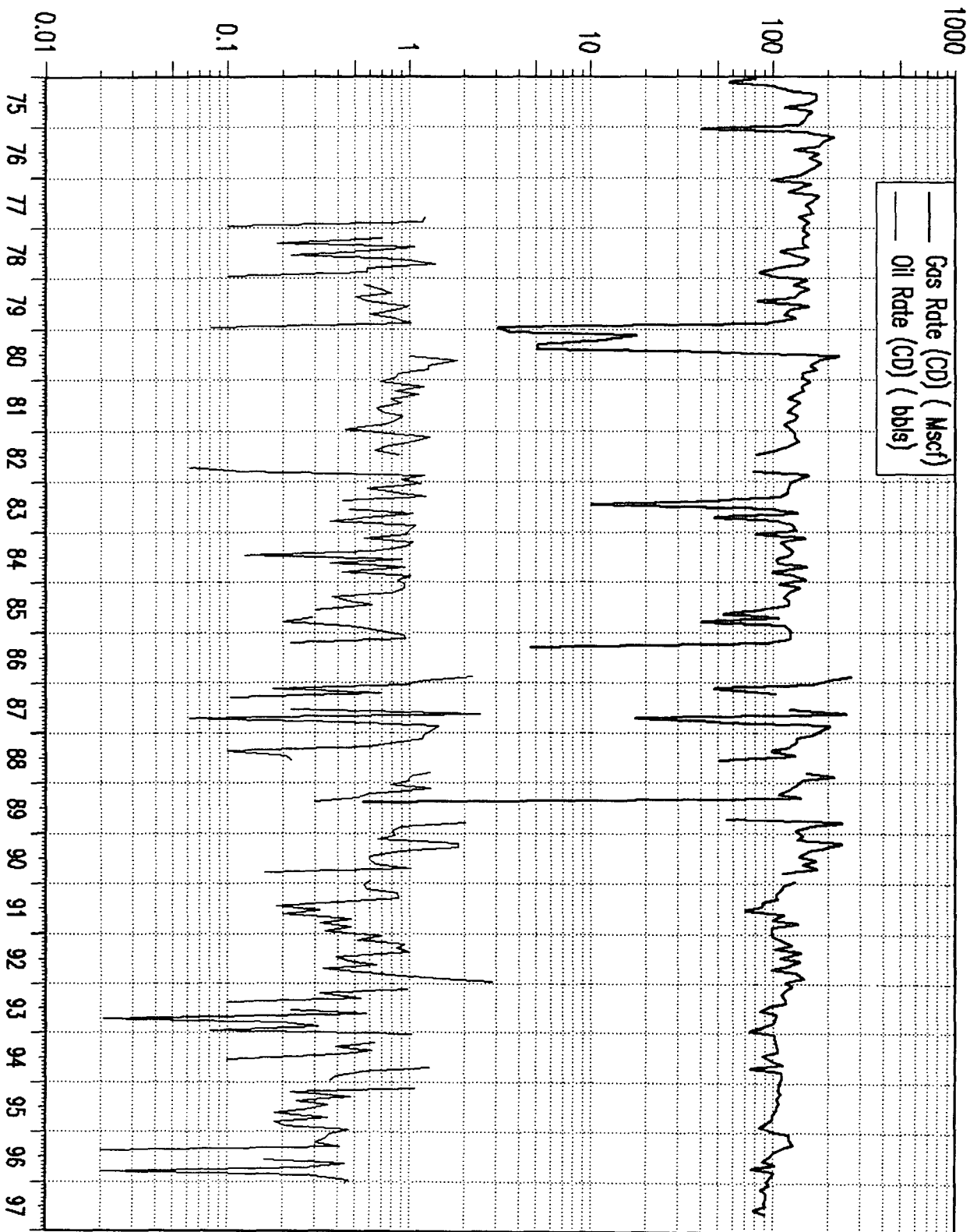
cc: New Mexico Oil Conservation Division/Santa Fe, NM

