CASE 6944: BENSON-MONTIN-GREER DRILLING Corp. CORPORATION FOR A PRESSURE MAINTENANCE PROJECT, RIO ARRIBA COUNTY, NEW MEXICO

CASE NO.

6944

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

August 29, 1980

Re: CASE NO. 6944
ORDER NO. R-6448

Mr. Thomas Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Applicant:

Benson-Montin-Greer Drilling Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD ____x____
Artesia OCD ____x____
Aztec OCD ____x____

Other _____

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6944
Order No. R-6448

APPLICATION OF BENSON-MONTIN-GREER
DRILLING CORPORATION FOR A PRESSURE
MAINTENANCE PROJECT, RIO ARRIBA
COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 9, 1980, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 26th day of August, 1980, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Benson-Montin-Greer Drilling Corporation, seeks authority to institute a pressure maintenance project on its East Puerto Chiquito-Mancos Unit Area in Townships 26 and 27 North, Ranges 1 East and 1 West, NMPM, Rio Arriba County, New Mexico, by the injection of gas, air, LPG, water, or chemicals into the Mancos formation through seven wells located in Sections 4, 6, and 7, Township 26 North, Range 1 East, Sections 19, 28, and 29, Township 27 North, Range 1 East, and Section 25, Township 27 North, Range 1 West.

(3) That of the aforesaid seven wells, gas would be injected into three existing wells located up-structure, being applicants' Well No. C-2 located in Unit C of Section 28 and Well No. G-29 located in Unit G of Section 29, both in Township 27 North, Range 1 East and Well No. D-4 located in Unit D of Section 4, Township 26 North, Range 1 East, while water and chemicals would be injected into two existing wells located down-structure, being

applicants' Well No. F-6 located in Unit F of Section 6, Township 26 North, Range 1 East, and Well No. H-25 located in Unit H of Section 25, Township 27 North, Range 1 West, and also into two new wells to be drilled down-structure, to be located in Unit G of Section 7, Township 26 North, Range 1 East, and Unit E of Section 19, Township 27 North, Range 1 East.

(4) That although the proposed enhanced recovery injection program will involve the injection of fluids into the reservoir in its present primary state of depletion as a pressure maintenance program and continue on into secondary recovery, it will then, by the addition of so-called "tertiary chemicals," proceed into a tertiary recovery operation to depletion.

(5) That it is expected that the initial gas injection for pressure maintenance will recover some 600,000 barrels of oil not recoverable under primary depletion alone, that the continued gas injection and waterflooding for secondary recovery will recover an additional 400,000 barrels, and that the continued gas injection, water injection, and added tertiary chemicals will result in the recovery of yet another 400,000 barrels, for a total estimated 1,400,000 barrels of otherwise unrecoverable oil, thereby preventing waste.

(6) That prior to placing any well on injection, applicant should test and inspect the casing and cement on such well to ensure the integrity of same, and make such repairs as may be deemed necessary by the supervisor of the Aztec district office of the Division.

(7) That all injection should be through tubing set in a packer, and the casing-tubing annulus should be loaded with sweet oil or other inert fluid.

(8) That the operator should take all steps necessary to ensure that the injected fluids enter only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(9) That there are two wells in the project area, both located within one-half mile of a proposed gas injection well, which should be investigated and re-entered if necessary to perform such remedial or plugging operations as are deemed appropriate by the supervisor of the Aztec district office of the Division prior to commencement of gas injection; said wells are the S & B Drilling Company's Jicarilla 287 Well No. G-4, located

in Unit O of Section 21, and its Jicarilla 287 Well No. L-3, located in Unit L of Section 28, both in Township 27 North, Range 1 East.

(10) That the water and water/chemical injection wells, or injection pressurization system, should be so equipped as to limit injection pressure at the wellhead to no more than 0.2 psi per foot of depth to the uppermost perforation, or in the case of an open hole completion, to the depth of the casing shoe; that the gas injection wells, or gas injection pressurization system, should be so equipped as to limit gas injection pressure at the wellhead to no more than 500 psi. That the Division Director should have authority to administratively authorize pressure limitations in excess of the above upon a showing by the operator that such higher pressures will not result in fracturing of the confining strata.

(11) That provision should be made for the drilling of additional wells at orthodox and unorthodox locations for production, and for approval of same as injection wells administratively without notice and hearing.

(12) That special rules for the project should be adopted whereby allowables may be transferred from injection wells and shut-in wells to other wells for production.

(13) That the proposed project should be known as the BMG East Puerto Chiquito-Mancos Enhanced Recovery Project, and should be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations not inconsistent herewith.

(14) That the proposed project is in the interest of conservation, will prevent waste and protect correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Benson-Montin-Greer Drilling Corporation, is hereby authorized to institute an enhanced recovery project on its East Puerto Chiquito-Mancos Unit Area, East Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico, by the injection of fluids into the Mancos formation as follows:

Gas Injection:

Well No.	Unit Letter	Section	Township	Range
D-4	D	4	26N	1E
C-2	C	28	27N	1E
G-29	G	29	27N	1E

Water and/or Chemical Injection:

Well No.	Unit Letter	Section	Township	Range
F-6	F	6	26N	1E
H-25	H	25	27N	1W
To be drilled	G	7	26N	1E
To be drilled	E	19	27N	1E

(2) That said project shall be known as the BMG East Puerto Chiquito-Mancos Enhanced Recovery Project.

(3) That Special Rules and Regulations governing the BMG East Puerto Chiquito-Mancos Enhanced Recovery Project are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
BMG EAST PUERTO CHIQUITO-MANCOS
ENHANCED RECOVERY PROJECT

RULE 1. The project area shall consist of all those proration units within the boundary of the East Puerto Chiquito-Mancos Unit Area upon which is completed a well in the East Puerto Chiquito-Mancos Oil Pool.

RULE 2. The project area shall receive a project area allowable, and said project area allowable shall be equal to 320 times the number of developed 160-acre proration units in the project area.

RULE 3. The project allowable may be produced from the wells in the project area in any proportion.

RULE 4. The Division Director shall have authority to approve, without notice and hearing, the drilling of wells at unorthodox locations anywhere within the boundary of the East Puerto Chiquito-Mancos Unit Area, provided however, no unorthodox location shall be closer than ten feet to a quarter-quarter section line, and provided further that no such unorthodox location shall be closer than 330 feet to the outer boundary of the unit area unless such well is covered by a lease-line agreement with the operator of lands offsetting the well, and a copy of the lease-line agreement accompanies the application for such unorthodox location, or unless such operator has waived objection to the proposed unorthodox location in writing, and his waiver accompanies the application.

RULE 5. Application for approval of additional wells to be drilled for or converted to injection shall be filed in accordance with Rule 701 of the Division Rules and Regulations, and may be approved by the Division Director without notice and hearing.

RULE 6. Injection of any medium into any injection well shall be through tubing, and the tubing shall be set as near as is practicable to the uppermost perforation in the injection zone, or, in the case of an open-hole completion, as near as is practicable to the casing shoe.

RULE 7. The casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

RULE 8. Water/chemical injection wells or the injection pressurization system for same shall be so equipped as to limit injection pressure at the wellhead to no more than 0.2 psi per foot of depth to the injection zone; gas injection wells, or the gas injection pressurization system shall be so equipped so to limit injection pressure at the wellhead to no more than 500 psi. The Division Director may authorize higher injection pressures upon satisfactory showing that such pressures will not result in fracturing of the confining strata.

RULE 9. The operator shall immediately notify the supervisor of the Division's Aztec district office of the failure of the tubing, casing, or packer in any injection well, the leakage of water, oil, or gas from or around any producing well, or the leakage of water, oil, or gas from or around any plugged and abandoned well, anywhere in the project area, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

RULE 10. No injection well shall be placed on active injection until it has been inspected and tested to ensure the integrity of the well's casing and cementing program. If such casing and cementing program is found to be defective in any proposed injection well, such repairs as may be deemed necessary by the Supervisor of the Aztec district office of the Division shall be made before placing the well on injection.

RULE 11. The operator shall file reports for this project on Division Form C-115 in accordance with Rule 704(1) of the Division Rules and Regulations and may later be required to file additional information in accordance with Rule 704(5).

(4) That prior to commencement of gas injection, applicant shall investigate and re-enter if necessary to perform such remedial or plugging operations as are deemed appropriate by the Supervisor of the Aztec district office of the Division the following two wells: S & B Drilling Company's Jicarilla 287 Well No. O-4 located in Unit O of Section 21, and its Jicarilla 287 Well No. L-3, located in Unit L of Section 28, both in Township 27 North, Range 1 East.

(5) That 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

JOE D. RAMEY
Director

SEAL

fd/

BENSON-MONTIN-GREER DRILLING CORP.
221 PETROLEUM CENTER BUILDING
FARMINGTON, NEW MEXICO 87401
PHONE: 325-8874

RECEIVED
JUL 14 1980
OIL CONSERVATION DIVISION
SANTA FE

July 10, 1980

Mr. Dan Nutter
Hearing Examiner
Oil Conservation Division
Box 2088
Santa Fe, NM 87501

RE: CASES 6943 & 6944
HEARING JULY 9, 1980

Dear Mr. Nutter:

At the consolidated hearing of the captioned cases, you requested that we supply the 40-acre locations of the proposed water injection wells in section 7, T-26N, R-1E and section 19, T-27N, R-1E.

The 40-acre tracts on which we propose to locate these two injection wells are as follows:

Section 7: SW/4 NE/4
Section 19: SW/4 NW/4

Also for your information, although I did not want to take the time - because of other pending cases on the docket - to elaborate on my response to your question about the possible problems created for the working interest owners of the Indian tracts caused by the reallocation of the total Indian equity to various Indian tracts, the way the working interest owners resolved this problem was to equalize, by pooling, the working interests of all the Indian tracts. The exhibit showing this pooled interest for the various owners is Page 7 of Exhibit B under Section B of our Exhibit #1. The basis of the pooling is simply the weighted average interest of each working interest owner using the tract participations as determined under the participation formula.

Yours truly,

BENSON-MONTIN-GREER DRILLING CORP.

BY: _____
Albert R. Greer, President

ARG/tlp

cc: W. Thomas Kellahin, Attorney-at-Law

BENSON-MONTIN-GREER DRILLING CORP.
221 PETROLEUM CENTER BUILDING
FARMINGTON, NEW MEXICO 87401
PHONE: 325-8874

July 28, 1980

New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Daniel S. Nutter

Re: CASES 6943 AND 6944:
PROPOSED EAST PUERTO CHIQUITO
MANCOS UNIT

Gentlemen:

As requested, we are sending you supplementary information for the captioned cases, being information required under Rule 701 and Memo No. 3-77 of August 24, 1977. For identification of locations we are also enclosing the base plat which formed Section K of the book of exhibits presented in the original testimony, on which have been transcribed 1/2 mile arcs from the proposed injection wells.

There are no wells within the 1/2 mile arc of the proposed water injection wells. The wells which are within 1/2 mile of the proposed gas injection wells are listed on the schedule enclosed herein.

Also enclosed are sketches of all of the proposed injection wells and the one permanently plugged well in Section 29, which was originally drilled by Pan-American.

We are attempting to contact Mr. Fundingsland, who was the operator of the well in Section 28 which was represented to S & B Drilling Company to be plugged, to see if we can determine the particulars of the plugging operations.

Yours very truly,

BENSON-MONTIN-GREER DRILLING CORP.

RECEIVED
JUL 30 1980
OIL CONSERVATION DIVISION
SANTA FE

BY: Albert R. Greer
Albert R. Greer, President

ARG:ney

BENSON-MONTIN-GREER DRILLING CORP.
221 PETROLEUM CENTER BUILDING
FARMINGTON, NEW MEXICO 87401
PHONE: 325-8874

RECEIVED
JUL 30 1980
OIL CONSERVATION DIVISION
SANTA FE

July 29, 1980

New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Daniel S. Nutter

Re: CASES 6943 AND 6944:
PROPOSED EAST PUERTO CHIQUITO
MANCOS UNIT

Gentlemen:

Further with regard to Oil Conservation Division Memo #3-77 as to surface pressure on injection wells, we discussed this in testimony at the hearing; but in the event you need a separate statement regarding this, we advise as follows:

1. Water Injection Wells: The water injection wells will be injecting at a depth of about 3600'. Surface pressure of .2 PSI per foot of depth will amount to a maximum allowed surface injection pressure of about 700#. We anticipate the water injection wells will take water with gravity pressure only, such that they will be "on a vacuum" at the surface. In any event, we will not exceed a surface pressure of 700 PSI.

2. Gas Injection Wells: We anticipate a gas injection pressure at the formation face of between 350# and 400#; with a consequent surface pressure of approximately 400 PSI. The shallowest of the gas injection wells is approximately 1600'; and at .2 PSI per foot over an assumed water gradient of .433 would be about 1000 PSI formation pressure. Accordingly we will be injecting gas at less than one-half of the maximum allowed pressure.

Further with regard to the gas injection wells, it is our plan to commence injection in the C-2 and the G-29, and, if injection rates are adequate, to use only these two wells. In the event they are not adequate, we would then move to the D-4 in order to obtain increased injectivity.

The producing intervals in the D-4 showed to be tight when initially drilled, and we believe a production string can be cemented through these zones and the well completed through perforations. As to the other two wells, however, because of the formation being highly fractured and permeable in these wells we think it will be necessary to cover the proposed injection zone with frac sand; cement the

production string (to the surface) and then clean out the frac sand and inject into the pay through an open hole completion.

Should you require any other information we will be pleased to supply it.

Yours very truly,

BENSON-MONTIN-GREER DRILLING CORP.

BY: Albert R. Greer

Albert R. Greer, President

ARG:ney

PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT

STATISTICAL DATA PER OIL CONSERVATION DIVISION MEMO OF AUGUST, 1977
FOR WELLS WITHIN 1/2 MILE OF PROPOSED INJECTION WELLS

Operator	Lease	Well No.	LOCATION				CASING OR LINER				Producing Interval	Total Depth
			Unit	Sec.	Twp.	Rge.	Size	Depth set	Sacks Cement	Top Cement		
B-M-G	Jicarilla 237	A-29	A	29	27-N	1-E	7-5/8" 5-1/2"	40' 816'	25 40	Surface Est. 300'	1810-1826	1846
B-M-G	Jicarilla 237	C-29	C	29	27-N	1-E	7-5/8" 5-1/2"	40' 1245'	25 40	Surface Est. 950'	est. 1900-2050	2081
B-M-G	Jicarilla 237	I-29	I	29	27-N	1-E	7-5/8" 5-1/2"	40' 707'	40 40	Surface Est. 400'	est. 1300-1400	1444
B-M-G	Jicarilla 237	K-29	K	29	27-N	1-E	7-5/8" 5-1/2"	40' 900'	25 50	Surface Est. 500'	est. 1550-1700	1707
B-M-G	Jicarilla 237	P-20	P	20	27-N	1-E	10-3/4" 7"	100' 1920'	150 150	Surface 1000'	1920-2202	2202
B-M-G	Alto	1	B	5	26-N	1-E	13-3/8" 5-1/2"	751' 1910'	78	Est. 1600'	1929-1958	1958
B-M-G	Puerto Chiquito	H-5	H	5	26-N	1-E	7" 4-1/2"	752' 2553'	225	Surface	1910-1891	2780
S & B Drlg.	Jicarilla 287	1	M	21	27-N	1-E	7-5/8" 5-1/2"	20' 1090'	20 75	Surface 800'	Est. 2000-2100	2178
S & B. Drlg.	Jicarilla 287	3	L	28	27-N	1-E	*	*	*	*		1637
S & B Drlg.	Jicarilla 287	4	O	21	27-N	1-E	No surface casing 5-1/2"	861'	50	Est. 600'	Est. 2200-2300	2338

* Original owner, E. L. Fundingsland, represented to S & B (present owner) that this well was P & A. Unit operator has been unable to confirm plugging data.

BENSON-MONTIN-GREER DRILLING CORP.

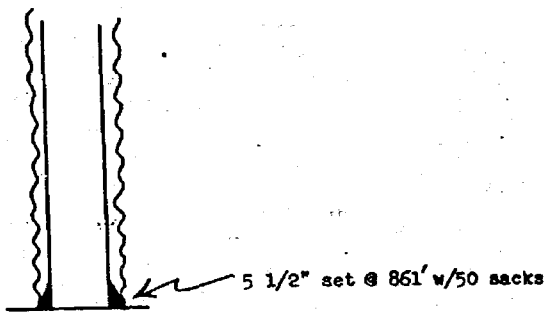
WELL ..JICARILLA #287 (O-4).....

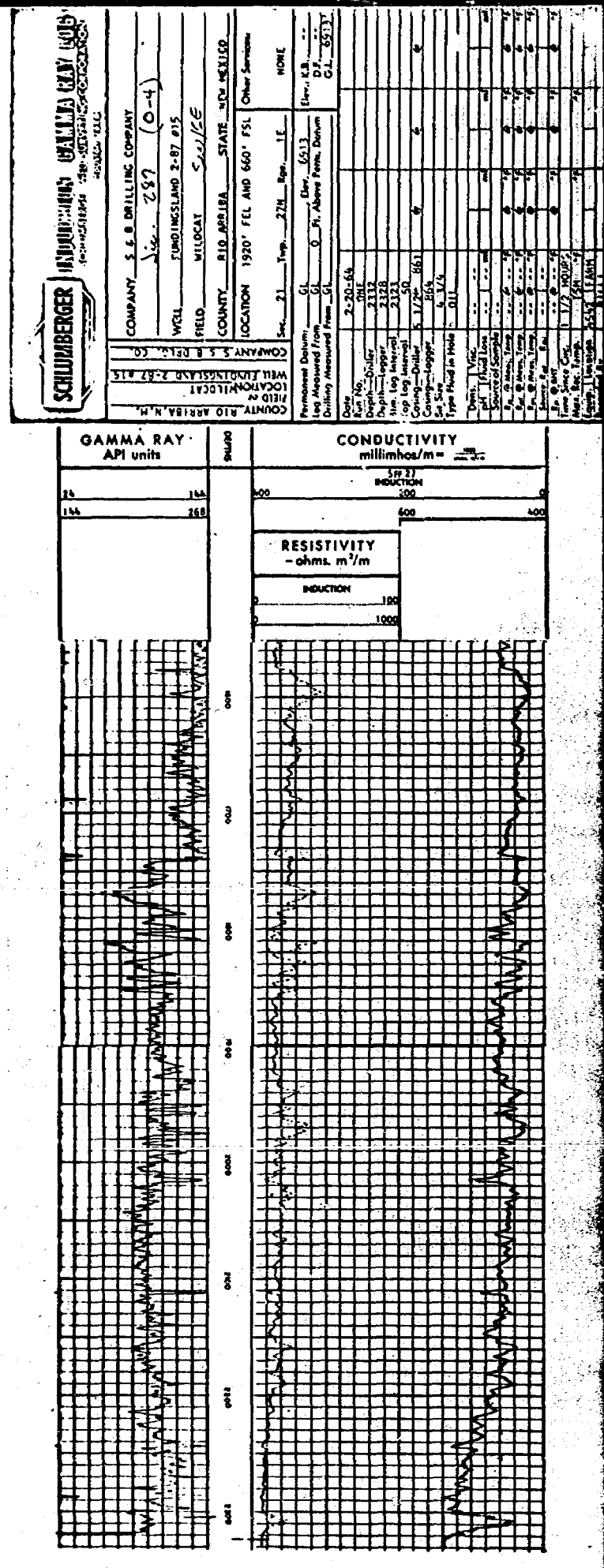
SW/SE SEC. ..21... TWNSHIP ..27 N....RANGE..1 E.....

STATE ..N.M.... COUNTY..RIO ARRIBA.....

FORMERLY: S & B DRILLING
FUNDLINGLAND 2-87 #15

STATUS: Temporarily abandoned - 1964





PAN AMERICAN PET. CO. (AMOCO)

WELL JICARILLA #237 #1 .....

SW/SW SEC. 29 ... TWNSHIP ...27 N.. RANGE...1 E....

STATE . N.M.... . COUNTY....RIO. ARRIBA.....

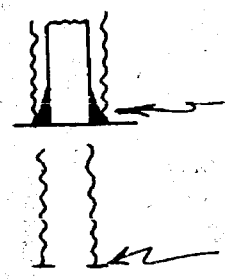


10' Cement plug @ surface

Surface casing set @ 122', cemented w/50 sacks

Cement plug 320' tc 553', cemented w/135 sacks

100 sack cement plug, 1785' to 1998'



5 1/2" shot off @ 1640'

5 1/2" set @ 1884' w/300 sacks cement

T. D. 1998'

RIO ARRIBA COUNTY NEW MEXICO PUERTO CHIQUITO 29-27N-1E

Well: PAN AMER. PET. CO. #1 Jicarilla (237) Result: D&A

Loc'n: SE SW SW, 29-27N-1E, 472' FSL, 1295' FWL, 2000' Gallup.

Spud: 10-4-60; Comp. 1-6-61; Elev: 7056' grd, 7058' DF; TD: 1998'

Casing: 10¾" 122'/50 sx, & 5/8" 1205', 5½" 1884'/75 sx

Comp Rds: F/1.5 BWPH @ 300'; DO cmt to 1884', Perf @ 1860'/5, DO to 1887' & set plr @ 1783', Squd 1860'/75 sx; DO cmt retainer, 300' wtr fillup; Plr @ 1876'; ctl bledg off; Plr @ 1783', & squd w/175 sx @ 3500#, (82' cmt above squd perfs); DO cmt to 1880', hole dry; DO cmt to 1885', wtr entry @ 1½ BWPH; Plr @ 1874', press tested; Plr @ 1783' & squd w/75 sx; DO to 1885', wtr entry @ 14 BW/1½ hrs, FL 150' off btm; rec fishy bailed 4 BW & ½ BO/4 hrs; Bailed 9½ CO & 73¾ GW/2 hrs, @ 1960'; Bailed 8½ CO & 110¾ GW/3 hrs @ 1970'; Bailed 10½ CO & 103 GW/3 hrs @ 1980'; Bailed 18½ CO & 142 GW/4 hrs @ 1998'; SI/32 hrs, FL 818'; Bailed 22 BW & 3.7 BO/4 hrs; Bailed dry/4 hrs; Bailed 2.2 BW & 0.1 BW/2 hrs; Bailed 255 gals wtr & 5½ gals oil; Rig rel 11-16-60;

Tops: (BL) Mancos 770', Gallup 1738'

Date: 2-17-61 Card No.: 11 ow

SCHLUMBERGER WELL SURVEYING CORPORATION

SCHLUMBERGER

INDUCTION LOG
GAMMA RAY LOG

COMPANY PAN AMERICAN PETROLEUM CORPORATION

WELL JICARILLA TRIBAL 237 1

FIELD PUERTO CHIQUITO GALLUP

LOCATION SEC. 29-27N-1E

COUNTY RIO ARRIBA

STATE NEW MEXICO

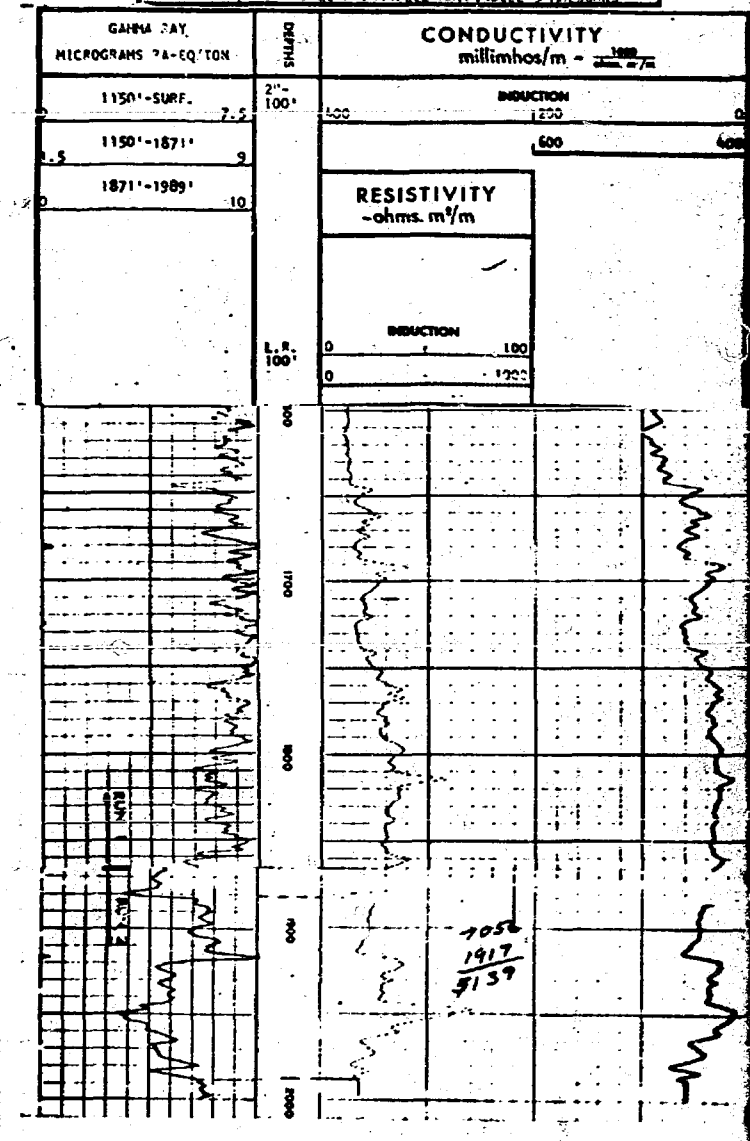
Location of Well
472' FR S/L
1295' FR W/L
SEC. 29-27N-1E

6330

Elevation: D.F. 7058
K.B.
or G.L.

FILING No.

RUN No.	ONE IND	ONE GRL	TWO IND	TWO GRL
Date	10-19-60	10-19-60	11-15-60	11-15-60
First Reading	1845	1871	1988	1989
Last Reading	1210	100	1882	1871
Feet Measured	635	1771	106	118
Cog. Schlum.	1210	1210	1882	1883
Cog. Driller	1210	1210	1880	1880
Depth Reached	1873	1873	1992	1992
Bottom Driller	1875	1875	1998	1998
Depth Datum	DF	DF	DF	DF
Mud Nat.	AIR	AIR	AIR	AIR
Density	--	--	--	--
Viscosity	--	--	--	--
Resist.	-- @ -- F	-- @ -- F	--	--
Res. BHT	-- @ -- F	-- @ -- F	--	--
pH	-- @ -- F	-- @ -- F	--	--
Wtr. Loss	-- cc 30 min.	-- cc 30 min.	--	--
Max. Temp. °F	--	--	--	--
Bit Size	8"	8"	5 3/4"	5 3/4"
SPCGS.	22"		22"	
Opr. Rig Time	1 HR	1 HR	1 HR	1 HR
Truck No.	1588 EARH	1588 EARH	2512 EARH	2512 EARH
Recorded By	CLAYTON	CLAYTON	CLAYTON	CLAYTON
Witness	MR. SHINDLER	MR. SHINDLER	MR. PENDELL & MR. BURNS	



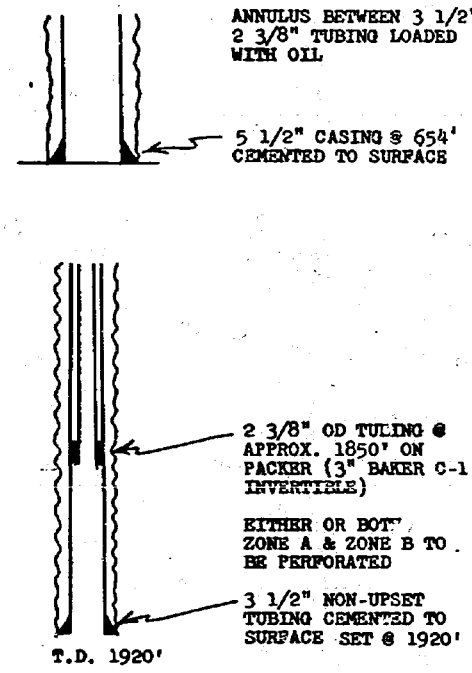
BENSON-MONTIN-GREER DRILLING CORP.

WELL . . . . . PUERTO CHIQUITO #19 (D-4) . . .

NW/NW SEC. . . 4 . . . TWNSHIP . . 26N . . . . RANGE . . 1E . . . . .

STATE . NM . . . . . COUNTY . . . RIO ARRIBA . . . . . .

PROPOSED GAS INJECTION WELL



P.C # 19(D-4)

RIO ARRIBA COUNTY NEW MEXICO PUERTO-CHIQUITO 4-26N-1E

Well: BENSON-MONTIN-GREER DRLG. CORP. #4 Puerto-Chiquito Unit Result: TEMP ABND

Loc'n: NW NW NW, 4-26N-1E, 395' FNL, 330' FWL; 2000' GH test; C/Own Tools.

Spud: 4-17-63; Comp: 7-1-64; Elev: 7163' grd, 7174' DF; TD: 1920'

Casing: 8⅝" 654' /hung

Comp Info: No cores or tests reported, (Will re-issue when tops are released).

Tops: No tops reported.

Date: 12-4-64 Card No.: 1 rm

SCHLUMBERGER INDUCTION ELECTRICAL LOG

COMPANY BENSON-MONTIN-GREER DRILLING CORPORATION

WELL PUERTO-CHIQUITO UNIT # 4-D

FIELD PUERTO-CHIQUITO

COUNTY RIO ARRIBA STATE NEW MEXICO

LOCATION 395 FNL & 330 FWL

Sec. 4 Twp. 26N Rge. 1E

Other Services: FDL

Permanent Datum: G.L. Elev. 7163

Log Measured From G.L. Ft. Above Perm. Datum

Drilling Measured From G.L.

Elev.: K.B. — D.F. — G.L. 7163

Date	4-22-63		
Run No.	One		
Depth—Driller	1924		
Depth—Logger	1920		
Btm. Log Interval	1920		
Top Log Interval	0000		
Casing—Driller	5¼ @ 124	@	@
Casing—Logger	124		
Bit Size	7¾		
Type Fluid in Hole	Low Oil		
Dens. / Visc.			
pH / Fluid Loss	ml	ml	ml
Source of Sample			
Rm @ Meas. Temp.	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	@ °F	@ °F	@ °F
Source: Rmf Rmc			
Rm @ BHT	@ °F	@ °F	@ °F
Time Since Circ.	—		
Max. Rec. Temp.	— °F	°F	°F
Equip. / Location	3520 / FARM		
Recorded By	[illegible]		
Witnessed By	SIDARS		

BENSON-MONTIN-GREER DRILLING CORP.

GAMMA RAY API units

CONDUCTIVITY millimhos/m

SFI 32 INDUCTION

RESISTIVITY – ohms. m²/m

INDUCTION

ZONE A

ZONE B

BENSON-MONTIN-GREER DRILLING CORP.

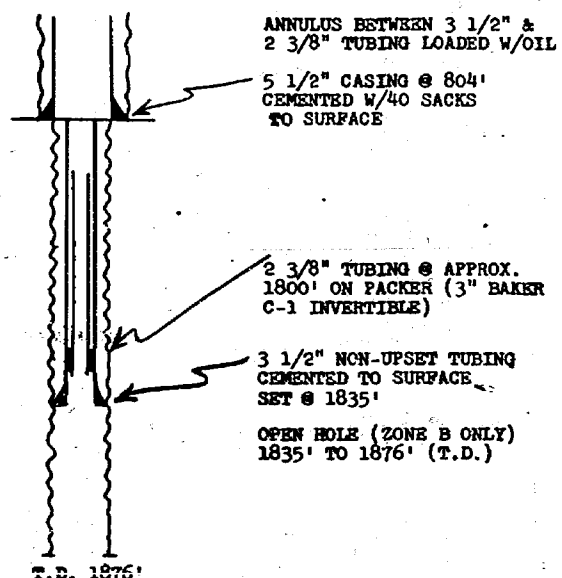
WELL . . JICARILLA #287 C-2 . . . . . .

NE/NW SEC. . . 28 . . . TWNSHIP . . . 27N . . . RANGE . . . 1E . . . . .

STATE . N.M. . . . . COUNTY . . . RIO ARRIBA . . . . .

FORMERLY: E. L. FUNDINGLAND JICARILLA 287 # 12

PROPOSED GAS INJECTION WELL



RIO ARRIBA COUNTY, NEW MEXICO PUERTO-CHIQUITO 29-27N-1E

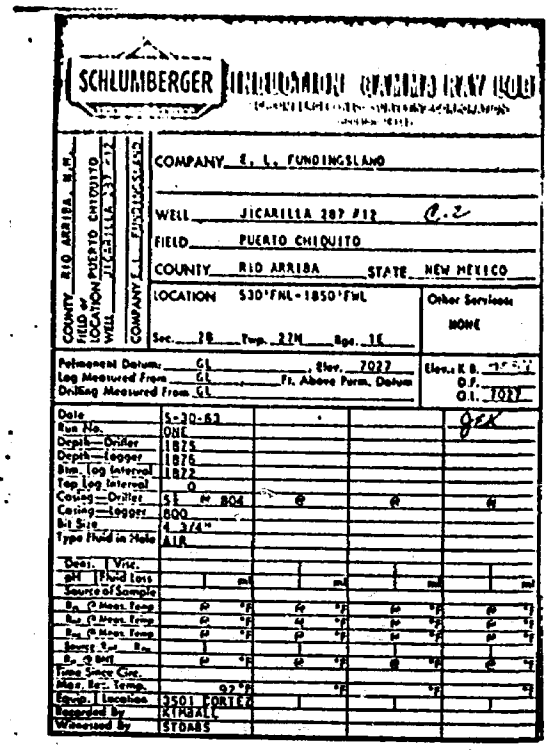
Well: E. L. FUNDINGSLAND #12 Fundingsland-Jicarilla (287) 2C Result: OIL

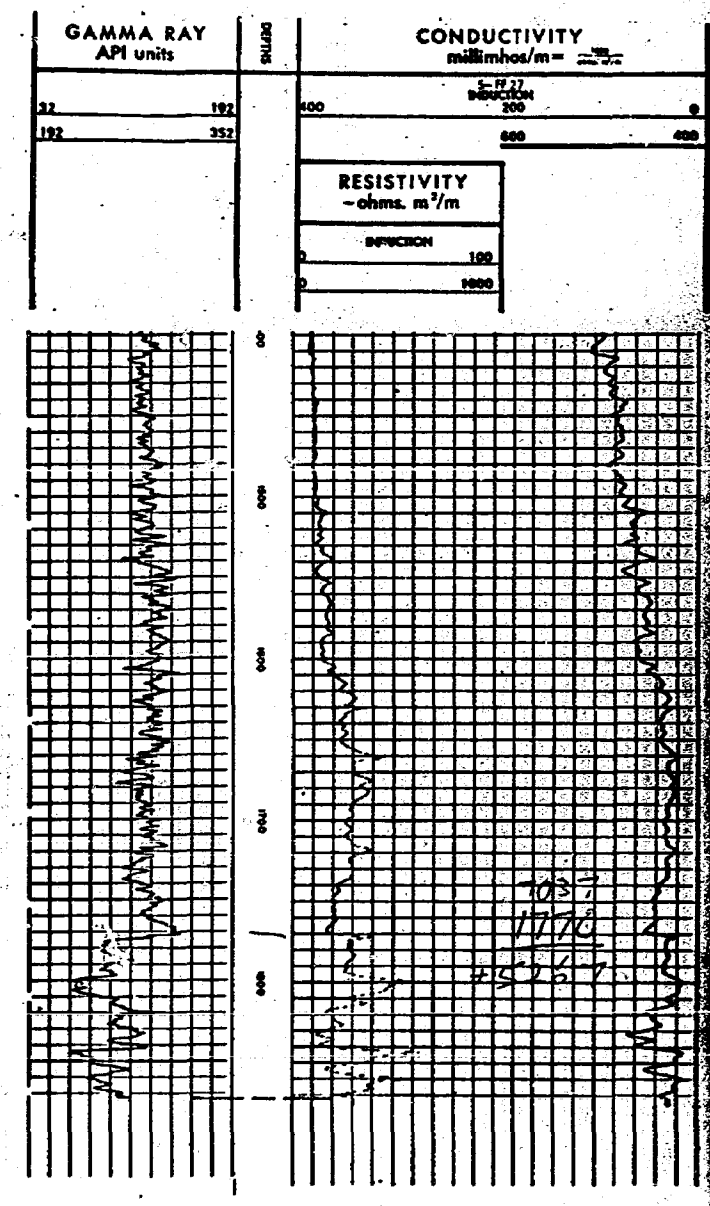
Loc'n: NW NE NW, 29-27N-1E, 530' FNL, 1850' FWL; 2000' Gallup test.

Spud: 12-8-63; Comp: 5-28-64; Elev: 7027' DF; TD: 1876'
Casing: 5½" 804' 40 sx. 2" thg 1380'
Prod Zone: (Gallup) T/Pay 804'. Prod from OH: 804-1876'
IPF: 9 BOPD
Comp Info: No cores or tests; Tstd OH 804-1876'. IES WLS #K 6162D.
Tops: (El) Mancos 635'. Gallup 1508'.

S.P. Drilling 2-C

Date: 10-9-64 Card No: 9 db





BENSON-MONTIN-GREER DRILLING CORP.

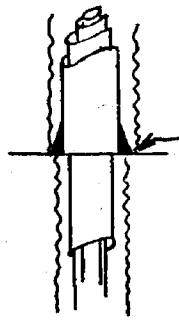
WELL .. #2 (O-29) JICARILLA #937 .....

SW/NE SEC. 29 ....TWNSHIP ...27N. . .RANGE..1E.....

STATE . .N.M... . COUNTY...RIO ARRIBA.....

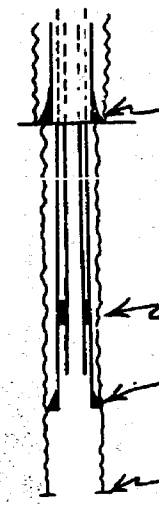
FORMERLY R. L. BAYLESS BETSY #2

PROPOSED GAS INJECTION WELL



ANNULUS BETWEEN 3 1/2" &
2 3/8" TUBING LOADED WITH OIL

7 5/8" SURFACE @ 40'
CEMENTED W/25 SACKS TO SURFACE



5 1/2" INTERMEDIATE @ 809'
CEMENTED W/40 SACKS
CEMENT TOP ESTIMATED @ 400'

2 3/8" OD TUBING @ 1620'
ON PACKER (BAKER C-1 INVERTIBLE)

3 1/2" NON-UPSET TUBING
CEMENTED TO SURFACE (SET @ 1650')

OPEN HOLE COMPLETION
1650' TO 1674'

T.D. 1674'

SCHLUMBERGER — INDUCTION LOG

COUNTY RIO ARRIBA, N.M. FIELD or LOCATION PUERTO-CHIQUITO WELL BETSY #2 COMPANY R. L. BAYLESS	COMPANY R. L. BAYLESS WELL . . BETSY #2 . . . FIELD . PUERTO-CHIQUITO . . LOCATION SEC. 29-27N-1E. . COUNTY RIO ARRIBA STATE NEW MEXICO	Location of Well 1650' FNL 1650' FEL SEC. 29-27N-1E Elevation: K.B.: -- D.F.: -- G.L.: 7111' FILING No.

RUN No.	ONE		
Date	5-19-62		
First Reading	1669		
Last Reading	70		
Feet Measured	1599		
Csg. Schlum.	803		
Csg. Driller	803		
Depth Reached	1673		
Bottom Driller	1674		
Depth Datum	GL		
Mud Mat.	AIR DRILLED		
" Density	--		
" Viscosity	--		
" Resist.	-- @ -- F	@ F	
" Res. BHT	-- @ -- F	@ F	
" pH	-- @ -- F	@ F	
" Wtr. Loss	-- CC 30 min.	CC 30 min.	
Max. Temp. °F	--		
Bit Size	6 3/4		
I.D.	SFF27		
OD	CNC-E		
Opr. Rig Time	2 HOURS		
Truck No.	1520FAPH		
Recorded By	FEATHER		
Witness	MR. BAYLESS		

GAMMA RAY API UNITS	SHUNT	CONDUCTIVITY millimhos/m = 1000/ohms. m²/m
0 192	2"=100'	400 200 0
192 252		RESISTIVITY -ohms. m²/m
		0 100
		0 1000

RIO ARRIBA COUNTY NEW MEXICO PUERTO CHIQUITO 29-27N-1E

Well: R. L. BAYLESS #2 Betsy G-29

Loc'n: C NE SW NE, 29-27N-1E, 1650' FNL, 1650' FEL; 1709' Gd'l.sp; C/Co. Tests.

Spud: 5-10-62; Comp: 5-24-62; Elev: 7111' DF; TD: 1674'
Casing: 7-5/8" 40'/25 sx, 5½" 810'/40 sx; 2½" tbg 1580'
Prod Zone: (Nieb) T/Pay 1670'. Prod from OH perfs 1670-74'
IPF: 11 MMCFPD, sist, grav 40
Comp Info: No cores or tests; Perf 1670-74'/2; (OH);
Tops: (EL) Mesaoe 800', Nieb 1630'.

S.I.

Revised

2(G-29)

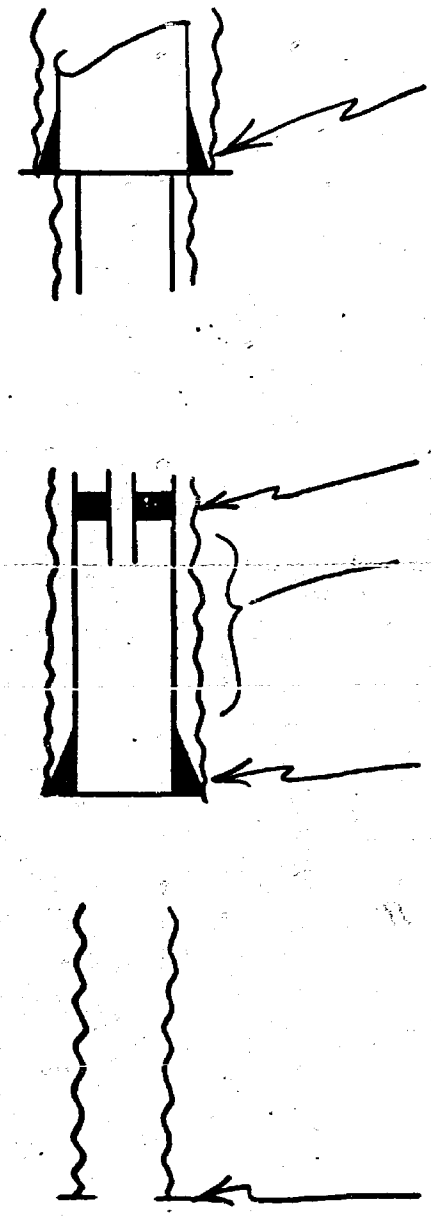
BENSON-MONTIN-GREER DRILLING CORP.

WELL .. JICARILLA #8 (H-25)

SEC. 25 ... TWNSHIP .... 27 N. RANGE .. 1 W.....

STATE . N.M.... . COUNTY...RIO ARRIBA.....

PROPOSED WATER INJECTION WELL



Surface casing 96' of 10 3/4" cemented to surface

Annulus between 7" & 2 3/8" tubing loaded with oil

2 3/8" O.D. tubing @ approx. 3400' on Baker Model R Packer

PERFS

Either or both Zone A & Zone B to be perforated @ ±3400 to 3500'

7" casing @ 3517' cemented with 300 sacks, cement top ±1500'

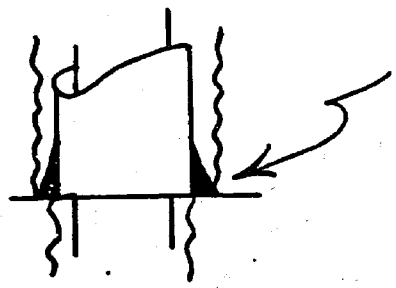
Cement plug below lower perfs to T.D.

T.D. 3818'

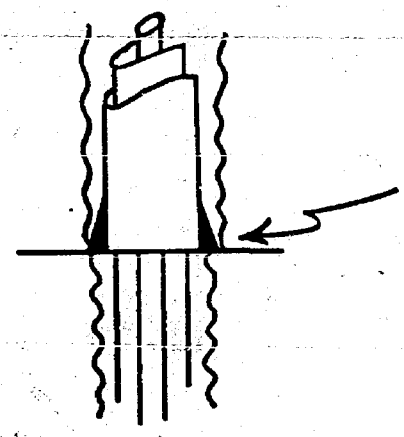
FOLLOWING ARE APPROXIMATE DEPTHS OF WELLS
TO BE DRILLED AT LOCATIONS IN THE:

SW/4 NE/4 of Section 7, T-26N, R-1E
and
SW/4 NW/4 of Section 19, T-27N, R-1E

To be used for water injection

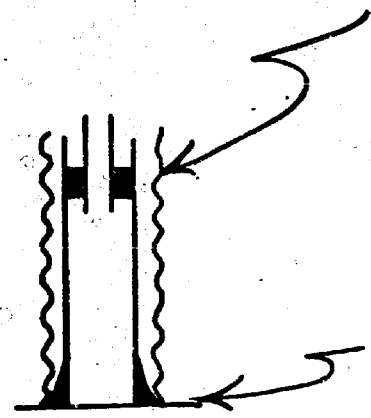


Surface casing 90' of 10 3/4"
cemented to surface



Annulus between 5 1/2" & 2 3/8"
tubing loaded with oil

7" casing @ ± 2700' cemented with
150 sacks (cement top ± 2000')



2 3/8" O.D. tubing @ approx.3600'
on Baker Model R Packer

Either or both Zone A & Zone B
to be perforated @ ± 3600' to 3700'

5 1/2" liner @ 3800' cemented into
intermediate casing @ ± 2600'

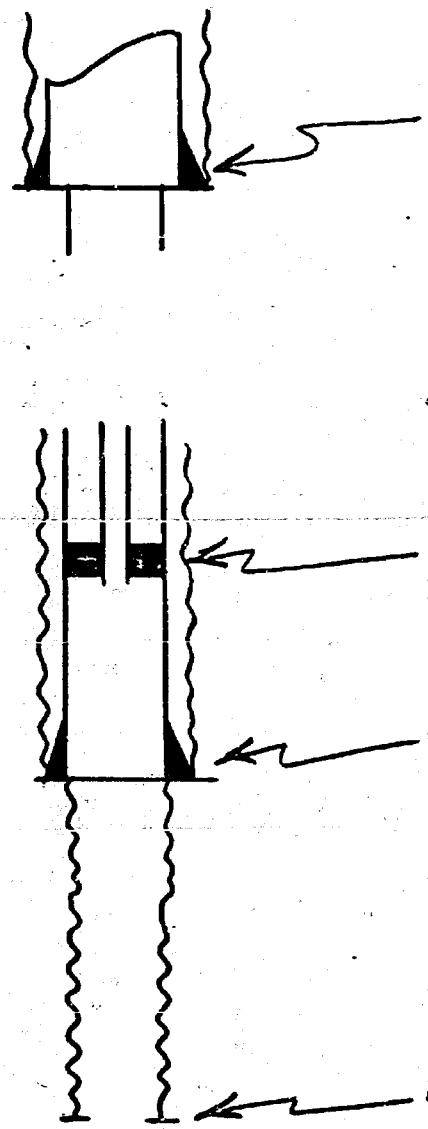
BENSON-MONTIN-GREER DRILLING CORP.

WELL .. PUERTO CHIQUITO #18 (F-6) .....

SE/NW SEC. ...6... TWNSHIP ...26 N. ..RANGE..1 E....

STATE . N M.... . COUNTY..RIO ARRIBA.....

PROPOSED WATER INJECTION WELL



CASE 6943: (Continued from June 25, 1980, Examiner Hearing)

Application of Benson-Montin-Greer Drilling Corporation for a unit agreement, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the East Puerto Chiquito-Mancos Unit Area, comprising 9,769 acres, more or less, of Federal, Indian, and fee lands in Townships 26 and 27 North, Ranges 1 East and 1 West.

CASE 6944: (Continued from June 25, 1980, Examiner Hearing)

Application of Benson-Montin-Greer Drilling Corporation for a pressure maintenance project, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of gas, air, LPG, water, or chemicals into the Mancos formation thru 7 wells on its East Puerto Chiquito-Mancos Unit Area.

CASE 6963: Application of Morris R. Antweil for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 660 feet from the North line and 1980 feet from the East line of Section 30, Township 19 South, Range 30 East, HG-Morrow Gas Pool, the E/2 of said Section 30 to be dedicated to the well.

CASE 6964: Application of Morris R. Antweil for an unorthodox gas well location and simultaneous dedication, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Rio Com. Well No. 2, to be drilled 660 feet from the North and West lines of Section 29, Township 18 South, Range 25 East, Penasco Draw-Morrow Gas Pool, to be simultaneously dedicated with its Rio Com. Well No. 1 in Unit G to the N/2 of said Section 29.

****

Docket No. 21-80

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 16, 1980

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

ALLOWABLE: (1) Consideration of the allowable production of gas for August, 1980, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.

(2) Consideration of the allowable production of gas for August, 1980, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6944: Application of Benson-Montin-Greer Drilling Corporation for a pressure maintenance project, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of gas, air, LPG, water, or chemicals into the Mancos formation thru 7 wells on its East Puerto Chiquito-Mancos Unit Area.

CASE 6945: Application of ARCO Oil and Gas Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Yates-Seven Rivers formation in the interval from 3550 feet to 4000 feet in its Fletcher Well No. 4 in Unit J of Section 27, Township 20 South, Range 34 East, Lynch Field.

CASE 6946: Application of Knox Industries, Inc. for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be recompleted in the Morrow formation at a point 1980 feet from the North line and 660 feet from the East line of Section 1, Township 19 South, Range 34 East, the N/2 of said Section 1 to be dedicated to the well.

CASE 6947: Application of Knox Industries, Inc. for pool contraction and creation and an NGPA determination, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order deleting certain lands from the La Rica-Morrow Gas Pool and creating a new gas pool from said lands together with a determination that applicant's NM State Well No. 1 located in Unit F of Section 2, Township 19 South, Range 34 East, has discovered a new onshore reservoir pursuant to Section 102 of the NGPA.

CASE 6948: Application of Maralo, Inc. for dual completions and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) and simultaneous dedication in the Jalmat Pool of four wells in its Jalmat Yates Unit to produce oil from, and later on to inject water into, its Yates formation waterflood, and to produce oil from the Seven Rivers formation from two of the wells, the Nos. 19 and 20 located in Units C and D and to produce gas from the Seven Rivers from the other two wells, the Nos. 25 and 31 located in Units F and K, all in Section 18, Township 25 South, Range 37 East.

CASE 6949: Application of Grace Petroleum Corporation for four compulsory poolings, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Escrito-Gallup Pool underlying four 80-acre proration units, being the E/2 NE/4, the S/2 NW/4, and the W/2 NW/4 of Section 28, and the W/2 SE/4 of Section 29, all in Township 24 North, Range 7 West, each to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells, and a charge for risk involved in drilling said wells.

CASE 6950: Application of Bass Enterprises Production Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Morrow test well to be drilled 660 feet from the North line and 1980 feet from the East line of Section 4, Township 25 South, Range 31 East, the E/2 of said Section 4 to be dedicated to the well.

CASE 6951: Application of Bass Enterprises Production Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying the E/2 of Section 21, Township 22 South, Range 30 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 6952: Application of Exxon Corporation for a non-standard gas proration unit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 378.11-acre non-standard gas proration unit comprising Lots 1 and 2 and the N/2 NE/4 of Section 31, and Lots 1, 2, 3, 4, and the N/2 N/2 of Section 32, all in Township 26 South, Range 26 East, Morrow formation, to be dedicated to its Milepost Federal Com 2 Well No. 1 located in Unit A of said Section 31.

CASE 6925: (Readvertised)

Application of Caribou Four Corners, Inc. for two exceptions to Rule 306, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 306 of the Division Rules and Regulations to permit the permanent flaring of gas from its Kirtland Wells Nos. 1 and 2, located in Units A and B, respectively, of Section 13, Township 29 North, Range 15 West.

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

KELLAHIN and KELLAHIN
Attorneys at Law
500 Don Gaspar Avenue
Post Office Box 1769
Santa Fe, New Mexico 87501

Telephone 982-4285
Area Code 505

June 5, 1980

RECEIVED
JUN - 5 1980
OIL CONSERVATION DIVISION
SANTA FE

Mr. Joe Ramey
Oil Conservation Division
Santa Fe, New Mexico

HAND DELIVERED

re: Benson-Montin-Greer
Case 6944

Dear Joe:

Enclosed please find the following:

- Application of Benson-Montin-Greer Drilling Corporation for Amendment of the Special Pool Rules and Regulations for the West Puerto Chiquito-Mancos Oil Pool, including the Configuration of Spacing Units, Rio Arriba County, New Mexico

- Application of Benson-Montin-Greer Drilling Corporation for Approval of the East Puerto Chiquito-Mancos Unit and Secondary and Tertiary Recovery Project, Rio Arriba County, New Mexico.

We would appreciate your setting these applications for hearing on June 25, 1980.

Thank you for your assistance.

Very truly yours,

W. Thomas Kellahin

cc: Mr. Al Greer
encl.
WTK:msf

BEFORE THE NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE APPLICATION OF BENSON-MONTIN-GREER DRILLING CORPORATION FOR APPROVAL OF THE EAST PUERTO CHIQUITO-MANCOS UNIT AND SECONDARY AND TERTIARY RECOVERY PROJECT, RIO ARRIBA COUNTY, NEW MEXICO

RECEIVED
JUN - 5 1980
OIL CONSERVATION DIVISION
SANTA FE

Case 6944

APPLICATION

COMES NOW BENSON-MONTIN-GREER DRILLING CORPORATION and applies to the Oil Conservation Division of New Mexico for approval of a Unit Agreement, Rio Arriba County, New Mexico, and in support thereof would show:

1. Applicant has formed its East Puerto Chiquito-Mancos Unit, composed of Federal, Indian, and fee acreage consisting of approximately 9,769.02 acres, more or less, and described as:

T26N, R1E, NMPM

Sec. 4
5
6
7, E/2
8
9
10, W/2
15, W/2
16, N/2 & Se/4
17, N/2

T27N, R1E, NMPM

Sec. 16, S/2
17, S/2
18, S/2
19
20
21
28
29
30

T27N, R1W, NMPM

Sec. 13, SE/4
24, E/2
25, E/2

Florene
Lets make two cases out of this application:

1. East Puerto Chiquito Mancos Unit Area 9769 acres of Fed, Indian & Fee lands in T 26N, 1E and T 27N, 1E and 1W

2. Pressure maintenance Project by injection of gas, air, LPG, water, ~~steam~~ or chemicals into the Mancos formation through 7 wells in ~~sections~~ on its East Puerto Chiquito Mancos Unit Area

2. Applicant is designated a soperator of the proposed unit.

3. The Unit Agreement has not yet been submitted to the Unites States Geological Survey for preliminary approval.

4. The said Unit Agreement has been approved by sufficient owners of interests to assure its ultimate effectiveness.

5. The said Unit is being formed for the development of the acreage dedicated to it.

6. Said secondary and tertiary recovery project shall consist of the injection of gas, liquefied petroleum gas, air, water, chemicals or any other medium into the Mancos formation for the purpose of enhancing recovery.

7. Said project shall be confined to the Mancos formation at a depth of 1,175 feet to 3,143 feet being from the base of the Mesa Verde to the top of the Graneros as found in the Intex Oil Company #1 Eijo well in Section 5, T26N, R1E, NMPM.

8. Applicant proposes to convert the following existing wells to injection wells:

S-6
SE/4 NW/4, Section 6, T26N, R1E

H-25
SE/4 NE/4 Section 25, T27N, R1W

G-29
SW/4 NE/4, Section 29, T27N, R1E

C-2
NE/4 NW/4, Section 28, T27N, R1E

D-4
NW/4 NW/4, Section 4, T26N, R1E

9. Applicant proposes to drill new injection well at the following locations:

NE/4 Section 7, T26N, R1E

NW/4 Section 19, T27N, R1E.

10. Applicant anticipates surface pressures to be no higher than .2 psi per foot of depth.

11. The granting of this Application will result in the prevention of waste and the protection of correlative rights.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing before the Division's duly appointed Examiner and that after notice and hearing, an order be entered approving the Unit Agreement.

BENSON-MONTIN-GREEN DRILLING CORPORATION

By _____
W. Thomas Kellahin

Kellahin & Kellahin
P.O. Box 1769
Santa Fe, New Mexico 87501
Phone: (505) 982-4285
ATTORNEYS FOR APPLICANT

BEFORE THE NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE APPLICATION OF BENSON-MONTIN-GREER DRILLING CORPORATION FOR APPROVAL OF THE EAST PUERTO CHIQUITO-MANCOS UNIT AND SECONDARY AND TERTIARY RECOVERY PROJECT, RIO ARRIBA COUNTY, NEW MEXICO

Case 6944

APPLICATION

COMES NOW BENSON-MONTIN-GREER DRILLING CORPORATION and applies to the Oil Conservation Division of New Mexico for approval of a Unit Agreement, Rio Arriba County, New Mexico, and in support thereof would show:

1. Applicant has formed its East Puerto Chiquito-Mancos Unit, composed of Federal, Indian, and fee acreage consisting of approximately 9,769.02 acres, more or less, and described as:

T26N, R1E, NMPM

Sec. 4
5
6
7, E/2
8
9
10, W/2
15, W/2
16, N/2 & Se/4
17, N/2

T27N, R1E, NMPM

Sec. 16, S/2
17, S/2
18, S/2
19
20
21
28
29
30

T27N, R1W, NMPM

Sec. 13, SE/4
24, E/2
25, E/2

2. Applicant is designated a soperator of the proposed unit.

3. The Unit Agreement has not yet been submitted to the Unites States Geological Survey for preliminary approval.

4. The said Unit Agreement has been approved by sufficient owners of interests to assure its ultimate effectiveness.

5. The said Unit is being formed for the development of the acreage dedicated to it.

6. Said secondary and tertiary recovery project shall consist of the injection of gas, liquefied petroleum gas, air, water, chemicals or any other medium into the Mancos formation for the purpose of enhancing recovery.

7. Said project shall be confined to the Mancos formation at a depth of 1,175 feet to 3,143 feet being from the base of the Mesa Verde to the top of the Graneros as found in the Intex Oil Company #1 Eijo well in Section 5, T26N, R1E, NMPM.

8. Applicant proposes to convert the following existing wells to injection wells:

S-6
SE/4 NW/4, Section 6, T26N, R1E

H-25
SE/4 NE/4 Section 25, T27N, R1W

G-29
SW/4 NE/4, Section 29, T27N, R1E

C-2
NE/4 NW/4, Section 28, T27N, R1E

D-4
NW/4 NW/4, Section 4, T26N, R1E

9. Applicant proposes to drill new injection well at the following locations:

NE/4 Section 7, T26N, R1E

NW/4 Section 19, T27N, R1E.

10. Applicant anticipates surface pressures to be no higher than .2 psi per foot of depth.

11. The granting of this Application will result in the prevention of waste and the protection of correlative rights.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing before the Division's duly appointed Examiner and that after notice and hearing, an order be entered approving the Unit Agreement.

BENSON-MONTIN-GREEN DRILLING CORPORATION

By _____
W. Thomas Kellahin
Kellahin & Kellahin
P.O. Box 1769
Santa Fe, New Mexico 87501
Phone: (505) 982-4285
ATTORNEYS FOR APPLICANT

ROUGH

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6944

Order No. R-6448

APPLICATION OF BENSON-MONTIN-GREER
DRILLING CORPORATION FOR A PRESSURE
MAINTENANCE PROJECT, RIO ARRIBA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 9, 19 80, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of August, 19 80, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Benson-Montin-Greer Drilling Corporation, seeks authority to institute a pressure maintenance project on its East Puerto Chiquito-Mancos Unit Area in Townships 26 and

27 North, Ranges 1 East and 1 West, NMPM, Rio Arriba County, New Mexico, by the injection of gas, air, LPG, water, or chemicals into the Mancos formation through seven wells located in Sections 4, 6, and 7, Township 26 North, Range 1 East, Sections 19, 28, and 29, Township 27 North, Range 1 East, and Section 25, Township 27 North, Range 1 West.

(3) That of the aforesaid seven wells, gas would be injected into three existing wells located up-structure, being applicants' Well No. C-2 located in Unit C of Section 28 and Well No. G-29 located in Unit G of Section 29, both in Township 27 North, Range 1 East and Well No. D-4 located in Unit D of Section 4, Township 26 North, Range 1 East, while water and chemicals would be injected into two existing wells located down-structure, being applicants' Well No. F-6 located in Unit F of Section 6, Township 26 North, Range 1 East, and Well No. H-25 located in Unit H of Section 25, Township 27 North, Range 1 West, and also into two new wells to be drilled down-structure, to be located in Unit G of Section 7, Township 26 North, Range 1 East, and Unit E of Section 19, Township 27 North, Range 1 East.

(4) That although the proposed enhanced recovery injection program will involve the injection of fluids into the reservoir in ~~a~~ its present primary state of depletion as a pressure maintenance program and continue on into secondary recovery, it will then, by the addition of so-called "tertiary chemicals," proceed into a tertiary recovery operation to depletion.

(5) That it is expected that the initial gas injection for pressure maintenance will recover some 600,000 barrels of oil not recoverable under primary depletion alone, that the continued gas injection and waterflooding for secondary recovery

will recover an additional 400,000 barrels, and that the continued gas injection, water injection, and added tertiary chemicals will result in the recovery of yet another 400,000 barrels, for a total estimated 1,400,000 barrels of otherwise unrecoverable oil, thereby preventing waste.

(6) That prior to placing any well on injection, applicant should test and inspect the casing and cement on such well to ensure the integrity of same, and make such repairs as may be deemed necessary by the supervisor of the Aztec district office of the Division.

(7) That all injection should be through tubing set in a packer, and the casing-tubing annulus should be loaded with sweet oil or other inert fluid.

(8) That the operator should take all steps necessary to ensure that the injected fluids enter only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(9) That there are two wells in the project area, both located within one-half mile of a proposed gas injection well, which should be investigated and re-entered if necessary to ~~wa~~ perform such remedial or plugging operations as are deemed appropriate by the Supervisor of the Aztec district office of the Division ~~if said wells are the Jicarilla~~ prior to commencement of gas injection; said wells are the ~~Jicarilla~~ S & B Drilling Company's Jicarilla 287 Well No. O-4, located in Unit O of Section 21, and its Jicarilla 287 Well No. L-3, located in Unit L of Section 28, both in Township 27 North, Range 1 East.

(10) That the water and water/chemical injection wells, or injection pressurization system, should be so equipped as to limit injection pressure at the wellhead to no more than 0.2 psi per foot of depth to the uppermost perforation, or in the case of an open hole completion, to the depth of the casing shoe; that the gas injection wells, or gas injection pressurization system, should be so equipped as to limit gas injection pressure at the wellhead to no more than 500 psi. That the Division Director should have authority to administratively authorize pressure limitations in excess of the above upon a showing by the operator that such higher pressures will not result in fracturing of the confining strata.

(10) That provision should be made for the drilling of additional wells at orthodox and unorthodox locations for production, and for approval of same as injection wells administratively without notice and hearing.

(12) That special rules for the project should be adopted whereby allowables may be transferred from injection wells and shut-in wells to other wells for production.

(13) That the proposed project should be known as the BMG East Puerto Chiquito-Mancos Enhanced Recovery Project, and should be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations not inconsistent herewith.

(14) That the proposed project is in the interest of conservation, will prevent waste and protect correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Benson-Montin-Greer Drilling Corporation, is hereby authorized to institute an enhanced recovery project on its East Puerto Chiquito-Mancos Unit Area, East Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico, by the injection of fluids into the Mancos formation as follows:

Gas Injection:

Well No.	Unit Letter	Section	Township	Range
D-4	D	4	26N	1E
C-2	C	28	27N	1E
G-29	G	29	27N	1E
Water and/or Chemical Injection:				
F-6	F	6	26N	1E
H-25	H	25	27N	1W
To be drilled	G	7	26N	1E
To be drilled	E	19	27N	1E

(2) That said project shall be known as the BMG East Puerto Chiquito-Mancos Enhanced Recovery Project.

(3) That Special Rules and Regulations governing the BMG East Puerto Chiquito-Mancos Enhanced Recovery Project are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS

FOR THE

BMG EAST PUERTO CHIQUITO-MANCOS

ENHANCED RECOVERY PROJECT

RULE 1. The project area shall consist of all those proration units within the boundary of the East Puerto Chiquitos-Mancos Unit Area upon which is completed a well in the East Puerto Chiquitos-Mancos Oil Pool.

RULE 2. The project area shall receive a project area allowable, and said project area allowable shall be equal to 320 times the number of developed 160-acre proration units in the project area.

RULE 3. The project allowable may be produced from the wells in the project area in any proportion.

RULE 4. The Division Director shall have authority to approve, without notice and hearing, the drilling of wells at unorthodox locations anywhere within the boundary of the East Puerto Chiquito-Mancos Unit Area, provided however, no unorthodox location shall be closer than ten feet to a quarter-quarter section line, and provided further that no such unorthodox location shall be closer than 330 feet to the outer boundary of the unit area unless such well is covered by a lease-line agreement with the operator of lands offsetting the well, and a copy of the lease-line agreement accompanies the application for such

unorthodox location, or unless such operator has waived objection to the proposed unorthodox location in writing, and his waiver accompanies the application.

RULE 5. Application for approval of additional wells to be drilled for or converted to injection shall be filed in accordance with Rule 701 of the Division Rules and Regulations, and may be approved by the Division Director without notice and hearing.

RULE 6. Injection of any medium into any injection well shall be through tubing, and the tubing shall be set as near as is practicable to the uppermost perforation in the injection zone, or, in the case of an open-hole completion, as near as is practicable to the casing shoe.

RULE 7. The casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

RULE 8. Water/chemical injection wells or the injection pressurization system for same shall be so equipped as to limit injection pressure at the wellhead to no more than 0.2 psi per foot of depth to the injection zone; gas injection wells, or the gas injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 500 psi. The Division Director may authorize higher injection pressures upon satisfactory showing that such pressures will not result in fracturing of the confining strata.

RULE 9. The operator shall immediately notify the supervisor of the Division's Aztec district office of the failure of the tubing, casing, or packer in any injection well, the leakage of water, oil, or gas from or around any producing well, or the leakage of water, oil, or gas from or around any plugged and abandoned well, anywhere in the project area, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

RULE 10. No injection well shall be placed on active injection until it has been inspected and tested to ensure the integrity of the well's casing and cementing program. If such casing and cementing program is found to be defective in any proposed injection well, such repairs as may be deemed necessary by the Supervisor of the Aztec district office of the Division shall be made before placing the well on injection.

RULE 11. The operator shall file reports for this project on Division Form C-115 in accordance with Rule 704(1) of the Division Rules and Regulations and may later be required to file additional information in accordance with Rule 704(5)

(4) That prior to commencement of gas injection, applicant shall investigate and re-enter if necessary to perform such remedial or plugging operations as are deemed appropriate by the Supervisor of the Aztec district office of the Division the following two wells: S & B Drilling Company's Jicarilla 287 Well No. O-4 located in Unit O of Section 21, and its Jicarilla 287 Well No L-3, located in Unit L of Section 28, both in Township 27 North, Range 1 East

(4) That 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
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
9 July 1980

EXAMINER HEARING

IN THE MATTER OF:

Application of Benson-Montin-Greer Drilling Corporation for a unit agreement, Rio Arriba County, New Mexico. CASE 6943

and

Application of Benson-Montin-Greer Drilling Corporation for a pressure maintenance project, Rio Arriba County, New Mexico. CASE 6944

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Ernest L. Padilla, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: W. Thomas Kellahin, Esq.
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I N D E X

ALBERT R. GREER

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MR. NUTTER: We'll call next Case Number 6943.

MR. PADILLA: Application of Benson-Montin-Greer Drilling Corporation for a unit agreement, Rio Arriba County, New Mexico.

MR. NUTTER: We'll also at this time call Case Number 6944.

MR. PADILLA: Application of Benson-Montin-Greer Drilling Corporation for a pressure maintenance project, Rio Arriba County, New Mexico.

MR. KELLAHIN: I'm Tom Kellahin, of Santa Fe, New Mexico, appearing on behalf of the applicant in Cases 6943 and 6944, and I have one witness to be sworn.

MR. NUTTER: For purpose of testimony, Cases 6943 and 6944 will be consolidated.

(Witness sworn.)

ALBERT R. GREER

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name and occu-

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pation?

A. Albert R. Greer, G-R-E-E-R. I'm an officer and petroleum engineer for Benson-Montin-Greer Drilling Corp.

Q. Mr. Greer, have you previously testified before the Division as a petroleum engineer and had your qualifications accepted and made a matter of record?

A. Yes, sir.

Q. And as a petroleum engineer have you made a study of and are you familiar with the facts surrounding these two applications?

A. Yes, sir.

MR. KELLAHIN: We tender Mr. Greer as an expert petroleum engineer.

MR. NUTTER: Mr. Greer is an expert petroleum engineer.

Q. Mr. Greer, I have taken the packet of exhibits that you have presented today and marked it as Exhibit One, and I would like for you to commence your testimony by referring to each of the parts within Exhibit Number One and if we could start with what is labeled the location plat, and have you first identify for me your proposed unit area.

A. Well, the unit area is shown on this location plat outlined in red. It's within the East Puerto

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Chiquito Mancos Pool, which is outlined in green on this plat.

Q. Could you describe generally for us what types of acreages are involved in the unit?

A. Yes, sir, there are Indian lands, Federal lands, and fee lands.

Q. The advertisement indicates that there is some 9769 acres, more or less, to be dedicated to the unit.

A. Yes, sir.

Q. What is to be the unitized formation?

A. The Mancos formation.

Q. Is this unit being organized for purposes of primary recovery, secondary recovery, or tertiary recovery?

A. It's principally for secondary and tertiary recovery.

Q. Have the working interests agreed as to a form of unit agreement for this particular unit?

A. Yes, sir, 99.7 percent of the working interest owners of leased lands have agreed to it.

Q. Does the proposed -- has the proposed unit agreement been submitted to the USGS and to the State Land Commission, State of New Mexico?

A. The agreement about as it appears here was submitted to the USGS two years ago. There are some changes in it that they have not yet reviewed.

We have not submitted it to the Land

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Commissioner.

Q. Would you summarize generally what has been the history of this particular formation and your efforts to bring about a voluntary unit for secondary recovery?

A. Yes, sir. It's a fractured shale formation. Produced initially oil, under saturated oil, and is under, to the best of our ability, we make it operate with gravity drainage completion, which means that we produce the down dip wells and as the up dip wells reach high gas/oil ratios we shut them in. And this is a procedure that we can carry out only to a certain limit, and that limit is when the down dip producers commence making gas, then we're forced either to produce high gas/oil ratio wells or shut the properties in.

Accordingly, we commenced some fifteen years ago trying to get the area unitized. The Indian tribe, the Jicarilla Tribe, was reluctant to unitize and we put off unitization as long as we could then, because of the Indians, until we reached a point which we now have, that we can delay no longer. We're either going to have to shut the wells in or produce high gas/oil ratio wells, and when we do, we'll dissipate the energy from the secondary gas cap that's formed and the net of it is that -- that we just must unitize soon or we are going to lose a substantial -- otherwise recoverable reserves.

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So in our efforts to unitize, we managed finally a year ago to bring to the attention of the Indians the amount of royalty that they would lose if we did not unitize, and it's a substantial difference, and when we finally got their attorneys to recognize it, then they agreed to unitize, and after considerable negotiation we reached trade terms, an increase in their royalty, net profits, and one thing and another, and we now have an agreement whereby we can unitize.

Q. In your opinion, Mr. Greer, does the proposed unit area constitute a logical configuration by which the unit and the unit operator will have substantial and effective control of the unitized formation?

A. Yes.

Q. In addition to the preparation of a proposed unit agreement, have you proposed a unit operating agreement?

A. Yes.

Q. If you'll commence with the unit agreement and simply go through and indicate for us some of the important points in summary to familiarize the Examiner with that agreement, perhaps commencing with an explanation of why you've indicated in the unit agreement the green shading at various pages.

A. Well, we've indicated in green shading

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the words where the Oil Conservation Division is given authority in the unit agreement.

I thought two years ago that we had furnished a copy to the Division for review, but in checking my files, I find that we did not. So we've made this agreement conform to one we have recently submitted on another area to the department, or to the Division, and I believe that we have the same authorities here as in the one recently approved.

On page one of the unit agreement we set out where the Oil Conservation Division has the authority to take part in these agreements.

On page two the Division is defined as we use in the agreement here.

Page four the Division is given authority in expansion of the unit agreement -- in expansion of the unit area.

Carried over onto page five it shows again.

On page six the Division is given authority under approval of the plan of operations, which carries over to page seven.

On page ten regarding allocation of unitized substances, which carries over to page eleven.

Also, on page eleven under Section 15, authority regarding what gas might be royalty-free if outside gas is brought in for injection.

