Application of Amoco Production Company for Downhole Commingling Stewart LS #6M Lot 16, Section 28, T30N, R10W San Juan County, New Mexico

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 11645 Exhibit No. 1

Submitted by: Amoco Production Company

Hearing Date: November 7, 1996

Southern Rockies Business Unit

October 4, 1996

Mr. William J. LeMay, Director
New Mexico Oil Conservation Division
2040 S. Pacheco Street
P.O. Box 6429
Santa Fe, NM 87505

Application For Exception to Rule 303-A Downhole Commingling
Stewart LS 6M
Lot 16 Section 28-T30N-R10W
Blanco Mesaverde and Basin Dakota Pools
San Juan County, New Mexico

Amoco Production Company hereby makes application for exception to NMOCD general Rule 303A to downhole commingle Dakota and Mesaverde production in the Stewart LS #6M well. The Stewart LS #6M is to be drilled at a location 800 FSL and 1165 FEL, Section 28, T30N-R10W, San Juan County, New Mexico.

In support of this application, Amoco states the following:

1. Amoco is the operator of the Dakota formation, Basin Dakota Pool underlying the E/2 Section 28, T30N-R10W, San Juan County, New Mexico currently dedicated to the Stewart LS #6M well.

2. Amoco is the operator of the Mesaverde formation, Blanco Mesaverde Pool underlying the E/2 Section 28, T30N-R10W, San Juan County, New Mexico currently dedicated to the Stewart LS #6M well.

3. The ownership (WI,RI,ORRI) of the Dakota Formation and Mesaverde formation which are proposed for commingling are common.

4. Production from both formations is anticipated to be marginal and the economic life of the production will be extended if these formations are downhole commingled.

5. Approval of this application will otherwise be in the best interest of conservation, the prevention of waste and the protection of correlative rights.

Amoco Production Company requests that this application be set for hearing before a duly appointed Examiner of the Oil Conservation Division on November 7, 1996. A copy of this application will be sent to each of the operators of spacing units offsetting the well and to the Bureau of Land Management by certified mail, return receipt requested. This well is located on Federal Lease No. NM-03566.

Sincerely,

Pamela W. Staley

Attachments

cc: Frank Chavez, Supervisor
NMOCD District III
1000 Rio Brazos Road
Aztec, NM 87410

Duane Spencer
Bureau of Land Management
1235 La Plata Hwy.
Farmington, NM 87401

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

1 API Number	2 Pool Code	3 Pool Name
	72319	Blanco Mesaverde

4 Property Code	5 Property Name	6 Well Number
	STEWART LS	# 6M

7 OGRID No.	8 Operator Name	9 Elevation
000778	AMOCO PRODUCTION COMPANY	6165

10 Surface Location

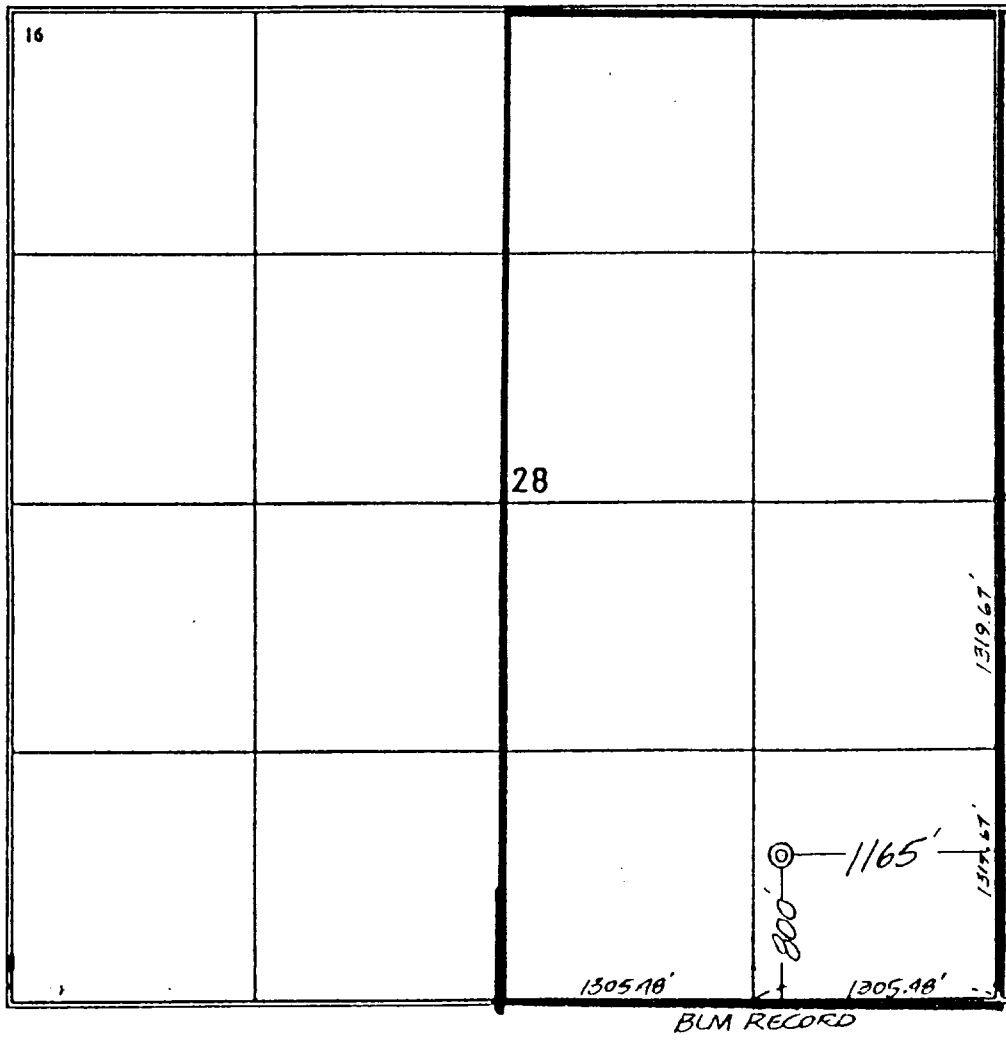
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Lot 16	28	30 N	10 W		800	SOUTH	1165	EAST	SAN JUAN

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.
322.26			

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 is true and complete to the best of my knowledge and belief

Signature
Patty Haefele
Printed Name
Staff Assistant
Title
10/9/95
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.

May 22, 1995
Date of Survey

Signature and Seal of Professional Surveyor:

