BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

APPLICATION OF CHACE OIL COMPANY, INC.
FOR DOWNHOLE COMMINGLING

The applicant, Chace Oil Company, Inc. is the owner and operator of the Chace Oil Company, Inc. Jicarilla Apache 15, Well No. 3.

The 15-3 well was completed in the Chacon Dakota Associated field September 1, 1977, and recompleted in an Undesignated Gallup group December 6, 1982.

Applicant requests authority for downhole commingling in the subject well of the Chacon Dakota Associated pool with the Undesignated Gallup pool.

The application is presented in the order that the requirements are set forth in the Oil Conservation Division's Rules and Regulations, dated March 1, 1982.

Rule: 303-C

Section 1:

(a) For wells involving oil zones:

1. Bottom perforation — Bbl/day Limit

   Chacon Dakota Associated - 7224 — 50

   Undesignated Gallup - 7074 — 50

   Neither zone is expected to exceed the Bbl/day limit.

2. Each of the zones requires artificial lift. Neither is capable of flowing.

3. "Neither zone produces more water than the combined oil limit as determined in Paragraph (1) above".

4. The fluids from both zones are compatible with the fluids from the other zones, and will not react with each other to cause damage in either of the reservoirs.

5. The total value of the crude will not be reduced by commingling.

6. Ownership of each zone is common.

7. The commingling will not jeopardize the efficiency of any future secondary recovery operations.

Section 2, Paragraphs A-J, 'For approval of downhole commingling':

(a) Chace Oil Company, Inc.
313 Washington, SE
Albuquerque, NM 87108

(b) The applicant is the owner and operator of the Chace Oil Company, Inc. Jicarilla 15, Well No. 3.

Location: Unit 'F' - 1850' FNL & 1850' FWL
Section 20, Township 23 North, Range 3 West
Sandoval County, New Mexico

Pools to be commingled:

Chacon Dakota Associated

Undesignated Gallup

(c) Plat indicating location of 15-3 well and offsetting location ownership. Attached p. 4.

(d) Gas Oil ratio form C-116, dated January 14, 1983. Attached p. 5.

(e) Production decline curve for Dakota production only. Attached p. 6.

(f) Estimated bottom hole pressure for each artificially lifted zone to be commingled, (PSIA):

Undesignated Gallup	2311
Chacon Dakota Associated	2521

(g) Fluid characteristics:

All zones produce oil of 40°-45° gravity with little or no water.

(h) Individual production of each zone would not increase or decrease the value of the production. The price per barrel of oil is the same for each producing horizon.