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On page fourteen the approval of the unit agreement, the effective date, and the term of the agreement.

On page fifteen perhaps one of the more important sections, Section 23, regarding rate of prospecting, development, and production, the Division is given equal authority with the USGS regarding approvals of rate of prospecting and development; in addition, what both the USGS and the Division determine must be within the limits fixed by the Division regarding the quantity and the rate of production.

On page seventeen authority regarding subsequent joinder of additional parties who might want to come in at a later time.

Those are the authorities granted to the Division. Then there are a few particular items that we should call to the attention now.

One is on page seven regarding tract participations. The participation formula is 10 percent acreage; 22-1/2 percent structural position weighting factor, and that we'll go into in detail a little bit later; 67-1/2 percent production.

Q. Do you have subsequent exhibits to indicate how those numbers were derived?

A. Right. They're explained here in the language of this particular section, but later on it's easier

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to understand from the exhibits.

Q. On page eight there is indicated a special agreement with the Jicarilla Tribe. Would you identify that for us?

A. Yes, sir. About the center of the page eight is spelled out briefly one of the terms that we agreed to with the Jicarilla Tribe, and that is after we have determined the Tribe's equity as to the various leases, I think there's five or six of them, the Tribe wanted the equity reallocated on a different basis than the basic formula. We agreed to do this. This affects only the Indians and the working interest owners.

Q. Will that have an adverse effect in any way upon any of the other working interest or royalty owners in the unit?

A. No, sir, it doesn't affect their equity at all.

MR. NUTTER: Well now, it would the other working interest owners, wouldn't it?

A. The other working interest owners who are parties and own interest over these leases are affected, and they have all agreed to this trade.

MR. NUTTER: So in other words, this is changing the participation for the Indians probably to a higher rate, but it's carved out of working interest and not

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out of any other royalty owners?

A. That is exactly right.

MR. NUTTER: Okay.

Q. I believe on page nine there is a need for an explanation on some of these undrilled acreage. Do you have any open acreage involved here?

A. Yes, sir, there's some unleased Federal acreage and a little bit of unleased fee acreage. The bottom paragraph on page nine sets out how the unleased Federal acreage will be handled, which essentially is that when it's put up for sale the successful bidder will be obligated to join the unit agreement, unless there's some reason of the equities that it should not.

Q. Back on page six under plan of operation, you've set forth a number of different substances that might be used for secondary and tertiary recovery.

You might summarize for us, if you would, the anticipated substances that could be used.

A. Yes, sir. We are thinking about not only water flooding and gas injection, but tertiary methods, which can include caustics, polymers, and chemicals, which we identify in the first paragraph of Section 10.

Q. I believe that covers most of the significant points in the unit agreement, Mr. Greer.

MR. NUTTER: Mr. Greer, before you get

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too far off on that, now that portion, wherever that section was, I lost it --

A. It's page six.

MR. NUTTER: No, the part about the lands that would be leased after the effective date of the unit.

Now how are you going to bind those parties that pick up these leases after the effective date? Will the government put the clause in the lease that they must join the unit?

A. This will be part of the -- when the leases are advertised for sale --

MR. NUTTER: That they're subject to this binder?

A. -- they'll be subject to that, yes, sir.

MR. NUTTER: And they take the leases under that binder?

A. Right, uh-huh.

MR. NUTTER: I see. Okay.

A. The same as is in an exploratory unit. The main difference here, of course, is that this is unusual for a secondary unit because ordinarily you already have --

MR. NUTTER: You already have the lands leased.

A -- the lands leased, right. So we do have that unusual provision here.

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MR. NUTTER: Okay.

Q. If you'll turn to the unit operating agreement now, Mr. Greer.

A. I think the only unusual thing here is on page eight, commences on page eight, the investment adjustment of intangible drilling and non-removable downhole equipment. Here again, for the problem of bringing in parties who have not paid for wells now and do not have any investment, if they buy a new lease, as for instance the Federal leases, then they'll be required to pay a share of the cost of the previously drilled wells. We have an investment adjustment for the surface equipment, which is more or less standard in any unitization, but the problem of the intangible drilling costs, which often is taken care of in a unitization by each man drilling his own well, you have here a situation where there will be leases with no wells on them, and so that these outside parties, then, would be required to pay a share of the intangible drilling costs.

We've estimated that as the cost -- what it would cost to drill wells at this time, but the well costs are depreciated at the rate of 1/2 percent a month for 50 months, which means we'll take 75 percent of the estimated cost of the wells at this point, and that's the figure that will be used for the investment adjustment of the intangible drilling costs.

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Then for the costs of chemicals, we've added those in, and the reason for that is that depending on the plan of -- that we use for our tertiary recovery process, we could inject a substantial amount of the chemicals the first few months, or perhaps the first year. If, for instance, we spend $1,000,000 on chemicals the first year, and then the lands come up for sale, the parties who come in at that time will get the benefit of the chemicals, which may take some 20 years to do their work through the reservoir, so they again are obligated, or we feel they're obligated, to pay their share of the chemical cost. We depreciate the chemical cost over a 25-year period, assuming that in 25 years that we dissipate them.

Q. Now in your discussion on page seven of the unit agreement you indicated a formula for the determination of tract participation.

A. Yes.

Q. I'd like you to go to those lettered attachments to the exhibit, which will explain to us how you determined the tract participation.

A. All right, sir. I might say in passing, if you looked at the different exhibits, A, B, C, D, and E, they are simply exhibits A to the unit agreement, B to the unit agreement, C to the unit agreement, D to the unit agreement, and E is Exhibit E to the unit operating agreement.

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They have to do primarily with the statistics of what we'll be talking about here now.

Under Section E -- no, Section F, Section F, we have a discussion of the parameters that we used for determining the participation factors.

The first parameter is acreage, which is quite simple, just the acreage to each tract is given its share of a 10 percent weighting.

Structure position weighted acreage factor is a new concept, which the USGS geologists and engineers felt we should include, and that's for the reason that the area so far has been produced by a gravity drainage process with the primary production being taken out down dip; the up dip wells now covering the secondary gas cap, the value of the gas for a given volume of reservoir is less than the value of oil, and we have the problem of otherwise determining equity, which you ordinarily do from reservoir volume and estimated reserves. This being a fractured shale reservoir, there's no way to do that under ordinary methods.

So we had to devise some other equitable approach to it. The way we wound up is giving a factor of zero in the structural position weighting factor for the uppermost contour, the 6000-foot contour interval, and increasing that down dip until we're just above the water/oil contact, at which point we start decreasing the weighting

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factor, and --

Q. It might be helpful, Mr. Greer, if you could identify for us one of the plats of the area, and so you could summarize how you took into consideration the structural position of weighted acreage factor.

A. Under Section L, there is first a plat which shows the zones that are producing in the two areas, East Puerto Chiquito and West Puerto Chiquito. We call them Zones A, B, and C.

In this particular area only Zones A and B produce, the yellow and green colored ones on the plat.

The next map after that is a structural contour map that shows my interpretation of the fluid content of the reservoir now and also identifies the wells we plan as producing wells, injection wells, and both gas injection wells and water injection wells.

The area colored in yellow is area which is pretty much gas saturated now because of depletion or drainage down dip from these wells.

The area colored in red is essentially gas-free oil saturated.

And the area colored in green is principally water.

The water/oil contact is shown halfway between the 3800 and 4000 foot contour interval, where the

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red meets the green.

The 6000 foot interval which we give zero weighting on the structure position rating factor is over on the righthand side of the map.

And I think perhaps we should go right straight to the structural position weighting factor map. I believe that map is listed under -- in the index under H, but I think under most of these exhibits it's under G. It's a foldout plat similar to your structure contour map that we just looked at.

MR. KELLAHIN: It's under H.

A. If you look at the upper righthand part of the map, Section 9, the structural contours are given a rating factor, starting there with 3, moving southwest you can follow them up, 4, 5, 6, 7, 8, 9, 10, at which point we drop from there to the next contour down to the oil/water contact, we give that a weighting factor of 5, and then zero on the next contour, the 3600 foot contour interval.

And the weight --

MR. NUTTER: Anything below that gets zero because it's in the water.

A. Then the way we get those back to tract factors, we probably ought to take just a minute to look at that. If you can find the yellow, green, and blue sheets that are either in that same section or the section just

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ahead of it. They're identified as Exhibit C, Part III, Schedules I, II, and III. The gold colored one is the first one.

For instance, there the first line, the northeast quarter of Section 4, if you look at Section 4, which is about the center of the map on the righthand side, go to the northeast corner of that quarter section is given a rating of 0.7; the northwest quarter, 1.2; the southwest quarter,0.7; the southeast quarter, zero; the arithmetic 4-point average is .65.

So that gives the structure position weighting factor for that northeast quarter.

Then we go to Schedule II, which is the green colored sheets --

MR. NUTTER: Now you -- in other words, you've taken the northeast quarter of Section 4 and divided that into the four 40-acre tracts, and given each of those 40's a value, is that it?

A. Well, we give the corner a value.

MR. NUTTER: You base this on the corner points?

A. Corner point, uh-huh.

MR. NUTTER: I see.

A. It's not quite as accurate, of course, as if we had planimetered, but it's a lot easier for somebody

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else checking the thing to come up with the same numbers.

MR. NUTTER: But every quarter section has four points that you've taken measurements on.

A. Right. And then we just take the arithmetic average. That's shown on the gold colored sheets.

Then on the green sheets we come again to the northeast quarter of 4, that's the first one that's listed. Under Column (4) is that weighting factor we just talked about. Under Column (3) is the number of acres in each tract. For instance in the northeast of 4 there are three tracts, 3, 14, and 26. We take the acreage in each one of them, multiple it by the weighting factor, and in Column (5) we have then the structural position weighting factor for that tract in that quarter section.

As you can see down on line about 6 and 8, Tract 3 appears again and then again further down.

Then we summarize all those on the blue sheets, the Schedule III.

We go to each tract, find each one of its parts in each quarter section, sum them up, and then that is the structure position weighting factor for each tract.

Then we go with that and perhaps we should now look under Section C to see how it's all put together.

If you'll look at the last sheet of Section C, page five, you can see, for instance, for Tract 25, it's

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160 acres; its structural position weighting factor of 762.25; and its 1976-77 production, which is the year we used for production, 160 barrels. If you take weighting factors for each one and come up with a total and -- and that's the total participation for each such tract.

Then we should take a quick look at the redistribution to the reallocation to the Indian tracts. That starts on page three, Tract 17, on the righthand side the equity factor for Tract 17 would be .163783. By our special allocation it's given a rating factor about five times, or an equity factor about five times what it otherwise would have.

The next tract is reduced from 64 to 44 percent.

MR. NUTTER: How did you get them to take a reduction on that?

A. Well, it had to come from somewhere. They didn't mind giving up 25 percent royalty for 50 percent net profits.

Then we might look quickly at the -- at the acreage -- the distribution of production to the tracts is fairly simple, based on the communitized acreage within each tract.

Under Section J there are some notes regarding surveying, which we don't need to go into detail,

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but need to be a part of the record.

The first two pages explain some of the guidelines we used for allocating acreage to tracts.

The third sheet is a plat, which shows the problem we have of the homestead entry surveys right down the middle of the unit. That particular tract you can see where we had the little survey problems to work with.

Following that are some survey notes, the balancing of the angles, the calculating of the areas, and the plats themselves.

Now, under Section K we show a plat, or we have a plat which shows the lands and the wells within two mile arcs of the proposed injection wells. The color coding here, the triangular wells marked in red are those planned for gas injection; those in blue, the two center ones will be converted wells to water injection; the north and south blue triangles would be new water injection wells.

All of the land within those arcs that has no color means that it's leased by Benson-Montin-Greer Drilling Corp., or SNB Drilling Company, both of whom are parties to the unit agreement.

Lands colored are lands either unleased or owned by other parties.

Those in yellow are Federal lands that are not leased.

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Those in blue are fee lands that are not leased.

Those in orange are owned by operators who have not yet committed to the unit agreement.

MR. NUTTER: In other words, what was that last?

A. The two little tracts colored in orange.

MR. NUTTER: Yeah, those are the only lands that are leased that are not committed?

A. Yes.

MR. NUTTER: By the working interest.

A. By the working interest, and we're negotiating on those and I feel that we probably will get them. It represents about 3/10ths of 1 percent of the working interest.

MR. NUTTER: How about all this open government land? Will it be put up for lease within the near future?

A. Well, we presume, and the discussions we've had with the USGS representative, is that once the unit is effective, then depending on their paper process, why, they will have the lands put up for sale, and how long that will take, we don't know, but by virtue of the way we have our operating agreement structured, we feel we do not have to wait on the sale in order to proceed. We can go ahead and

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get to work and of course the quicker they have the sale, why, the better, but we can move ahead and when the parties come in they can pay their share. If we're still drilling, well, they can pay their share then; if not, they'll just have to reimburse those who have paid.

MR. NUTTER: Well now, to put it bluntly, Mr. Greer, by the time you have placed a value on all these wells and all these improvements that you've got in here, and you're making those people who buy these prospective leases, pay for those improvements, this puts them in a pretty bad disadvantage trying to buy into the unit, doesn't it?

A. Oh, I don't know. It's -- I'd say it's not like finding a bird's nest on the ground, but --

MR. NUTTER: But doesn't it put you in a better position to bid on the leases if they're put up for competitive bidding?

A. Oh, I presume that's true in any instance where one already has an investment in a property and a new man comes in and wants to buy into it, and he hasn't paid anything, why, yeah.

MR NUTTER: Well, you've already had a certain amount of use out of some of those wells.

A. Yes, we've had some use out of them, no question about that. But also we feel that it's not fair to us just to give them an interest. In round numbers we're

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talking about $4-1/2 million worth of wells and we're talking about $50 million worth of oil.

So they're certainly obligated to pay some.

MR. NUTTER: What's the total amount of acreage that's not leased today?

A. I don't have the acreage amount. The equity amount of about 5 percent.

MR. NUTTER: About 5 percent of the total unit.

A. Right.

MR. NUTTER: Go ahead, I'm sorry.

Q. In your opinion, Mr. Greer, is the proposed method of participation fair and equitable for all the parties?

A. I believe so. The -- we tried a number of different formulas, and in the end we come up with just about the same.

Oh, one thing before we leave this plat, we've outlined one little tract in green in the southwest quarter of Section 9. The ownership there is just a little indefinite. We think we have some leases on part of the interest but that's a fee tract. Three or four estates are involved; a number of people.

MR. NUTTER: Is that that old T. D. Burns

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estate?

A. Right. So there is a question there as to what -- just what the status of that is.

Q. Would you identify for us now, Mr. Greer, those exhibits and information that establishes the -- your anticipated recovery from the institution of the secondary and tertiary projects?

A. Yes, sir. We might take a quick look at the laboratory analysis we've had on the tertiary work. That's under Section M.

The significant information is on Table 4. The pages are not numbered; it's Table 4, in which three runs were made with different kinds of chemical injectants.

The first column is with straight sodium hydroxide, 3 percent solution. The second and third ones were with the same sodium hydroxide but with polymers added.

I've underlined the waterflood recovery in red under the oil recovery section, and the tertiary oil recovery underlined in red.

For instance, under column 1 --

MR. NUTTER: You don't have any underlining on mine, Mr. Greer. Where do we underline?

A. The one I might call attention to, the first red underline under Column 1 shows 48 cc recovered from this particular core, which incidentally, these are radial

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floods, a special type of core analysis, I think really is pretty representative of what might be expected. The problem is, of course, we had to use Berea cores. We didn't have a formation core to use.

Recovered 48 cc by waterflood. Now that's both primary and a waterflood recovery.

Then the tertiary recovery is 30 cc in addition to that, which in terms of percent of the initial recovery is about 62 percent.

There's a little higher recovery in runs two and three with the polymers added, but that increases the viscosity of the water and it's my feeling that we would be better with a low viscosity water than a high viscosity where we're trying to float the oil on top of the water, and so we're thinking about straight -- straight caustic.

Now although this shows a 62 percent increase, I've assumed maybe a 3/4ths efficiency factor and the number I've used is about 46 percent that we might hopefully expect to pick up of tertiary recovery in addition to the waterflood recovery.

The graphs of the laboratory tests, which we might look at the first one, shows how -- how the oil cut drops off as the core is flooded, to about 2 or 3 tenths of a percent of pore volume, the water cut drops real low.

Then on the second graph you can see how,

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again after 2 or 3 tenths of pore volume is injected, the oil cut picks up.

Then there are some photographs at the end of that section where they took pictures of the test tubes whick they gathered at every 5-hundredths of a pore volume that was flooded.

The upper lefthand photo, the dark color you can see is the oil that's recovered, and where it's light, that's water, and you can see that after six or eight test tubes, or about 3-tenths of a pore volume, that the oil cut drops to a very small amount.

Then they start the tertiary chemicals in and on the lower lefthand photograph you can see how initially the oil cut is small but it increases with -- with the flood.

We were surprised that this oil would respond as well as it did to caustic, but it appears to be that it could be quite helpful.

That's the basic information that we deal with for the expected increase through tertiary methods.

Now, by unitizing the -- perhaps the most important thing we can do is save dissipating the gas. By picking up the produced gas and re-injecting it, we can maintain the reservoir pressure, keep the viscosity low, and we think we can do two things: We can let the gravity drainage process continue through the high capacity fracture system.

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We found that we ran tests in the West Puerto Chiquito Pool, just a few miles away, the same formation. We concluded that the reservoir is made up of blocks, kind of like a jigsaw puzzle, tight blocks with high capacity fracture system in between.

Initially we drained the high capacity fracture system, the gas and -- nearest to the well bores, and we produce high volumes of gas. There still, we think, is oil left in the tight blocks, and one of the questions is how do we best recover that. If we go ahead and blow the pressure down that, as soon as the gas in the high capacity system reaches the down dip producers, we're looking only at solution gas drive recovery in the tight blocks; whereas, if we can continue to maintain the pressure for a long time, we think we can get part of the oil out of those tight blocks by gravity drainage and sweep them with the gas on down the high capacity system to the producers.

Now this is just a theory but we think it has a little bit of substance to it through one of the tests we have run in West Puerto Chiquito Pool, and that's shown in this yellow graph under Section O.

In West Puerto Chiquito the same as in East Puerto Chiquito, as soon as wells reach a high gas/oil ratio, and by high we mean like, oh, four or five times their solution ratio, in West Puerto Chiquito when the ratio reached

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about 2000-to-1 we shut the wells in. With the exception of this particular well, the C-34, when the gas in the high capacity system reached this well we went ahead and produced it to see what would happen if the gas/oil ratio would just go out of sight or if it would level off somewhere if we might pick up producer oil, and it appears, in this well, at least, when the ratio reached about 10,000-to-1 it leveled off.

In 1974 this particular well had produced about 300,000 barrels of oil and in six years since then even that high gas/oil ratio, it's produced another 150,000 barrels of oil. I think a good part of that could have come from drainage of tight rocks in support of this theory that we think the reservoir is made up of these tight rocks and high capacity system.

If, for instance, this well would continue on as it's indicated here for 20 years, it's already gone 6, why it would produce another 400,000 barrels of oil beyond the time at which it produced 300,000. That would be over half as much would come out of perhaps the tight rocks as compared to the high capacity system.

And just from some of the theoretical analyses we made earlier we felt like that could be as much as half of the oil in the tight rocks, half in the high capacity fracture system.

MR. NUTTER: Now, Mr. Greer, are you

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talking about the oil that's in the matrix itself or are you talking about in tiny fractures?

A. I'm really talking about -- by blocks I mean substantial areal segments of the reservoir. If you can think of it as a jigsaw puzzle and a block being like 30 to 70 acres big. That's about the size that we measured through our interference tests and pressure tests in West Chiquito, and the behavior of the wells is such that -- that you've drilled a well that's in, say, a 40-acre tight block, and if it's surrounded by high capacity system, just like the ocean around it, then this is how the reservoir has behaved, and I believe that's the way it actually is.

And so when I speak of a tight block, I'm speaking of a large segment of the reservoir, 30, 40, 50 acres. It drains, and oil seeps out slowly into the high capacity system. If we're cycling gas, we've got a chance of picking that up, if we don't let the pressure drop. Presumably, when the oil drains through the high capacity system it left a thin film of oil on the sides. Additional oil could fall and flow along those -- that same film, if we haven't destroyed the film. Now, if you let the pressure deplete, gas will come out of solution, that oil on the -- that thin film of oil will no longer be a film. It will be dried up and there is nothing left to get the oil out of the tight blocks and it just stops right there.

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So by holding the pressure up and sweeping gas through it, we feel we can pick up additional oil. The amount could be all the way up to as much as 100 percent of what we've already produced. The estimate that I've made here is that realistically we might hope for 10 percent, and that's what I put in my estimate. I hope I'm conservative.

I feel that we'll get maybe 10 percent more from the high capacity system that still is above the lowest producing wells.

Then below the lowest producing wells we have oil that I call basement oil, that exists from that structure position down to the water/oil contact. That oil we hope to get by injecting water down dip in the water zone with tertiary chemicals in it, and float the oil above that. I've estimated maybe 15 percent of what we've already produced can be recovered that way.

And then I feel that the tertiary chemicals should work on a minimum of the oil that's left in the high capacity system and where we move the water up through the basement oil now.

So when you add all those together, they are itemized here on the first white sheet under Section O, 300,000 barrels -- the wells have produced about 3,000,000 so far. 10 percent would be 300,000 barrels from the high capacity system; another 10 percent from the tight rocks,

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totalling 600,000 we can get from reserving the pressure and gas injection; pick up 400,000 from waterflood, and another 400,000 by tertiary, and we figure 300,000 the tertiary, a direct result of the chemicals and then another 100,000 barrels because of drilling additional wells. We'll drill additional wells because of the front end tertiary incentive program that the Department of Energy has introduced, which lets us release this $6.00 oil to $40.00 if we take the increase in income and put it into a tertiary project.

Then we -- the analysis in terms of cost to institute the secondary and tertiary methods is shown on page two, summarized at the bottom.

For gas injection we estimate it will cost us $400,000 to institute that system. We'll pick up, hopefully, 535,000 barrels at .34 cents a barrel.

And we might take a look at the graph at the end of this section to see how we've estimated -- or how these look.

You can see that the present rate of decline is 25 percent a year, the way the wells have been produced now. We've had to shut wells in in order to preserve the gas and I've shown here for the middle of 1980 that if we put all wells on production now, the ones that have been shut in, we would increase the rate from roughly 40,000 barrels a year to 80,000 barrels a year, but I would expect a

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very high rate of decline from there, like 75 percent a year. That's shown on the lefthand side of the yellow colored area.

If, however, we save that gas through a gas gathering, gas injection system, then we can stretch out to the righthand side of the yellow colored area, about 12 percent a year, and pick up that additional volume of oil.

The green shaded area shows what I think we'll get from waterflooding, and then the pink is the increase by the tertiary chemicals.

Then those costs shown on page two at the center of the page amounts to about $1.30 a barrel for gas injection for the additional oil recovery, $1.60 a barrel for waterflooding, and about $10.00 a barrel for the extra oil that I expect to get from tertiary.

Under Section P we just show the plan of operation, which we will submit when we present the agreement for approval, which simply is just what we've discussed.

Perhaps we should mention, there's a formation water analysis under the section where the -- regarding the tertiary chemical laboratory data.

As to injected water, we're not sure what we'll use. We have the right to use one of the wells shown on the plat in Section 13 to get Dakota water for injection. We've still not run enough tests to know if that's what we want to inject or not, primarily because of how it reacts

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with the tertiary chemicals.

So that's one of the points not yet definitely decided.

As to wells within a half mile radius of the injection wells, there are none within a half mile radius of the water injection wells, and the gas injection wells, we're not certain yet which ones we'll use. We have a little bit of a problem there in that we want to inject gas into one zone ~~and~~ in one well and the second zone in another well. In order to know which wells we can do that, we're going to have to go in and work on them and then come back and submit the details of the completion of those wells and the wells that are within a half mile radius of them.

Q. Mr. Greer, are you familiar with Division Memo 3-77, with regards to limitation on injection pressure into injection wells?

A. Yes, sir.

Q. And will any of your proposed wells exceed that pressure limitation factor, 0.2 psi per foot of depth?

A. No, sir, in fact we think the water will probably go in on vacuum. I'm estimating 400 pounds surface pressure for the -- the gas injection wells. The existing pressure in the secondary gas cap now is about 150 to 175 pounds.

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Q. Was Exhibit One and all its attachments prepared by you or compiled under your direction and supervision?

A. Yes, sir.

Q. In your opinion will approval of these applications be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, sir.

MR. KELLAHIN: That concludes our examination. We move the introduction of Exhibit One.

MR. NUTTER: Exhibit One will be admitted in evidence.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Greer, now to consolidate all of your testimony, first of all, you're seeking approval of the East Puerto Chiquito Mancos Unit Area, and that's in Case Number 6943.

A. Yes, sir.

Q. And then second, in Case Number 6944, you're asking for approval for a pressure maintenance project in that unit area?

A. Yes, sir.

Q. Okay. Now, the project would be by the

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injection of what?

A. We'll inject gas in the up dip gas injection wells, and we'll inject water with some alkali metal as a tertiary recovery process. The alkali metal we're thinking of now is either sodium hydroxide or sodium carbonate. The test runs so far have indicated the oil responds better to sodium hydroxide than to sodium carbonate.

Q. Now would this tertiary process be begun at the beginning of the injection program or would you have a straight water injection program down dip and a gas injection program up dip carried out first and later on the chemical injections?

A. We're thinking about starting the chemicals right away for the reason that -- let's see, if you'll refer to the colored plat, contoured plat, under Section L, the water/oil contact is not -- not absolutely -- we don't know exactly where it is. We think it's approximately between the 3800 and 4000 foot contour interval, but wherever it is there, there's going to be a substantial amount of water move up ahead of anything we inject in the injection wells, the water injection wells, so that in a sense we are going to have a waterflood first, followed by a chemical flood, even if we start the chemicals immediately, because we don't plan on starting water in any of the oil saturated area. We just plan on putting water and the chemicals only in the

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water zone below the oil.

Q. Well now, what has been going out here up to date? Have you been injecting gas?

A. No, sir. No, all we've done is shut in -- just shut in high ratio wells?

A. -- high ratio wells, yes.

Q. So, actually, we're going from a primary production into a tertiary production, and then where's the secondary? That's what --

A. Actually, the secondary will come ahead of the -- the secondary waterflood will come ahead of the tertiary, just because we've got that fresh water band, and there's probably -- there may a half a million remaining barrels of water there that's going to move up to the oil zone before the tertiary chemicals hit.

But if we inject water first and flood it out completely and then go to tertiary chemicals, I'm afraid then that economics might not justify it, because we might have to wait then for this half a million barrels of water to move through before we see any response.

Q. Before the chemicals would get to it.

A. Right, and that could take several years. We feel that we have to inject the water real slow. We've had very good luck in West Puerto Chiquito with gravity segregation in this fractured formation by the difference in

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gravity -- or the density of the gas and the oil.

Q. I see.

A. We think we'll have the same thing working in our favor here, the difference in the density of the water and the oil, but we know that we must move it real slow.

Q. Would it be fair and would it upset your cost estimates or your profit estimates if we called it a combination secondary-tertiary recovery program?

A. Oh, no problem at all, because in a sense it's just all going to be going on concurrently.

Q. But that doesn't affect you as far as DOE prices and incentives on tertiary recovery?

A. No, sir, we --

Q. If we call it a combination secondary-tertiary recovery pressure maintenance project.

A. Right. There are so many questions with the Department of Energy regulations, you know, all we can do is make an educated guess as --

Q. Just hope you come out right.

A. --to what it's going to be, and five years from now when the auditing is all done, we'll find out whether we guessed right or not.

Incidentally, we've asked for an exception to their rules on determining of base production control level under unitization. Their rules are such now, which is just

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as hard to understand, but then a lot of their rules are hard to understand, we suffer a -- having a higher BPCL by unitizing than if you take the properties individually.

When we asked for our exception we found that there had been one other exception asked for. That was by Shell and for the Hobbs Pool for the same thing. So we're hoping, of course, they're going to rule favorably on Shell's application and so they probably will on ours.

Q Okay, now, Mr. Kellahin in filing his application stated that you propose to convert the following existing wells to injection wells, and then he listed five wells, and he also proposed to drill new injection wells at the following locations, and gave us two.

Now, could you be specific and tell us which of those are gas injection wells and which are water injection wells?

A Yes, sir. If you'd look again under Section L at that plat, and we'll identify them.

Q Is that same colored plat?

A Yes, sir, the same colored plat.

On the lefthand side is a row of blue colored wells. The two center ones, marked H-25 and S-6 are existing wells that we will convert to water injection wells.

The new two wells we want to drill --

Q You're going too fast for me, Mr. Greer.

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A. Oh, okay.

Q. 25 and --

A. H-25, that's at Unit H in Section 25.

Q. All right.

A. And then the F-6 is Unit F in Section 6.

Q. Oh, you call that S-6 on this.

A. Oh.

Q. It's F-6, Section 6.

A. Right, uh-huh.

Q. That's a water injection well.

A. Yes.

Q. Okay, and then?

A. Then Section 19, up in the lefthand corner, somewhere in that northwest quarter we want to drill an water injection well.

Q. Do you have the 40-acre tract picked out yet for that?

A. No, no, sir, we do not. We do not.

Q. Could you make that determination and let me know a 40-acre tract for it?

A. Okay.

Q. And I can just specify a Unit D, or E, or F, or whatever it is, if you'll just give me a 40.

A. Okay. One of our problems there, you know, is the Indian land. It's pretty country up there and

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we have to be careful just where we locate it.

Q. Yes.

A. Okay, the same thing would be true in Section 7, the northeast quarter there.

Q. Section 7, right.

A. Then the proposed gas injection wells are those colored in red.

Q. And those three are already drilled. That's G-29, C-2, and G-4, is that correct?

A. Right, uh-huh, and our plan there is to go in and test these wells. First we need to pressure test the casing and then we need to see if we can get the bottom and which are the ones -- I think one of them only goes to the first zone, and we need to -- I hope to have them in shape that we can inject in one zone in one well and another zone in the other well.

If we can't get enough gas in that at 400 pounds pressure, we may need to convert some additional wells, which we presume we can come back to ask for that if need be.

Q. I think the project rules would probably specify additional wells be drilled and converted to injection.

A. I see.

Q. Now, did you have any special rules for the operation of the project that you were proposing?

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A. Well --

Q. As far as production limitations or allowable transfers, or credits on high GOR's, anything like that?

A. Nothing special. We will, of course, want to produce the most efficient wells with the higher rates, and --

Q. Will you be continuing to shut in high GOR wells?

A. My plan is to operate within the limits of our compressor, and what we disgned -- what we designed it for is on the assumption that we'll be producing from 100 to 300 barrels a day, and we can handle up to about 3,000,000 feet of gas with the compressor, which means we could go to a gas/oil ratio average of 10,000-to-1 at 300 barrels a day, or 30,000-to-1 when we get down to 100 barrels a day, and depending on how much of that gas we have to use either for gas lift or if we have to operate a little bit higher pressure than I'm estimating, then we have those limitations, but within those limitations, we just produce all the wells all the time.

Q. It won't be so critical to shut them in now if you're re-injecting gas.

A. No, as long as we re-inject gas, then I think the cycling can't do anything but help.

Q. Will you be ~~stiffening~~ stripping this gas or running

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it through any kind of a plant?

A. Well, we thought about it. It's really a small volume and I'm sure as time goes on we're going to want to be thinking about it.

The issues, of course, are that we're dealing with a high capacity fracture system, the gas is, although it will be work going through that system, whether it would get exposed to a big enough area of the reservoir to pick up additional hydrocarbons, liquid hydrocarbons, we don't know, but the odds are we'll be thinking about it.

In round numbers I think we'll be cycling a core volume every six or eight months in the gas zone, whereas it will probably take 20 years to cycle a core volume of water.

Q. Okay, now what about the configuration or the construction of the injection wells? You said you plan to test these injection wells before you ever use them to be sure that the casing and cementing programs are intact.

A. Right.

Q. Then what will you be doing, going down tubing?

A. Yes. Our plan will be to -- we'll have the casing cemented into the Mancos and then we'll set tubing on a packer with the packer fluid in the annulus, and of course we'd like oil for that packer fluid, and dealing with

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$6.00 oil we might just as well use it as packer fluid, except of course, a little bit of additional energy we give the country, why, we probably should go to a water with treated water and give the government that oil.

But that would be the plan.

Q. Now, how about the -- how about these two wells that have already been drilled, are they drilled down into the Mancos and cemented through the Mancos?

A. The --

Q. Or will you have to recement them?

A. The 6 has a liner set -- it's just about where we want it, and it is drilled -- has been drilled into an open hole with cable tools into the Zone A, and it has a good capacity, like 10 or 20 barrels an hour. It will be a -- I think we have a dandy injection well in that zone.

The H-25 just north of it has been -- has been drilled to both zones; has 7-inch casing set into the Mancos. We will clean it out and run a 5-inch liner through both zones and probably inject in only the lower zone, if we can get satisfactory injection rate in it.

Q. Then how about the two injection wells you propose to drill?

A. The other two, I have hopes that we can run liners, cement liners, to both zones and figure out a way that we can inject, either control injection into each zone,

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or at least be in shape where we can alternate injection in one zone and the other, depending on what it looks like we should do.

Q. Now, you're going to using some rather toxic chemicals here, Mr. Greer. Have you made investigation as to methods and means of handling this so that it won't be contaminating any fresh water supplies, and so forth?

A. Yes, sir, we have. In fact, we visited one of Gulf's operations in the North _____ Field here two or three weeks ago, and by the way, they were most kind to take us out and show us everything, and I was impressed, of course, by the problem of handling these caustics, and we'll be taking every precaution to -- to protect not only the fresh water zones but our people in handling them. They are dangerous.

Q. And all injection would be through tubing and the annulus would be loaded.

A. Right, yes, sir.

Q. With the oil.

Would the injection into those three gas injection wells be through tubing, too?

A. Yes, sir. Yes, sir, it would.

MR NUTTER: Are there any further questions of Mr. Greer? He may be excused.

Do you have anything further, Mr. Kellahin?

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MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Cases 6944 and 6943?

We'll take the cases under advisement.

(Hearing concluded.)

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C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

SALLY W. BOYD, C.S.R.
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Santa Fe, New Mexico 87501
Phone (505) 455-7409

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6943-6944 heard by me on 7/9, 1980.

, Examiner
Oil Conservation Division

BENSON-MONTIN-GREER DRILLING CORP.
EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO
EXHIBITS IN CASES 6943 & 6944
BEFORE THE
NEW MEXICO OIL CONSERVATION DIVISION
JULY 9, 1980

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UNIT AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

COUNTY OF RIO ARRIBA

STATE OF NEW MEXICO

EPCMUA-6180 REV B

Dated June 1, 1980

UNIT AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO

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UNIT AGREEMENT
FOR THE DEVELOPMENT AND OPERATION
OF THE
EAST PUERTO CHIQUITO MANCOS UNIT
COUNTY OF RIO ARRIBA
STATE OF NEW MEXICO
NO. _____

THIS AGREEMENT, entered into as of the 1st day of June, 1980, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "Parties hereto",

WITNESSETH:

WHEREAS, the parties hereto are the owners of working, royalty, or other oil and gas interests in the Unit Area subject to this Agreement; and

WHEREAS, the Mineral Leasing Act of February 25, 1920, 41 Stat. 437, as amended, 30 U. S. C. Secs. 181 et seq., authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating a unit plan of development or operation of any oil or gas pool, field, or like area, or any part thereof for the purpose of more properly conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

WHEREAS, the rules and regulations governing the leasing of restricted allotted and tribal Indian lands for oil and gas, promulgated by the Secretary of the Interior (25 C.F.R. 172.24(c)) 1909, 35 Stat. 783, 25 U.S.C. Section 396 and the Tribal Land Mineral Leasing Act of May 11, 1938, 52 Stat. 347, 25 U.S.C. Sections 396a et seq., and the oil and gas leases covering said allotted and tribal Indian lands provide for the commitment of such leases to a cooperative or unit plan of development or operations; and

WHEREAS, [redacted] Oil Conservation Division of the Energy and Minerals Department of the State of New Mexico is authorized by an Act of the Legislature (Chapter 72, Laws of 1935, as amended, being Section 70-2-1 et sec. New Mexico Statutes Annotated, 1979 Compilation) to approve this Agreement, and the conservation provisions hereof; and

WHEREAS, the parties hereto hold sufficient interests in the East Puerto Chiquito Mancos Unit Area covering the land hereinafter described to give reasonably effective control of operations therein; and

WHEREAS, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure the other benefits obtainable through development and operation of the area subject to this Agreement under the terms, conditions, and limitations herein set forth;

NOW, THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this Agreement their respective interests in the unitized formation of the below defined Unit Area, and agree severally among themselves as follows:

1. ENABLING ACT AND REGULATIONS.

The Mineral Leasing Act of February 25, 1920, as amended, supra, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder and valid, pertinent, and reasonable regulations hereafter issued thereunder are accepted and made a part of this Agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this Agreement; and as to non-Federal lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State of New Mexico, are hereby accepted and made a part of this Agreement.

2. UNIT AREA AND DEFINITIONS.

For the purpose of this agreement, the following terms and expressions as used herein shall mean:

(a) "Unit Area" is defined as those lands described in Exhibit B and depicted on Exhibit A hereof, and such land is hereby designated and recognized as constituting the Unit Area, containing 9,769.02 acres, more or less, in Rio Arriba County, New Mexico.

(b) "Superintendent" is defined as the superintendent of the Bureau of Indian Affairs for the Jicarilla Tribe.

(c) "Division" is defined as the Oil Conservation Division of the Oil and Minerals Department of the State of New Mexico.

(d) "Director" is defined as the Director of the United States Geological Survey.

(e) "Secretary" is defined as the Secretary of the Interior of the United States of America, or his duly authorized delegate.

(f) "Department" is defined as the Department of the Interior of the United States of America.

(g) "Deputy" is defined as the Deputy Conservation Manager of the Oil and Gas Division of the United States Geological Survey for the area in which the Unit Area is situated.

(h) "Unitized Formation" shall mean that subsurface portion of the Unit Area commonly known as the Mancos; and which is that continuous stratigraphic interval occurring between the base of the Mesa Verde formation and the top of the Graneros member, and which is the same formation that was encountered between the logged (Schlumberger Induction-Gamma Ray log 8-23-60) depths of 1175' and 3143' in Intex Oil Company's #1 Hijo, located 1980' from the north line and 1980' from the west line of section 5, T-26N, R-1E, within the Unit Area.

(i) "Unitized Substances" are all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate and all associated and constituent liquid or liquefiable hydrocarbons within and produced from the Unitized Formation, of the Unitized Land.

(j) "Tract" is each parcel of land described as such and given a Tract Number in Exhibit B.

(k) "Tract Participation" is defined as the percentage of participation shown on Exhibit C for allocating Unitized Substances

to a Tract under this Agreement.

(l) "Working Interest Unit Participation" of a Working Interest Owner is the sum of the percentages obtained by multiplying the Working Interest of such Working Interest Owner in each Tract by the Tract Participation of such Tract.

(m) "Working Interest" is the right to search for, produce and acquire Unitized Substances whether held as an incident of ownership of mineral fee simple title, under an oil and gas lease, or otherwise held, which interest is chargeable with and obligated to pay or bear, either in cash or out of production, or otherwise, all or a portion of the cost of drilling, developing and producing the Unitized Substances from the Unitized Formation and operations thereof hereunder; provided further, that any royalty interest created out of a working interest subsequent to the execution of this Agreement by the owner of the working interest shall continue to be subject to such working interest burdens and obligations.

(n) "Working Interest Owner" is any party hereto owning a Working Interest, including a carried working interest owner, holding an interest in Unitized Substances by virtue of a lease, operating agreement, fee title or otherwise. The owner of Oil and Gas Rights that are free of lease or other instrument creating a Working Interest in another shall be regarded as a Working Interest Owner to the extent of seven-eighths (7/8) of his interest in Unitized Substances, and as a Royalty Owner with respect to his remaining one-eighth (1/8) interest therein.

(o) "Royalty Interest" or "Royalty" is an interest other than a Working Interest in or right to receive a portion of the Unitized Substances or the proceeds thereof and includes the royalty interest reserved by the lessor by an oil and gas lease and any overriding royalty interest, oil payment interest, net profit contracts, or any other payment or burden which does not carry with it the right to search for and produce Unitized Substances.

(p) "Royalty Owner" is the owner of a Royalty Interest.

(q) "Oil and Gas Rights" is the right to explore, develop and operate lands within the Unit Area for the production of Unitized Substances, or to share in the production so obtained or the proceeds thereof.

(r) "Outside Substances" is any substance obtained from any source other than the Unitized Formation and injected into the Unitized Formation.

(s) "Unit Operator" is the party designated by Working Interest Owners to conduct Unit Operations.

(t) "Unit Operations" is any operation conducted pursuant to this Agreement.

(u) "Unit Equipment" is all personal property, lease and well equipment, plants, and other facilities and equipment taken over or otherwise acquired for use in Unit Operations.

(v) "Unit Expense" is all cost, expense, or indebtedness incurred pursuant to this agreement for or on account of Unit Operations.

3. EXHIBITS.

Exhibit A attached hereto is a map showing the Unit Area and the boundaries and identity of tracts and leases in said Unit Area to the extent known to the Unit Operator. Exhibit B attached hereto is a schedule showing to the extent known to the Unit Operator the acreage comprising each tract, percentages and kind of ownership of oil and gas interests in all land in the Unit Area. Exhibit C attached hereto shows the Tract Participation of each Tract in the Unit Area. However, nothing herein or in said schedule or map shall be construed as a representation by any party hereto as to the ownership of any interest other than such interest or interests as are shown in said map or schedule as owned by such party. Exhibit D attached hereto is the provisions of paragraphs 1 through 7 of Section 202 of Executive Order 11246. Exhibits A and B and C shall be revised by the Unit Operator whenever changes in the Unit Area render such revision necessary, or when requested by the Deputy, and copies of such revision shall be filed with the Superintendent and the Division, and not less than five copies shall be filed with the Deputy.

4. EXPANSION.

The above-described Unit Area shall when practicable be expanded to include therein any additional Tract or Tracts regarded as reasonably necessary or advisable for the purposes of this Agreement. Such expansion or contraction shall be effected in the following manner:

(a) The Working Interest Owner or Owners of a Tract or Tracts desiring to bring such Tract or Tracts into this Unit, shall file an application therefor with Unit Operator requesting such admission.

(b) Unit Operator shall circulate a notice of the proposed expansion to each Working Interest Owner in the Unit Area and in the Tract proposed to be included in the Unit, setting out the basis for admission, the Tract Participation to be assigned to each Tract in the enlarged Unit Area and other pertinent data. After negotiation (at Working Interest Owners' meeting or otherwise) if Working Interest Owners having in the aggregate eighty per cent (80%) Unit Participation then in effect have agreed to inclusion of such Tract or Tracts in the Unit Area, then Unit Operator shall:

(1) After obtaining preliminary concurrence by the Director, prepare a notice of proposed expansion describing the contemplated changes in the boundaries of the Unit Area, the reason therefor, the basis for admission of the additional Tract or Tracts, the Tract Participation to be assigned thereto and the proposed effective date thereof; and

(2) Deliver copies of said notice to the Superintendent, the Deputy, [redacted] each Working Interest Owner and to the lessee and lessor whose interests are affected, advising such parties that thirty (30) days will be allowed for submission to the Unit Operator of any objection to such proposed expansion; and

(3) File, upon the expiration of said thirty (30) day period as set out in (2) immediately above with the Superintendent, [redacted] and the Deputy the following: (a) Evidence of mailing or delivering said copies of said notice of expansion; (b) An application for approval of such expansion; (c) An instrument containing the appropriate joinders in compliance with the participation requirements of Section 13 and Section 31, infra; and (d) A copy of all objections received along with the Operator's response thereto.

The expansion shall, after due consideration of all pertinent information and approval by the Superintendent, the Division and the Deputy, become effective as of the date prescribed in the notice thereof, preferably the first day of a month subsequent to the date of notice. The revised Tract Participation of the respective Tracts included within the Unit Area prior to such enlargement shall remain the same ratio one to another.

5. UNITIZED LAND.

All land committed to this Agreement as to the Unitized Formation shall constitute land referred to herein as "Unitized Land" or "Land subject to this Agreement". Nothing herein shall be construed to unitize, pool, or in any way affect the oil, gas and other minerals contained in or that may be produced from any formation other than the Unitized Formation as defined in Section 2(h) of this Agreement.

6. UNIT OPERATOR.

Benson-Montin-Greer Drilling Corp. is hereby designated the Unit Operator, and by signing this instrument as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the operation, development and production of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interests in Unitized Substances, when such interests are owned by it and the term "Working Interest Owner" when used herein shall include or refer to the Unit Operator as the owner of a Working Interest when such an interest is owned by it.

7. SUCCESSOR UNIT OPERATOR.

A successor Unit Operator may be selected upon the resignation of the Unit Operator. However, such selection shall not become effective until (a) the successor Unit Operator shall accept in writing the duties and responsibilities of Unit Operator; and (b) the selection shall have been approved by the Deputy.

8. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT.

If the Unit Operator is not the sole owner of Working Interest, costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of Working Interests, all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of Working Interests, whether one or more, separately or collectively. Any agreement or agreements entered into between the Working Interest Owners and the Unit Operator as provided in this section, whether one or more, are herein referred to as the "Unit Operating Agreement". Such Unit Operating Agreement shall also provide the manner in which the Working Interest Owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other independent contracts, and such other rights and obligations as between Unit Operator and the Working Interest Owners; however, no such Unit Operating Agreement shall be deemed either to modify any of the terms and conditions of this Unit Agreement or to relieve the Unit Operator of any right or obligation established under this Unit Agreement, and in case of any inconsistency or conflict between this Unit Agreement and the Unit Operating Agreement, this Unit Agreement shall govern. Three true copies of any Unit Operating Agreement executed pursuant to this section should be filed with the Deputy, prior to approval of this Unit Agreement.

9. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR.

Except as otherwise specifically provided herein, the exclusive right, privilege and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating and distributing the Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Upon request, acceptable evidence of title to said rights shall be deposited with said Unit Operator and, together with this Agreement, shall constitute and define the rights, privileges and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that under this Agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

10. PLAN OF OPERATIONS.

It is recognized and agreed by the parties hereto that all of the land subject to this Agreement is reasonably proved to be productive of Unitized Substances and that the object and purpose of this Agreement is to formulate and to put into effect an improved recovery project in order to effect additional recovery of Unitized Substances, prevent waste and conserve natural resources: and in connection therewith, the parties hereto agree that the Unit Operator may, subject to the consent and approval of a Plan of Operation by the Working Interest Owners, the Deputy and [redacted] Division, inject into the Unitized Formation, through any well or wells completed therein, brine, water, air, gas, oil, liquefied petroleum gases, caustics, polymers, chemicals and any one or more other substances or combination of substances whether produced from the Unitized Land or not, and that the location of input wells and the rates of injection therein shall be governed by standards of good geologic and petroleum engineering practices and conservation methods. Subject to like approval the Plan of Operation may be revised as conditions may warrant.

The initial Plan of Operation shall be filed with the Deputy, the Superintendent and the Division concurrently with the filing of this Unit Agreement for final approval. Said initial Plan of Operation and all revisions thereof shall be as complete and adequate as the Deputy and the Division may determine to be necessary for timely operation consistent herewith. Said initial plan shall provide for the injection of a portion of the gas produced from the Unitized Formation commencing within twelve months from the effective date hereof and continuing until such time as the initial plan is terminated or modified by a subsequent plan with the approval of all necessary parties, including the Deputy and [redacted] Division. Upon approval of this Agreement and the initial plan by the Deputy and the Division, said plan, and all subsequently approved plans shall constitute the operating obligations of the Unit Operator under this Agreement for the period specified therein. Thereafter, from time to time before the expiration of any existing plan, the Unit Operator shall submit for like approval a plan for an additional specified period of operation. After such operations are commenced, reasonable diligence shall be exercised by the Unit Operator in complying with the obligations of the approved Plan of Operation.

Notwithstanding anything to the contrary herein contained, should the Unit Operator fail to commence operation of an improved recovery project incorporating the injection of produced gas within

one (1) year after the effective date of this Agreement, or any extension thereof approved by the Deputy and the Division this Agreement shall terminate automatically as of the date of default.

11. USE OF SURFACE AND USE OF WATER.

The parties have to the extent of their rights and interests, hereby granted to Unit Operator the right to use as much of the surface of the Unitized Land as may reasonably be necessary for Unit Operations; provided that nothing herein shall be construed as leasing or otherwise conveying to the Unit Operator a site for water, gas injection or other plants or camp site.

Unit Operator shall have free use of water or brine or both from the Unitized Land for Unit Operations, except water from any well, lake, pond or irrigation ditch of a surface owner, unless approval for such use is granted by the surface owner.

Unit Operator shall pay the Owner for damages to growing crops, timber, fences, improvements and structures on the Unitized land that result from Unit Operations.

12. TRACT PARTICIPATION.

Basic tract factors, as to each phase, are set forth on Exhibit C attached hereto opposite the various listed and numbered Tracts. If all tracts within the Unit Area qualify as provided herein, these basic tract factors will be the Tract Participations; however, in the event less than all Tracts are qualified on the Effective Date hereof, the Tract Participations shall be calculated on the basis of all such qualified Tracts rather than all Tracts in the Unit Area.

Determination of Tract Participations:

Tract Participation = 10% A + 22.5% B + 67.5% C

Where A = The ratio of surface area of the subject tract to the sum of the surface area of all tracts.

B = The ratio of the "structural position weighted acreage" for the subject tract to the sum of the "structural position weighted acreage" for all tracts.

C = The ratio of the 1976 and 1977 oil production allocated to the subject tract to the sum of the 1976 and 1977 oil production allocated to all tracts.

"Structural position weighted acreage" means, as to each tract, the sum of its "partial structural position weighted acreages"

where

"Partial structural position weighted acreage" means the product of that portion of a tract's acreage lying within a given quarter-section and that quarter-section's "structural position weighting factor"

where

"Structural position weighting factor" for a given quarter-section is the average of these values for each of its four corners (sum of four values divided by four). For this purpose the east and west halves of

Sections 25, 28, 29 and 30 are considered quarter-sections;

and where

"Structural position weighting factor" for the corner of each quarter-section is that interpreted value shown on the attached structural contour map and which was arrived at by assigning weighting factors as follows:

Contour	Weighting Factor
6000'	0
5800'	1
5600'	2
5400'	3
5200'	4
5000'	5
4800'	6
4600'	7
4400'	8
4200'	9
4000'	10
3800'	5
3600' (& lower)	0;

and where the structural contour points are those interpreted to be the top of Zone "A", which is found at the depth of 2268' in the index well, described in the definitions, Section 2(h) herein.

Per special agreement with the Jicarilla Tribe, the sum of the Tract Participations allocated to all of the Indian land tracts are to be re-distributed to the various Indian tracts by the following method:

2/3 of the equity is asigned to the 237 and 287 leases with the remaining 1/3 assigned to the remaining leases. Allocation to each tract within these groups is in the proportion that the basic Tract Participation factors bear to each other. These special allocation equity factors are designated on Part I of Exhibit C with parentheses and an asterisk and are the equity factors to be assigned to these tracts regardless of the equity factors determined by the basic participation formula.

13. TRACTS QUALIFIED FOR PARTICIPATION.

A. Tracts under Lease as of Effective Date

On and after the Effective Date hereof the leased Tracts within the Unit Area which shall be entitled to participation in the production of Unitized Substances shall be those Tracts more particularly described in Exhibit B that corner or have a common boundary (Tracts separated only by a public highway or a railroad right-of-way shall be considered to have a common boundary), and that otherwise qualify as follows:

(a) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this Agreement and as to which Royalty Owners owning seventy-five percent (75%) or more of the Royalty Interest have become parties to this Agreement.

(b) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this Agreement, and as to which Royalty Owners owning less than seventy-five percent (75%) of the Royalty Interest have become parties to this Agreement, and as to which (1) the Working Interest Owner who operates the Tract and at least seventy-five percent (75%) of all other Working Interest Owners in such Tract have joined in a request for the inclusion of such Tract, and as which (2) owners of seventy-five percent (75%) of the combined Working Interest Unit Participation in all Tracts have voted in favor of the inclusion of such tract.

(c) Each Tract as to which Working Interest Owners owning less than one hundred percent (100%) of the Working Interest have become parties to this Agreement, regardless of the percentage of Royalty Interest therein that is committed hereto; and as to which (1) the Working Interest Owner who operates the Tract and a total of seventy-five percent (75%) or more of the other Working Interest Owners in such Tract who have become parties to this Agreement have joined in a request for inclusion of such Tract, and have executed and delivered, or obligated themselves to execute and deliver, an indemnity agreement indemnifying and agreeing to hold harmless the other owners of committed Working Interests, their successors and assigns, against all claims and demands that may be made by the owners of Working Interest in such Tract who are not parties to this Agreement, and which arise out of the inclusion of the Tract; and as to which (2) the owners of seventy-five percent (75%) of the Unit Participation in all Tracts that meet the requirements of Section 13(a) and 13(b) have voted in favor of the inclusion of such tract and to accept the indemnity agreement. Upon the inclusion of such a Tract, the Tract Participations which would have been attributed to the non-subscribing owners of Working Interest in such Tract, had they become parties to this Agreement, shall be attributed to the Working Interest Owners in such Tract who have become parties to such agreements, and joined in the indemnity agreement, in proportion to their respective Working Interests in the Tract.

If on the Effective Date of this Agreement there is any leased Tract or Tracts which have not been effectively committed to or made subject to this Agreement by qualifying as above provided, then such Tract or Tracts shall not be entitled to participate hereunder. Unit Operator shall, when submitting this Agreement for final approval by the Deputy, file therewith a schedule of those Tracts which have been committed and made subject to this Agreement and are entitled to participate in Unitized Substances. Said schedule shall set forth opposite each such committed Tract the lease number or assignment number, the owner of record of the lease, and the percentage participation of such Tract which shall be computed according to the participation formula set out in Section 12 (Tract Participation) above. This schedule of participation shall be Revised Exhibit C and upon approval thereof by the Deputy shall become a part of this Agreement and shall govern the allocation of production of Unitized Substances.

B. Federal Tracts Leased Subsequent to Effective Date

Subject only to a majority vote by owners in accord with their Working Interest Unit Participation, the lessees of a federal tract which was leased subsequent to the Effective Date shall be required to commit the affected leased interests to the Unit Agreement and Unit Operating Agreement, and such tracts shall automatically be qualified for participation, effective with the first of the month in which the interest was committed by the lessees to the

Agreements. Tract participation shall be determined in the same fashion and by the same formulae as for other tracts committed hereto, and Exhibit C revised accordingly; but nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the Effective Date of commitment of such tract.

C. Fee Tracts Not Under Lease as of Effective Date

Fee lands not under lease as of the Effective Date shall be considered under Section 13A above; seven-eighths (7/8) of the mineral interest shall be treated as a Working Interest, and one-eighth (1/8) of the mineral interest as a Royalty Interest.

14. ALLOCATION OF UNITIZED SUBSTANCES.

All Unitized Substances produced and saved (less, save and except any part of such Unitized Substances used in conformity with good operating practices on unitized land for drilling, operating, camp and other unavoidable loss in accordance with a Plan of Operation approved by the Deputy and the Division) shall be apportioned among and allocated to the qualified Tracts in accordance with the respective Tract Participations as set forth in the schedule of participation in Exhibit C. The amount of Unitized Substances so allocated to each Tract, and only that amount, (regardless of whether it be more or less than the amount of the actual production of Unitized Substances from the well or wells, if any, on such Tract) shall, for all intents, uses and purposes, be deemed to have been produced from such Tract.

The Unitized Substances allocated to each Tract shall be distributed among, or accounted to, the parties entitled to share in the production from such Tract in the same manner, in the same proportions, and upon the same conditions, as they would have participated and shared in the production from such Tracts, or in the proceeds thereof, had this Agreement not been entered into; and with the same legal force and effect.

No tract committed to this Agreement and qualified for participation as above provided shall be subsequently excluded from participation hereunder on account of depletion of Unitized Substances.

If the Working Interest and/or the Royalty Interest in any Tract are divided with respect to separate parcels or portions of such Tract and owned now or hereafter in severalty by different persons, the Tract Participation shall in the absence of a recordable instrument executed by all owners and furnished to Unit Operator fixing the divisions of ownership, be divided among such parcels or portions in proportion to the number of surface acres in each.

The Unitized Substances allocated to each Tract shall be delivered in kind to the respective Working Interest Owners and parties entitled thereto by virtue of the ownership of Oil and Gas Rights therein. Each Working Interest Owner and the parties entitled thereto shall have the continuing right to receive such production in kind at a common point within the Unit Area and to sell or dispose of the same as it sees fit. Each such party shall have the right to construct, maintain and operate all necessary facilities for that purpose on unitized land, provided the same are so constructed, maintained and operated as not to interfere with operations carried on pursuant hereto. Subject to Section 16 hereof, any extra expenditure incurred by Unit Operator by reason of the delivery in kind of any portion of the Unitized Substances

shall be borne by the party responsible therefor under the controlling lease or contract. In the event any Interest Owner shall fail to take or otherwise adequately dispose of its proportionate share of the production from the Unitized Formation currently as and when produced, then so long as such condition continues, Unit Operator, for the account and at the expense of the Working Interest Owner of the Tract or Tracts concerned, and in order to avoid curtailing the operation of the Unit Area, may, but shall not be required to, sell or otherwise dispose of such production to itself or to others on a day-to-day basis, provided that all contracts of sale by Unit Operator of any other party's share of Unitized Substances shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any contract be for a period in excess of one year, and at not less than the prevailing market price in the area for like production, and the account of such Working Interest Owner shall be charged therewith as having received such production. The net proceeds, if any, of the Unitized Substances so disposed of by Unit Operator shall be paid to the Working Interest Owners of the Tract or Tracts concerned. Notwithstanding the foregoing, Unit Operator shall not make a sale into interstate commerce of any Working Interest Owner's share of gas production without first giving such Working Interest Owner sixty (60) days notice of such intended sale.

Any Working Interest Owner receiving in kind or separately disposing of all or any part of the Unitized Substances allocated to any Tract, or receiving the proceeds therefrom if the same is sold or purchased by Unit Operator, shall be responsible for the payment of all Royalty, Overriding Royalty and production payments due thereon, and each such party shall hold each other Working Interest Owner harmless against all claims, demands and causes of action by owners of such Royalty, Overriding Royalty and production payments.

If, after the Effective Date of this Agreement, there is any Tract or Tracts that are subsequently committed hereto, as provided in Section 4 (Expansion) hereof, or any Tract or Tracts within the Unit Area not committed hereto as of the Effective Date hereof but which are subsequently committed hereto under the provisions of Section 13 (Tracts Qualified for Participation) and Section 31 (Nonjoinder and Subsequent Joinder), or if any Tract is excluded from this Agreement as provided for in Section 30 (Loss of Title), the schedule of participation as shown in Exhibit C, shall be revised by the Unit Operator; and the revised Exhibit C, upon approval by the Deputy and [redacted] Division, shall govern the allocation of production on and after the Effective Date thereof until a revised schedule is approved as hereinabove provided.

In any such revised Exhibit C, pursuant to this paragraph, the Tract Participation of the previously qualified Tracts shall remain in the same ratio one to the other.

15. OUTSIDE SUBSTANCES.

If gas obtained from formations not subject to this Agreement is introduced into the Unitized Formation for use in repressuring, stimulating of production or increasing ultimate recovery which shall be in conformity with a Plan of Operation first approved by the Deputy and [redacted] Division, a like amount of gas with appropriate deduction for loss or depletion from any cause may be withdrawn from unit wells completed in the Unitized Formation royalty free as to dry gas, but not royalty free as to the products extracted therefrom; provided that such withdrawal shall be at such time as

may be provided in the approved Plan of Operation or as otherwise may be consented to or prescribed by the Deputy and the Division as conforming to good petroleum engineering practices and provided further that such right of withdrawal shall terminate on the termination date of this Agreement.

16. ROYALTY SETTLEMENT.

The Jicarilla Tribe and the United States and all Royalty Owners who, under an existing contract, are entitled to take in kind a share of the substances provided from any Tract unitized hereunder, shall continue to be entitled to such right to take in kind their share of the Unitized Substances allocated to such Tract, and Unit Operator shall make deliveries of such Royalty share taken in kind in conformity with the applicable contracts, laws and regulations. Settlement for royalty interest not taken in kind shall be made by Working Interest Owners responsible therefor under existing contracts, laws and regulations on or before the last day of each month for Unitized Substances produced during the preceding calendar month; provided, however, that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any Royalty due under their leases, except that such Royalty shall be computed on Unitized Substances as allocated to each Tract in accordance with the terms of this Agreement. With respect to Federal leases committed hereto on which the royalty rate depends upon the daily average production per well, such average production shall be determined in accordance with the operating regulations pertaining to Federal leases as though the committed Tracts were included in a single consolidated lease.

All Royalty due the Jicarilla Tribe and the United States of America and the other Royalty Owners hereunder shall be computed and paid on the basis of all Unitized Substances allocated to the respective Tract or Tracts committed hereto, in lieu of actual production from such Tract or Tracts.

Each Royalty Owner (other than the Jicarilla Tribe and the United States of America) that executes this Agreement represents and warrants that it is the owner of a Royalty Interest in a Tract or Tracts within the Unit Area as its interest appears in Exhibit B attached hereto. If any Royalty Interest in a Tract or Tracts should be lost by title failure or otherwise in whole or part, during the term of this Agreement, then the Royalty Interest of the party representing himself to be the owner thereof shall be reduced proportionately and the interests of all parties shall be adjusted accordingly.

17. RENTAL SETTLEMENT.

Rental or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty in lieu thereof, due under their leases. Rental for lands of the Jicarilla Tribe subject to this Agreement shall be paid at the rate specified in the respective leases from the Jicarilla Tribe. Rental or minimum royalty for lands of the United States of America subject to this Agreement shall be paid at the rate specified in the respective leases from the United States of America, unless such rental or minimum royalty is waived, suspended or reduced by law or by approval of the Secretary or his duly authorized representative.

18. CONSERVATION.

Operations hereunder and production of Unitized Substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by or pursuant to Federal and State laws and regulations.

19. DRAINAGE.

The Unit Operator shall take appropriate and adequate measures to prevent drainage of Unitized Substances from Unitized Land by wells on land not subject to this Agreement.

The Unit Operator, upon approval by the Working Interest Owners and the Deputy, is hereby empowered to enter into a border line agreement or agreements with working interest owenrs of adjoining lands not subject to this Agreement with respect to operation in the border area for the maximum economic recovery, conservation purposes and proper protection of the parties and interest affected.

20. LEASES AND CONTRACTS CONFORMED AND EXTENDED.

The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development or operation for oil or gas on lands committed to this Agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect; and the parties hereto hereby consent that the Secretary shall and by his approval hereof, or by the approval hereof by his duly authorized representatives, does hereby establish, alter, change or revoke the drilling, producing, rental, minimum Royalty and Royalty requirements of Federal and Indian leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this agreement.

Without limiting the generality of the foregoing, all leases, subleases and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of all obligations for development and operation with respect to part or separately owned Tract subject to this Agreement, regardless of whether there is any development of any particular part or Tract of the Unit Area, not withstanding anything to the contrary in any lease, operating agreement or other contract by and between the parties hereto, or their respective predecessors in interest, or any of them.

(b) Drilling, producing, tertiary, enhanced or improved recovery operations performed hereunder shall be deemed to be performed upon and for the benefit of each Tract, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on the land therein embraced.

(c) Suspension of drilling or producing operations on all unitized lands pursuant to direction or consent of the Land Commissioner and the Secretary, or their duly authorized representatives, shall be deemed to constitute such suspension pursuant to such direction or consent as to each Tract of unitized lands.

(d) Each lease, sublease or contract relating to the exploration, drilling, development or operation for oil and

gas which by its terms might expire prior to the termination of this Agreement, is hereby extended beyond any such term so provided therein, so that it shall be continued in full force and effect for and during the term of this Agreement.

(e) Any lease embracing lands of the Jicarilla Tribe which is made subject to this Agreement shall continue in force beyond the term provided therein as to the lands committed hereto until the termination hereof.

(f) Any Indian lease having only a portion of its lands committed hereto shall be segregated as to the portion committed and the portion not committed, and the provisions of such lease shall apply separately to such segregated portions commencing as of the effective date hereof.

(g) The segregation of any Federal lease committed to this Agreement is governed by the following provision in the fourth paragraph of Sec. 17(j) of the Mineral Leasing Act, as amended by the Act of September 2, 1960 (74 Stat. 781-784): "Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the Effective Date of unitization: Provided, however, That any such lease as to the non-unitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as oil or gas is produced in Paying Quantities."

21. COVENANTS RUN WITH LAND.

The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer; and no assignment or transfer of any Royalty Interest subject hereto shall be binding upon the Working Interest Owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer.

22. EFFECTIVE DATE AND TERM.

This Agreement shall become binding upon each party who executes or ratifies it as of the date of execution or ratification by such party and shall become effective on the first day of the calendar month next following the approval of this Agreement by the Deputy, the Indian Commissioner and [redacted].

If this Agreement does not become effective on or before June 1, 1981, it shall ipso facto expire on said date (hereinafter called "expiration date") and thereafter be of no further force or effect, unless prior thereto this Agreement has been executed or ratified by Working Interest Owners owning a combined Participation of at least eighty per cent (80%), and at least seventy-five per cent

(75%) of such Working Interest Owners committed to this Agreement have decided to extend said expiration date for a period not to exceed six months (hereinafter called "extended expiration date"). If said expiration date is so extended and this Agreement does not become effective on or before said extended expiration date, it shall ipso facto expire on said extended expiration date and thereafter be of no further force and effect.

Unit Operator shall file for record within thirty (30) days after the Effective Date of this Agreement, in the office where a counterpart of this Agreement is recorded, a certificate to the effect that this Agreement has become effective according to its terms and stating further the effective date.

The term of this Agreement shall be for and during the time that Unitized Substances are produced from the unitized land and so long thereafter as drilling, reworking or other operations (including improved recovery operations) are prosecuted thereon without cessation of more than ninety (90) consecutive days unless sooner terminated as herein provided.

This Agreement may be terminated with the approval of the Deputy and [redacted] Division, by Working Interest Owners owning eighty per cent (80%) of the Unit Participation whenever such Working Interest Owners determine that Unit Operations are no longer profitable, or in the interest of conservation. Upon approval, such termination shall be effective as of the first day of the month after said Working Interest Owners' determination. Notice of any such termination shall be filed by Unit Operator in the office of the County Clerk of Rio Arriba County, New Mexico, within thirty (30) days of the effective date of termination.

Upon termination of this Agreement, the parties hereto shall be governed by the terms and provisions of the leases and contracts affecting the separate Tracts just as if this Agreement had never been entered into.

If not otherwise provided by the leases unitized under this Agreement, Royalty Owners hereby grant Working Interest Owners a period of six months after termination of this Agreement in which to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with Unit Operations.

23. RATE OF PROSPECTING, DEVELOPMENT AND PRODUCTION.

All production and the disposal thereof shall be in conformity with allocations and quotas made or fixed by any duly authorized person or regulatory body under any Federal or State statute. The Director and [redacted] Division are hereby vested with authority to alter or modify from time to time, in their discretion, the rate of prospecting and development and within the limits made or fixed by [redacted] Division, to alter or modify the quantity and rate of production under this Agreement, such authority being hereby limited to alteration or modification in the public interest, the purpose thereof and the public interest to be served thereby to be stated in the order of alteration or modification; provided, that the powers in this Section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than fifteen (15) days from notice; and thereafter subject to administrative appeal before becoming final.

24. NONDISCRIMINATION.

Unit Operator in connection with the performance of work under this Agreement relating to leases of the United States agrees to

comply with the clauses set forth in Exhibit D attached hereto and made a part hereof.

25. APPEARANCES.

Unit Operator shall have the right to appear for and on behalf of any and all interests affected hereby before the Department and the Division, and to appeal from any order issued under the rules and regulations of the Deputy, the Department or the Division, or to apply for relief from any of said rules and regulations or in any proceedings relative to operations before the Department or the Division or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his or its own expense to be heard in any such proceeding.

26. NOTICES.

All notices, demands, objections or statements required hereunder to be given or rendered to the parties shall be deemed fully given if made in writing and personally delivered to the party or parties or sent by postpaid certified or registered mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party or parties may have furnished in writing to the party sending the notice, demand or statement.

27. NO WAIVER OF CERTAIN RIGHTS.

Nothing in this agreement contained shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any law of the State of New Mexico, or regulations issued thereunder in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive; provided, however, each party hereto covenants that it will not resort to any action to partition the unitized land or the Unit Equipment.

28. EQUIPMENT AND FACILITIES NOT FIXTURES ATTACHED TO REALTY.

Each Working Interest Owner has heretofore placed and used on its Tract or Tracts committed to this Agreement various well and lease equipment and other property, equipment and facilities. It is also recognized that additional equipment and facilities may hereafter be placed and used upon the Unitized Land as now or hereafter constituted. Therefore, for all purposes of this Agreement any such equipment shall be considered to be personal property and not fixtures attached to realty. Accordingly, said well and lease equipment and personal property is hereby severed from the mineral estates affected by this Agreement, and it is agreed that any such equipment and personal property shall be and remain personal property of the Working Interest Owners for all purposes.

29. UNAVOIDABLE DELAY.

All obligations under this Agreement requiring the Unit Operator to commence or continue improved recovery operations or to operate on or produce Unitized Substances from any of the lands covered by this Agreement shall be suspended while, but only so long as, the Unit Operator, despite the exercise of due care and diligence, is prevented from complying with such obligations, in whole or in part, by strikes, acts of God, Federal, State or municipal law or agency, unavoidable accident, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

30. LOSS OF TITLE.

In the event title to any Tract of unitized land shall fail so as to render the Tract inoperable under this Agreement and the true owner cannot be induced to join this Agreement, such Tract shall be automatically regarded as not committed hereto as of the first day of the calendar month in which failure of title is determined and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title. In the event of a dispute as to title as to any Royalty, Working Interest, or other interest subject thereto, payment or delivery on account thereof may be withheld without liability or interest until the dispute is finally settled; provided, that, as to Indian or Federal land or leases, no payments of funds due the Jicarilla Tribe or the United States shall be withheld, but such funds shall be deposited as directed by the Superintendent and/or the Deputy (as the case may be), to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder.

31. NON-JOINDER AND SUBSEQUENT JOINDER.

Joinder by any Royalty Owner, at any time, must be accompanied by appropriate joinder of the corresponding Working Interest Owner in order for the interest of such Royalty Owner to be regarded as effectively committed.

Any oil or gas interests in the Unitized Formations not committed hereto prior to submission of this Agreement to the Superintendent and the Deputy for final approval may thereafter be committed hereto upon compliance with the applicable provisions of this Section and Section 13 (Tracts Qualified for Participation) hereof, at any time up to the effective date hereof on the same basis of participation as provided in said Section 13, by the owner or owners thereof subscribing, ratifying or consenting in writing to this Agreement.

It is understood and agreed, however, that from and after the Effective Date hereof the right of subsequent Joinder as provided in this Section shall be subject to such requirements or approvals and on such basis as may be agreed upon by Working Interest Owners owning not less than sixty-five per cent (65%) of the Unit Participation and approved by the Superintendent, the Division and Deputy. Such subsequent joinder by a proposed Working Interest Owner must be evidenced by his execution or ratification of this Agreement and, where Indian or Federal land is involved, such Joinder must be approved by the Superintendent or Deputy. Such Joinder by a proposed Royalty Owner must be evidenced by his execution, ratification or consent of this Agreement and must be consented to in writing by the Working Interest Owner responsible for the payment of any benefits that may accrue hereunder in behalf of such proposed Royalty Owner. Except as may be otherwise herein provided, subsequent joinder to this Agreement shall be effective as of the first day of the month following the filing with the Superintendent, the Division and the Deputy of duly executed counterparts of any and all documents necessary to establish commitment of any Tract or interest to this Agreement, unless objection to such joinder by the Superintendent, the Division or the Deputy is duly made sixty (60) days after such filing.

32. COUNTERPARTS.

This Agreement may be executed in any number of counterparts,

no one of which needs to be executed by all parties and may be ratified or consented to by separate instrument in writing, specifically referring hereto, and shall be binding upon all those parties who have executed such a counterpart, ratification or consent hereto with the same force and effect as if all parties had signed the same document, and regardless of whether or not it is executed by all other parties owning or claiming an interest in the land within the above-described Unit Area.

33. JOINDER IN DUAL CAPACITY.

Execution as herein provided by any party as either a Working Interest Owner or a Royalty Owner shall commit all interests owned or controlled by such party.

