

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

RECEIVED
MAR 25 1998
OIL CON. DIV.
DIST. 3

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

APPROVAL PROCESS:
☒ Administrative ☐ Hearing
EXISTING WELLBORE
☒ YES ☐ NO

APPLICATION FOR DOWNHOLE COMMINGLING

Operator UNION OIL COMPANY OF CALIFORNIA (UNOCAL) 1004 N. BIG SPRING, MIDLAND TX 79702
Address

Lease RINCON UNIT Well No. 137E Unit Ltr. - Sec - Twp - Rge J 24-T27N-R7W County RIO ARRIBA

OGRID NO. 023708 Property Code 011510 API NO. 30-039-25208 Spacing Unit Lease Types: (check 1 or more)
Federal ☒ State ☐ Land/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	LARGO GALLUP 80000	BASIN DAKOTA 71599
2. Top and Bottom of Pay Section (Perforations)	Proposed 4870-4927	6576-6848	7376-7644
3. Type of production (Oil or Gas)	GAS	GAS	GAS
4. Method of Production (Flowing or Artificial Lift)	FLOWING	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) 850 psia b. (Original) 850 psia	a. 589 psia b. 1548 psia	a. 589 psia b. 966 BHP survey
6. Oil Gravity (° API) or Gas BTU Content	1184 BTU	1202 BTU	1112 BTU
7. Producing or Shut-In?	New Completion	PRODUCING	PRODUCING
Production Marginal? (yes or no)	YES	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: SEE ATTACHED	Date: Rates:	Date: Rates:
* If Producing, give date and oil/gas/ water rates of recent test (within 60 days)	Date: Rates:	Date: 1-98 69 mcfd, Rates: 0 bopd, 0 bwpd	Date: 1-98 293 mcfd, Rates: 2.8 bopd, 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
No offset

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 3-23-98

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

Supplemental Data for C-107-A, Rincon Unit Well No. 137E

Well History: The Rincon Unit Well No. 137E was drilled and completed as a Dakota / Gallup producer in December 1992. Approval to downhole commingle the two zones was issued on September 17th, 1993 by **Administrative Order DHC-913**. Unocal proposes to add a Mesaverde completion and seeks approval to downhole commingle the Dakota, Gallup and Mesaverde. This well would be completed and operated most economically with a triple commingled completion. An estimated completion date is late April or May 1998.

Production History: Current gas production is 293 Mcfd from the Dakota and 69 Mcfd from the Gallup. The Dakota produces trace amounts of oil and water. The current fixed allocation percentage for the Dakota is 81% gas, 100% oil. Unocal will be performing a production flow test prior to the Mesaverde completion to confirm or determine current allocation percentages. An estimated initial rate for the first 30 days of additional Mesaverde production is 307 Mcfd and 4 Bopd. This estimate is an average based on actual IP's and production from six recent Mesaverde completions on the Rincon Unit. Please see attachments for this supporting data.

Pressure Data: Original and current bottom hole pressures were obtained by bottom hole pressure survey (137E Dakota original pressure) or calculated from surface shut-in casing pressures. Bottom hole pressures from 1997 recompletions in the Mesaverde have ranged from 694 – 1063 psia with the average being 850 psia. This average is used as an estimate for the 137E Mesaverde original pressure. Please see attachments for the bottom hole calculation, date and duration of these tests.

Allocation of Production: Unocal proposes to use an allocation based on an established Dakota / Gallup annual decline rate of 11.44%. A fixed allocation percentage for Gallup production will be applied to the commingled forecasted volume. This percentage will be based upon the results of the flow test. Production will be extrapolated monthly using Bureau of Land Management recommended allocation methods with the remainder of the commingled production being allocated to the Mesaverde formation. Please see attachments for the Dakota / Gallup forecast. Initial flush production volumes have been added to the first two months due to the anticipated extended shut-in during the workover. While tabular data has been provided for the first five years of the Dakota / Gallup forecast, we anticipate being able to convert to a fixed allocation percentage for the Mesaverde. Unocal also proposes to use a yield factor for allocating production to the Mesaverde. Please see attachments for the yield factor calculation.