WELL: RINCON UNIT #168
LOCATION: 1190' FNL 1190' FEL Sec. 36 T27N R7W NE NE
COUNTY: Rio Arriba
STATE: NM
PRODUCING FORMATION: Dakota
CURRENT
SPUD DATE: 9/25/62
COMPL DATE: 11/19/62
RECOMPL DATE: -----
Elevation = 6586'
KB = 11.30'
Updated: 1/9/96
9-5/8", 40# S-95 @ 308'
Cmt w/ 210 sxs, Circ. to Surface
TOC
@ 2200'
by TS
DV Tool
@ 3141'
TOC
@ 4820'
by TS
DV Tool
@ 5407'
TOC
@ 6915'
by TS
PBTD
@ 7480'
235 Jts., 2-3/8" 8rd, 4.7# J-55 FHD @ 7436'
(11/19/62)
.75' Bull plug
31.80' 1 jt., 2 3/8" 4.7# J-55 8rd tbg
3.10' Perf sub
.65' SN
7390.43' 234 jts., 2 3/8" 4.7# J-55 8rd tbg
7426.73' 235 jts., Total
9.00' BKDB
7435.73' FHD
Dakota perms: 7262-7462
7262-66, 7278-84 w/ 2 spf, 7370-82 w/ 1 spf
7420-26, 7456-62 w/ 2 spf
Frac w/ 75,000 gal wtr, 75,000# sand
4-1/2", 11.6 & 10.5#, J-55 @ 7547'
TD = 7547' Cmt w/ 228 sxs 1st stg., 258 sxs 2nd stg., 355 sxs 3rd stg.

WELL: RINCON UNIT 168:DK

LOCATION : N027 W007 36 NENE

COUNTY : RIO ARriba STATE : NMEX



DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II
811 South First St., Artesia, NM 88210-2835

DISTRICT III
1000 Rio Brazos Rd, Aztec, NM 87410-1693

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 S. Pacheco
Santa Fe, New Mexico 87505-6429

Form C-107-A
New 3-12-96

APPROVAL PROCESS:

☒ Administrative ☐ Hearing

EXISTING WELLBORE

☒ YES ☐ NO

APPLICATION FOR DOWNHOLE COMMINGLING

UNION OIL COMPANY OF CALIFORNIA 1004 N. BIG SPRING, MIDLAND TX 79702
Operator Address
RINCON UNIT 168 A 36 T27N R7W RIO ARRIBA
Lease Well No. Unit Ltr. - Sec - Twp - Rge County
OGRID NO. 023708 Property Code 011510 API NO. 30-039-82377 Spacing Unit Lease Types (check 1 or more)
Federal ☐ State ☒ (and/or) Fee ☐

The following facts are submitted in support of downhole commingling:	Upper Zone	Intermediate Zone	Lower Zone
1. Pool Name and Pool Code	BLANCO MESAVERDE 72319		BASIN DAKOTA 71599
2. Top and Bottom of Pay Section (Perforations)	5253 - 5344		7262 - 7462
3. Type of production (Oil or Gas)	GAS		GAS
4. Method of Production (Flowing or Artificial Lift)	FLOWING		FLOWING
5. Bottomhole Pressure Oil Zones - Artificial Lift: Gas & Oil - Flowing: All Gas Zones: Estimated Current Measured Current Estimated Or Measured Original	a. (Current) 1-23-98 786 psia b. (Original) 12-22-97 932 psia	a. b.	a. 1-23-98 813 psia b. 12-04-62 3018 psia
6. Oil Gravity ($^{\circ}$ API) or Gas BTU Content	1184 BTU		1141 BTU
7. Producing or Shut-In?	SHUT IN		SHUT IN
Production Marginal? (yes or no)	YES		YES
* If Shut-In, give date and oil/gas/water rates of last production Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data	Date: Rates: NEW COMPLETION	Date: Rates:	Date: 10-97 Rates: 140 mcf/d, .1 bopd .2 bwpd
* If Producing, give date and oil/gas/water rates of recent test (within 60 days)	Date: Rates:	Date: Rates:	Date: Rates:
8. Fixed Percentage Allocation Formula - % for each zone	Oil: % Gas: %	Oil: % Gas: %	Oil: % Gas: %

9. If allocation formula is based upon something other than current or past production, or is based upon some other method, submit attachments with supporting data and/or explaining method and providing rate projections or other required data.