34. TAXES.

Each party hereto shall, for its own account, render and pay its share of any taxes levied against or measured by the amount or value of the Unitized Substances produced from the unitized land; provided, however, that if it is required or if it be determined that the Unit Operator or the several Working Interest Owners must pay or advance said taxes for the account of the parties hereto, it is hereby expressly agreed that the parties so paying or advancing said taxes shall be reimbursed therefor by the parties hereto, including Royalty Owners, who may be responsible for the taxes on their respective allocated share of said Unitized Substances. No taxes shall be charged to the United States or to the Jicarilla Tribe, nor to any lessor who has a contract with a lessee which requires his lessee to pay such taxes.

35. NO PARTNERSHIP.

The duties, obligations and liabilities of the parties hereto are intended to be several and not joint or collective. This Agreement is not intended to create, and shall not be construed to create, an association or trust, or to impose a partnership duty, obligation or liability with regard to any one or more of the parties hereto. Each party hereto shall be individually responsible for its own obligations as herein provided.

36. PRODUCTION AS OF THE EFFECTIVE DATE.

Unit Operator shall make a proper and timely gauge of all leases and other tanks within the unitized area in order to ascertain the amount of merchantable oil above the pipe line connection in such tanks as of the effective date hereof. All such oil which has then been produced in accordance with established allowables shall be and remain the property of the Interest Owner entitled thereto, the same as if the unit had not been formed; and the responsible Working Interest Owner shall promptly remove said oil from the unitized land. Any such oil not so removed shall be sold by Unit Operator for the account of such Working Interest Owners, subject to the payment of all Royalty to Royalty Owners under the terms hereof. The oil that is in excess of the prior allowable of the wells from which it was produced shall be regarded as Unitized Substances produced after Effective Date hereof.

If, as of the Effective Date hereof, any Tract is overproduced with respect to the allowable of the wells on that Tract and the amount of overproduction has been sold or otherwise disposed of, such overproduction shall be regarded as a part of the Unitized Substances produced after the Effective Date hereof and shall be charged to such Tract as having been delivered to the parties entitled to Unitized Substances allocated to such Tract.

37. BURDEN OF UNCOMMITTED ROYALTY INTERESTS.

The burden or benefit of any uncommitted royalty or overriding royalty interests shall be borne by the Working Interest Owners hereto in proportion to their Working Interest Unit Participation.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and have set opposite their representative names the date of execution.

UNIT OPERATOR AND
WORKING INTEREST OWNER

BENSON-MONTIN-GREER DRILLING CORP.

ATTEST:

_____

BY: _____
Albert R. Greer, President

Date:

_____

221 Petroleum Center Building
Farmington, New Mexico 87401

WORKING INTEREST OWNERS

Date:

_____

_____
John R. Anderson

P. O. Box 243
Farmington, New Mexico 87401

Date:

_____

_____
Tom Bolack

1010 North Dustin
Farmington, New Mexico 87401

Date:

_____

_____
Molly E. Bramblette

710 Crestview Drive
Farmington, New Mexico 87401

Date:

_____

RICHARD BRAMBLETTE TRUST

BY: _____
Molly E. Bramblette, Trustee

710 Crestview Drive
Farmington, New Mexico 87401

Date:

_____

_____
Albert R. Greer

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

GREER ENTERPRISES, LTD.,
a Limited Partnership

BY: _____
Albert R. Greer, Gen. Partner

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

_____
Bill Harbert

Box 1297
Birmingham, Alabama 35201

Date:

_____

_____
Jack London, Jr.

101 Park Avenue Building
Suite 310
Oklahoma City, Oklahoma 73102

Date:

_____

_____
William London

Continental Federal Building
Suite 300
101 Park Avenue
Oklahoma City, Oklahoma 73102

Date:

_____

_____
Alfred C. Montin

1392 First National Building
Oklahoma City, Oklahoma 73102

Date:

_____

_____
William V. Montin

1392 First National Building
Oklahoma City, Oklahoma 73102

Date: _____

_____
Jessie Stanley

1702 Chaco
Farmington, New Mexico 87401

Date: _____

STOABS OIL CORP., a corporation

_____ BY: _____
Virgil L. Stoabs, President

221 Petroleum Center Building
Farmington, New Mexico 87401

Date: _____

_____
Virgil L. Stoabs

221 Petroleum Center Building
Farmington, New Mexico 87401

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by ALBERT R. GREER, President of BENSON-MONTIN-GREER DRILLING CORP., a corporation, on behalf of said corporation.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by John R. Anderson.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Tom Bolack.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Molly E. Bramblette.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Molly E. Bramblette, Trustee of Richard Bramblette Trust, a trust, on behalf of said trust.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Albert R. Greer.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Albert R. Greer, General Partner of Greer Enterprises, Ltd., a Limited Partnership, on behalf of said Limited Partnership.

STATE OF ALABAMA)
) SS
COUNTY OF JEFFERSON)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Bill Harbert.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Jack London, Jr.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by William London.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Alfred C. Montin.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by William V. Montin.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Jessie Stanley.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Virgil L. Stoabs, President of Stoabs Oil Corp., a corporation, on behalf of said corporation.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Virgil L. Stoabs.

UNIT OPERATING AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

COUNTY OF RIO ARRIBA

STATE OF NEW MEXICO

EPCMUOA-6180 REV B

Dated June 1, 1980

UNIT OPERATING AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO

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UNIT OPERATING AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO

THIS AGREEMENT, entered into as of the 1st day of June, 1980 by and between the parties who have signed the original of this instrument, a counterpart thereof, or other instrument agreeing to become a party hereto;

WITNESSETH:

WHEREAS, the parties hereto as Working Interest Owners have executed, as of the date hereof, an Agreement entitled "Unit Agreement, East Puerto Chiquito Mancos Unit, Rio Arriba County, New Mexico," herein referred to as "Unit Agreement", which, among other things, provides for a separate agreement to be entered into by Working Interest Owners to provide for Unit Operations as therein defined.

NOW, THEREFORE, in consideration of the mutual agreements herein set forth, it is agreed as follows:

ARTICLE 1

CONFIRMATION OF UNIT AGREEMENT

1.1 Confirmation of Unit Agreement. The Unit Agreement is hereby confirmed and by reference made a part of this Agreement. The definitions in the Unit Agreement are adopted for all purposes of this Agreement. If there is any conflict between the Unit Agreement and this Agreement, the Unit Agreement shall govern.

ARTICLE 2

EXHIBITS

2.1 Exhibits. The following exhibits are incorporated hereby by reference:

2.1.1 Exhibits A, B, C and D of the Unit Agreement.

2.1.2 Exhibit E, attached hereto, is a schedule showing the Working Interest Unit Participation of each Working Interest Owner for both phase I and phase II. Exhibit E, or a revision thereof, shall not be conclusive as to the information therein, except it may be used as showing the Working Interest Unit Participations of Working Interest Owners for purposes of this Agreement until shown to be in error or revised as herein authorized.

2.1.3 Exhibit F, attached hereto, is the Accounting Procedure applicable to Unit Operations. If there is any conflict between this Agreement and Exhibit F, this Agreement shall govern.

2.1.4 Exhibit G, attached hereto, contains insurance provisions applicable to Unit Operations.

2.2 Revision of Exhibits. Whenever Exhibits A, B or C are revised, Exhibit E shall be revised accordingly and be effective as of the same date. Unit Operator shall also revise Exhibit E from time to time as required to conform to changes in ownership

of which Unit Operator has been notified as provided in the Unit Agreement.

2.3 Reference to Exhibits. When reference is made herein to an exhibit, it is to the exhibit as originally attached or, if revised, to the last revision.

ARTICLE 3

SUPERVISION OF OPERATIONS BY WORKING INTEREST OWNERS

3.1 Overall Supervision. Working Interest Owners shall exercise overall supervision and control of all matters pertaining to Unit Operations pursuant to this Agreement and the Unit Agreement. In the exercise of such authority, each Working Interest Owner shall act solely in its own behalf in the capacity of an individual owner and not on behalf of the owners as an entirety.

3.2 Specific Authorities and Duties. The matters with respect to which Working Interest Owners shall decide and take action shall include, but not be limited to, the following:

3.2.1 Method of Operation. The method of operation, including the type or types of pressure maintenance, secondary recovery, or other recovery program to be employed.

3.2.2 Drilling of Wells. The drilling of any well whether for production of Unitized Substances, for use as an injection well, or for other purposes.

3.2.3 Well Recompletions and Change of Status. The recompletion, abandonment, or permanent change of status of any well, or the use of any well for injection or other purposes.

3.2.4 Expenditures. The making of any single expenditure in excess of Twenty-Five Thousands Dollars ($25,000.00); however, approval by Working Interest Owners of the drilling, reworking, deepening or plugging back of any well shall include approval of all necessary expenditures required therefor, and for completing, testing and equipping the well, including necessary flow lines, separators and lease tankage.

3.2.5 Disposition of Unit Equipment. The selling or otherwise disposing of any major item of surplus Unit Equipment, if the current price of new equipment similar thereto is Ten Thousand Dollars ($10,000.00) or more.

3.2.6 Appearance Before a Court or Regulatory Agency. The designating of a representative to appear before any court or regulatory agency in matters pertaining to Unit Operations; however, such designation shall not prevent any Working Interest Owner from appearing in person or from designating another representative in its own behalf.

3.2.7 Audits. The auditing of the accounts of Unit Operator pertaining to Unit Operations hereunder; however, the audits shall

(a) not be conducted more than once each year except upon the resignation or removal of Unit Operator, and

(b) be made upon the approval of the owner or owners

of a majority of Working Interest other than that of Unit Operator, at the expense of all Working Interest Owners other than Unit Operator, or

(c) be made at the expense of those Working Interest Owners requesting such audit, if owners of less than a majority of Working Interest, other than that of Unit Operator, request such an audit, and

(d) be made upon not less than thirty (30) days' written notice to Unit Operator.

3.2.8 Inventories. The taking of periodic inventories under the terms of Exhibit F.

3.2.9 Technical Services. The authorizing of charges to the Joint Account for services by consultants or Unit Operator's technical personnel not covered by the overhead charges provided by Exhibit F when: in excess of Thirty Thousand Dollars ($30,000.00) in any one calendar year for technical services other than those directly related to tertiary or enhanced recovery methods; or when in excess of one hundred thousand dollars ($100,000.00) in any one calendar year for technical (including laboratory) services directly related to tertiary or enhanced recovery methods.

3.2.10 Assignments to Committees. The appointment of committees to study any problems in connection with Unit Operations.

3.2.11 The removal of Unit Operator and the selection of a successor.

3.2.12 The enlargement of the Unit Area.

3.2.13 The adjustment and readjustment of investments.

3.2.14 The termination of the Unit Agreement.

3.2.15 Border Line Agreements.

ARTICLE 4

MANNER OF EXERCISING SUPERVISION

4.1 Designation of Representatives. Each Working Interest Owner shall inform Unit Operator in writing of the names and addresses of the representative and alternate who are authorized to represent and bind such Working Interest Owner with respect to Unit Operations. The representative or alternate may be changed from time to time by written notice to Unit Operator.

4.2 Meetings. All meetings of Working Interest Owners shall be called by Unit Operator upon its own motion or at the request of two (2) or more Working Interest Owners having a total Working Interest Unit Participation then in effect of not less than ten percent (10%). No meeting shall be called on less than fourteen (14) days' advance written notice, with agenda for the meeting attached. Working Interest Owners who attend the meeting may amend items included in the agenda and may act upon an amended item or other items presented at the meeting. The representative of Unit Operator shall be chairman of each meeting.

4.3 Voting Procedure. Working Interest Owners shall decide all matters coming before them as follows:

4.3.1 Voting Interest. Each Working Interest Owner shall have a voting interest equal to its Working Interest Unit Participation in effect at the time of the vote.

4.3.2 Vote Required. Unless otherwise provided herein or in the Unit Agreement, Working Interest Owners shall determine all matters by the affirmative vote of four or more Working Interest Owners having a combined voting interest of at least sixty-five percent (65%); however, should any one Working Interest Owner have more than thirty-five percent (35%) voting interest, its negative vote or failure to vote shall not defeat a motion, and such motion shall pass if approved by Working Interest Owners having a majority voting interest, unless three or more Working Interest Owners having a combined voting interest of at least ten percent (10%) likewise vote against the motion or fail to vote.

4.3.3 Vote at Meeting by Nonattending Working Interest Owner. Any Working Interest Owner who is not represented at a meeting may vote on any agenda item by letter or telegram addressed to the representative of Unit Operator if its vote is received prior to the vote at the meeting, provided the agenda items are not amended.

4.3.4 Poll Votes. Working Interest Owners may vote on and decide, by letter or telegram, any matter submitted in writing to Working Interest Owners. If a meeting is not requested, as provided in Section 4.2, within seven (7) days after a written proposal is sent to Working Interest Owners, the vote taken by letter or telegram shall become final. Unit Operator will give prompt notice of the results of such voting to all Working Interest Owners.

ARTICLE 5

INDIVIDUAL RIGHTS OF WORKING INTEREST OWNERS

5.1 Reservation of Rights. Working Interest Owners severally reserve to themselves all their rights, except as otherwise provided in this Agreement and the Unit Agreement.

5.2 Specific Rights. Each Working Interest Owner shall have among others, the following specific rights:

5.2.1 Access to Unit Area. Access to the Unit Area at all reasonable times to inspect Unit Operations, all wells and the records and data pertaining thereto.

5.2.2 Reports. The right to receive from Unit Operator, upon written request, copies of all reports to any governmental agency, reports of crude oil runs and stocks, inventory reports, and all other information pertaining to Unit Operations. The cost of gathering and furnishing information not ordinarily furnished by Unit Operator to all Working Interest Owners shall be charged to the Working Interest Owner that requests the information.

ARTICLE 6

UNIT OPERATOR

6.1 Unit Operator. Benson-Montin-Greer Drilling Corp. is hereby designated as the initial Unit Operator.

6.2 Resignation or Removal of Unit Operator. Unit Operator shall have the right to resign at any time but, in all instances of resignation or removal, until a successor unit operator is selected and approved as hereinafter provided, the working interest owners shall be jointly responsible for performance of the duties of Unit Operator, and shall, not later than 30 days before such resignation or removal becomes effective, appoint a common agent to represent them in any action to be taken hereunder.

The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of Working Interest Unit Participation by the owners of working interests as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the Deputy and the Division.

The resignation or removal of Unit Operator under this agreement shall not terminate its right, title, or interest as the owner of a working interest or other interest in unitized substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all wells, equipment, materials and appurtenances used in conducting the unit operations to the new duly qualified successor Unit Operator or to the common agent, if no such new Unit Operator is elected, to be used for the purpose of conducting unit operations hereunder. Nothing herein shall be construed as authorizing removal of any material, equipment and appurtenances needed for the perservation of any wells.

6.3 Successor Unit Operator. Whenever the Unit Operator shall tender his or its resignation as Unit Operator or shall be removed as hereinabove provided, or a change of Unit Operator is negotiated by working interest owners, the owners of the working interests, according to their Working Interest Unit Participation, shall by vote under the terms of the voting procedure outlined in section 4.3 herein select a successor Unit Operator. Such selection shall not become effective until

(a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and

(b) the selection shall have been approved by the Deputy and the Division.

If no successor Unit Operator is selected and qualified as herein provided, this agreement shall automatically terminate under the same conditions a set forth under section 22 of the Unit Agreement and Article 19 herein.

ARTICLE 7

AUTHORITIES AND DUTIES OF UNIT OPERATOR

7.1 Exclusive Right to Operate Unit. Subject to the provisions of this Agreement and to instructions from Working

Interest Owners, Unit Operator shall have the exclusive right and be obligated to conduct Unit Operations.

7.2 Workmanlike Conduct. Unit Operator shall conduct Unit Operations in a good and workmanlike manner as would a prudent operator under the same or similar circumstances. Unit Operator shall freely consult with Working Interest Owners and keep them informed of all matters which Unit Operator, in the exercise of its best judgment, considers important. Unit Operator shall not be liable to Working Interest Owners for damages, unless such damages result from its gross negligence or willful misconduct.

7.3 Liens and Encumbrances. Unit Operator shall endeavor to keep the lands and leases in the Unit Area and Unit Equipment free from all liens and encumbrances occasioned by Unit Operations, except the lien and security interest of Unit Operator and Working Interest Owners granted hereunder.

7.4 Employees. The number of employees used by Unit Operator in conducting Unit Operations, their selection, hours of labor, and compensation shall be determined by Unit Operator. Such employees shall be the employees of Unit Operator.

7.5 Records. Unit Operator shall keep correct books, accounts and records of Unit Operations.

7.6 Reports to Working Interest Owners. Unit Operator shall furnish Working Interest Owners periodic reports of Unit Operations.

7.7 Reports to Governmental Authorities. Unit Operator shall make all reports to governmental authorities that it has the duty to make as Unit Operator.

7.8 Engineering and Geological Information. Unit Operator shall furnish to a Working Interest Owner, upon written request, a copy of all logs and other engineering and geological data pertaining to wells drilled for Unit Operations.

7.9 Expenditures. Unit Operator is authorized to make single expenditures not in excess of Twenty-Five Thousand Dollars ($25,000.00) without prior approval of Working Interest Owners. If an emergency occurs, Unit Operator may immediately make or incur such expenditures as in its opinion are required to deal with the emergency. Unit Operator shall report to Working Interest Owners, as promptly as possible, the nature of the emergency and the action taken.

7.10 Wells Drilled by Unit Operator. All wells drilled by Unit Operator shall be at the usual rates prevailing in the area. Unit Operator may employ its own tools and equipment, but the charge therefor shall not exceed the usual rates prevailing in the area, and the work shall be performed by Unit Operator under the same terms and conditions as are usual in the area in contracts of independent contractors doing work of a similar nature.

ARTICLE 8

TAXES

8.1 Ad Valorem Taxes. Beginning with the first calendar year after the Effective Date hereof, Unit Operator shall make and file all necessary ad valorem tax renditions and returns with the proper taxing authorities with respect to all property of each Working

Interest Owner used or held by Unit Operator for Unit Operations. Unit Operator shall settle assessments arising therefrom. All such ad valorem taxes shall be paid by Unit Operator and charged to the joint account; except those ad valorem taxes measured by production, which shall be borne by each owner in proportion to his share of production; and if Unit Operator receipts for and disburses the working interest production income he is hereby authorized to deduct such share of ad valorem taxes along with other taxes measured by production prior to distributing the production income.

8.2 Other Taxes. Each Working Interest Owner shall pay or cause to be paid all production, severance, gathering, and other taxes imposed upon or with respect to the production or handling of its share of Unitized Substances.

ARTICLE 9

INSURANCE

9.1 Insurance. Unit Operator, with respect to Unit Operations, shall:

(a) comply with the Workmen's Compensation Laws of the State,

(b) carry Employer's Liability and other insurance required by the laws of the State, and

(c) provide other insurance as set forth in Exhibit G.

ARTICLE 10

ADJUSTMENT OF INVESTMENT

10.1 Personal Property Taken Over. Upon Effective Date, Working Interest Owners shall deliver to Unit Operator the following:

10.1.1 Wells. All wells completed in the Unitized Formation.

10.1.2 Well and Lease Equipment. The casing and tubing in each such well, the wellhead connections thereon, and all other lease and operating equipment that is used in the operation of such wells which Working Interest Owners determine is necessary or desirable for conducting Unit Operations.

10.1.3 Records. A copy of all production and well records for such wells.

10.2. Inventory and Valuation of Investment Adjustment Items. Until changed by the working interest owners, the following procedure shall govern the investment adjustment:

10.2.1 Inventory and Base Valuation of Surface and Removeable Downhole Equipment . Working interest owners shall at Unit Expense inventory and evaluate, as determined by Working Interest Owners, the personal property taken over. Such inventory shall include and be limited to those items of surface equipment (including pipelines whether buried or not and equipment for pressure maintenance, waterflooding and handling of tertiary chemicals) and removable downhole equipment considered controllable under Exhibit F except, upon

determination of Working Interest Owners, items considered non-controllable may be included in the inventory in order to insure a more equitable adjustment of investment. Casing shall be included in the inventory for record purposes, but shall be excluded from this inventoried surface and downhole equipment list (casing is to be accounted for under 10.2.2 hereof). Base valuation of each of these property items shall be determined by pricing in accordance with the provisions of Exhibit F attached for the condition category of the item at the time it was installed, provided, however: that for wells included in the Unit at the effective date the prices shall be based on prices as of time of the effective date; and that for wells drilled after the effective date base prices will be those existing at the time the equipment item was installed.

10.2.2 Base Valuation of Intangible Drilling and Non-Removable Downhole Equipment (including casing) Costs .

(a) This base value for wells on existing leases planned for producers (includes all wells on leases existing at the effective date which have not been plugged, abandoned or temporarily abandoned and are useable in that they are producing now, or can be put to production without reworking; and excludes the wells planned for conversion to injectors which are the D-4 in NW/4 NW/4 Section 4, the F-6 in SE/4 NW/4 Section 6 and the H-25 in SE/4 NE/4 Section 25) is, as to each well, equal to: (its "depth" in feet multiplied by $40.00) plus $100,000.00.

(b) This base value for the planned injection wells listed in (a) above is, as to each well, equal to its depth in feet multiplied by $40.00.

(c) This base value for any well other than those in (a) and (b) above, whether at the effective date is drilling, being re-entered or re-worked; or whether at a later date is drilled, re-entered or re-worked, shall be the actual cost to the owners thereof not to exceed (unless specifically approved by the Working Interest Owners) the amount prescribed under (a) above.

(d) As used in this subsection 10.2.2 "depth" means the actual depth of the well not to exceed a depth which is 300' below the contour marker at the top of Zone A (correlative with that point found at a depth of 2268' in the index well, described in the definitions, Section 2(b) of the Unit Agreement).

10.2.3 Base Valuation of Tertiary, or Enhanced Recovery, Chemicals . This value shall be that amount paid for tertiary, or enhanced recovery, chemicals whether or not the chemicals have been injected, are in storage on the property, or for which "pre-payment" has been made or the funds escrowed for payment at such future time at which, under contract, such chemicals are to be delivered.

10.2.4 Adjusted Valuation of Surface and Removable Downhole Equipment . The valuations of Section 10.2.1 shall be adjusted by multiplying by both a depreciation and inflation factor as they are defined hereunder:

depreciation factor ; (1-.005M) where M is the number of months in service as of date of investment adjustment up to a maximum of 50 months.

inflation factor ; CPI (last) divided by CPI (first), where CPI means consumer price index as published by the Bureau of Labor statistics and (last) means at the date (month) of investment adjustment and (first) means at the date (month) equipment installed, which for the equipment in the initial adjustment is the effective date.

The value so determined will be the adjusted valuation of the surface and downhole equipment.

10.2.5 Adjusted Value of Intangible Drilling and Non-Removeable Downhole Equipment . The base valuations of Section 10.2.2 shall be adjusted for depreciation and inflation in the same manner as provided in 10.2.4 for surface and removeable downhole equipment.

10.2.6 Adjusted Value of Tertiary or Enhanced Recovery Chemicals. The base values of the chemicals as defined in 10.2.3 above shall be adjusted by first summing for each year the total amount for that year and depreciating as follows:

(a) For the 0 to 5th year no depreciation

(b) For the 5th to the 25th year 5% per year.

and summing the yearly depreciated values for the chemicals valued for those years.

10.3 Investment Adjustment. Upon approval by Working Interest Owners of the inventory and valuations, and adjusted valuations, investments shall be adjusted as follows:

10.3.1 Initial Adjustment of Investments (as of effective date:

(a) Surface and Removeable Downhole Equipment: Each Working Interest Onwer shall be credited with the adjusted value, as determined in accordance with Section 10.2.4 above, of its interest in all such property taken over by Unit Operator under Section 10.1.2 and charged with an amount equal to that obtained by multiplying the total adjusted value of all such personal property taken over by Unit Operator under Section 10.1.2 by such Owner's Working Interest Unit Participation, as shown in Exhibit E. If the charge against any Working Interest Owner is greater than the amount credited to such Working Interest Owner, the resulting net charge shall be paid and in all other respects be treated as any other item of Unit Expense chargeable against such Working Interest Owner. If the credit to any Working Interest Owner is greater than the amount charged against such Working Interest Owner, the resulting net credit shall be paid to such Working Interest Owner by Unit Operator out of funds received by it in settlement of the net charges described above.

(b) Intangible Drilling and Non-Removeable Downhole Equipment. In the same fashion that production is "pooled" and apportioned under this unitization, so are the adjusted values of intangible drilling and non-removeable downhole equipment costs as defined in 10.2.5 above apportioned at the effective date to the Working Interest Owners of existing wells: to each such Working Interest Owner shall be credited an amount equal to the total adjusted value of all wells under 10.2.5 multiplied by such owner's Working Interest Unit Participation as shown on Exhibit E. It is intended that among these owners there be no initial adjustment of investment: rather, that the parties simply recognize and establish for use in other investment adjustments the amount that is credited to each such Working Interest Owner as of the effective date, such to be each owner's initial standing in this account. Between these owner's and any others at the effective date there shall be an investment adjustment the same as for subsequent investment adjustments provided for under 10.3.2(b); it being the intent of this provision that any Working Interest Owners joining at the effective date that has not shared in the cost of wells drilled as of that time must bear a share of the costs of intangible and non-removeable downhole equipment by reimbursing those that have.

(c) Tertiary, or Enhanced Recovery, Chemicals. Any tertiary, or enhanced recovery, chemicals purchased by the operator for the account of the Working Interest Owners - whether prior to, at, or after the effective date - shall be for the account of the parties in proportion to their Working Interest Unit Participations, and is to be so invoiced; so there will be no need for an initial investment adjustment for such items.

10.3.2 Subsequent (after Initial) Investment Adjustments. At any time following the effective date that an additional tract or tracts are admitted, in accordance with the terms of the Unit Agreement, to participation, there shall be, effective as of the date of admission, investment adjustments for the 3 classes of investment as follows:

(a) Surface and Removeable Downhole Equipment. Each subsequent investment adjustment shall be as described in 10.3.1(a) above for the initial investment adjustment.

(b) Intangible Drilling and Non-Removeable Downhole Equipment. Each subsequent investment adjustment shall take into account the intangible drilling and non-removeable downhole equipment in the same fashion as in (a) preceding, using the adjusted values of the well costs as defined in 10.2.5 above. Any costs in this category added between the preceding investment adjustment date and the current one shall be included in the amount of investment credited each owner under 10.2.2 by the actual amount added (prior to adjusting under 10.2.5).

(c) Tertiary, or Enhanced Recovery, Chemicals. Each subsequent investment adjustment shall take into account the tertiary, or emhanced recovery, chemical costs in the same fashion as in (a) preceding using the adjusted

values as defined in 10.2.6 above.

10.4 General Facilities. The acquisition of warehouses, warehouse stocks, lease houses, camps, facility systems, and office buildings necessary for Unit Operations shall be by negotiation by the owners thereof and Unit Operator, subject to the approval of Working Interest Owners.

10.5 Ownership of Personal Property and Facilities. Each Working Interest Owner, individually, shall by virtue hereof own an undivided interest, equal to its Working Interest Unit Participation, in all personal property and facilities taken over or otherwise acquired by Unit Operator pursuant to this Agreement.

ARTICLE 11

UNIT EXPENSE AND UNIT INCOME

11.1 Basis of Charge to Working Interest Owners. Unit Operator initially shall pay all Unit Expense. Each Working Interest Owner shall reimburse Unit Operator for its share of unit operating expense in proportion to the respective Working Interest Unit Participations of the parties hereto in effect at the time such expense was incurred. Investment items purchased during Unitized operations will, however, be charged to each Working Interest Owner using his Exhibit E Participation Percentage. All charges, credits, and accounting for Unit Expense shall be in accordance with Exhibit F.

11.2 Budgets. Before or as soon as practical after the Effective Date, Unit Operator shall prepare a budget of estimated Unit Expense for the remainder of the calendar year, and, on or before the first day of each April thereafter, shall prepare a budget for the ensuing twelve months. A budget shall set forth the estimated Unit Expense by annual periods. Budgets shall be estimates only, and shall be adjusted or corrected by Working Interest Owners and Unit Operator whenever an adjustment or correction is proper. A copy of each budget and adjusted budget shall be furnished promptly to each Working Interest Owner.

11.3 Advance Billings. Unit Operator shall have the right, without prejudice to other rights or remedies, to require Working Interest Owners to advance their respective shares of estimated Unit Expense by submitting to Working Interest Owners, on or before the 15th day of any month, an itemized estimate thereof for the succeeding month, with a request for payment in advance. Within fifteen (15) days after receipt of the estimate, each Working Interest Owner shall pay to Unit Operator its share of such estimate. Adjustments between estimated and actual Unit Expense shall be made by Unit Operator at the close of each calendar month, and the accounts of Working Interest Owners shall be adjusted accordingly.

11.4 Commingling of Funds. Funds received by Unit Operator under this Agreement need not be segregated or maintained by it as a separate fund, but may be commingled with its own funds.

11.5 Lien and Security Interest of Unit Operator and Working Interest Owners. Each Working Interest Owner grants to Unit Operator a lien upon its Oil and Gas Rights in each Tract, and a security interest in its share of Unitized Substances when extracted and its interest in all Unit Equipment, to secure payment of its share of Unit Expense, together with interest thereon at the rate

of ten percent (10%) per annum. To the extent that Unit Operator has a security interest under the Uniform Commercial Code of the State, Unit Operator shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by Unit Operator for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the lien rights or security interest as security for the payment thereof. In addition, upon default by any Working Interest Owner in the payment of its share of Unit Expense, Unit Operator shall have the right, without prejudice to other rights or remedies, to collect from the purchaser the proceeds from the sale of such Working Interest Owner's share of Unitized Substances until the amount owed by such Working Interest Owner, plus interest has been paid. Each purchaser shall be entitled to rely upon Unit Operator's written statement concerning the amount of any default. Unit Operator grants a like lien and security interest to the Working Interest Owners.

11.6 Unpaid Unit Expense. If any Working Interest Owner fails to pay its share of Unit Expense within sixty (60) days after rendition of a statement therefor by Unit Operator, each Working Interest Owner agrees, upon request by Unit Operator, to pay its proportionate part of the unpaid share of Unit Expense of the defaulting Working Interest Owner. Working Interest Owners that pay the share of Unit Expense of a defaulting Working Interest Owner shall be reimbursed by Unit Operator for the amount so paid, plus any interest collected thereon, upon receipt by Unit Operator of any past due amount collected from the defaulting Working Interest Owner. Any Working Interest Owner so paying a defaulting Working Interest Owner's share of Unit Expense shall, to obtain reimbursement thereof, be subrogated to the lien and other rights herein granted Unit Operator.

11.7 Uncommitted Royalty. Should an owner of a Royalty Interest or an Overriding Royalty Interest in any Tract fail to become a party to the Unit Agreement, and, as a result thereof, the actual Royalty (or Overriding Royalty) Interest payments with respect to such Tract are more or less than the Royalty (or Overriding Royalty) Interest payments computed on the basis of the Unitized Substances that are allocated to such Tract under the Unit Agreement, the difference shall be borne or inure to the benefit of Working Interest Owners, in proportion to their respective Working Interest Unit Participations at the time the Unitized Substances were produced. Such adjustments shall be made by charges and credits to the joint account.

11.8 Rentals. Unless otherwise agreed to, the Working Interest Owners in each Tract shall pay all rentals, minimum royalty, advance rentals or delay rentals due under the lease thereon and shall concurrently submit to the Unit Operator evidence of payment.

11.9 Subsequently Created Lease Burdens. If any Working Interest Owner shall, after executing this agreement, create an overriding royalty, production payment, net profits interest, carried interest, or any other interest out of its Working Interest, such "carved-out" interest shall be subject to the terms and provisions of this agreement, specifically including, but without limitation, Section 11.5 hereof entitled "Lien and Security Interest of Unit Operators and Working Interest Owners." If the Working Interest Owner creating such carved-out interest (a) fails to pay any Unit Expense chargeable to such Working Interest Owner under this agreement, and the production of Unitized Substances accruing

to the credit of such Working Interest Owner is insufficient for that purpose, or (b) withdraws from this agreement under the terms and provisions of Article 17 hereof, the carved-out interest shall be chargeable with a pro rata portion of all Unit Expense incurred hereunder, the same as though such carved-out interest were a Working Interest, and Unit Operator shall have the right to enforce against such carved-out interest the lien and all other rights granted in Section 11.5 for the purpose of collecting the Unit Expense chargeable to the carved-out interest.

11.10 Unit Income. The proceeds of production of Unitized Substances shall be allocated to the tracts and the owners thereof in accordance with the terms of the Unit Agreement, particularly Articles 12, 13 and 14 therein.

ARTICLE 12

NON-UNITIZED FORMATIONS

12.1 Right to Operate. Any Working Interest Owner that now has or hereafter acquires the right to drill for and produce oil, gas, or other minerals, from a formation underlying the Unit Area other than the Unitized Formation, shall have the right to do so notwithstanding this Agreement or the Unit Agreement. In exercising the right, however, the Working Interest Owner shall exercise care to prevent unreasonable interference with Unit Operations. No Working Interest Owner shall produce Unitized Substances through any well drilled or operated by it. If any Working Interest Owner drills any well into or through the Unitized Formation, the Unitized Formation shall be protected in a manner satisfactory to Working Interest Owners so that the production of Unitized Substances will not be affected adversely.

ARTICLE 13

TITLES

13.1 Warranty and Indemnity. Each Working Interest Owner represents and warrants that it is the owner of the respective working interests set forth opposite its name in Exhibit B of the Unit Agreement, and agrees to indemnify and hold harmless the other Working Interest Owners from any loss due to failure, in whole or in part, of its title to any such interest, except failure of title arising out of Unit Operations; however, such indemnity and any liability for breach of warranty shall be limited to an amount equal to the net value that has been received from the sale or receipt of Unitized Substances attributed to the interest as to which title failed. Each failure of title will be deemed to be effective, insofar as this Agreement is concerned, as of 7:00 A.M. on the first day of the calendar month in which such failure is finally determined, and there shall be no retroactive adjustment of Unit Expense, or retroactive allocation of Unitized Substances or the proceeds therefrom, as a result of title failure.

13.2 Failure Because of Unit Operations. The failure of title to any Working Interest in any Tract because of Unit Operations, including nonproduction from such Tract, shall not change the Working Interest Unit Participation of the Working Interest Owner whose title failed in relation to the Working Interest Unit Participation of the other Working Interest Owners at the time of the title failure.

ARTICLE 14

LIABILITY, CLAIMS, AND SUITS

14.1 Individual Liability. The duties, obligations, and liabilities of Working Interest Owners shall be several and not joint or collective; and nothing herein shall ever be construed as creating a partnership of any kind, joint venture, association, or trust among Working Interest Owners.

14.2 Settlements. Unit Operator may settle any single damage claim or suit involving Unit Operations if the expenditure does not exceed Five Thousand Five Hundred Dollars ($5,000.00) and if the payment is in complete settlement of such claim or suit. If the amount required for settlement exceeds the above amount, Working Interest Owners shall assume and take over the further handling of the claim or suit, unless such authority is delegated to Unit Operator. All costs and expense of handling, settling, or otherwise discharging such claim or suit shall be an item of Unit Expense. If a claim is made against any Working Interest Owner or if any Working Interest Owner is sued on account of any matter arising from Unit Operations over which such Working Interest Owner individually has no control because of the rights given Working Interest Owners and Unit Operator by this Agreement and the Unit Agreement, the Working Interest Owner shall immediately notify Unit Operator, and the claim or suit shall be treated as any other claim or suit involving Unit Operations.

14.3 Litigation Involving Unit. All litigation, and all settlements or liability for damages arising thereunder, involving or arising out of Unit Operations (specifically including but not limited to actions by third parties claiming damages by virtue of Unit Operations) shall be deemed a Unit Expense under Article 11 hereof.

ARTICLE 15

LAWS AND REGULATIONS

15.1 Internal Revenue Provision. Notwithstanding any provisions herein that the rights and liabilities of the parties hereunder are several and not joint or collective, or that this Agreement and operations hereunder shall not constitute a partnership, if for Federal income tax purposes this Agreement and the operations hereunder are regarded as a partnership, then each of the parties hereto elects to be excluded from the application of all of the provisions of Subchapter K, Chapter 1, Subtitle A, of the Internal Revenue Code of 1954, as permitted and authorized by Section 761 of the Code and the regulations promulgated thereunder. Unit Operator is hereby authorized and directed to execute on behalf of each of the parties hereto such evidence of this election as may be required by the Secretary of the Treasury of the United States or the Federal Internal Revenue Service, including specifically, but not by way of limitation, all of the returns, statements, and the data required by Federal Regulations 1.761-2. Should there be any requirement that each party hereto further evidence this election, each party hereto agrees to execute such documents and furnish such other evidence as may be required by the Federal Internal Revenue Service or as may be necessary to evidence this election. Each party hereto further agrees not to give any notices or take any other action inconsistent with the election made hereby. If any present or future income tax laws of the state or states in which the Unit Area is located, or any

future income tax law of the United States, contain provisions similar to those in Subchapter K, Chapter 1, Subtitle A, of the Internal Revenue Code of 1954, under which an election similar to that provided by section 761 of the Code is permitted, each of the parties agrees to make such election as may be permitted, or required by such laws. In making this election, each of the parties states that the income derived by such party from the operations under this Agreement can be adequately determined without the computation of partnership taxable income.

ARTICLE 16

NOTICES

16.1 Notices. All notices required hereunder shall be in writing and shall be deemed to have been properly served when sent by mail or telegram to the address of the representative of each Working Interest Owner as furnished to Unit Operator in accordance with Article 4.

ARTICLE 17

WITHDRAWAL OF WORKING INTEREST OWNER

17.1 Withdrawal. A Working Interest Owner may withdraw from this Agreement by transferring, without warrant of title, either express or implied, to the other Working Interest Owners, all its Oil and Gas Rights exclusive of Royalty Interests, together with its interest in all Unit Equipment and in all wells used in Unit Operations. The instrument of transfer may be delivered to Unit Operator for the transferees. Such transfer shall not relieve the Working Interest Owners from any obligation or liability incurred prior to the date of the delivery of the instrument of transfer; however, the tender has to be accepted unless Working Interest Owners decide within ninety (90) days to terminate the Unit. The interest transfered shall be owned by the transferees in proportion to their respective Working Interest Unit Participations then in effect. The transferees, in proportion to the respective interests so acquired, shall pay transferor, for its interest in Unit Equipment, the net salvage value thereof as determined by Working Interest Owners. In the event such withdrawing party's interest in the aforesaid net salvage value after deducting the estimated cost of salvaging same is less than the withdrawing party's share of the estimated cost of plugging and abandoning all wells then being used or held for Unit Operations, then the withdrawing party, as a condition precedent to withdrawal, shall pay in cash to the party or parties succeeding to its interest a sum equal to the deficiency. After the date of delivery of the instrument of transfer, the withdrawing Working Interest Owner shall be relieved from all further obligations and liability hereunder and under the Unit Agreement, and the rights of such Working Interest Owner hereunder and under the Unit Agreement shall cease insofar as they existed by virtue of the interest transferred.

ARTICLE 18

ABANDONMENT OF WELLS

18.1 Rights of Former Owners. If Working Interest Owners decide to permanently abandon any well within the Unit Area prior to termination of the Unit Agreement, Unit Operator shall give written notice thereof to the Working Interest Owners of the Tract on which the well is located, and they shall have the option for

a period of ninety (90) days after the sending of such notice to notify Unit Operator in writing of their election to take over and own the well. Within ten (10) days after the Working Interest Owners of the Tract have notified Unit Operator of their election to take over the well, they shall pay Unit Operator, for credit to the joint account, the amount determined by Working Interest Owners to be the net salvage value of the casing and equipment in and on the well. The Working Interest Owners of the Tract, by taking over the well, agree to seal off the Unitized formation, and upon abandonment to plug the well in compliance with applicable laws and regulations.

18.2 Plugging. If the Working Interest Owners of a Tract do not elect to take over a well located within the Unit Area that is proposed for abandonment, Unit Operator shall plug and abandon the well in compliance with applicable laws and regulations.

ARTICLE 19

EFFECTIVE DATE AND TERM

19.1 Effective Date. This Agreement shall become effective when the Unit Agreement becomes effective.

19.2 Term. This Agreement shall continue in effect so long as the Unit Agreement remains in effect, and thereafter until (a) all unit wells have been plugged and abandoned or turned over to Working Interest Owners in accordance with Article 22; (b) all Unit Equipment and real property acquired for the joint account have been disposed of by Unit Operator in accordance with instructions of Working Interest Owners; and (c) there has been a final accounting.

ARTICLE 20

NO OBLIGATION TO REPRESENT OTHER PARTIES BEFORE FEDERAL ENERGY REGULATORY COMMISSION

20.1 No Obligation to Represent Other Parties Before Federal Energy Regulatory Commission. This Agreement shall not be construed to provide that any Party is obligated to represent any other Party hereto before the Federal Energy Regulatory Commission.

ARTICLE 21

SUPERIORITY OF UNIT OPERATING AGREEMENT

21.1 Supersedence by Unit Operating Agreement. This Unit Operating Agreement supersedes - or is superior to - any previously existing operating agreements covering the Working Interests committed hereto for so long as the subject Interests are committed to the Unit Agreement and Unit Operating Agreement.

ARTICLE 22

ABANDONMENT OF OPEPATIONS

22.1 Termination. Upon termination of the Unit Agreement, the following will occur:

22.1.1 Oil and Gas Rights. Oil and Gas Rights in and to each separate Tract shall no longer be affected by this Agreement, and thereafter the parties shall be governed by

the terms and provisions of the leases, contracts and other instruments affecting the separate Tracts.

22.1.2 Right to Operate. Working Interest Owners of any Tract that desire to take over and continue to operate wells located thereon may do so by paying Unit Operator, for credit to the joint account, the net salvage values, as determined by Working Interest Owners, of the casing and equipment in and on the wells taken over and by agreeing upon abandonment to plug each well in compliance with applicable laws and regulations.

22.1.3 Salvaging Wells. Unit Operator shall salvage as much of the casing and equipment in or on wells not taken over by Working Interest Owners of separate Tracts as can economically and reasonably be salvaged, and shall cause the wells to be plugged and abandoned in compliance with applicable laws and regulations.

22.1.4 Cost of Abandonment. The cost of abandonment of Unit Operations shall be Unit Expense.

22.1.5 Distribution of Assets. Working Interest Owners shall share in the distribution of Unit Equipment, or the proceeds thereof, in proportion to their Working Interest Unit Participations.

ARTICLE 23

RESTORATION IN EVENT OF OVERPAYMENT FOR PRODUCTION

23.1 Restoration In Event of Overpayment for Production Not Taken in Kind. Section 14 of the Unit Agreement provides for the taking in kind of Unitized Substances by the Working Interest Owners, and in event of failure to take in kind, for the Unit Operator to market the Unitized Substances and account to the Owners therefor. Further with regard to Section 14 of the Unit Agreement, Unit Operator agrees to advise the Working Interest Owners of prices being received for Unitized Substances and when significant changes in prices occur, and although any Working Interest Owner may at any time revoke the authority granted Unit Operator to market his share of Unitized Substances, take in kind, and in accordance with Section 14 of the Unit Agreement market it: unless and until such action is taken Unit Operator may market the Unitized Substances; and in consideration of Unit Operator's marketing the Unitized Substances and making distribution of the proceeds to the Working Interest Owners, each of the Working Interest Owners agrees to indemnify and hold Unit Operator harmless from any and all claims, demands or cause of action arising by virtue of its marketing Unitized Substances and making such payments.

It is recognized that the price for which Unitized Substances are permitted to be sold may be subject to regulation by governmental authority. In the event such regulation does not permit retention of all of the price for which Unitized Substances were sold, the Working Interest Owners severally agree to refund amounts in excess of permitted levels, together with any applicable interest and penalties, promptly when required by Unit Operator; such refunds being treated as expense under the meaning of Article 11 hereof.

Should such refunds be required that are attributable to royalty interests, overriding royalty interests, production payments and other similar interests (hereinafter called "lease burdens") and Unit Operator is unable to recover such refunds from the owners

thereof; then any unrecovered refund accruing to a lease burden shall be treated as a Unit Expense under the meaning of Article 11 hereof chargeable to the Working Interest Owners in proportion to their Working Interest Unit Participations. Unit Operator shall continue to use such reasonable measures as deemed practical - including withholding of proceeds of sale of Unitized Substances attributable to the lease burden interest - to attempt to recover and credit to the accounts of the Working Interest Owners such outstanding refunds.

In event litigation is considered to protect the rights of the Working Interest Owners, as to matters covered by this Article 23.1, Unit Operator may be authorized through the voting procedure of Article 4.3 hereof, but not otherwise, to incur legal costs to protect the rights of the Working Interest Owners.

ARTICLE 24

EXECUTION

24.1 Original, Counterpart, or Other Instrument. An owner of a Working Interest may become a party to this Agreement by signing the original of this instrument, a counterpart thereof, or other instrument agreeing to become a party hereto. The signing of any such instrument shall have the same effect as if all parties had signed the same instrument.

ARTICLE 25

COVENANTS RUN WITH LAND

25.1 Covenants Run With Land. The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer, or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument or transfer; and no assignment of transfer of any Royalty Interest subject hereto shall be binding upon the Working Interest Owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument or transfer.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date opposite their respective signatures.

UNIT OPERATOR AND
WORKING INTEREST OWNER

BENSON-MONTIN-GREER DRILLING CORP.

ATTEST:

_____

BY: _____
Albert R. Greer, President

Date:

_____

221 Petroleum Center Building
Farmington, New Mexico 87401

WORKING INTEREST OWNERS

Date:

_____

_____
John R. Anderson

P. O. Box 243
Farmington, New Mexico 87401

Date:

_____

_____
Tom Bolack

1010 North Dustin
Farmington, New Mexico 87401

Date:

_____

_____
Molly E. Bramblette

710 Crestview Drive
Farmington, New Mexico 87401

Date:

RICHARD BRAMBLETTE TRUST

_____

BY: _____
Molly E. Bramblette, Trustee

710 Crestview Drive
Farmington, New Mexico 87401

Date:

_____

_____
Albert R. Greer

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

GREER ENTERPRISES, LTD.,
a Limited Partnership

_____

BY: _____
Albert R. Greer, Gen. Partner

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

_____
Bill Harbert

Box 1297
Birmingham, Alabama 35201

Date:

_____

Jack London, Jr.

101 Park Avenue Building
Suite 310
Oklahoma City, Oklahoma 73102

Date:

_____

William London

Continental Federal Building
Suite 300
101 Park Avenue
Oklahoma City, Oklahoma 73102

Date:

_____

Alfred C. Montin

1392 First National Building
Oklahoma City, Oklahoma 73102

Date:

_____

William V. Montin

1392 First National Building
Oklahoma City, Oklahoma 73102

Date:

_____

Jessie Stanley

1702 Chaco
Farmington, New Mexico 87401

Date:

STOABS OIL CORP., a corporation

_____

BY: _____
Virgil L. Stoabs, President

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

Virgil L. Stoabs

221 Petroleum Center Building
Farmington, New Mexico 87401

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by ALBERT R. GREER, President of BENSON-MONTIN-GREER DRILLING CORP., a corporation, on behalf of said corporation.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by John R. Anderson.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Tom Bolack.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Molly E. Bramblette.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Molly E. Bramblette, Trustee of Richard Bramblette Trust, a trust, on behalf of said trust.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Albert R. Greer.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Albert R. Greer, General Partner of Greer Enterprises, Ltd., a Limited Partnership, on behalf of said Limited Partnership.

STATE OF ALABAMA)
) SS
COUNTY OF JEFFERSON)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Bill Harbert.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Jack London, Jr.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by William London.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Alfred C. Montin.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by William V. Montin.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Jessie Stanley.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Virgil L. Stoabs, President of Stoabs Oil Corp., a corporation, on behalf of said corporation.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Virgil L. Stoabs.

EXHIBIT "F"

Attached to and made a part of the East Puerto Chiquito Mancos Unit Operating Agreement dated June 1, 1980 Rio Arriba County, New Mexico

ACCOUNTING PROCEDURE
JOINT OPERATIONS

I. GENERAL PROVISIONS

1. Definitions

"Joint Property" shall mean the real and personal property subject to the agreement to which this Accounting Procedure is attached.

"Joint Operations" shall mean all operations necessary or proper for the development, operation, protection and maintenance of the Joint Property.

"Joint Account" shall mean the account showing the charges paid and credits received in the conduct of the Joint Operations and which are to be shared by the Parties.

"Operator" shall mean the party designated to conduct the Joint Operations.

"Non-Operators" shall mean the parties to this agreement other than the Operator.

"Parties" shall mean Operator and Non-Operators.

"First Level Supervisors" shall mean those employees whose primary function in Joint Operations is the direct supervision of other employees and/or contract labor directly employed on the Joint Property in a field operating capacity.

"Technical Employees" shall mean those employees having special and specific engineering, geological or other professional skills, and whose primary function in Joint Operations is the handling of specific operating conditions and problems for the benefit of the Joint Property.

"Personal Expenses" shall mean travel and other reasonable reimbursable expenses of Operator's employees.

"Material" shall mean personal property, equipment or supplies acquired or held for use on the Joint Property.

"Controllable Material" shall mean Material which at the time is so classified in the Material Classification Manual as most recently recommended by the Council of Petroleum Accountants Societies of North America.

2. Statement and Billings

Operator shall bill Non-Operators on or before the last day of each month for their proportionate share of the Joint Account for the preceding month. Such bills will be accompanied by statements which identify the authority for expenditure, lease or facility, and all charges and credits, summarized by appropriate classifications of investment and expense except that items of Controllable Material and unusual charges and credits shall be separately identified and fully described in detail.

3. Advances and Payments by Non-Operators

Unless otherwise provided for in the agreement, the Operator may require the Non-Operators to advance their share of estimated cash outlay for the succeeding month's operation. Operator shall adjust each monthly billing to reflect advances received from the Non-Operators.

Each Non-Operator shall pay its proportion of all bills within fifteen (15) days after receipt. If payment is not made within such time, the unpaid balance shall bear interest monthly at the rate of twelve percent (12%) per annum or the maximum contract rate permitted by the applicable usury laws in the state in which the Joint Property is located, whichever is the lesser, plus attorney's fees, court costs, and other costs in connection with the collection of unpaid amounts.

4. Adjustments

Payment of any such bills shall not prejudice the right of any Non-Operator to protest or question the correctness thereof; provided, however, all bills and statements rendered to Non-Operators by Operator during any calendar year shall conclusively be presumed to be true and correct after twenty-four (24) months following the end of any such calendar year, unless within the said twenty-four (24) month period a Non-Operator takes written exception thereto and makes claim on Operator for adjustment. No adjustment favorable to Operator shall be made unless it is made within the same prescribed period. The provisions of this paragraph shall not prevent adjustments resulting from a physical inventory of Controllable Material as provided for in Section V.

5. Audits

A. Non-Operator, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records relating to the Joint Account for any calendar year within the twenty-four (24) month period following the end of such calendar year; provided, however, the making of an audit shall not extend the time for the taking of written exception to and the adjustments of accounts as provided for in Paragraph 4 of this Section I. Where there are two or more Non-Operators, the Non-Operators shall make every reasonable effort to conduct joint or simultaneous audits in a manner which will result in a minimum of inconvenience to the Operator. Operator shall bear no portion of the Non-Operators' audit cost incurred under this paragraph unless agreed to by the Operator.

6. Approval by Non-Operators

Where an approval or other agreement of the Parties or Non-Operators is expressly required under other sections of this Accounting Procedure and if the agreement to which this Accounting Procedure is attached contains no contrary provisions in regard thereto, Operator shall notify all Non-Operators of the Operator's proposal, and the agreement or approval of a majority in interest of the Non-Operators shall be controlling on all Non-Operators.

II. DIRECT CHARGES

Operator shall charge the Joint Account with the following items:

1. Rentals and Royalties

Lease rentals and royalties paid by Operator for the Joint Operations.

2. Labor

A. (1) Salaries and wages of Operator's field employees directly employed on the Joint Property in the conduct of Joint Operations.

(2) Salaries of First Level Supervisors in the field.

(3) Salaries and wages of Technical Employees directly employed on the Joint Property if such charges are excluded from the Overhead rates.

B. Operator's cost of holiday, vacation, sickness and disability benefits and other customary allowances paid to employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II. Such costs under this Paragraph 2B may be charged on a "when and as paid basis" or by "percentage assessment" on the amount of salaries and wages chargeable to the Joint Account under Paragraph 2A of this Section II. If percentage assessment is used, the rate shall be based on the Operator's cost experience.

C. Expenditures or contributions made pursuant to assessments imposed by governmental authority which are applicable to Operator's costs chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II.

D. Personal Expenses of those employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II.

3. Employee Benefits

Operator's current costs of established plans for employees' group life insurance, hospitalization, pension, retirement, stock purchase, thrift, bonus, and other benefit plans of a like nature, applicable to Operator's labor cost chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II shall be Operator's actual cost not to exceed twenty per cent (20%).

4. Material

Material purchased or furnished by Operator for use on the Joint Property as provided under Section IV. Only such Material shall be purchased for or transferred to the Joint Property as may be required for immediate use and is reasonably practical and consistent with efficient and economical operations. The accumulation of surplus stocks shall be avoided.

5. Transportation

Transportation of employees and Material necessary for the Joint Operations but subject to the following limitations:

A. If Material is moved to the Joint Property from the Operator's warehouse or other properties, no charge shall be made to the Joint Account for a distance greater than the distance from the nearest reliable supply store, recognized barge terminal, or railway receiving point where like material is normally available, unless agreed to by the Parties.

B. If surplus Material is moved to Operator's warehouse or other storage point, no charge shall be made to the Joint Account for a distance greater than the distance to the nearest reliable supply store, recognized barge terminal, or railway receiving point unless agreed to by the Parties. No charge shall be made to the Joint Account for moving Material to other properties belonging to Operator, unless agreed to by the Parties.

C. In the application of Subparagraphs A and B above, there shall be no equalization of actual gross trucking cost of $200 or less excluding accessorial charges.

6. Services

The cost of contract services, equipment and utilities provided by outside sources, except services excluded by Paragraph 9 of Section II and Paragraph 1. ii of Section III. The cost of professional consultant services and contract services of technical personnel directly engaged on the Joint Property if such charges are excluded from the Overhead rates. The cost of professional consultant services or contract services of technical personnel not directly engaged on the Joint Property shall not be charged to the Joint Account unless previously agreed to by the Parties.

7. Equipment and Facilities Furnished by Operator

A. Operator shall charge the Joint Account for use of Operator owned equipment and facilities at rates commensurate with costs of ownership and operation. Such rates shall include costs of maintenance, repairs, other operating expense, insurance, taxes, depreciation, and interest on investment not to exceed eight per cent (8%) per annum. Such rates shall not exceed average commercial rates currently prevailing in the immediate area of the Joint Property.

B. In lieu of charges in Paragraph 7A above, Operator may elect to use average commercial rates prevailing in the immediate area of the Joint Property less 20%. For automotive equipment, Operator may elect to use rates published by the Petroleum Motor Transport Association.

8. Damages and Losses to Joint Property

All costs or expenses necessary for the repair or replacement of Joint Property made necessary because of damages or losses incurred by fire, flood, storm, theft, accident, or other cause, except those resulting from Operator's gross negligence or willful misconduct. Operator shall furnish Non-Operator written notice of damages or losses incurred as soon as practicable after a report thereof has been received by Operator.

9. Legal Expense

Expense of handling, investigating and settling litigation or claims, discharging of liens, payment of judgments and amounts paid for settlement of claims incurred in or resulting from operations under the agreement or necessary to protect or recover the Joint Property, except that no charge for services of Operator's legal staff or fees or expense of outside attorneys shall be made unless previously agreed to by the Parties. All other legal expense is considered to be covered by the overhead provisions of Section III unless otherwise agreed to by the Parties, except as provided in Section I, Paragraph 3.

10. Taxes

All taxes of every kind and nature assessed or levied upon or in connection with the Joint Property, the operation thereof, or the production therefrom, and which taxes have been paid by the Operator for the benefit of the Parties.

11. Insurance

Net premiums paid for insurance required to be carried for the Joint Operations for the protection of the Parties. In the event Joint Operations are conducted in a state in which Operator may act as self-insurer for Workmen's Compensation and/or Employers Liability under the respective state's laws, Operator may, at its election, include the risk under its self-insurance program and in that event, Operator shall include a charge at Operator's cost not to exceed manual rates.

12. Other Expenditures

Any other expenditure not covered or dealt with in the foregoing provisions of this Section II, or in Section III, and which is incurred by the Operator in the necessary and proper conduct of the Joint Operations.

III. OVERHEAD

1. Overhead - Drilling and Producing Operations

i. As compensation for administrative, supervision, office services and warehousing costs, Operator shall charge drilling and producing operations on either:

(X) Fixed Rate Basis, Paragraph 1A, or
( ) Percentage Basis, Paragraph 1B.

Unless otherwise agreed to by the Parties, such charge shall be in lieu of costs and expenses of all offices and salaries or wages plus applicable burdens and expenses of all personnel, except those directly chargeable under Paragraph 2A, Section II. The cost and expense of services from outside sources in connection with matters of taxation, traffic, accounting or matters before or involving governmental agencies shall be considered as included in the Overhead rates provided for in the above selected Paragraph of this Section III unless such cost and expense are agreed to by the Parties as a direct charge to the Joint Account.

ii. The salaries, wages and Personal Expenses of Technical Employees and/or the cost of professional consultant services and contract services of technical personnel directly employed on the Joint Property shall ( ) shall not ( ) be covered by the Overhead rates.

A. Overhead - Fixed Rate Basis

(1) Operator shall charge the Joint Account at the following rates per well per month:

Drilling Well Rate $ 1,250.00
Producing Well Rate $ 125.00
Compressor Operating Rate $125.00

(2) Application of Overhead - Fixed Rate Basis shall be as follows:

(a) Drilling Well Rate

[1] Charges for onshore drilling wells shall begin on the date the well is spudded and terminate on the date the drilling or completion rig is released, whichever is later, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days.

[2] Charges for offshore drilling wells shall begin on the date when drilling or completion equipment arrives on location and terminate on the date the drilling or completion equipment moves off location or rig is released, whichever occurs first, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days

[3] Charges for wells undergoing any type of workover or recompletion for a period of five (5) consecutive days or more shall be made at the drilling well rate. Such charges shall be applied for the period from date workover operations, with rig, commence through date of rig release, except that no charge shall be made during suspension of operations for fifteen (15) or more consecutive days.

(b) Producing Well Rates

[1] An active well either produced or injected into for any portion of the month shall be considered as a one-well charge for the entire month.

[2] Each active completion in a multi-completed well in which production is not commingled down hole shall be considered as a one-well charge providing each completion is considered a separate well by the governing regulatory authority.

[3] An inactive gas well shut in because of overproduction or failure of purchaser to take the production shall be considered as a one-well charge providing the gas well is directly connected to a permanent sales outlet.

[4] A one-well charge may be made for the month in which plugging and abandonment operations are completed on any well.

[5] All other inactive wells (including but not limited to inactive wells covered by unit allowable, lease allowable, transferred allowable, etc.) shall not qualify for an overhead charge.

(6) An observation well shall be considered an active well.

(3) The well rates shall be adjusted as of the first day of April each year following the effective date of the agreement to which this Accounting Procedure is attached. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly earnings of Crude Petroleum and Gas Production Workers for the last calendar year compared to the calendar year preceding as shown by the index of average weekly earnings of Crude Petroleum and Gas Fields Production Workers as published by the United States Department of Labor, Bureau of Labor Statistics, or the equivalent Canadian index as published by Statistics Canada, as applicable. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment.

B. Overhead - Percentage Basis

(1) Operator shall charge the Joint Account at the following rates:

(a) Development

_____ Percent (%) of the cost of Development of the Joint Property exclusive of costs provided under Paragraph 9 of Section II and all salvage credits.

(b) Operating

_____ Percent (%) of the cost of Operating the Joint Property exclusive of costs provided under Paragraphs 1 and 9 of Section II, all salvage credits, the value of injected substances purchased for secondary recovery and all taxes and assessments which are levied, assessed and paid upon the mineral interest in and to the Joint Property.

(2) Application of Overhead - Percentage Basis shall be as follows:
For the purpose of determining charges on a percentage basis under Paragraph 1B of this Section III, development shall include all costs in connection with drilling, redrilling, deepening or any remedial operations on any or all wells involving the use of drilling crew and equipment; also, preliminary expenditures necessary in preparation for drilling and expenditures incurred in abandoning when the well is not completed as a producer, and original cost of construction or installation of fixed assets, the expansion of fixed assets and any other project clearly discernible as a fixed asset, except Major Construction as defined in Paragraph 2 of this Section III. All other costs shall be considered as Operating.

2. Overhead - Major Construction

To compensate Operator for overhead costs incurred in the construction and installation of fixed assets, the expansion of fixed assets, and any other project clearly discernible as a fixed asset required for the development and operation of the Joint Property, Operator shall either negotiate a rate prior to the beginning of construction, or shall charge the Joint Account for Overhead based on the following rates for any Major Construction project in excess of $25,000.00 :

A. 4 % of total costs if such costs are more than $25,000.00 but less than $ 100,000.00 plus
B. 3 % of total costs in excess of $ 100,000.00 but less than $1,000,000; plus
C. * % of total costs in excess of $1,000,000. * To be negotiated if applicable.

Total cost shall mean the gross cost of any one project. For the purpose of this paragraph, the component parts of a single project shall not be treated separately and the cost of drilling and workover wells shall be excluded.

3. Amendment of Rates

The Overhead rates provided for in this Section III may be amended from time to time only by mutual agreement between the Parties hereto if, in practice, the rates are found to be insufficient or excessive.

IV. PRICING OF JOINT ACCOUNT MATERIAL PURCHASES, TRANSFERS AND DISPOSITIONS

Operator is responsible for Joint Account Material and shall make proper and timely charges and credits for all material movements affecting the Joint Property. Operator shall provide all Material for use on the Joint Property; however, at Operator's option, such Material may be supplied by the Non-Operator. Operator shall make timely disposition of idle and/or surplus Material, such disposal being made either through sale to Operator or Non-Operator, division in kind, or sale to outsiders. Operator may purchase, but shall be under no obligation to purchase, interest of Non-Operators in surplus condition A or B Material. The disposal of surplus Controllable Material not purchased by the Operator shall be agreed to by the Parties.

1. Purchases

Material purchased shall be charged at the price paid by Operator after deduction of all discounts received. In case of Material found to be defective or returned to vendor for any other reason, credit shall be passed to the Joint Account when adjustment has been received by the Operator.

2. Transfers and Dispositions

Material furnished to the Joint Property and Material transferred from the Joint Property or disposed of by the Operator, unless otherwise agreed to by the Parties, shall be priced on the following bases exclusive of cash discounts:

A. New Material (Condition A)

(1) Tubular goods, except line pipe, shall be priced at the current new price in effect on date of movement on a maximum carload or barge load weight basis, regardless of quantity transferred, equalized to the lowest published price f.o.b. railway receiving point or recognized barge terminal nearest the Joint Property where such Material is normally available.

(2) Line Pipe

(a) Movement of less than 30,000 pounds shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store nearest the Joint Property where such Material is normally available.

(b) Movement of 30,000 pounds or more shall be priced under provisions of tubular goods pricing in Paragraph 2A (1) of this Section IV.

(3) Other Material shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store or f.o.b. railway receiving point nearest the Joint Property where such Material is normally available.

B. Good Used Material (Condition B)

Material in sound and serviceable condition and suitable for reuse without reconditioning:

(1) Material moved to the Joint Property

(a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV.

(2) Material moved from the Joint Property

(a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as new Material, or

(b) at sixty-five percent (65%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as good used Material at seventy-five percent (75%) of current new price.

The cost of reconditioning, if any, shall be absorbed by the transferring property.

C. Other Used Material (Condition C and D)

(1) Condition C

Material which is not in sound and serviceable condition and not suitable for its original function until after reconditioning shall be priced at fifty percent (50%) of current new price as determined by Paragraph 2A of this Section IV. The cost of reconditioning shall be charged to the receiving property, provided Condition C value plus cost of reconditioning does not exceed Condition B value.

(2) Condition D

All other Material, including junk, shall be priced at a value commensurate with its use or at prevailing prices. Material no longer suitable for its original purpose but usable for some other purpose, shall be priced on a basis comparable with that of items normally used for such other purpose. Operator may dispose of Condition D Material under procedures normally utilized by the Operator without prior approval of Non-Operators.

D. Obsolete Material

Material which is serviceable and usable for its original function but condition and/or value of such Material is not equivalent to that which would justify a price as provided above may be specially priced as agreed to by the Parties. Such price should result in the Joint Account being charged with the value of the service rendered by such Material.

E. Pricing Conditions

(1) Loading and unloading costs may be charged to the Joint Account at the rate of fifteen cents (15¢) per hundred weight on all tubular goods movements, in lieu of loading and unloading costs sustained, when actual hauling cost of such tubular goods are equalized under provisions of Paragraph 5 of Section II.

(2) Material involving erection costs shall be charged at applicable percentage of the current knocked-down price of new Material.

3. Premium Prices

Whenever Material is not readily obtainable at published or listed prices because of national emergencies, strikes or other unusual causes over which the Operator has no control, the Operator may charge the Joint Account for the required Material at the Operator's actual cost incurred in providing such Material, in making it suitable for use, and in moving it to the Joint Property; provided notice in writing is furnished to Non-Operators of the proposed charge prior to billing Non-Operators for such Material. Each Non-Operator shall have the right, by so electing and notifying Operator within ten days after receiving notice from Operator, to furnish in kind all or part of his share of such Material suitable for use and acceptable to Operator.

4. Warranty of Material Furnished by Operator

Operator does not warrant the Material furnished. In case of defective Material, credit shall not be passed to the Joint Account until adjustment has been received by Operator from the manufacturers or their agents.

V. INVENTORIES

The Operator shall maintain detailed records of Controllable Material.

1. Periodic Inventories, Notice and Representation

At reasonable intervals, Inventories shall be taken by Operator of the Joint Account Controllable Material. Written notice of intention to take inventory shall be given by Operator at least thirty (30) days before any inventory is to begin so that Non-Operators may be represented when any inventory is taken. Failure of Non-Operators to be represented at an inventory shall bind Non-Operators to accept the inventory taken by Operator.

2. Reconciliation and Adjustment of Inventories

Reconciliation of a physical inventory with the Joint Account shall be made, and a list of overages and shortages shall be furnished to the Non-Operators within six months following the taking of the inventory. Inventory adjustments shall be made by Operator with the Joint Account for overages and shortages, but Operator shall be held accountable only for shortages due to lack of reasonable diligence.

3. Special Inventories

Special Inventories may be taken whenever there is any sale or change of interest in the Joint Property. It shall be the duty of the party selling to notify all other Parties as quickly as possible after the transfer of interest takes place. In such cases, both the seller and the purchaser shall be governed by such inventory.

4. Expense of Conducting Periodic Inventories

The expense of conducting periodic Inventories shall not be charged to the Joint Account unless agreed to by the Parties.

EXHIBIT G

ATTACHED TO AND MADE A PART OF
THAT CERTAIN AGREEMENT ENTITLED

UNIT OPERATING AGREEMENT,
EAST PUERTO CHIQUITO MANCOS UNIT AREA
RIO ARRIBA COUNTY, NEW MEXICO

DATED JUNE 1, 1980

INSURANCE

In addition to the insurance coverage set out in Article 9 hereof, Unit Operator shall carry the following insurance for the benefit and protection of the joint account:

1. Primary Comprehensive General Public Liability Insurance with limits, (a) as to Bodily Injury of not less than One Hundred Thousand Dollars ($100,000.00) for each person and not less than Three Hundred Thousand Dollars ($300,000.00) for each occurrence, and (b) as to Property Damage of not less than One Hundred Thousand Dollars ($100,000.00) for each claim arising out of one occurrence and One Hundred Thousand Dollars ($100,000.00) for any number of claims arising out of one occurrence.

2. Primary Comprehensive Automobile Public Liability Insurance with limits, (a) as to Bodily Injury of not less than One Hundred Thousand Dollars ($100,000.00) for each person and not less than Three Hundred Thousand Dollars ($300,000.00) for each occurrence, and (b) as to Property Damage of not less than One Hundred Thousand Dollars ($100,000.00) for each occurrence.

3. A Five Million Dollars ($5,000,000.00) single limit Umbrella Liability policy which shall follow the primary coverages set out in Article 9 and Paragraphs 1 and 2 above, and constitute excess protection as to primary limits per occurrence, but also shall extend to cover certain hazards not covered by the primary, subject to a returned deductible of Twenty-Five Thousand Dollars ($25,000.00), notably Underground Property Damage, Damage to Property of others in care, custody and control of the operator.

The premiums for all such insurance shall be charged to the joint account. It is understood and agreed that Unit Operator shall not carry insurance covering loss by fire, windstorm, explosion or tornado to lease equipment or lease products, or any other insurance for the joint account except by mutual agreement of the parties hereto.

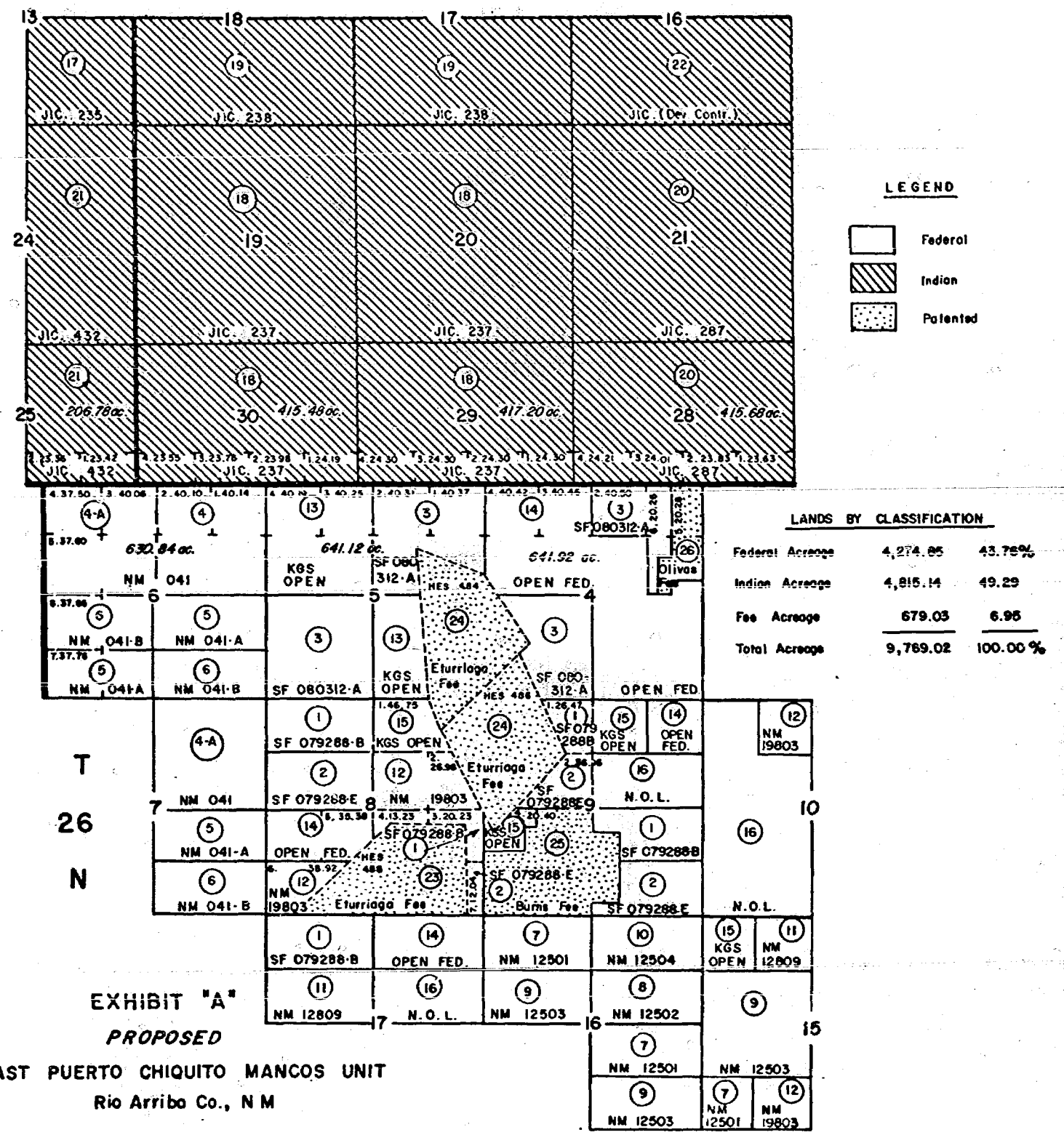

R 1 W
R 1 E
T 27 N
T 26 N
LEGEND
Federal
Indian
Patented
LANDS BY CLASSIFICATION
Federal Acreage 4,274.85 43.78%
Indian Acreage 4,815.14 49.29
Fee Acreage 679.03 6.95
Total Acreage 9,769.02 100.00 %
JIC. 235
JIC. 238
JIC. (Dev. Contr.)
JIC. 432
JIC. 237
JIC. 287
206.78 ac.
415.48 ac.
417.20 ac.
415.68 ac.
630.84 ac.
641.12 ac.
641.92 ac.
NM 041
KGS OPEN
OPEN FED.
SF 080312-A
SF 080312-A
SF 079288-B
SF 079288-E
NM 19803
N.O.L.
NM 12501
NM 12503
NM 12504
NM 12502
NM 12809
Eturriaga Fee
Burns Fee
Olivas
HES 484
HES 486
EXHIBIT "A"
PROPOSED
EAST PUERTO CHIQUITO MANCOS UNIT
Rio Arriba Co., N M
June 1, 1980
Benson - Montin - Greer Drilling Corp.
Revised: July 7, 1980

EXHIBIT B

ATTACHED TO AND MADE A PART OF
THAT CERTAIN AGREEMENT ENTITLED

EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO

JUNE 1, 1980
REV B

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE		WORKING INTEREST & PERCENTAGE*
FEDERAL LAND								
1	T-26N, R-1E S. 8: Lots 3, 4, N/2NW/4 E/2NW/4SE/4, NW/4NW/4SE/4	289.93	SF-079288-B 5-31-59 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Jr. Melba M. Morrow Warren E. Carr Clinton White Amax Petroleum Corp. Tesoro Petroleum Pennzoil United, Inc. *Except when 15 BOPD or less (average/well/month), then prorata of 1% instead of 6.25%	1.8750% .1250% 1.0000% .5000% .5000% 50% of 6.25%* 25% of 6.25%* 25% of 6.25%*	Ownership "B"
2	T-26N, R-1E S. 8: Lot 7, S/2NW/4 S. 9: Lot 2, SE/4SE/4, E/2SW/4SE/4, S/2SW/4SW/4SE/4	193.20	SF-079288-E 5-31-59 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey A. B. Steward Warren E. Carr Clinton White	1.8750% .1250% 1.0000% .5000% .5000%	Ownership "B"
3	T-26N, R-1E S. 4: Lots 2, 6, N/2NW/4SE/4NE/4, SW/4NW/4SE/4NE/4, W/2SW/4SE/4NE/4, SW/4 (excluding that portion of said SW/4 lying in HES 486 & HES 484 S. 5: Lots 1, 2, S/2NE/4 (excluding that portion of the S/2NE/4 lying in HES 484), SW/4	468.55	SF-080312-A 4-30-61 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon Amax Petroleum Corp.	1.8750% .1250% .5000% .5000% 1.0000%	Ownership "B"

*See page 6 for breakdown of ownership categories.