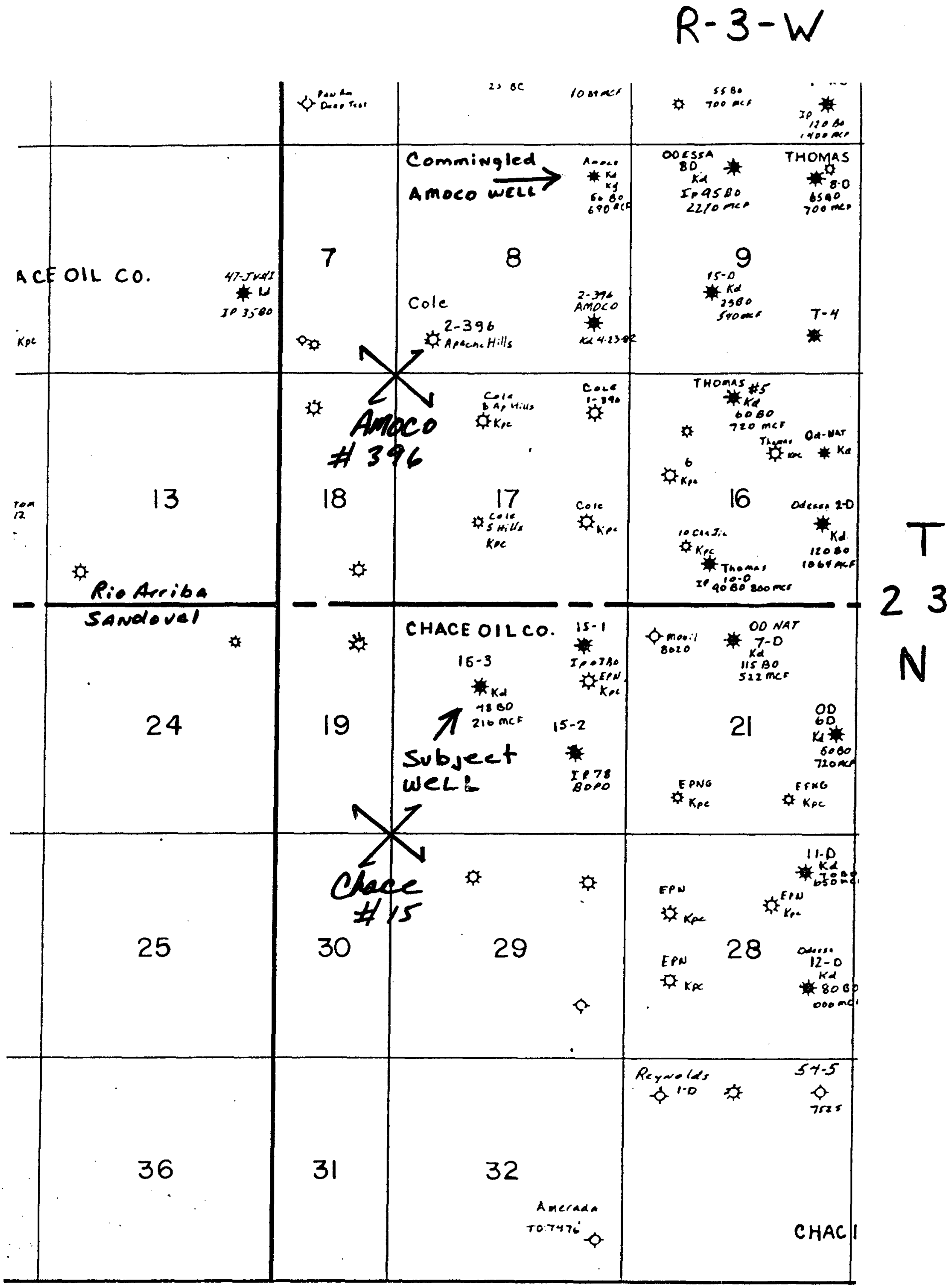
(i) Allocation of Production:

Estimated Oil and Gas:

	Oil	Gas
Dakota	60%	45%
Gallup	40%	55%

(j) Notification of proposed commingling:

The minerals Management service and all offset owners have been notified by attached letters. Waivers from offset operators will be forthcoming as a supplement to this application.


R-3-W
T 23 N
Commingled Amoco well
Amoco #396
Subject well
Chace #15
CHACE OIL CO.
Rio Arriba
Sandoval
Cole
2-396
Apache Hills
2-396 AMOCO
ODESSA
THOMAS
OD NAT
7-D
16-3
15-1
15-2
11-D
12-D
EPNG
Reynolds 1-D
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NEW MEXICO OIL CONSERVATION COMMISSION
GAS - OIL RATIO TESTS

C-116
Revised 1-1-65

Operator: Chace Oil Company, Inc.
Pool: Chacon Dakota Associated
County: Sandoval
Address: 313 Washington, SE, Albuquerque, NM 87108
TYPE OF TEST - (X): Scheduled [ ] Completion [ ] Special [XX]

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS - OIL RATIO CU.FT/BBL.
Chace Apache 15	3	F	20	23N	3W	1-14-83	F	2"	120	5	24	10	44	21	20	952