10. Are all working, overriding, and royalty interests identical in all commingled zones? Yes ☒ No ☐
If not, have all working, overriding, and royalty interests been notified by certified mail? R-9893 Yes ☐ No ☐
Have all offset operators been given written notice of the proposed downhole commingling? ☒ Yes ☐ No

11. Will cross-flow occur? ☐ Yes ☒ No If yes, are fluids compatible, will the formations not be damaged, will any cross-flowed production be recovered, and will the allocation formula be reliable. ☐ Yes ☐ No (If No, attach explanation)

12. Are all produced fluids from all commingled zones compatible with each other? ☒ Yes ☐ No

13. Will the value of production be decreased by commingling? ☐ Yes ☒ No (If Yes, attach explanation)

14. If this well is on, or communitized with, state or federal lands, either the Commissioner of Public Lands or the United States Bureau of Land Management has been notified in writing of this application. ☒ Yes ☐ No

15. NMOCD Reference Cases for Rule 303(D) Exceptions: ORDER NO(S). SEE ATTACHED

16. ATTACHMENTS:

- * C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
- * Production curve for each zone for at least one year. (If not available, attach explanation.)
- * For zones with no production history, estimated production rates and supporting data.
- * Data to support allocation method or formula.
- * Notification list of all offset operators.
- * Notification list of working, overriding, and royalty interests for uncommon interest cases.
- * Any additional statements, data, or documents required to support commingling.

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

SIGNATURE Heather Dahlgren TITLE Eng. Technician DATE 1-24-98

TYPE OR PRINT NAME HEATHER DAHLGREN TELEPHONE NO. (915) 685 7665

--BHPCALC--

Calculated BHP and Z-factor from surface shut-in pressure

TEST DATE: 01/23/98

WELL NAME : Rincon Unit 168 DK (Current Pressure)

GAS GRAVITY: 0.66 % N2 0.25
CONDENSATE (YES=1): 1 % CO2 1.32 %
RESERVOIR TEMP: 195 F % H2S 0.00 %
SURFACE TEMP: 60 F Pc = 672.74 %
DEPTH OF ZONE: 7362 Foot Tc = 372.72

SURFACE PRES	BHP	Z	BHP/Z
psia	psia		psia
685	813	0.9366	868

Current pressure obtained after 30 day shut-in following completion of Mesaverde.

ATTACHMENT 1a.

--BHPCALC--

Calculated BHP and Z-factor from surface shut-in pressure

TEST DATE: 12/04/62

WELL NAME : Rincon Unit 168 DK (Original Pressure)

GAS GRAVITY:	0.66	% N2	0.25
CONDENSATE (YES=1):	1	% CO2	1.32 %
RESERVOIR TEMP:	195 F	% H2S	0.00 %
SURFACE TEMP:	60 F	Pc =	672.74 %
DEPTH OF ZONE:	7362 Foot	Tc =	372.72

SURFACE PRES	BHP	Z	BHP/Z
Psia	psia		psia
2489	3,018	0.8963	3,367

Initial pressure obtained after 15 day shut-in following completion of well.

ATTACHMENT 1b.