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE		WORKING INTEREST & PERCENTAGE*
4	T-26N, R-1E S. 6: Lots 1, 2, S/2NE/4	160.24	NM-041 8-31-61 (HBP)	USA - All of 12.5%	Mobil Oil Co.	G. H. Blankenship Mary Marshall Jones	1.5000% 1.5000%	Ownership "C"
4-A	T-26N, R-1E S. 6: Lots 3,4,5, SE/4NW/4 S. 7: NE/4	315.16	NM-041 8-31-61 (HBP)	USA - All of 12.5%	Mobil Oil Co.	G. H. Blankenship Mary Marshall Jones	1.5000% 1.5000%	Ownership "B"
5	T-26N, R-1E S. 6: Lot 7, SE/4SW/4, N/2SE/4 S. 7: N/2SE/4	237.76	NM-041-A 8-31-61 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Mary Marshall Jones G. H. Blankenship Russell Cobb Felix Hickman Horace F. McKay, Jr. Amax Petroleum Corp. Tesoro Petroleum Amoco Production Co.	1.0000% 2.0000% 1.0000% .5000% .5000% 3.1250% 1.5625% 1.5625%	Ownership "B"
6	T-26N, R-1E S. 6: Lot 6, NE/4SW/4, S/2SE/4 S. 7: S/2SE/4	237.68	NM-041-B 8-31-61 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Mary Marshall Jones G. H. Blankenship Russell Cobb Felix Hickman Horace F. McKay, Jr. Tesoro Petroleum Amoco Production Co. North American Resources Corp., et al	1.0000% 2.0000% 1.0000% .5000% .5000% 1.5625% 1.5625% 3.1250%	Ownership "B"
7	T-26N, R-1E S. 15: SW/4SW/4 S. 16: N/2NW/4, N/2SE/4	200.00	NM-12501 6-30-58 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon Warren E. Carr Clinton White	1.8750% .1250% .5000% .5000% .5000% .5000%	Ownership "B"
8	T-26N, R-1E S. 16: S/2NE/4	80.00	NM-12502 6-30-58 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon Tesoro Petroleum Amax Corp. Pennzoil United, Inc.	1.8750% .1250% .5000% .5000% 1.5625% 1.5000% 1.5625%	Ownership "B"
9	T-26N, R-1E S. 15: S/2NW/4, N/2SW/4 S. 16: S/2NW/4, S/2SE/4	320.00	NM-12503 6-30-58 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon	1.8750% .1250% .5000% .5000%	Ownership "B"

*See page 6 for breakdown of ownership categories.

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE		WORKING INTEREST & PERCENTAGE*
10	T-26N, R-1E S. 16: N/2NE/4	80.00	NM-12504 6-30-58 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon Tesoro Petroleum Amax Corp. Pennzoil United, Inc.	1.8750% .1250% .5000% .5000% 1.5625% 1.5000% 1.5625%	Ownership "B"
11	T-26N, R-1E S. 15: NE/4NW/4 S. 17: S/2NW/4	120.00	NM-12809 4-30-81	USA - All of 12.5%	M. J. Harvey			M. J. Harvey
12	T-26N, R-1E S. 8: Lots 2, 6, SW/4NE/4 S. 10: NE/4NW/4 S. 15: SE/4SW/4	185.90	NM-19803 12-31-83	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Royce E. Lawson, Jr.	5.0000%	Ownership "B"
13	T-26N, R-1E S. 5: Lots 3, 4, S/2NW/4, SE/4 (excluding that portion lying within HES 484 & 486)	237.10	OPEN (NGS)	USA - All of 12.5%				
14	T-26N, R-1E S. 4: Lots 3, 4, S/2NW/4 (excluding that portion lying within HES 484), NE/4SE/4SE/4NE/4, S/2SE/4SE/4NE/4 SW/4NE/4, SE/4 S. 8: Lot 5, NW/4SW/4 S. 9: NE/4NE/4 S. 17: N/2NE/4	562.18	OPEN	USA - All of 12.5%				
15	T-26N, R-1E S. 8: Lot 1 S. 9: Lot 4, NW/4NE/4 S. 15: NW/4NW/4	147.15	OPEN (NGS)	USA - All of 12.5%				
16	T-26N, R-1E S. 9: S/2NE/4 S. 10: NW/4NW/4, S/2NW/4, SW/4 S. 17: S/2NE/4	440.00	Not Open For Leasing (NOL)	USA - All of 12.5%				

*See page 6 for breakdown of ownership categories.

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE	WORKING INTEREST & PERCENTAGE*
INDIAN LAND							
17	T-27N, R-1W S. 13: SE/4	160.00	Jic. 235 7-25-68 (HBP)	Jic. Apache 12.50%	Amoco Production Co.	4.166667% until "payout"	Ownership "F" (subject to net profits agreement with Jic. Tribe)
18	T-27N, R-1E S. 19: All S. 20: All S. 29: Lots 1, 2, 3, 4, N/2 (All) S. 30: Lots 1, 2, 3, 4, N/2 (All)	2112.68	Jic. 237 7-25-68 (HBP)	Jic. Apache 12.50% Variable to 25.00%	Amoco Production Co.	None	Ownership "A"
19	T-27N, R-1E S. 17: S/2 S. 18: S/2	640.00	Jic. 238 7-25-68 (HBP)	Jic. Apache 12.50%	Benson-Montin-Greer Drilling Corp.	4.166667% until "payout"	Ownership "F" (Subject to net profits agreement with Jic. Tribe)
20	T-27N, R-1E S. 21: All S. 28: Lots 1, 2, 3, 4, N/2 (All)	1055.68	Jic. 287 (HBP)	Jic. Apache 12.50% Variable to 25.00%	S & B Drilling	Tesoro Petroleum 3.125% Pennzoil United 3.125%	Ownership "D"
21	T-27N, R-1W S. 24: E/2 S. 25: Lots 1, 2, NW/4NW/4 (E/2)	526.78	Jic. 432 7-7-80 (HBP)	Jic. Apache 16.67%	Benson-Montin-Greer Drilling Corp.	None	Ownership "E" (Subject to net profits agreement with Jic. Tribe)
22	T-27N, R-1E S. 16: S/2	320.00	(Dev. Contr.)	(Dev. Contr.)	(Dev. Contr.)	(Dev. Contr.)	Ownership "X" (Subject to Dev. Contract with Jic. Tribe)
PATENTED LAND							
23	T-26N, R-1E S. 8: HES 486	160.16	2-10-63 (HBP)	Alfonso Iturriaga 12.50%	Texota Oil Co.	Warren E. Carr .5000% Clinton White .5000% Pennzoil United, Inc. 1.5625% Tesoro Petroleum 1.5625% Texota Oil Co. 3.1250%	Ownership "B"

*See page 6 for breakdown of ownership categories.

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE		WORKING INTEREST & PERCENTAGE*
24	T-26N, R-1E Parcel 1: HES 484, embracing a portion of S. 4, 5 & 8 (159.58 acres) Parcel 2: HES 486, embracing a portion of S. 4, 5, 8 & 9 (159.01 acres)	318.59	5-20-64 (HBP)	Alfonso Eturriaga 12.50%	Tesoro Petroleum	Tesoro Petroleum Texota Oil Co.	3.1250% 3.1250%	Ownership "B"
25	T-26N, R-1E S. 9: S/2SW/4NW/4SW/4, S/2SE/4NW/4SW/4, NE/4SE/4NW/4SW/4, SE/4NE/4NW/4SW/4, SW/4SW/4, E/2SW/4, SW/4NW/4SE/4, NW/4SW/4SE/4, N/2SW/4SW/4SE/4	160.00		Isabel E. Barton 25%, Marie L. Quarles 25%, First Nat'l Bank, Alb - Trustee for T.D. Burns III Estate 25%, Maria L. Burns Estate 25%				
26	T-26N, R-1E S. 4: Lot 5, NE/4SE/4NE/4, SE/4NW/4SE/4NE/4, NW/4SE/4SE/4NE/4, E/2SW/4SE/4NE/4	40.28		Sabino Olivas	Unknown			

SUMMARY:			
	FEDERAL ACREAGE	4,274.85	43.76%
	INDIAN ACREAGE	4,815.14	49.29%
	PATENTED ACREAGE (FEE)	679.03	6.95%
		9,769.02	100.00%

See page 6 for breakdown of ownership categories.

PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT
WORKING INTEREST OWNERSHIP BY WELLS
1-1-78

	OWNERSHIP "A"	OWNERSHIP "B"	OWNERSHIP "C"	OWNERSHIP "D"	OWNERSHIP "E"	OWNERSHIP "F"
	Jicarilla 237 Lease	Alto Bajo Casa PC H-5 PC I-6 PC D-9 PC P-9 PC I-8 PC F-6	Bernie	Jicarilla 287 Lease	Jicarilla 432 (H-25) *	Jicarilla 235 (P-13) & Jicarilla 238 (O-17)
John R. Anderson	3.582000	8.590000	4.814000	0.000000	3.582000	8.590000
Tom Bolack	31.340000	33.040000	33.698000	0.000000	31.340000	33.040000
Benson-Montin-Greer	7.848323	10.911392	8.602483	0.000000	7.848323	10.911392
Molly E. Bramblette	6.186000	3.700000	2.407000	25.000000	6.186000	3.700000
Molly E. Bramblette Trust	6.186000	3.700000	2.407000	25.000000	6.186000	3.700000
Albert R. Greer	6.268000	7.560000	6.740000	0.000000	6.268000	7.560000
Greer Enterprises, Ltd.	3.134000	3.760000	3.370000	0.000000	3.134000	3.760000
Bill L. Harbert	3.543050	1.248000	1.820000	0.000000	3.543050	1.248000
Jack London, Jr.	6.369500	8.430000	10.110000	0.000000	6.369500	8.430000
William W. London	1.411750	2.080000	3.033000	0.000000	1.411750	2.080000
A. C. Montin	1.238700	2.182000	1.213000	0.000000	1.238700	2.182000
William V. Montin	2.696000	0.000000	0.000000	0.000000	2.696000	0.000000
Jessie Stanley	0.000000	0.200000	0.000000	0.000000	0.000000	0.200000
Stoabs Oil Corp.	3.307677	4.598608	3.625517	0.000000	3.307677	4.598608
Virgil L. Stoabs	16.889000	10.000000	18.160000	50.000000	16.889000	10.000000
	100.000000	100.000000	100.000000	100.000000	100.000000	100.000000

* Ownership "E" is same as "A": Tract 21 participation figured separately since lease is under litigation.

PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT

WEIGHTED AVERAGE WORKING INTEREST OF INDIAN LEASES

OWNERSHIP "X"

	Jicarilla 237 Lease	Jicarilla 287 Lease	Jicarilla 432 (H-25)	Jicarilla 235 (P-13) & Jicarilla 238 (O-17)	Totals	OWNERSHIP "X" Weighted Average
SUM OF TRACT PARTICIPATIONS	62.332727	4.235385	0.921073	2.880417	70.369602	100.000000
John R. Anderson	2.232758	0.000000	0.032993	0.247428	2.513179	3.571399
Tom Bolack	19.535079	0.000000	0.288664	0.951608	20.775431	29.523303
Benson-Montin-Greer	4.892074	0.000000	0.072289	0.314294	5.278657	7.501330
Molly E. Bramblette	3.855903	1.058846	0.056978	0.106575	5.078302	7.216613
Molly E. Bramblette Trust	3.855903	1.058846	0.056978	0.106575	5.078302	7.216613
Albert R. Greer	3.907015	0.000000	0.057733	0.217760	4.182508	5.943628
Greer Enterprises, Ltd.	1.953508	0.000000	0.028866	0.108304	2.090678	2.970996
Bill L. Harbert	2.208479	0.000000	0.032634	0.035948	2.277061	3.235859
Jack London, Jr.	3.970283	0.000000	0.058668	0.242819	4.271770	6.070476
William W. London	0.879982	0.000000	0.013003	0.059913	0.952898	1.354133
A. C. Montin	0.772115	0.000000	0.011409	0.062851	0.846375	1.202757
William V. Montin	1.680490	0.000000	0.024832	0.000000	1.705322	2.423379
Jessie Stanley	0.000000	0.000000	0.000000	0.005761	0.005761	.008187
Stoabs Oil Corp.	2.061765	0.000000	0.030466	0.132459	2.224690	3.161437
Virgil L. Stoabs	10.527373	2.117693	0.155560	0.288042	13.088668	18.599890
TOTALS	62.332727	4.235385	0.921073	2.880417	70.369602	100.000000

Note: Because of special re-distribution of tract participations to Indian lands the working intereest owners of these tracts are currently (July, 1980) pooling their interests. The pooling takes effect on effective date of unitization. Probable pooled interests will be that of "X" above for all Indian tracts.

EAST PUERTO CHIQUITO MANCOS UNIT

CALCULATION OF TRACT PARTICIPATIONS

FORMULA: SEE LAST PAGE

(EXHIBIT C (PART I) TO UNIT AGREEMENT)

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
FEDERAL LAND								
1	T-26N, R-1E S. 8: Lots 3, 4, N/2NW/4 S. 9: Lot 1, NE/4SE/4, E/2NW/4, NW/4NW/4SE/4 S. 17: N/2NW/4	289.93	1,547.12	1,146	.296785	.807300	.401200	1.505285
2	T-26N, R-1E S. 8: Lot 7, S/2NW/4 S. 9: Lot 2, SE/4SE/4, E/2SW/4SE/4, S/2SW/4SW/4SE/4	193.20	1,048.33	1,462	.197768	.547027	.511828	1.256623
3	T-26N, R-1E S. 4: Lots 2, 6, N/2NW/4SE/4NE/4, SW/4NW/4SE/4NE/4, W/2SW/4SE/4NE/4, SW/4 SW/4 (excluding that portion of said SW/4 lying in HES 486 & HES 484 S. 5: Lots 1, 2, S/2NE/4 (excluding that portion of the S/2NE/4 lying in HES 484), SW/4	468.55	2,050.12	1,641	.479628	1.069770	.574493	2.123891
4	T-26N, R-1E S. 6: Lots 1, 2, S/2NE/4	160.24	982.27	4,165	.164029	.512557	1.458114	2.134700

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
4-A	T-26N, R-1E S. 6: Lots 3,4,5, SE/4NW/4 S. 7: NE/4	315.16	1,060.96	-0-	.322612	.553618	.000000	.876230
5	T-26N, R-1E S. 6: Lot 7, SE/4SW/4, N/2SE/4 S. 7: N/2SE/4	237.76	672.16	3,711	.243382	.350739	1.299174	1.893295
6	T-26N, R-1E S. 6: Lot 6, NE/4SW/4, S/2SE/4 S. 7: S/2SE/4	237.68	672.08	3,711	.243300	.350697	1.299174	1.893171
7	T-26N, R-1E S. 15: SW/4SW/4 S. 16: N/2NW/4, N/2SE/4	200.00	935.20	-0-	.204729	.487995	.000000	.692724
8	T-26N, R-1E S. 16: S/2NE/4	80.00	304.00	695	.081892	.158630	.243311	.483833
9	T-26N, R-1E S. 15: S/2NW/4, N/2SW/4 S. 16: S/2NW/4, S/2SE/4	320.00	1,158.40	-0-	.327566	.604463	.000000	.932029
10	T-26N, R-1E S. 16: N/2NE/4	80.00	304.00	-0-	.081892	.158630	.000000	.240522
11	T-26N, R-1E S. 15: NE/4NW/4 S. 17: S/2NW/4	120.00	430.00	-0-	.122837	.224378	.000000	.347215
12	T-26N, R-1E S. 8: Lots 2, 6, SW/4NE/4 S. 10: NE/4NW/4 S. 15: SE/4SW/4	185.90	745.79	-0-	.190295	.389159	.000000	.579454

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
13	T-26N, R-1E S. 5: Lots 3, 4, S/2NW/4, SE/4 (excluding that portion lying within HES 484 & 486)	237.10	1,419.12	-0-	.242706	.740509	.000000	.983215
14	T-26N, R-1E S. 4: Lots 3, 4, S/2NW/4 (excluding that portion lying within HES 484), NE/4SE/4SE/4NE/4, S/2SE/4SE/4NE/4, SW/4NE/4, SE/4 S. 8: Lot 5, NW/4SW/4 S. 9: NE/4NE/4 S. 17: N/2NE/4	562.18	1,633.74	-0-	.575472	.852499	.000000	1.427971
15	T-26N, R-1E S. 8: Lot 1 S. 9: Lot 4, NW/4NE/4 S. 15: NW/4NW/4	147.15	511.87	-0-	.150629	.267098	.000000	.417727
16	T-26N, R-1E S. 9: S/2NE/4 S. 10: NW/4NW/4, S/2NW/4, SW/4 S. 17: S/2NE/4	440.00	976.40	-0-	.450403	.509494	.000000	.959897
INDIAN LAND								
17	T-27N, R-1W S. 13: SE/4	160.00	-0-	-0-	.163783	.000000	.000000	.163783 (.793683)*
18	T-27N, R-1E S. 19: All S. 20: All S. 29: Lots 1, 2, 3, 4, N/2 (All) S. 30: Lots 1, 2, 3, 4, N/2 (All)	2112.68	13,012.09	152,477	2.162633	6.789817	53.380277	62.332727 (44.624711)*

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
19	T-27N, R-1E S. 17: S/2 S. 18: S/2	640.00	3,694.40	382	.655132	1.927769	.133733	2.716634 (13.164648)*
20	T-27N, R-1E S. 21: All S. 28: Lots 1, 2, 3, 4, N/2 (All)	1055.68	4,483.91	2,328	1.080641	2.339741	.815003	4.235385 (3.032160)*
21	T-27N, R-1W S. 24: E/2 S. 25: Lots 1, 2, NW/4NW/4 (E/2)	526.78	731.76	-0-	.539235	.381838	.000000	.921073 (4.463465)*
22	T-27N, R-1E S. 16: S/2	320.00	1,510.40	-0-	.327566	.788139	.000000	1.115705 (5.406641)*
PATENTED LAND								
23	T-26N, R-1E S. 8: HES 488	160.16	1,097.16	2,380	.163947	.572507	.833208	1.569662
24	T-26N, R-1E Parcel 1: HES 484, embracing a portion of S. 4, 5 & 8 (159.58 acres) Parcel 2: HES 486, embracing a portion of S. 4, 5, 8 & 9 (159.01 acres)	318.59	1,349.57	18,551	.326123	.704217	6.494471	7.524811

EAST PUERTO CHIQUITO MANCOS UNIT
CALCULATION OF TRACT PARTICIPATIONS
EXHIBIT C (PART I) TO UNIT AGREEMENT

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
25	T-26N, R-1E S. 9: S/2SW/4NW/4SW/4, S/2SE/4NW/4SW/4, NE/4SE/4NW/4SW/4, SE/4NE/4NW/4SW/4, SW/4SW/4, E/2SW/4, SW/4NW/4SE/4, NW/4SW/4SE/4, N/2SW/4SW/4SE/4	160.00	762.25	160	.163783	.397748	.056014	.617545
26	T-26N, R-1E S. 4: Lot 5, NE/4SE/4NE/4, SE/4NW/4SE/4NE/4, NW/4SE/4SE/4NE/4, E/2SW/4SE/4NE/4	40.28	26.18	-0-	.041232	.013661	.000000	.054893
		9769.02	43,119.28	192,809	10.000000	22.500000	67.500000	100.000000

Determination of Tract Participations:

Tract Participation = 10% A + 22.5% B + 67.5% C
Where A = The ratio of surface area of the subject tract to the sum of the surface area of all tracts.
B = The ratio of the "structural position weighted acreage" for the subject tract to the sum of the "structural position weighted acreage" for all tracts.
C = The ratio of the 1976 and 1977 oil production allocated to the subject tract to the sum of the 1976 and 1977 oil production allocated to all tracts.

*Note: Per agreement with the Jicarilla Tribe, and in accordance with the terms of the Unit Agreement, the sum of the equity factors allocated to all of the Indian land tracts are to be re-distributed to the various Indian tracts in the following method:

2/3 of the equity is assigned to the 237 and 287 leases with the remaining 1/3 assigned to the remaining leases.

Allocation to each tract within these groups is in the proportion that the basic equity factors bear to each other. These special allocation equity factors are designated on this Part I of Exhibit C with parentheses and an asterisk and are the equity factors to be assigned to these tracts regardless of the equity factors determined by the formula.

EXHIBIT D

ATTACHED TO AND MADE A PART OF
THAT CERTAIN AGREEMENT ENTITLED

UNIT OPERATING AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT AREA
RIO ARRIBA COUNTY, NEW MEXICO

DATED JUNE 1, 1980

EQUAL OPPORTUNITY CLAUSE

A. During the performance of this contract, the CONTRACTOR agrees as follows:

(1) The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The CONTRACTOR will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The CONTRACTOR will, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The CONTRACTOR will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the CONTRACTOR'S commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The CONTRACTOR will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The CONTRACTOR will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the CONTRACTOR'S noncompliance with the nondiscrimination clauses of this Agreement or with any of such rules, regulations, or orders, this Agreement may be cancelled, terminated or suspended in whole or in part and the CONTRACTOR may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The CONTRACTOR will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The CONTRACTOR will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

B. If required to do so by Federal law, regulation, or order, CONTRACTOR agrees that he shall:

(1) File with the Office of Federal Contract Compliance or agency designated by it, a complete and accurate report on Standard Form 100 (EEO-1) within 30 days after the signing of this Agreement (unless such a report has been filed in the last 12 months), and continue to file such reports annually, on or before March 31st;

(2) Develop and maintain a written affirmative action compliance program for each of its establishments in accordance with the regulations of the Secretary of Labor promulgated under Executive Order 11246, as amended.

EXHIBIT D

ATTACHED TO AND MADE A PART OF
THAT CERTAIN AGREEMENT ENTITLED

UNIT OPERATING AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT AREA
RIO ARRIBA COUNTY, NEW MEXICO

DATED JUNE 1, 1980

EQUAL OPPORTUNITY CLAUSE

A. During the performance of this contract, the CONTRACTOR agrees as follows:

(1) The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The CONTRACTOR will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The CONTRACTOR will, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The CONTRACTOR will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the CONTRACTOR'S commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The CONTRACTOR will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The CONTRACTOR will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the CONTRACTOR'S noncompliance with the nondiscrimination clauses of this Agreement or with any of such rules, regulations, or orders, this Agreement may be cancelled, terminated or suspended in whole or in part and the CONTRACTOR may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The CONTRACTOR will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The CONTRACTOR will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

B. If required to do so by Federal law, regulation, or order, CONTRACTOR agrees that he shall:

(1) File with the Office of Federal Contract Compliance or agency designated by it, a complete and accurate report on Standard Form 100 (EEO-1) within 30 days after the signing of this Agreement (unless such a report has been filed in the last 12 months), and continue to file such reports annually, on or before March 31st;

(2) Develop and maintain a written affirmative action compliance program for each of its establishments in accordance with the regulations of the Secretary of Labor promulgated under Executive Order 11246, as amended.

EXHIBIT E

UNIT OPERATING AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

WORKING INTEREST UNIT PARTICIPATIONS
(ALL TRACTS QUALIFYING)

	OWNERSHIP "A"	OWNERSHIP "B"	OWNERSHIP "C"	OWNERSHIP "D"	OWNERSHIP "E"	OWNERSHIP "F"	TOTALS
	Jicarilla 237 Lease	Alto Bajo Casa PC H-5 PC I-6 PC D-9 PC P-9 PC I-8 PC F-6	Bernie	Jicarilla 287 Lease	Jicarilla 432 (H-25)	Jicarilla 235 (P-13) & Jicarilla 238 (O-17)	
SUM OF TRACT PARTICIPATIONS	62.332727	21.571530	2.134700	4.235385	0.921073	2.880417	100.000000
John R. Anderson	2.232758	1.852994	0.102764	0.000000	0.032993	0.247428	4.468937
Tom Bolack	19.535079	7.127232	0.719352	0.000000	0.288664	0.951688	28.622015
Benson-Montin-Greer	4.892074	2.353754	0.183637	0.000000	0.072289	0.314294	7.816048
Molly E. Bramblette	3.855902	0.798147	0.051382	1.058846	0.056978	0.106575	5.927830
Molly E. Bramblette Trust	3.855902	0.798147	0.051382	1.058846	0.056978	0.106575	5.927830
Albert R. Greer	3.907015	1.630808	0.143879	0.000000	0.057733	0.217760	5.957195
Greer Enterprises, Ltd.	1.953508	0.811090	0.071939	0.000000	0.028866	0.108304	2.973707
Bill L. Harbert	2.208480	0.269213	0.038852	0.000000	0.032634	0.035948	2.585127
Jack London, Jr.	3.970283	1.818480	0.215818	0.000000	0.058668	0.242819	6.306068
William W. London	0.879982	0.448688	0.064745	0.000000	0.013003	0.059913	1.466331
A. C. Montin	0.772115	0.470691	0.025894	0.000000	0.011409	0.062851	1.342960
William V. Montin	1.680490	0.000000	0.000000	0.000000	0.024832	0.000000	1.705322
Jessie Stanley	0.000000	0.043143	0.000000	0.000000	0.000000	0.005761	0.048904
Stoabs Oil Corp.	2.061765	0.991990	0.077394	0.000000	0.030466	0.132459	3.294074
Virgil L. Stoabs	10.527374	2.157153	0.387662	2.117693	0.155560	0.288042	15.633484
Unleased (Federal)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.788810
Unleased (Fee)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.672438
Indian Dev. Contr. (Tr 22) ("X")	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.115705
M. J. Harvey	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.347215
TOTALS	62.332727	21.571530	2.134700	4.235385	0.921073	2.880417	100.000000

Note: (1) Tracts under ownerships A, B, C, D, E & F are set out on Exhibit B.
(2) When pooling agreement is effective, tract 22 will be owned as shown by ownership schedule "X" under Exhibit B.

EXHIBIT E

UNIT OPERATING AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

WORKING INTEREST UNIT PARTICIPATIONS
(ALL TRACTS QUALIFYING - EXCEPT 11, 13, 14, 15, 16, 25, 26) *

	OWNERSHIP "X" (All Indian tracts: 17,18,19, 20,21,22)	OWNERSHIP "C" (Tract 4) Bernie	OWNERSHIP "B" (all other tracts) Alto Bajo Casa PC H-5 PC I-6 PC D-9 PC P-9 PC I-8 PC F-6	TOTALS
SUM OF TRACT PARTICIPATIONS (Adjusted for non-committed tracts)	70.369602 (74.800935)	2.124700 (2.269127)	21.571530 (22.929938)	94.075832 (100.000000)
John R. Anderson	2.671440	0.109235	1.969682	4.750357
Tom Bolack	22.083706	0.764650	7.576052	30.424408
Benson-Montin-Greer	5.611066	0.195201	2.501975	8.308242
Molly E. Bramblette	5.398094	0.054618	0.848408	6.301120
Molly E. Bramblette Trust	5.398094	0.054618	0.848408	6.301120
Albert R. Greer	4.445890	0.152939	1.733503	6.332332
Greer Enterprises, Ltd.	2.222333	0.076470	0.862165	3.160968
Bill L. Harbert	2.420453	0.041298	0.286166	2.747917
Jack London, Jr.	4.540773	0.229409	1.932993	6.703175
William W. London	1.012903	0.068823	0.476943	1.558669
A. C. Montin	0.899673	0.027525	0.500331	1.427529
William V. Montin	1.812710	0.000000	0.000000	1.812710
Jessie Stanley	0.006124	0.000000	0.045860	0.051984
Stoabs Oil Corp.	2.364784	0.082268	1.054458	3.501510
Virgil L. Stoabs	13.918892	0.412073	2.292994	16.617959
TOTALS	74.800935	2.269127	22.929938	100.000000

Note: (1) Tracts under ownerships A, B, C, D, E & F are set out on Exhibit B.
(2) When pooling agreement is effective, tract 22 will be owned as shown by ownership schedule "X" under Exhibit B.
* This schedule assumes as uncommitted the unleased federal lands (13,14,15,16), the fee tracts (25 & 26) and Harvey's tract (11).

EXHIBIT E

UNIT OPERATING AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

WORKING INTEREST UNIT PARTICIPATIONS
(ALL TRACTS QUALIFYING - EXCEPT 11, 13, 14, 15, 16, 26) *

	OWNERSHIP "X" (All Indian tracts: 17,18,19, 20,21,22)	OWNERSHIP "C" (Tract 4) Bernie	OWNERSHIP "B" (all other tracts) Alto Bajo Casa PC H-5 PC I-6 PC D-9 PC P-9 PC I-8 PC F-6	TOTALS
SUM OF TRACT PARTICIPATIONS (Adjusted for non-committed tracts)	70.369602 (74.313119)	2.124700 (2.254329)	22.189075 (23.432552)	94.693377 (100.000000)
John R. Anderson	2.651409	0.108523	2.012856	4.775398
Tom Bolack	21.939687	0.759663	7.742115	30.441465
Benson-Montin-Greer	5.574472	0.193928	2.556818	8.325218
Molly E. Bramblette	5.362890	0.054262	0.867004	6.284156
Molly E. Bramblette Trust	5.362890	0.054262	0.867004	6.284156
Albert R. Greer	4.416895	0.151942	1.771501	6.340338
Greer Enterprises, Ltd.	2.207840	0.075971	0.881064	3.164875
Bill L. Harbert	2.404668	0.041029	0.292438	2.738135
Jack London, Jr.	4.511160	0.227913	1.975364	6.714437
William W. London	1.006298	0.068374	0.487397	1.562069
A. C. Montin	0.893807	0.027345	0.511298	1.432450
William V. Montin	1.800889	0.000000	0.000000	1.800889
Jessie Stanley	0.006084	0.000000	0.046865	0.052949
Stoabs Oil Corp.	2.349362	0.081731	1.077572	3.508665
Virgil L. Stoabs	13.822158	0.409386	2.343256	16.574800
TOTALS	74.313119	2.254329	23.432552	100.000000

Note: (1) Tracts under ownerships A, B, C, D, E & F are set out on Exhibit B.
(2) When pooling agreement is effective, tract 22 will be owned as shown by ownership schedule "X" under Exhibit B.
* This schedule assumes as uncommitted the unleased federal lands (13,14,15,16), the fee tract 26 and Harvey's tract (11); and that tract 25 is committed to working interest ownership in Schedule "B".

PARAMETERS USED IN

DETERMINING TRACT PARTICIPATIONS

EAST PUERTO CHIQUITO MANCOS UNIT

JUNE, 1980

Three parameters were used in determining tract participations. Each of the three is described briefly below, identified by the letters as shown in Exhibit C:

ACREAGE : ("A")

Acreage as to each quarter-section was "balanced" as described in the attached "Notes regarding Balancing of Areas". There may be other, more definitive, data available which will require revision of the figures used. In its absence, however, we suggest the acreages shown herein be used for calculating the acreage parameter and for calculating the below-listed "structural position weighted acreage" parameter. Allocation of tract acreage to lots within quarter-sections is shown on the attached plat.

STRUCTURAL POSITION WEIGHTED ACREAGE : ("B")

(Defined in the Unit Agreement). This parameter assumes that the most valuable lands are those overlying the structurally down-dip areas which are useful in accumulating oil by gravity drainage and thereby allowing the maximum oil recovery from the reservoir. Assigning equity values (the parameter scale) to the various areas must necessarily be somewhat subjective. Issues are listed below:

(a) Relative value of the recoverable oil and gas underlying the tracts: The gas cap now contains gas under a pressure of about 10 atmospheres; so for equal pore space in gas and oil zones and assuming that there is as much energy (BTU's) in 5.6 MCF of gas as in 1 barrel of oil, then there is in place 100 times as many BTU's in the oil zone as in an equal volume of gas zones. Under unitization, assuming a 50% recovery of oil and 100% recovery of gas, the ratio of 50 to 1 results. If, however, the properties are produced under competitive conditions and the gas cap produced (and gas marketed), the oil recovery will be that of solution-gas drive = approximately 6% of that in place; and the ratio of relative values drops to 6 to 1.

(b) Benefit of unitization: Without the gas cap lands committed to the unit, the oil areas cannot enjoy the high potential recovery factors - so some credit needs be given this.

(c) Origin of the down-dip oil: The reservoir initially was all oil-saturated. The present gas cap is "secondary" in that it resulted from shutting in high gas-oil ratio wells - with

the consequence that up-dip oil has now migrated down-dip; and some consideration needs be given this.

(d) Possibility of some additional oil recovery from the gas cap area: "Sweeping" of the gas cap by injecting gas should result in additional oil being moved from the up-dip to the down-dip areas.

(e) Transition zone of oil to water between the 4000' and 3600' contour: This area will contribute substantial production if the waterflood is effective and "basement" oil recovered.

All issues considered, a reasonable scale seems to be 0 to 10; and this has been used, as shown on the attached plat (0 for the 3600' and 6000' contours, 5 for the 3800', 10 for the 4000' contour and proportional values between the 4000' and 6000' contours.

Values were interpreted for each corner of each quarter-section (see map and Schedule I attached).

The four corner values of each quarter-section were averaged to give a value for each quarter-section (Schedule I attached).

The quarter-section values multiplied by each tract's acreage within a quarter-section were recorded (Schedule II attached); and these values summed as to each tract (Schedule III attached).

CURRENT PRODUCTION : ("C")

The oil production amount used for each tract in determining "production" is the total production for that tract for the two years of 1976 and 1977.

EXHIBIT C: PART II

TO

UNIT AGREEMENT FOR THE

EAST PUERTO CHIQUITO MANCOS UNIT

Values of the acreage parameters for each tract is the acreage shown for that tract on Exhibit B to the Unit Agreement.

Reference: Sections I and J for acreages assigned to tracts.

EXHIBIT C: PART III
TO UNIT AGREEMENT FOR THE

EAST PUERTO CHIQUITO MANCOS UNIT

STRUCTURAL POSITION WEIGHTING FACTOR

(SCHEDULE I)

		VALUE FOR POINT IN ¼ SECTION				4-POINT
		NE	NW	SW	SE	AVERAGE
T-26N, R-1E						
SECTION 4:	NE¼	0.7	1.2	0.7	0.0	0.65
	NW¼	1.2	2.5	3.4	0.7	1.95
	SW¼	0.7	3.4	4.3	2.0	2.60
	SE¼	0.0	0.7	2.0	0.1	0.70
SECTION 5:	NE¼	2.5	4.9	5.6	3.4	4.10
	NW¼	4.9	7.4	8.0	5.6	6.48
	SW¼	5.6	8.0	9.7	6.5	7.45
	SE¼	3.4	5.6	6.5	4.3	4.95
SECTION 6:	NE¼	7.4	5.1	4.0	8.0	6.13
	NW¼	5.1	-0-	-0-	4.0	2.28
	SW¼	4.0	-0-	-0-	-0-	1.00
	SE¼	8.0	4.0	-0-	9.7	5.43
SECTION 7:	NE¼	9.7	-0-	-0-	8.0	4.42
	SE¼	8.0	-0-	-0-	-0-	2.00
SECTION 8:	NE¼	4.3	6.5	7.4	5.4	5.90
	NW¼	6.5	9.7	8.0	7.4	7.90
	SW¼	7.4	8.0	-0-	9.0	6.10
	SE¼	5.4	7.4	9.0	6.8	7.15

		VALUE FOR POINT IN ¼ SECTION				4-POINT AVERAGE
		NE	NW	SW	SE	
SECTION 9:	NE¼	0.1	2.0	3.6	1.3	1.75
	NW¼	2.0	4.3	5.4	3.6	3.83
	SW¼	3.6	5.4	6.8	4.6	5.10
	SE¼	1.3	3.6	4.6	2.3	2.95
SECTION 10:	NW¼	-0-	0.1	1.3	-0-	0.35
	SW¼	-0-	1.3	2.3	-0-	0.90
SECTION 15:	NW¼	-0-	2.3	3.0	0.9	1.55
	SW¼	0.9	3.0	3.8	2.2	2.48
SECTION 16:	SE¼	3.0	5.3	5.7	3.8	4.45
	NE¼	2.3	4.6	5.3	3.0	3.80
	NW¼	4.6	6.8	7.3	5.3	6.00
SECTION 17:	NE¼	6.8	9.0	9.4	7.3	8.13
	NW¼	9.0	-0-	-0-	9.4	4.60
T-27N, R-1E						
SECTION 16:	SW¼	4.2	5.8	7.0	5.1	5.52
	SW¼	2.7	4.2	5.1	3.7	3.92
SECTION 17:	SW¼	7.6	9.4	8.5	8.5	8.50
	SE¼	5.8	7.6	8.5	7.0	7.22

		VALUE FOR POINT IN ¼ SECTION				4-POINT AVERAGE
		NE	NW	SW	SE	
SECTION 18:	SW¼	4.5	-0-	-0-	1.3	1.45
	SE¼	9.4	4.5	1.3	8.5	5.92
SECTION 19:	NE¼	8.5	1.3	10.0	8.7	7.13
	NW¼	1.3	-0-	1.4	10.0	3.18
	SW¼	10.0	1.4	5.0	7.9	6.08
	SE¼	8.7	10.0	7.9	6.2	8.20
SECTION 20:	NE¼	7.0	8.5	7.8	7.7	7.75
	NW¼	8.5	8.5	8.7	7.8	8.38
	SW¼	7.8	8.7	6.2	4.7	6.85
	SE¼	7.7	7.8	4.7	5.0	6.30
SECTION 21:	NE¼	3.7	5.1	6.2	4.6	4.90
	NW¼	5.1	7.0	7.7	6.2	6.50
	SW¼	6.2	7.7	5.0	3.8	5.68
	SE¼	4.6	6.2	3.8	3.4	4.50
SECTION 28:	E½	3.4	3.8	1.0	0.5	2.18
	W½	3.8	5.0	1.3	1.0	2.78
SECTION 29:	E½	5.0	4.7	3.0	1.3	3.50
	W½	4.7	6.2	5.3	3.0	4.80
SECTION 30:	E½	6.2	7.9	7.9	5.3	6.83
	W½	7.9	5.0	3.1	7.9	5.98

EAST PUERTO CHIQUITO MANCOS UNIT
STRUCTURAL POSITION WEIGHTING FACTOR
SCHEDULE I

		VALUE FOR POINT IN ¼ SECTION				4-POINT AVERAGE
		NE	NW	SW	SE	
T-27N, R-1W						
SECTION 13:	SE¼	-0-	-0-	-0-	-0-	-0-
SECTION 24:	NE¼	-0-	-0-	-0-	1.4	0.35
	SE¼	1.4	-0-	-0-	5.0	1.60
SECTION 25:	SE¼	5.0	-0-	-0-	3.1	2.03

EXHIBIT C: PART III
TO UNIT AGREEMENT FOR THE

EAST PUERTO CHIQUITO MANCOS UNIT

WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION

(SCHEDULE II)

LAND SUBDIVISION	TRACT NO.		SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)		(3)	(4)	(5)
T-26N, R-1E					
Sec. 4: NE¼	3		73.26	0.65	47.62
	14		47.50	0.65	30.88
	26		40.28	0.65	26.18
		TOTAL	161.04		
Sec. 4: NW¼	14		159.30	1.95	310.64
	24		1.58	1.95	3.08
		TOTAL	160.88		
Sec. 4: SW¼	3		102.79	2.60	267.25
	24	(HES 484 38.12) (HES 486 19.09)	57.21	2.60	148.75
		TOTAL	160.00		
Sec. 4: SE¼	14		160.00	0.70	112.00
Sec. 5: NE¼	3		132.50	4.10	543.25
	24	(HES 484)	28.18	4.10	115.54
		TOTAL	160.68		
Sec. 5: NW¼	13		160.44	6.48	1039.65
Sec. 5: SW¼	3		160.00	7.45	1192.00
Sec. 5: SE¼	13		76.66	4.95	379.47
	24	(HES 484 82.52) (HES 486 0.82)	83.34	4.95	412.53
		TOTAL	160.00		
Sec. 6: NE¼	4		160.24	6.13	982.27
Sec. 6: NW¼	4-A		155.16	2.28	353.76

LAND SUBDIVISION	TRACT NO.		SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)		(3)	(4)	(5)
Sec. 6: SW¼	5		77.76	1.00	77.76
	6		77.68	1.00	77.68
		TOTAL	155.44		
Sec. 6: SE¼	5		80.00	5.43	434.40
	6		80.00	5.43	434.40
		TOTAL	160.00		
Sec. 7: NE¼	4-A		160.00	4.42	707.20
Sec. 7: SE¼	5		80.00	2.00	160.00
	6		80.00	2.00	160.00
		TOTAL	160.00		
Sec. 8: NE¼	12		66.98	5.90	395.18
	15		46.75	5.90	275.83
	24	(HBS 484 9.18) (HBS 486 37.09)	46.27	5.90	272.99
		TOTAL	160.00		
Sec. 8: NW¼	1		80.00	7.90	632.00
	2		80.00	7.90	632.00
		TOTAL	160.00		
Sec. 8: SW¼	12		38.92	6.10	237.41
	14		75.38	6.10	459.82
	23		45.70	6.10	278.77
		TOTAL	160.00		

EAST PUERTO CHIQUITO MANCOS UNIT
WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION
SCHEDULE II

LAND SUBDIVISION	TRACT NO.		SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)		(3)	(4)	(5)
Sec. 8: SE¼	1		33.46	7.15	239.24
	2		12.04	7.15	86.09
	23		114.46	7.15	818.39
	24	(HES 486)	0.04	7.15	0.29
		TOTAL	160.00		
Sec. 9: NE¼	14		40.00	1.75	70.00
	15		40.00	1.75	70.00
	16		80.00	1.75	140.00
		TOTAL	160.00		
Sec. 9: NW¼	1		26.47	3.83	101.38
	2		36.16	3.83	138.49
	24		97.37	3.83	372.93
		TOTAL	160.00		
Sec. 9: SW¼	15		20.40	5.10	104.04
	24		4.60	5.10	23.46
	25		135.00	5.10	688.50
		TOTAL	160.00		
Sec. 9: SE¼	1		70.00	2.95	206.50
	2		65.00	2.95	191.75
	25		25.00	2.95	73.75
		TOTAL	160.00		
Sec. 10: NW¼	12		40.00	0.35	14.00
	16		120.00	0.35	42.00
		TOTAL	160.00		
Sec. 10: SW¼	16		160.00	0.90	144.00

EAST PUERTO CHIQUITO MANCOS UNIT
WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION
SCHEDULE II

LAND SUBDIVISION	TRACT NO.		SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)		(3)	(4)	(5)
Sec. 15: NW¼	9		80.00	1.55	124.00
	11		40.00	1.55	62.00
	15		40.00	1.55	62.00
		TOTAL	160.00		
Sec. 15: SW¼	7		40.00	2.48	99.20
	9		80.00	2.48	198.40
	12		40.00	2.48	99.20
		TOTAL	160.00		
Sec. 16: SE¼	7		80.00	4.45	356.00
	9		80.00	4.45	356.00
		TOTAL	160.00		
Sec. 16: NE¼	10		80.00	3.80	304.00
	8		80.00	3.80	304.00
		TOTAL	160.00		
Sec. 16: NW¼	9		80.00	6.00	480.00
	7		80.00	6.00	480.00
		TOTAL	160.00		
Sec. 17: NE¼	14		80.00	8.13	650.40
	16		80.00	8.13	650.40
		TOTAL	160.00		
Sec. 17: NW¼	11		80.00	4.60	368.00
	1		80.00	4.60	368.00
		TOTAL	160.00		

EAST PUERTO CHIQUITO MANCOS UNIT
WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION
SCHEDULE II

LAND SUBDIVISION (1)	TRACT NO. (2)	SURFACE AREA (ACRES) (3)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR (4)	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4) (5)
T-27N, R-1E				
Sec. 16: SW¼	22	160.00	5.52	883.20
Sec. 16: SE¼	22	160.00	3.92	627.20
Sec. 17: SW¼	19	160.00	8.50	1360.00
Sec. 17: SE¼	19	160.00	7.22	1155.20
Sec. 18: SW¼	19	160.00	1.45	232.00
Sec. 18: SE¼	19	160.00	5.92	947.20
Sec. 19: NE¼	18	160.00	7.13	1140.80
Sec. 19: NW¼	18	160.00	3.18	508.80
Sec. 19: SW¼	18	160.00	6.08	972.80
Sec. 19: SE¼	18	160.00	8.20	1312.00
Sec. 20: NE¼	18	160.00	7.75	1240.00
Sec. 20: NW¼	18	160.00	8.38	1340.80
Sec. 20: SW¼	18	160.00	6.85	1096.00
Sec. 20: SE¼	18	160.00	6.30	1008.00
Sec. 21: NE¼	20	160.00	4.90	784.00
Sec. 21: NW¼	20	160.00	6.50	1040.00
Sec. 21: SW¼	20	160.00	5.68	908.80
Sec. 21: SE¼	20	160.00	4.50	720.00

LAND SUBDIVISION	TRACT NO.	SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)	(3)	(4)	(5)
Sec. 28: E½	20	207.46	2.18	452.26
Sec. 28: W½	20	208.22	2.78	578.85
Sec. 29: E½	18	208.60	3.50	730.10
Sec. 29: W½	18	208.60	4.80	1001.28
Sec. 30: E½	18	208.17	6.83	1421.80
Sec. 30: W½	18	207.31	5.98	1239.71
T-27N, R-1W				
Sec. 13: SE¼	17	160.00	-0-	-0-
Sec. 24: NE¼	21	160.00	0.35	56.00
Sec. 24: SE¼	21	160.00	1.60	256.00
Sec. 25: SE¼	21	206.78	2.03	419.76
TOTAL		9,769.02		43,119.28

	AMOUNT	PERCENT
INDIAN	23,432.56	54.343579
FEDERAL	16,451.56	38.153606
FEE	3,235.16	7.502815
	43,119.28	100.000000

EAST PUERTO CHIQUITO MANCOS UNIT
WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION
SCHEDULE II

EXHIBIT C: PART III
TO UNIT AGREEMENT FOR THE

EAST PUERTO CHIQUITO MANCOS UNIT

SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES

(SCHEDULE III)

TRACT NO.	SECTION	1/4 SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	WEIGHTED ACREAGE FROM SCHEDULE II TRACT TOTAL
	T-26N, R-1E			
1	8	NW	632.00	
		SE	239.24	
	9	NW	101.38	
		SE	206.50	
	17	NW	368.00	1,547.12
2	8	NW	632.00	
		SE	86.09	
	9	NW	138.49	
		SE	191.75	1,048.33
3	4	NE	47.62	
		SW	267.25	
	5	NE	543.25	
		SW	1,192.00	2,050.12
4	6	NE	982.27	982.27
4-A	6	NW	353.76	
	7	NE	707.20	1,060.96
5	6	SW	77.76	
		SE	434.40	
	7	SE	160.00	672.16

TRACT NO.	SECTION	¼ SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	TRACT TOTAL
6	6	SW	77.68	
		SE	434.40	
	7	SE	160.00	672.08
7	15	SW	99.20	
	16	SE	356.00	
		NW	480.00	935.20
8	16	NE	304.00	304.00
9	15	NW	124.00	
		SW	198.40	
	16	SE	356.00	
		NW	480.00	1,158.40
10	16	NE	304.00	304.00
11	15	NW	62.00	
	17	NW	368.00	430.00
12	8	NE	395.18	
		SW	237.41	
	10	NW	14.00	
	15	SW	99.20	745.79

EAST PUERTO CHIQUITO MANCOS UNIT
SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES
SCHEDULE III

TRACT NO.	SECTION	¼ SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	TRACT TOTAL
13	5	NW	1,039.65	
		SE	379.47	1,419.12
14	4	NE	30.88	
		NW	310.64	
		SE	112.00	
	8	SW	459.82	
	9	NE	70.00	
	17	NE	650.40	1,633.74
15	8	NE	275.83	
	9	NE	70.00	
		SW	104.04	
	15	NW	62.00	511.87
16	9	NE	140.00	
	10	NW	42.00	
		SW	144.00	
	17	NE	650.40	976.40
	T-27N, R-1W			
17	13	SE	-0-	-0-

EAST PUERTO CHIQUITO MANCOS UNIT
SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES
SCHEDULE III

TRACT NO.	SECTION	¼ SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	TRACT TOTAL
	T-27N, R-1E			
18	19	NE	1,140.80	
		NW	508.80	
		SW	972.80	
		SE	1,312.00	
	20	NE	1,240.00	
		NW	1,340.80	
		SW	1,096.00	
		SE	1,008.00	
	29	E½	730.10	
		W½	1,001.28	
	30	E½	1,421.80	
		W½	1,239.71	13,012.09
19	17	SW	1,360.00	
		SE	1,155.20	
	18	SW	232.00	
		SE	947.20	3,694.40
20	21	NE	784.00	
		NW	1,040.00	
		SW	908.80	
		SE	720.00	
	28	E½	452.26	
		W½	578.85	4,483.91

EAST PUERTO CHIQUITO MANCOS UNIT
SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES
SCHEDULE III

TRACT NO.	SECTION	¼ SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	TRACT TOTAL
	T-27N, R-1W			
21	24	NE	56.00	
		SE	256.00	
	25	SE	419.76	731.76
	T-27N, R-1E			
22	16	SW	883.20	
		SE	627.20	1,510.40
	T-26N, R-1E			
23	8	SW	278.77	
		SE	818.39	1,097.16
24	4	NW	3.08	
		SW	148.75	
	5	NE	115.54	
		SE	412.53	
	8	NE	272.99	
		SE	0.29	
	9	NW	372.93	
		SW	23.46	1,349.57
25	9	SW	688.50	
		SE	73.75	762.25
26	4	NE	26.18	26.18
				43,119.28

EAST PUERTO CHIQUITO MANCOS UNIT
SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES
SCHEDULE III

EXHIBIT C - PART IV

TO

EAST PUERTO CHIQUITO MANCOS UNIT AGREEMENT

The production figures used for each tract in determining the tract participation is the sum of the two year production for that tract in 1976 and 1977 as shown in the following schedule marked Exhibit C: Part IV.

Also included herein is a schedule showing allocation to tracts of acreage and production under communitized tracts.

EXHIBIT C: PART IV
TO THE

EAST PUERTO CHIQUITO MANCOS UNIT AGREEMENT

ALLOCATION OF 1976-1977 PRODUCTION TO TRACTS

LEASE OR WELL	TOTAL 1976-1977 PRODUCTION (BBLS)	ALLOCATION TO TRACTS TRACT	BARRELS
Jicarilla 237 lease	152,477	18	152,477
Jicarilla 287 lease	2,328	20	2,328
Bernie	4,165	4	4,165
PC C-5	-0-	-	-0-
Alto*	-0-	-	-0-
PC H-5	1,492	3	662
		24	830
Hijo 1-X	-0-	-	-0-
PC I-8	3,327	23	2,380
		1	697
		2	250
PC D-9	17,546	24	17,546
PC P-9	1,025	1	449
		2	416
		25	160
Bajo (P.A.)	1,950	3	979
		2	796
		24	175
Casa	695	8	695
PC I-6	7,422	5	3,711
		6	3,711
Jic. 238 (O-17)	382	19	382

* Credited under Bajo P.A.

EAST PUERTO CHIQUITO MANCOS UNIT

ALLOCATION TO TRACTS OF ACREAGE AND PRODUCTION FOR COMMUNITIZED WELL SPACING UNITS

(USED IN DETERMINING ALLOCATION OF PRODUCTION TO TRACTS)

WELL		ALLOCATION TO	PROPORTION	ACREAGE	PRODUCTION 1976-1977 (Barrels)
H-5	(3)	SF 080312-A	5.546875 / 12.500000	35.50	662
	(24)	Eturriaga	6.953125 / 12.500000	44.50	830
			1.	80.00	1492
I-8	(23)	Eturriaga	71.531250	114.45	2380
	(1)	SF 079288-B	20.943750	33.51	697
	(2)	SF 097288-E	7.525000	12.04	250
			100.000000	160.00	3327
P-9	(1)	SF 079288-B	43.750000	70.00	449
	(2)	SF 079288-E	40.620000	65.00	416
	(25)	Burns Estate	15.630000	25.00	160
			100.000000	160.00	1025
Bajo (P.A.)					
	(3)	SF 080312-A	50.193000		979
	(2)	SF 079288-E	40.804380		796
	(24)	Eturriaga	9.002620		175
			100.000000		1950

NOTES REGARDING BALANCING OF AREAS

EAST PUERTO CHIQUITO MANCOS UNIT

Although there may be more definitive information available regarding land areas within the East Puerto Chiquito Mancos Unit, the data from which B-M-G worked required some interpretation and adjustment in order that the land areas be balanced.

The basic assumption regarding areas was that except for the lots shown in Sections 4, 5, 6, 25, 28, 29 and 30, the sections are of 640 acres each.

Under this basic assumption the areas were balanced through the following interpretations:

HOMESTEAD ENTRY 484 (TRACT 23) AND ADJOINING TRACTS:

For this tract we used Survey of August 4, 1913 (List No. 3-2701) which survey was accepted October 13, 1922 by the GLO.

This survey shows 159.58 acres in HES 484; and has the acreages in each Section 4, 5 and 8 broken down by sections.

W/2 Section 4: Although the survey shows an amount of acreage (39.70) in the west half of Section 4, it does not have it broken down by quarter-sections. There is only a small part of the tract in the NW/4 of Section 4, and from metes and bounds we have calculated it to be 1.58 acres. This then leaves 38.12 acres remaining for the SW/4 of Section 4.

E/2 Section 5: The same as for Section 4, the total acresage in HES 484 is shown on the survey but not broken down by quarter-sections. A large part of the acreage in HES 484 is located in the SE/4 of Section 5; and by metes and bounds it was calculated to be 82.58 acres. However, from lease data covering the NW/4 and the SE/4 (except for HES 484) - by difference - the amount of HES 484 which is in the SE/4 of Section 5 shows to be 82.52 acres; and so this is the figure which we used for the SE/4 of Section 5. Since there is 110.70 acres all told for HES 484 in Section 5, the rest of it is in the NE/4. This leaves 28.18 acres for the NE/4.

NE/4 Section 8: All of the land in Section 8 under HES 484 is in the NE/4 and, as shown by the survey described above, is 9.18 acres.

HOMESTEAD ENTRY 486 (ALSO TRACT 23) AND ADJOINING TRACTS:

For this survey we have used the plat dated January 27, 1953, showing "Amended Lottings". Lottings shown cover Sections 4 and 5 - but the plat does not show the lottings for these sections.

NE/4 Section 8: The lottings on the subject plat for the NE/4 of Section 8 show (by difference) that 46.27 acres out of the NE/4 are occupied by parts of HES 484 and 486. The above referenced survey for HES 484 showed 9.18 acres out of HES 484 in the NE/4 of Section 8; accordingly, by difference, 37.09 acres out of HES 486 lies in the NE/4 of Section 8.

SE/4 Section 8: By metes and bounds the amount of acreage out of HES 486 which lies in the SE/4 of Section 8 is .04 acres.

NW/4 Section 9: By difference, from the lottings shown on the plat for the NW/4 of Section 9, 97.37 acres out of HES 486 lies in the NW/4 of Section 9.

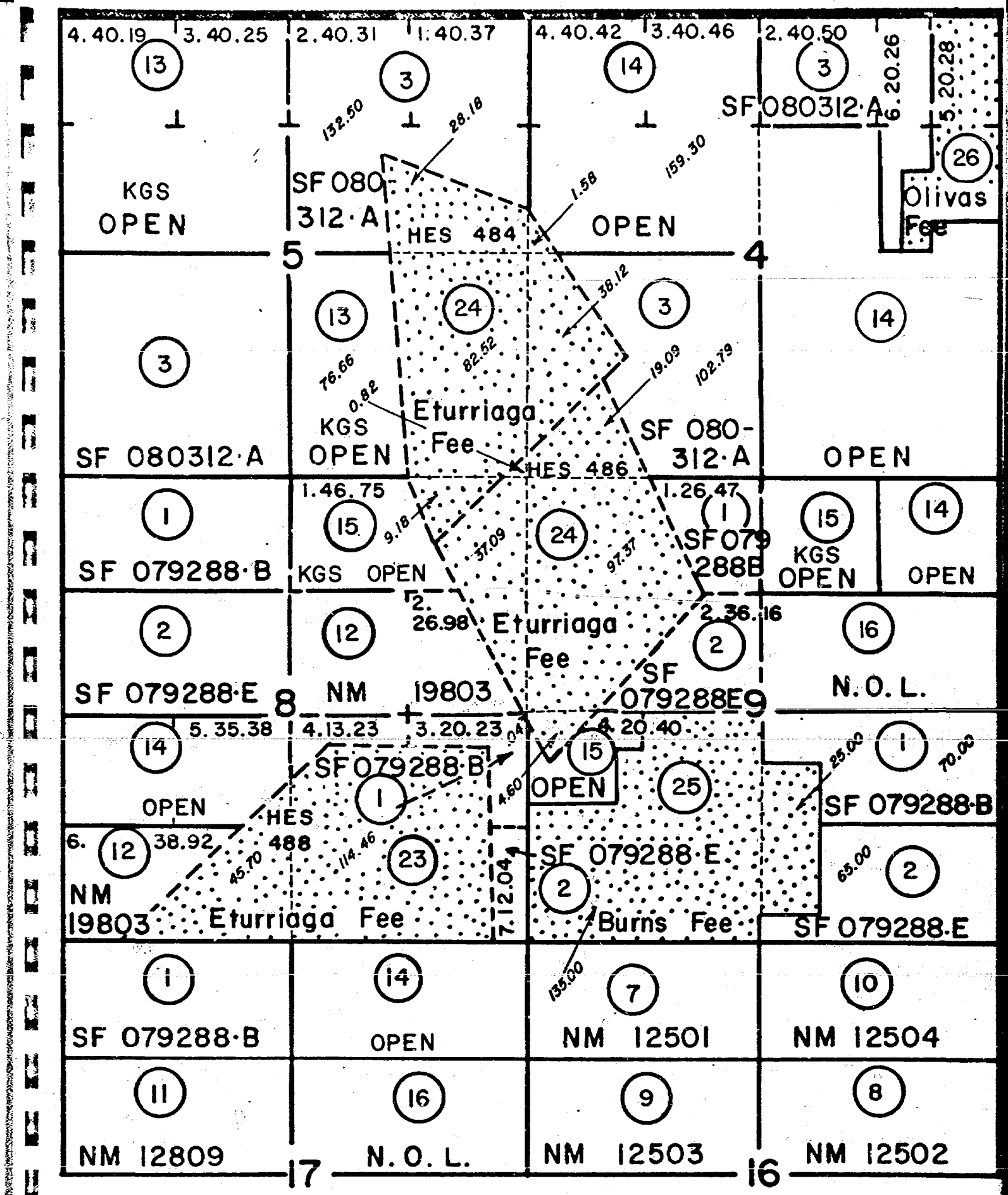
SW/4 Section 9: By difference, from the lottings shown for the SW/4 of Section 9, 4.60 acres out of HES 486 lies in the SW/4 of Section 9.

SE/4 Section 5: By metes and bounds we calculate .82 acres out of HES 486 to lie in the SE/4 of Section 5.

SW/4 Section 4: The January 27, 1953 plat does not show the total area under HES 486. Its calculated area by metes and bounds is 158.77 acres and the earlier listing for this tract under the initial Puerto Chiquito Unit showed 159.01 acres. We are assuming that 159.01 acres is correct: and if this be true, then by deducting the above amounts allocated to Sections 5, 8 and 9, there remains 19.09 acres for the SW/4 of Section 4. From metes and bounds of the survey we calculate 18.84 acres; so this seems reasonable, and accordingly we have allocated 19.09 acres to this portion of the survey.

HOMESTEAD ENTRY 488 (TRACT 22) AND ADJOINING TRACTS:

This tract lies wholly within the S/2 of Section 8, and the above described January 27, 1953 plat shows all of the lottings for the adjoining lots. Again, this plat does not show the area of HES 488; however, it is shown on the initial Puerto Chiquito Unit schedules as containing 159.99 acres, and calculation by metes and bounds also shows 159.99 acres. However, if the S/2 of Section 8 is regular and contains 320 acres, and the lottings shown on the January 27, 1953 plat are correct, then there must be in HES 488 not 159.99 acres but 160.16 acres. Therefore, to satisfy the basic assumption described at the beginning of this discussion that all of the sections are regular, it seems that the appropriate adjustment here is to change the area of HES 488 to 160.16 acres; and this we have done.



PORTION OF E.P.C.M.U. SHOWING QUARTER SECTION ACREAGE ALLOCATIONS TO TRACTS

...CIPAL MERIDIAN, NEW MEXICO.

Supplemental Plat

This plat, showing lots in secs. 8 and 9 created by the segregation of Homestead Entry Surveys 484, 486, and 488 is based upon the township plat approved July 12, 1918 and the record of the Homestead Entry Surveys.

484 from = 159.01 Acres (per lotes)
(158.77 by Nickey Gordon use 159.01

H.E.S. No. 484

H.E.S. No. 486

H.E.S. No. 488

Sec. 8

Sec. 9

H.E.S. 484	Acres
NW 4	97.37
SW 4	4.60 "
NE 5	37.09
SE 5	0.04
SE 5	0.82 ± (est.)
	139.92
SW 4 +	19.09 (by diff.)
	159.01

Note: Assume:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D. C.

H.E.S. 486

Length MN (from Survey for H.E.S. 484) = 17.57 + 5.71 + 26.11 − 9.38 = 39.99 ch

Length PM = 33.41 + 7.49 = 40.90 (This Survey)

" NO = (PM)(sin 76°01 / sin 75°59) = (40.90)(sin 76°01 / sin 75°59) = 40.91

" OP = 42.00 (This Survey)

① BALANCING of ANGLES

Line	Bearing	Azimuth	Deflection
MN	N 46°01'E	46°01'	76°01'R
NO	S 29°58'E	150°02'	104°01'R
OP	S 46°01'W	226°01'	75°59'R
PM	N 30°00'W	330°00'	103°59'R
			360° 00'

② LATITUDES, DEPARTURES, DMD's, AREA

(Red figures are to 4 decimal places)

Line	Dist. (ch)	Bearing	Latitude N	Latitude S	Departure E	Departure W	Correction LAT	Correction DEP	DMD	Double Area +	Double Area −
MN	40.01	N 46°01E	27.78		28.79		+27.7844 +27.79	+25.7921 +25.80	28.80	800	
NO	40.91	S 29°58E		35.44	20.43		−35.4344 −35.43	+20.4321 +20.43	78.03		2764
OP	42.00	S 46°01W		27.78		28.78	−27.7756 −27.78	−25.7771 −25.78	69.68	724	1935
PM	40.90	N 30°00W	35.42			20.45	+35.4256 +35.42	−20.4479 −20.45	20.45		
			63.20	63.22	49.22	49.23				1524	4700
				63.22		49.22					3175
				.02		.01				÷2 =	1587
				126.44		98.46					sq ch

EARLIER SHEET SHOWS 15901 × 1/10 = 158.78 Acres

× 1/10 = 158.77 by correction, the 4 decimals

H.E.S. 488

① BALANCING of ANGLES

Line	Bearing	Azimuth	Deflection
AB	N 47°25'E	47°25'	137°12' R
BC	N 90°00'E	90°00'	42°35' R
CD	S 00°00'W	180°00'	90°00' R
DE	N 89°40'W	270°20'	90°20' R
EA	N 89°47'W	270 13'	00°07' L
			360°00'

② LATITUDES, DEPARTURES, DMD's, AREA

Line	Dist. (ch)	Bearing	Latitude N	Latitude S	Departure E	Departure W	Corrected Lat	Corrected Dep	DMD	Double Area +	Double Area −
AB	49.96	N 47°25'E	33.81		36.79		+33.81	+36.50	36.80	1244.21	
BC	25.63	N 90°00'E	0		25.63		0	+23.64	102.24	0	
CD	34.14	S 00°00'W		34.14		0	-34.14	0	130.88		4468.2
DE	34.00	N 89°40'W	0.20			34.00	+.20	-33.99	96.89	19.38	
EA	31.45	N 89°47'W	0.12			31.45	+.12	-31.44	31.44	3.77	
			34.13	34.14	65.42	65.45	.01	.01		1267.37	4468.2
			34.13		65.42						1267.37
			.01		.03						3200.8
			68.27		131.87						÷2 = 1600.4 sq ch
											= 160.04 acres

NOTE: By Correcting Lat's & Dep's to 4 decimal places:

Corrected Lat.	Corrected Dep	DMD	Double Area +	Double Area −
+33.8150	+36.7984	36.7984	1244.34	
0	+25.6345	102.2333	0	
-34.135	0	130.8698		4467.24
+0.20	-33.9923	96.8775	19.38	
+0.12	-31.4426	31.4426	3.77	

3199.75 ÷2 = 1599.875 sq ch x HD² = 159.99 Acres

Survey accepted Oct. 11, 1922
G.L.O.

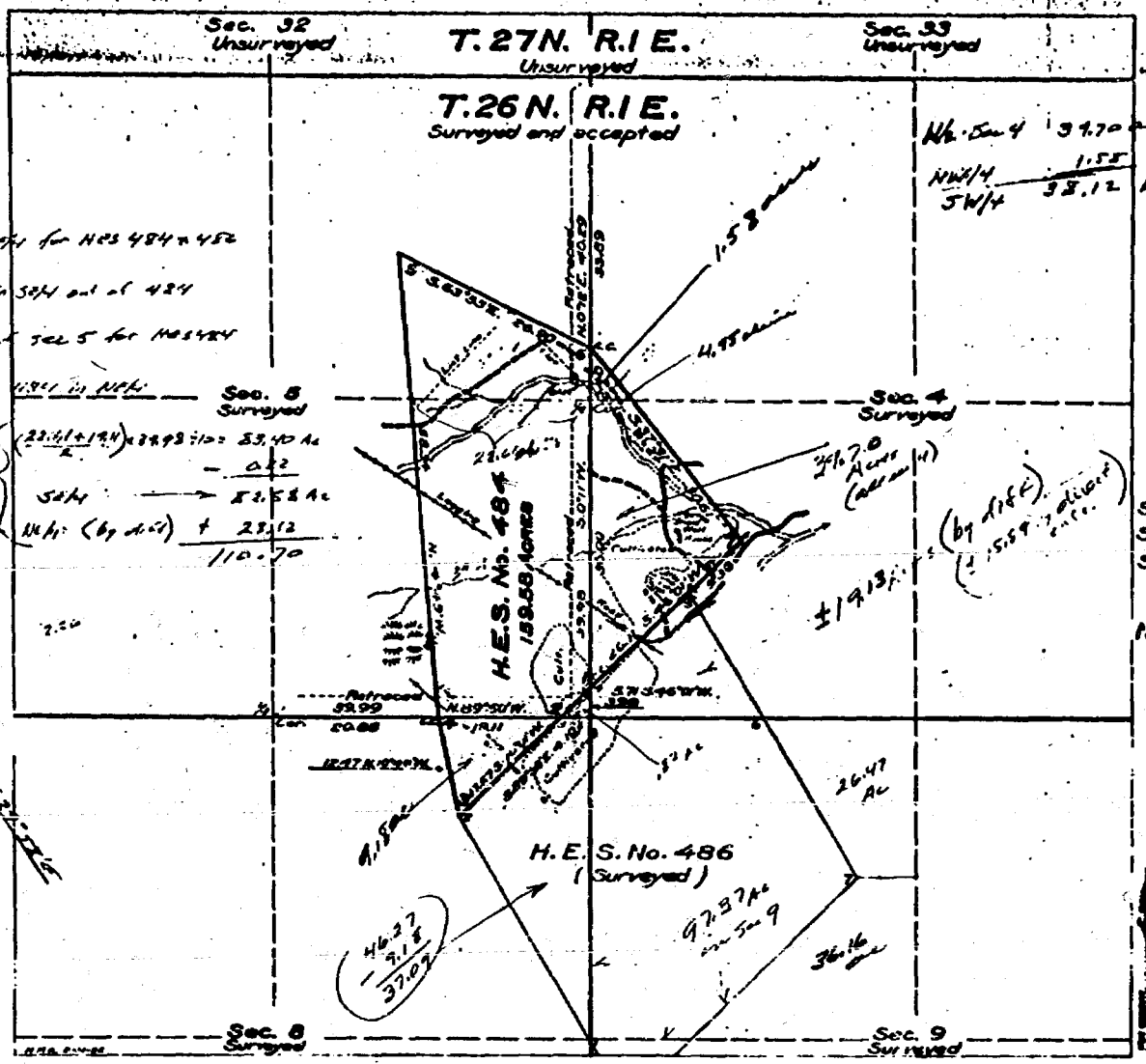
Plat of HOMESTEAD ENTRY SURVEY No. 484 in the SANTA FE NATIONAL FOREST

in

Section 4, surveyed T. 26 N. R. I E.
Section 5, surveyed T. 26 N. R. I E.
Section 8, surveyed T. 26 N. R. I E.