GARY D. VANN
NEW MEXICO
7016
REGISTERED PROFESSIONAL LAND SURVEYOR

7016
Certificate Number

BLM RECORD

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

1 API Number	2 Pool Code	3 Pool Name
	71599	Basin Dakota

4 Property Code	5 Property Name	6 Well Number
	Stewart LS	6M

7 OGRID No.	8 Operator Name	9 Elevation
000778	Amoco Production Company	6165

10 Surface Location

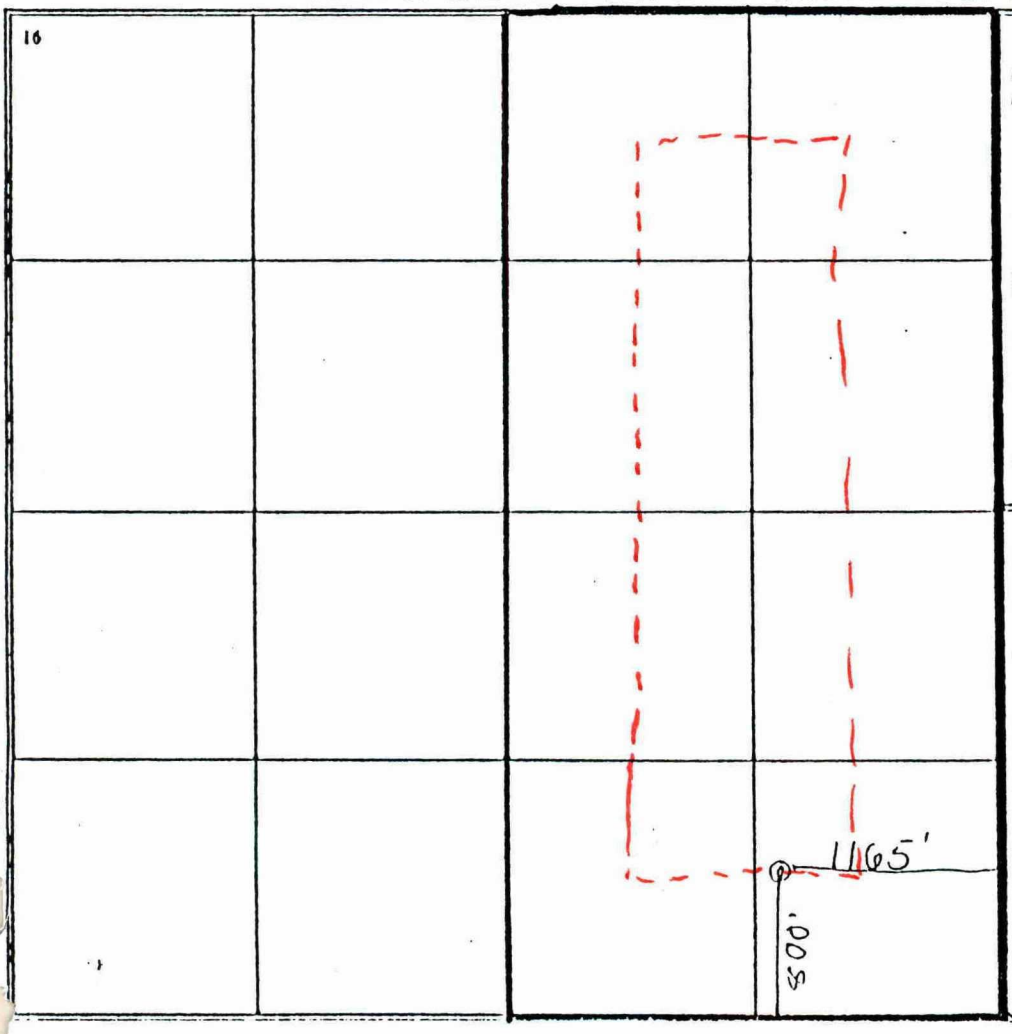
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Lot 16	28	30N	10W		800	South	1165	East	San Juan

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.
322.26			

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 is true and complete to the best of my knowledge and belief

Patty Haefele
Signature

Patty Haefele
Printed Name

Staff Assistant
Title

4/3/96
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.

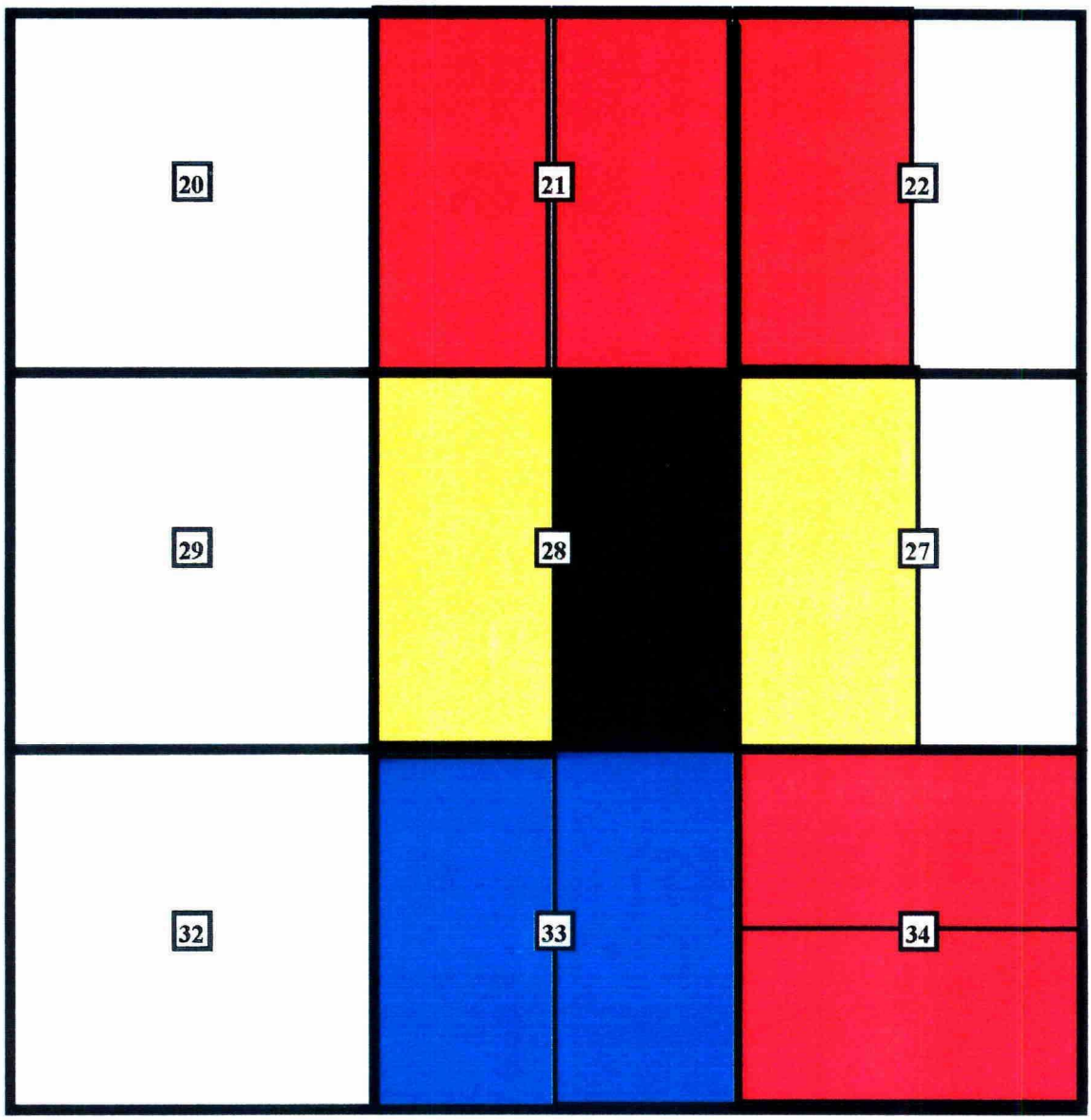
5/22/95
Date of Survey

Signature and Seal of Professional Surveyer:

7016
Certificate Number

AMOCO PRODUCTION COMPANY OFFSET OPERATOR PLAT

Stewart LS #6M
800' FSL & 1165' FEL
Lot 16 Section 28-T30N-R10W
Blanco Mesaverde Pool