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

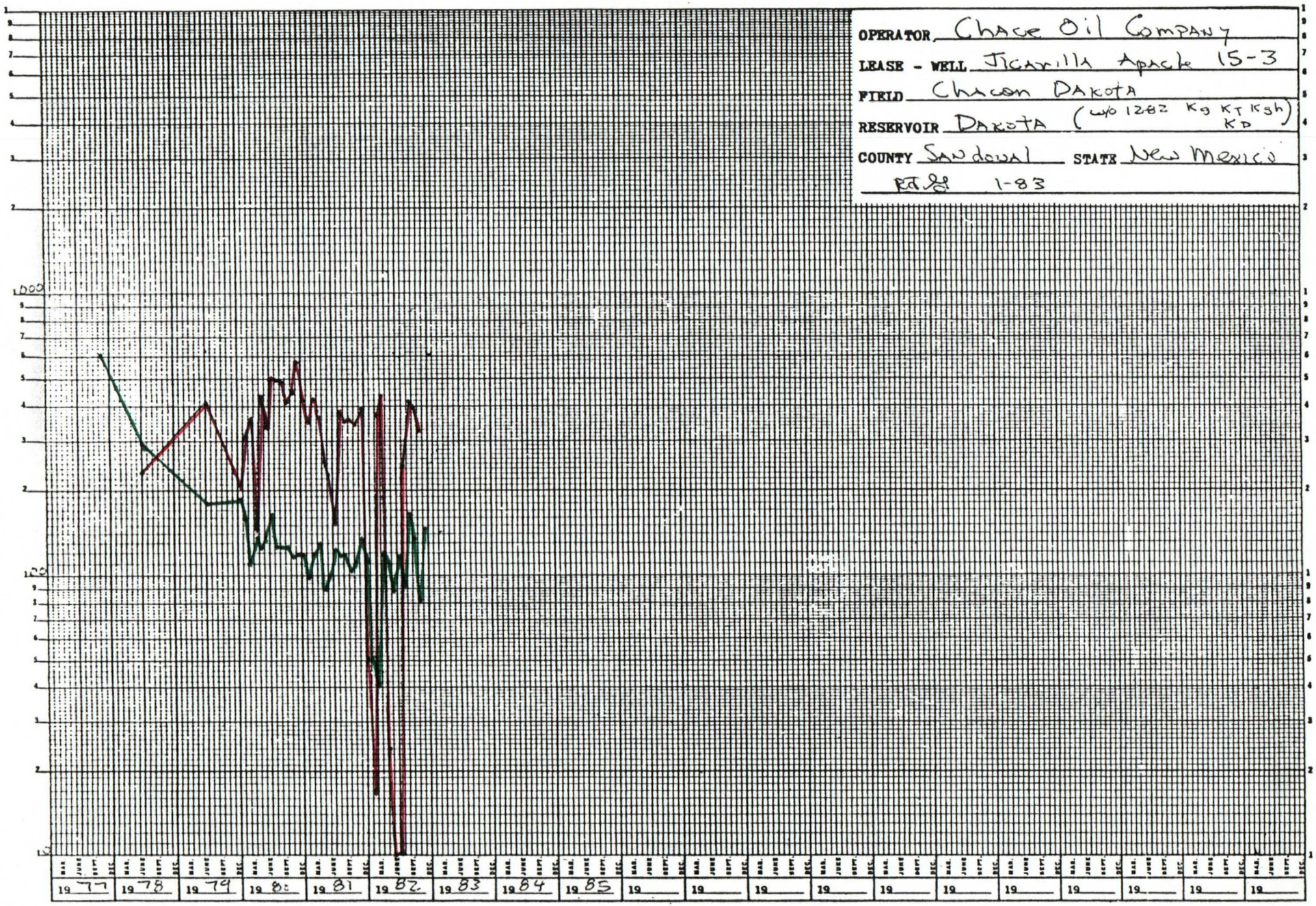
Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

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

B. W. Mills
(Signature)

President
(Title)

1-14-83


OPERATOR Chace Oil Company
LEASE - WELL Jicarilla Apache 15-3
FIELD Chacon DAKOTA
RESERVOIR DAKOTA (w/o 1282 Kg KT Kgh KD)
COUNTY Sandoval STATE New Mexico
1-83
Bbls Oil & MCF Gas
1000
100
10
1
MAR JUNE SEPT DEC
19 77
19 78
19 79
19 80
19 81
19 82
19 83
19 84
19 85
19