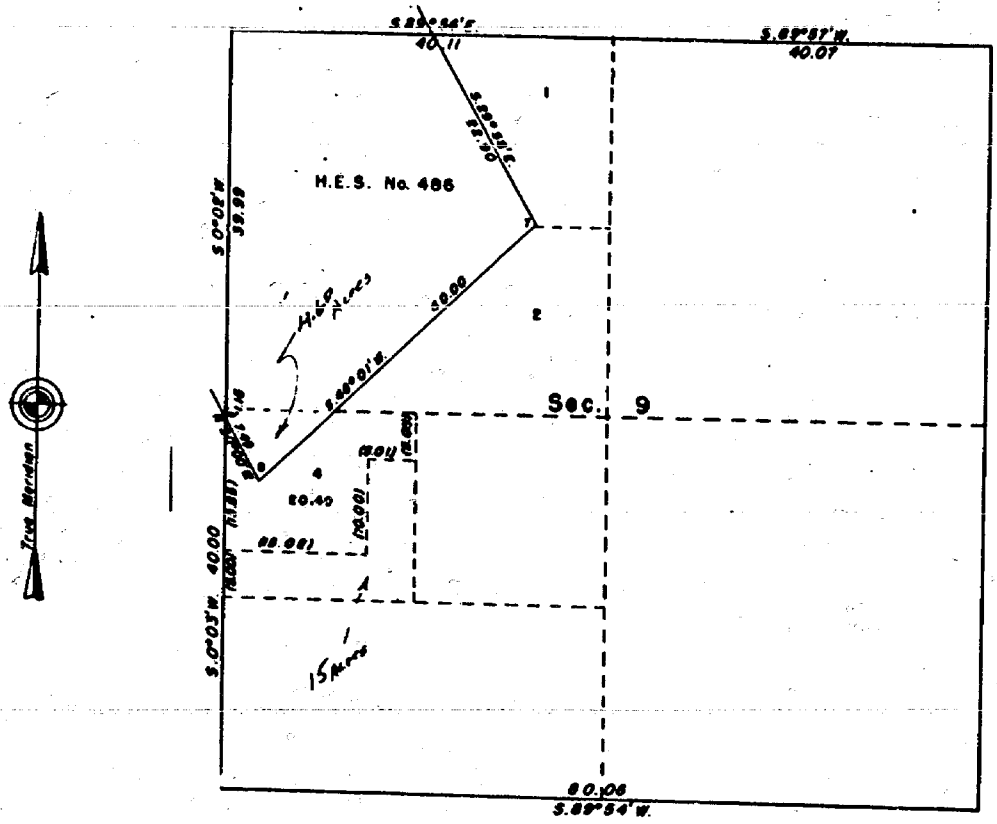
of the

NEW MEXICO PRINCIPAL MERIDIAN
NEW MEXICO


Sec. 32 Unsurveyed
T. 27N. R. I E.
Unsurveyed
Sec. 33 Unsurveyed
T. 26N. R. I E.
Surveyed and accepted
Sec. 5 Surveyed
Sec. 4 Surveyed
Sec. 8 Surveyed
Sec. 9 Surveyed
H.E.S. No. 484
138.58 Acres
H. E. S. No. 486
(Surveyed)
92.37 Ac
in Sec 9
±19.13 Ac
1.58 chains
4.15 chains
4.15 chains
S 53° 30' E
S 37° 30' W
N 53° 30' W
N 37° 30' E
Retraced
Retraced
Retraced

TOWNSHIP 26 NORTH, RANGE 1 EAST OF THE NEW MEXICO PRINCIPAL MERIDIAN, NEW MEXICO

SUPPLEMENTAL PLAT



Scale in Chains

This plat, showing Lot 4 created by the segregation of patented areas from M.E.S. No. 486, Sec. 9, is based upon the township plat approved July 18, 1950, and supplemental plat accepted January 27, 1953.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D. C. June 20, 1956

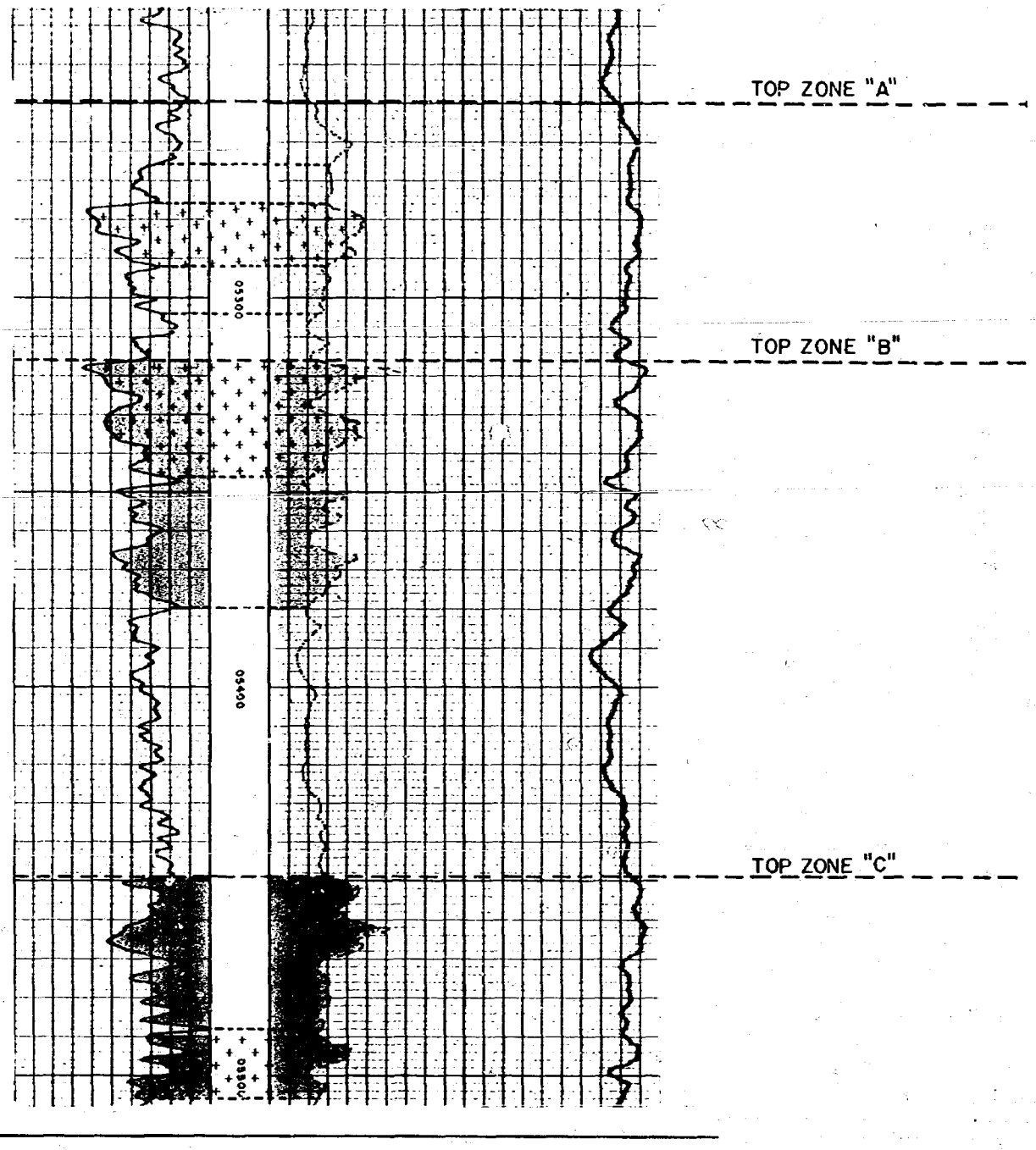
This plat showing amended lottings, having been correctly prepared in accordance with the regulations, is hereby accepted.

For the Director

IDENTIFICATION OF MAIN PRODUCING ZONES
NORTHEAST PUERTO CHIQUITO
AND
SOUTHWEST PUERTO CHIQUITO

BENSON-MONTIN-GREER DRLG. CORP.

CAÑADA OJITOS UNIT NO. B-18



EXOIL SERVICES

SUMMARY OF THREE RADIAL BEREA CORE FLOODS

EAST PUERTO CHIQUITO MANCOS UNIT PROJECT

for

Benson-Montin-Greer Drilling Corporation

by

EXOIL SERVICES

February 1980

EXOIL SERVICES

TABLE 1

SYNTHETIC PRODUCED AND FRESH WATER COMPOSITIONS

	PRODUCED WATER (mg/L)	
ION	Synthetic	Analyses
Mg	53	52
Ca	54	54
Na	8,057	Omitted
Cl	12,669	12,670
SO_4	5	5
TDS	20,808	28,800
Salt		
$MgSO_4$	6	
$CaCl_2$	150	
$NaCl$	20,480	
$MgCl_2 \cdot 6H_2O$	430	

Fresh Water = 49:1 dilution of produced water w/deionized water

TDS = 416 PPM

EXOIL SERVICES

TABLE 2

BMG CRUDE BENCH DATA

The following bench data was completed for BMG:

Crude I.D.'s

Exoil #	Sample I.D.
11-79	A3 Crude Oil
12-79	E2 Crude Oil
13-79	A1 Crude Oil
1-80	Jicarilla 237 F-30 Crude Oil

IFT's for crude oil samples 11-79, 12-79, and 13-79 were run vs. 0, 0.2, 0.4, and 0.6 wt% NaOH as follows:

	wt% NaOH				
Crude #	0.0	0.2	0.4	0.6	
11-79 (A-3)	31.9	24.1	23.5	17.9	IFT (dynes/cm)
12-79 (E-2)	28.4	16.9	12.8	5.2	
13-79 (A-1)	31.0	20.4	16.2	9.3	

The 1-80 crude (Jicarilla 237 F-30) was checked for IFT vs. 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 2.0, and 4.0% NaOH as follows:

Crude #1-80 — Sample used in tests following pages

	wt% NaOH							
	0.1	0.2	0.4	0.6	0.8	1.0	2.0	4.0
IFT (dynes/cm)	4.1	4.7	7.2	2.7	3.0	1.0	0.3	1.2

EXOIL SERVICES

TABLE 3

INJECTED FLUID PROPERTIES - BMG RADIAL CAUSTIC RUNS

RUN NO.	UNITS	1	2	3
Fresh Water				
Visc. @ 120°F	cp	0.6	0.6	0.6
Produced Water #2				
Visc. @ 120°F	cp	0.6	0.6	0.6
BMG Crude				
Visc. @ 120°F	cp	5.6	5.6	5.6
3% NaOH Solution+	pH	13.1	---	13.1
3% NaOH in Dow 700 Polymer+	pH	---	13.2	---
Polymer Concentration	ppm		2000	
Visc @ 120°F	cp		9.0	
Screen Factor @ Room Temp.			43.7	
Dow 700 Polymer+		---		
Polymer Concentration			400	400
Visc @ 120°F			9.1	8.5
Screen Factor @ Room Temperature			19.1	16.8

+ In synthetic BMG fresh water

Crude 1-BC

EXOIL SERVICES

TABLE 4

PERFORMANCE SUMMARY - BMG RADIAL BEREA DISC RUNS 1-3

Run No.		1	2	3
Core Properties				
Pore Volume	cc	196.2	195.7	196.1
Porosity	fract	.223	.222	.223
Permeability (overall)	md	510	486	491
Eff. Permeability (K_{orw})	md	507	474	481
Eff. Permeability (K_{wro})	md	47.5	47.5	16.6
Fluids Injected				
Waterflood	PV	2.05	2.06	2.12
Caustic	PV	.276	---	.250
Caustic Polymer	PV	---	.227	---
Polymer	PV	---	.499	.586
Fresh Water Flush	PV	.502	.564	.428
Produced Water Flush	PV	.763	.351	.243
Oil Recovery				
Initial Oil Sat. (S_{oi})	cc	119.0	120.0	118.0
	PV	0.607	0.613	0.602
Waterflood Oil Recovery	cc	48.2	47.3	44.8
	PV	0.246	0.242	.228
	$\%S_{oi}$	40.5	39.4	38.0
Waterflood Oil Sat. (S_{or})	cc	70.8	72.7	73.2
	PV	0.361	0.371	0.373
Tertiary Oil Recovery	cc	30.0	36.3	31.7
	PV	0.153	0.185	0.162
	$\%S_{or}$	42.4	49.9	43.3
Residual Oil Sat. (S_{of})	cc	40.8	36.4	41.5
	PV	0.208	0.186	0.212
Total Oil Recovery	cc	78.2	83.6	76.5
	PV	0.399	0.427	0.390
	$\%S_{oi}$	65.7	69.7	64.8

Cancelled - EXO

EXOIL SERVICES

TABLE 5

RUN BMG-1: PRODUCED FLUIDS pH DATA - CAUSTIC RUN

Caustic pH = 13.1

Caustic Flood Sample #	PV Produced	pH
1	0.046	7.7
10	0.463	7.0
11	0.523	12.3
13	0.619	12.3
16	0.755	12.3
20	0.937	12.3
22	1.027	12.3
24	1.119	12.2
26	1.209	12.2
28	1.300	12.0
30	1.392	11.8
32	1.484	11.5
34	1.570	10.5

EXOIL SERVICES

TABLE 6

RUN BMG-2: PRODUCED FLUIDS pH DATA - CAUSTIC-POLYMER RUN

Waterflood H_2O pH = 6.8			Caustic Polymer pH = 13.2		
Waterflood Sample #	PV Produced	pH	Cautic Flood Sample #	PV Produced	pH
6	0.282	7.3	1	0.047	7.0
8	0.376	7.5	5	0.229	7.0
10	0.468	1.9	10	0.457	6.9
12	0.561	2.9	12	0.550	7.1
14	0.654	7.0	13	0.602	11.8
18	0.838	7.0	14	0.654	12.4
26	1.205	7.0	21	0.984	12.4
34	1.572	7.0	25	1.169	12.4
46	2.080	7.0	27	1.257	12.2
			31	1.435	11.9
			37	1.679	11.5

EXOIL SERVICES

TABLE 7

RUN BMG-3: PRODUCED FLUIDS pH DATA - CAUSTIC RUN

Waterflood H_2O pH = 6.8

Waterflood Sample #	PV Produced	pH
6	0.246	6.8
10	0.432	6.8
15	0.666	6.6
21	0.945	6.8
29	1.316	6.9
37	1.683	6.8
47	2.142	6.8

Caustic pH = 13.1

Waterflood Sample #	PV Produced	pH
1	0.047	6.8
9	0.366	6.8
10	0.412	7.0
11	0.463	12.3
12	0.513	12.5
15	0.652	12.5
21	0.931	12.5
25	1.115	12.4
29	1.299	12.4
31	1.389	12.2
33	1.481	12.2
34	1.525	11.8

FIGURE DISC RUN #1 : WATERFLOOD OIL RECOVERY

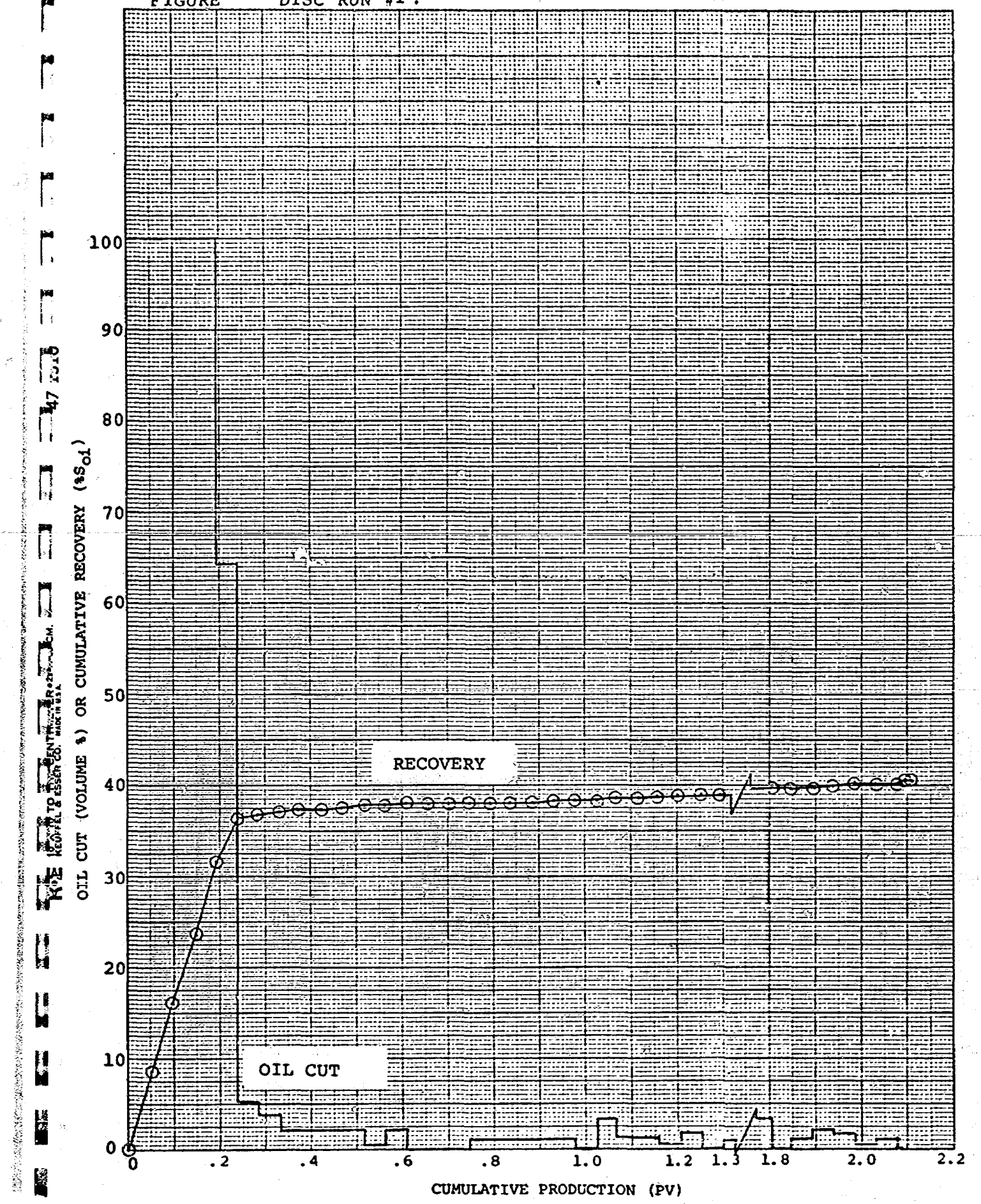


FIGURE DISC RUN #1: TERTIARY OIL RECOVERY

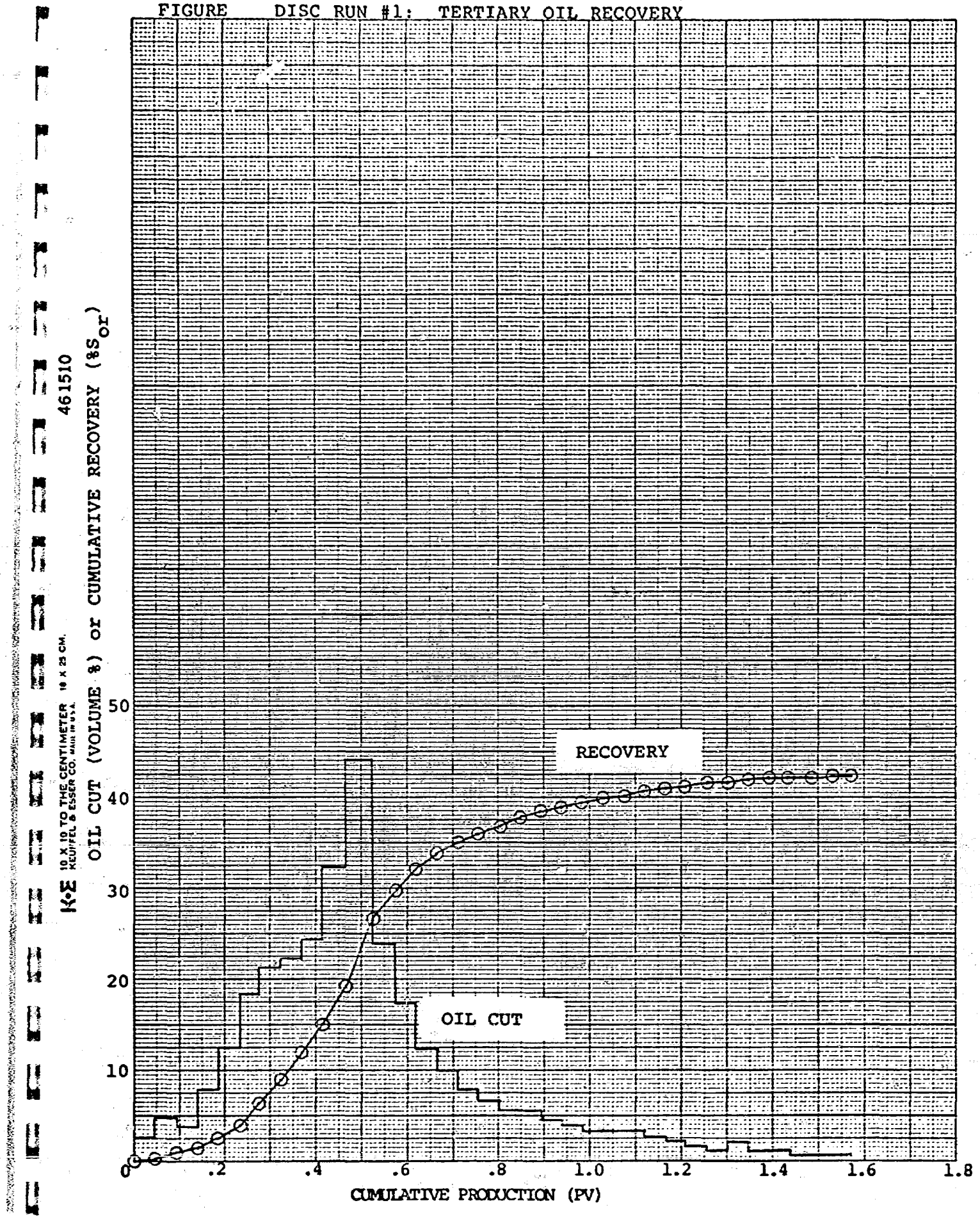


FIGURE DISC RUN #2: WATERFLOOD OIL RECOVERY

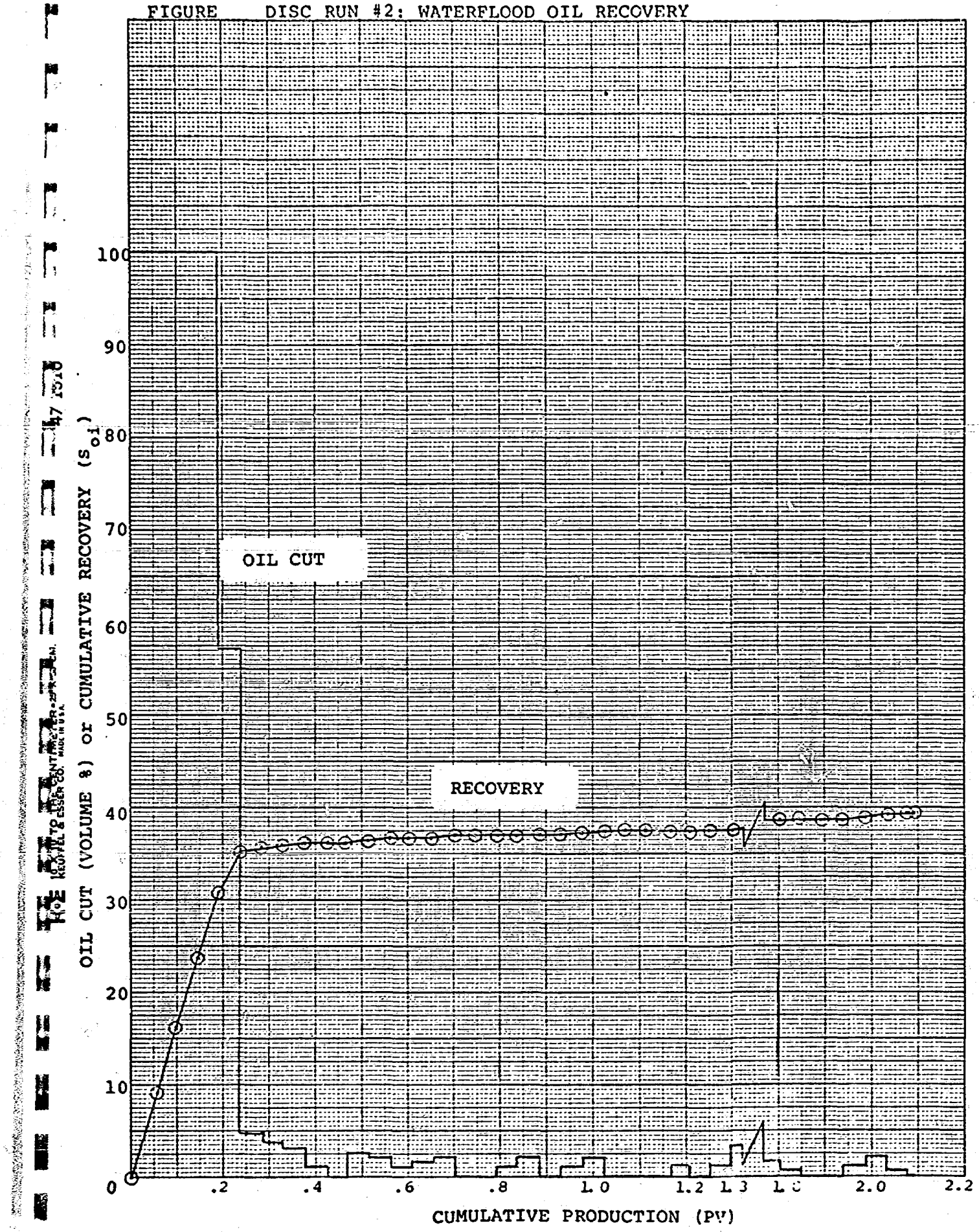


FIGURE DISC RUN #2: TERTIARY OIL RECOVERY

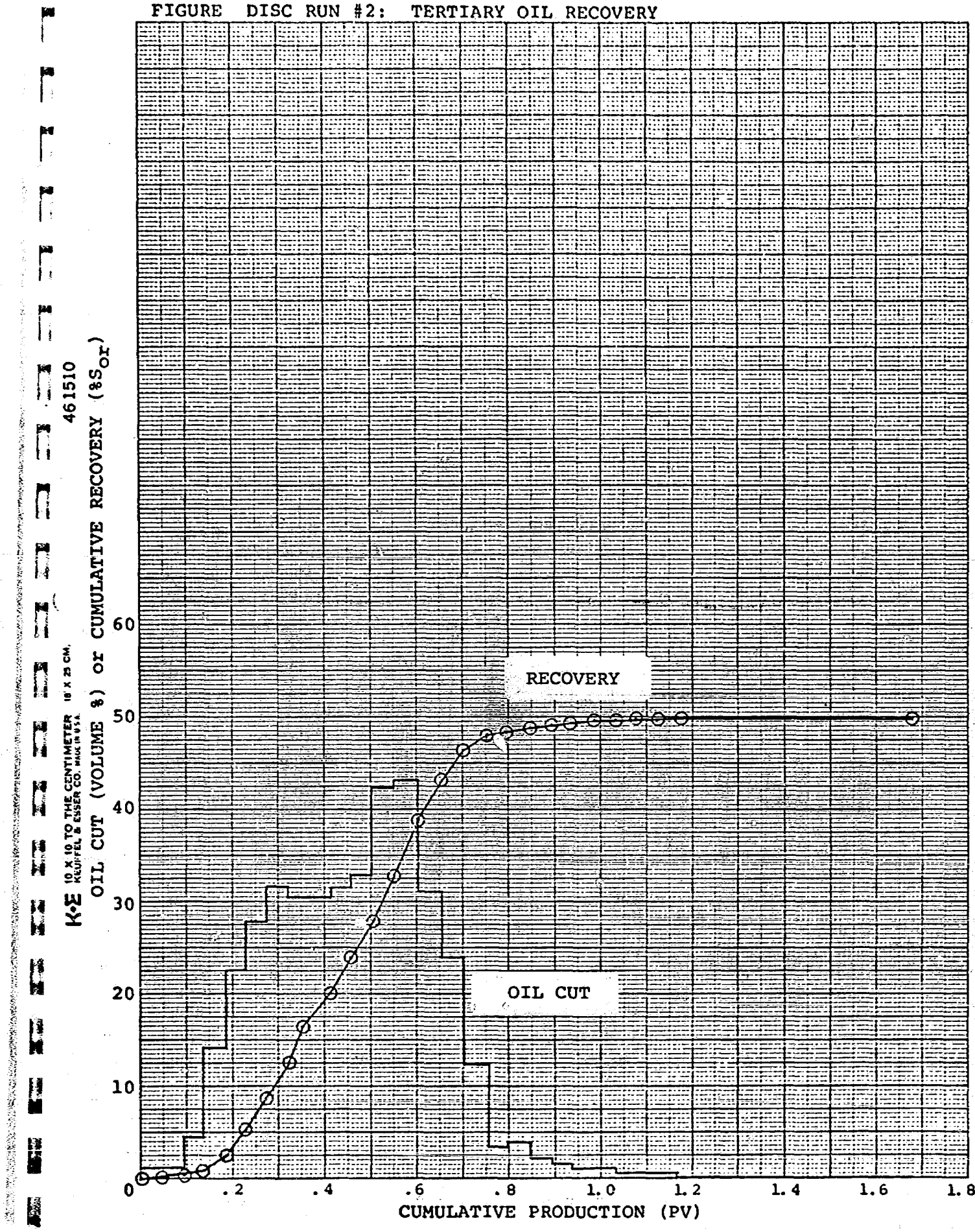


FIGURE DISC RUN #3: WATERFLOOD OIL RECOVERY

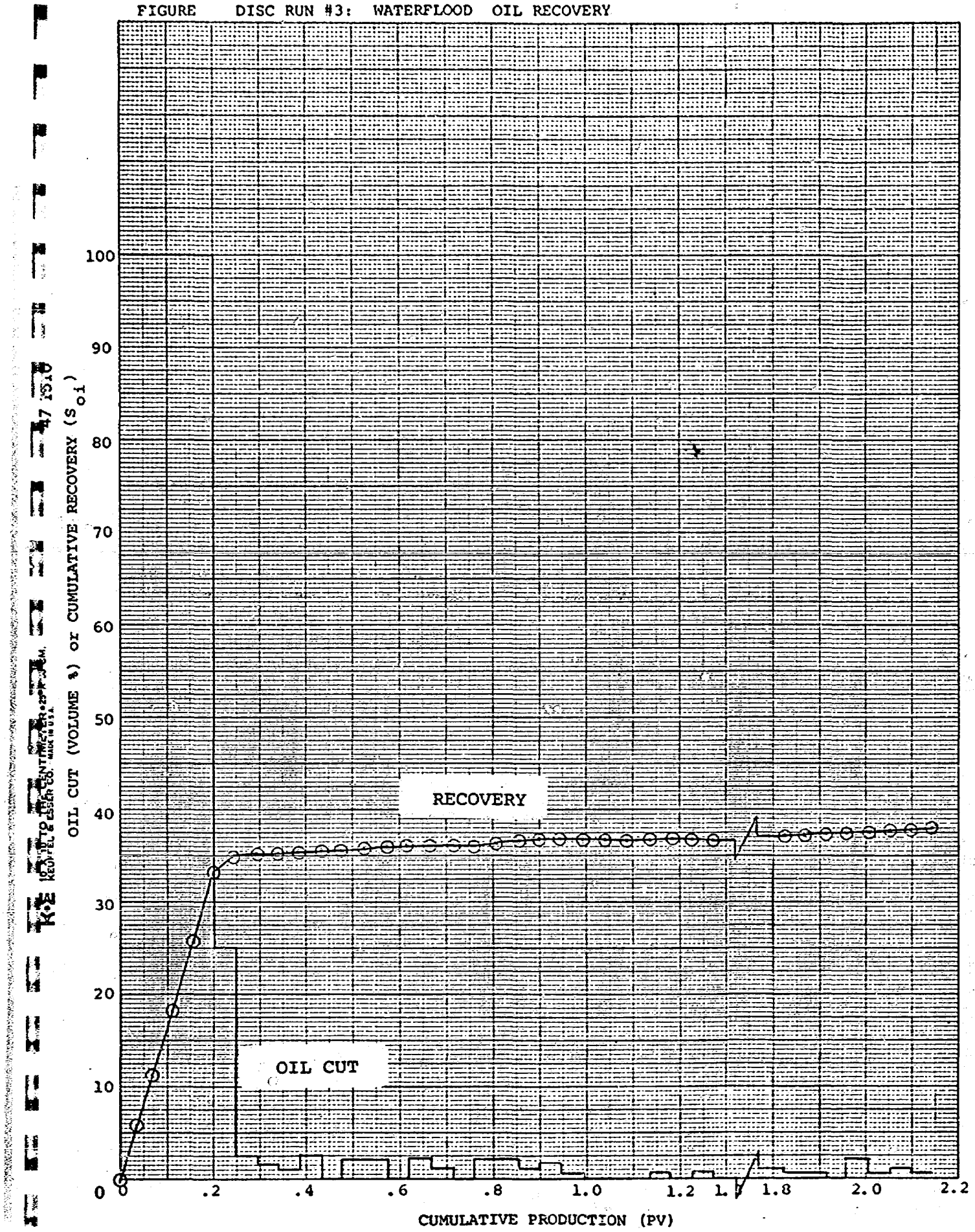
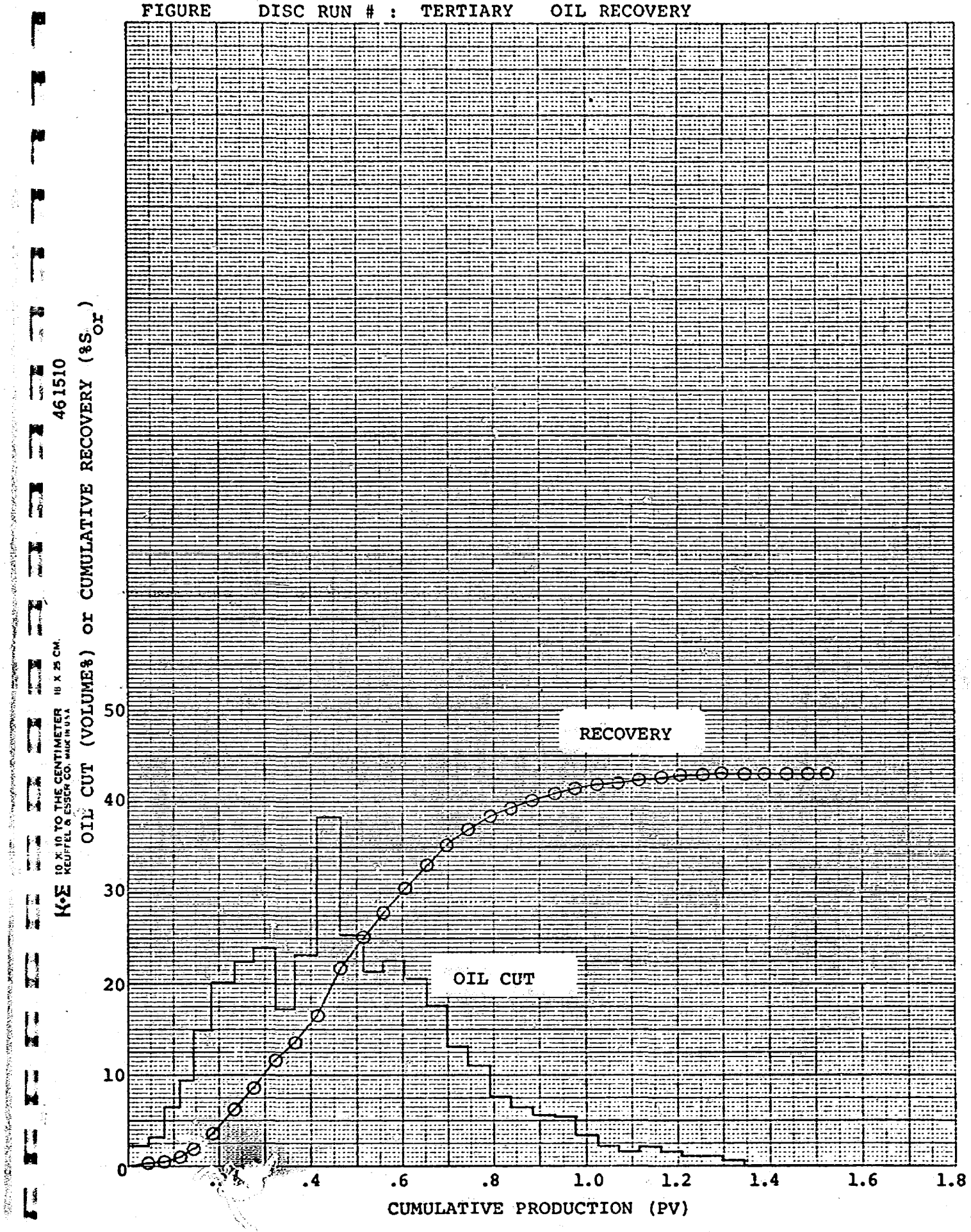
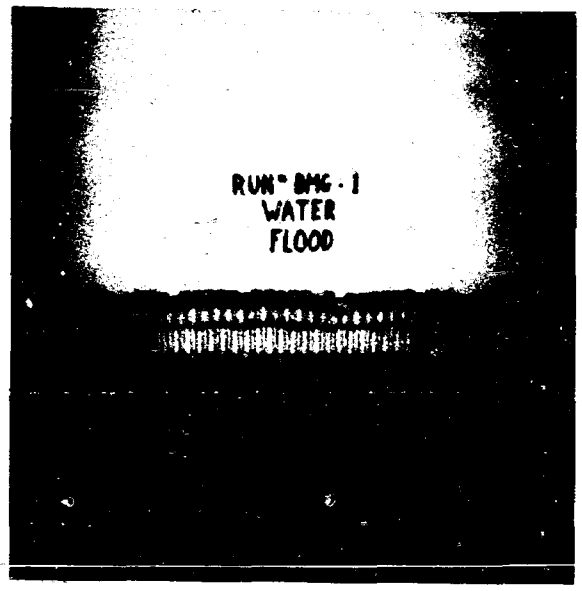
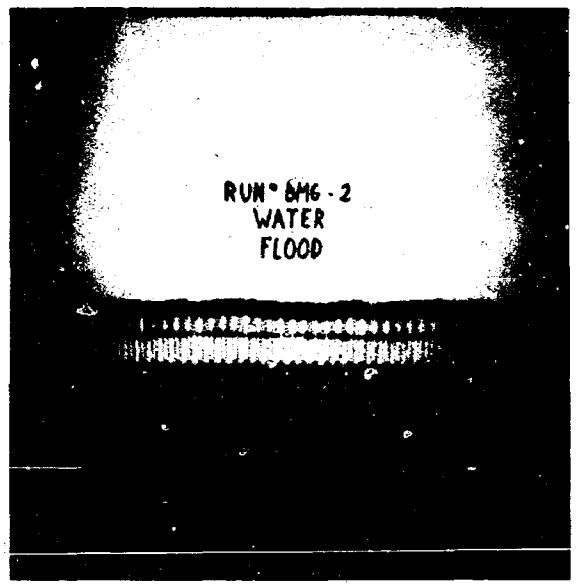


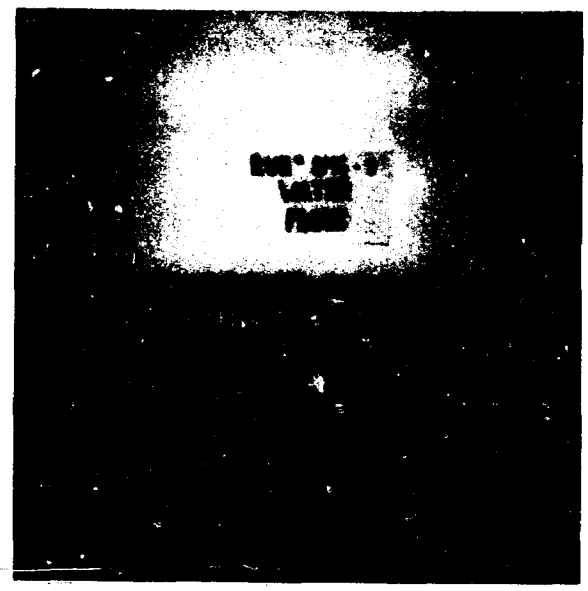
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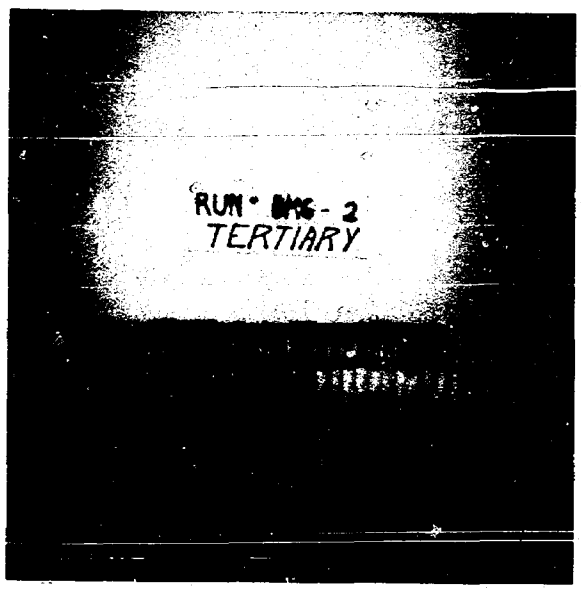
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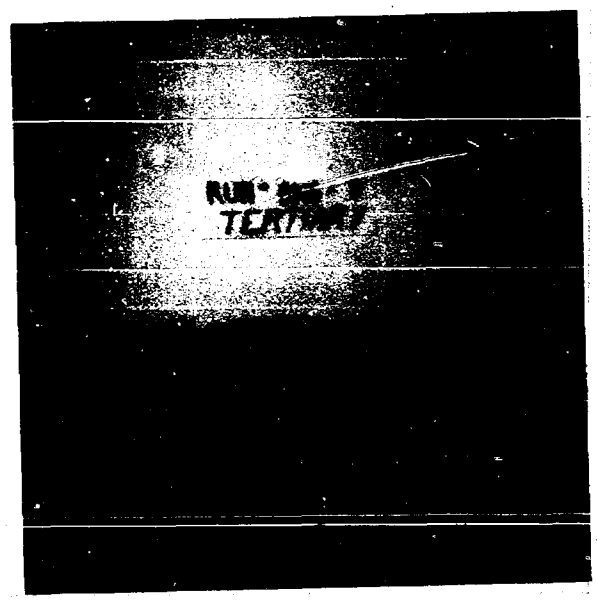

RUN • BMG - 1
WATER
FLOOD


RUN • BMG - 2
WATER
FLOOD




TERTIARY


RUN • BMG - 2
TERTIARY


TERTIARY

EAST PUERTO CHIQUITO MANCOS UNIT AGREEMENT

PRODUCTION HISTORIES OF WELLS IN UNIT AREA

(OIL VOLUME IN BARRELS)

LEASE OR WELL	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Jic 237			9,602	12,297	71,217	266,404	363,744	317,985	243,809	165,063	160,182	142,251	157,619	149,485	126,884	85,056
Jic 287			1,140	3,334	10,438	9,827	7,269	6,478	4,024	3,137	3,632	1,836	2,434	1,723	1,468	1,385
Bernie		3,024	7,812	5,532	9,667	7,679	7,137	6,547	6,112	4,464	6,128	4,934	5,278	4,294	4,635	4,329
PC C-5					645	316	10,500	7,830	10,871	10,486	11,131	9,197	5,010	799	SI	SI
Alto	17,455	6,190	5,929	5,274	7,486	3,146	1,825	422	SI	SI	SI	SI	SI	SI	SI	SI
PC H-5			2,566	6,444	5,034	3,572	2,244	1,277	2,390	1,253	1,110	811	991	690	739	821
Hijo 1-X			1,981	3,632	2,564	60	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI
PC I-8				1,468	1,910	910	1,441	2,143	944	1,011	1,225	959	789	560	204	807
PC D-9										64	11,954	16,626	16,603	13,788	12,167	10,221
PC P-9									2,953	2,197	1,665	1,449	1,339	753	568	873
Casa	2,198	1,517	1,084	536	802	SI	SI	SI	SI	SI	SI	590	410	467	392	378
PC I-6														411	4,760	3,732
Bajo	6,844	13,713	12,383	10,307	8,836	7,065	6,072	2,248	5,281	3,493	2,374	939	2,700	1,740	1,325	1,289
Jic. 238				3,198	1,443	447	269	912	527	309	210	315	288	151	458	215
TOTALS	26,497	24,444	42,497	52,022	120,042	299,426	400,501	345,842	276,911	191,477	199,611	179,907	193,461	174,861	153,600	109,106
All of above except C-5 and Hijo:	26,497	24,444	40,516	48,390	116,833	299,050	390,001	338,012	266,040	180,991	188,480	170,710	188,451	174,062	153,600	109,106

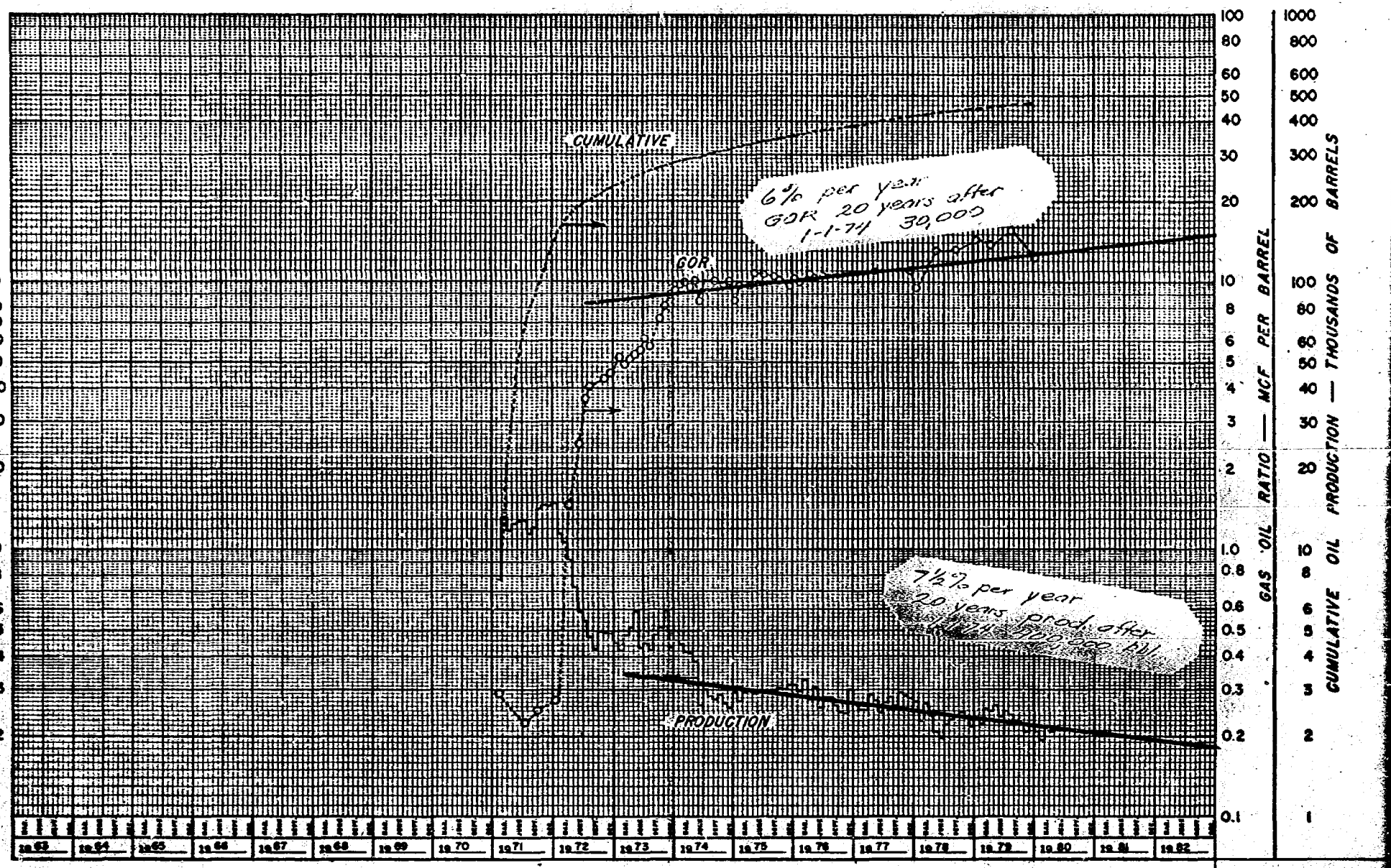
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EAST PUERTO CHIQUITO MANCOS UNIT AGREEMENT

PRODUCTION HISTORIES OF WELLS IN UNIT AREA

(OIL VOLUME IN BARRELS)

LEASE OR WELL	1976	1977	SUM OF 1976 & 1977	1978	1979	TOTAL 1960-1979
Jic 237	89,177	63,300	152,477	55,974	42,325	2,522,374
Jic 287	1,412	916	2,328	1,046	1,469	62,968
Bernie	3,290	875	4,165	1,743	1,561	95,041
PC C-5	SI	SI	-0-	SI	SI	66,785
Alto	SI	SI	-0-	SI	SI	47,727
PC H-5	814	678	1,492	664	430	32,528
Hijo 1-X	SI	SI	-0-	SI	SI	8,237
PC I-8	1,838	1,489	3,327	994	1,054	19,746
PC D-9	9,751	7,795	17,546	5,450	4,052	108,471
PC P-9	572	453	1,025	381	195	13,398
Casa	374	321	695	264	188	9,521
PC I-6	3,325	4,097	7,422	1,754	1,414	19,493
Bajo	1,085	865	1,950	822	808	90,189
Jic 238	227	155	382	-0-	-0-	9,124
TOTALS	111,865	80,944	192,809	69,092	53,496	3,105,602
All of above except C-5 and Hijo:	111,865	80,944	192,809	69,092	53,496	3,030,580



PRODUCTION HISTORY
CANADA OJITOS UNIT WELL C-34

C.O.U. C-34
PRODUCTION
HISTORY
S. 24 - 22N - 11W

APPROXIMATE ECONOMICS OF PRESSURE MAINTENANCE
BY GAS INJECTION, WATERFLOODING, AND TERTIARY RECOVERY METHODS

PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT

Estimated Increased Production

A. Estimated increase in recovery through pressure maintenance by gas injection:

(1) 10% of past production volume to be recovered from the high capacity fracture system	300 M bbls	
(2) 10% of past production volume to be recovered from the "tight" blocks and from solution-gas drive	300 M bbls	
Total		600 M bbls

B. Estimated increase in production to be recovered by waterflooding:

12-15% of past production volume to be recovered by waterflooding	400 M bbls

C. Estimated increase in production through use of tertiary method (flooding with caustic-treated water):

Laboratory analysis of this type oil and flooding with 3% sodium hydroxide showed an increase of 62.2% recovery over and above primary plus waterflood. Assuming 75% efficiency leaves 46%. Applying 46% to the sum of volumes of A (1) and B above (700 M/bbls) is 300 M/bbls+ for this increment. Because of the "front end money incentive program" additional wells will be drilled improving the efficiency of recovery, which is estimated to add approximately 100 M/bbls and is credited to the "tertiary" program because of the incentive funding.

Total these items	400 M bbls
Total Future Production	1400 M bbls

Estimated Basic Cost (Excluding Operating Expense)

		($M)
Gas Injection:		400
Water Flooding: (convert 2 wells to injection)		250
Tertiary Program:		
Chemicals	2,000	
Wells *	2,200	
(not including additional cost of handling tertiary chemicals)		4,200

Summary of Economics (Excluding Operating Expense)

	Approximate Cost ($M)	Approximate Recovery (M bbls)	Cost of Additional Recovery ($/Gross Bbl)
Gas Injection (600M-65M bbls)	400	535	$1.34
Water Flooding	250	400	$1.60
Tertiary	4,200	400	$10.50

* Location of proposed additional producing wells:
Section 5: SE/4 and SW/4
Section 8: NE/4 and NW/4
Section 9: SW/4
Section 20: NW/4
Section 21: NW/4

Location of 2 additional water injection wells:
Section 7: NE/4
Section 19: NW/4

APPROXIMATE ECONOMICS OF PRESSURE MAINTENANCE
BY GAS INJECTION, WATERFLOODING AND TERTIARY RECOVERY METHODS
PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT

INITIAL PLAN OF OPERATIONS
FIRST APPROXIMATE 18 MONTHS OF OPERATION

EAST PUERTO CHIQUITO MANCOS UNIT

JULY, 1980

In accordance with Section 10 of the Unit Agreement, Benson-Montin-Greer Drilling Corp., Unit Operator of the proposed East Puerto Chiquito Mancos Unit will submit concurrently with application for final approval an Initial Plan of Operation summarized as follows:

Commence immediately:

1. Convert to gas injection the following listed wells:
   C-2 NENW Section 28
   G-29 SWNE Section 29
   D-4 NWNW Section 4

2. Install gas gathering, gas lift, gas injection lines (fuel for the compressor will be gas produced from unit wells).

3. Install approximately 200 hp compressor.

4. Commence gas gathering, gas lift and gas injection.

Next, following above, or perhaps concurrently:

5. Convert to water injection the following wells:
   F-6 SENW Section 6
   H-25 SENE Section 25

6. Drill water injection wells at the following locations:
   NE/4 Section 7
   NW/4 Section 19

7. Provide water source well.

8. Install water gathering and distribution systems and commence water injection (probably with tertiary chemicals added).

9. Commencement of drilling of additional producing wells probably will be undertaken in this initial 18-month period of operation.

BENSON-MONTIN-GREER DRILLING CORP.
EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO
EXHIBITS IN CASES 6943 & 6944
BEFORE THE
NEW MEXICO OIL CONSERVATION DIVISION
JULY 9, 1980

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SECTION "UNIT AGREEMENT":	REDUCED COPY OF UNIT AGREEMENT
SECTION "UNIT OPERATING AGREEMENT"	REDUCED COPY OF UNIT OPERATING AGREEMENT WITH EXHIBITS F AND G ATTACHED
SECTION "A":	EXHIBIT "A" TO UNIT AGREEMENT
SECTION "B":	EXHIBIT "B" TO UNIT AGREEMENT
SECTION "C":	EXHIBIT "C" (PART I) TO UNIT AGREEMENT
SECTION "D":	EXHIBIT "D" TO UNIT AGREEMENT
SECTION "E":	EXHIBIT "E" TO UNIT OPERATING AGREEMENT
SECTION "F":	DESCRIPTION OF PARAMETERS USED IN DETERMINING TRACT PARTICIPATIONS
SECTION "G":	PART II OF EXHIBIT C TO UNIT AGREEMENT
SECTION "H":	PART III OF EXHIBIT C TO UNIT AGREEMENT (STRUCTURAL POSITION WEIGHTING FACTOR. SCHEDULES I, II, III AND CONTOUR MAP OF STRUCTURAL POSITION WEIGHTING FACTOR
SECTION "I":	PART IV OF EXHIBIT C TO UNIT AGREEMENT (ALLOCATION OF PRODUCTION TO TRACTS)
SECTION "J":	SURVEY NOTES REGARDING BALANCING OF TRACTS

SECTION "K":	LOCATION PLAT - LANDS WITHIN TWO-MILE ARCS OF PROPOSED INJECTION WELLS
SECTION "L":	1. PLAT: TYPE LOG SHOWING PRODUCTIVE INTERVAL 2. MAP: CONTOUR MAP SHOWING INJECTION AND PRODUCING WELLS
SECTION "M":	LABORATORY ANALYSIS OF TERTIARY FLOODING DATA (AND PHOTOS)
SECTION "N":	SCHEDULE OF PRODUCTION
SECTION "O":	1. GRAPH OF CANADA OJITOS UNIT C-34 PRODUCTION HISTORY 2. SCHEDULE OF ECONOMICS 3. GRAPH OF PAST AND PROJECTED PRODUCTION, EAST PUERTO CHIQUITO MANCOS UNIT
SECTION "P":	PLAN OF OPERATION

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UNIT AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

COUNTY OF RIO ARRIBA

STATE OF NEW MEXICO

EPCMUA-6180 REV B

Dated June 1, 1980

UNIT AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO

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Exhibit "A" (Map of Unit Area)
Exhibit "B" (Schedule of Ownership)
Exhibit "C" (Schedule of Tract Participation)
Exhibit "D" (Section 202 of Executive Order 11246)

UNIT AGREEMENT
FOR THE DEVELOPMENT AND OPERATION
OF THE
EAST PUERTO CHIQUITO MANCOS UNIT
COUNTY OF RIO ARRIBA
STATE OF NEW MEXICO
NO. _____

THIS AGREEMENT, entered into as of the 1st day of June, 1980, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "Parties hereto",

WITNESSETH:

WHEREAS, the parties hereto are the owners of working, royalty, or other oil and gas interests in the Unit Area subject to this Agreement; and

WHEREAS, the Mineral Leasing Act of February 25, 1920, 41 Stat. 437, as amended, 30 U. S. C. Secs. 181 et seq., authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating a unit plan of development or operation of any oil or gas pool, field, or like area, or any part thereof for the purpose of more properly conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

WHEREAS, the rules and regulations governing the leasing of restricted allotted and tribal Indian lands for oil and gas, promulgated by the Secretary of the Interior (25 C.F.R. 172.24(c)) 1909, 35 Stat. 783, 25 U.S.C. Section 396 and the Tribal Land Mineral Leasing Act of May 11, 1938, 52 Stat. 347, 25 U.S.C. Sections 396a et seq., and the oil and gas leases covering said allotted and tribal Indian lands provide for the commitment of such leases to a cooperative or unit plan of development or operations; and

WHEREAS, the Oil Conservation Division of the Energy and Minerals Department of the State of New Mexico is authorized by an Act of the Legislature (Chapter 72, Laws of 1935, as amended, being Section 70-2-1 et sec. New Mexico Statutes Annotated, 1979 Compilation) to approve this Agreement, and the conservation provisions hereof; and

WHEREAS, the parties hereto hold sufficient interests in the East Puerto Chiquito Mancos Unit Area covering the land hereinafter described to give reasonably effective control of operations therein; and

WHEREAS, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure the other benefits obtainable through development and operation of the area subject to this Agreement under the terms, conditions, and limitations herein set forth;

NOW, THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this Agreement their respective interests in the unitized formation of the below defined Unit Area, and agree severally among themselves as follows:

1. ENABLING ACT AND REGULATIONS.

The Mineral Leasing Act of February 25, 1920, as amended, supra, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder and valid, pertinent, and reasonable regulations hereafter issued thereunder are accepted and made a part of this Agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this Agreement; and as to non-Federal lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State of New Mexico, are hereby accepted and made a part of this Agreement.

2. UNIT AREA AND DEFINITIONS.

For the purpose of this agreement, the following terms and expressions as used herein shall mean:

(a) "Unit Area" is defined as those lands described in Exhibit B and depicted on Exhibit A hereof, and such land is hereby designated and recognized as constituting the Unit Area, containing 9,769.02 acres, more or less, in Rio Arriba County, New Mexico.

(b) "Superintendent" is defined as the superintendent of the Bureau of Indian Affairs for the Jicarilla Tribe.

(c) [redacted] is defined as the Oil Conservation Division of the Oil and Minerals Department of the State of New Mexico.

(d) "Director" is defined as the Director of the United States Geological Survey.

(e) "Secretary" is defined as the Secretary of the Interior of the United States of America, or his duly authorized delegate.

(f) "Department" is defined as the Department of the Interior of the United States of America.

(g) "Deputy" is defined as the Deputy Conservation Manager of the Oil and Gas Division of the United States Geological Survey for the area in which the Unit Area is situated.

(h) "Unitized Formation" shall mean that subsurface portion of the Unit Area commonly known as the Mancos; and which is that continuous stratigraphic interval occurring between the base of the Mesa Verde formation and the top of the Graneros member, and which is the same formation that was encountered between the logged (Schlumberger Induction-Gamma Ray log 8-23-60) depths of 1175' and 3143' in Intex Oil Company's #1 Hijo, located 1980' from the north line and 1980' from the west line of section 5, T-26N, R-1E, within the Unit Area.

(i) "Unitized Substances" are all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate and all associated and constituent liquid or liquefiable hydrocarbons within and produced from the Unitized Formation, of the Unitized Land.

(j) "Tract" is each parcel of land described as such and given a Tract Number in Exhibit B.

(k) "Tract Participation" is defined as the percentage of participation shown on Exhibit C for allocating Unitized Substances

to a Tract under this Agreement.

(l) "Working Interest Unit Participation" of a Working Interest Owner is the sum of the percentages obtained by multiplying the Working Interest of such Working Interest Owner in each Tract by the Tract Participation of such Tract.

(m) "Working Interest" is the right to search for, produce and acquire Unitized Substances whether held as an incident of ownership of mineral fee simple title, under an oil and gas lease, or otherwise held, which interest is chargeable with and obligated to pay or bear, either in cash or out of production, or otherwise, all or a portion of the cost of drilling, developing and producing the Unitized Substances from the Unitized Formation and operations thereof hereunder; provided further, that any royalty interest created out of a working interest subsequent to the execution of this Agreement by the owner of the working interest shall continue to be subject to such working interest burdens and obligations.

(n) "Working Interest Owner" is any party hereto owning a Working Interest, including a carried working interest owner, holding an interest in Unitized Substances by virtue of a lease, operating agreement, fee title or otherwise. The owner of Oil and Gas Rights that are free of lease or other instrument creating a Working Interest in another shall be regarded as a Working Interest Owner to the extent of seven-eighths (7/8) of his interest in Unitized Substances, and as a Royalty Owner with respect to his remaining one-eighth (1/8) interest therein.

(o) "Royalty Interest" or "Royalty" is an interest other than a Working Interest in or right to receive a portion of the Unitized Substances or the proceeds thereof and includes the royalty interest reserved by the lessor by an oil and gas lease and any overriding royalty interest, oil payment interest, net profit contracts, or any other payment or burden which does not carry with it the right to search for and produce Unitized Substances.

(p) "Royalty Owner" is the owner of a Royalty Interest.

(q) "Oil and Gas Rights" is the right to explore, develop and operate lands within the Unit Area for the production of Unitized Substances, or to share in the production so obtained or the proceeds thereof.

(r) "Outside Substances" is any substance obtained from any source other than the Unitized Formation and injected into the Unitized Formation.

(s) "Unit Operator" is the party designated by Working Interest Owners to conduct Unit Operations.

(t) "Unit Operations" is any operation conducted pursuant to this Agreement.

(u) "Unit Equipment" is all personal property, lease and well equipment, plants, and other facilities and equipment taken over or otherwise acquired for use in Unit Operations.

(v) "Unit Expense" is all cost, expense, or indebtedness incurred pursuant to this agreement for or on account of Unit Operations.

3. EXHIBITS.

Exhibit A attached hereto is a map showing the Unit Area and the boundaries and identity of tracts and leases in said Unit Area to the extent known to the Unit Operator. Exhibit B attached hereto is a schedule showing to the extent known to the Unit Operator the acreage comprising each tract, percentages and kind of ownership of oil and gas interests in all land in the Unit Area. Exhibit C attached hereto shows the Tract Participation of each Tract in the Unit Area. However, nothing herein or in said schedule or map shall be construed as a representation by any party hereto as to the ownership of any interest other than such interest or interests as are shown in said map or schedule as owned by such party. Exhibit D attached hereto is the provisions of paragraphs 1 through 7 of Section 202 of Executive Order 11246. Exhibits A and B and C shall be revised by the Unit Operator whenever changes in the Unit Area render such revision necessary, or when requested by the Deputy, and copies of such revision shall be filed with the Superintendent and the Division, and not less than five copies shall be filed with the Deputy.

4. EXPANSION.

The above-described Unit Area shall when practicable be expanded to include therein any additional Tract or Tracts regarded as reasonably necessary or advisable for the purposes of this Agreement. Such expansion or contraction shall be effected in the following manner:

(a) The Working Interest Owner or Owners of a Tract or Tracts desiring to bring such Tract or Tracts into this Unit, shall file an application therefor with Unit Operator requesting such admission.

(b) Unit Operator shall circulate a notice of the proposed expansion to each Working Interest Owner in the Unit Area and in the Tract proposed to be included in the Unit, setting out the basis for admission, the Tract Participation to be assigned to each Tract in the enlarged Unit Area and other pertinent data. After negotiation (at Working Interest Owners' meeting or otherwise) if Working Interest Owners having in the aggregate eighty per cent (80%) Unit Participation then in effect have agreed to inclusion of such Tract or Tracts in the Unit Area, then Unit Operator shall:

(1) After obtaining preliminary concurrence by the Director, prepare a notice of proposed expansion describing the contemplated changes in the boundaries of the Unit Area, the reason therefor, the basis for admission of the additional Tract or Tracts, the Tract Participation to be assigned thereto and the proposed effective date thereof; and

(2) Deliver copies of said notice to the Superintendent, the Deputy, the Division, each Working Interest Owner and to the lessee and lessor whose interests are affected, advising such parties that thirty (30) days will be allowed for submission to the Unit Operator of any objection to such proposed expansion; and

(3) File, upon the expiration of said thirty (30) day period as set out in (2) immediately above with the Superintendent, the Division and the Deputy the following: (a) Evidence of mailing or delivering said copies of said notice of expansion; (b) An application for approval of such expansion; (c) An instrument containing the appropriate joinders in compliance with the participation requirements of Section 13 and Section 31, infra; and (d) A copy of all objections received along with the Operator's response thereto.

The expansion shall, after due consideration of all pertinent information and approval by the Superintendent, [redacted] Division and the Deputy, become effective as of the date prescribed in the notice thereof, preferably the first day of a month subsequent to the date of notice. The revised Tract Participation of the respective Tracts included within the Unit Area prior to such enlargement shall remain the same ratio one to another.

5. UNITIZED LAND.

All land committed to this Agreement as to the Unitized Formation shall constitute land referred to herein as "Unitized Land" or "Land subject to this Agreement". Nothing herein shall be construed to unitize, pool, or in any way affect the oil, gas and other minerals contained in or that may be produced from any formation other than the Unitized Formation as defined in Section 2(h) of this Agreement.

6. UNIT OPERATOR.

Benson-Montin-Greer Drilling Corp. is hereby designated the Unit Operator, and by signing this instrument as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the operation, development and production of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interests in Unitized Substances, when such interests are owned by it and the term "Working Interest Owner" when used herein shall include or refer to the Unit Operator as the owner of a Working Interest when such an interest is owned by it.

7. SUCCESSOR UNIT OPERATOR.

A successor Unit Operator may be selected upon the resignation of the Unit Operator. However, such selection shall not become effective until (a) the successor Unit Operator shall accept in writing the duties and responsibilities of Unit Operator; and (b) the selection shall have been approved by the Deputy.

8. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT.

If the Unit Operator is not the sole owner of Working Interest, costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of Working Interests, all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of Working Interests, whether one or more, separately or collectively. Any agreement or agreements entered into between the Working Interest Owners and the Unit Operator as provided in this section, whether one or more, are herein referred to as the "Unit Operating Agreement". Such Unit Operating Agreement shall also provide the manner in which the Working Interest Owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other independent contracts, and such other rights and obligations as between Unit Operator and the Working Interest Owners; however, no such Unit Operating Agreement shall be deemed either to modify any of the terms and conditions of this Unit Agreement or to relieve the Unit Operator of any right or obligation established under this Unit Agreement, and in case of any inconsistency or conflict between this Unit Agreement and the Unit Operating Agreement, this Unit Agreement shall govern. Three true copies of any Unit Operating Agreement executed pursuant to this section should be filed with the Deputy, prior to approval of this Unit Agreement.

9. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR.

Except as otherwise specifically provided herein, the exclusive right, privilege and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating and distributing the Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Upon request, acceptable evidence of title to said rights shall be deposited with said Unit Operator and, together with this Agreement, shall constitute and define the rights, privileges and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that under this Agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

10. PLAN OF OPERATIONS.

It is recognized and agreed by the parties hereto that all of the land subject to this Agreement is reasonably proved to be productive of Unitized Substances and that the object and purpose of this Agreement is to formulate and to put into effect an improved recovery project in order to effect additional recovery of Unitized Substances, prevent waste and conserve natural resources: and in connection therewith, the parties hereto agree that the Unit Operator may, subject to the consent and approval of a Plan of Operation by the Working Interest Owners, the Deputy and [redacted], inject into the Unitized Formation, through any well or wells completed therein, brine, water, air, gas, oil, liquefied petroleum gases, caustics, polymers, chemicals and any one or more other substances or combination of substances whether produced from the Unitized Land or not, and that the location of input wells and the rates of injection therein shall be governed by standards of good geologic and petroleum engineering practices and conservation methods. Subject to like approval the Plan of Operation may be revised as conditions may warrant.

The initial Plan of Operation shall be filed with the Deputy, the Superintendent and [redacted] concurrently with the filing of this Unit Agreement for final approval. Said initial Plan of Operation and all revisions thereof shall be as complete and adequate as the Deputy and [redacted] may determine to be necessary for timely operation consistent herewith. Said initial plan shall provide for the injection of a portion of the gas produced from the Unitized Formation commencing within twelve months from the effective date hereof and continuing until such time as the initial plan is terminated or modified by a subsequent plan with the approval of all necessary parties, including the Deputy and [redacted]. Upon approval of this Agreement and the initial plan by the Deputy and [redacted], said plan, and all subsequently approved plans shall constitute the operating obligations of the Unit Operator under this Agreement for the period specified therein. Thereafter, from time to time before the expiration of any existing plan, the Unit Operator shall submit for like approval a plan for an additional specified period of operation. After such operations are commenced, reasonable diligence shall be exercised by the Unit Operator in complying with the obligations of the approved Plan of Operation.

Notwithstanding anything to the contrary herein contained, should the Unit Operator fail to commence operation of an improved recovery project incorporating the injection of produced gas within

one (1) year after the effective date of this Agreement, or any extension thereof approved by the Deputy and the Division this Agreement shall terminate automatically as of the date of default.

11. USE OF SURFACE AND USE OF WATER.

The parties have to the extent of their rights and interests, hereby granted to Unit Operator the right to use as much of the surface of the Unitized Land as may reasonably be necessary for Unit Operations; provided that nothing herein shall be construed as leasing or otherwise conveying to the Unit Operator a site for water, gas injection or other plants or camp site.

Unit Operator shall have free use of water or brine or both from the Unitized Land for Unit Operations, except water from any well, lake, pond or irrigation ditch of a surface owner, unless approval for such use is granted by the surface owner.

Unit Operator shall pay the Owner for damages to growing crops, timber, fences, improvements and structures on the Unitized land that result from Unit Operations.

12. TRACT PARTICIPATION.

Basic tract factors, as to each phase, are set forth on Exhibit C attached hereto opposite the various listed and numbered Tracts. If all tracts within the Unit Area qualify as provided herein, these basic tract factors will be the Tract Participations; however, in the event less than all Tracts are qualified on the Effective Date hereof, the Tract Participations shall be calculated on the basis of all such qualified Tracts rather than all Tracts in the Unit Area.

Determination of Tract Participations:

Tract Participation = 10% A + 22.5% B + 67.5% C

Where A = The ratio of surface area of the subject tract to the sum of the surface area of all tracts.

B = The ratio of the "structural position weighted acreage" for the subject tract to the sum of the "structural position weighted acreage" for all tracts.

C = The ratio of the 1976 and 1977 oil production allocated to the subject tract to the sum of the 1976 and 1977 oil production allocated to all tracts.

"Structural position weighted acreage" means, as to each tract, the sum of its "partial structural position weighted acreages"

where

"Partial structural position weighted acreage" means the product of that portion of a tract's acreage lying within a given quarter-section and that quarter-section's "structural position weighting factor"

where

"Structural position weighting factor" for a given quarter-section is the average of these values for each of its four corners (sum of four values divided by four). For this purpose the east and west halves of

Sections 25, 28, 29 and 30 are considered quarter-sections;

and where

"Structural position weighting factor" for the corner of each quarter-section is that interpreted value shown on the attached structural contour map and which was arrived at by assigning weighting factors as follows:

Contour	Weighting Factor
6000'	0
5800'	1
5600'	2
5400'	3
5200'	4
5000'	5
4800'	6
4600'	7
4400'	8
4200'	9
4000'	10
3800'	5
3600' (& lower)	0;

and where the structural contour points are those interpreted to be the top of Zone "A", which is found at the depth of 2268' in the index well, described in the definitions, Section 2(h) herein.

Per special agreement with the Jicarilla Tribe, the sum of the Tract Participations allocated to all of the Indian land tracts are to be re-distributed to the various Indian tracts by the following method:

2/3 of the equity is asigned to the 237 and 287 leases with the remaining 1/3 assigned to the remaining leases. Allocation to each tract within these groups is in the proportion that the basic Tract Participation factors bear to each other. These special allocation equity factors are designated on Part I of Exhibit C with parentheses and an asterisk and are the equity factors to be assigned to these tracts regardless of the equity factors determined by the basic participation formula.

13. TRACTS QUALIFIED FOR PARTICIPATION.

A. Tracts under Lease as of Effective Date

On and after the Effective Date hereof the leased Tracts within the Unit Area which shall be entitled to participation in the production of Unitized Substances shall be those Tracts more particularly described in Exhibit B that corner or have a common boundary (Tracts separated only by a public highway or a railroad right-of-way shall be considered to have a common boundary), and that otherwise qualify as follows:

(a) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this Agreement and as to which Royalty Owners owning seventy-five percent (75%) or more of the Royalty Interest have become parties to this Agreement.

(b) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this Agreement, and as to which Royalty Owners owning less than seventy-five percent (75%) of the Royalty Interest have become parties to this Agreement, and as to which (1) the Working Interest Owner who operates the Tract and at least seventy-five percent (75%) of all other Working Interest Owners in such Tract have joined in a request for the inclusion of such Tract, and as which (2) owners of seventy-five percent (75%) of the combined Working Interest Unit Participation in all Tracts have voted in favor of the inclusion of such tract.

(c) Each Tract as to which Working Interest Owners owning less than one hundred percent (100%) of the Working Interest have become parties to this Agreement, regardless of the percentage of Royalty Interest therein that is committed hereto; and as to which (1) the Working Interest Owner who operates the Tract and a total of seventy-five percent (75%) or more of the other Working Interest Owners in such Tract who have become parties to this Agreement have joined in a request for inclusion of such Tract, and have executed and delivered, or obligated themselves to execute and deliver, an indemnity agreement indemnifying and agreeing to hold harmless the other owners of committed Working Interests, their successors and assigns, against all claims and demands that may be made by the owners of Working Interest in such Tract who are not parties to this Agreement, and which arise out of the inclusion of the Tract; and as to which (2) the owners of seventy-five percent (75%) of the Unit Participation in all Tracts that meet the requirements of Section 13(a) and 13(b) have voted in favor of the inclusion of such tract and to accept the indemnity agreement. Upon the inclusion of such a Tract, the Tract Participations which would have been attributed to the non-subscribing owners of Working Interest in such Tract, had they become parties to this Agreement, shall be attributed to the Working Interest Owners in such Tract who have become parties to such agreements, and joined in the indemnity agreement, in proportion to their respective Working Interests in the Tract.