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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

¹ API Number 30-039-25208	² Pool Code 71599	³ Pool Name BASIN DAKOTA
⁴ Property Code 011510	⁴ Property Name RINCON UNIT	⁵ Well Number 137E
⁷ OGRID No. 023708	⁸ Operator Name UNION OIL COMPANY OF CALIFORNIA (UNOCAL)	⁹ Elevation 6619'

¹⁰ Surface Location

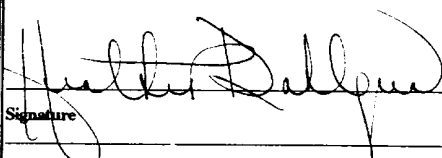
UL or lot no. J	Section 24	Township 27N	Range 7W	Lot Idn	Feet from the 1540	North/South line S	Feet from the 1500	East/West line E	County Rio Arriba
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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¹² Dedicated Acres 337.40	¹³ Joint or Infill Y	¹⁴ Consolidation Code U	¹⁵ Order No. Unitization
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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 Printed Name HEATHER DAHLGREN Title ENGINEERING TECHNICIAN Date 3-20-98
					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</i> Date of Survey Signature and Seal of Professional Surveyor: Certificate Number

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WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-25208		² Pool Code 80000	³ Pool Name LARGO GALLUP
⁴ Property Code 011510	⁴ Property Name RINCON UNIT		⁵ Well Number 137E
⁷ OGRID No. 023708	⁶ Operator Name UNION OIL COMPANY OF CALIFORNIA (UNOCAL)		⁸ Elevation 6619'

¹⁰ Surface Location

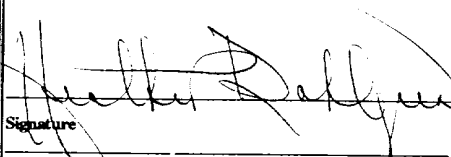
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¹¹ Bottom Hole Location If Different From Surface

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WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-25208		² Pool Code 72319	³ Pool Name BLANCO MESAVERDE
⁴ Property Code 011510	⁴ Property Name RINCON UNIT		⁵ Well Number 137E
⁷ OGRID No. 023708	⁷ Operator Name UNION OIL COMPANY OF CALIFORNIA (UNOCAL)		⁹ Elevation 6619'

¹⁰ Surface Location

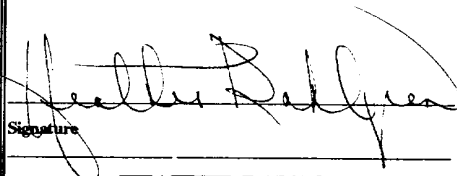
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¹¹ Bottom Hole Location If Different From Surface