SPACING UNIT TO BE DOWNHOLE COMMINGLED

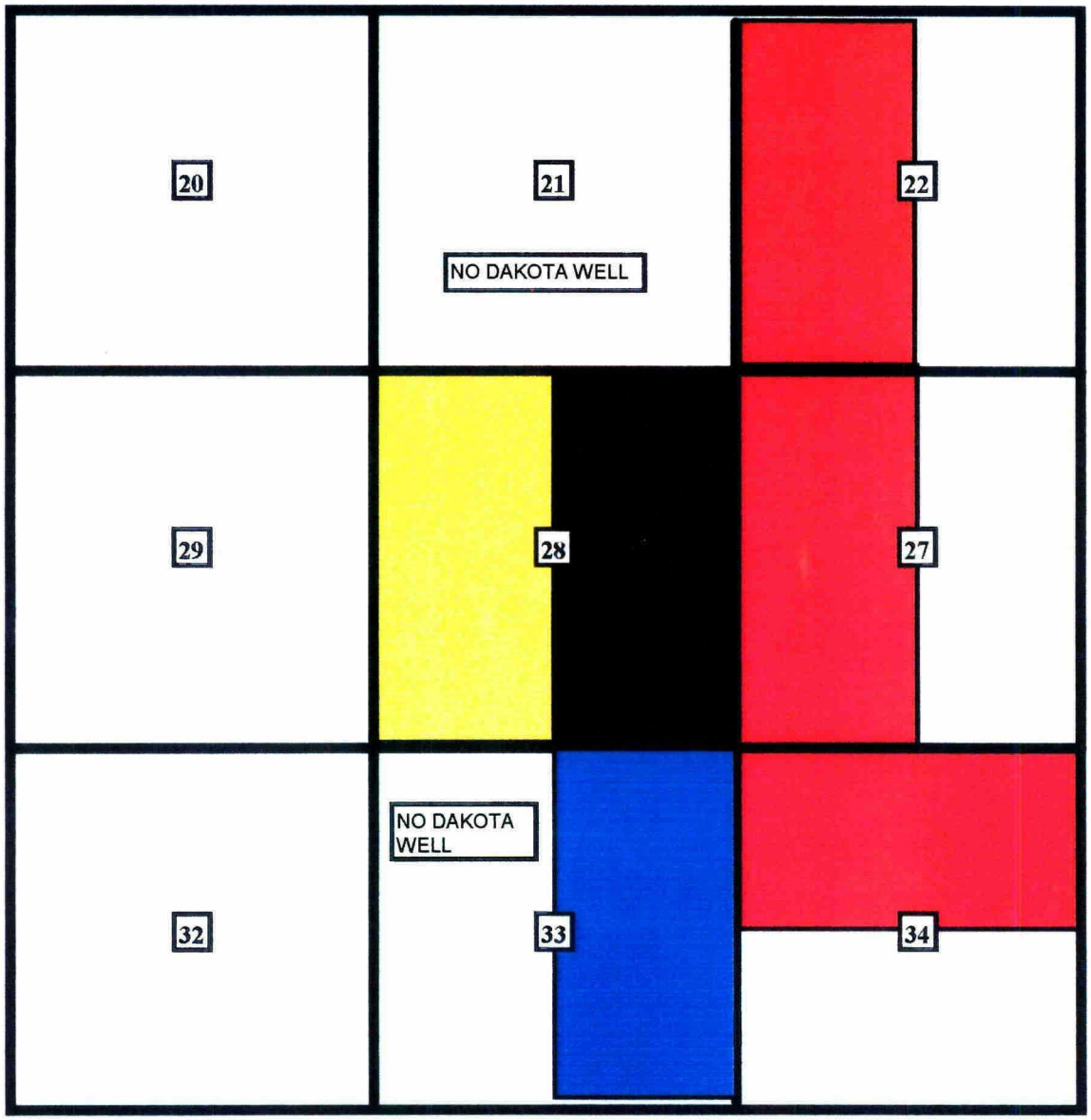
AMOCO PRODUCTION COMPANY

CONOCO INC

BURLINGTON RESOURCES

AMOCO PRODUCTION COMPANY OFFSET OPERATOR PLAT

Stewart LS #6M
800' FSL & 1165' FEL
Lot 16 Section 28-T30N-R10W
Basin Dakota Pool



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

APPLICATION FOR DOWNHOLE COMMINGLING

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

APPROVAL PROCESS:
_ Administrative _X_ Hearing

EXISTING WELLBORE
_ YES X_ NO

Amoco Production Company		P.O. Box 800 Denver, CO 80201	
Operator		Address	
STEWART LS	6M	LOT 16-SEC 28-T30N-R10W	San Juan
Lease	Well No.	Unit Ltr - Sec Twp - Rge	County

Spacing Unit Lease Types: (check 1 or more)

OGRID NO. 000778 Property Code NA API NO. 3004529380 Federal x 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)	TO BE SUBMITTED AFTER COMPLETION EST DEPTH 4935'		TO BE SUBMITTED AFTER COMPLETION EST DEPTH 7070'
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) TO BE SUBMITTED AFTER COMPLETION EST 1032 PSI b. (Original) 1293 PSI	a. b.	a. TO BE SUBMITTED AFTER COMPLETION EST 1835 PSI b. 2113 PSI
6. Oil Gravity (° API) or Gas BTU Content	1196 BTU		1122 BTU
7. Producing or Shut-In?	NEW		NEW
Production Marginal? (yes or no)	NO		YES
• If Shut-In, give data 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: 65 MCFD 0 BOPD EST FROM OFFSETS SEE ATTACHED	Date Rates:	Date Rates: 70 MCFD 0.5 BOPD EST FROM OFFSETS SEE ATTACHED
• 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: 0 % Gas 48 %	Oil: % Gas %	Oil: 100 % Gas 52 %

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? _X_ 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? _X_ Yes ___ No

11. Will cross-flow occur? _X_ 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. _X_ Yes ___ No (If No, attach explanation)

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

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

15. 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. _X_ Yes ___ No NM-03566

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. - SEE ATTACHED
- 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.

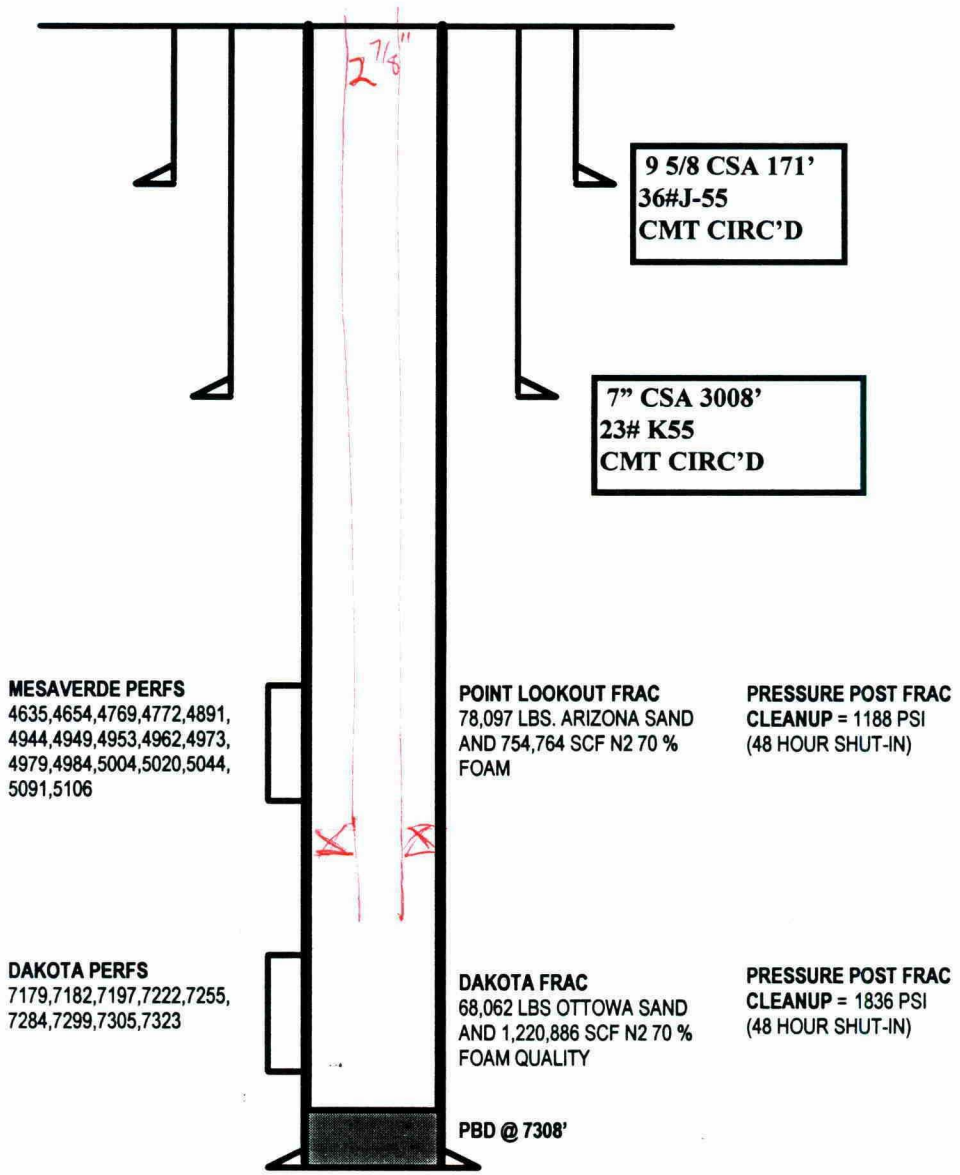
SIGNATURE [signature] TITLE REGULATORY AFFAIRS ENGR DATE 10/4/96