If on the Effective Date of this Agreement there is any leased Tract or Tracts which have not been effectively committed to or made subject to this Agreement by qualifying as above provided, then such Tract or Tracts shall not be entitled to participate hereunder. Unit Operator shall, when submitting this Agreement for final approval by the Deputy, file therewith a schedule of those Tracts which have been committed and made subject to this Agreement and are entitled to participate in Unitized Substances. Said schedule shall set forth opposite each such committed Tract the lease number or assignment number, the owner of record of the lease, and the percentage participation of such Tract which shall be computed according to the participation formula set out in Section 12 (Tract Participation) above. This schedule of participation shall be Revised Exhibit C and upon approval thereof by the Deputy shall become a part of this Agreement and shall govern the allocation of production of Unitized Substances.

B. Federal Tracts Leased Subsequent to Effective Date

Subject only to a majority vote by owners in accord with their Working Interest Unit Participation, the lessees of a federal tract which was leased subsequent to the Effective Date shall be required to commit the affected leased interests to the Unit Agreement and Unit Operating Agreement, and such tracts shall automatically be qualified for participation, effective with the first of the month in which the interest was committed by the lessees to the

Agreements. Tract participation shall be determined in the same fashion and by the same formulae as for other tracts committed hereto, and Exhibit C revised accordingly; but nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the Effective Date of commitment of such tract.

C. Fee Tracts Not Under Lease as of Effective Date

Fee lands not under lease as of the Effective Date shall be considered under Section 13A above; seven-eighths (7/8) of the mineral interest shall be treated as a Working Interest, and one-eighth (1/8) of the mineral interest as a Royalty Interest.

14. ALLOCATION OF UNITIZED SUBSTANCES.

All Unitized Substances produced and saved (less, save and except any part of such Unitized Substances used in conformity with good operating practices on Unitized land for drilling, operating, camp and other unavoidable loss in accordance with a Plan of Operation approved by the Deputy and [redacted] Division), shall be apportioned among and allocated to the qualified Tracts in accordance with the respective Tract Participations as set forth in the schedule of participation in Exhibit C. The amount of Unitized Substances so allocated to each Tract, and only that amount, (regardless of whether it be more or less than the amount of the actual production of Unitized Substances from the well or wells, if any, on such Tract) shall, for all intents, uses and purposes, be deemed to have been produced from such Tract.

The Unitized Substances allocated to each Tract shall be distributed among, or accounted to, the parties entitled to share in the production from such Tract in the same manner, in the same proportions, and upon the same conditions, as they would have participated and shared in the production from such Tracts, or in the proceeds thereof, had this Agreement not been entered into; and with the same legal force and effect.

No tract committed to this Agreement and qualified for participation as above provided shall be subsequently excluded from participation hereunder on account of depletion of Unitized Substances.

If the Working Interest and/or the Royalty Interest in any Tract are divided with respect to separate parcels or portions of such Tract and owned now or hereafter in severalty by different persons, the Tract Participation shall in the absence of a recordable instrument executed by all owners and furnished to Unit Operator fixing the divisions of ownership, be divided among such parcels or portions in proportion to the number of surface acres in each.

The Unitized Substances allocated to each Tract shall be delivered in kind to the respective Working Interest Owners and parties entitled thereto by virtue of the ownership of Oil and Gas Rights therein. Each Working Interest Owner and the parties entitled thereto shall have the continuing right to receive such production in kind at a common point within the Unit Area and to sell or dispose of the same as it sees fit. Each such party shall have the right to construct, maintain and operate all necessary facilities for that purpose on unitized land, provided the same are so constructed, maintained and operated as not to interfere with operations carried on pursuant hereto. Subject to Section 16 hereof, any extra expenditure incurred by Unit Operator by reason of the delivery in kind of any portion of the Unitized Substances

shall be borne by the party responsible therefor under the controlling lease or contract. In the event any Interest Owner shall fail to take or otherwise adequately dispose of its proportionate share of the production from the Unitized Formation currently as and when produced, then so long as such condition continues, Unit Operator, for the account and at the expense of the Working Interest Owner of the Tract or Tracts concerned, and in order to avoid curtailing the operation of the Unit Area, may, but shall not be required to, sell or otherwise dispose of such production to itself or to others on a day-to-day basis, provided that all contracts of sale by Unit Operator of any other party's share of Unitized Substances shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any contract be for a period in excess of one year, and at not less than the prevailing market price in the area for like production, and the account of such Working Interest Owner shall be charged therewith as having received such production. The net proceeds, if any, of the Unitized Substances so disposed of by Unit Operator shall be paid to the Working Interest Owners of the Tract or Tracts concerned. Notwithstanding the foregoing, Unit Operator shall not make a sale into interstate commerce of any Working Interest Owner's share of gas production without first giving such Working Interest Owner sixty (60) days notice of such intended sale.

Any Working Interest Owner receiving in kind or separately disposing of all or any part of the Unitized Substances allocated to any Tract, or receiving the proceeds therefrom if the same is sold or purchased by Unit Operator, shall be responsible for the payment of all Royalty, Overriding Royalty and production payments due thereon, and each such party shall hold each other Working Interest Owner harmless against all claims, demands and causes of action by owners of such Royalty, Overriding Royalty and production payments.

If, after the Effective Date of this Agreement, there is any Tract or Tracts that are subsequently committed hereto, as provided in Section 4 (Expansion) hereof, or any Tract or Tracts within the Unit Area not committed hereto as of the Effective Date hereof but which are subsequently committed hereto under the provisions of Section 13 (Tracts Qualified for Participation) and Section 31 (Nonjoinder and Subsequent Joinder), or if any Tract is excluded from this Agreement as provided for in Section 30 (Loss of Title), the schedule of participation as shown in Exhibit C, shall be revised by the Unit Operator; and the revised Exhibit C, upon approval by the Deputy and [redacted] shall govern the allocation of production on and after the Effective Date thereof until a revised schedule is approved as hereinabove provided.

In any such revised Exhibit C, pursuant to this paragraph, the Tract Participation of the previously qualified Tracts shall remain in the same ratio one to the other.

15. OUTSIDE SUBSTANCES.

If gas obtained from formations not subject to this Agreement is introduced into the Unitized Formation for use in repressuring, stimulation of production or increasing ultimate recovery which shall be in conformity with a Plan of Operation first approved by the Deputy and [redacted], a like amount of gas with appropriate deduction for loss or depletion from any cause may be withdrawn from unit wells completed in the Unitized Formation royalty free as to dry gas, but not royalty free as to the products extracted therefrom; provided that such withdrawal shall be at such time as

may be provided in the approved Plan of Operation or as otherwise may be consented to or prescribed by the Deputy and the Division as conforming to good petroleum engineering practices and provided further that such right of withdrawal shall terminate on the termination date of this Agreement.

16. ROYALTY SETTLEMENT.

The Jicarilla Tribe and the United States and all Royalty Owners who, under an existing contract, are entitled to take in kind a share of the substances provided from any Tract unitized hereunder, shall continue to be entitled to such right to take in kind their share of the Unitized Substances allocated to such Tract, and Unit Operator shall make deliveries of such Royalty share taken in kind in conformity with the applicable contracts, laws and regulations. Settlement for royalty interest not taken in kind shall be made by Working Interest Owners responsible therefor under existing contracts, laws and regulations on or before the last day of each month for Unitized Substances produced during the preceding calendar month; provided, however, that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any Royalty due under their leases, except that such Royalty shall be computed on Unitized Substances as allocated to each Tract in accordance with the terms of this Agreement. With respect to Federal leases committed hereto on which the royalty rate depends upon the daily average production per well, such average production shall be determined in accordance with the operating regulations pertaining to Federal leases as though the committed Tracts were included in a single consolidated lease.

All Royalty due the Jicarilla Tribe and the United States of America and the other Royalty Owners hereunder shall be computed and paid on the basis of all Unitized Substances allocated to the respective Tract or Tracts committed hereto, in lieu of actual production from such Tract or Tracts.

Each Royalty Owner (other than the Jicarilla Tribe and the United States of America) that executes this Agreement represents and warrants that it is the owner of a Royalty Interest in a Tract or Tracts within the Unit Area as its interest appears in Exhibit B attached hereto. If any Royalty Interest in a Tract or Tracts should be lost by title failure or otherwise in whole or part, during the term of this Agreement, then the Royalty Interest of the party representing himself to be the owner thereof shall be reduced proportionately and the interests of all parties shall be adjusted accordingly.

17. RENTAL SETTLEMENT.

Rental or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty in lieu thereof, due under their leases. Rental for lands of the Jicarilla Tribe subject to this Agreement shall be paid at the rate specified in the respective leases from the Jicarilla Tribe. Rental or minimum royalty for lands of the United States of America subject to this Agreement shall be paid at the rate specified in the respective leases from the United States of America, unless such rental or minimum royalty is waived, suspended or reduced by law or by approval of the Secretary or his duly authorized representative.

18. CONSERVATION.

Operations hereunder and production of Unitized Substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by or pursuant to Federal and State laws and regulations.

19. DRAINAGE.

The Unit Operator shall take appropriate and adequate measures to prevent drainage of Unitized Substances from Unitized Land by wells on land not subject to this Agreement.

The Unit Operator, upon approval by the Working Interest Owners and the Deputy, is hereby empowered to enter into a border line agreement or agreements with working interest owenrs of adjoining lands not subject to this Agreement with respect to operation in the border area for the maximum economic recovery, conservation purposes and proper protection of the parties and interest affected.

20. LEASES AND CONTRACTS CONFORMED AND EXTENDED.

The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development or operation for oil or gas on lands committed to this Agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect; and the parties hereto hereby consent that the Secretary shall and by his approval hereof, or by the approval hereof by his duly authorized representatives, does hereby establish, alter, change or revoke the drilling, producing, rental, minimum Royalty and Royalty requirements of Federal and Indian leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this agreement.

Without limiting the generality of the foregoing, all leases, subleases and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of all obligations for development and operation with respect to part or separately owned Tract subject to this Agreement, regardless of whether there is any development of any particular part or Tract of the Unit Area, not withstanding anything to the contrary in any lease, operating agreement or other contract by and between the parties hereto, or their respective predecessors in interest, or any of them.

(b) Drilling, producing, tertiary, enhanced or improved recovery operations performed hereunder shall be deemed to be performed upon and for the benefit of each Tract, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on the land therein embraced.

(c) Suspension of drilling or producing operations on all unitized lands pursuant to direction or consent of the Land Commissioner and the Secretary, or their duly authorized representatives, shall be deemed to constitute such suspension pursuant to such direction or consent as to each Tract of unitized lands.

(d) Each lease, sublease or contract relating to the exploration, drilling, development or operation for oil and

gas which by its terms might expire prior to the termination of this Agreement, is hereby extended beyond any such term so provided therein, so that it shall be continued in full force and effect for and during the term of this Agreement.

(e) Any lease embracing lands of the Jicarilla Tribe which is made subject to this Agreement shall continue in force beyond the term provided therein as to the lands committed hereto until the termination hereof.

(f) Any Indian lease having only a portion of its lands committed hereto shall be segregated as to the portion committed and the portion not committed, and the provisions of such lease shall apply separately to such segregated portions commencing as of the effective date hereof.

(g) The segregation of any Federal lease committed to this Agreement is governed by the following provision in the fourth paragraph of Sec. 17(j) of the Mineral Leasing Act, as amended by the Act of September 2, 1960 (74 Stat. 781-784): "Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the Effective Date of unitization: Provided, however, That any such lease as to the non-unitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as oil or gas is produced in Paying Quantities."

21. COVENANTS RUN WITH LAND.

The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer; and no assignment or transfer of any Royalty Interest subject hereto shall be binding upon the Working Interest Owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer.

22. EFFECTIVE DATE AND TERM.

This Agreement shall become binding upon each party who executes or ratifies it as of the date of execution or ratification by such party and shall become effective on the first day of the calendar month next following the approval of this Agreement by the Deputy, the Indian Commissioner and [redacted] Division.

If this Agreement does not become effective on or before June 1, 1981, it shall ipso facto expire on said date (hereinafter called "expiration date") and thereafter be of no further force or effect, unless prior thereto this Agreement has been executed or ratified by Working Interest Owners owning a combined Participation of at least eighty per cent (80%), and at least seventy-five per cent

(75%) of such Working Interest Owners committed to this Agreement have decided to extend said expiration date for a period not to exceed six months (hereinafter called "extended expiration date"). If said expiration date is so extended and this Agreement does not become effective on or before said extended expiration date, it shall ipso facto expire on said extended expiration date and thereafter be of no further force and effect.

Unit Operator shall file for record within thirty (30) days after the Effective Date of this Agreement, in the office where a counterpart of this Agreement is recorded, a certificate to the effect that this Agreement has become effective according to its terms and stating further the effective date.

The term of this Agreement shall be for and during the time that Unitized Substances are produced from the unitized land and so long thereafter as drilling, reworking or other operations (including improved recovery operations) are prosecuted thereon without cessation of more than ninety (90) consecutive days unless sooner terminated as herein provided.

This Agreement may be terminated with the approval of the Deputy and the Division by Working Interest Owners owning eighty per cent (80%) of the Unit Participation whenever such Working Interest Owners determine that Unit Operations are no longer profitable, or in the interest of conservation. Upon approval, such termination shall be effective as of the first day of the month after said Working Interest Owners' determination. Notice of any such termination shall be filed by Unit Operator in the office of the County Clerk of Rio Arriba County, New Mexico, within thirty (30) days of the effective date of termination.

Upon termination of this Agreement, the parties hereto shall be governed by the terms and provisions of the leases and contracts affecting the separate Tracts just as if this Agreement had never been entered into.

If not otherwise provided by the leases unitized under this Agreement, Royalty Owners hereby grant Working Interest Owners a period of six months after termination of this Agreement in which to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with Unit Operations.

23. RATE OF PROSPECTING, DEVELOPMENT AND PRODUCTION.

All production and the disposal thereof shall be in conformity with allocations and quotas made or fixed by any duly authorized person or regulatory body under any Federal or State statute. The Director and Division are hereby vested with authority to alter or modify from time to time, in their discretion, the rate of prospecting and development and within the limits made or fixed by Division to alter or modify the quantity and rate of production under this Agreement, such authority being hereby limited to alteration or modification in the public interest, the purpose thereof and the public interest to be served thereby to be stated in the order of alteration or modification; provided, that the powers in this Section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than fifteen (15) days from notice; and thereafter subject to administrative appeal before becoming final.

24. NONDISCRIMINATION.

Unit Operator in connection with the performance of work under this Agreement relating to leases of the United States agrees to

comply with the clauses set forth in Exhibit D attached hereto and made a part hereof.

25. APPEARANCES.

Unit Operator shall have the right to appear for and on behalf of any and all interests affected hereby before the Department and the Division, and to appeal from any order issued under the rules and regulations of the Deputy, the Department or the Division, or to apply for relief from any of said rules and regulations or in any proceedings relative to operations before the Department or the Division or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his or its own expense to be heard in any such proceeding.

26. NOTICES.

All notices, demands, objections or statements required hereunder to be given or rendered to the parties shall be deemed fully given if made in writing and personally delivered to the party or parties or sent by postpaid certified or registered mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party or parties may have furnished in writing to the party sending the notice, demand or statement.

27. NO WAIVER OF CERTAIN RIGHTS.

Nothing in this agreement contained shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any law of the State of New Mexico, or regulations issued thereunder in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive; provided, however, each party hereto covenants that it will not resort to any action to partition the unitized land or the Unit Equipment.

28. EQUIPMENT AND FACILITIES NOT FIXTURES ATTACHED TO REALTY.

Each Working Interest Owner has heretofore placed and used on its Tract or Tracts committed to this Agreement various well and lease equipment and other property, equipment and facilities. It is also recognized that additional equipment and facilities may hereafter be placed and used upon the Unitized Land as now or hereafter constituted. Therefore, for all purposes of this Agreement any such equipment shall be considered to be personal property and not fixtures attached to realty. Accordingly, said well and lease equipment and personal property is hereby severed from the mineral estates affected by this Agreement, and it is agreed that any such equipment and personal property shall be and remain personal property of the Working Interest Owners for all purposes.

29. UNAVOIDABLE DELAY.

All obligations under this Agreement requiring the Unit Operator to commence or continue improved recovery operations or to operate on or produce Unitized Substances from any of the lands covered by this Agreement shall be suspended while, but only so long as, the Unit Operator, despite the exercise of due care and diligence, is prevented from complying with such obligations, in whole or in part, by strikes, acts of God, Federal, State or municipal law or agency, unavoidable accident, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

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30. LOSS OF TITLE.

In the event title to any Tract of unitized land shall fail so as to render the Tract inoperable under this Agreement and the true owner cannot be induced to join this Agreement, such Tract shall be automatically regarded as not committed hereto as of the first day of the calendar month in which failure of title is determined and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title. In the event of a dispute as to title as to any Royalty, Working Interest, or other interest subject thereto, payment or delivery on account thereof may be withheld without liability or interest until the dispute is finally settled; provided, that, as to Indian or Federal land or leases, no payments of funds due the Jicarilla Tribe or the United States shall be withheld, but such funds shall be deposited as directed by the Superintendent and/or the Deputy (as the case may be), to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder.

31. NON-JOINDER AND SUBSEQUENT JOINDER.

Joinder by any Royalty Owner, at any time, must be accompanied by appropriate joinder of the corresponding Working Interest Owner in order for the interest of such Royalty Owner to be regarded as effectively committed.

Any oil or gas interests in the Unitized Formations not committed hereto prior to submission of this Agreement to the Superintendent and the Deputy for final approval may thereafter be committed hereto upon compliance with the applicable provisions of this Section and Section 13 (Tracts Qualified for Participation) hereof, at any time up to the effective date hereof on the same basis of participation as provided in said Section 13, by the owner or owners thereof subscribing, ratifying or consenting in writing to this Agreement.

It is understood and agreed, however, that from and after the Effective Date hereof the right of subsequent Joinder as provided in this Section shall be subject to such requirements or approvals and on such basis as may be agreed upon by Working Interest Owners owning not less than sixty-five per cent (65%) of the Unit Participation and approved by the Superintendent, [redacted] and Deputy. Such subsequent joinder by a proposed Working Interest Owner must be evidenced by his execution or ratification of this Agreement and, where Indian or Federal land is involved, such Joinder must be approved by the Superintendent or Deputy. Such Joinder by a proposed Royalty Owner must be evidenced by his execution, ratification or consent of this Agreement and must be consented to in writing by the Working Interest Owner responsible for the payment of any benefits that may accrue hereunder in behalf of such proposed Royalty Owner. Except as may be otherwise herein provided, subsequent joinder to this Agreement shall be effective as of the first day of the month following the filing with the Superintendent, the Division and the Deputy of duly executed counterparts of any and all documents necessary to establish commitment of any Tract or interest to this Agreement, unless objection to such joinder by the Superintendent, [redacted] or the Deputy is duly made sixty (60) days after such filing.

32. COUNTERPARTS.

This Agreement may be executed in any number of counterparts,

no one of which needs to be executed by all parties and may be ratified or consented to by separate instrument in writing, specifically referring hereto, and shall be binding upon all those parties who have executed such a counterpart, ratification or consent hereto with the same force and effect as if all parties had signed the same document, and regardless of whether or not it is executed by all other parties owning or claiming an interest in the land within the above-described Unit Area.

33. JOINDER IN DUAL CAPACITY.

Execution as herein provided by any party as either a Working Interest Owner or a Royalty Owner shall commit all interests owned or controlled by such party.

34. TAXES.

Each party hereto shall, for its own account, render and pay its share of any taxes levied against or measured by the amount or value of the Unitized Substances produced from the unitized land; provided, however, that if it is required or if it be determined that the Unit Operator or the several Working Interest Owners must pay or advance said taxes for the account of the parties hereto, it is hereby expressly agreed that the parties so paying or advancing said taxes shall be reimbursed therefor by the parties hereto, including Royalty Owners, who may be responsible for the taxes on their respective allocated share of said Unitized Substances. No taxes shall be charged to the United States or to the Jicarilla Tribe, nor to any lessor who has a contract with a lessee which requires his lessee to pay such taxes.

35. NO PARTNERSHIP.

The duties, obligations and liabilities of the parties hereto are intended to be several and not joint or collective. This Agreement is not intended to create, and shall not be construed to create, an association or trust, or to impose a partnership duty, obligation or liability with regard to any one or more of the parties hereto. Each party hereto shall be individually responsible for its own obligations as herein provided.

36. PRODUCTION AS OF THE EFFECTIVE DATE.

Unit Operator shall make a proper and timely gauge of all leases and other tanks within the unitized area in order to ascertain the amount of merchantable oil above the pipe line connection in such tanks as of the effective date hereof. All such oil which has then been produced in accordance with established allowables shall be and remain the property of the Interest Owner entitled thereto, the same as if the unit had not been formed; and the responsible Working Interest Owner shall promptly remove said oil from the unitized land. Any such oil not so removed shall be sold by Unit Operator for the account of such Working Interest Owners, subject to the payment of all Royalty to Royalty Owners under the terms hereof. The oil that is in excess of the prior allowable of the wells from which it was produced shall be regarded as Unitized Substances produced after Effective Date hereof.

If, as of the Effective Date hereof, any Tract is overproduced with respect to the allowable of the wells on that Tract and the amount of overproduction has been sold or otherwise disposed of, such overproduction shall be regarded as a part of the Unitized Substances produced after the Effective Date hereof and shall be charged to such Tract as having been delivered to the parties entitled to Unitized Substances allocated to such Tract.

37. BURDEN OF UNCOMMITTED ROYALTY INTERESTS.

The burden or benefit of any uncommitted royalty or overriding royalty interests shall be borne by the Working Interest Owners hereto in proportion to their Working Interest Unit Participation.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and have set opposite their representative names the date of execution.

UNIT OPERATOR AND
WORKING INTEREST OWNER

BENSON-MONTIN-GREER DRILLING CORP.

ATTEST:

_____

BY: _____
Albert R. Greer, President

Date:

_____

221 Petroleum Center Building
Farmington, New Mexico 87401

WORKING INTEREST OWNERS

Date:

_____

_____
John R. Anderson

P. O. Box 243
Farmington, New Mexico 87401

Date:

_____

_____
Tom Bolack

1010 North Dustin
Farmington, New Mexico 87401

Date:

_____

_____
Molly E. Bramblette

710 Crestview Drive
Farmington, New Mexico 87401

Date:

_____

RICHARD BRAMBLETTE TRUST

BY: _____
Molly E. Bramblette, Trustee

710 Crestview Drive
Farmington, New Mexico 87401

Date:

_____

Albert R. Greer

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

GREER ENTERPRISES, LTD.,
a Limited Partnership

BY: _____
Albert R. Greer, Gen. Partner

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

Bill Harbert

Box 1297
Birmingham, Alabama 35201

Date:

_____

Jack London, Jr.

101 Park Avenue Building
Suite 310
Oklahoma City, Oklahoma 73102

Date:

_____

William London

Continental Federal Building
Suite 300
101 Park Avenue
Oklahoma City, Oklahoma 73102

Date:

_____

Alfred C. Montin

1392 First National Building
Oklahoma City, Oklahoma 73102

Date:

_____

William V. Montin

1392 First National Building
Oklahoma City, Oklahoma 73102

Date: _____

_____
Jessie Stanley

1702 Chaco
Farmington, New Mexico 87401

Date: _____

STOABS OIL CORP., a corporation

BY: _____
Virgil L. Stoabs, President

221 Petroleum Center Building
Farmington, New Mexico 87401

Date: _____

_____
Virgil L. Stoabs

221 Petroleum Center Building
Farmington, New Mexico 87401

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by ALBERT R. GREER, President of BENSON-MONTIN-GREER DRILLING CORP., a corporation, on behalf of said corporation.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by John R. Anderson.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Tom Bolack.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Molly E. Bramblette.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Molly E. Bramblette, Trustee of Richard Bramblette Trust, a trust, on behalf of said trust.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Albert R. Greer.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Albert R. Greer, General Partner of Greer Enterprises, Ltd., a Limited Partnership, on behalf of said Limited Partnership.

STATE OF ALABAMA)
) SS
COUNTY OF JEFFERSON)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Bill Harbert.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Jack London, Jr.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by William London.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Alfred C. Montin.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by William V. Montin.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Jessie Stanley.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Virgil L. Stoabs, President of Stoabs Oil Corp., a corporation, on behalf of said corporation.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____, 1980, by Virgil L. Stoabs.

UNIT OPERATING AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

COUNTY OF RIO ARRIBA

STATE OF NEW MEXICO

EPCMUOA-6180 REV B

Dated June 1, 1980

UNIT OPERATING AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO

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UNIT OPERATING AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO

THIS AGREEMENT, entered into as of the 1st day of June, 1980 by and between the parties who have signed the original of this instrument, a counterpart thereof, or other instrument agreeing to become a party hereto;

WITNESSETH:

WHEREAS, the parties hereto as Working Interest Owners have executed, as of the date hereof, an Agreement entitled "Unit Agreement, East Puerto Chiquito Mancos Unit, Rio Arriba County, New Mexico," herein referred to as "Unit Agreement", which, among other things, provides for a separate agreement to be entered into by Working Interest Owners to provide for Unit Operations as therein defined.

NOW, THEREFORE, in consideration of the mutual agreements herein set forth, it is agreed as follows:

ARTICLE 1

CONFIRMATION OF UNIT AGREEMENT

1.1 Confirmation of Unit Agreement. The Unit Agreement is hereby confirmed and by reference made a part of this Agreement. The definitions in the Unit Agreement are adopted for all purposes of this Agreement. If there is any conflict between the Unit Agreement and this Agreement, the Unit Agreement shall govern.

ARTICLE 2

EXHIBITS

2.1 Exhibits. The following exhibits are incorporated hereby by reference:

2.1.1 Exhibits A, B, C and D of the Unit Agreement.

2.1.2 Exhibit E, attached hereto, is a schedule showing the Working Interest Unit Participation of each Working Interest Owner for both phase I and phase II. Exhibit E, or a revision thereof, shall not be conclusive as to the information therein, except it may be used as showing the Working Interest Unit Participations of Working Interest Owners for purposes of this Agreement until shown to be in error or revised as herein authorized.

2.1.3 Exhibit F, attached hereto, is the Accounting Procedure applicable to Unit Operations. If there is any conflict between this Agreement and Exhibit F, this Agreement shall govern.

2.1.4 Exhibit G, attached hereto, contains insurance provisions applicable to Unit Operations.

2.2 Revision of Exhibits. Whenever Exhibits A, B or C are revised, Exhibit E shall be revised accordingly and be effective as of the same date. Unit Operator shall also revise Exhibit E from time to time as required to conform to changes in ownership

of which Unit Operator has been notified as provided in the Unit Agreement.

2.3 Reference to Exhibits. When reference is made herein to an exhibit, it is to the exhibit as originally attached or, if revised, to the last revision.

ARTICLE 3

SUPERVISION OF OPERATIONS BY WORKING INTEREST OWNERS

3.1 Overall Supervision. Working Interest Owners shall exercise overall supervision and control of all matters pertaining to Unit Operations pursuant to this Agreement and the Unit Agreement. In the exercise of such authority, each Working Interest Owner shall act solely in its own behalf in the capacity of an individual owner and not on behalf of the owners as an entirety.

3.2 Specific Authorities and Duties. The matters with respect to which Working Interest Owners shall decide and take action shall include, but not be limited to, the following:

3.2.1 Method of Operation. The method of operation, including the type or types of pressure maintenance, secondary recovery, or other recovery program to be employed.

3.2.2 Drilling of Wells. The drilling of any well whether for production of Unitized Substances, for use as an injection well, or for other purposes.

3.2.3 Well Recompletions and Change of Status. The recompletion, abandonment, or permanent change of status of any well, or the use of any well for injection or other purposes.

3.2.4 Expenditures. The making of any single expenditure in excess of Twenty-Five Thousands Dollars ($25,000.00); however, approval by Working Interest Owners of the drilling, reworking, deepening or plugging back of any well shall include approval of all necessary expenditures required therefor, and for completing, testing and equipping the well, including necessary flow lines, separators and lease tankage.

3.2.5 Disposition of Unit Equipment. The selling or otherwise disposing of any major item of surplus Unit Equipment, if the current price of new equipment similar thereto is Ten Thousand Dollars ($10,000.00) or more.

3.2.6 Appearance Before a Court or Regulatory Agency. The designating of a representative to appear before any court or regulatory agency in matters pertaining to Unit Operations; however, such designation shall not prevent any Working Interest Owner from appearing in person or from designating another representative in its own behalf.

3.2.7 Audits. The auditing of the accounts of Unit Operator pertaining to Unit Operations hereunder; however, the audits shall

(a) not be conducted more than once each year except upon the resignation or removal of Unit Operator, and

(b) be made upon the approval of the owner or owners

of a majority of Working Interest other than that of Unit Operator, at the expense of all Working Interest Owners other than Unit Operator, or

(c) be made at the expense of those Working Interest Owners requesting such audit, if owners of less than a majority of Working Interest, other than that of Unit Operator, request such an audit, and

(d) be made upon not less than thirty (30) days' written notice to Unit Operator.

3.2.8 Inventories. The taking of periodic inventories under the terms of Exhibit F.

3.2.9 Technical Services. The authorizing of charges to the Joint Account for services by consultants or Unit Operator's technical personnel not covered by the overhead charges provided by Exhibit F when: in excess of Thirty Thousand Dollars ($30,000.00) in any one calendar year for technical services other than those directly related to tertiary or enhanced recovery methods; or when in excess of one hundred thousand dollars ($100,000.00) in any one calendar year for technical (including laboratory) services directly related to tertiary or enhanced recovery methods.

3.2.10 Assignments to Committees. The appointment of committees to study any problems in connection with Unit Operations.

3.2.11 The removal of Unit Operator and the selection of a successor.

3.2.12 The enlargement of the Unit Area.

3.2.13 The adjustment and readjustment of investments.

3.2.14 The termination of the Unit Agreement.

3.2.15 Border Line Agreements.

ARTICLE 4

MANNER OF EXERCISING SUPERVISION

4.1 Designation of Representatives. Each Working Interest Owner shall inform Unit Operator in writing of the names and addresses of the representative and alternate who are authorized to represent and bind such Working Interest Owner with respect to Unit Operations. The representative or alternate may be changed from time to time by written notice to Unit Operator.

4.2 Meetings. All meetings of Working Interest Owners shall be called by Unit Operator upon its own motion or at the request of two (2) or more Working Interest Owners having a total Working Interest Unit Participation then in effect of not less than ten percent (10%). No meeting shall be called on less than fourteen (14) days' advance written notice, with agenda for the meeting attached. Working Interest Owners who attend the meeting may amend items included in the agenda and may act upon an amended item or other items presented at the meeting. The representative of Unit Operator shall be chairman of each meeting.

4.3 Voting Procedure. Working Interest Owners shall decide all matters coming before them as follows:

4.3.1 Voting Interest. Each Working Interest Owner shall have a voting interest equal to its Working Interest Unit Participation in effect at the time of the vote.

4.3.2 Vote Required. Unless otherwise provided herein or in the Unit Agreement, Working Interest Owners shall determine all matters by the affirmative vote of four or more Working Interest Owners having a combined voting interest of at least sixty-five percent (65%); however, should any one Working Interest Owner have more than thirty-five percent (35%) voting interest, its negative vote or failure to vote shall not defeat a motion, and such motion shall pass if approved by Working Interest Owners having a majority voting interest, unless three or more Working Interest Owners having a combined voting interest of at least ten percent (10%) likewise vote against the motion or fail to vote.

4.3.3 Vote at Meeting by Nonattending Working Interest Owner. Any Working Interest Owner who is not represented at a meeting may vote on any agenda item by letter or telegram addressed to the representative of Unit Operator if its vote is received prior to the vote at the meeting, provided the agenda items are not amended.

4.3.4 Poll Votes. Working Interest Owners may vote on and decide, by letter or telegram, any matter submitted in writing to Working Interest Owners. If a meeting is not requested, as provided in Section 4.2, within seven (7) days after a written proposal is sent to Working Interest Owners, the vote taken by letter or telegram shall become final. Unit Operator will give prompt notice of the results of such voting to all Working Interest Owners.

ARTICLE 5

INDIVIDUAL RIGHTS OF WORKING INTEREST OWNERS

5.1 Reservation of Rights. Working Interest Owners severally reserve to themselves all their rights, except as otherwise provided in this Agreement and the Unit Agreement.

5.2 Specific Rights. Each Working Interest Owner shall have among others, the following specific rights:

5.2.1 Access to Unit Area. Access to the Unit Area at all reasonable times to inspect Unit Operations, all wells and the records and data pertaining thereto.

5.2.2 Reports. The right to receive from Unit Operator, upon written request, copies of all reports to any governmental agency, reports of crude oil runs and stocks, inventory reports, and all other information pertaining to Unit Operations. The cost of gathering and furnishing information not ordinarily furnished by Unit Operator to all Working Interest Owners shall be charged to the Working Interest Owner that requests the information.

ARTICLE 6

UNIT OPERATOR

6.1 Unit Operator. Benson-Montin-Greer Drilling Corp. is hereby designated as the initial Unit Operator.

6.2 Resignation or Removal of Unit Operator. Unit Operator shall have the right to resign at any time but, in all instances of resignation or removal, until a successor unit operator is selected and approved as hereinafter provided, the working interest owners shall be jointly responsible for performance of the duties of Unit Operator, and shall, not later than 30 days before such resignation or removal becomes effective, appoint a common agent to represent them in any action to be taken hereunder.

The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of Working Interest Unit Participation by the owners of working interests as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the Deputy and the Division.

The resignation or removal of Unit Operator under this agreement shall not terminate its right, title, or interest as the owner of a working interest or other interest in unitized substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all wells, equipment, materials and appurtenances used in conducting the unit operations to the new duly qualified successor Unit Operator or to the common agent, if no such new Unit Operator is elected, to be used for the purpose of conducting unit operations hereunder. Nothing herein shall be construed as authorizing removal of any material, equipment and appurtenances needed for the perservation of any wells.

6.3 Successor Unit Operator. Whenever the Unit Operator shall tender his or its resignation as Unit Operator or shall be removed as hereinabove provided, or a change of Unit Operator is negotiated by working interest owners, the owners of the working interests, according to their Working Interest Unit Participation, shall by vote under the terms of the voting procedure outlined in section 4.3 herein select a successor Unit Operator. Such selection shall not become effective until

(a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and

(b) the selection shall have been approved by the Deputy and the Division.

If no successor Unit Operator is selected and qualified as herein provided, this agreement shall automatically terminate under the same conditions a set forth under section 22 of the Unit Agreement and Article 19 herein.

ARTICLE 7

AUTHORITIES AND DUTIES OF UNIT OPERATOR

7.1 Exclusive Right to Operate Unit. Subject to the provisions of this Agreement and to instructions from Working

Interest Owners, Unit Operator shall have the exclusive right and be obligated to conduct Unit Operations.

7.2 Workmanlike Conduct. Unit Operator shall conduct Unit Operations in a good and workmanlike manner as would a prudent operator under the same or similar circumstances. Unit Operator shall freely consult with Working Interest Owners and keep them informed of all matters which Unit Operator, in the exercise of its best judgment, considers important. Unit Operator shall not be liable to Working Interest Owners for damages, unless such damages result from its gross negligence or willful misconduct.

7.3 Liens and Encumbrances. Unit Operator shall endeavor to keep the lands and leases in the Unit Area and Unit Equipment free from all liens and encumbrances occasioned by Unit Operations, except the lien and security interest of Unit Operator and Working Interest Owners granted hereunder.

7.4 Employees. The number of employees used by Unit Operator in conducting Unit Operations, their selection, hours of labor, and compensation shall be determined by Unit Operator. Such employees shall be the employees of Unit Operator.

7.5 Records. Unit Operator shall keep correct books, accounts and records of Unit Operations.

7.6 Reports to Working Interest Owners. Unit Operator shall furnish Working Interest Owners periodic reports of Unit Operations.

7.7 Reports to Governmental Authorities. Unit Operator shall make all reports to governmental authorities that it has the duty to make as Unit Operator.

7.8 Engineering and Geological Information. Unit Operator shall furnish to a Working Interest Owner, upon written request, a copy of all logs and other engineering and geological data pertaining to wells drilled for Unit Operations.

7.9 Expenditures. Unit Operator is authorized to make single expenditures not in excess of Twenty-Five Thousand Dollars ($25,000.00) without prior approval of Working Interest Owners. If an emergency occurs, Unit Operator may immediately make or incur such expenditures as in its opinion are required to deal with the emergency. Unit Operator shall report to Working Interest Owners, as promptly as possible, the nature of the emergency and the action taken.

7.10 Wells Drilled by Unit Operator. All wells drilled by Unit Operator shall be at the usual rates prevailing in the area. Unit Operator may employ its own tools and equipment, but the charge therefor shall not exceed the usual rates prevailing in the area, and the work shall be performed by Unit Operator under the same terms and conditions as are usual in the area in contracts of independent contractors doing work of a similar nature.

ARTICLE 8

TAXES

8.1 Ad Valorem Taxes. Beginning with the first calendar year after the Effective Date hereof, Unit Operator shall make and file all necessary ad valorem tax renditions and returns with the proper taxing authorities with respect to all property of each Working

Interest Owner used or held by Unit Operator for Unit Operations. Unit Operator shall settle assessments arising therefrom. All such ad valorem taxes shall be paid by Unit Operator and charged to the joint account; except those ad valorem taxes measured by production, which shall be borne by each owner in proportion to his share of production; and if Unit Operator receipts for and disburses the working interest production income he is hereby authorized to deduct such share of ad valorem taxes along with other taxes measured by production prior to distributing the production income.

8.2 Other Taxes. Each Working Interest Owner shall pay or cause to be paid all production, severance, gathering, and other taxes imposed upon or with respect to the production or handling of its share of Unitized Substances.

ARTICLE 9

INSURANCE

9.1 Insurance. Unit Operator, with respect to Unit Operations, shall:

(a) comply with the Workmen's Compensation Laws of the State,

(b) carry Employer's Liability and other insurance required by the laws of the State, and

(c) provide other insurance as set forth in Exhibit G.

ARTICLE 10

ADJUSTMENT OF INVESTMENT

10.1 Personal Property Taken Over. Upon Effective Date, Working Interest Owners shall deliver to Unit Operator the following:

10.1.1 Wells. All wells completed in the Unitized Formation.

10.1.2 Well and Lease Equipment. The casing and tubing in each such well, the wellhead connections thereon, and all other lease and operating equipment that is used in the operation of such wells which Working Interest Owners determine is necessary or desirable for conducting Unit Operations.

10.1.3 Records. A copy of all production and well records for such wells.

10.2. Inventory and Valuation of Investment Adjustment Items. Until changed by the working interest owners, the following procedure shall govern the investment adjustment:

10.2.1 Inventory and Base Valuation of Surface and Removeable Downhole Equipment . Working interest owners shall at Unit Expense inventory and evaluate, as determined by Working Interest Owners, the personal property taken over. Such inventory shall include and be limited to those items of surface equipment (including pipelines whether buried or not and equipment for pressure maintenance, waterflooding and handling of tertiary chemicals) and removable downhole equipment considered controllable under Exhibit F except, upon

determination of Working Interest Owners, items considered non-controllable may be included in the inventory in order to insure a more equitable adjustment of investment. Casing shall be included in the inventory for record purposes, but shall be excluded from this inventoried surface and downhole equipment list (casing is to be accounted for under 10.2.2 hereof). Base valuation of each of these property items shall be determined by pricing in accordance with the provisions of Exhibit F attached for the condition category of the item at the time it was installed, provided, however: that for wells included in the Unit at the effective date the prices shall be based on prices as of time of the effective date; and that for wells drilled after the effective date base prices will be those existing at the time the equipment item was installed.

10.2.2 Base Valuation of Intangible Drilling and Non-Removable Downhole Equipment (including casing) Costs .

(a) This base value for wells on existing leases planned for producers (includes all wells on leases existing at the effective date which have not been plugged, abandoned or temporarily abandoned and are useable in that they are producing now, or can be put to production without reworking; and excludes the wells planned for conversion to injectors which are the D-4 in NW/4 NW/4 Section 4, the F-6 in SE/4 NW/4 Section 6 and the H-25 in SE/4 NE/4 Section 25) is, as to each well, equal to: (its "depth" in feet multiplied by $40.00) plus $100,000.00.

(b) This base value for the planned injection wells listed in (a) above is, as to each well, equal to its depth in feet multiplied by $40.00.

(c) This base value for any well other than those in (a) and (b) above, whether at the effective date is drilling, being re-entered or re-worked; or whether at a later date is drilled, re-entered or re-worked, shall be the actual cost to the owners thereof not to exceed (unless specifically approved by the Working Interest Owners) the amount prescribed under (a) above.

(d) As used in this subsection 10.2.2 "depth" means the actual depth of the well not to exceed a depth which is 300' below the contour marker at the top of Zone A (correlative with that point found at a depth of 2268' in the index well, described in the definitions, Section 2(b) of the Unit Agreement).

10.2.3 Base Valuation of Tertiary, or Enhanced Recovery, Chemicals . This value shall be that amount paid for tertiary, or enhanced recovery, chemicals whether or not the chemicals have been injected, are in storage on the property, or for which "pre-payment" has been made or the funds escrowed for payment at such future time at which, under contract, such chemicals are to be delivered.

10.2.4 Adjusted Valuation of Surface and Removable Downhole Equipment . The valuations of Section 10.2.1 shall be adjusted by multiplying by both a depreciation and inflation factor as they are defined hereunder:

depreciation factor ; (1-.005M) where M is the number of months in service as of date of investment adjustment up to a maximum of 50 months.

inflation factor ; CPI (last) divided by CPI (first), where CPI means consumer price index as published by the Bureau of Labor statistics and (last) means at the date (month) of investment adjustment and (first) means at the date (month) equipment installed, which for the equipment in the initial adjustment is the effective date.

The value so determined will be the adjusted valuation of the surface and downhole equipment.

10.2.5 Adjusted Value of Intangible Drilling and Non-Removeable Downhole Equipment . The base valuations of Section 10.2.2 shall be adjusted for depreciation and inflation in the same manner as provided in 10.2.4 for surface and removeable downhole equipment.

10.2.6 Adjusted Value of Tertiary or Enhanced Recovery Chemicals. The base values of the chemicals as defined in 10.2.3 above shall be adjusted by first summing for each year the total amount for that year and depreciating as follows:

(a) For the 0 to 5th year no depreciation

(b) For the 5th to the 25th year 5% per year.

and summing the yearly depreciated values for the chemicals valued for those years.

10.3 Investment Adjustment. Upon approval by Working Interest Owners of the inventory and valuations, and adjusted valuations, investments shall be adjusted as follows:

10.3.1 Initial Adjustment of Investments (as of effective date:

(a) Surface and Removeable Downhole Equipment: Each Working Interest Onwer shall be credited with the adjusted value, as determined in accordance with Section 10.2.4 above, of its interest in all such property taken over by Unit Operator under Section 10.1.2 and charged with an amount equal to that obtained by multiplying the total adjusted value of all such personal property taken over by Unit Operator under Section 10.1.2 by such Owner's Working Interest Unit Participation, as shown in Exhibit E. If the charge against any Working Interest Owner is greater than the amount credited to such Working Interest Owner, the resulting net charge shall be paid and in all other respects be treated as any other item of Unit Expense chargeable against such Working Interest Owner. If the credit to any Working Interest Owner is greater than the amount charged against such Working Interest Owner, the resulting net credit shall be paid to such Working Interest Owner by Unit Operator out of funds received by it in settlement of the net charges described above.

(b) Intangible Drilling and Non-Removeable Downhole Equipment. In the same fashion that production is "pooled" and apportioned under this unitization, so are the adjusted values of intangible drilling and non-removeable downhole equipment costs as defined in 10.2.5 above apportioned at the effective date to the Working Interest Owners of existing wells: to each such Working Interest Owner shall be credited an amount equal to the total adjusted value of all wells under 10.2.5 multiplied by such owner's Working Interest Unit Participation as shown on Exhibit E. It is intended that among these owners there be no initial adjustment of investment: rather, that the parties simply recognize and establish for use in other investment adjustments the amount that is credited to each such Working Interest Owner as of the effective date, such to be each owner's initial standing in this account. Between these owner's and any others at the effective date there shall be an investment adjustment the same as for subsequent investment adjustments provided for under 10.3.2(b); it being the intent of this provision that any Working Interest Owners joining at the effective date that has not shared in the cost of wells drilled as of that time must bear a share of the costs of intangible and non-removeable downhole equipment by reimbursing those that have.

(c) Tertiary, or Enhanced Recovery, Chemicals. Any tertiary, or enhanced recovery, chemicals purchased by the operator for the account of the Working Interest Owners - whether prior to, at, or after the effective date - shall be for the account of the parties in proportion to their Working Interest Unit Participations, and is to be so invoiced; so there will be no need for an initial investment adjustment for such items.

10.3.2 Subsequent (after Initial) Investment Adjustments. At any time following the effective date that an additional tract or tracts are admitted, in accordance with the terms of the Unit Agreement, to participation, there shall be, effective as of the date of admission, investment adjustments for the 3 classes of investment as follows:

(a) Surface and Removeable Downhole Equipment. Each subsequent investment adjustment shall be as described in 10.3.1(a) above for the initial investment adjustment.

(b) Intangible Drilling and Non-Removeable Downhole Equipment. Each subsequent investment adjustment shall take into account the intangible drilling and non-removeable downhole equipment in the same fashion as in (a) preceding, using the adjusted values of the well costs as defined in 10.2.5 above. Any costs in this category added between the preceding investment adjustment date and the current one shall be included in the amount of investment credited each owner under 10.2.2 by the actual amount added (prior to adjusting under 10.2.5).

(c) Tertiary, or Enhanced Recovery, Chemicals. Each subsequent investment adjustment shall take into account the tertiary, or emhanced recovery, chemical costs in the same fashion as in (a) preceding using the adjusted

values as defined in 10.2.6 above.

10.4 General Facilities. The acquisition of warehouses, warehouse stocks, lease houses, camps, facility systems, and office buildings necessary for Unit Operations shall be by negotiation by the owners thereof and Unit Operator, subject to the approval of Working Interest Owners.

10.5 Ownership of Personal Property and Facilities. Each Working Interest Owner, individually, shall by virtue hereof own an undivided interest, equal to its Working Interest Unit Participation, in all personal property and facilities taken over or otherwise acquired by Unit Operator pursuant to this Agreement.

ARTICLE 11

UNIT EXPENSE AND UNIT INCOME

11.1 Basis of Charge to Working Interest Owners. Unit Operator initially shall pay all Unit Expense. Each Working Interest Owner shall reimburse Unit Operator for its share of unit operating expense in proportion to the respective Working Interest Unit Participations of the parties hereto in effect at the time such expense was incurred. Investment items purchased during Unitized operations will, however, be charged to each Working Interest Owner using his Exhibit E Participation Percentage. All charges, credits, and accounting for Unit Expense shall be in accordance with Exhibit F.

11.2 Budgets. Before or as soon as practical after the Effective Date, Unit Operator shall prepare a budget of estimated Unit Expense for the remainder of the calendar year, and, on or before the first day of each April thereafter, shall prepare a budget for the ensuing twelve months. A budget shall set forth the estimated Unit Expense by annual periods. Budgets shall be estimates only, and shall be adjusted or corrected by Working Interest Owners and Unit Operator whenever an adjustment or correction is proper. A copy of each budget and adjusted budget shall be furnished promptly to each Working Interest Owner.

11.3 Advance Billings. Unit Operator shall have the right, without prejudice to other rights or remedies, to require Working Interest Owners to advance their respective shares of estimated Unit Expense by submitting to Working Interest Owners, on or before the 15th day of any month, an itemized estimate thereof for the succeeding month, with a request for payment in advance. Within fifteen (15) days after receipt of the estimate, each Working Interest Owner shall pay to Unit Operator its share of such estimate. Adjustments between estimated and actual Unit Expense shall be made by Unit Operator at the close of each calendar month, and the accounts of Working Interest Owners shall be adjusted accordingly.

11.4 Commingling of Funds. Funds received by Unit Operator under this Agreement need not be segregated or maintained by it as a separate fund, but may be commingled with its own funds.

11.5 Lien and Security Interest of Unit Operator and Working Interest Owners. Each Working Interest Owner grants to Unit Operator a lien upon its Oil and Gas Rights in each Tract, and a security interest in its share of Unitized Substances when extracted and its interest in all Unit Equipment, to secure payment of its share of Unit Expense, together with interest thereon at the rate

of ten percent (10%) per annum. To the extent that Unit Operator has a security interest under the Uniform Commercial Code of the State, Unit Operator shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by Unit Operator for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the lien rights or security interest as security for the payment thereof. In addition, upon default by any Working Interest Owner in the payment of its share of Unit Expense, Unit Operator shall have the right, without prejudice to other rights or remedies, to collect from the purchaser the proceeds from the sale of such Working Interest Owner's share of Unitized Substances until the amount owed by such Working Interest Owner, plus interest has been paid. Each purchaser shall be entitled to rely upon Unit Operator's written statement concerning the amount of any default. Unit Operator grants a like lien and security interest to the Working Interest Owners.

11.6 Unpaid Unit Expense. If any Working Interest Owner fails to pay its share of Unit Expense within sixty (60) days after rendition of a statement therefor by Unit Operator, each Working Interest Owner agrees, upon request by Unit Operator, to pay its proportionate part of the unpaid share of Unit Expense of the defaulting Working Interest Owner. Working Interest Owners that pay the share of Unit Expense of a defaulting Working Interest Owner shall be reimbursed by Unit Operator for the amount so paid, plus any interest collected thereon, upon receipt by Unit Operator of any past due amount collected from the defaulting Working Interest Owner. Any Working Interest Owner so paying a defaulting Working Interest Owner's share of Unit Expense shall, to obtain reimbursement thereof, be subrogated to the lien and other rights herein granted Unit Operator.

11.7 Uncommitted Royalty. Should an owner of a Royalty Interest or an Overriding Royalty Interest in any Tract fail to become a party to the Unit Agreement, and, as a result thereof, the actual Royalty (or Overriding Royalty) Interest payments with respect to such Tract are more or less than the Royalty (or Overriding Royalty) Interest payments computed on the basis of the Unitized Substances that are allocated to such Tract under the Unit Agreement, the difference shall be borne or inure to the benefit of Working Interest Owners, in proportion to their respective Working Interest Unit Participations at the time the Unitized Substances were produced. Such adjustments shall be made by charges and credits to the joint account.

11.8 Rentals. Unless otherwise agreed to, the Working Interest Owners in each Tract shall pay all rentals, minimum royalty, advance rentals or delay rentals due under the lease thereon and shall concurrently submit to the Unit Operator evidence of payment.

11.9 Subsequently Created Lease Burdens. If any Working Interest Owner shall, after executing this agreement, create an overriding royalty, production payment, net profits interest, carried interest, or any other interest out of its Working Interest, such "carved-out" interest shall be subject to the terms and provisions of this agreement, specifically including, but without limitation, Section 11.5 hereof entitled "Lien and Security Interest of Unit Operators and Working Interest Owners." If the Working Interest Owner creating such carved-out interest (a) fails to pay any Unit Expense chargeable to such Working Interest Owner under this agreement, and the production of Unitized Substances accruing

to the credit of such Working Interest Owner is insufficient for that purpose, or (b) withdraws from this agreement under the terms and provisions of Article 17 hereof, the carved-out interest shall be chargeable with a pro rata portion of all Unit Expense incurred hereunder, the same as though such carved-out interest were a Working Interest, and Unit Operator shall have the right to enforce against such carved-out interest the lien and all other rights granted in Section 11.5 for the purpose of collecting the Unit Expense chargeable to the carved-out interest.

11.10 Unit Income. The proceeds of production of Unitized Substances shall be allocated to the tracts and the owners thereof in accordance with the terms of the Unit Agreement, particularly Articles 12, 13 and 14 therein.

ARTICLE 12

NON-UNITIZED FORMATIONS

12.1 Right to Operate. Any Working Interest Owner that now has or hereafter acquires the right to drill for and produce oil, gas, or other minerals, from a formation underlying the Unit Area other than the Unitized Formation, shall have the right to do so notwithstanding this Agreement or the Unit Agreement. In exercising the right, however, the Working Interest Owner shall exercise care to prevent unreasonable interference with Unit Operations. No Working Interest Owner shall produce Unitized Substances through any well drilled or operated by it. If any Working Interest Owner drills any well into or through the Unitized Formation, the Unitized Formation shall be protected in a manner satisfactory to Working Interest Owners so that the production of Unitized Substances will not be affected adversely.

ARTICLE 13

TITLES

13.1 Warranty and Indemnity. Each Working Interest Owner represents and warrants that it is the owner of the respective working interests set forth opposite its name in Exhibit B of the Unit Agreement, and agrees to indemnify and hold harmless the other Working Interest Owners from any loss due to failure, in whole or in part, of its title to any such interest, except failure of title arising out of Unit Operations; however, such indemnity and any liability for breach of warranty shall be limited to an amount equal to the net value that has been received from the sale or receipt of Unitized Substances attributed to the interest as to which title failed. Each failure of title will be deemed to be effective, insofar as this Agreement is concerned, as of 7:00 A.M. on the first day of the calendar month in which such failure is finally determined, and there shall be no retroactive adjustment of Unit Expense, or retroactive allocation of Unitized Substances or the proceeds therefrom, as a result of title failure.

13.2 Failure Because of Unit Operations. The failure of title to any Working Interest in any Tract because of Unit Operations, including nonproduction from such Tract, shall not change the Working Interest Unit Participation of the Working Interest Owner whose title failed in relation to the Working Interest Unit Participation of the other Working Interest Owners at the time of the title failure.

ARTICLE 14

LIABILITY, CLAIMS, AND SUITS

14.1 Individual Liability. The duties, obligations, and liabilities of Working Interest Owners shall be several and not joint or collective; and nothing herein shall ever be construed as creating a partnership of any kind, joint venture, association, or trust among Working Interest Owners.

14.2 Settlements. Unit Operator may settle any single damage claim or suit involving Unit Operations if the expenditure does not exceed Five Thousand Five Hundred Dollars ($5,000.00) and if the payment is in complete settlement of such claim or suit. If the amount required for settlement exceeds the above amount, Working Interest Owners shall assume and take over the further handling of the claim or suit, unless such authority is delegated to Unit Operator. All costs and expense of handling, settling, or otherwise discharging such claim or suit shall be an item of Unit Expense. If a claim is made against any Working Interest Owner or if any Working Interest Owner is sued on account of any matter arising from Unit Operations over which such Working Interest Owner individually has no control because of the rights given Working Interest Owners and Unit Operator by this Agreement and the Unit Agreement, the Working Interest Owner shall immediately notify Unit Operator, and the claim or suit shall be treated as any other claim or suit involving Unit Operations.

14.3 Litigation Involving Unit. All litigation, and all settlements or liability for damages arising thereunder, involving or arising out of Unit Operations (specifically including but not limited to actions by third parties claiming damages by virtue of Unit Operations) shall be deemed a Unit Expense under Article 11 hereof.

ARTICLE 15

LAWS AND REGULATIONS

15.1 Internal Revenue Provision. Notwithstanding any provisions herein that the rights and liabilities of the parties hereunder are several and not joint or collective, or that this Agreement and operations hereunder shall not constitute a partnership, if for Federal income tax purposes this Agreement and the operations hereunder are regarded as a partnership, then each of the parties hereto elects to be excluded from the application of all of the provisions of Subchapter K, Chapter 1, Subtitle A, of the Internal Revenue Code of 1954, as permitted and authorized by Section 761 of the Code and the regulations promulgated thereunder. Unit Operator is hereby authorized and directed to execute on behalf of each of the parties hereto such evidence of this election as may be required by the Secretary of the Treasury of the United States or the Federal Internal Revenue Service, including specifically, but not by way of limitation, all of the returns, statements, and the data required by Federal Regulations 1.761-2. Should there be any requirement that each party hereto further evidence this election, each party hereto agrees to execute such documents and furnish such other evidence as may be required by the Federal Internal Revenue Service or as may be necessary to evidence this election. Each party hereto further agrees not to give any notices or take any other action inconsistent with the election made hereby. If any present or future income tax laws of the state or states in which the Unit Area is located, or any

future income tax law of the United States, contain provisions similar to those in Subchapter K, Chapter 1, Subtitle A, of the Internal Revenue Code of 1954, under which an election similar to that provided by section 761 of the Code is permitted, each of the parties agrees to make such election as may be permitted, or required by such laws. In making this election, each of the parties states that the income derived by such party from the operations under this Agreement can be adequately determined without the computation of partnership taxable income.

ARTICLE 16

NOTICES

16.1 Notices. All notices required hereunder shall be in writing and shall be deemed to have been properly served when sent by mail or telegram to the address of the representative of each Working Interest Owner as furnished to Unit Operator in accordance with Article 4.

ARTICLE 17

WITHDRAWAL OF WORKING INTEREST OWNER

17.1 Withdrawal. A Working Interest Owner may withdraw from this Agreement by transferring, without warrant of title, either express or implied, to the other Working Interest Owners, all its Oil and Gas Rights exclusive of Royalty Interests, together with its interest in all Unit Equipment and in all wells used in Unit Operations. The instrument of transfer may be delivered to Unit Operator for the transferees. Such transfer shall not relieve the Working Interest Owners from any obligation or liability incurred prior to the date of the delivery of the instrument of transfer; however, the tender has to be accepted unless Working Interest Owners decide within ninety (90) days to terminate the Unit. The interest transfered shall be owned by the transferees in proportion to their respective Working Interest Unit Participations then in effect. The transferees, in proportion to the respective interests so acquired, shall pay transferor, for its interest in Unit Equipment, the net salvage value thereof as determined by Working Interest Owners. In the event such withdrawing party's interest in the aforesaid net salvage value after deducting the estimated cost of salvaging same is less than the withdrawing party's share of the estimated cost of plugging and abandoning all wells then being used or held for Unit Operations, then the withdrawing party, as a condition precedent to withdrawal, shall pay in cash to the party or parties succeeding to its interest a sum equal to the deficiency. After the date of delivery of the instrument of transfer, the withdrawing Working Interest Owner shall be relieved from all further obligations and liability hereunder and under the Unit Agreement, and the rights of such Working Interest Owner hereunder and under the Unit Agreement shall cease insofar as they existed by virtue of the interest transferred.

ARTICLE 18

ABANDONMENT OF WELLS

18.1 Rights of Former Owners. If Working Interest Owners decide to permanently abandon any well within the Unit Area prior to termination of the Unit Agreement, Unit Operator shall give written notice thereof to the Working Interest Owners of the Tract on which the well is located, and they shall have the option for

a period of ninety (90) days after the sending of such notice to notify Unit Operator in writing of their election to take over and own the well. Within ten (10) days after the Working Interest Owners of the Tract have notified Unit Operator of their election to take over the well, they shall pay Unit Operator, for credit to the joint account, the amount determined by Working Interest Owners to be the net salvage value of the casing and equipment in and on the well. The Working Interest Owners of the Tract, by taking over the well, agree to seal off the Unitized formation, and upon abandonment to plug the well in compliance with applicable laws and regulations.

18.2 Plugging. If the Working Interest Owners of a Tract do not elect to take over a well located within the Unit Area that is proposed for abandonment, Unit Operator shall plug and abandon the well in compliance with applicable laws and regulations.

ARTICLE 19

EFFECTIVE DATE AND TERM

19.1 Effective Date. This Agreement shall become effective when the Unit Agreement becomes effective.

19.2 Term. This Agreement shall continue in effect so long as the Unit Agreement remains in effect, and thereafter until (a) all unit wells have been plugged and abandoned or turned over to Working Interest Owners in accordance with Article 22; (b) all Unit Equipment and real property acquired for the joint account have been disposed of by Unit Operator in accordance with instructions of Working Interest Owners; and (c) there has been a final accounting.

ARTICLE 20

NO OBLIGATION TO REPRESENT OTHER PARTIES BEFORE FEDERAL ENERGY REGULATORY COMMISSION

20.1 No Obligation to Represent Other Parties Before Federal Energy Regulatory Commission. This Agreement shall not be construed to provide that any Party is obligated to represent any other Party hereto before the Federal Energy Regulatory Commission.

ARTICLE 21

SUPERIORITY OF UNIT OPERATING AGREEMENT

21.1 Supersedence by Unit Operating Agreement. This Unit Operating Agreement supersedes - or is superior to - any previously existing operating agreements covering the Working Interests committed hereto for so long as the subject Interests are committed to the Unit Agreement and Unit Operating Agreement.

ARTICLE 22

ABANDONMENT OF OPERATIONS

22.1 Termination. Upon termination of the Unit Agreement, the following will occur:

22.1.1 Oil and Gas Rights. Oil and Gas Rights in and to each separate Tract shall no longer be affected by this Agreement, and thereafter the parties shall be governed by

the terms and provisions of the leases, contracts and other instruments affecting the separate Tracts.

22.1.2 Right to Operate. Working Interest Owners of any Tract that desire to take over and continue to operate wells located thereon may do so by paying Unit Operator, for credit to the joint account, the net salvage values, as determined by Working Interest Owners, of the casing and equipment in and on the wells taken over and by agreeing upon abandonment to plug each well in compliance with applicable laws and regulations.

22.1.3 Salvaging Wells. Unit Operator shall salvage as much of the casing and equipment in or on wells not taken over by Working Interest Owners of separate Tracts as can economically and reasonably be salvaged, and shall cause the wells to be plugged and abandoned in compliance with applicable laws and regulations.

22.1.4 Cost of Abandonment. The cost of abandonment of Unit Operations shall be Unit Expense.

22.1.5 Distribution of Assets. Working Interest Owners shall share in the distribution of Unit Equipment, or the proceeds thereof, in proportion to their Working Interest Unit Participations.

ARTICLE 23

RESTORATION IN EVENT OF OVERPAYMENT FOR PRODUCTION

23.1 Restoration In Event of Overpayment for Production Not Taken in Kind. Section 14 of the Unit Agreement provides for the taking in kind of Unitized Substances by the Working Interest Owners, and in event of failure to take in kind, for the Unit Operator to market the Unitized Substances and account to the Owners therefor. Further with regard to Section 14 of the Unit Agreement, Unit Operator agrees to advise the Working Interest Owners of prices being received for Unitized Substances and when significant changes in prices occur, and although any Working Interest Owner may at any time revoke the authority granted Unit Operator to market his share of Unitized Substances, take in kind, and in accordance with Section 14 of the Unit Agreement market it: unless and until such action is taken Unit Operator may market the Unitized Substances; and in consideration of Unit Operator's marketing the Unitized Substances and making distribution of the proceeds to the Working Interest Owners, each of the Working Interest Owners agrees to indemnify and hold Unit Operator harmless from any and all claims, demands or cause of action arising by virtue of its marketing Unitized Substances and making such payments.

It is recognized that the price for which Unitized Substances are permitted to be sold may be subject to regulation by governmental authority. In the event such regulation does not permit retention of all of the price for which Unitized Substances were sold, the Working Interest Owners severally agree to refund amounts in excess of permitted levels, together with any applicable interest and penalties, promptly when required by Unit Operator; such refunds being treated as expense under the meaning of Article 11 hereof.

Should such refunds be required that are attributable to royalty interests, overriding royalty interests, production payments and other similar interests (hereinafter called "lease burdens") and Unit Operator is unable to recover such refunds from the owners

thereof; then any unrecovered refund accruing to a lease burden shall be treated as a Unit Expense under the meaning of Article 11 hereof chargeable to the Working Interest Owners in proportion to their Working Interest Unit Participations. Unit Operator shall continue to use such reasonable measures as deemed practical - including withholding of proceeds of sale of Unitized Substances attributable to the lease burden interest - to attempt to recover and credit to the accounts of the Working Interest Owners such outstanding refunds.

In event litigation is considered to protect the rights of the Working Interest Owners, as to matters covered by this Article 23.1, Unit Operator may be authorized through the voting procedure of Article 4.3 hereof, but not otherwise, to incur legal costs to protect the rights of the Working Interest Owners.

ARTICLE 24

EXECUTION

24.1 Original, Counterpart, or Other Instrument. An owner of a Working Interest may become a party to this Agreement by signing the original of this instrument, a counterpart thereof, or other instrument agreeing to become a party hereto. The signing of any such instrument shall have the same effect as if all parties had signed the same instrument.

ARTICLE 25

COVENANTS RUN WITH LAND

25.1 Covenants Run With Land. The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer, or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument or transfer; and no assignment of transfer of any Royalty Interest subject hereto shall be binding upon the Working Interest Owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument or transfer.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date opposite their respective signatures.

UNIT OPERATOR AND
WORKING INTEREST OWNER

BENSON-MONTIN-GREER DRILLING CORP.

ATTEST:

_____

BY: _____
Albert R. Greer, President

Date:

_____

221 Petroleum Center Building
Farmington, New Mexico 87401

WORKING INTEREST OWNERS

Date:

_____

John R. Anderson

P. O. Box 243
Farmington, New Mexico 87401

Date:

_____

Tom Bolack

1010 North Dustin
Farmington, New Mexico 87401

Date:

_____

Molly E. Bramblette

710 Crestview Drive
Farmington, New Mexico 87401

Date:

_____

RICHARD BRAMBLETTE TRUST

BY: _____
Molly E. Bramblette, Trustee

710 Crestview Drive
Farmington, New Mexico 87401

Date:

_____

Albert R. Greer

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

GREER ENTERPRISES, LTD.,
a Limited Partnership

BY: _____
Albert R. Greer, Gen. Partner

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

Bill Harbert

Box 1297
Birmingham, Alabama 35201

Date:

_____

Jack London, Jr.

101 Park Avenue Building
Suite 310
Oklahoma City, Oklahoma 73102

Date:

_____

William London

Continental Federal Building
Suite 300
101 Park Avenue
Oklahoma City, Oklahoma 73102

Date:

_____

Alfred C. Montin

1392 First National Building
Oklahoma City, Oklahoma 73102

Date:

_____

William V. Montin

1392 First National Building
Oklahoma City, Oklahoma 73102

Date:

_____

Jessie Stanley

1702 Chaco
Farmington, New Mexico 87401

Date:

_____

STOABS OIL CORP., a corporation

BY: _____
Virgil L. Stoabs, President

221 Petroleum Center Building
Farmington, New Mexico 87401

Date:

_____

Virgil L. Stoabs

221 Petroleum Center Building
Farmington, New Mexico 87401

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by ALBERT R. GREER, President of BENSON-MONTIN-GREER DRILLING CORP., a corporation, on behalf of said corporation.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by John R. Anderson.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Tom Bolack.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Molly E. Bramblette.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Molly E. Bramblette, Trustee of Richard Bramblette Trust, a trust, on behalf of said trust.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Albert R. Greer.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Albert R. Greer, General Partner of Greer Enterprises, Ltd., a Limited Partnership, on behalf of said Limited Partnership.

STATE OF ALABAMA)
) SS
COUNTY OF JEFFERSON)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Bill Harbert.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Jack London, Jr.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by William London.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Alfred C. Montin.

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by William V. Montin.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Jessie Stanley.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Virgil L. Stoabs, President of Stoabs Oil Corp., a corporation, on behalf of said corporation.

STATE OF NEW MEXICO)
) SS
COUNTY OF SAN JUAN)

The foregoing Unit Agreement was acknowledged before me this _____ day of _____ , 1980, by Virgil L. Stoabs.

EXHIBIT "F"

Attached to and made a part of the East Puerto Chiquito Mancos Unit Operating Agreement dated June 1, 1980 Rio Arriba County, New Mexico

ACCOUNTING PROCEDURE
JOINT OPERATIONS

I. GENERAL PROVISIONS

1. Definitions

"Joint Property" shall mean the real and personal property subject to the agreement to which this Accounting Procedure is attached.

"Joint Operations" shall mean all operations necessary or proper for the development, operation, protection and maintenance of the Joint Property.

"Joint Account" shall mean the account showing the charges paid and credits received in the conduct of the Joint Operations and which are to be shared by the Parties.

"Operator" shall mean the party designated to conduct the Joint Operations.

"Non-Operators" shall mean the parties to this agreement other than the Operator.

"Parties" shall mean Operator and Non-Operators.

"First Level Supervisors" shall mean those employees whose primary function in Joint Operations is the direct supervision of other employees and/or contract labor directly employed on the Joint Property in a field operating capacity.

"Technical Employees" shall mean those employees having special and specific engineering, geological or other professional skills, and whose primary function in Joint Operations is the handling of specific operating conditions and problems for the benefit of the Joint Property.

"Personal Expenses" shall mean travel and other reasonable reimbursable expenses of Operator's employees.

"Material" shall mean personal property, equipment or supplies acquired or held for use on the Joint Property.

"Controllable Material" shall mean Material which at the time is so classified in the Material Classification Manual as most recently recommended by the Council of Petroleum Accountants Societies of North America.

2. Statement and Billings

Operator shall bill Non-Operators on or before the last day of each month for their proportionate share of the Joint Account for the preceding month. Such bills will be accompanied by statements which identify the authority for expenditure, lease or facility, and all charges and credits, summarized by appropriate classifications of investment and expense except that items of Controllable Material and unusual charges and credits shall be separately identified and fully described in detail.

3. Advances and Payments by Non-Operators

Unless otherwise provided for in the agreement, the Operator may require the Non-Operators to advance their share of estimated cash outlay for the succeeding month's operation. Operator shall adjust each monthly billing to reflect advances received from the Non-Operators.

Each Non-Operator shall pay its proportion of all bills within fifteen (15) days after receipt. If payment is not made within such time, the unpaid balance shall bear interest monthly at the rate of twelve percent (12%) per annum or the maximum contract rate permitted by the applicable usury laws in the state in which the Joint Property is located, whichever is the lesser, plus attorney's fees, court costs, and other costs in connection with the collection of unpaid amounts.

4. Adjustments

Payment of any such bills shall not prejudice the right of any Non-Operator to protest or question the correctness thereof; provided, however, all bills and statements rendered to Non-Operators by Operator during any calendar year shall conclusively be presumed to be true and correct after twenty-four (24) months following the end of any such calendar year, unless within the said twenty-four (24) month period a Non-Operator takes written exception thereto and makes claim on Operator for adjustment. No adjustment favorable to Operator shall be made unless it is made within the same prescribed period. The provisions of this paragraph shall not prevent adjustments resulting from a physical inventory of Controllable Material as provided for in Section V.

5. Audits

A. Non-Operator, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records relating to the Joint Account for any calendar year within the twenty-four (24) month period following the end of such calendar year; provided, however, the making of an audit shall not extend the time for the taking of written exception to and the adjustments of accounts as provided for in Paragraph 4 of this Section I. Where there are two or more Non-Operators, the Non-Operators shall make every reasonable effort to conduct joint or simultaneous audits in a manner which will result in a minimum of inconvenience to the Operator. Operator shall bear no portion of the Non-Operators' audit cost incurred under this paragraph unless agreed to by the Operator.

6. Approval by Non-Operators

Where an approval or other agreement of the Parties or Non-Operators is expressly required under other sections of this Accounting Procedure and if the agreement to which this Accounting Procedure is attached contains no contrary provisions in regard thereto, Operator shall notify all Non-Operators of the Operator's proposal, and the agreement or approval of a majority in interest of the Non-Operators shall be controlling on all Non-Operators.

II. DIRECT CHARGES

Operator shall charge the Joint Account with the following items:

1. Rentals and Royalties

Lease rentals and royalties paid by Operator for the Joint Operations.

2. Labor

A. (1) Salaries and wages of Operator's field employees directly employed on the Joint Property in the conduct of Joint Operations.

(2) Salaries of First Level Supervisors in the field.

(3) Salaries and wages of Technical Employees directly employed on the Joint Property if such charges are excluded from the Overhead rates.

B. Operator's cost of holiday, vacation, sickness and disability benefits and other customary allowances paid to employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II. Such costs under this Paragraph 2B may be charged on a "when and as paid basis" or by "percentage assessment" on the amount of salaries and wages chargeable to the Joint Account under Paragraph 2A of this Section II. If percentage assessment is used, the rate shall be based on the Operator's cost experience.

C. Expenditures or contributions made pursuant to assessments imposed by governmental authority which are applicable to Operator's costs chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II.

D. Personal Expenses of those employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II.

3. Employee Benefits

Operator's current costs of established plans for employees' group life insurance, hospitalization, pension, retirement, stock purchase, thrift, bonus, and other benefit plans of a like nature, applicable to Operator's labor cost chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II shall be Operator's actual cost not to exceed twenty per cent (20%).

4. Material

Material purchased or furnished by Operator for use on the Joint Property as provided under Section IV. Only such Material shall be purchased for or transferred to the Joint Property as may be required for immediate use and is reasonably practical and consistent with efficient and economical operations. The accumulation of surplus stocks shall be avoided.