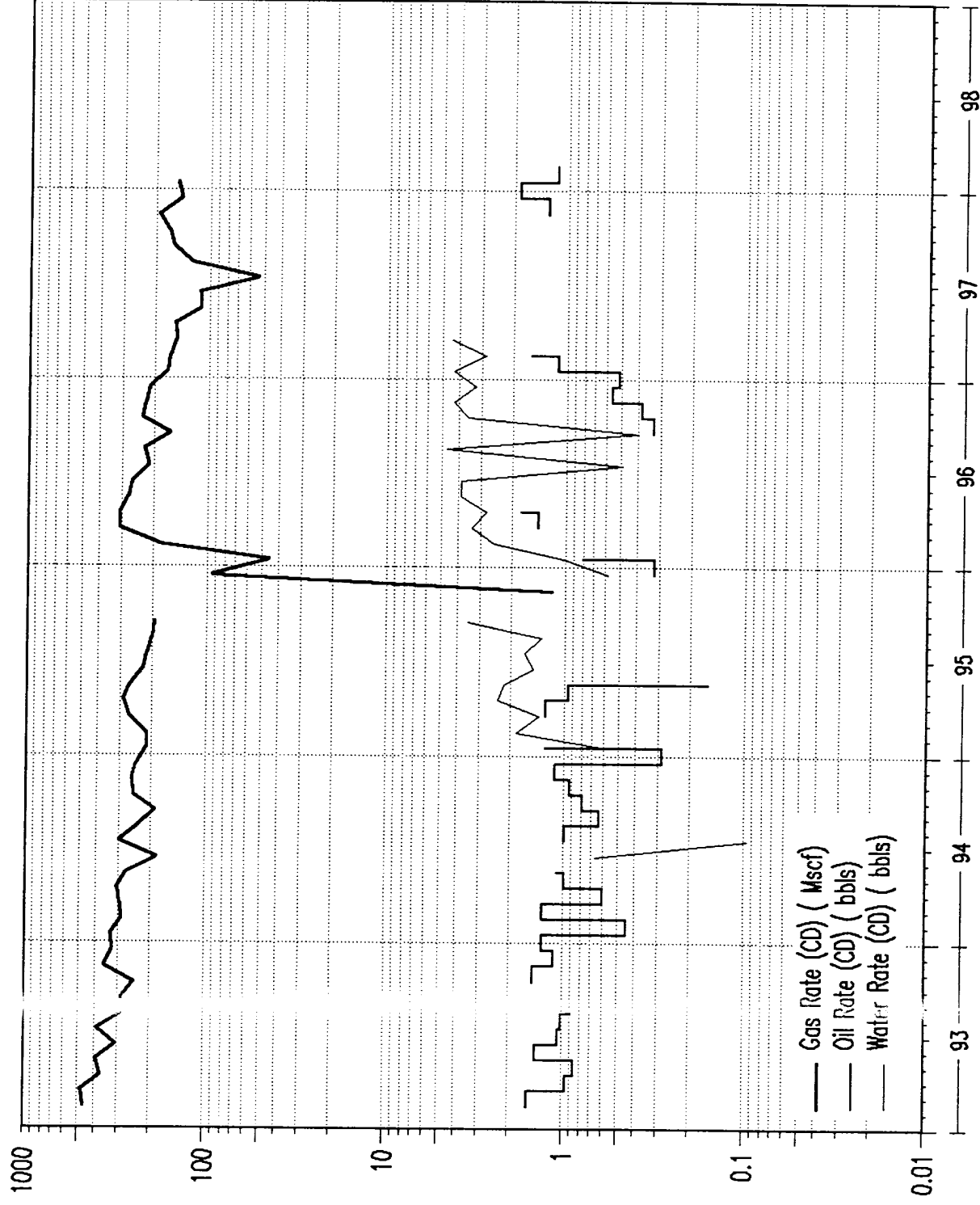
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					¹⁸ SURVEYOR CERTIFICATION <i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys in accordance with the rules and regulations of the State of New Mexico</i> Date of Survey Signature and Seal of Professional Surveyor: Certificate Number