--BHPCALC--

Calculated BHP and Z-factor from surface shut-in pressure

TEST DATE: 01/23/98

WELL NAME : Rincon Unit 168 MV (Current Pressure)

GAS GRAVITY: 0.69 % N2 0.28
CONDENSATE (YES=1): 1 % CO2 1.10 %
RESERVOIR TEMP: 140 F % H2S 0.00 %
SURFACE TEMP: 60 F Pc = 670.05 %
DEPTH OF ZONE: 5298 Foot Tc = 378.61

SURFACE PRES	BHP	Z	BHP/Z
psia	psia		psia
685	786	0.9087	865

Current pressure obtained after 30 day shut-in following completion of Mesaverde.

ATTACHMENT 1c.

--BHPCALC--

Calculated BHP and Z-factor from surface shut-in pressure

TEST DATE: 12/22/97

WELL NAME : Rincon Unit 168 MV (Initial Pressure)

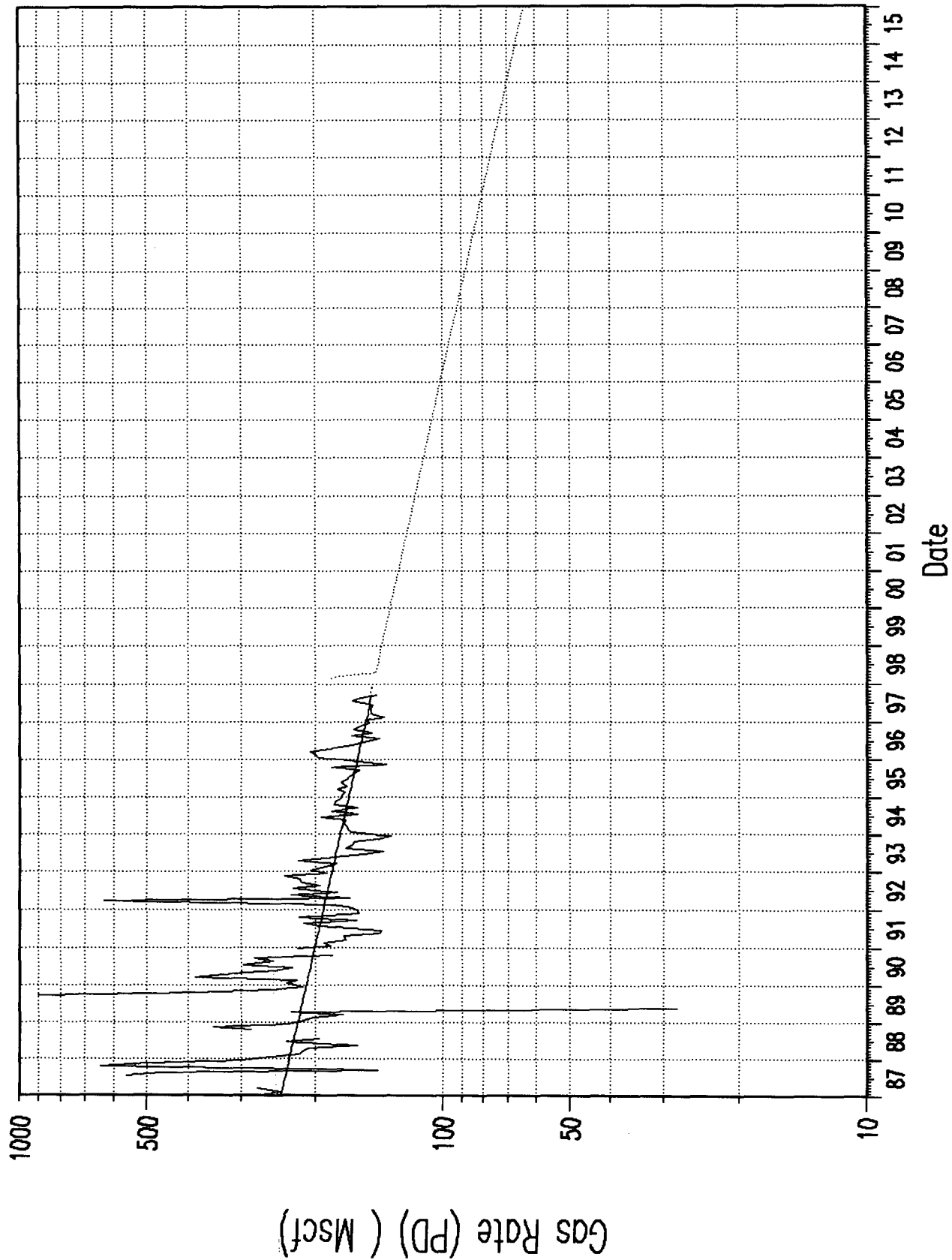
GAS GRAVITY: 0.69 % N2 0.28
CONDENSATE (YES=1): 1 % CO2 1.10 %
RESERVOIR TEMP: 140 F % H2S 0.00 %
SURFACE TEMP: 60 F Pc = 670.05 %
DEPTH OF ZONE: 5298 Foot Tc = 378.61