5. Transportation

Transportation of employees and Material necessary for the Joint Operations but subject to the following limitations:

A. If Material is moved to the Joint Property from the Operator's warehouse or other properties, no charge shall be made to the Joint Account for a distance greater than the distance from the nearest reliable supply store, recognized barge terminal, or railway receiving point where like material is normally available, unless agreed to by the Parties.

B. If surplus Material is moved to Operator's warehouse or other storage point, no charge shall be made to the Joint Account for a distance greater than the distance to the nearest reliable supply store, recognized barge terminal, or railway receiving point unless agreed to by the Parties. No charge shall be made to the Joint Account for moving Material to other properties belonging to Operator, unless agreed to by the Parties.

C. In the application of Subparagraphs A and B above, there shall be no equalization of actual gross trucking cost of $200 or less excluding accessorial charges.

6. Services

The cost of contract services, equipment and utilities provided by outside sources, except services excluded by Paragraph 9 of Section II and Paragraph 1. ii of Section III. The cost of professional consultant services and contract services of technical personnel directly engaged on the Joint Property if such charges are excluded from the Overhead rates. The cost of professional consultant services or contract services of technical personnel not directly engaged on the Joint Property shall not be charged to the Joint Account unless previously agreed to by the Parties.

7. Equipment and Facilities Furnished by Operator

A. Operator shall charge the Joint Account for use of Operator owned equipment and facilities at rates commensurate with costs of ownership and operation. Such rates shall include costs of maintenance, repairs, other operating expense, insurance, taxes, depreciation, and interest on investment not to exceed eight per cent (8%) per annum. Such rates shall not exceed average commercial rates currently prevailing in the immediate area of the Joint Property.

B. In lieu of charges in Paragraph 7A above, Operator may elect to use average commercial rates prevailing in the immediate area of the Joint Property less 20%. For automotive equipment, Operator may elect to use rates published by the Petroleum Motor Transport Association.

8. Damages and Losses to Joint Property

All costs or expenses necessary for the repair or replacement of Joint Property made necessary because of damages or losses incurred by fire, flood, storm, theft, accident, or other cause, except those resulting from Operator's gross negligence or willful misconduct. Operator shall furnish Non-Operator written notice of damages or losses incurred as soon as practicable after a report thereof has been received by Operator.

9. Legal Expense

Expense of handling, investigating and settling litigation or claims, discharging of liens, payment of judgments and amounts paid for settlement of claims incurred in or resulting from operations under the agreement or necessary to protect or recover the Joint Property, except that no charge for services of Operator's legal staff or fees or expense of outside attorneys shall be made unless previously agreed to by the Parties. All other legal expense is considered to be covered by the overhead provisions of Section III unless otherwise agreed to by the Parties, except as provided in Section I, Paragraph 3.

10. Taxes

All taxes of every kind and nature assessed or levied upon or in connection with the Joint Property, the operation thereof, or the production therefrom, and which taxes have been paid by the Operator for the benefit of the Parties.

11. Insurance

Net premiums paid for insurance required to be carried for the Joint Operations for the protection of the Parties. In the event Joint Operations are conducted in a state in which Operator may act as self-insurer for Workmen's Compensation and/or Employers Liability under the respective state's laws, Operator may, at its election, include the risk under its self-insurance program and in that event, Operator shall include a charge at Operator's cost not to exceed manual rates.

12. Other Expenditures

Any other expenditure not covered or dealt with in the foregoing provisions of this Section II, or in Section III, and which is incurred by the Operator in the necessary and proper conduct of the Joint Operations.

III. OVERHEAD

1. Overhead - Drilling and Producing Operations

i. As compensation for administrative, supervision, office services and warehousing costs, Operator shall charge drilling and producing operations on either:

(X) Fixed Rate Basis, Paragraph 1A, or
( ) Percentage Basis, Paragraph 1B.

Unless otherwise agreed to by the Parties, such charge shall be in lieu of costs and expenses of all offices and salaries or wages plus applicable burdens and expenses of all personnel, except those directly chargeable under Paragraph 2A, Section II. The cost and expense of services from outside sources in connection with matters of taxation, traffic, accounting or matters before or involving governmental agencies shall be considered as included in the Overhead rates provided for in the above selected Paragraph of this Section III unless such cost and expense are agreed to by the Parties as a direct charge to the Joint Account.

ii. The salaries, wages and Personal Expenses of Technical Employees and/or the cost of professional consultant services and contract services of technical personnel directly employed on the Joint Property shall ( ) shall not ( ) be covered by the Overhead rates.

A. Overhead - Fixed Rate Basis

(1) Operator shall charge the Joint Account at the following rates per well per month:

Drilling Well Rate $ 1,250.00
Producing Well Rate $ 125.00
Compressor Operating Rate $125.00

(2) Application of Overhead - Fixed Rate Basis shall be as follows:

(a) Drilling Well Rate

[1] Charges for onshore drilling wells shall begin on the date the well is spudded and terminate on the date the drilling or completion rig is released, whichever is later, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days.

[2] Charges for offshore drilling wells shall begin on the date when drilling or completion equipment arrives on location and terminate on the date the drilling or completion equipment moves off location or rig is released, whichever occurs first, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days

[3] Charges for wells undergoing any type of workover or recompletion for a period of five (5) consecutive days or more shall be made at the drilling well rate. Such charges shall be applied for the period from date workover operations, with rig, commence through date of rig release, except that no charge shall be made during suspension of operations for fifteen (15) or more consecutive days.

(b) Producing Well Rates

[1] An active well either produced or injected into for any portion of the month shall be considered as a one-well charge for the entire month.

[2] Each active completion in a multi-completed well in which production is not commingled down hole shall be considered as a one-well charge providing each completion is considered a separate well by the governing regulatory authority.

[3] An inactive gas well shut in because of overproduction or failure of purchaser to take the production shall be considered as a one-well charge providing the gas well is directly connected to a permanent sales outlet.

[4] A one-well charge may be made for the month in which plugging and abandonment operations are completed on any well.

[5] All other inactive wells (including but not limited to inactive wells covered by unit allowable, lease allowable, transferred allowable, etc.) shall not qualify for an overhead charge.

(6) An observation well shall be considered an active well.

(3) The well rates shall be adjusted as of the first day of April each year following the effective date of the agreement to which this Accounting Procedure is attached. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly earnings of Crude Petroleum and Gas Production Workers for the last calendar year compared to the calendar year preceding as shown by the index of average weekly earnings of Crude Petroleum and Gas Fields Production Workers as published by the United States Department of Labor, Bureau of Labor Statistics, or the equivalent Canadian index as published by Statistics Canada, as applicable. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment.

B. Overhead - Percentage Basis

(1) Operator shall charge the Joint Account at the following rates:

(a) Development

_____ Percent (%) of the cost of Development of the Joint Property exclusive of costs provided under Paragraph 9 of Section II and all salvage credits.

(b) Operating

_____ Percent (%) of the cost of Operating the Joint Property exclusive of costs provided under Paragraphs 1 and 9 of Section II, all salvage credits, the value of injected substances purchased for secondary recovery and all taxes and assessments which are levied, assessed and paid upon the mineral interest in and to the Joint Property.

(2) Application of Overhead - Percentage Basis shall be as follows:
For the purpose of determining charges on a percentage basis under Paragraph 1B of this Section III, development shall include all costs in connection with drilling, redrilling, deepening or any remedial operations on any or all wells involving the use of drilling crew and equipment; also, preliminary expenditures necessary in preparation for drilling and expenditures incurred in abandoning when the well is not completed as a producer, and original cost of construction or installation of fixed assets, the expansion of fixed assets and any other project clearly discernible as a fixed asset, except Major Construction as defined in Paragraph 2 of this Section III. All other costs shall be considered as Operating.

2. Overhead - Major Construction

To compensate Operator for overhead costs incurred in the construction and installation of fixed assets, the expansion of fixed assets, and any other project clearly discernible as a fixed asset required for the development and operation of the Joint Property, Operator shall either negotiate a rate prior to the beginning of construction, or shall charge the Joint Account for Overhead based on the following rates for any Major Construction project in excess of $25,000.00 :

A. 4 % of total costs if such costs are more than $25,000.00 but less than $ 100,000.00 plus
B. 3 % of total costs in excess of $ 100,000.00 but less than $1,000,000; plus
C. * % of total costs in excess of $1,000,000. * To be negotiated if applicable.

Total cost shall mean the gross cost of any one project. For the purpose of this paragraph, the component parts of a single project shall not be treated separately and the cost of drilling and workover wells shall be excluded.

3. Amendment of Rates

The Overhead rates provided for in this Section III may be amended from time to time only by mutual agreement between the Parties hereto if, in practice, the rates are found to be insufficient or excessive.

IV. PRICING OF JOINT ACCOUNT MATERIAL PURCHASES, TRANSFERS AND DISPOSITIONS

Operator is responsible for Joint Account Material and shall make proper and timely charges and credits for all material movements affecting the Joint Property. Operator shall provide all Material for use on the Joint Property; however, at Operator's option, such Material may be supplied by the Non-Operator. Operator shall make timely disposition of idle and/or surplus Material, such disposal being made either through sale to Operator or Non-Operator, division in kind, or sale to outsiders. Operator may purchase, but shall be under no obligation to purchase, interest of Non-Operators in surplus condition A or B Material. The disposal of surplus Controllable Material not purchased by the Operator shall be agreed to by the Parties.

1. Purchases

Material purchased shall be charged at the price paid by Operator after deduction of all discounts received. In case of Material found to be defective or returned to vendor for any other reason, credit shall be passed to the Joint Account when adjustment has been received by the Operator.

2. Transfers and Dispositions

Material furnished to the Joint Property and Material transferred from the Joint Property or disposed of by the Operator, unless otherwise agreed to by the Parties, shall be priced on the following bases exclusive of cash discounts:

A. New Material (Condition A)

(1) Tubular goods, except line pipe, shall be priced at the current new price in effect on date of movement on a maximum carload or barge load weight basis, regardless of quantity transferred, equalized to the lowest published price f.o.b. railway receiving point or recognized barge terminal nearest the Joint Property where such Material is normally available.

(2) Line Pipe

(a) Movement of less than 30,000 pounds shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store nearest the Joint Property where such Material is normally available.

(b) Movement of 30,000 pounds or more shall be priced under provisions of tubular goods pricing in Paragraph 2A (1) of this Section IV.

(3) Other Material shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store or f.o.b. railway receiving point nearest the Joint Property where such Material is normally available.

B. Good Used Material (Condition B)

Material in sound and serviceable condition and suitable for reuse without reconditioning:

(1) Material moved to the Joint Property

(a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV.

(2) Material moved from the Joint Property

(a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as new Material, or

(b) at sixty-five percent (65%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as good used Material at seventy-five percent (75%) of current new price.

The cost of reconditioning, if any, shall be absorbed by the transferring property.

C. Other Used Material (Condition C and D)

(1) Condition C

Material which is not in sound and serviceable condition and not suitable for its original function until after reconditioning shall be priced at fifty percent (50%) of current new price as determined by Paragraph 2A of this Section IV. The cost of reconditioning shall be charged to the receiving property, provided Condition C value plus cost of reconditioning does not exceed Condition B value.

(2) Condition D

All other Material, including junk, shall be priced at a value commensurate with its use or at prevailing prices. Material no longer suitable for its original purpose but usable for some other purpose, shall be priced on a basis comparable with that of items normally used for such other purpose. Operator may dispose of Condition D Material under procedures normally utilized by the Operator without prior approval of Non-Operators.

D. Obsolete Material

Material which is serviceable and usable for its original function but condition and/or value of such Material is not equivalent to that which would justify a price as provided above may be specially priced as agreed to by the Parties. Such price should result in the Joint Account being charged with the value of the service rendered by such Material.

E. Pricing Conditions

(1) Loading and unloading costs may be charged to the Joint Account at the rate of fifteen cents (15¢) per hundred weight on all tubular goods movements, in lieu of loading and unloading costs sustained, when actual hauling cost of such tubular goods are equalized under provisions of Paragraph 5 of Section II.

(2) Material involving erection costs shall be charged at applicable percentage of the current knocked-down price of new Material.

3. Premium Prices

Whenever Material is not readily obtainable at published or listed prices because of national emergencies, strikes or other unusual causes over which the Operator has no control, the Operator may charge the Joint Account for the required Material at the Operator's actual cost incurred in providing such Material, in making it suitable for use, and in moving it to the Joint Property; provided notice in writing is furnished to Non-Operators of the proposed charge prior to billing Non-Operators for such Material. Each Non-Operator shall have the right, by so electing and notifying Operator within ten days after receiving notice from Operator, to furnish in kind all or part of his share of such Material suitable for use and acceptable to Operator.

4. Warranty of Material Furnished by Operator

Operator does not warrant the Material furnished. In case of defective Material, credit shall not be passed to the Joint Account until adjustment has been received by Operator from the manufacturers or their agents.

V. INVENTORIES

The Operator shall maintain detailed records of Controllable Material.

1. Periodic Inventories, Notice and Representation

At reasonable intervals, Inventories shall be taken by Operator of the Joint Account Controllable Material. Written notice of intention to take inventory shall be given by Operator at least thirty (30) days before any inventory is to begin so that Non-Operators may be represented when any inventory is taken. Failure of Non-Operators to be represented at an inventory shall bind Non-Operators to accept the inventory taken by Operator.

2. Reconciliation and Adjustment of Inventories

Reconciliation of a physical inventory with the Joint Account shall be made, and a list of overages and shortages shall be furnished to the Non-Operators within six months following the taking of the inventory. Inventory adjustments shall be made by Operator with the Joint Account for overages and shortages, but Operator shall be held accountable only for shortages due to lack of reasonable diligence.

3. Special Inventories

Special Inventories may be taken whenever there is any sale or change of interest in the Joint Property. It shall be the duty of the party selling to notify all other Parties as quickly as possible after the transfer of interest takes place. In such cases, both the seller and the purchaser shall be governed by such inventory.

4. Expense of Conducting Periodic Inventories

The expense of conducting periodic Inventories shall not be charged to the Joint Account unless agreed to by the Parties.

EXHIBIT G

ATTACHED TO AND MADE A PART OF
THAT CERTAIN AGREEMENT ENTITLED

UNIT OPERATING AGREEMENT,
EAST PUERTO CHIQUITO MANCOS UNIT AREA
RIO ARRIBA COUNTY, NEW MEXICO

DATED JUNE 1, 1980

INSURANCE

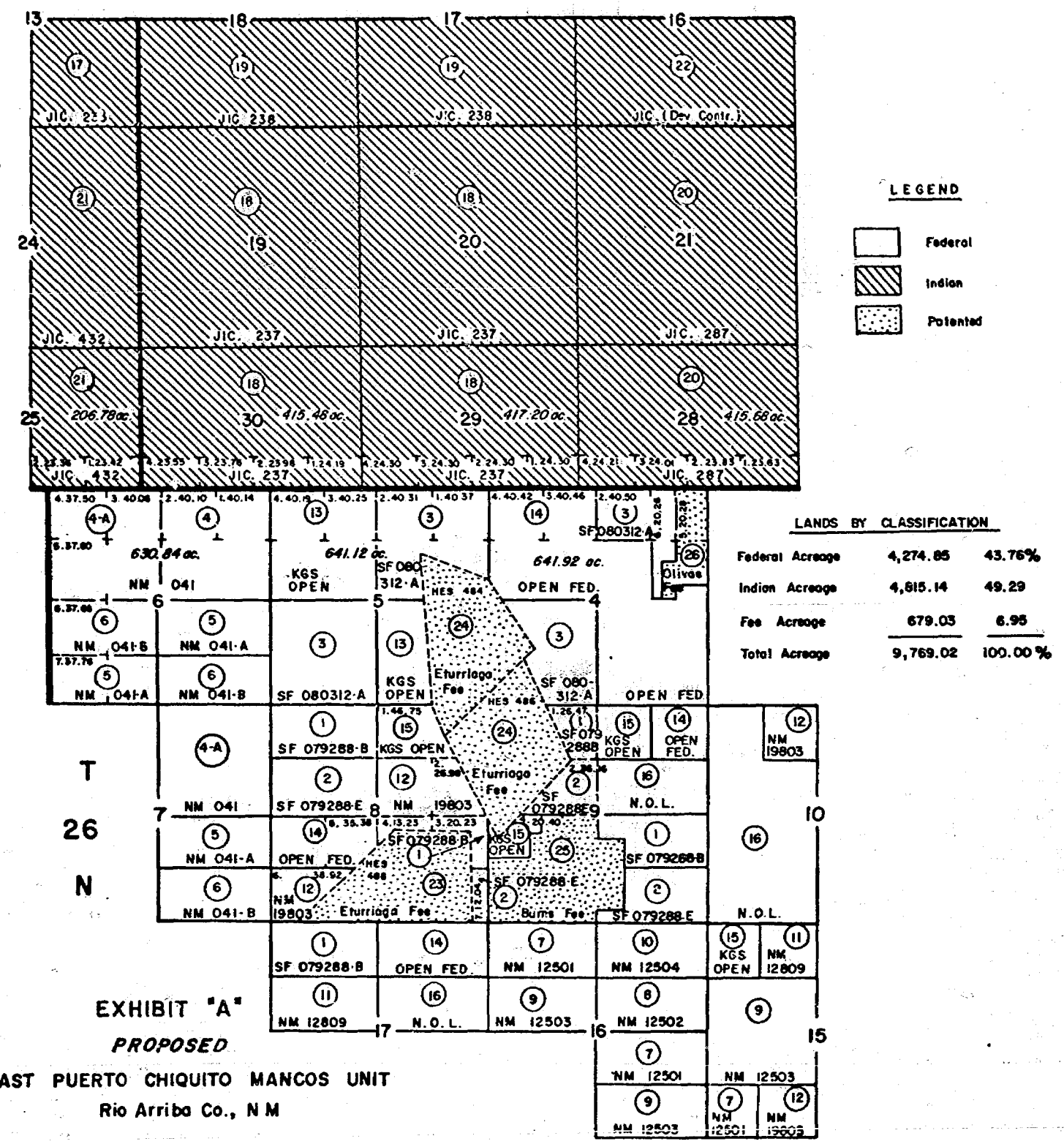
In addition to the insurance coverage set out in Article 9 hereof, Unit Operator shall carry the following insurance for the benefit and protection of the joint account:

1. Primary Comprehensive General Public Liability Insurance with limits, (a) as to Bodily Injury of not less than One Hundred Thousand Dollars ($100,000.00) for each person and not less than Three Hundred Thousand Dollars ($300,000.00) for each occurrence, and (b) as to Property Damage of not less than One Hundred Thousand Dollars ($100,000.00) for each claim arising out of one occurrence and One Hundred Thousand Dollars ($100,000.00) for any number of claims arising out of one occurrence.

2. Primary Comprehensive Automobile Public Liability Insurance with limits, (a) as to Bodily Injury of not less than One Hundred Thousand Dollars ($100,000.00) for each person and not less than Three Hundred Thousand Dollars ($300,000.00) for each occurrence, and (b) as to Property Damage of not less than One Hundred Thousand Dollars ($100,000.00) for each occurrence.

3. A Five Million Dollars ($5,000,000.00) single limit Umbrella Liability policy which shall follow the primary coverages set out in Article 9 and Paragraphs 1 and 2 above, and constitute excess protection as to primary limits per occurrence, but also shall extend to cover certain hazards not covered by the primary, subject to a returned deductible of Twenty-Five Thousand Dollars ($25,000.00), notably Underground Property Damage, Damage to Property of others in care, custody and control of the operator.

The premiums for all such insurance shall be charged to the joint account. It is understood and agreed that Unit Operator shall not carry insurance covering loss by fire, windstorm, explosion or tornado to lease equipment or lease products, or any other insurance for the joint account except by mutual agreement of the parties hereto.



LANDS BY CLASSIFICATION		
Federal Acreage	4,274.85	43.76%
Indian Acreage	4,815.14	49.29
Fee Acreage	679.03	6.95
Total Acreage	9,769.02	100.00 %

EXHIBIT "A"

PROPOSED

EAST PUERTO CHIQUITO MANCOS UNIT

Rio Arriba Co., N M

June 1, 1980

Benson - Montin - Greer Drilling Corp.

Revised: July 7, 1980

EXHIBIT B

ATTACHED TO AND MADE A PART OF
THAT CERTAIN AGREEMENT ENTITLED

EAST PUERTO CHIQUITO MANCOS UNIT
RIO ARRIBA COUNTY, NEW MEXICO

JUNE 1, 1980
REV B

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE		WORKING INTEREST & PERCENTAGE*
FEDERAL LAND								
1	T-26N, R-1E S. 8: Lots 3, 4, N/2NW/4 E/2NW/4SE/4, NW/4NW/4SE/4	289.93	SF-079288-B 5-31-59 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Jr. Melba M. Morrow Warren E. Carr Clinton White Amax Petroleum Corp. Tesoro Petroleum Pennzoil United, Inc. *Except when 15 BOPD or less (average/well/month), then prorata of 1% instead of 6.25%	1.8750% .1250% 1.0000% .5000% .5000% 50% of 6.25%* 25% of 6.25%* 25% of 6.25%*	Ownership "B"
2	T-26N, R-1E S. 8: Lot 7, S/2NW/4 S. 9: Lot 2, SE/4SE/4, E/2SW/4SE/4, S/2SW/4SW/4SE/4	193.20	SF-079288-E 5-31-59 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey A. B. Steward Warren E. Carr Clinton White	1.8750% .1250% 1.0000% .5000% .5000%	Ownership "B"
3	T-26N, R-1E S. 4: Lots 2, 6, N/2NW/4SE/4NE/4, SW/4NW/4SE/4NE/4, W/2SW/4SE/4NE/4, SW/4 (excluding that portion of said SW/4 lying in HES 486 & HES 484 S. 5: Lots 1, 2, S/2NE/4 (excluding that portion of the S/2NE/4 lying in HES 484), SW/4	468.55	SF-080312-A 4-30-61 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon Amax Petroleum Corp.	1.8750% .1250% .5000% .5000% 1.0000%	Ownership "B"

*See page 6 for breakdown of ownership categories.

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE		WORKING INTEREST & PERCENTAGE*
4	T-26N, R-1E S. 6: Lots 1, 2, S/2NE/4	160.24	NM-041 8-31-61 (HBP)	USA - All of 12.5%	Mobil Oil Co.	G. H. Blankenship Mary Marshall Jones	1.5000% 1.5000%	Ownership "C"
4-A	T-26N, R-1E S. 6: Lots 3,4,5, SE/4NW/4 S. 7: NE/4	315.16	NM-041 8-31-61 (HBP)	USA - All of 12.5%	Mobil Oil Co.	G. H. Blankenship Mary Marshall Jones	1.5000% 1.5000%	Ownership "B"
5	T-26N, R-1E S. 6: Lot 7, SE/4SW/4, N/2SE/4 S. 7: N/2SE/4	237.76	NM-041-A 8-31-61 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Mary Marshall Jones G. H. Blankenship Russell Cobb Felix Hickman Horace F. McKay, Jr. Amax Petroleum Corp. Tesoro Petroleum Amoco Production Co.	1.0000% 2.0000% 1.0000% .5000% .5000% 3.1250% 1.5625% 1.5625%	Ownership "B"
6	T-26N, R-1E S. 6: Lot 6, NE/4SW/4, S/2SE/4 S. 7: S/2SE/4	237.68	NM-041-B 8-31-61 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Mary Marshall Jones G. H. Blankenship Russell Cobb Felix Hickman Horace F. McKay, Jr. Tesoro Petroleum Amoco Production Co. North American Resources Corp., et al	1.0000% 2.0000% 1.0000% .5000% .5000% 1.5625% 1.5625% 3.1250%	Ownership "B"
7	T-26N, R-1E S. 15: SW/4SW/4 S. 16: N/2NW/4, N/2SE/4	200.00	NM-12501 6-30-58 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon Warren E. Carr Clinton White	1.8750% .1250% .5000% .5000% .5000% .5000%	Ownership "B"
8	T-26N, R-1E S. 16: S/2NE/4	80.00	NM-12502 6-30-58 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon Tesoro Petroleum Amax Corp. Pennzoil United, Inc.	1.8750% .1250% .5000% .5000% 1.5625% 1.5000% 1.5625%	Ownership "B"
9	T-26N, R-1E S. 15: S/2NW/4, N/2SW/4 S. 16: S/2NW/4, S/2SE/4	320.00	NM-12503 6-30-58 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon	1.8750% .1250% .5000% .5000%	Ownership "B"

*See page 6 for breakdown of ownership categories.

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE		WORKING INTEREST & PERCENTAGE*
10	T-26N, R-1E S. 16: N/2NE/4	80.00	NM-12504 6-30-58 (HBP)	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Dudley Cornell William S. Bailey Annetta B. DeChenne Barbara B. Dixon Tesoro Petroleum Amax Corp. Pennzoil United, Inc.	1.8750% .1250% .5000% .5000% 1.5625% 1.5000% 1.5625%	Ownership "B"
11	T-26N, R-1E S. 15: NE/4NW/4 S. 17: S/2NW/4	120.00	NM-12809 4-30-81	USA - All of 12.5%	M. J. Harvey			M. J. Harvey
12	T-26N, R-1E S. 8: Lots 2, 6, SW/4NE/4 S. 10: NE/4NW/4 S. 15: SE/4SW/4	185.90	NM-19803 12-31-83	USA - All of 12.5%	Benson-Montin-Greer Drilling Corp.	Royce E. Lawson, Jr.	5.0000%	Ownership "B"
13	T-26N, R-1E S. 5: Lots 3, 4, S/2NW/4, SE/4 (excluding that portion lying within HES 484 & 486)	237.10	OPEN (KGS)	USA - All of 12.5%				
14	T-26N, R-1E S. 4: Lots 3, 4, S/2NW/4 (excluding that portion lying within HES 484), NE/4SE/4SE/4NE/4, S/2SE/4SE/4NE/4 SW/4NE/4, SE/4 S. 8: Lot 5, NW/4SW/4 S. 9: NE/4NE/4 S. 17: N/2NE/4	562.18	OPEN	USA - All of 12.5%				
15	T-26N, R-1E S. 8: Lot 1 S. 9: Lot 4, NW/4NE/4 S. 15: NW/4NW/4	147.15	OPEN (KGS)	USA - All of 12.5%				
16	T-26N, R-1E S. 9: S/2NE/4 S. 10: NW/4NW/4, S/2NW/4, SW/4 S. 17: S/2NE/4	440.00	Not Open For Leasing (NOL)	USA - All of 12.5%				

*See page 6 for breakdown of ownership categories.

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE	WORKING INTEREST & PERCENTAGE*
INDIAN LAND							
17	T-27N, R-1W S. 13: SE/4	160.00	Jic. 235 7-25-68 (HBP)	Jic. Apache 12.50%	Amoco Production Co.	4.166667% until "payout"	Ownership "F" (subject to net profits agreement with Jic. Tribe)
18	T-27N, R-1E S. 19: All S. 20: All S. 29: Lots 1, 2, 3, 4, N/2 (All) S. 30: Lots 1, 2, 3, 4, N/2 (All)	2112.68	Jic. 237 7-25-68 (HBP)	Jic. Apache 12.50% Variable to 25.00%	Amoco Production Co.	None	Ownership "A"
19	T-27N, R-1E S. 17: S/2 S. 18: S/2	640.00	Jic. 238 7-25-68 (HBP)	Jic. Apache 12.50%	Benson-Montin-Greer Drilling Corp.	4.166667% until "payout"	Ownership "F" (Subject to net profits agreement with Jic. Tribe)
20	T-27N, R-1E S. 21: All S. 28: Lots 1, 2, 3, 4, N/2 (All)	1055.68	Jic. 287 (HBP)	Jic. Apache 12.50% Variable to 25.00%	S & B Drilling	Tesoro Petroleum 3.125% Pennzoil United 3.125%	Ownership "D"
21	T-27N, R-1W S. 24: E/2 S. 25: Lots 1, 2, NW/4NW/4 (E/2)	526.78	Jic. 432 7-7-80 (HBP)	Jic. Apache 16.67%	Benson-Montin-Greer Drilling Corp.	None	Ownership "E" (Subject to net profits agreement with Jic. Tribe)
22	T-27N, R-1E S. 16: S/2	320.00	(Dev. Contr.)	(Dev. Contr.)	(Dev. Contr.)	(Dev. Contr.)	Ownership "X" (Subject to Dev. Contract with Jic. Tribe)
PATENTED LAND							
23	T-26N, R-1E S. 8: HES 488	160.16	2-10-63 (HBP)	Alfonso Eturriaga 12.50%	Texota Oil Co.	Warren E. Carr .5000% Clinton White .5000% Pennzoil United, Inc. 1.5625% Tesoro Petroleum 1.5625% Texota Oil Co. 3.1250%	Ownership "B"

*See page 6 for breakdown of ownership categories.

TRACT NO.	DESCRIPTION	NO. ACRES	SERIAL NO. & EXPIRATION DATE	BASIC ROYALTY & PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY & PERCENTAGE		WORKING INTEREST & PERCENTAGE*
24	T-26N, R-1E Parcel 1: HES 484, embracing a portion of S. 4, 5 & 8 (159.58 acres) Parcel 2: HES 486, embracing a portion of S. 4, 5, 8 & 9 (159.01 acres)	318.59	5-20-64 (HBP)	Alfonso Eturriaga 12.50%	Tesoro Petroleum	Tesoro Petroleum Texota Oil Co.	3.1250% 3.1250%	Ownership "B"
25	T-26N, R-1E S. 9: S/2SW/4NW/4SW/4, S/2SE/4NW/4SW/4, NE/4SE/4NW/4SW/4, SE/4NE/4NW/4SW/4, SW/4SW/4, E/2SW/4, SW/4NW/4SE/4, NW/4SW/4SE/4, N/2SW/4SW/4SE/4	160.00		Isabel E. Barton 25%, Marie L. Quarles 25%, First Nat'l Bank, Alb - Trustee for T.D. Burns III Estate 25%, Maria L. Burns Estate 25%				
26	T-26N, R-1E S. 4: Lot 5, NE/4SE/4NE/4, SE/4NW/4SE/4NE/4, NW/4SE/4SE/4NE/4, E/2SW/4SE/4NE/4	40.28		Sabino Olivas	Unknown			

SUMMARY:	FEDERAL ACREAGE	4,274.85	43.76%
	INDIAN ACREAGE	4,815.14	49.29%
	PATENTED ACREAGE (FEE)	679.03	6.95%
		9,769.02	100.00%

See page 6 for breakdown of ownership categories.

PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT
WORKING INTEREST OWNERSHIP BY WELLS
1-1-78

	OWNERSHIP "A"	OWNERSHIP "B"	OWNERSHIP "C"	OWNERSHIP "D"	OWNERSHIP "E"	OWNERSHIP "F"
		Alto Bajo Casa PC H-5 PC I-6 PC D-9 PC P-9 PC I-8 PC F-6			*	
	Jicarilla 237 Lease		Bernie	Jicarilla 287 Lease	Jicarilla 432 (H-25)	Jicarilla 235 (P-13) & Jicarilla 238 (O-17)
John R. Anderson	3.582000	8.590000	4.814000	0.000000	3.582000	8.590000
Tom Bolack	31.340000	33.040000	33.698000	0.000000	31.340000	33.040000
Benson-Montin-Greer	7.848323	10.911392	8.602483	0.000000	7.848323	10.911392
Molly E. Bramblette	6.186000	3.700000	2.407000	25.000000	6.186000	3.700000
Molly E. Bramblette Trust	6.186000	3.700000	2.407000	25.000000	6.186000	3.700000
Albert R. Greer	6.268000	7.560000	6.740000	0.000000	6.268000	7.560000
Greer Enterprises, Ltd.	3.134000	3.760000	3.370000	0.000000	3.134000	3.760000
Bill L. Harbert	3.543050	1.248000	1.820000	0.000000	3.543050	1.248000
Jack London, Jr.	6.369500	8.430000	10.110000	0.000000	6.369500	8.430000
William W. London	1.411750	2.080000	3.033000	0.000000	1.411750	2.080000
A. C. Montin	1.238700	2.182000	1.213000	0.000000	1.238700	2.182000
William V. Montin	2.696000	0.000000	0.000000	0.000000	2.696000	0.000000
Jessie Stanley	0.000000	0.200000	0.000000	0.000000	0.000000	0.200000
Stoabs Oil Corp.	3.307677	4.598608	3.625517	0.000000	3.307677	4.598608
Virgil L. Stoabs	16.889000	10.000000	18.160000	50.000000	16.889000	10.000000
	100.000000	100.000000	100.000000	100.000000	100.000000	100.000000

* Ownership "E" is same as "A": Tract 21 participation figured separately since lease is under litigation.

PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT

WEIGHTED AVERAGE WORKING INTEREST OF INDIAN LEASES

OWNERSHIP "X"

	Jicarilla 237 Lease	Jicarilla 287 Lease	Jicarilla 432 (H-25)	Jicarilla 235 (P-13) & Jicarilla 238 (O-17)	Totals	OWNERSHIP "X" Weighted Average
SUM OF TRACT PARTICIPATIONS	62.332727	4.235385	0.921073	2.880417	70.369602	100.000000
John R. Anderson	2.232758	0.000000	0.032993	0.247428	2.513179	3.571399
Tom Bolack	19.535079	0.000000	0.288664	0.951688	20.775431	29.523303
Benson-Montin-Greer	4.892074	0.000000	0.072289	0.314294	5.278657	7.501330
Molly E. Bramblette	3.855903	1.058846	0.056978	0.106575	5.078302	7.216613
Molly E. Bramblette Trust	3.855903	1.058846	0.056978	0.106575	5.078302	7.216613
Albert R. Greer	3.907015	0.000000	0.057733	0.217760	4.182508	5.943628
Greer Enterprises, Ltd.	1.953508	0.000000	0.028866	0.108304	2.090678	2.970996
Bill L. Harbert	2.208479	0.000000	0.032634	0.035948	2.277061	3.235859
Jack London, Jr.	3.970283	0.000000	0.058668	0.242819	4.271770	6.070476
William W. London	0.879982	0.000000	0.013003	0.059913	0.952898	1.354133
A. C. Montin	0.772115	0.000000	0.011409	0.062851	0.846375	1.202757
William V. Montin	1.680490	0.000000	0.024832	0.000000	1.705322	2.423379
Jessie Stanley	0.000000	0.000000	0.000000	0.005761	0.005761	.008187
Stoabs Oil Corp.	2.061765	0.000000	0.030466	0.132459	2.224690	3.161437
Virgil L. Stoabs	10.527373	2.117693	0.155560	0.288042	13.088668	18.599890
TOTALS	62.332727	4.235385	0.921073	2.880417	70.369602	100.000000

Note: Because of special re-distribution of tract participations to Indian lands the working intereest owners of these tracts are currently (July, 1980) pooling their interests. The pooling takes effect on effective date of unitization. Probable pooled interests will be that of "X" above for all Indian tracts.

EAST PUERTO CHIQUITO MANCOS UNIT

CALCULATION OF TRACT PARTICIPATIONS

FORMULA: SEE LAST PAGE

(EXHIBIT C (PART I) TO UNIT AGREEMENT)

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
FEDERAL LAND								
1	T-26N, R-1E S. 8: Lots 3, 4, N/2NW/4 S. 9: Lot 1, NE/4SE/4, E/2NW/4, NW/4NW/4SE/4 S. 17: N/2NW/4	289.93	1,547.12	1,146	.296785	.807300	.401200	1.505285
2	T-26N, R-1E S. 8: Lot 7, S/2NW/4 S. 9: Lot 2, SE/4SE/4, E/2SW/4SE/4, S/2SW/4SW/4SE/4	193.20	1,048.33	1,462	.197768	.547027	.511828	1.256623
3	T-26N, R-1E S. 4: Lots 2, 6, N/2NW/4SE/4NE/4, SW/4NW/4SE/4NE/4, W/2SW/4SE/4NE/4, SW/4 SW/4 (excluding that portion of said SW/4 lying in HES 486 & HES 484 S. 5: Lots 1, 2, S/2NE/4 (excluding that portion of the S/2NE/4 lying in HES 484), SW/4	468.55	2,050.12	1,641	.479628	1.069770	.574493	2.123891
4	T-26N, R-1E S. 6: Lots 1, 2, S/2NE/4	160.24	982.27	4,165	.164029	.512557	1.458114	2.134700

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
4-A	T-26N, R-1E S. 6: Lots 3,4,5, SE/4NW/4 S. 7: NE/4	315.16	1,060.96	-0-	.322612	.553618	.000000	.876230
5	T-26N, R-1E S. 6: Lot 7, SE/4SW/4, N/2SE/4 S. 7: N/2SE/4	237.76	672.16	3,711	.243382	.350739	1.299174	1.893295
6	T-26N, R-1E S. 6: Lot 6, NE/4SW/4, S/2SE/4 S. 7: S/2SE/4	237.68	672.08	3,711	.243300	.350697	1.299174	1.893171
7	T-26N, R-1E S. 15: SW/4SW/4 S. 16: N/2NW/4, N/2SE/4	200.00	935.20	-0-	.204729	.487995	.000000	.692724
8	T-26N, R-1E S. 16: S/2NE/4	80.00	304.00	695	.081892	.158630	.243311	.483833
9	T-26N, R-1E S. 15: S/2NW/4, N/2SW/4 S. 16: S/2NW/4, S/2SE/4	320.00	1,158.40	-0-	.327566	.604463	.000000	.932029
10	T-26N, R-1E S. 16: N/2NE/4	80.00	304.00	-0-	.081892	.158630	.000000	.240522
11	T-26N, R-1E S. 15: NE/4NW/4 S. 17: S/2NW/4	120.00	430.00	-0-	.122837	.224378	.000000	.347215
12	T-26N, R-1E S. 8: Lots 2, 6, SW/4NE/4 S. 10: NE/4NW/4 S. 15: SE/4SW/4	185.90	745.79	-0-	.190295	.389159	.000000	.579454

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
13	T-26N, R-1E S. 5: Lots 3, 4, S/2NW/4, SE/4 (excluding that portion lying within HES 484 & 486)	237.10	1,419.12	-0-	.242706	.740509	.000000	.983215
14	T-26N, R-1E S. 4: Lots 3, 4, S/2NW/4 (excluding that portion lying within HES 484), NE/4SE/4SE/4NE/4, S/2SE/4SE/4NE/4, SW/4NE/4, SE/4 S. 8: Lot 5, NW/4SW/4 S. 9: NE/4NE/4 S. 17: N/2NE/4	562.18	1,633.74	-0-	.575472	.852499	.000000	1.427971
15	T-26N, R-1E S. 8: Lot 1 S. 9: Lot 4, NW/4NE/4 S. 15: NW/4NW/4	147.15	511.87	-0-	.150629	.267098	.000000	.417727
16	T-26N, R-1E S. 9: S/2NE/4 S. 10: NW/4NW/4, S/2NW/4, SW/4 S. 17: S/2NE/4	440.00	976.40	-0-	.450403	.509494	.000000	.959897
INDIAN LAND								
17	T-27N, R-1E S. 13: SE/4	160.00	-0-	-0-	.163783	.000000	.000000	.163783 (.793683)*
18	T-27N, R-1E S. 19: All S. 20: All S. 29: Lots 1, 2, 3, 4, N/2 (All) S. 30: Lots 1, 2, 3, 4, N/2 (All)	2112.68	13,012.09	152,477	2.162633	6.789817	53.380277	62.332727 (44.624711)*

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
19	T-27N, R-1E S. 17: S/2 S. 18: S/2	640.00	3,694.40	382	.655132	1.927769	.133733	2.716634 (13.164648)*
20	T-27N, R-1E S. 21: All S. 28: Lots 1, 2, 3, 4, N/2 (All)	1055.68	4,483.91	2,328	1.080641	2.339741	.815003	4.235385 (3.032160)*
21	T-27N, R-1W S. 24: E/2 S. 25: Lots 1, 2, NW/4NW/4 (E/2)	526.78	731.76	-0-	.539235	.381838	.000000	.921073 (4.463465)*
22	T-27N, R-1E S. 16: S/2	320.00	1,510.40	-0-	.327566	.788139	.000000	1.115705 (5.406641)*
PATENTED LAND								
23	T-26N, R-1E S. 8: HES 488	160.16	1,097.16	2,380	.163947	.572507	.833208	1.569662
24	T-26N, R-1E Parcel 1: HES 484, embracing a portion of S. 4, 5 & 8 (159.58 acres) Parcel 2: HES 486, embracing a portion of S. 4, 5, 8 & 9 (159.01 acres)	318.59	1,349.57	18,551	.326123	.704217	6.494471	7.524811

TRACT NO.	DESCRIPTION	NO. ACRES (A)	STRUCTURAL POSITION WEIGHTED ACREAGE (FROM SCHED III) (B)	1976 & 1977 PRODUCTION (BARRELS) (C)	10% A (ACRES)	22.5% B (SPW FACTOR)	67.5% C (PRODUCTION)	TOTAL
25	T-26N, R-1E S. 9: S/2SW/4NW/4SW/4, S/2SE/4NW/4SW/4, NE/4SE/4NW/4SW/4, SE/4NE/4NW/4SW/4, SW/4SW/4, E/2SW/4, SW/4NW/4SE/4, NW/4SW/4SE/4, N/2SW/4SW/4SE/4	160.00	762.25	160	.163783	.397748	.056014	.617545
26	T-26N, R-1E S. 4: Lot 5, NE/4SE/4NE/4, SE/4NW/4SE/4NE/4, NW/4SE/4SE/4NE/4, E/2SW/4SE/4NE/4	40.28	26.18	-0-	.041232	.013661	.000000	.054893
		9769.02	43,119.28	192,809	10.000000	22.500000	67.500000	100.000000

Determination of Tract Participations:

Tract Participation = 10% A + 22.5% B + 67.5% C
Where A = The ratio of surface area of the subject tract to the sum of the surface area of all tracts.
B = The ratio of the "structural position weighted acreage" for the subject tract to the sum of the "structural position weighted acreage" for all tracts.
C = The ratio of the 1976 and 1977 oil production allocated to the subject tract to the sum of the 1976 and 1977 oil production allocated to all tracts.

*Note: Per agreement with the Jicarilla Tribe, and in accordance with the terms of the Unit Agreement, the sum of the equity factors allocated to all of the Indian land tracts are to be re-distributed to the various Indian tracts in the following method:

2/3 of the equity is assigned to the 237 and 287 leases with the remaining 1/3 assigned to the remaining leases.

Allocation to each tract within these groups is in the proportion that the basic equity factors bear to each other. These special allocation equity factors are designated on this Part I of Exhibit C with parentheses and an asterisk and are the equity factors to be assigned to these tracts regardless of the equity factors determined by the formula.

EXHIBIT D

ATTACHED TO AND MADE A PART OF
THAT CERTAIN AGREEMENT ENTITLED

UNIT OPERATING AGREEMENT
EAST PUERTO CHIQUITO MANCOS UNIT AREA
RIO ARRIBA COUNTY, NEW MEXICO

DATED JUNE 1, 1980

EQUAL OPPORTUNITY CLAUSE

A. During the performance of this contract, the CONTRACTOR agrees as follows:

(1) The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The CONTRACTOR will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The CONTRACTOR will, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The CONTRACTOR will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the CONTRACTOR'S commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The CONTRACTOR will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The CONTRACTOR will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the CONTRACTOR'S noncompliance with the nondiscrimination clauses of this Agreement or with any of such rules, regulations, or orders, this Agreement may be cancelled, terminated or suspended in whole or in part and the CONTRACTOR may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The CONTRACTOR will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The CONTRACTOR will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

B. If required to do so by Federal law, regulation, or order, CONTRACTOR agrees that he shall:

(1) File with the Office of Federal Contract Compliance or agency designated by it, a complete and accurate report on Standard Form 100 (EEO-1) within 30 days after the signing of this Agreement (unless such a report has been filed in the last 12 months), and continue to file such reports annually, on or before March 31st;

(2) Develop and maintain a written affirmative action compliance program for each of its establishments in accordance with the regulations of the Secretary of Labor promulgated under Executive Order 11246, as amended.

EXHIBIT E

UNIT OPERATING AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

WORKING INTEREST UNIT PARTICIPATIONS
(ALL TRACTS QUALIFYING)

	OWNERSHIP "A"	OWNERSHIP "B"	OWNERSHIP "C"	OWNERSHIP "D"	OWNERSHIP "E"	OWNERSHIP "F"	TOTALS
	Jicarilla 237 Lease	Alto Bajo Casa PC H-5 PC I-6 PC D-9 PC P-9 PC I-8 FC F-6	Bernie	Jicarilla 287 Lease	Jicarilla 432 (H-25)	Jicarilla 235 (P-13) & Jicarilla 238 (O-17)	
SUM OF TRACT PARTICIPATIONS	62.332727	21.571530	2.134700	4.235385	0.921073	2.880417	100.000000
John R. Anderson	2.232758	1.852994	0.102764	0.000000	0.032993	0.247428	4.468937
Tom Bolack	19.535079	7.127232	0.719352	0.000000	0.288664	0.951688	28.622015
Benson-Montin-Greer	4.892074	2.353754	0.103637	0.000000	0.072289	0.314294	7.816048
Molly E. Bramblette	3.855902	0.798147	0.051382	1.058846	0.056978	0.106575	5.927830
Molly E. Bramblette Trust	3.855902	0.798147	0.051382	1.058846	0.056978	0.106575	5.927830
Albert R. Greer	3.907015	1.630808	0.143879	0.000000	0.057733	0.217760	5.957195
Greer Enterprises, Ltd.	1.953508	0.811090	0.071939	0.000000	0.028866	0.108304	2.973707
Bill L. Harbert	2.208480	0.269213	0.038852	0.000000	0.032634	0.035948	2.585127
Jack London, Jr.	3.970283	1.818480	0.215818	0.000000	0.058668	0.242819	6.306068
William W. London	0.879982	0.448688	0.064745	0.000000	0.013003	0.059913	1.466331
A. C. Montin	0.772115	0.470691	0.025894	0.000000	0.011409	0.062851	1.342960
William V. Montin	1.680490	0.000000	0.000000	0.000000	0.024832	0.000000	1.705322
Jessie Stanley	0.000000	0.043143	0.000000	0.000000	0.000000	0.005761	0.048904
Stoabs Oil Corp.	2.061765	0.991990	0.077394	0.000000	0.030466	0.132459	3.294074
Virgil L. Stoabs	10.527374	2.157153	0.387662	2.117693	0.155560	0.288042	15.633484
Unleased (Federal)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.788810
Unleased (Fee)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.672438
Indian Dev. Contr. (Tr 22) ("X")	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.115705
M. J. Harvey	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.347215
TOTALS	62.332727	21.571530	2.134700	4.235385	0.921073	2.880417	100.000000

Note: (1) Tracts under ownerships A, B, C, D, E & F are set out on Exhibit B.
(2) When pooling agreement is effective, tract 22 will be owned as shown by ownership schedule "X" under Exhibit B.

EXHIBIT E

UNIT OPERATING AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

WORKING INTEREST UNIT PARTICIPATIONS
(ALL TRACTS QUALIFYING - EXCEPT 11, 13, 14, 15, 16, 25, 26) *

	OWNERSHIP "X" (All Indian tracts: 17,18,19, 20,21,22)	OWNERSHIP "C" (Tract 4) Bernie	OWNERSHIP "B" (all other tracts) Alto Bajo Casa PC H-5 PC I-6 PC D-9 PC P-9 PC I-8 PC F-6	TOTALS
SUM OF TRACT PARTICIPATIONS	70.369602	2.124700	21.571530	94.075832
(Adjusted for non-committed tracts)	(74.800935)	(2.269127)	(22.929938)	(100.000000)
John R. Anderson	2.671440	0.109235	1.969682	4.750357
Tom Bolack	22.083706	0.764650	7.576052	30.424408
Benson-Montin-Greer	5.611066	0.195201	2.501975	8.308242
Molly E. Bramblette	5.398094	0.054618	0.848408	6.301120
Molly E. Bramblette Trust	5.398094	0.054618	0.848408	6.301120
Albert R. Greer	4.445890	0.152939	1.733503	6.332332
Greer Enterprises, Ltd.	2.222333	0.076470	0.862165	3.160968
Bill L. Harbert	2.420453	0.041298	0.286166	2.747917
Jack London, Jr.	4.540773	0.229409	1.932993	6.703175
William W. London	1.012903	0.068823	0.476943	1.558669
A. C. Montin	0.899673	0.027525	0.500331	1.427529
William V. Montin	1.812710	0.000000	0.000000	1.812710
Jessie Stanley	0.006124	0.000000	0.045860	0.051984
Stoabs Oil Corp.	2.364784	0.082268	1.054458	3.501510
Virgil L. Stoabs	13.918892	0.412073	2.292994	16.617959
TOTALS	74.800935	2.269127	22.929938	100.000000

Note: (1) Tracts under ownerships A, B, C, D, E & F are set out on Exhibit B.
(2) When pooling agreement is effective, tract 22 will be owned as shown by ownership schedule "X" under Exhibit B.
* This schedule assumes as uncommitted the unleased federal lands (13,14,15,16), the fee tracts (25 & 26) and Harvey's tract (11).

EXHIBIT E

UNIT OPERATING AGREEMENT

EAST PUERTO CHIQUITO MANCOS UNIT

WORKING INTEREST UNIT PARTICIPATIONS
(ALL TRACTS QUALIFYING - EXCEPT 11, 13, 14, 15, 16, 26) *

	OWNERSHIP "X" (All Indian tracts: 17,18,19, 20,21,22)	OWNERSHIP "C" (Tract 4) Bernie	OWNERSHIP "B" (all other tracts) Alto Bajo Casa PC H-5 PC I-6 PC D-9 PC P-9 PC I-8 PC F-6	TOTALS
SUM OF TRACT PARTICIPATIONS (Adjusted for non-committed tracts)	70.369602 (74.313119)	2.124700 (2.254329)	22.189075 (23.432552)	94.693377 (100.000000)
John R. Anderson	2.651409	0.108523	2.012856	4.775398
Tom Bolack	21.939687	0.759663	7.742115	30.441465
Benson-Montin-Greer	5.574472	0.193928	2.556818	8.325218
Molly E. Bramblette	5.362890	0.054262	0.867004	6.284156
Molly E. Bramblette Trust	5.362890	0.054262	0.867004	6.284156
Albert R. Greer	4.416895	0.151942	1.771501	6.340338
Greer Enterprises, Ltd.	2.207840	0.075971	0.881064	3.164875
Bill L. Harbert	2.404668	0.041029	0.292438	2.738135
Jack London, Jr.	4.511160	0.227913	1.975364	6.714437
William W. London	1.006298	0.068374	0.487397	1.562069
A. C. Montin	0.893807	0.027345	0.511298	1.432450
William V. Montin	1.800889	0.000000	0.000000	1.800889
Jessie Stanley	0.006084	0.000000	0.046865	0.052949
Stoabs Oil Corp.	2.349362	0.081731	1.077572	3.508665
Virgil L. Stoabs	13.822158	0.409386	2.343256	16.574800
TOTALS	74.313119	2.254329	23.432552	100.000000

Note: (1) Tracts under ownerships A, B, C, D, E & F are set out on Exhibit B.
(2) When pooling agreement is effective, tract 22 will be owned as shown by ownership schedule "X" under Exhibit B.
* This schedule assumes as uncommitted the unleased federal lands (13,14,15,16), the fee tract 26 and Harvey's tract (11); and that tract 25 is committed to working interest ownership in Schedule "B".

PARAMETERS USED IN

DETERMINING TRACT PARTICIPATIONS

EAST PUERTO CHIQUITO MANCOS UNIT

JUNE, 1980

Three parameters were used in determining tract participations. Each of the three is described briefly below, identified by the letters as shown in Exhibit C:

ACREAGE : ("A")

Acreage as to each quarter-section was "balanced" as described in the attached "Notes regarding Balancing of Areas". There may be other, more definitive, data available which will require revision of the figures used. In its absence, however, we suggest the acreages shown herein be used for calculating the acreage parameter and for calculating the below-listed "structural position weighted acreage" parameter. Allocation of tract acreage to lots within quarter-sections is shown on the attached plat.

STRUCTURAL POSITION WEIGHTED ACREAGE : ("B")

(Defined in the Unit Agreement). This parameter assumes that the most valuable lands are those overlying the structurally down-dip areas which are useful in accumulating oil by gravity drainage and thereby allowing the maximum oil recovery from the reservoir. Assigning equity values (the parameter scale) to the various areas must necessarily be somewhat subjective. Issues are listed below:

(a) Relative value of the recoverable oil and gas underlying the tracts: The gas cap now contains gas under a pressure of about 10 atmospheres; so for equal pore space in gas and oil zones and assuming that there is as much energy (BTU's) in 5.6 MCF of gas as in 1 barrel of oil, then there is in place 100 times as many BTU's in the oil zone as in an equal volume of gas zones. Under unitization, assuming a 50% recovery of oil and 100% recovery of gas, the ratio of 50 to 1 results. If, however, the properties are produced under competitive conditions and the gas cap produced (and gas marketed), the oil recovery will be that of solution-gas drive - approximately 6% of that in place; and the ratio of relative values drops to 6 to 1.

(b) Benefit of unitization: Without the gas cap lands committed to the unit, the oil areas cannot enjoy the high potential recovery factors - so some credit needs be given this.

(c) Origin of the down-dip oil: The reservoir initially was all oil-saturated. The present gas cap is "secondary" in that it resulted from shutting in high gas-oil ratio wells - with

the consequence that up-dip oil has now migrated down-dip; and some consideration needs be given this.

(d) Possibility of some additional oil recovery from the gas cap area: "Sweeping" of the gas cap by injecting gas should result in additional oil being moved from the up-dip to the down-dip areas.

(e) Transition zone of oil to water between the 4000' and 3600' contour: This area will contribute substantial production if the waterflood is effective and "basement" oil recovered.

All issues considered, a reasonable scale seems to be 0 to 10; and this has been used, as shown on the attached plat (0 for the 3600' and 6000' contours, 5 for the 3800', 10 for the 4000' contour and proportional values between the 4000' and 6000' contours.

Values were interpreted for each corner of each quarter-section (see map and Schedule I attached).

The four corner values of each quarter-section were averaged to give a value for each quarter-section (Schedule I attached).

The quarter-section values multiplied by each tract's acreage within a quarter-section were recorded (Schedule II attached); and these values summed as to each tract (Schedule III attached).

CURRENT PRODUCTION : ("C")

The oil production amount used for each tract in determining "production" is the total production for that tract for the two years of 1976 and 1977.

EXHIBIT C: PART II

TO

UNIT AGREEMENT FOR THE

EAST PUERTO CHIQUITO MANCOS UNIT

Values of the acreage parameters for each tract is the acreage shown for that tract on Exhibit B to the Unit Agreement.

Reference: Sections I and J for acreages assigned to tracts.

EXHIBIT C: PART III
TO UNIT AGREEMENT FOR THE

EAST PUERTO CHIQUITO MANCOS UNIT

STRUCTURAL POSITION WEIGHTING FACTOR

(SCHEDULE I)

		VALUE FOR POINT IN ¼ SECTION				4-POINT
		NE	NW	SW	SE	AVERAGE
T-26N, R-1E						
SECTION 4:	NE¼	0.7	1.2	0.7	0.0	0.65
	NW¼	1.2	2.5	3.4	0.7	1.95
	SW¼	0.7	3.4	4.3	2.0	2.60
	SE¼	0.0	0.7	2.0	0.1	0.70
SECTION 5:	NE¼	2.5	4.9	5.6	3.4	4.10
	NW¼	4.9	7.4	8.0	5.6	6.48
	SW¼	5.6	8.0	9.7	6.5	7.45
	SE¼	3.4	5.6	6.5	4.3	4.95
SECTION 6:	NE¼	7.4	5.1	4.0	8.0	6.13
	NW¼	5.1	-0-	-0-	4.0	2.28
	SW¼	4.0	-0-	-0-	-0-	1.00
	SE¼	8.0	4.0	-0-	9.7	5.43
SECTION 7:	NE¼	9.7	-0-	-0-	8.0	4.42
	SE¼	8.0	-0-	-0-	-0-	2.00
SECTION 8:	NE¼	4.3	6.5	7.4	5.4	5.90
	NW¼	6.5	9.7	8.0	7.4	7.90
	SW¼	7.4	8.0	-0-	9.0	6.10
	SE¼	5.4	7.4	9.0	6.8	7.15

		VALUE FOR POINT IN ¼ SECTION				4-POINT AVERAGE
		NE	NW	SW	SE	
SECTION 9:	NE¼	0.1	2.0	3.6	1.3	1.75
	NW¼	2.0	4.3	5.4	3.6	3.83
	SW¼	3.6	5.4	6.8	4.6	5.10
	SE¼	1.3	3.6	4.6	2.3	2.95
SECTION 10:	NW¼	-0-	0.1	1.3	-0-	0.35
	SW¼	-0-	1.3	2.3	-0-	0.90
SECTION 15:	NW¼	-0-	2.3	3.0	0.9	1.55
	SW¼	0.9	3.0	3.8	2.2	2.48
SECTION 16:	SE¼	3.0	5.3	5.7	3.8	4.45
	NE¼	2.3	4.6	5.3	3.0	3.80
	NW¼	4.6	6.8	7.3	5.3	6.00
SECTION 17:	NE¼	6.8	9.0	9.4	7.3	8.13
	NW¼	9.0	-0-	-0-	9.4	4.68
T-27N, R-1E						
SECTION 16:	SW¼	4.2	5.8	7.0	5.1	5.52
	SW¼	2.7	4.2	5.1	3.7	3.92
SECTION 17:	SW¼	7.6	9.4	8.5	8.5	8.50
	SE¼	5.8	7.6	8.5	7.0	7.22

EAST PUERTO CHIQUITO MANCOS UNIT
STRUCTURAL POSITION WEIGHTING FACTOR
SCHEDULE I

		VALUE FOR POINT IN ¼ SECTION				4-POINT AVERAGE
		NE	NW	SW	SE	
SECTION 18:	SW¼	4.5	-0-	-0-	1.3	1.45
	SE¼	9.4	4.5	1.3	8.5	5.92
SECTION 19:	NE¼	8.5	1.3	10.0	8.7	7.13
	NW¼	1.3	-0-	1.4	10.0	3.18
	SW¼	10.0	1.4	5.0	7.9	6.08
	SE¼	8.7	10.0	7.9	6.2	8.20
SECTION 20:	NE¼	7.0	8.5	7.8	7.7	7.75
	NW¼	8.5	8.5	8.7	7.8	8.38
	SW¼	7.8	8.7	6.2	4.7	6.85
	SE¼	7.7	7.8	4.7	5.0	6.30
SECTION 21:	NE¼	3.7	5.1	6.2	4.6	4.90
	NW¼	5.1	7.0	7.7	6.2	6.50
	SW¼	6.2	7.7	5.0	3.8	5.68
	SE¼	4.6	6.2	3.8	3.4	4.50
SECTION 28:	E½	3.4	3.8	1.0	0.5	2.18
	W½	3.8	5.0	1.3	1.0	2.78
SECTION 29:	E½	5.0	4.7	3.0	1.3	3.50
	W½	4.7	6.2	5.3	3.0	4.80
SECTION 30:	E½	6.2	7.9	7.9	5.3	6.83
	W½	7.9	5.0	3.1	7.9	5.98

EAST PUERTO CHIQUITO MANCOS UNIT
STRUCTURAL POSITION WEIGHTING FACTOR
SCHEDULE I

		VALUE FOR POINT IN ¼ SECTION				4-POINT AVERAGE
		NE	NW	SW	SE	
T-27N, R-1W						
SECTION 13:	SE¼	-0-	-0-	-0-	-0-	-0-
SECTION 24:	NE¼	-0-	-0-	-0-	1.4	0.35
	SE¼	1.4	-0-	-0-	5.0	1.60
SECTION 25:	SE¼	5.0	-0-	-0-	3.1	2.03

EXHIBIT C: PART III
TO UNIT AGREEMENT FOR THE

EAST PUERTO CHIQUITO MANCOS UNIT

WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION

(SCHEDULE II)

LAND SUBDIVISION	TRACT NO.		SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)		(3)	(4)	(5)
T-26N, R-1E					
Sec. 4: NE¼	3		73.26	0.65	47.62
	14		47.50	0.65	30.88
	26		40.28	0.65	26.18
		TOTAL	161.04		
Sec. 4: NW¼	14		159.30	1.95	310.64
	24		1.58	1.95	3.08
		TOTAL	160.88		
Sec. 4: SW¼	3		102.79	2.60	267.25
	24	(HES 484 38.12) (HES 486 19.09)	57.21	2.60	148.75
		TOTAL	160.00		
Sec. 4: SE¼	14		160.00	0.70	112.00
Sec. 5: NE¼	3		132.50	4.10	543.25
	24	(HES 484)	28.18	4.10	115.54
		TOTAL	160.68		
Sec. 5: NW¼	13		160.44	6.48	1039.65
Sec. 5: SW¼	3		160.00	7.45	1192.00
Sec. 5: SE¼	13		76.66	4.95	379.47
	24	(HES 484 82.52) (HES 486 0.82)	83.34	4.95	412.53
		TOTAL	160.00		
Sec. 6: NE¼	4		160.24	6.13	982.27
Sec. 6: NW¼	4-A		155.16	2.28	353.76

LAND SUBDIVISION	TRACT NO.		SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)		(3)	(4)	(5)
Sec. 6: SW¼	5		77.76	1.00	77.76
	6		77.68	1.00	77.68
		TOTAL	155.44		
Sec. 6: SE¼	5		80.00	5.43	434.40
	6		80.00	5.43	434.40
		TOTAL	160.00		
Sec. 7: NE¼	4-A		160.00	4.42	707.20
Sec. 7: SE¼	5		80.00	2.00	160.00
	6		80.00	2.00	160.00
		TOTAL	160.00		
Sec. 8: NE¼	12		66.98	5.90	395.18
	15		46.75	5.90	275.83
	24	(HES 484 9.18) (HES 486 37.09)	46.27	5.90	272.99
		TOTAL	160.00		
Sec. 8: NW¼	1		80.00	7.90	632.00
	2		80.00	7.90	632.00
		TOTAL	160.00		
Sec. 8: SW¼	12		38.92	6.10	237.41
	14		75.38	6.10	459.82
	23		45.70	6.10	278.77
		TOTAL	160.00		

EAST PUERTO CHIQUITO MANCOS UNIT
WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION
SCHEDULE II

LAND SUBDIVISION	TRACT NO.		SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)		(3)	(4)	(5)
Sec. 8: SE¼	1		33.46	7.15	239.24
	2		12.04	7.15	86.09
	23		114.46	7.15	818.39
	24	(HES 486)	0.04	7.15	0.29
		TOTAL	160.00		
Sec. 9: NE¼	14		40.00	1.75	70.00
	15		40.00	1.75	70.00
	16		80.00	1.75	140.00
		TOTAL	160.00		
Sec. 9: NW¼	1		26.47	3.83	101.38
	2		36.16	3.83	138.49
	24		97.37	3.83	372.93
		TOTAL	160.00		
Sec. 9: SW¼	15		20.40	5.10	104.04
	24		4.60	5.10	23.46
	25		135.00	5.10	688.50
		TOTAL	160.00		
Sec. 9: SE¼	1		70.00	2.95	206.50
	2		65.00	2.95	191.75
	25		25.00	2.95	73.75
		TOTAL	160.00		
Sec. 10: NW¼	12		40.00	0.35	14.00
	16		120.00	0.35	42.00
		TOTAL	160.00		
Sec. 10: SW¼	16		160.00	0.90	144.00

EAST PUERTO CHIQUITO MANCOS UNIT
WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION
SCHEDULE II

LAND SUBDIVISION	TRACT NO.		SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)		(3)	(4)	(5)
Sec. 15: NW¼	9		80.00	1.55	124.00
	11		40.00	1.55	62.00
	15		40.00	1.55	62.00
		TOTAL	160.00		
Sec. 15: SW¼	7		40.00	2.48	99.20
	9		80.00	2.48	198.40
	12		40.00	2.48	99.20
		TOTAL	160.00		
Sec. 16: SE¼	7		80.00	4.45	356.00
	9		80.00	4.45	356.00
		TOTAL	160.00		
Sec. 16: NE¼	10		80.00	3.80	304.00
	8		80.00	3.80	304.00
		TOTAL	160.00		
Sec. 16: NW¼	9		80.00	6.00	480.00
	7		80.00	6.00	480.00
		TOTAL	160.00		
Sec. 17: NE¼	14		80.00	8.13	650.40
	16		80.00	8.13	650.40
		TOTAL	160.00		
Sec. 17: NW¼	11		80.00	4.60	368.00
	1		80.00	4.60	368.00
		TOTAL	160.00		

EAST PUERTO CHIQUITO MANCOS UNIT
WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION
SCHEDULE II

LAND SUBDIVISION	TRACT NO.	SURFACE AREA (ACRES)	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)	(3)	(4)	(5)
T-27N, R-1E				
Sec. 16: SW¼	22	160.00	5.52	883.20
Sec. 16: SE¼	22	160.00	3.92	627.20
Sec. 17: SW¼	19	160.00	8.50	1360.00
Sec. 17: SE¼	19	160.00	7.22	1155.20
Sec. 18: SW¼	19	160.00	1.45	232.00
Sec. 18: SE¼	19	160.00	5.92	947.20
Sec. 19: NE¼	18	160.00	7.13	1140.80
Sec. 19: NW¼	18	160.00	3.18	508.80
Sec. 19: SW¼	18	160.00	6.08	972.80
Sec. 19: SE¼	18	160.00	8.20	1312.00
Sec. 20: NE¼	18	160.00	7.75	1240.00
Sec. 20: NW¼	18	160.00	8.38	1340.80
Sec. 20: SW¼	18	160.00	6.85	1096.00
Sec. 20: SE¼	18	160.00	6.30	1008.00
Sec. 21: NE¼	20	160.00	4.90	784.00
Sec. 21: NW¼	20	160.00	6.50	1040.00
Sec. 21: SW¼	20	160.00	5.68	908.80
Sec. 21: SE¼	20	160.00	4.50	720.80

LAND SUBDIVISION	TRACT NO.	SURFACE AREA (ACRES),	LAND SUBDIVISION STRUCTURAL POSITION WEIGHTING FACTOR	TRACT STRUCTURAL POSITION WEIGHTED ACREAGE (3) x (4)
(1)	(2)	(3)	(4)	(5)
Sec. 28: E½	20	207.46	2.18	452.26
Sec. 28: W½	20	208.22	2.78	578.85
Sec. 29: E½	18	208.60	3.50	730.10
Sec. 29: W½	18	208.60	4.80	1001.28
Sec. 30: E½	18	208.17	6.83	1421.80
Sec. 30: W½	18	207.31	5.98	1239.71
T-27N, R-1W				
Sec. 13: SE¼	17	160.00	-0-	-0-
Sec. 24: NE¼	21	160.00	0.35	56.00
Sec. 24: SE¼	21	160.00	1.60	256.00
Sec. 25: SE¼	21	206.78	2.03	419.76
TOTAL		9,769.02		43,119.28

	AMOUNT	PERCENT
INDIAN	23,432.56	54.343579
FEDERAL	16,451.56	38.153606
FEE	3,235.16	7.502815
	43,119.28	100.000000

EAST PUERTO CHIQUITO MANCOS UNIT
WEIGHTING OF TRACTS
BY
STRUCTURAL POSITION
SCHEDULE II

EXHIBIT C: PART III
TO UNIT AGREEMENT FOR THE

EAST PUERTO CHIQUITO MANCOS UNIT

SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES

(SCHEDULE III)

TRACT NO.	SECTION	1/4 SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	WEIGHTED ACREAGE FROM SCHEDULE II TRACT TOTAL
	T-26N, R-1E			
1	8	NW	632.00	
		SE	239.24	
	9	NW	101.38	
		SE	206.50	
	17	NW	368.00	1,547.12
2	8	NW	632.00	
		SE	86.09	
	9	NW	138.49	
		SE	191.75	1,048.33
3	4	NE	47.62	
		SW	267.25	
	5	NE	543.25	
		SW	1,192.00	2,050.12
4	6	NE	982.27	982.27
4-A	6	NW	353.76	
	7	NE	707.20	1,060.96
5	6	SW	77.76	
		SE	434.40	
	7	SE	160.00	672.16

TRACT NO.	SECTION	¼ SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	TRACT TOTAL
6	6	SW	77.68	
		SE	434.40	
	7	SE	160.00	672.08
7	15	SW	99.20	
	16	SE	356.00	
		NW	480.00	935.20
8	16	NE	304.00	304.00
9	15	NW	124.00	
		SW	198.40	
	16	SE	356.00	
		NW	480.00	1,158.40
10	16	NE	304.00	304.00
11	15	NW	62.00	
	17	NW	368.00	430.00
12	8	NE	395.18	
		SW	237.41	
	10	NW	14.00	
	15	SW	99.20	745.79

EAST PUERTO CHIQUITO MANCOS UNIT
SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES
SCHEDULE III

TRACT NO.	SECTION	¼ SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	TRACT TOTAL
13	5	NW	1,039.65	
		SE	379.47	1,419.12
14	4	NE	30.88	
		NW	310.64	
		SE	112.00	
	8	SW	459.82	
	9	NE	70.00	
	17	NE	650.40	1,633.74
15	8	NE	275.83	
	9	NE	70.00	
		SW	104.04	
	15	NW	62.00	511.87
16	9	NE	140.00	
	10	NW	42.00	
		SW	144.00	
	17	NE	650.40	976.40
	T-27N, R-1W			
17	13	SE	-0-	-0-

EAST PUERTO CHIQUITO MANCOS UNIT
SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES
SCHEDULE III

TRACT NO.	SECTION	¼ SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	TRACT TOTAL
	T-27N, R-1E			
18	19	NE	1,140.80	
		NW	508.80	
		SW	972.80	
		SE	1,312.00	
	20	NE	1,240.00	
		NW	1,340.80	
		SW	1,096.00	
		SE	1,008.00	
	29	E½	730.10	
		W½	1,001.28	
	30	E½	1,421.80	
		W½	1,239.71	13,012.09
19	17	SW	1,360.00	
		SE	1,155.20	
	18	SW	232.00	
		SE	947.20	3,694.40
20	21	NE	784.00	
		NW	1,040.00	
		SW	908.80	
		SE	720.00	
	28	E½	452.26	
		W½	578.85	4,483.91

EAST PUERTO CHIQUITO MANCOS UNIT
SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES
SCHEDULE III

TRACT NO.	SECTION	¼ SECTION	WEIGHTED ACREAGE FROM SCHEDULE II PARCEL	TRACT TOTAL
	T-27N, R-1W			
21	24	NE	56.00	
		SE	256.00	
	25	SE	419.76	731.76
	T-27N, R-1E			
22	16	SW	883.20	
		SE	627.20	1,510.40
	T-26N, R-1E			
23	8	SW	278.77	
		SE	818.39	1,097.16
24	4	NW	3.08	
		SW	148.75	
	5	NE	115.54	
		SE	412.53	
	8	NE	272.99	
		SE	0.29	
	9	NW	372.93	
		SW	23.46	1,349.57
25	9	SW	688.50	
		SE	73.75	762.25
26	4	NE	26.18	26.18
				43,119.28

EAST PUERTO CHIQUITO MANCOS UNIT
SUMMARY OF STRUCTURAL POSITION WEIGHTED ACRES
SCHEDULE III

EXHIBIT C - PART IV

TO

EAST PUERTO CHIQUITO MANCOS UNIT AGREEMENT

The production figures used for each tract in determining the tract participation is the sum of the two year production for that tract in 1976 and 1977 as shown in the following schedule marked Exhibit C: Part IV.

Also included herein is a schedule showing allocation to tracts of acreage and production under communitized tracts.

EXHIBIT C: PART IV
TO THE

EAST PUERTO CHIQUITO MANCOS UNIT AGREEMENT

ALLOCATION OF 1976-1977 PRODUCTION TO TRACTS

LEASE OR WELL	TOTAL 1976-1977 PRODUCTION (BBLS)	ALLOCATION TO TRACTS TRACT	BARRELS
Jicarilla 237 lease	152,477	18	152,477
Jicarilla 287 lease	2,328	20	2,328
Bernie	4,165	4	4,165
PC C-5	-0-	-	-0-
Alto*	-0-	-	-0-
PC H-5	1,492	3	662
		24	830
Hijo 1-X	-0-	-	-0-
PC I-8	3,327	23	2,380
		1	697
		2	250
PC D-9	17,546	24	17,546
PC P-9	1,025	1	449
		2	416
		25	160
Bajo (P.A.)	1,950	3	979
		2	796
		24	175
Casa	695	8	695
PC I-6	7,422	5	3,711
		6	3,711
Jic. 238 (O-17)	382	19	382

* Credited under Bajo P.A.