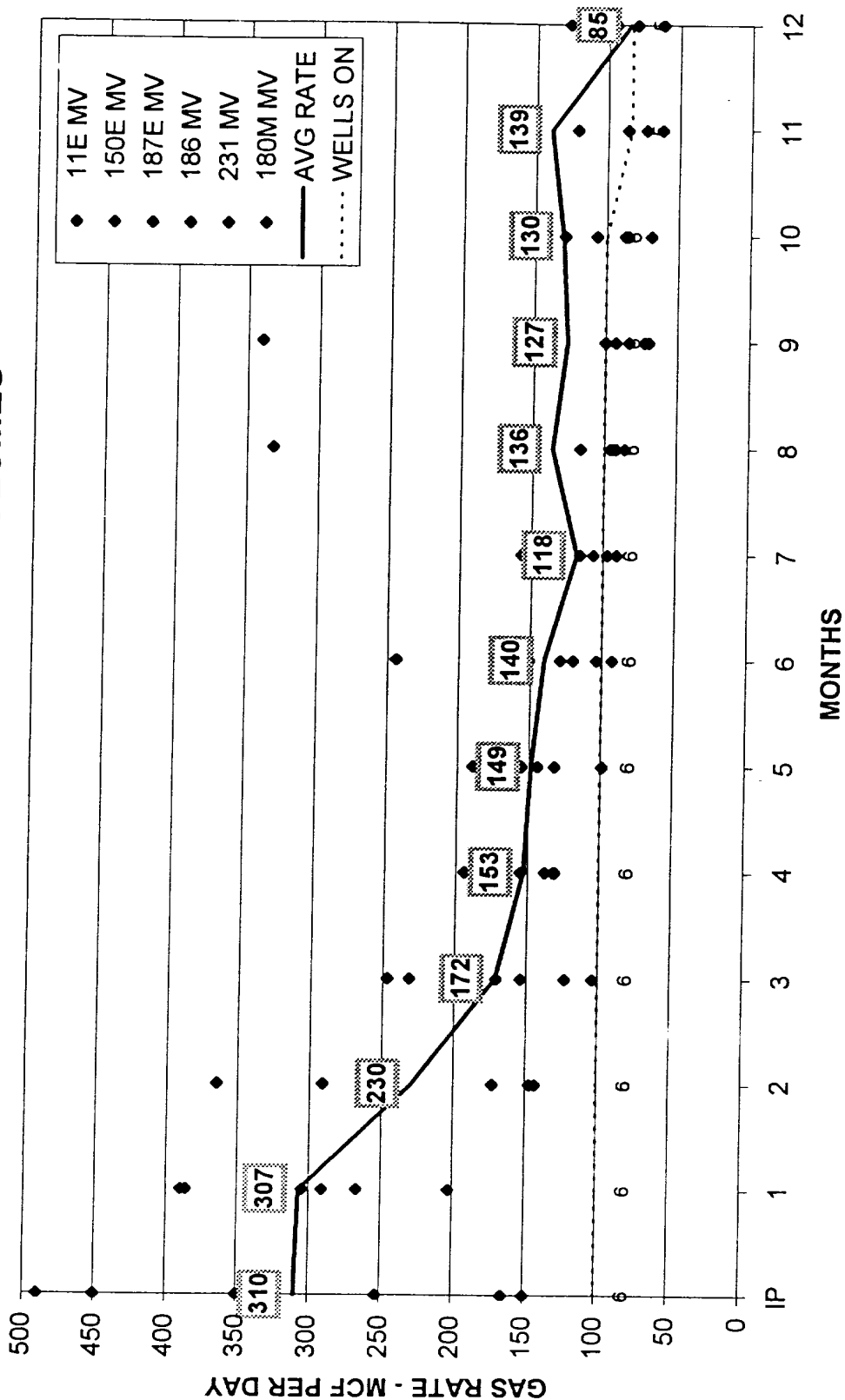
RINCON UNIT 137E: DK/GL COMMINGLE



RINCON UNIT 137E: DK/GL COMMINGLE

DATE	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	25	1418	32	0.8	46	1.0	951	282757
9602	0	5480	73	0.0	189	2.5	951	288237
9603	45	9595	105	1.5	310	3.4	996	297832
9604	54	9216	84	1.8	307	2.8	1050	307048
9605	0	8530	120	0.0	275	3.9	1050	315578
9606	50	7866	116	1.7	262	3.9	1100	323444
9607	0	6634	15	0.0	276	0.6	1100	330078
9608	0	7048	145	0.0	227	4.7	1100	337126
9609	10	4929	12	0.4	197	0.5	1110	342055
9610	12	7231	110	0.4	233	3.5	1122	349286
9611	17	6631	128	0.6	221	4.3	1139	355917
9612	16	6539	100	0.5	211	3.2	1155	362456
9701	35	5285	132	1.1	170	4.3	1190	367741
9702	45	4575	80	1.6	163	2.9	1235	372316
9703	0	4680	136	0.0	151	4.4	1235	376996
9704	116	4690	0	3.9	156	0.0	1351	381686
9705	0	3495	0	0.0	117	0.0	1351	385181
9706	0	3426	0	0.0	114	0.0	1351	388607
9707	51	1673	0	8.5	279	0.0	1402	390280
9708	0	3938	0	0.0	246	0.0	1402	394218
9709	17	4779	0	0.9	244	0.0	1419	398997
9710	0	5278	0	0.0	264	0.0	1419	404275
9711	39	5797	0	2.0	290	0.0	1458	410072
9712	58	4473	0	2.9	224	0.0	1516	414545
9801	36	4695	0	2.8	361	0.0	1552	419240

RINCON MESAVERDE RECOMPLETIONS SEPARATELY METERED VOLUMES



--BHPCALC--

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

TEST DATE: Jul-97

WELL NAME : Rincon Unit 137E DK/GL (Current Pressure)

GAS GRAVITY:	0.64	% N2	0.17
CONDENSATE (YE: -1):	1	% CO2	1.12 %
RESERVOIR TEMP:	195 F	% H2S	0.00 %
SURFACE TEMP:	60 F	Pc =	673.46 %
DEPTH OF ZONE:	7510 Foot	Tc =	367.44

SURFACE PRES	BHP	Z	BHP/Z
psia	psia		psia
500	589	0.9547	617

Current SICP obtained after 5 day shut-in.