TYPE OR PRINT NAME PAMELA W. STALEY TELEPHONE NO. (303) 830-5344

Stewart LS 6M												
Drilling location: SE28-T30N-R10W												
Commingling Evaluation												
FM	Wellname	Location	Comp. Date	SIP	Avg Depth	IP (MCFD)	1 Yr Later (MCFD)	Current (MCFD)	Current (BOPD)	Cum Gas (MMCF)	Cum Oil (BBL)	API Gravity
MV	Riddle B 1R	NE27-30N-10W	Sep-85	904	4823	800	350	130	0.5	730	2256	49.7
MV	Bassett B 1	NW33-30N-10W	Jun-80	1125	4860	550	200	65	0	622	1882	N/A
MV	Grenier A 3M	NW34-30N-10W	Apr-84	1004	4564	900	200	80	0	381	1014	N/A
MV	King 1A	SE22-30N-10W	Mar-80	904	4991	1100	500	150	2	1221	4228	N/A
MV	Sunray D 2A	SE21-30N-10W	Apr-81	763	5178	900	150	60	0	484	2630	N/A
MV	Gage 3M	NW20-30N-10W	Jun-82	900	5193	320	175	55	0	366	131	N/A
MV	AVERAGES			938	4935	762	263	90	0	634	2024	
MV	BOTTOM HOLE PRS											
DK	Gage Com 1E	SE20-30N-10W	Feb-82	1550	7171	320	110	45	0	268	389	N/A
DK	Bassett Com 1M	SW33-30N-10W	Dec-82	1515	6912	400	100	35	0	251	849	N/A
DK	Helms Fed 1E	NW22-30N-10W	Sep-81	2085	7308	750	200	75	0	480	379	N/A
DK	Riddle B 10E	SE27-30N-10W	Sep-85	1563	6992	250	85	45	0	219	23	N/A
DK	Grenier A 3E	NW34-30N-10W	Apr-84	1753	6965	450	150	100	0	346	467	N/A
DK	AVERAGES				7070	434	129	60	0	313	421	
DK	BOTTOM HOLE PRS											
	RATIO OF BHP'S			0.56								
		Allocations	MV			0.64	0.67	0.60		0.67	0.83	
			DK			0.36	0.33	0.40		0.33	0.17	

AMOCO PRODUCTION COMPANY WELLBORE DIAGRAM

Stewart LS #6M
800' FSL & 1165' FEL
Lot 16 Section 28-T30N-R10W
Blanco Mesaverde and Basin Dakota Pools



12

Calculated Frac Gradient

FG = (ISIP + Hydrostatic Press.) / Mid Perf Depth

Hydrostatic Pressure for approximately 62% N2 foam in wellbore during flush = .19 psi/ft

ISIP = 1500 psi

Mid Perforation Depth = 4871

FG = (1500 + .19 (4871)) / 4871 = 0.50 psi/ft

BHTP = FG x Mid Perf Depth = .5 x 4871 = 2436 psi

From experience in this area we usually anticipate a Point Lookout frac gradient of 0.43 psi/ft to 0.50 psi/ft.

If you have any further questions please feel free to give me a call at (303) 830-4442.

Randy Natvig
Technical Advisor
Halliburton Energy Services

COMPARISON OF RESERVOIR PRESSURES BETWEEN FORMATIONS

RULE 303.C.(b) (ii) REQUIREMENT:

THE BOTTOMHOLE PRESSURE OF THE HIGHEST PRESSURED COMMINGLED ZONE DOES NOT EXCEED THE ORIGINAL RESERVOIR PRESSURE OF ANY OTHER COMMINGLED ZONE IN THE WELLBORE , ADJUSTED TO A COMMON DATUM.

DK CURRENT PRESSURE IS GREATER THAN ORIGINAL PRESSURE IN MV

MV CURRENT BHP = 1188 PSI
(ORIGINAL BHP = **1293 PSI**)

DK CURRENT BHP = **1836 PSI**
(ORIGINAL BHP = 2113 PSI)

- PRESSURE DIFFERENTIAL (CURRENT DK - ORIGINAL MV = 1836 PSI - 1293 PSI = **543 PSI**

- **BASED ON FRAC GRADIENT OF 0.5 PSI/FT IT WOULD TAKE A PRESSURE OF 2463 PSI TO INITIATE A FRACTURE IN THE MESAVERDE FORMATION IN THIS WELL**

- 2463 PSI - 1188 PSI CURRENT PRESSURE = A DIFFERENTIAL OF 1275 PSI

- 1275 PSI - 543 PSI = **732 PSI BELOW FRACTURE PRESSURE THAT COULD CAUSE THE DK TO FRACTURE MV**

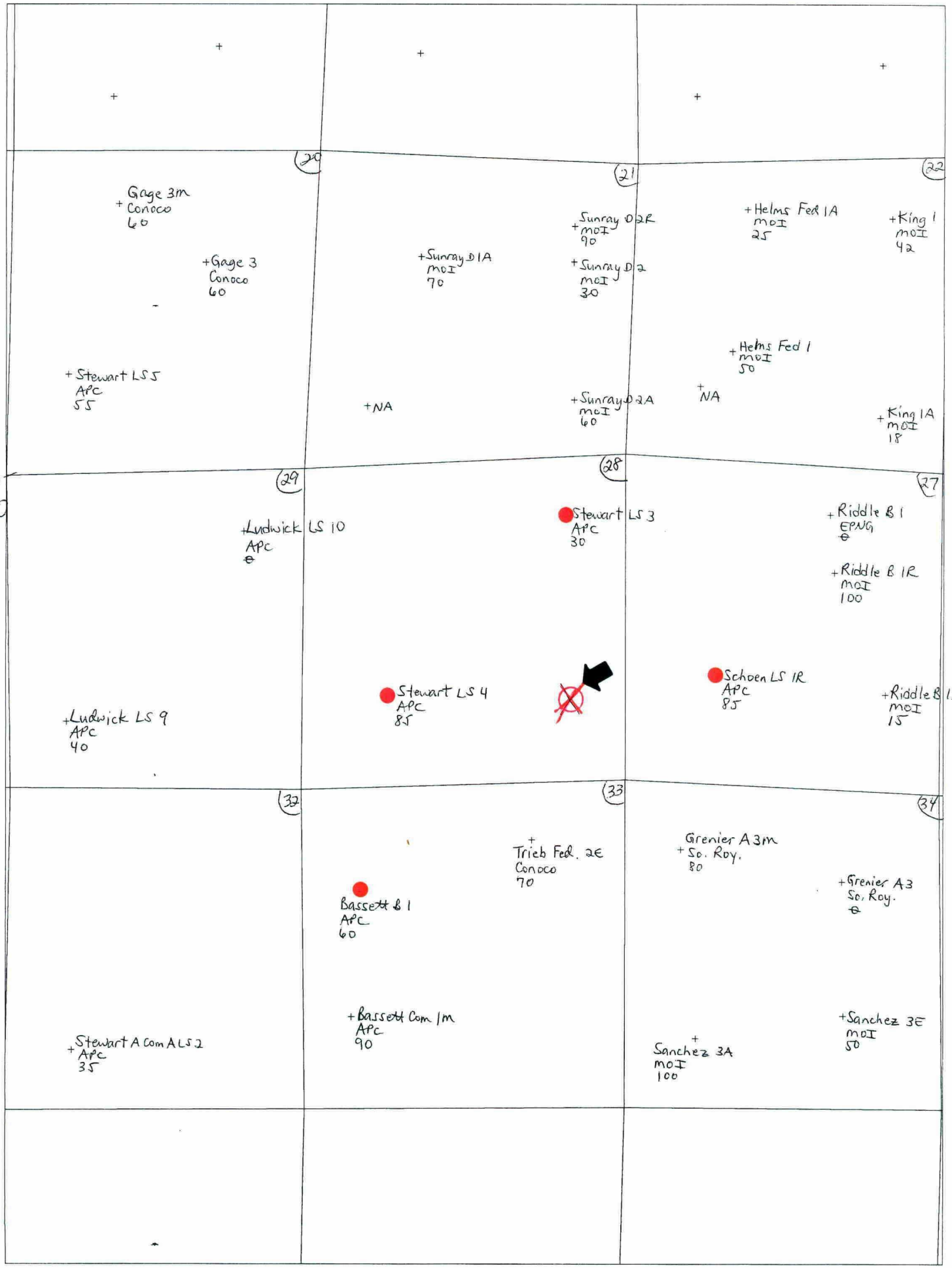
CONCLUSION:

CROSSFLOW MAY OCCUR, BUT DAKOTA WILL NOT FRACTURE MESAVERDE

BASIS FOR ALLOCATION

Stewart LS 6M						
Drilling location: SE28-T30N-R10W						
Commingling Information From Offsets						
Wellname	Location	Operator	FM	Current Gas Prod.(MCFD)	Current Oil Prod.(BOPD)	API Gravity
Stewart LS 3	28A-30N-10W	Amoco	MV	30	0	N/A
Stewart LS 4	28K-30N-10W	Amoco	MV	85	0	N/A
Schoen LS 1R	27K-30N-10W	Amoco	MV	85	0.3	49
Bassett B 1	33E-30N-10W	Amoco	MV	60	0	N/A
Avg. of MV Prod.:				65	0	
Percentage of Production to allocate to MV:				48	0	
Stewart LS 6	28H-30N-10W	Amoco	DK	45	2	59
Stewart LS 8	28N-30N-10W	Amoco	DK	60	0	N/A
Schoen LS 2	27L-30N-10W	Amoco	DK	95	0	N/A
Trieb Fed 2E	33B-30N-10W	Conoco	DK	80	0	N/A
Avg. of DK Prod.:				70	0.5	
Percentage of Production to allocate to DK:				52	100	

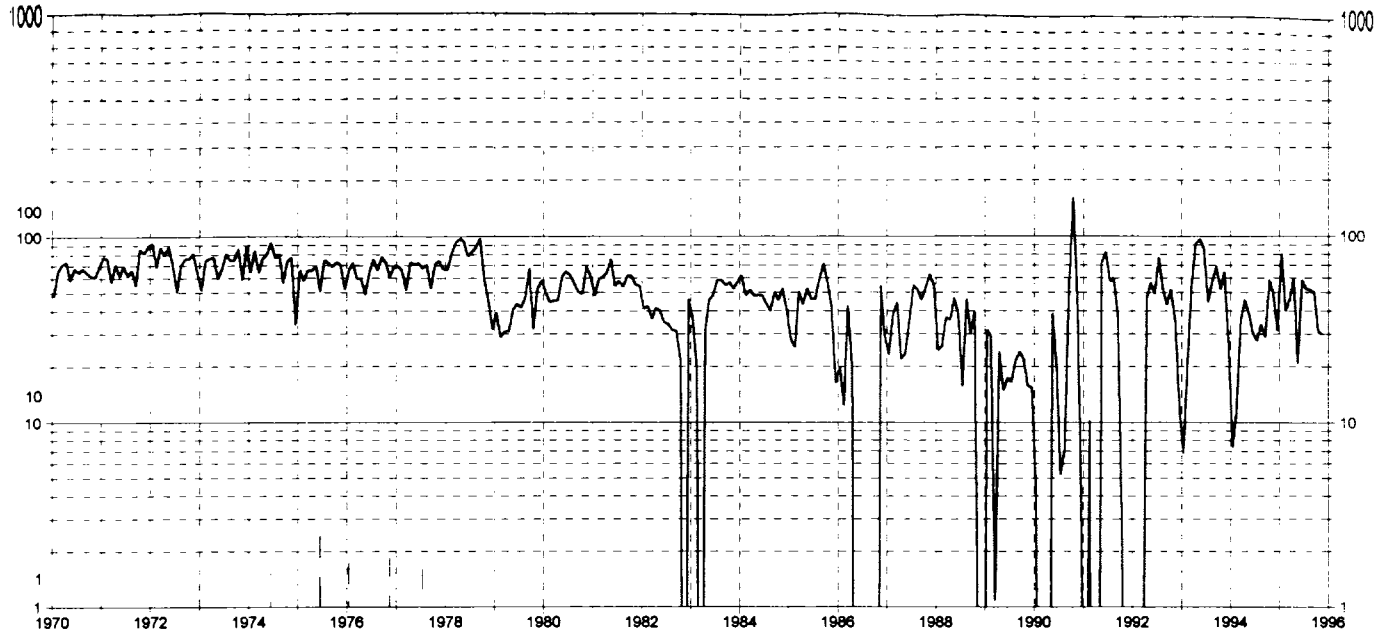
Stewart LS 6M location w/MV offsets



Dwights

1000 **Lease: STEWART LS 000003**

Retrieval Code: 251,045,30N10W28A00M

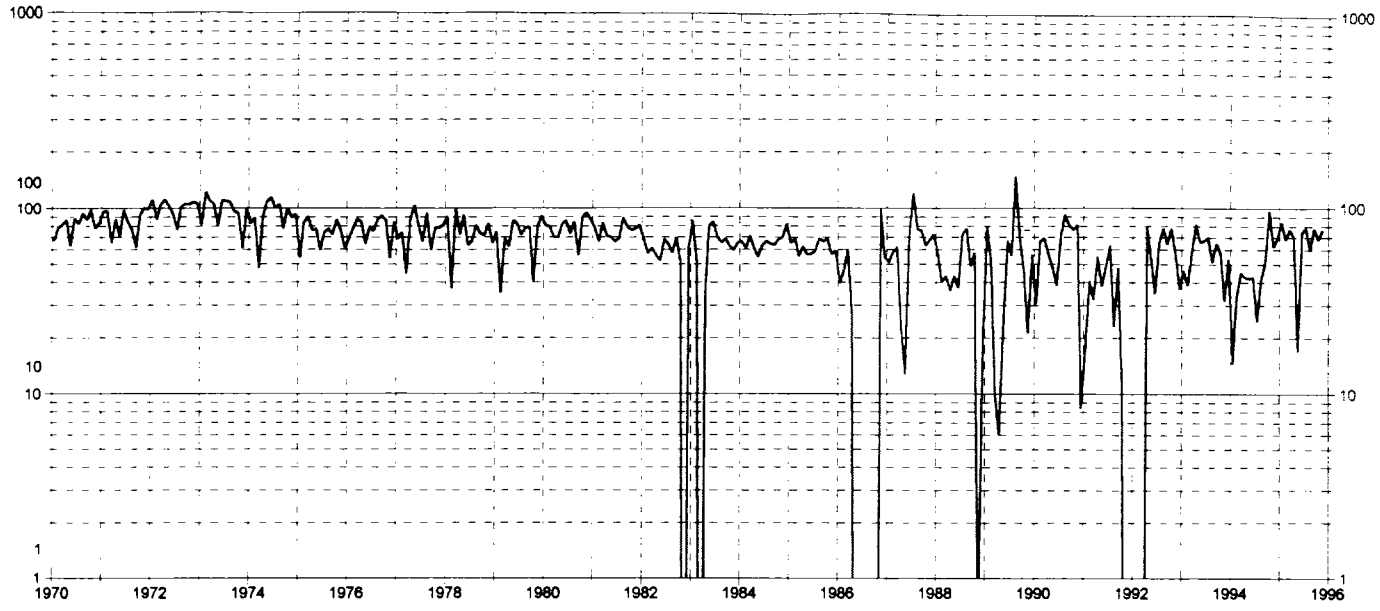


County: SAN JUAN	**State: NM**	**F.P. Date: 05/56**		**Date: 04/08/96**
Field: BLANCO (MESAVERDE) MV	**Oil Cum: 443 bbl**			
Reservoir: MESAVERDE	**Gas Cum: 804545 mcf**	Water (bbl/day)	- - -	
Operator: AMOCO PRODUCTION CO	**Location: 28A 30N 10W**	Gas (mcf/day)	——	Oil (bbl/day) — — —