SURFACE PRES	BHP	Z	BHP/Z
psia	psia		psia
810	932	0.8937	1,043

24 hr. Shut-in pressure obtained 12/22/97 after 5 day clean up
and flow back period following MV stimulation treatment.

ATTACHMENT 1d.

RINCON UNIT WELL NO. 168 DAKOTA



RINCON UNIT WELL NO. 168 DAKOTA

Cum. Gas Production:	2740945.00	Mscf
Remaining Recoverable Gas Reserves:	823887.18	Mscf
Ultimate Recoverable Gas Reserves:	3564832.18	Mscf

SCHEDULE 1

Qi:	420.26	Mscf
Di:	0.003837	
Hyperbolic B:	0.0000	
Start Date:	1997/10	
Monthly Nominal Decline (Dn):	0.003837	
Monthly Effective Decline (De):	0.003830	
Yearly Effective Decline (De):	0.045000	
Initial Forecast Rate:	148.00	Mscf
Economic Limit:	25.00	Mscf
Cumulative Produced:	2740945.00	Mscf
Total Forecasted Reserves:	13537.97	Mscf
Total Recovered Reserves:	2754482.97	Mscf

SCHEDULE 2

Qi:	270006609742.50	Mscf
Di:	0.076358	
Hyperbolic B:	0.0000	
Start Date:	1998/02	
Monthly Nominal Decline (Dn):	0.076358	
Monthly Effective Decline (De):	0.073515	
Yearly Effective Decline (De):	0.600000	
Initial Forecast Rate:	190.00	Mscf
Economic Limit:	25.00	Mscf
Cumulative Produced:	2740945.00	Mscf
Total Forecasted Reserves:	23913.79	Mscf
Total Recovered Reserves:	2764858.79	Mscf

SCHEDULE 3

Qi:	418.43	Mscf
Di:	0.003837	
Hyperbolic B:	0.0000	
Start Date:	1998/04	
Monthly Nominal Decline (Dn):	0.003837	
Monthly Effective Decline (De):	0.003830	
Yearly Effective Decline (De):	0.045000	
Initial Forecast Rate:	144.00	Mscf
Economic Limit:	25.00	Mscf
Cumulative Produced:	2740945.00	Mscf
Total Forecasted Reserves:	823887.18	Mscf
Total Recovered Reserves:	3564832.18	Mscf