--BHPCALC--

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

TEST DATE: Dec-92

WELL NAME : Rincon Unit 137E GL (Original Pressure)

GAS GRAVITY:	0.70	% N2	1.57
CONDENSATE (YE -1):	0	% CO2	0.69 %
RESERVOIR TEMP:	180 F	% H2S	0.00 %
SURFACE TEMP:	60 F	Pc =	669.39 %
DEPTH OF ZONE:	6712 Foot	Tc =	385.64

SURFACE PRES	BHP	Z	BHP/Z
psia	psia		psia
1980	1,548	0.8693	1,780

Initial casing pressure obtained after 14 day shut-in following completion and clean up of well.

B & R SERVICE, INC.

P. O. Box 1048
Farmington, New Mexico 87499
(505) 325-2393

Company Unocal Lease Rincon Well 137-M
County Rio Arriba State N.Mex. Date 12-15-92
Shut-In _____ Zero Point K.B. Tbg. Pressure 810
Casing Pressure _____ Tbg. Depth _____ Casing Perf. _____
Max. Temp. _____ Fluid Level 5200

DEPTH

PSIG

GRADIENT

0	808	- - -
1000	835	.027
2000	858	.023
3000	876	.018
4000	896	.020
5000	916	.020
6000	1268	.352
6500	1483	.430
7000	1702	.438
7100	1744	.420
7200	1787	.430
7300	1830	.430
7400	1874	.440
7500	1916	.420

RU 137E DKGL Forecast

Well

Existing Completion Prior to DHC

Annual Decline

Annual Decline Factor (Annual Decline/12)

Average 3 month volume (Mcf) prior to DHC

Average Yield (bbls/mcf) Oil

Average Yield (bbls/mcf) Water

Volume Prior to DHC (Mcf)