Dwights

1000 **Lease: STEWART LS 000004**

Retrieval Code: 251,045,30N10W28K00M

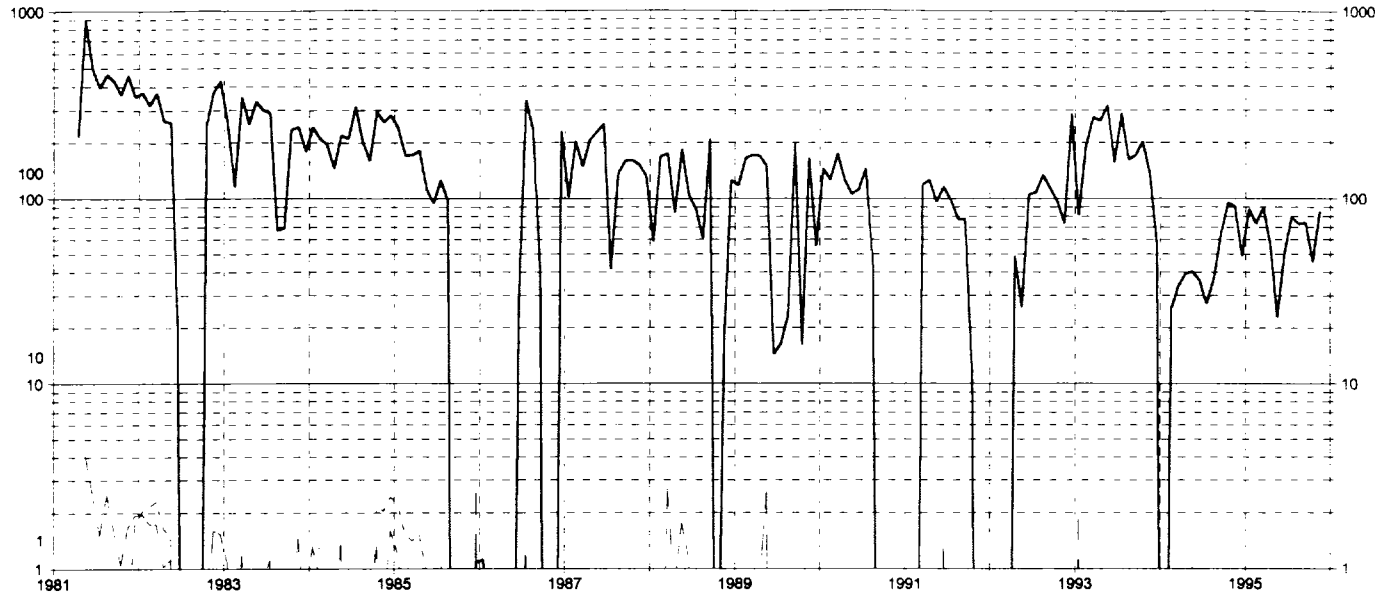


County: SAN JUAN	**State: NM**	**F.P. Date: 07/56**	**Date: 04/08/96**
Field: BLANCO (MESAVERDE) MV	**Oil Cum: 73 bbl**		
Reservoir: MESAVERDE	**Gas Cum: 992119 mcf**	Water (bbl/day)	- - -
Operator: AMOCO PRODUCTION CO	**Location: 28K 30N 10W**	Gas (mcf/day)	—— Oil (bbl/day) — — —

Dwights

1000 **Lease: SCHOEN LS 00001R**

Retrieval Code: 251,045,30N10W27K00M

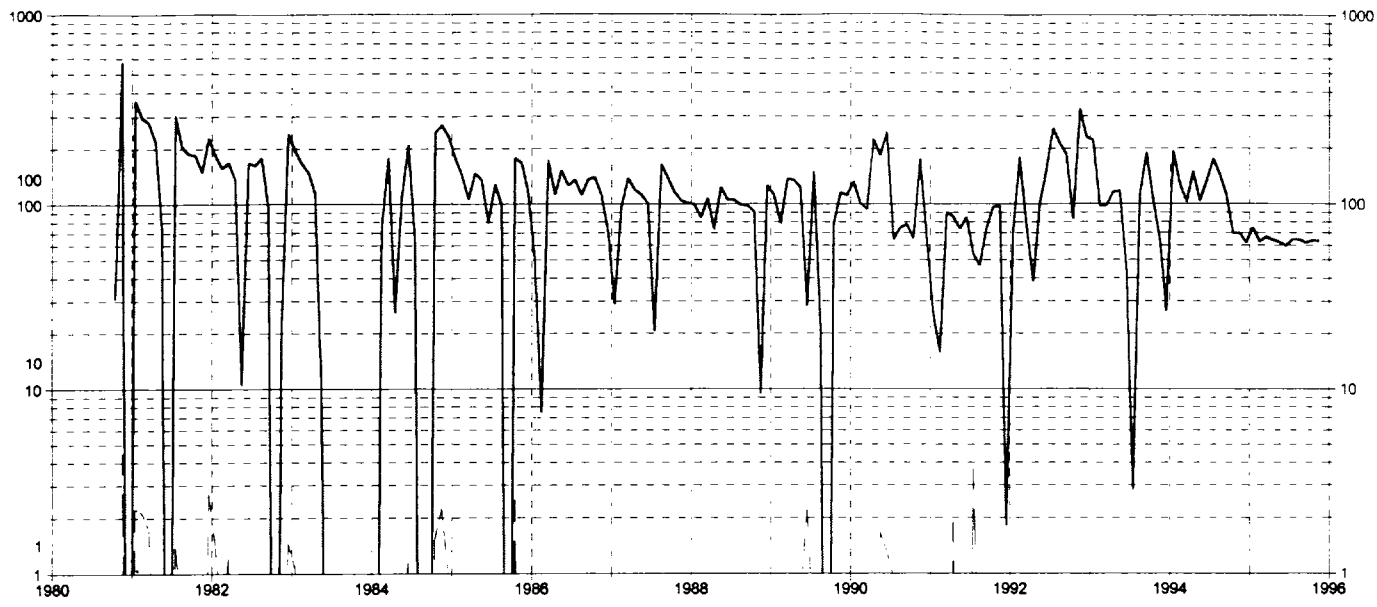


County: SAN JUAN	**State: NM**	**F.P. Date: 04/81**	**Date: 04/08/96**
Field: BLANCO (MESAVERDE) MV	**Oil Cum: 2842 bbl**		
Reservoir: MESAVERDE	**Gas Cum: 759921 mcf**	Water (bbl/day) - - -	
Operator: AMOCO PRODUCTION CO	**Location: 27K 30N 10W**	Gas (mcf/day) ——	Oil (bbl/day) — — —