DATE	AVERAGE DAILY RATE Mscf	MONTHLY FORECAST PROD. Mscf	CUM. PROD. Mscf	REMAINING RECOV. RESERVES Mscf
1998/01	0.00	0.00	2754483.00	810349.19
1998/02	182.93	5121.96	2759605.00	805227.25
1998/03	169.48	5253.86	2764858.75	799973.38
1998/04	143.72	4311.72	2769170.50	795661.69
1998/05	143.18	4438.43	2773609.00	791223.25
1998/06	142.62	4278.67	2777887.50	786944.56
1998/07	142.08	4404.52	2782292.25	782540.06
1998/08	141.53	4387.52	2786679.75	778152.56
1998/09	141.00	4229.88	2790909.50	773922.69
1998/10	140.45	4353.98	2795263.50	769568.69
1998/11	139.92	4197.55	2799461.00	765371.13
1998/12	139.38	4320.70	2803781.75	761050.44
1999/01	138.84	4304.18	2808086.00	756746.25
1999/02	138.32	3872.84	2811958.75	752873.44
1999/03	137.78	4271.27	2816230.00	748602.19
1999/04	137.26	4117.73	2820347.75	744484.44
1999/05	136.73	4238.72	2824586.50	740245.75
1999/06	136.20	4086.12	2828672.50	736159.63
1999/07	135.69	4206.29	2832879.00	731953.31
1999/08	135.17	4190.14	2837069.00	727763.19
1999/09	134.65	4039.47	2841108.50	723723.69
1999/10	134.13	4158.09	2845266.50	719565.63
1999/11	133.62	4008.57	2849275.25	715557.06
1999/12	133.11	4126.28	2853401.50	711430.75
2000/01	132.60	4110.63	2857512.00	707320.13
2000/02	132.09	3830.55	2861342.50	703489.56
2000/03	131.58	4079.07	2865421.75	699410.50
2000/04	131.08	3932.45	2869354.25	695478.06
2000/05	130.58	4047.88	2873402.00	691430.19
2000/06	130.08	3902.39	2877304.50	687527.75
2000/07	129.58	4016.94	2881321.25	683510.88
2000/08	129.09	4001.64	2885323.00	679509.19
2000/09	128.59	3857.66	2889180.75	675651.56
2000/10	128.10	3970.95	2893151.50	671680.63
2000/11	127.61	3828.19	2896979.75	667852.38
2000/12	127.12	3940.63	2900920.50	663911.75
2001/01	126.63	3925.58	2904846.00	659986.19
2001/02	126.14	3532.05	2908378.00	656454.13
2001/03	125.66	3895.58	2912273.50	652558.56
2001/04	125.18	3755.41	2916029.00	648803.19
2001/05	124.70	3865.80	2919894.75	644937.38
2001/06	124.22	3726.72	2923621.50	641210.63
2001/07	123.75	3836.20	2927457.75	637374.44
2001/08	123.28	3821.53	2931279.25	633552.94
2001/09	122.80	3684.08	2934963.25	629868.88
2001/10	122.33	3792.31	2938755.75	626076.50
2001/11	121.86	3655.91	2942411.50	622420.63
2001/12	121.40	3763.30	2946174.75	618657.31
2002/01	120.93	3748.92	2949923.75	614908.38
2002/02	120.47	3373.11	2953297.00	611535.31
2002/03	120.01	3720.27	2957017.25	607815.00
2002/04	119.55	3586.47	2960603.50	604228.56
2002/05	119.09	3691.78	2964295.50	600536.75
2002/06	118.63	3559.05	2967854.50	596977.75

2002/07	118.18	3663.55	2971518.00	593314.19
2002/08	117.73	3649.56	2975167.50	589664.63
2002/09	117.28	3518.30	2978685.75	586146.31
2002/10	116.83	3621.64	2982307.50	582524.69
2002/11	116.38	3491.39	2985799.00	579033.31
2002/12	115.93	3593.97	2989392.75	575439.31

RU 168 FORECAST

Well	RU 168
Existing Completion Prior to DHC	DK
Annual Decline	4.50%
Monthly Effective Decline Factor	0.0038
Average 3 month volume (Mcf) prior to DHC	4440
Average Yield (bbls/mcf) Oil	0.0019
Average Yield (bbls/mcf) Water	0.0016
Volume Prior to DHC (Mcf)	3770