* Fixed allocation % for the Gallup to be determined by production test

* Forecasted volumes to be adjusted for actual days on production

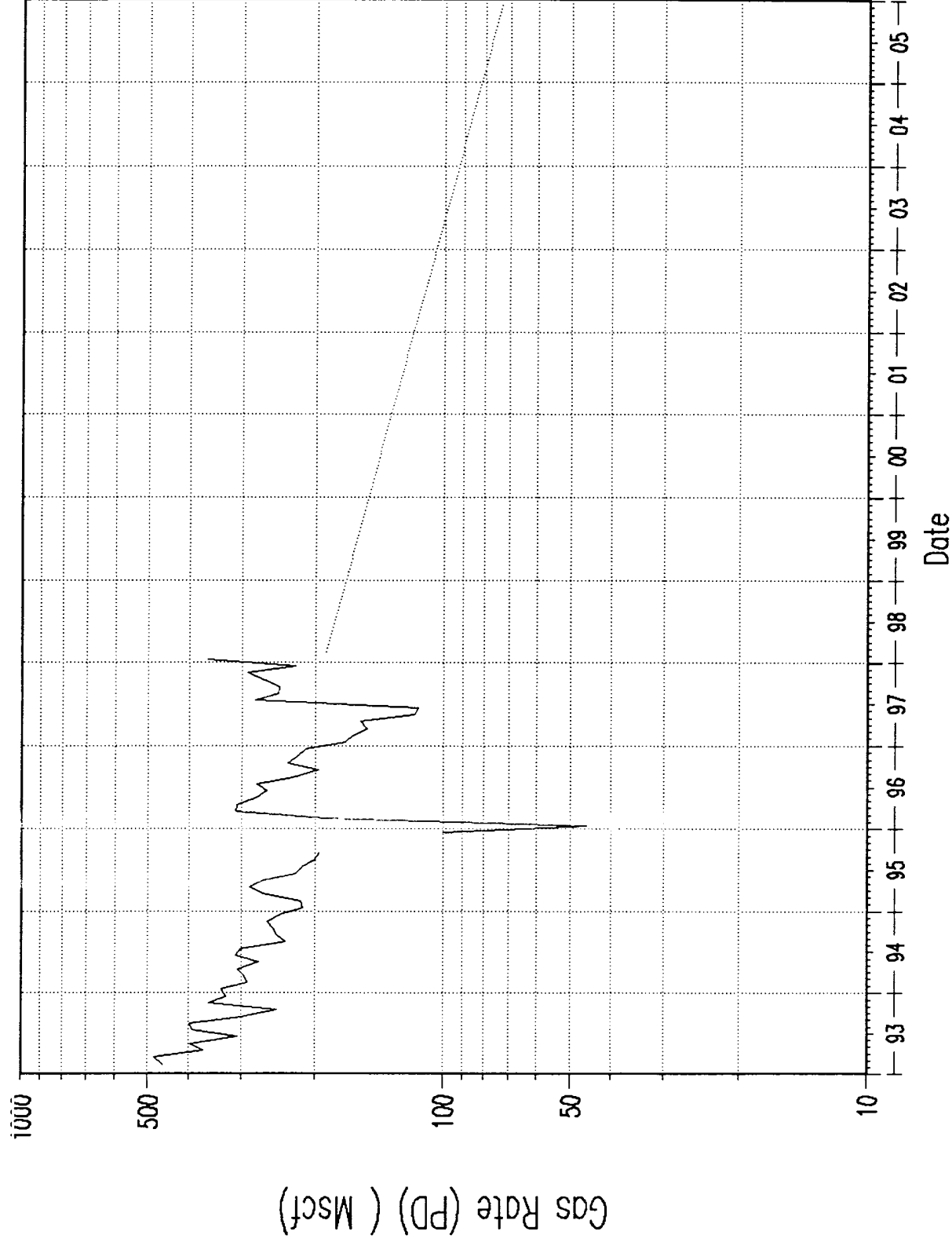
RU 137E
DK/GL
11.44%
0.9535
4988
0.007
0.0066

Months Nov - Jan 98
97 annual average
97 annual average

Month	DK/GL Forecast (Mcf)	DK Forecast (Bbls-Oil)	DK Forecast (Bbls-Water)
1	6596	46.2	43.5
2	6310	44.2	41.6
3	5736	40.2	37.9
4	5681	39.8	37.5
5	5627	39.4	37.1
6	5573	39.0	36.8
7	5520	38.6	36.4
8	5468	38.3	36.1
9	5416	37.9	35.7
10	5364	37.5	35.4
11	5313	37.2	35.1
12	5262	36.8	34.7
13	5212	36.5	34.4
14	5162	36.1	34.1
15	5113	35.8	33.7
16	5064	35.5	33.4
17	5016	35.1	33.1
18	4968	34.8	32.8
19	4921	34.4	32.5
20	4874	34.1	32.2
21	4827	33.8	31.9
22	4781	33.5	31.6
23	4736	33.2	31.3
24	4691	32.8	31.0

+ DK/GL flush volume
+ DK/GL flush volume

RINCON UNIT 137E: DK/GL COMMINGLE



RINCON UNIT 137E: DK/GL COMMINGLE

Cum. Gas Production: 419240.00 Mscf
 Remaining Recoverable Gas Reserves: 509634.83 Mscf
 Ultimate Recoverable Gas Reserves: 928874.83 Mscf