Dwights

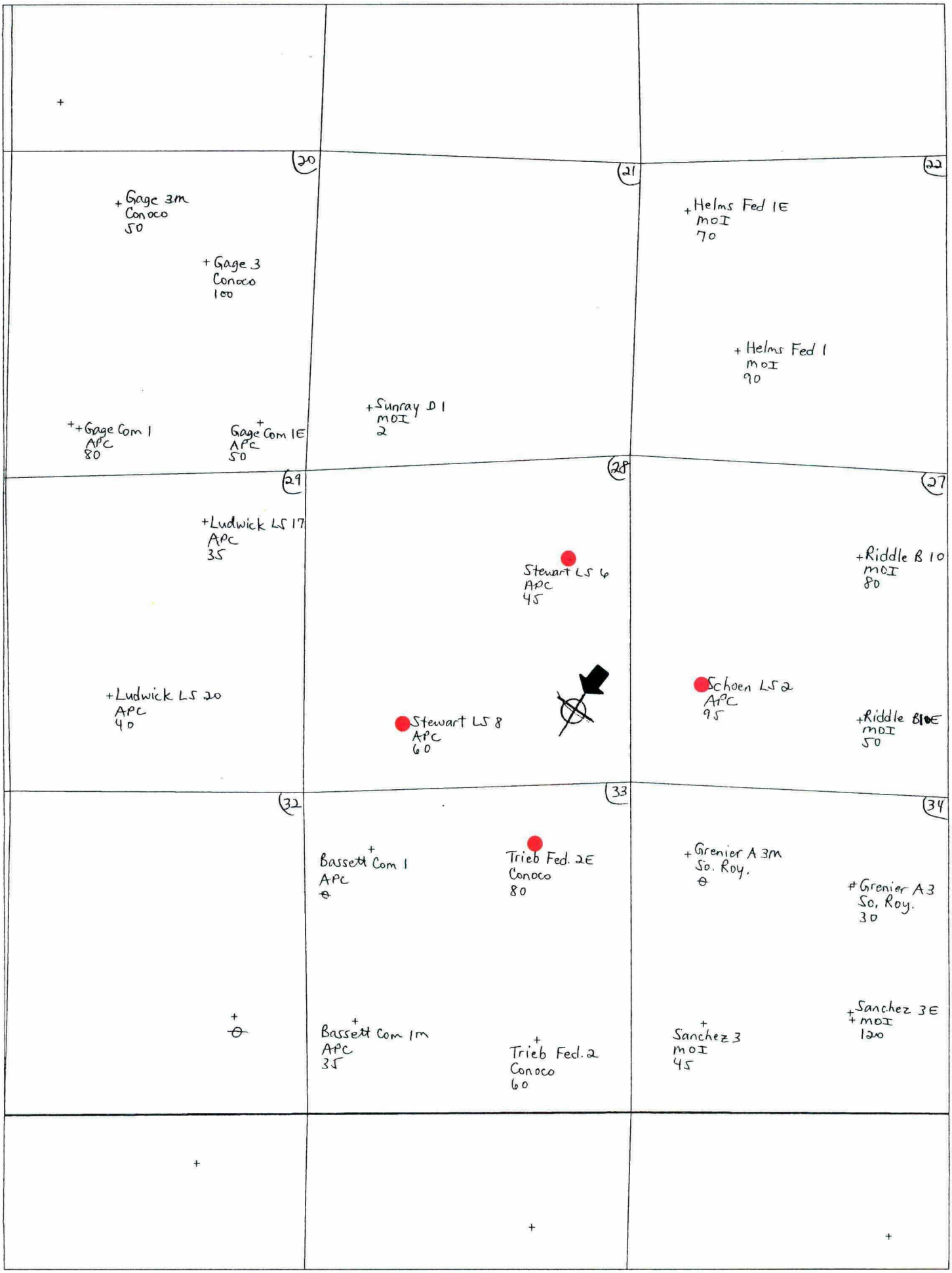
Lease: BASSETT B 000001

Retrieval Code: 251,045,30N10W33E00M



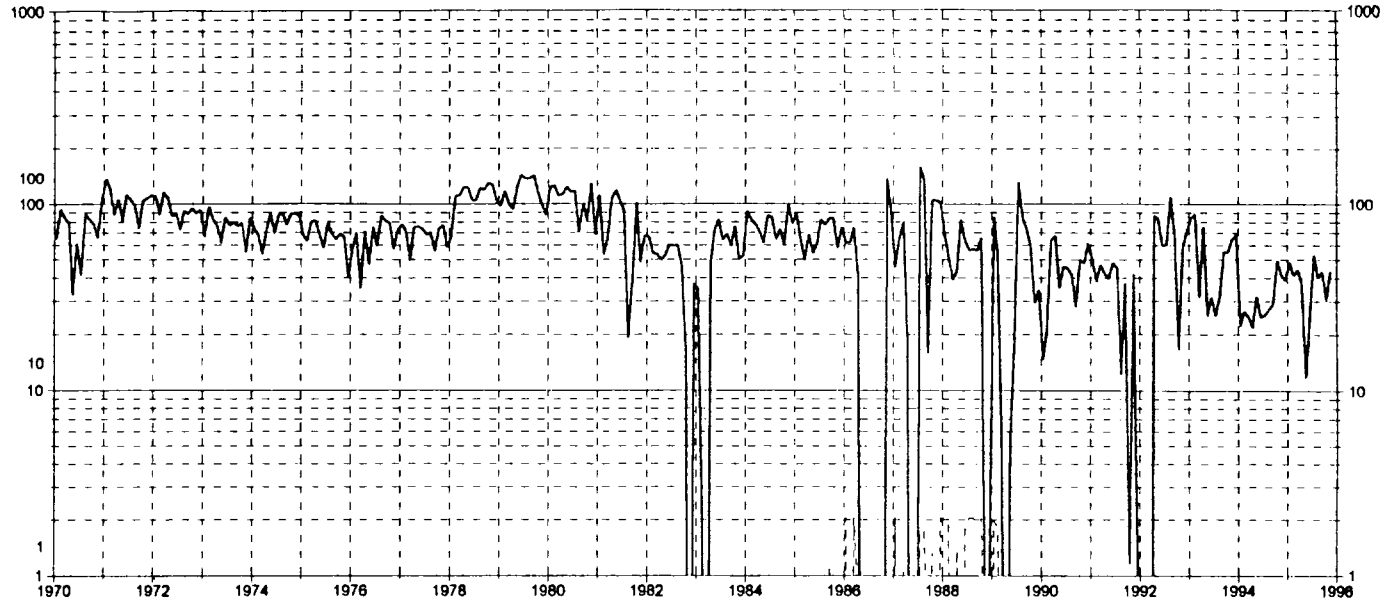
County: SAN JUAN	**State: NM**	**F.P. Date: 10/80**		**Date: 04/08/96**
Field: BLANCO (MESAVERDE) MV	**Oil Cum: 1882 bbl**			
Reservoir: MESAVERDE	**Gas Cum: 622307 mcf**	Water (bbl/day)	- - -	
Operator: AMOCO PRODUCTION CO	**Location: 33E 30N 10W**	Gas (mcf/day)	——	Oil (bbl/day) — — —

Stewart LS 6M location with DK offsets



Dwights

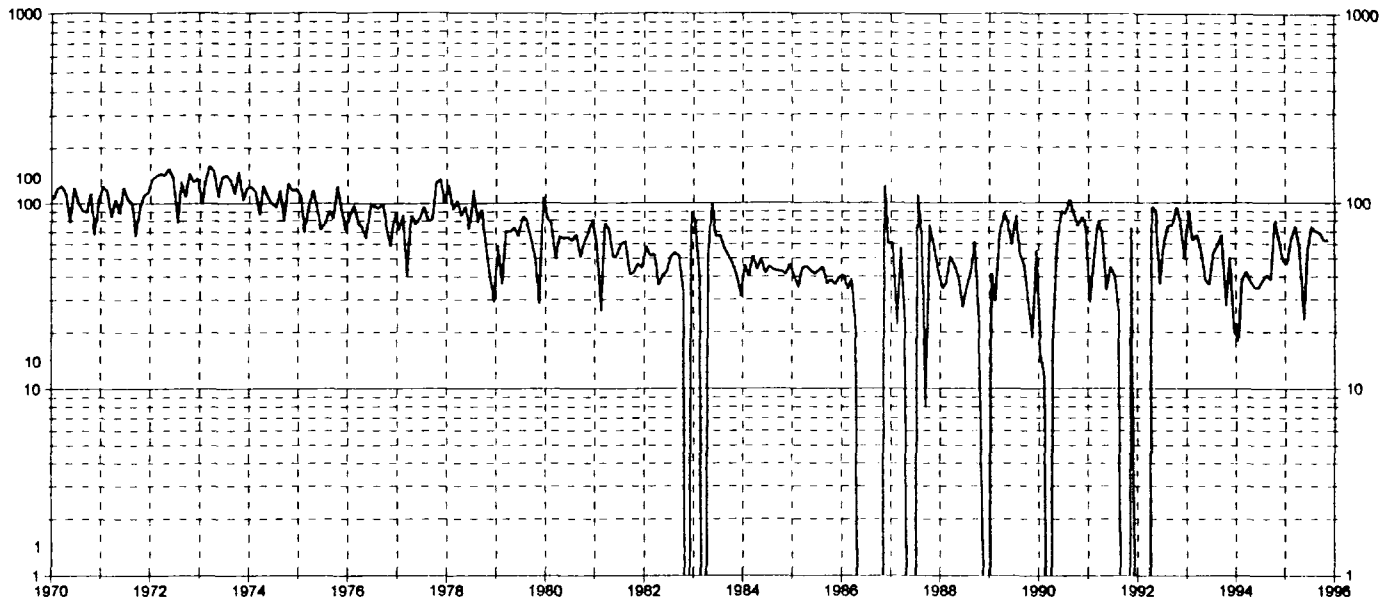
1000 **Lease: STEWART LS 000006** **Retrieval Code: 251,045,30N10W28H00D**