Full Months Prod Apr - Jun 97
96-97 annual average
96-97 annual average

Month	DK Forecast (Mcf)	DK Forecast (Bbls-Oil)	DK Forecast (Bbls-Water)	
1	5122	9.7	8.2	
2	5254	10.0	8.4	
3	4312	8.2	6.9	
4	4438	8.4	7.1	
5	4278	8.1	6.8	
6	4404	8.4	7.0	
7	4388	8.3	7.0	
8	4230	8.0	6.8	
9	4354	8.3	7.0	
10	4198	8.0	6.7	
11	4321	8.2	6.9	
12	4304	8.2	6.9	
13	3873	7.4	6.2	
14	4271	8.1	6.8	
15	4118	7.8	6.6	
16	4239	8.1	6.8	
17	4086	7.8	6.5	
18	4206	8.0	6.7	
19	4190	8.0	6.7	
20	4039	7.7	6.5	
21	4158	7.9	6.7	
22	4009	7.6	6.4	
23	4126	7.8	6.6	
24	4111	7.8	6.6	

+ DK flush volume
+ DK flush volume

ATTACHMENT 3.

SPIRIT ENERGY 76

New Name. Same Spirit.
A Business Unit of Unocal

DHC 12/22/97

November 28, 1997

DEC - 2 1997

New Mexico Oil Conservation Division
Attn.: Mr. William J. LeMay
2040 S. Pacheco Street
Santa Fe, NM 87505

Dear Mr. LeMay,

Union Oil Company of California d.b.a. UNOCAL requests approval to down-hole commingle hydrocarbon production from the Blanco Mesa Verde and Basin Dakota formations in the following Rincon Unit wells, Rio Arriba County, New Mexico.

Well	Legal Location
139	1650' FSL, 1650' FWL, SW Sec 25, T27N, R7W
168	1190' FNL, 1190' FEL, NE Sec 36, T27N, R7W
181	1550' FNL, 1750' FEL, NE Sec 22, T27N, R6W

Forms C-107-A with supporting data for each well are attached.

Mesaverde reserves would be developed most economically if these wells were granted downhole commingling approval. Approval prior to completion is being sought because production casing size will not support running dual production strings. Drilling a replacement well of larger casing size or a stand alone Mesa Verde well is not economical at this time.

A list of twenty-six bottom hole pressure measurements from new and mature completions, taken in 1993 and 1994, are submitted as reference cases. Calculated bottom hole pressures from 7-day surface shut-in pressures were used to determine current Dakota bottom hole pressures. No permanent loss of reserves due to cross flow should occur in these wells. Formation damage due to incompatible fluids has not been observed for existing downhole commingled completions on the Rincon Unit.

To date, thirty-four exceptions to rule 303-A have been granted for the Rincon Unit. In 1996, Unocal added and downhole commingled a Mesaverde completion with a mature Dakota in the Rincon Unit Well No. 183. The method for allocating production is based on the allocation formula approved by NMOCD Order DHC-1376 issued October 16th, 1996. This method accounts for approximately twelve months of "flush production" typically associated with new completions in the Rincon Unit. A fixed percentage allocation is determined after 12 months. Production forecasts for the existing Dakota formations are based on decline curve analysis. The projected Mesaverde production is the average of six Mesaverde wells completed since 1992 that have separately metered volumes.

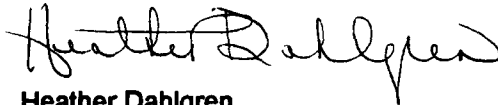
New Mexico Oil Conservation Division
November 28, 1997
Page 2

UNOCAL is confident that production will not be wasted and the proposed method of completion will efficiently drain Dakota and Mesa Verde acreage for these wellbores.

If you have any questions regarding this proposal please contact Tom Baiar at 915/685-6836.

Sincerely,

Spirit Energy 76
A Business Unit of UNOCAL

A handwritten signature in black ink, appearing to read "Heather Dahlgren". The signature is fluid and cursive, with the first name "Heather" being more prominent and the last name "Dahlgren" following in a similar style.

Heather Dahlgren
Engineering Technician

TEB:ss

Att.

cc: New Mexico Oil Conservation Division/Aztec, NM