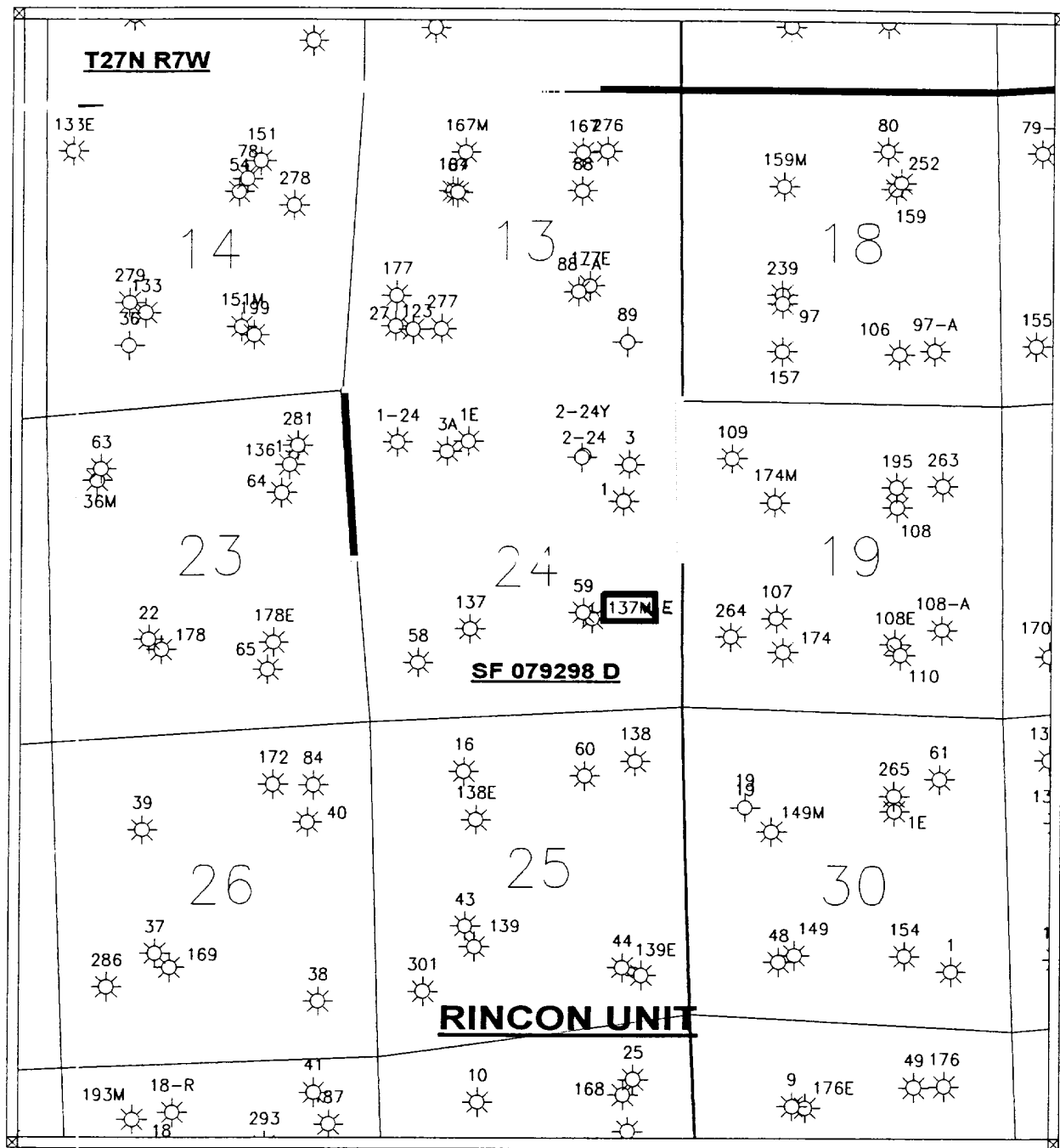
SCHEDULE 1

Qi: 344.69 Mscf
 Di: 0.010126
 Hyperbolic B: 0.0000
 Start Date: 1998/02
 Monthly Nominal Decline (Dn): 0.010126
 Monthly Effective Decline (De): 0.010075
 Yearly Effective Decline (De): 0.114415
 Initial Forecast Rate: 189.66 Mscf
 Economic Limit: 20.00 Mscf
 Cumulative Produced: 419240.00 Mscf
 Schedule Forecasted Reserves: 509634.83 Mscf
 Total Forecasted Reserves: 509634.83 Mscf
 Total Recovered Reserves: 928874.83 Mscf