EPCMUA-6180 REV B

EAST PUERTO CHIQUITO MANCOS UNIT

ALLOCATION TO TRACTS OF ACREAGE AND PRODUCTION FOR COMMUNITIZED WELL SPACING UNITS

(USED IN DETERMINING ALLOCATION OF PRODUCTION TO TRACTS)

WELL		ALLOCATION TO	PROPORTION	ACREAGE	PRODUCTION 1976-1977 (Barrels)
H-5	(3)	SF 080312-A	5.546875 / 12.500000	35.50	662
	(24)	Eturriaga	6.953125 / 12.500000	44.50	830
			1.	80.00	1492
I-8	(23)	Eturriaga	71.531250	114.45	2380
	(1)	SF 079288-B	20.943750	33.51	697
	(2)	SF 097288-E	7.525000	12.04	250
			100.000000	160.00	3327
P-9	(1)	SF 079288-B	43.750000	70.00	449
	(2)	SF 079288-E	40.620000	65.00	416
	(25)	Burns Estate	15.630000	25.00	160
			100.000000	160.00	1025
Bajo (P.A.)					
	(3)	SF 080312-A	50.193000		979
	(2)	SF 079288-E	40.804380		796
	(24)	Eturriaga	9.002620		175
			100.000000		1950

NOTES REGARDING BALANCING OF AREAS

EAST PUERTO CHIQUITO MANCOS UNIT

Although there may be more definitive information available regarding land areas within the East Puerto Chiquito Mancos Unit, the data from which B-M-G worked required some interpretation and adjustment in order that the land areas be balanced.

The basic assumption regarding areas was that except for the lots shown in Sections 4, 5, 6, 25, 28, 29 and 30, the sections are of 640 acres each.

Under this basic assumption the areas were balanced through the following interpretations:

HOMESTEAD ENTRY 484 (TRACT 23) AND ADJOINING TRACTS:

For this tract we used Survey of August 4, 1913 (List No. 3-2701) which survey was accepted October 13, 1922 by the GLO.

This survey shows 159.58 acres in HES 484; and has the acreages in each Section 4, 5 and 8 broken down by sections.

W/2 Section 4: Although the survey shows an amount of acreage (39.70) in the west half of Section 4, it does not have it broken down by quarter-sections. There is only a small part of the tract in the NW/4 of Section 4, and from metes and bounds we have calculated it to be 1.58 acres. This then leaves 38.12 acres remaining for the SW/4 of Section 4.

E/2 Section 5: The same as for Section 4, the total acresage in HES 484 is shown on the survey but not broken down by quarter-sections. A large part of the acreage in HES 484 is located in the SE/4 of Section 5; and by metes and bounds it was calculated to be 82.58 acres. However, from lease data covering the NW/4 and the SE/4 (except for HES 484) - by difference - the amount of HES 484 which is in the SE/4 of Section 5 shows to be 82.52 acres; and so this is the figure which we used for the SE/4 of Section 5. Since there is 110.70 acres all told for HES 484 in Section 5, the rest of it is in the NE/4. This leaves 28.18 acres for the NE/4.

NE/4 Section 8: All of the land in Section 8 under HES 484 is in the NE/4 and, as shown by the survey described above, is 9.18 acres.

HOMESTEAD ENTRY 486 (ALSO TRACT 23) AND ADJOINING TRACTS:

For this survey we have used the plat dated January 27, 1953, showing "Amended Lottings". Lottings shown cover Sections 4 and 5 - but the plat does not show the lottings for these sections.

NE/4 Section 8: The lottings on the subject plat for the NE/4 of Section 8 show (by difference) that 46.27 acres out of the NE/4 are occupied by parts of HES 484 and 486. The above referenced survey for HES 484 showed 9.18 acres out of HES 484 in the NE/4 of Section 8; accordingly, by difference, 37.09 acres out of HES 486 lies in the NE/4 of Section 8.

SE/4 Section 8: By metes and bounds the amount of acreage out of HES 486 which lies in the SE/4 of Section 8 is .04 acres.

NW/4 Section 9: By difference, from the lottings shown on the plat for the NW/4 of Section 9, 97.37 acres out of HES 486 lies in the NW/4 of Section 9.

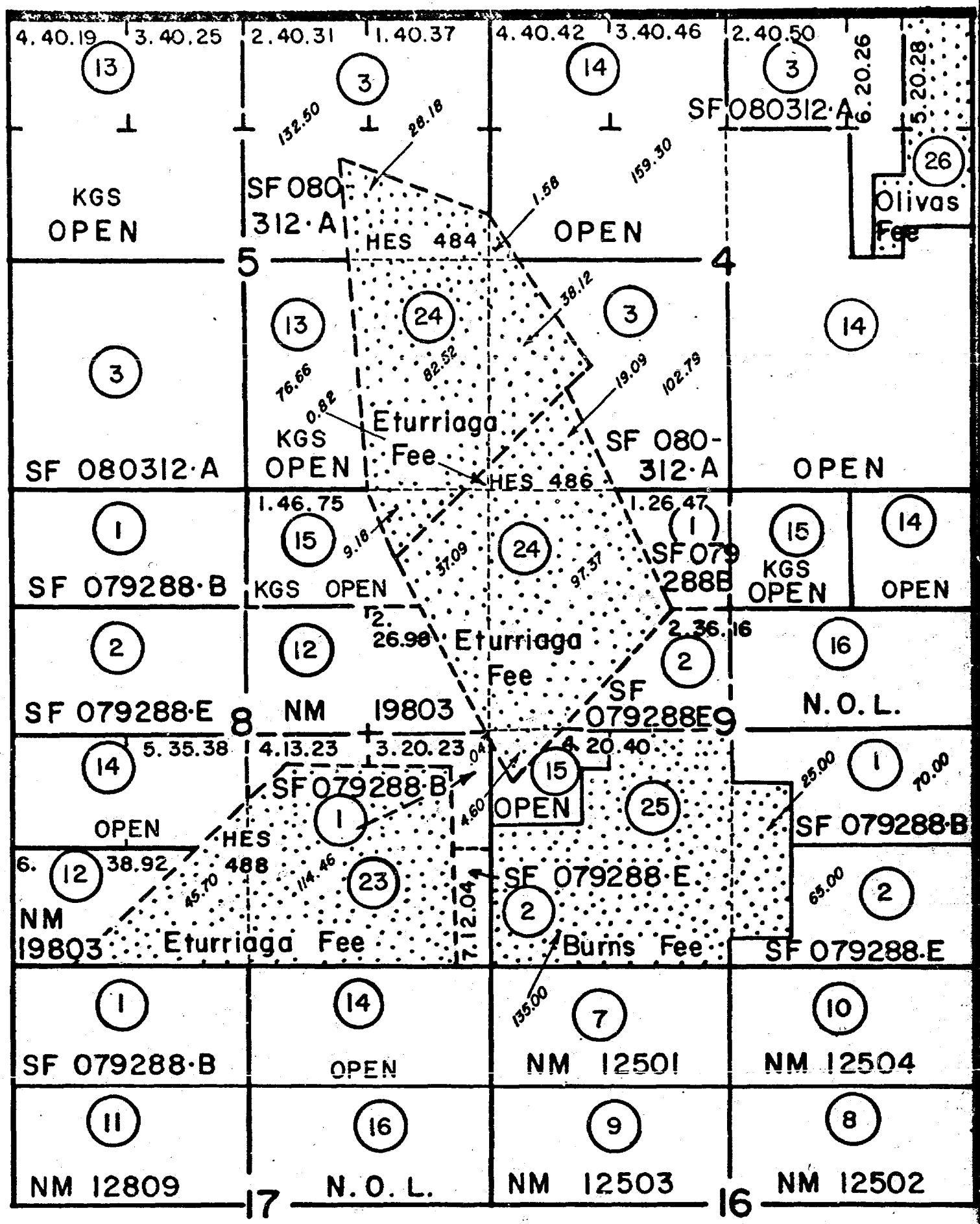
SW/4 Section 9: By difference, from the lottings shown for the SW/4 of Section 9, 4.60 acres out of HES 486 lies in the SW/4 of Section 9.

SE/4 Section 5: By metes and bounds we calculate .82 acres out of HES 486 to lie in the SE/4 of Section 5.

SW/4 Section 4: The January 27, 1953 plat does not show the total area under HES 486. Its calculated area by metes and bounds is 158.77 acres and the earlier listing for this tract under the initial Puerto Chiquito Unit showed 159.01 acres. We are assuming that 159.01 acres is correct: and if this be true, then by deducting the above amounts allocated to Sections 5, 8 and 9, there remains 19.09 acres for the SW/4 of Section 4. From metes and bounds of the survey we calculate 18.84 acres; so this seems reasonable, and accordingly we have allocated 19.09 acres to this portion of the survey.

HOMESTEAD ENTRY 488 (TRACT 22) AND ADJOINING TRACTS:

This tract lies wholly within the S/2 of Section 8, and the above described January 27, 1953 plat shows all of the lottings for the adjoining lots. Again, this plat does not show the area of HES 488; however, it is shown on the initial Puerto Chiquito Unit schedules as containing 159.99 acres, and calculation by metes and bounds also shows 159.99 acres. However, if the S/2 of Section 8 is regular and contains 320 acres, and the lottings shown on the January 27, 1953 plat are correct, then there must be in HES 488 not 159.99 acres but 160.16 acres. Therefore, to satisfy the basic assumption described at the beginning of this discussion that all of the sections are regular, it seems that the appropriate adjustment here is to change the area of HES 488 to 160.16 acres; and this we have done.



PORTION OF E.P.C.M.U. SHOWING QUARTER SECTION ACREAGE ALLOCATIONS TO TRACTS

PRINCIPAL MERIDIAN, NEW MEXICO

Supplemental Plat

This plat, showing lots in secs. 8 and 9 created by the segregation of Homestead Entry Surveys 484, 486, and 488 is based upon the township plat approved July 13, 1918 and the record of the Homestead Entry Surveys.

H.E.S. No. 484

H.E.S. No. 486

H.E.S. No. 488

Sec. 8

Sec. 9

Meridian

H.E.S. 486

	Acres
NW 4	97.37
SW 4	4.60
NE 3	37.09
SE 5	0.04
SE 5	0.82 ± (est.)
	139.92
SW 4 +	19.09 (by diff.)
	159.01

Note: Assume:

H.E.S. 486

Length MN (from Survey for H.E.S. 484) = 17.52 + 5.71 + 26.11 = 9.38.40 ch

Length PM = 33.41 + 7.49 = 40.90 (This Survey)

" NO = (PM)(sin 76°01 / sin 75°59) = (40.90)(sin 76°01 / sin 75°59) = 40.91

" OP = 42.00 (This survey)

① BALANCING of ANGLES

Line	Bearing	Azimuth	Deflection
MN	N 46°01'E	46°01'	76°01'R
NO	S 29°58'E	150°02'	104°01'R
OP	S 46°01'W	226°01'	75°54'R
PM	N 30°00'W	330°00'	103°54'R
			360° 00'

② LATITUDES, DEPARTURES, DMD's, AREA

(Red figures are to 4 decimal places)

Line	Dist. (ch)	Bearing	Latitude N	Latitude S	Departure E	Departure W	Correction Lat	Correction Dep	DMD	Double Area +	Double Area −
MN	40.01	N 46°01E	27.78		28.79		+27.7944 +27.79	+28.7924 +28.80	28.80	744 35 800	
NO	40.91	S 29°58E		35.44	20.43		-35.4244 -35.43	+20.4321 +20.43	78.03		2764 2764
OP	40.00	S 46°01W		27.78		28.78	-27.7752 -27.78	-25.7771 -25.78	69.68		1935
PM	40.90	N 30°00W	35.42			20.45	+35.4256 +35.42	-20.4477 -20.45	20.45	724 35 724	
			63.20	63.22	49.22	49.23				1524 67	4700 3175
				63.22		49.22					3175
				.02		.01					(.55)
				126.42		98.46				÷2 =	1587 79 ch

EARLICK SHOD shows 159.01 × 1/10 = 158.78 Acres

× 1/10 = 158.77 by cancelling the 4 decimals

H.E.S. 488

① BALANCING of ANGLES

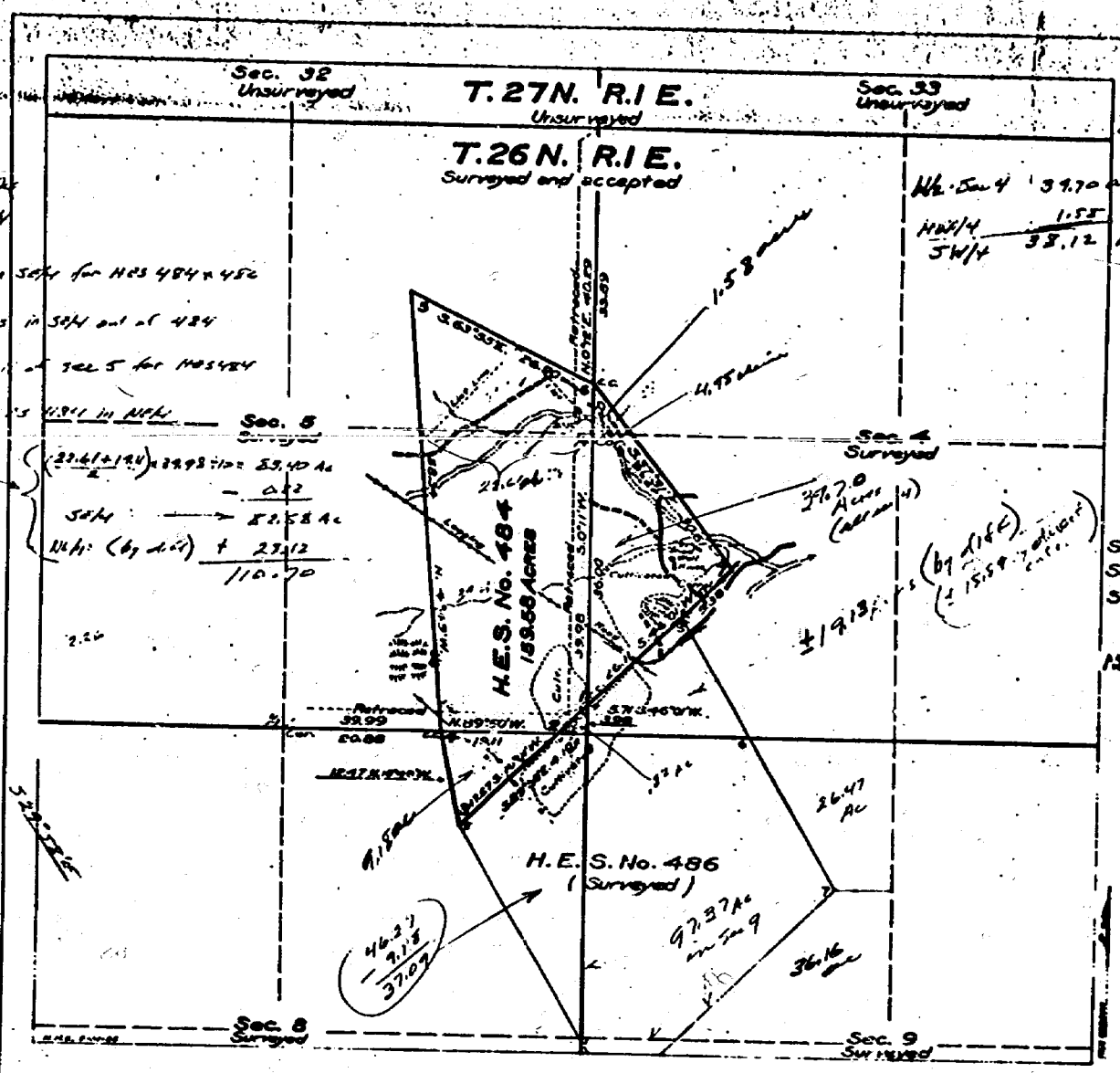
LINE	Bearing	Azimuth	Deflection
AB	N 47°25'E	47°25'	137°12'R
BC	N 90°00'E	90°00'	42°35'R
CD	S 00°00'W	180°00'	90°00'R
DE	N 89°40'W	270°20'	90°20'R
EA	N 89°47'W	270°13'	00°07'L
			360°00'

② LATITUDES, DEPARTURES, DMD's, AREA

LINE	Dist. (ch)	BEARING	LATITUDES N	LATITUDES S	DEPARTURES E	DEPARTURES W	CORRECTED LAT	CORRECTED DEP	DMD	DOUBLE AREAS +	DOUBLE AREAS −
AB	49.46	N 47°25'E	33.81		36.79		+33.81	136.80	36.80	1244^{31}	
BC	25.63	N 90°00'E	0		28.63		0	+23.64	102.24	0	
CD	34.14	S 00°00'W		34.14		0	-34.14	0	130.88		4468^{24}
DE	34.00	N 89°40'W	0.20			34.00	+ .20	-33.99	96.89	19^{38}	
EA	31.45	N 89°47'W	0.12			31.45	+ .12	-31.44	31.44	3^{23}	
			34.13	34.14	65.42	65.45	.01	.01		1267^{37}	4465^{28}
			34.13		65.42						1267^{37}
			.01		.03						3200.2
			68.27		131.87						÷2 = 1600.4 ch

NOTE: By Correction Lat & Dep to Decimal places:

Corrected Lat	Corrected Dep	DMD	Double Areas +	Double Areas −	
+33.8150	+36.7984	36.7984	1244^{34}		3199^{75} ÷2
0	+28.6365	102.2333	0		1599.375 sq ch
-34.135	0	130.8698		4467^{24}	x 10²
+ 0.20	-33.9923	96.8775	19^{35}		159.99 ACRES
+ 0.12	- 31.4426	31.4426	3^{22}		



Survey accepted Oct. 14, 1922
G.L.O.

Plat of

HOMESTEAD ENTRY SURVEY No. 484

in the

SANTA FE NATIONAL FOREST

in

Section 4, surveyed T. 26 N. R. I E.
Section 5, surveyed T. 26 N. R. I E.
Section 8, surveyed T. 26 N. R. I E.

of the

NEW MEXICO PRINCIPAL MERIDIAN

NEW MEXICO

This plat of Homestead Entry Survey No. 484 State of New Mexico is strictly conformable to the field notes thereof on file in this office, which have been examined and approved.

U.S. Surveyor General's Office

Santa Fe, New Mexico
September 22 1922

Manuel A. Lucero
U.S. Surveyor General
For New Mexico

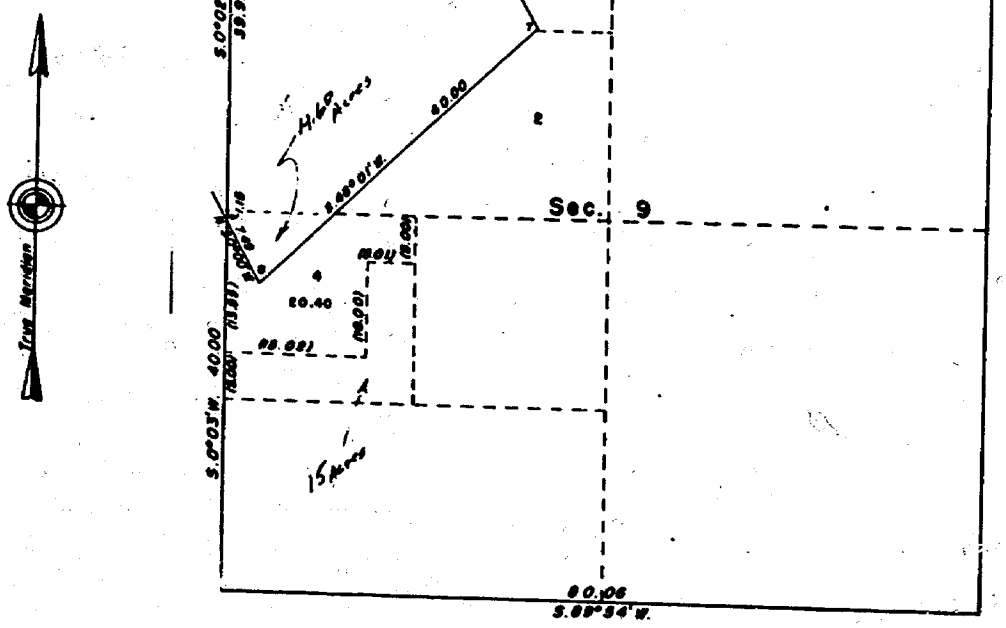
Surveys Designated	By whom Surveyed	Inst. Field Notes No.	Inst. Field Notes Date	When Surveyed Begun	When Surveyed Completed	Date of Approval
H.E.S. No. 484	Thomas F. Myers	484	July 19, 1919	Sept. 10, 1921	Sept. 21, 1921	Sept. 22, 1922
H.E.S. No. 486	"	486	"	"	Sept. 24, 1921	"
T. 27 N. R. I E.	Helen I. Clark	78	April 16, 1917	May 23, 1917	July 19, 1917	July 19, 1919

Acres in Area		
H.E. Survey No. 484 is in		Fractions
In Section 4	39.70	
In Section 5	110.70	
In Section 8	9.18	
Limited	139.58	
Unlimited	27.65	
Total	139.58 A.	

Act of June 11, 1906 Act of March 3, 1921
List No. S-2701 Dated Aug. 4, 1919.
Latitude 35°30'30" N.
Longitude 106°21' W. Observations at
Mean Mag. Decl. 14°07' E. Station No. 1

TOWNSHIP 26 NORTH, RANGE 1 EAST OF THE NEW MEXICO PRINCIPAL MERIDIAN, NEW MEXICO

SUPPLEMENTAL PLAT





Scale in Chains

This plat, showing Lot 4 created by the segregation of patented areas from Sec. 9, is based upon the township plat approved July 12, 1950, and supplemental plat accepted January 27, 1955.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D. C. June 29, 1954

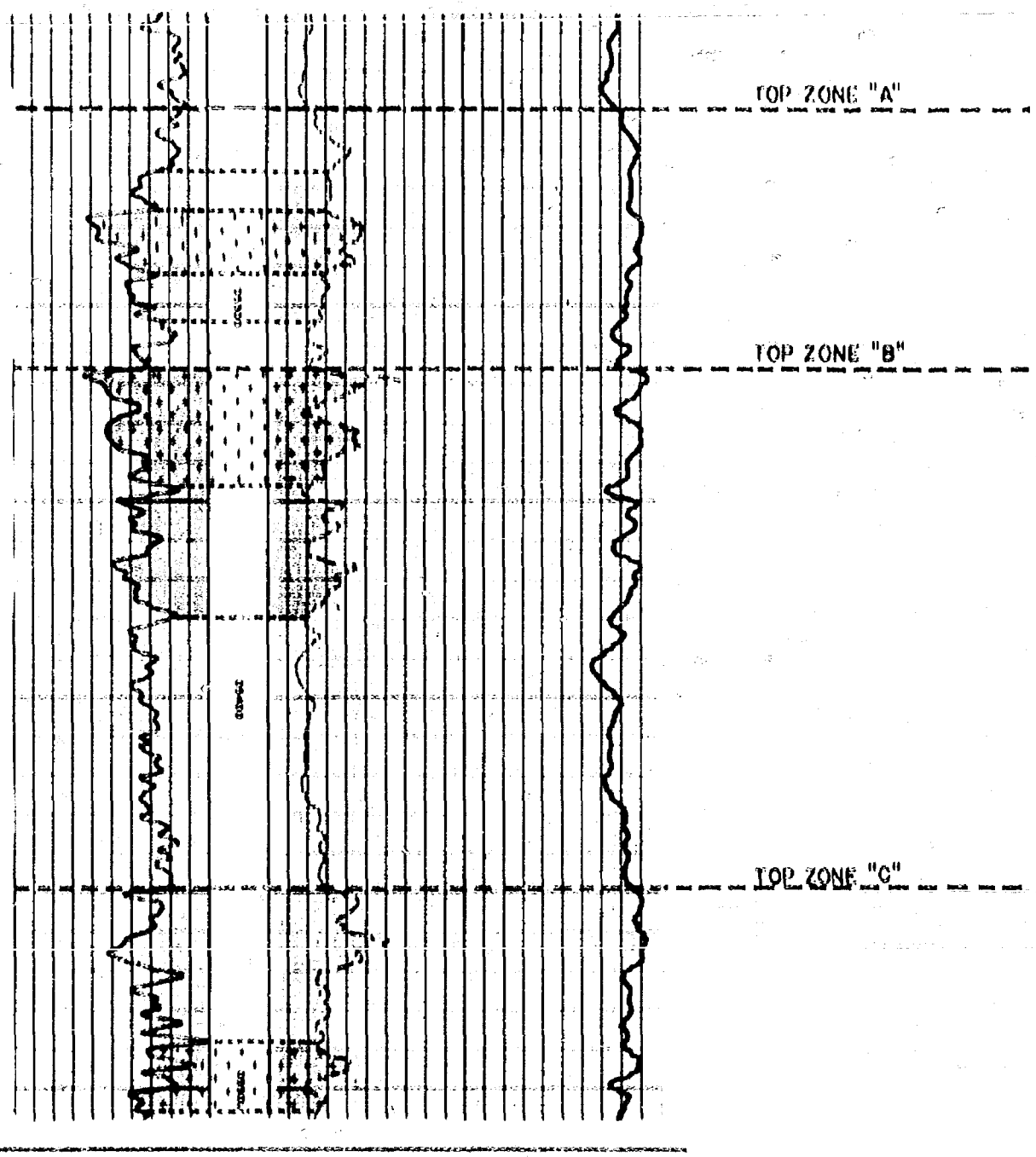
This plat showing amended lottings, having been correctly prepared in accordance with the regulations, is hereby accepted.

For the Director

IDENTIFICATION OF MAIN PRODUCING ZONES
NORTHEAST PUERTO CHIQUITO
AND
SOUTHWEST PUERTO CHIQUITO

BENSON-MONTIN-GREER DRLG. CORP.

CAÑADA OJITOS UNIT NO. B-18



EXOIL SERVICES

SUMMARY OF THREE RADIAL BEREA CORE FLOODS

EAST PUERTO CHIQUITO MANCOS UNIT PROJECT

for

Benson-Montin-Greer Drilling Corporation

by

EXOIL SERVICES

February 1980

EXOIL SERVICES

TABLE 1

SYNTHETIC PRODUCED AND FRESH WATER COMPOSITIONS

	PRODUCED WATER (mg/L)	
ION	Synthetic	Analyses
Mg	53	52
Ca	54	54
Na	8,057	Omitted
Cl	12,669	12,670
SO_4	5	5
TDS	20,808	28,800
Salt		
$MgSO_4$	6	
$CaCl_2$	150	
NaCl	20,480	
$MgCl_2 \cdot 6H_2O$	430	

Fresh Water = 49:1 dilution of produced water w/deionized water

TDS = 416 PPM

EXOIL SERVICES

TABLE 2

BMG CRUDE BENCH DATA

The following bench data was completed for BMG:

Crude I.D.'s

Exoil #	Sample I.D.
11-79	A3 Crude Oil
12-79	E2 Crude Oil
13-79	A1 Crude Oil
1-80	Jicarilla 237 F-30 Crude Oil

IFT's for crude oil samples 11-79, 12-79, and 13-79 were run vs. 0, 0.2, 0.4, and 0.6 wt% NaOH as follows:

	wt% NaOH			
Crude #	0.0	0.2	0.4	0.6
11-79 (A-3)	31.9	24.1	23.5	17.9
12-79 (E-2)	28.4	16.9	12.8	5.2
13-79 (A-1)	31.0	20.4	16.2	9.3

} IFT (dynes/cm)

The 1-80 crude (Jicarilla 237 F-30) was checked for IFT vs. 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 2.0, and 4.0% NaOH as follows:

Crude #1-80 — Sample used in tests following pages

	wt% NaOH							
	0.1	0.2	0.4	0.6	0.8	1.0	2.0	4.0
IFT (dynes/cm)	4.1	4.7	7.2	2.7	3.0	1.0	0.3	1.2

EXOIL SERVICES

TABLE 3

INJECTED FLUID PROPERTIES - BMG RADIAL CAUSTIC RUNS

RUN NO.	UNITS	1	2	3
Fresh Water				
Visc. @ 120°F	cp	0.6	0.6	0.6
Produced Water #2				
Visc. @ 120°F	cp	0.6	0.6	0.6
BMG Crude				
Visc. @ 120°F	cp	5.6	5.6	5.6
3% NaOH Solution+	pH	13.1	---	13.1
3% NaOH in Dow 700 Polymer+	pH	---	13.2	---
Polymer Concentration	ppm		2000	
Visc @ 120°F	cp		9.0	
Screen Factor @ Room Temp.			43.7	
Dow 700 Polymer+		---		
Polymer Concentration			400	400
Visc @ 120°F			9.1	8.5
Screen Factor @ Room Temperature			19.1	16.8

+ In synthetic BMG fresh water

Crude 1-80

EXOIL SERVICES

TABLE 4

PERFORMANCE SUMMARY - BMG RADIAL BEREA DISC RUNS 1-3

Run No.		1	2	3
Core Properties				
Pore Volume	cc	196.2	195.7	196.1
Porosity	fract	.223	.222	.223
Permeability (overall)	md	510	486	491
Eff. Permeability (K_{orw})	md	507	474	481
Eff. Permeability (K_{wro})	md	47.5	47.5	16.6
Fluids Injected				
Waterflood	PV	2.05	2.06	2.12
Caustic	PV	.276	---	.250
Caustic Polymer	PV	---	.227	---
Polymer	PV	---	.499	.586
Fresh Water Flush	PV	.502	.564	.428
Produced Water Flush	PV	.763	.351	.243
Oil Recovery				
Initial Oil Sat. (S_{oi})	cc	119.0	120.0	118.0
	PV	0.607	0.613	0.602
Waterflood Oil Recovery	cc	48.2	47.3	44.8
	PV	0.246	0.242	.228
	$\%S_{oi}$	40.5	39.4	38.0
Waterflood Oil Sat. (S_{or})	cc	70.8	72.7	73.2
	PV	0.361	0.371	0.373
Tertiary Oil Recovery	cc	30.0	36.3	31.7
	PV	0.153	0.185	0.162
	$\%S_{or}$	42.4	49.9	43.3
Residual Oil Sat. (S_{of})	cc	40.8	36.4	41.5
	PV	0.208	0.186	0.212
Total Oil Recovery	cc	78.2	83.6	76.5
	PV	0.399	0.427	0.390
	$\%S_{oi}$	65.7	69.7	64.8

Corrected 1-80

EXOIL SERVICES

TABLE 5

RUN BMG-1: PRODUCED FLUIDS pH DATA - CAUSTIC RUN

Caustic pH = 13.1

Caustic Flood Sample #	PV Produced	pH
1	0.046	7.7
10	0.463	7.0
11	0.523	12.3
13	0.619	12.3
16	0.755	12.3
20	0.937	12.3
22	1.027	12.3
24	1.119	12.2
26	1.209	12.2
28	1.300	12.0
30	1.392	11.8
32	1.484	11.5
34	1.570	10.5

EXOIL SERVICES

TABLE 6

RUN BMG-2: PRODUCED FLUIDS pH DATA - CAUSTIC-POLYMER RUN

Waterflood H_2O pH = 6.8			Caustic Polymer pH = 13.2		
Waterflood Sample #	PV Produced	pH	Cautic Flood Sample #	PV Produced	pH
6	0.282	7.3	1	0.047	7.0
8	0.376	7.5	5	0.229	7.0
10	0.468	1.9	10	0.457	6.9
12	0.561	2.9	12	0.550	7.1
14	0.654	7.0	13	0.602	11.8
18	0.838	7.0	14	0.654	12.4
26	1.205	7.0	21	0.984	12.4
34	1.572	7.0	25	1.169	12.4
46	2.080	7.0	27	1.257	12.2
			31	1.435	11.9
			37	1.679	11.5

EXOIL SERVICES

TABLE 7

RUN BMG-3: PRODUCED FLUIDS pH DATA - CAUSTIC RUN

Waterflood H_2O pH = 6.8

Caustic pH = 13.1

Waterflood Sample #	PV Produced	pH
6	0.246	6.8
10	0.432	6.8
15	0.666	6.6
21	0.945	6.8
29	1.316	6.9
37	1.683	6.8
47	2.142	6.8

Waterflood Sample #	PV Produced	pH
1	0.047	6.8
9	0.366	6.8
10	0.412	7.0
11	0.463	12.3
12	0.513	12.5
15	0.652	12.5
21	0.931	12.5
25	1.115	12.4
29	1.299	12.4
31	1.389	12.2
33	1.481	12.2
34	1.525	11.8

FIGURE DISC RUN #1 : WATERFLOOD OIL RECOVERY

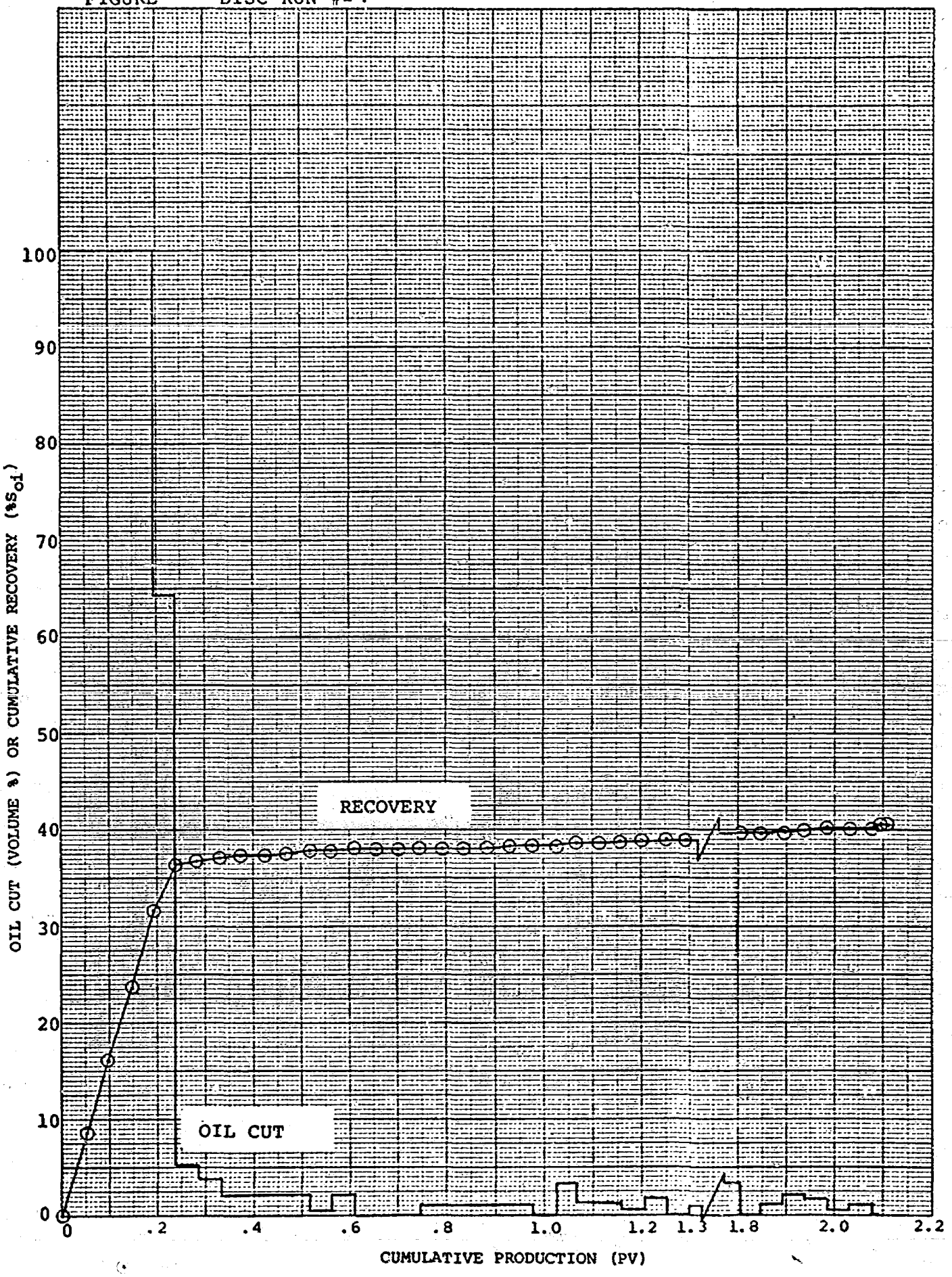


FIGURE DISC RUN #1: TERTIARY OIL RECOVERY

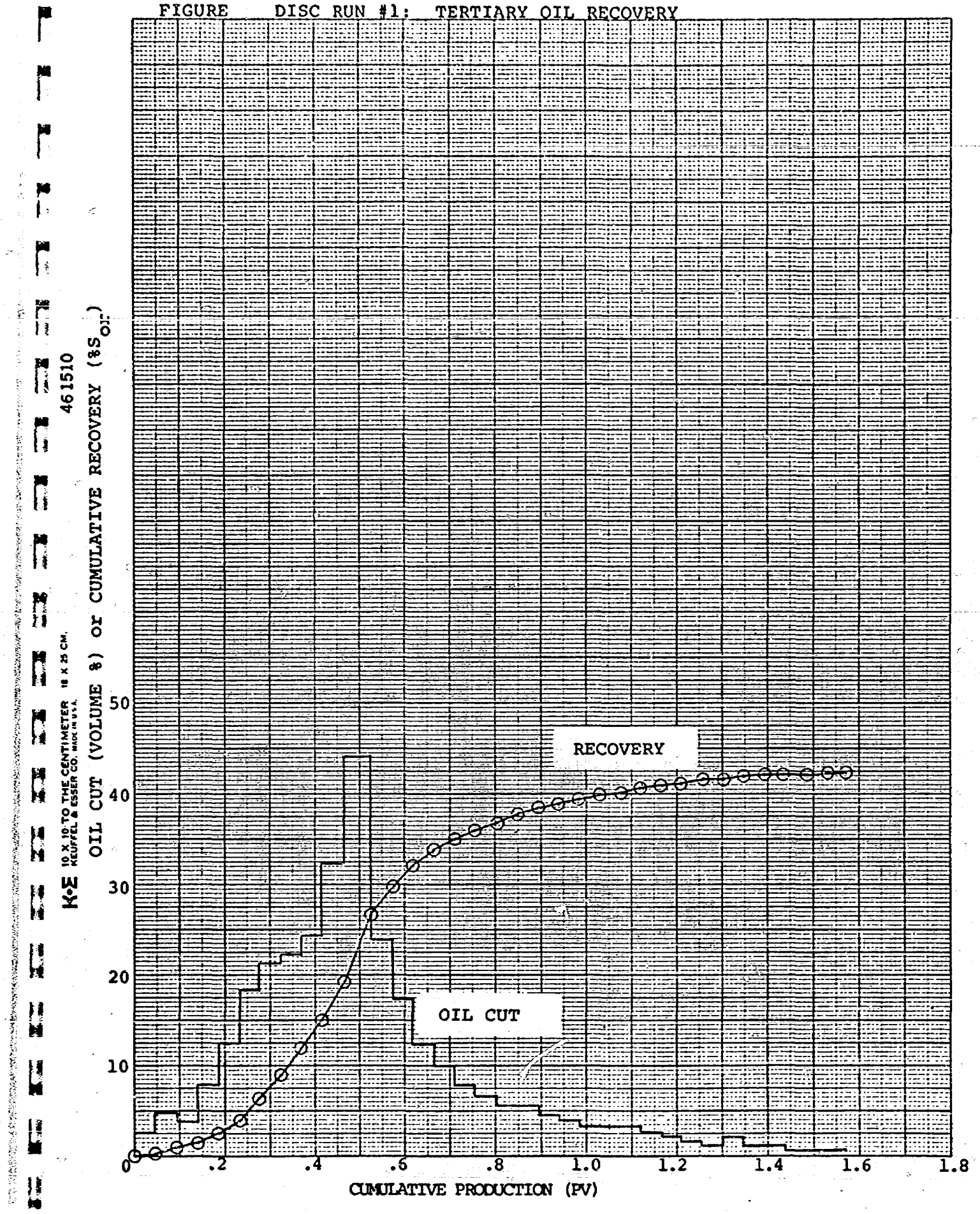


FIGURE DISC RUN #2: WATERFLOOD OIL RECOVERY

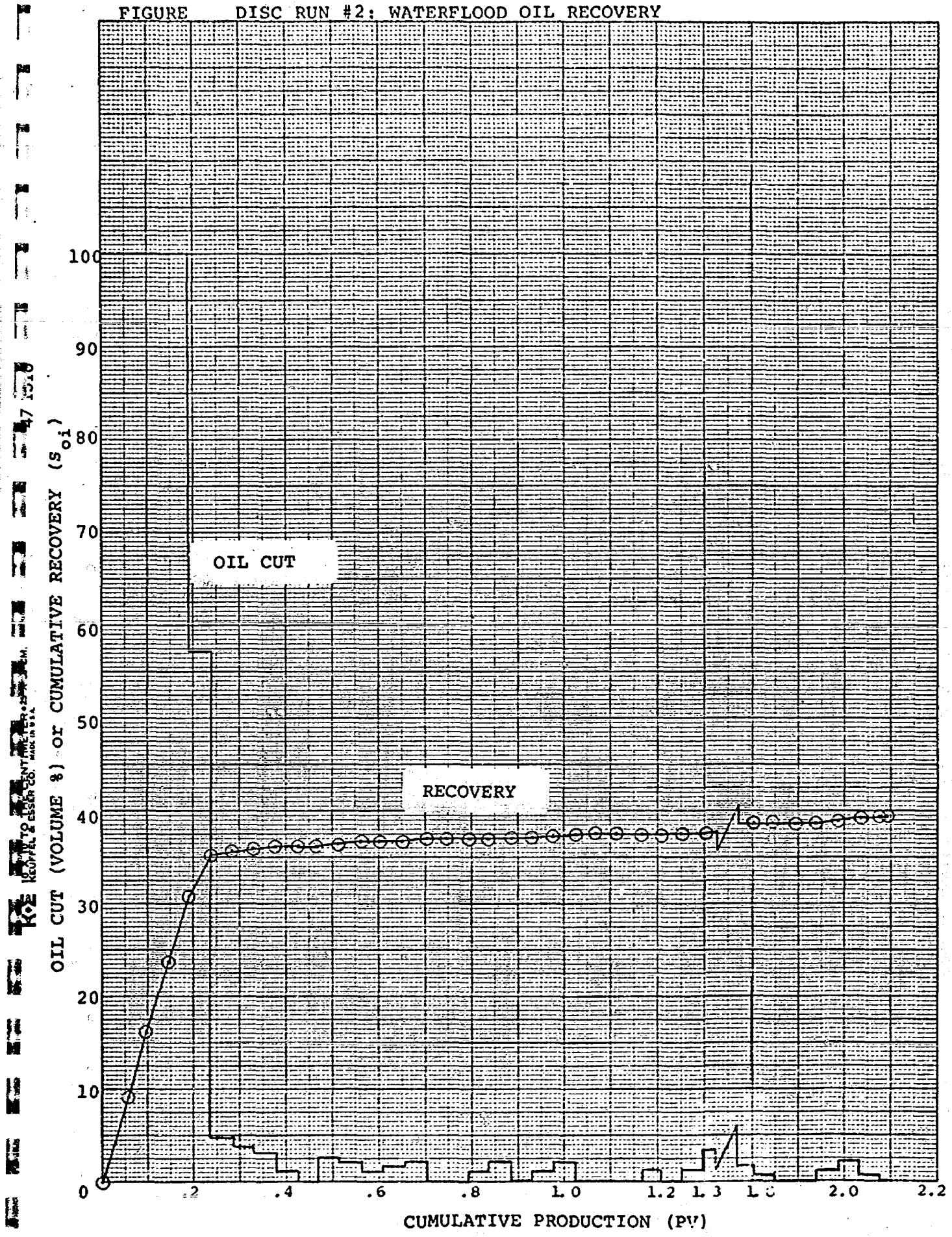


FIGURE DISC RUN #2: TERTIARY OIL RECOVERY

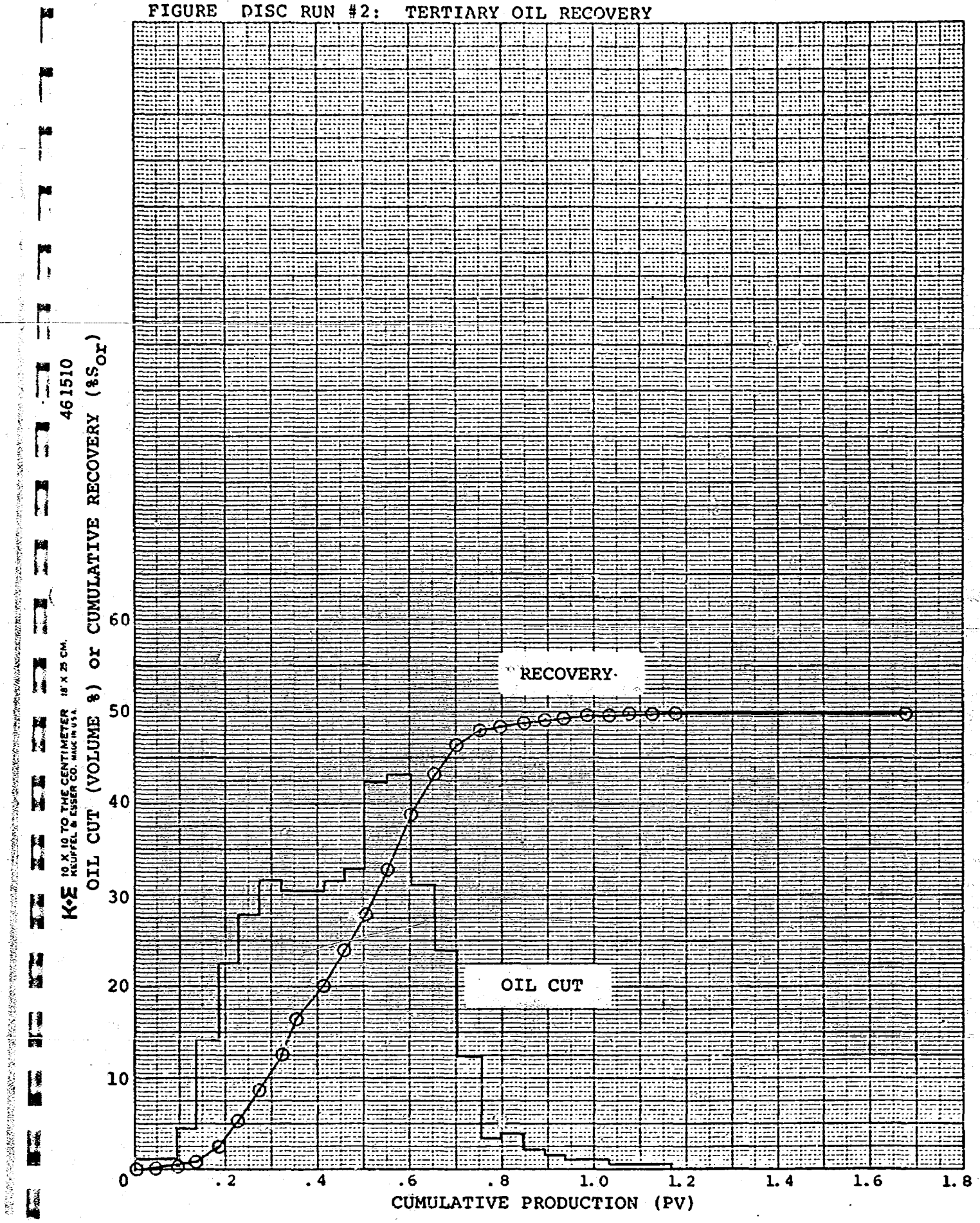


FIGURE DISC RUN #3: WATERFLOOD OIL RECOVERY

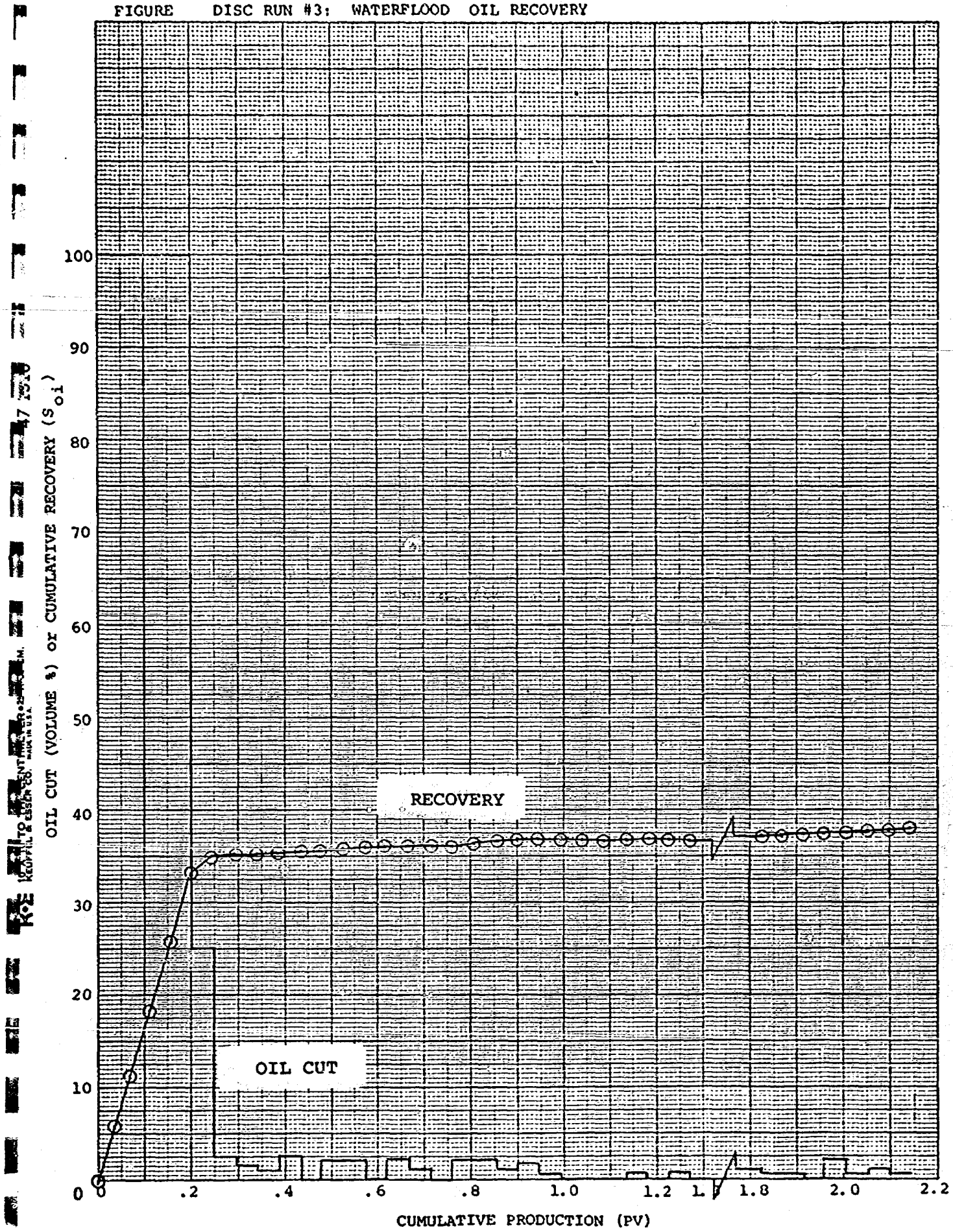
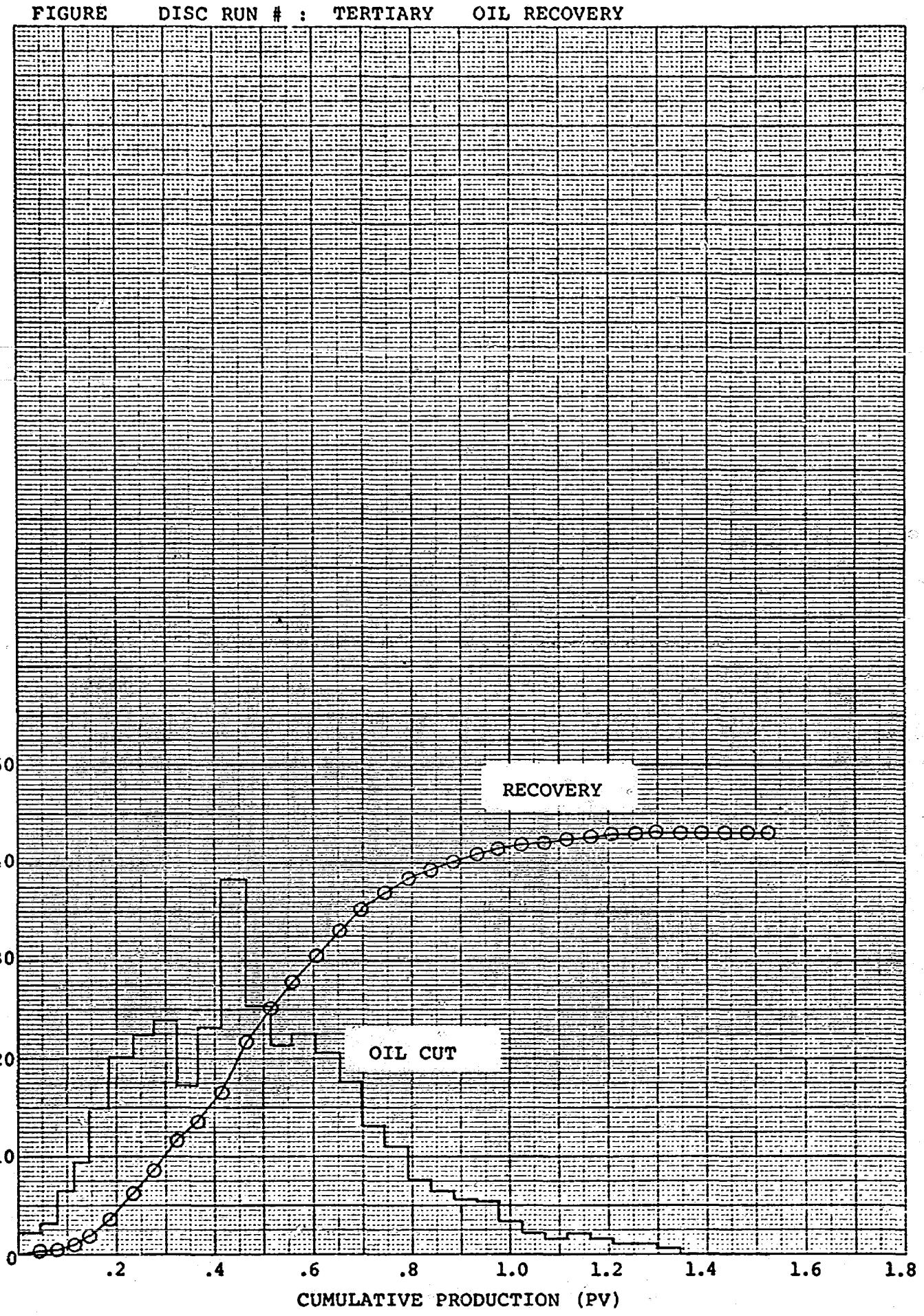
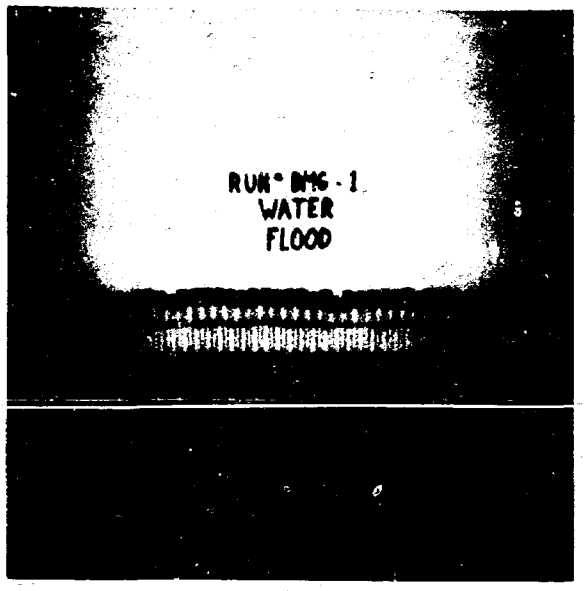
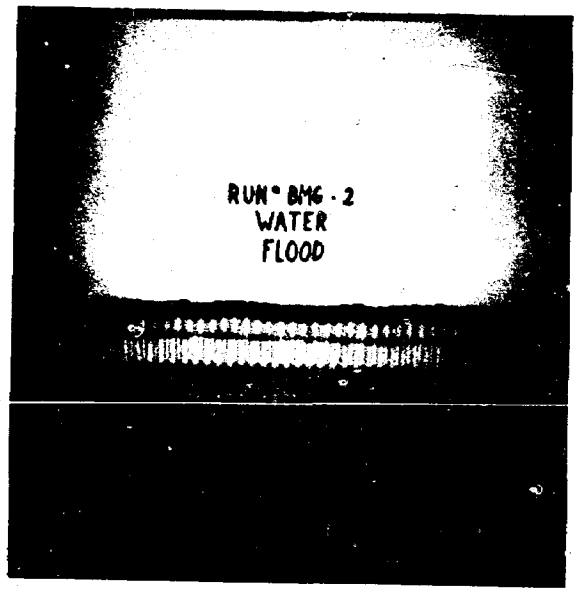


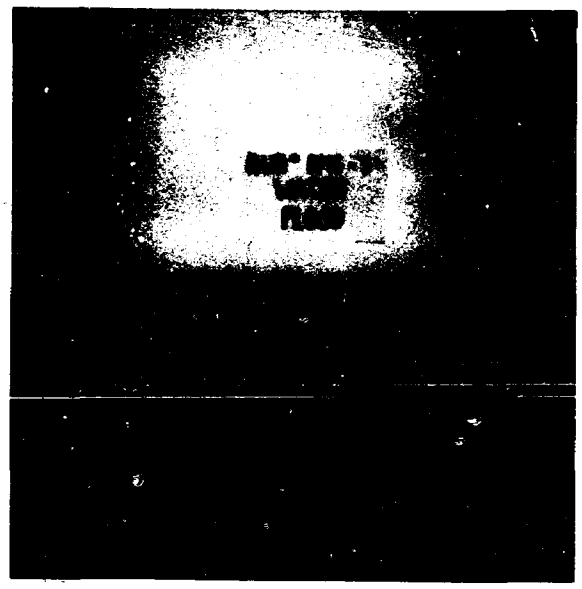
FIGURE DISC RUN # : TERTIARY OIL RECOVERY



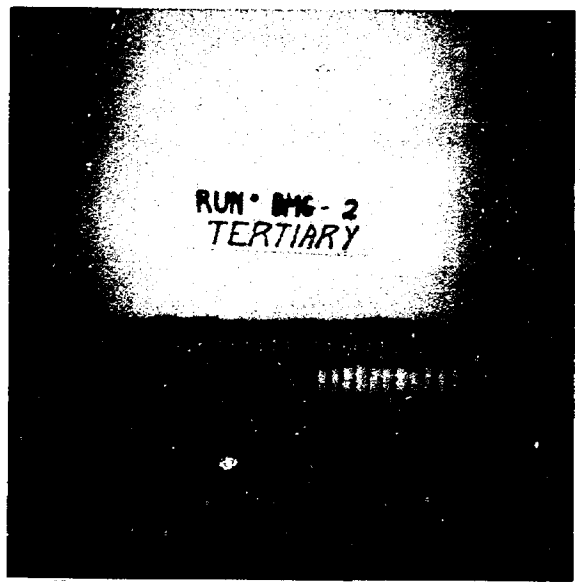
461510
K·E 10 X 10 TO THE CENTIMETER 18 X 25 CM.
KEUFFEL & ESSER CO. MADE IN U.S.A.

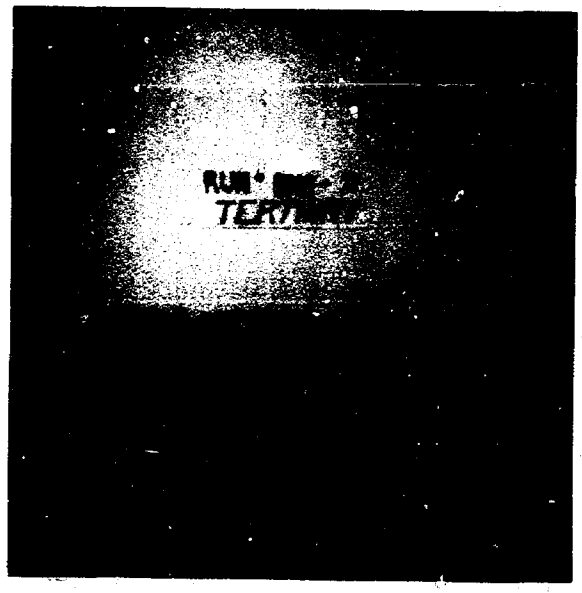

RUN • BMG - 1
WATER
FLOOD


RUN • BMG - 2
WATER
FLOOD




TERTIARY


RUN • BMG - 2
TERTIARY


TERTIARY

EAST PUERTO CHIQUITO MANCOS UNIT AGREEMENT

PRODUCTION HISTORIES OF WELLS IN UNIT AREA

(OIL VOLUME IN BARRELS)

LEASE OR WELL	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Jic 237			9,602	12,297	71,217	266,404	363,744	317,985	243,809	165,063	160,182	142,251	157,619	149,485	126,884	85,056
Jic 287			1,140	3,334	10,438	9,827	7,269	6,478	4,024	3,137	3,632	1,836	2,434	1,723	1,468	1,385
Bernie		3,024	7,812	5,532	9,667	7,679	7,137	6,547	6,112	4,464	6,128	4,934	5,278	4,294	4,635	4,329
PC C-5					645	316	10,500	7,830	10,871	10,486	11,131	9,197	5,010	799	SI	SI
Alto	17,455	6,190	5,929	5,274	7,486	3,146	1,825	422	SI	SI	SI	SI	SI	SI	SI	SI
PC H-5			2,565	6,444	5,034	3,572	2,244	1,277	2,390	1,253	1,110	811	991	690	739	821
Hijo 1-X			1,981	3,632	2,564	60	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI
PC I-8				1,468	1,910	910	1,441	2,143	944	1,011	1,225	959	789	560	204	807
PC D-9										64	11,954	16,626	16,603	13,788	12,167	10,221
PC P-9									2,953	2,197	1,665	1,449	1,339	753	568	873
Casa	2,198	1,517	1,084	536	802	SI	SI	SI	SI	SI	SI	590	410	467	392	378
PC I-6														411	4,760	3,732
Bajo	6,844	13,713	12,383	10,307	8,836	7,065	6,072	2,248	5,281	3,493	2,374	939	2,700	1,740	1,325	1,289
Jic. 238				3,198	1,443	447	269	912	527	309	210	315	288	151	458	215
TOTALS	26,497	24,444	42,497	52,022	120,042	299,426	400,501	345,842	276,911	191,477	199,611	179,907	193,461	174,861	153,600	109,106
All of above except C-5 and Hijo:	26,497	24,444	40,516	48,390	116,833	299,050	390,001	338,012	266,040	180,991	188,480	170,710	188,451	174,062	153,600	109,106

EPCMUA-6180 REV B

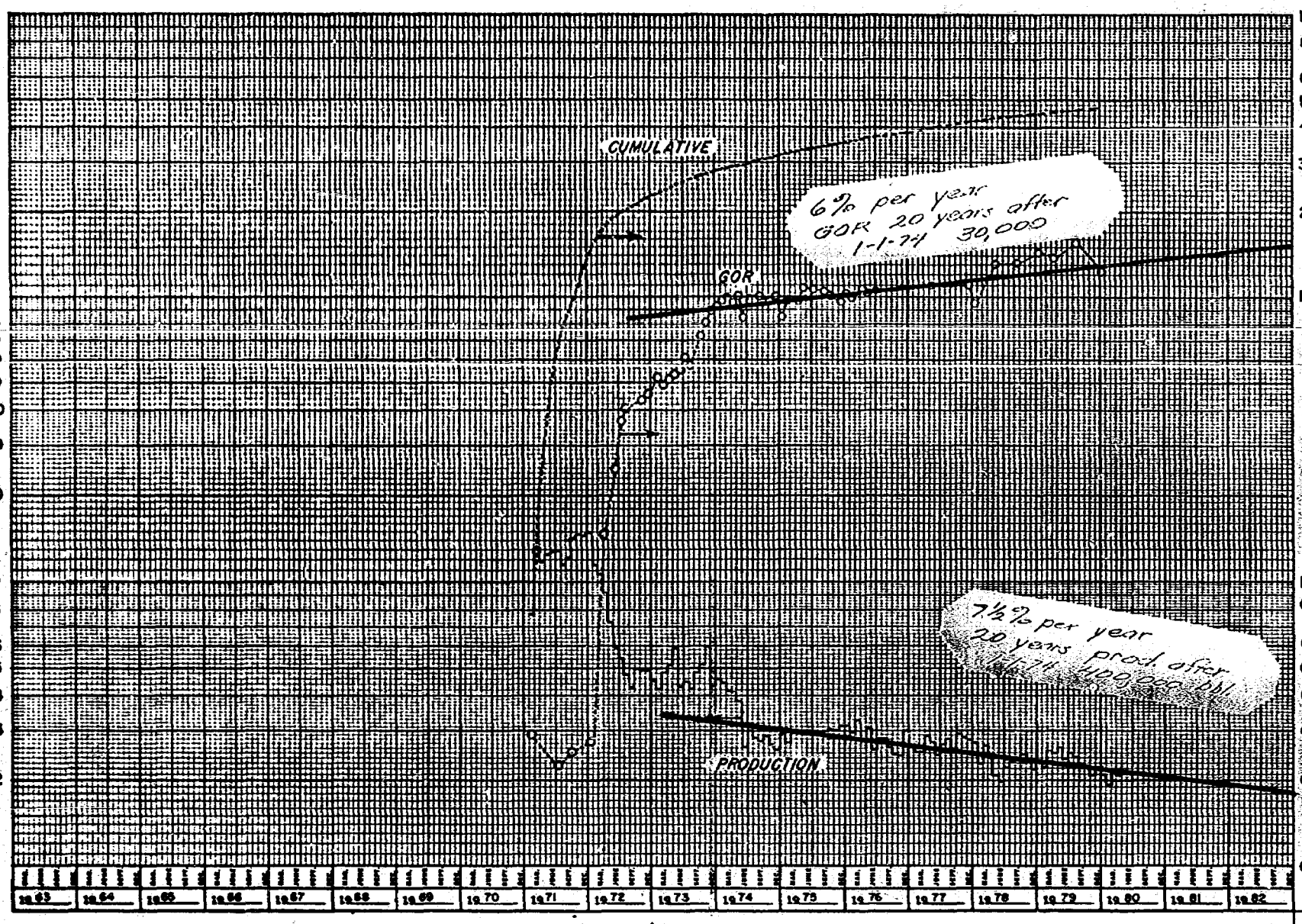
EAST PUERTO CHIQUITO MANCOS UNIT AGREEMENT

PRODUCTION HISTORIES OF WELLS IN UNIT AREA

(OIL VOLUME IN BARRELS)

LEASE OR WELL	1976	1977	SUM OF 1976 & 1977	1978	1979	TOTAL 1960-1979
Jic 237	89,177	63,300	152,477	55,974	42,325	2,522,374
Jic 287	1,412	916	2,328	1,046	1,469	62,968
Bernie	3,290	875	4,165	1,743	1,561	95,041
PC C-5	SI	SI	-0-	SI	SI	66,785
Alto	SI	SI	-0-	SI	SI	47,727
PC H-5	814	678	1,492	664	430	32,528
Hijo 1-X	SI	SI	-0-	SI	SI	8,237
PC I-8	1,838	1,489	3,327	994	1,054	19,746
PC D-9	9,751	7,795	17,546	5,450	4,052	108,471
PC P-9	572	453	1,025	381	195	13,398
Casa	374	321	695	264	188	9,521
PC I-6	3,325	4,097	7,422	1,754	1,414	19,493
Bajo	1,085	865	1,950	822	808	90,189
Jic 238	227	155	382	-0-	-0-	9,124
TOTALS	111,865	80,944	192,809	69,092	53,496	3,105,602
All of above except C-5 and Hijo:						
	111,865	80,944	192,809	69,092	53,496	3,030,580

EPCMUA-6180 REV B



PRODUCTION HISTORY
CANADA OJITOS UNIT WELL C-34

C.O.U. C-34
PRODUCTION
HISTORY

S. 34 - 28N - 1W

APPROXIMATE ECONOMICS OF PRESSURE MAINTENANCE BY GAS INJECTION, WATERFLOODING, AND TERTIARY RECOVERY METHODS

PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT

Estimated Increased Production

A. Estimated increase in recovery through pressure maintenance by gas injection:

(1) 10% of past production volume to be recovered from the high capacity fracture system	300 M bbls	
(2) 10% of past production volume to be recovered from the "tight" blocks and from solution-gas drive	300 M bbls	
Total		600 M bbls

B. Estimated increase in production to be recovered by waterflooding:

12-15% of past production volume to be recovered by waterflooding	400 M bbls

C. Estimated increase in production through use of tertiary method (flooding with caustic-treated water):

Laboratory analysis of this type oil and flooding with 3% sodium hydroxide showed an increase of 62.2% recovery over and above primary plus waterflood. Assuming 75% efficiency leaves 46%. Applying 46% to the sum of volumes of A (1) and B above (700 M/bbls) is 300 M/bbls+ for this increment. Because of the "front end money incentive program" additional wells will be drilled improving the efficiency of recovery, which is estimated to add approximately 100 M/bbls and is credited to the "tertiary" program because of the incentive funding.

Total these items	400 M bbls
Total Future Production	1400 M bbls

Estimated Basic Cost (Excluding Operating Expense)

		($M)
Gas Injection:		400
Water Flooding: (convert 2 wells to injection)		250
Tertiary Program:		
Chemicals	2,000	
Wells *	2,200	
(not including additional cost of handling tertiary chemicals)		4,200

Summary of Economics (Excluding Operating Expense)

	Approximate Cost ($M)	Approximate Recovery (M bbls)	Cost of Additional Recovery ($/Gross Bbl)
Gas Injection (600M-65M bbls)	400	535	$1.34
Water Flooding	250	400	$1.60
Tertiary	4,200	400	$10.50

* Location of proposed additional producing wells:
Section 5: SE/4 and SW/4
Section 8: NE/4 and NW/4
Section 9: SW/4
Section 20: NW/4
Section 21: NW/4

Location of 2 additional water injection wells:
Section 7: NE/4
Section 19: NW/4

APPROXIMATE ECONOMICS OF PRESSURE MAINTENANCE
BY GAS INJECTION, WATERFLOODING AND TERTIARY RECOVERY METHODS
PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT

PROPOSED EAST PUERTO CHIQUITO MANCOS UNIT
PRODUCTION HISTORY
AND
PROJECTED OIL RECOVERIES
AS DEPENDENT ON
PRODUCTION METHOD

ADDITIONAL RECOVERIES OVER PRIMARY

		Increment	*Total*
Gas Injection	Inc.	*600,000 Bbls.*	*600,000 Bbls.*
Gas Injection + Water Flooding	Inc.	*+ 400,000 Bbls.*	*1,000,000 Bbls.*
Gas Injection + Water Flooding + Tertiary	Inc.	*+ 400,000 Bbls.*	*1,400,000 Bbls.*

1,000
500
400
300
200
100
80
60
40
30
20
10

25%/YEAR

GAS INJECTION + WATER FLOODING + TERTIARY

GAS INJECTION + WATER FLOODING

75%/YEAR PRIMARY

21%/YEAR

12% YEAR

F-M BY GAS INJECTION ONLY

ECONOMIC LIMIT ± 1 BOPD/WELL

'60 '61 '62 '63 '64 '65 '66 '67 '68 '69 '70 '71 '72 '73 '74 '75 '76 '77 '78 '79 '80 '81 '82 '83 '84 '85 '86 '87 '88 '89 '90 '91 '92 '93 '94 '95 '96 '97 '98 '99

INITIAL PLAN OF OPERATIONS
FIRST APPROXIMATE 18 MONTHS OF OPERATION

EAST PUERTO CHIQUITO MANCOS UNIT

JULY, 1980

In accordance with Section 10 of the Unit Agreement, Benson-Montin-Greer Drilling Corp., Unit Operator of the proposed East Puerto Chiquito Mancos Unit will submit concurrently with application for final approval an Initial Plan of Operation summarized as follows:

Commence immediately:

1. Convert to gas injection the following listed wells:
   C-2 NENW Section 28
   G-29 SWNE Section 29
   D-4 NWNW Section 4

2. Install gas gathering, gas lift, gas injection lines (fuel for the compressor will be gas produced from unit wells).

3. Install approximately 200 hp compressor.

4. Commence gas gathering, gas lift and gas injection.

Next, following above, or perhaps concurrently:

5. Convert to water injection the following wells:
   F-6 SENW Section 6
   H-25 SENE Section 25

6. Drill water injection wells at the following locations:
   NE/4 Section 7
   NW/4 Section 19

7. Provide water source well.

8. Install water gathering and distribution systems and commence water injection (probably with tertiary chemicals added).

9. Commencement of drilling of additional producing wells probably will be undertaken in this initial 18-month period of operation.