County: SAN JUAN	**State: NM**	**F.P. Date: 04/61**	**Date: 04/08/96**
Field: BASIN (DAKOTA) DK	**Oil Cum: 1268 bbl**		
Reservoir: DAKOTA	**Gas Cum: 1022 mmcf**	Water (bbl/day)	
Operator: AMOCO PRODUCTION CO	**Location: 28H 30N 10W**	Gas (mcf/day)	Oil (bbl/day)

Dwights

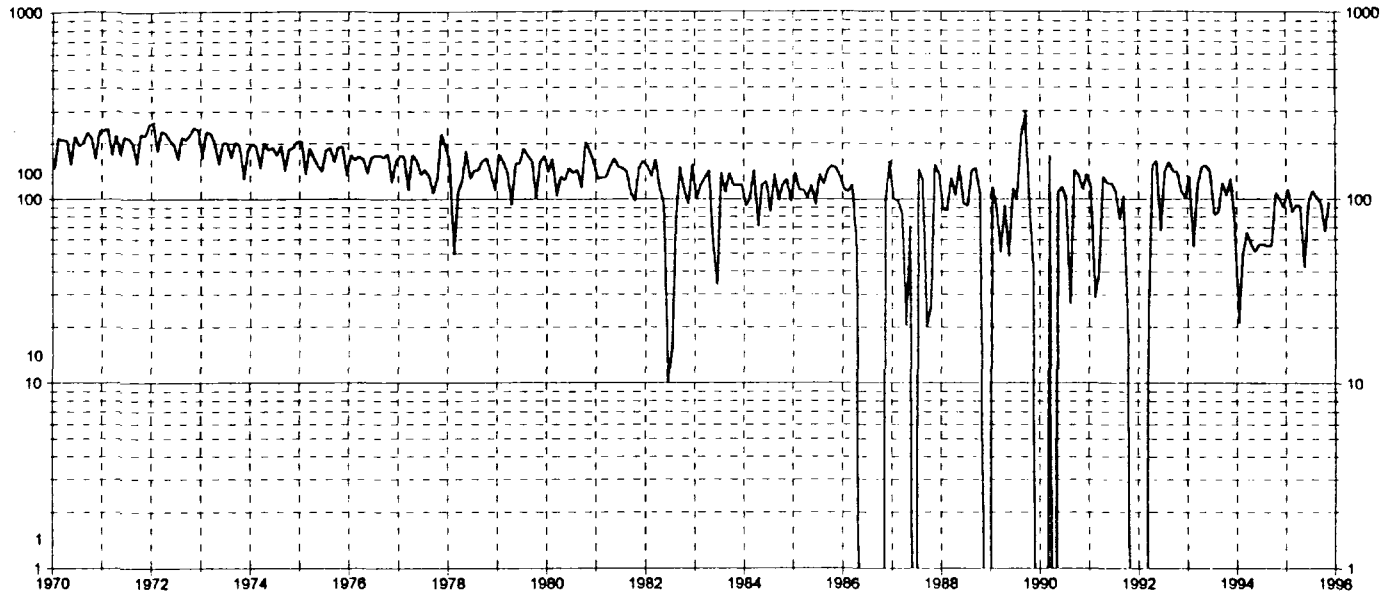
1000 Lease: STEWART LS 000008 Retrieval Code: 251,045,30N10W28N00D



County: SAN JUAN	State: NM	F.P. Date: 11/61		Date: 04/08/96	
Field: BASIN (DAKOTA) DK	Oil Cum: 1206 bbl				
Reservoir: DAKOTA	Gas Cum: 1211 mmcf	Water (bbl/day)	- - -		
Operator: AMOCO PRODUCTION CO	Location: 28N 30N 10W	Gas (mcf/day)	——	Oil (bbl/day)	— — —

Dwights

1000 **Lease: SCHOEN LS 000002** **Retrieval Code: 251,045,30N10W27L00D**

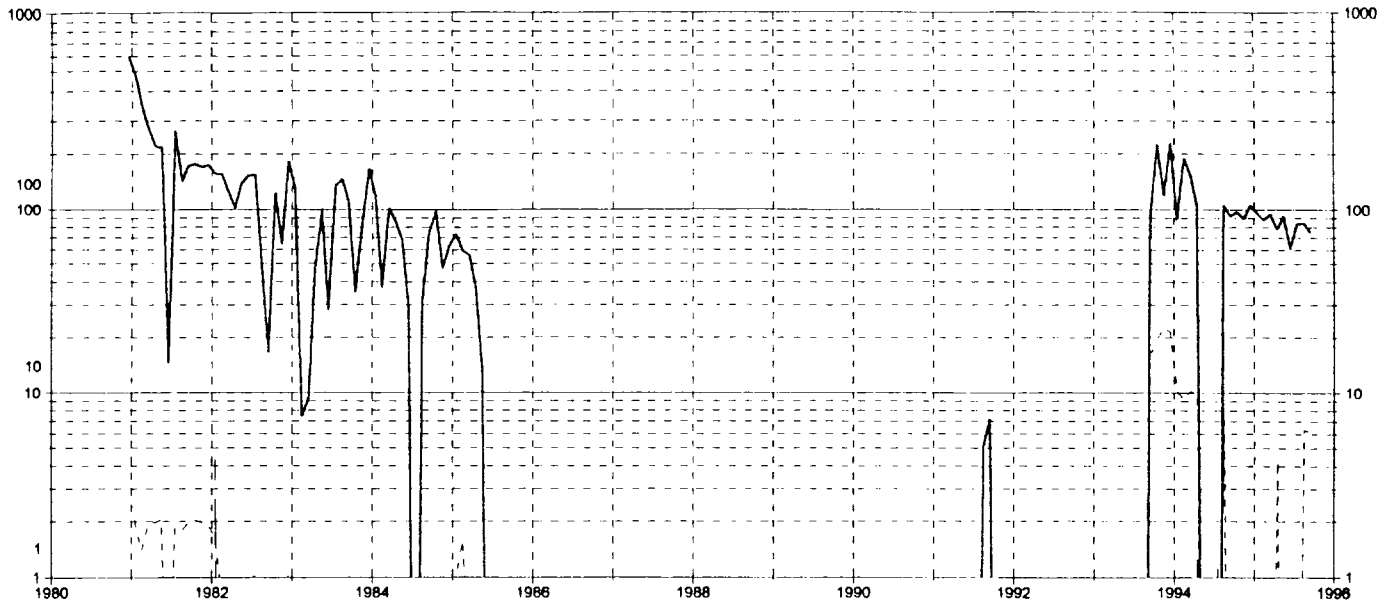


County: SAN JUAN	**State: NM**	**F.P. Date: 09/61**	**Date: 04/08/96**
Field: BASIN (DAKOTA) DK	**Oil Cum: 226 bbl**		
Reservoir: DAKOTA	**Gas Cum: 1744 mmcf**	Water (bbl/day)	- - -
Operator: AMOCO PRODUCTION CO	**Location: 27L 30N 10W**	Gas (mcf/day) ——	Oil (bbl/day) — — —

Dwights

Lease: TRIEB FEDERAL 00002E

Retrieval Code: 251,045,30N10W33B00D



County: SAN JUAN	**State: NM**	**F.P. Date: 12/80**	**Date: 04/08/96**
Field: BASIN (DAKOTA) DK	**Oil Cum: 292 bbl**		
Reservoir: DAKOTA	**Gas Cum: 276601 mcf**	Water (bbl/day) - - -	
Operator: CONOCO INC	**Location: 33B 30N 10W**	Gas (mcf/day) ———	Oil (bbl/day) — — —