DATE	AVERAGE DAILY RATE Mscf	MONTHLY FORECAST PROD. Mscf	CUM. PROD. Mscf	REMAINING RECOV. RESERVES Mscf
1998/02	188.70	5283.70	424523.69	504351.13
1998/03	186.80	5790.85	430314.56	498560.25
1998/04	184.92	5547.58	435862.13	493012.69
1998/05	183.06	5674.76	441536.91	487337.91
1998/06	181.21	5436.42	446973.31	481901.50
1998/07	179.39	5560.96	452534.28	476340.53
1998/08	177.58	5505.00	458039.28	470835.53
1998/09	175.79	5273.71	463313.00	465561.81
1998/10	174.02	5394.61	468707.59	460167.22
1998/11	172.27	5168.01	473875.63	454999.19
1998/12	170.53	5286.46	479162.06	449712.75
1999/01	168.81	5233.21	484395.28	444479.53
1999/02	167.11	4679.18	489074.47	439800.34
1999/03	165.43	5123.28	494202.75	434672.06
1999/04	163.76	4912.86	499115.59	429759.22
1999/05	162.11	5025.51	504141.13	424733.69
1999/06	160.48	4814.35	508955.47	419919.34
1999/07	158.86	4924.74	513880.19	414994.63
1999/08	157.26	4875.13	518755.34	410119.47
1999/09	155.68	4670.31	523425.66	405449.16
1999/10	154.11	4777.41	528203.06	400671.75
1999/11	152.56	4576.73	532779.81	396095.03
1999/12	151.02	4681.59	537461.38	391413.44
2000/01	149.50	4634.45	542095.81	386778.97
2000/02	147.99	4291.76	546387.63	382487.22

2000/03	146.50	4541.55	550929.13	377945.69
2000/04	145.03	4350.77	555279.88	373594.91

DATE	AVERAGE DAILY RATE Mscf	MONTHLY FORECAST PROD. Mscf	CUM. PROD. Mscf	REMAINING RECOV. RESERVES Mscf
2000/05	143.56	4450.50	559730.38	369144.41
2000/06	142.12	4263.53	563993.94	364880.88
2000/07	140.69	4361.25	568355.19	360519.63
2000/08	139.27	4317.36	572672.56	356202.25
2000/09	137.87	4136.00	576808.56	352066.25
2000/10	136.48	4230.78	581039.31	347835.50
2000/11	135.10	4053.03	585092.38	343782.44
2000/12	133.74	4145.95	589238.31	339636.50
2001/01	132.39	4104.23	593342.56	335532.25
2001/02	131.06	3669.67	597012.25	331862.59
2001/03	129.74	4021.92	601034.13	327840.69
2001/04	128.43	3852.94	604887.06	323987.75
2001/05	127.14	3941.30	608828.38	320046.44
2001/06	125.86	3775.72	612604.13	316270.72
2001/07	124.59	3862.28	616466.38	312408.44
2001/08	123.33	3823.38	620289.75	308585.06
2001/09	122.09	3662.75	623952.50	304922.31
2001/10	120.86	3746.73	627699.25	301175.56
2001/11	119.64	3589.30	631288.50	297586.28
2001/12	118.44	3671.61	634960.13	293914.69
2002/01	117.25	3634.63	638594.75	290280.06
2002/02	116.06	3249.81	641844.56	287030.25
2002/03	114.89	3561.73	645406.31	283468.50
2002/04	113.74	3412.13	648818.44	280056.38
2002/05	112.59	3490.36	652308.81	276566.00
2002/06	111.46	3343.70	655652.50	273222.31
2002/07	110.34	3420.39	659072.88	269801.94
2002/08	109.22	3385.92	662458.81	266416.00
2002/09	108.12	3243.67	665702.50	263172.31
2002/10	107.03	3318.03	669020.50	259854.30
2002/11	105.96	3178.66	672199.19	256675.64
2002/12	104.89	3251.52	675450.69	253424.13
2003/01	103.83	3218.77	678669.44	250205.36

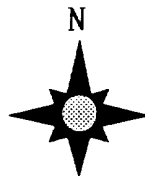


Scale 1:31308.12

1000 0. 1000. 2000. 3000. 4000. 5000. feet



0.1 0. 0.1 0.2 0.3 0.4 0.5 miles



SPIRIT ENERGY

OFFSET DATA & LEASE
RINCON UNIT NO. 137M E
OPERATOR: UNION OIL CO. OF CALIFORNIA

Scale 1:31308.12

Sandra M. Thoma

3/20/98

RU137M.GPJ