CHACE APACHE 15-3 PRODUCTION HISTORY

	Bbls/Oil		MCF/Gas	
Yearlys:		Mo. Avg.		Mo. Avg.
1977	2424	(606)	0	IP 9/77
1978	3575	(298)	2781	(230)
1979	2158	(180)	4908	(409)
1980:				
January	187		210	
February	158		310	
March	112		360	
April	136		148	
May	123		433	
June	134		335	
July	163		497	
August	125		492	
September	123		484	
October	122		408	
November	115		441	
December	118		568	
	1616		4686	

CHACE APACHE 15-3 PRODUCTION HISTORY

	Bbls/Oil	MCF/Gas
1981:		
January	119	418
February	97	350
March	120	421
April	130	366
May	89	259
June	97	229
July	124	155
August	117	378
September	118	347
October	104	358
November	111	342
December	133	393
1982:		
January	112	51
February	51	17
March	40	370
April	118	437
May	110	24
June	88	0
July	116	10
August	92	245
September	165	419
October	135	391
November	82	327
December	147	

CHACE OIL COMPANY, INC.

313 Washington S.E.

Albuquerque, New Mexico 87108

(505) 266-5562

CHACE APACHE 15-3 WELL

Location Unit "F" - 1850' NL & 1850'WL
Section 20, T23N - R3W
Sandoval County, NM

Elevation 7257 GR

Lease Jicarilla Apache Contract 15

Staked May 7, 1977 San Juan Engr. Co.

Location Completed June 21, 1977
D & R Construction Co.

Notification Send all notices to Cities Service Oil Company
Attention-Lou Bevactuq, Box 1919, Midland, TX 79701
and to Reynolds Mining Corp. Attention James K. Jones
P.O. Box 2346, Richmond, Virginia 22218

Estimated tops on 15-3 as compared with 15-2.

FORMATION	ESTIMATED TOPS Chace Apache 15-3	ACTUAL TOPS Chace Apache 15-1
Pictured Cliffs	2922'	2915'
Lewis Shale	3012'	3005'
Chacra	3274'	3267'
Cliff House	4467'	4460'
Point Lookout	5022'	5015'
Add LCM @ 6090'		
Gallup	6127'	6120'
Greenhorn	7067'	7060'
Dakota "A"	7159'	7152'
Dakota "B"	7259'	7255'
Dakota "D"	7357'	7350'
Burro Canyon	7433'	7426'
Total Depth	7550'	7525'

Coleman Drilling Co. - driller

8-2-77 Spudded 12:30 a.m. 8-2-77
Drilled 10 3/4" hole to 270'- 1° deviation. Ran 9 jts.
8 5/8" 23# surface casing to 238.55' Ground and 253.05' KB
Cemented with 200 sxs Class B cmt with 6% calcium chloride
Plug down at 8 am WOC.

8-2-77 Drilling at 1703' Bit #2
Mud wt. 9.6
Vis. 38
W.L. 12 cc's
Oil 10%

8-3-77 Drilling at 2657' Bit #3
Made trip at 2058'
Survey 1°
Mud wt. 8.9
Vis. 52
W.L. 5.8
Oil 10%

8-4-77 Tripping at 3500' Bit #4
Mud wt. 9.2
Vis. 35
W.L. 6.4
Oil 9%

8-7-77 Drilling at 5360'
Mud wt. 9
Viscosity 37
Water Loss 6cc
Oil 8%

8-8-77 Drilling at 5768'
Mud wt. 9.0
Vis. 40
Water loss 6 cc's
Oil 10%
Lost 150 bbls of mud @5475' adding LCM

8/10/77 8 am Drilling at 6230'
Bit #6, Mud weight 9#
Vis. 37
Water loss 6.8 cc's
Approx. 6% oil
Lost 250 bbls mud @ 6240. Gallup Formation

8-11-77 Drilling & reaming out bridges at 1800'
Total depth before lost circulation 6267'
M. Wt. 9.0
Vis. 5.5
W.L. 7.2 CC's
Oil 6%

8-12-77 Drilling 6466'
Mud wt. 8.8#
Vis. 46
W. L. 6 cc's
8% Oil

8-13-77 Drilling 6860'
Mud wt. 9#
Vis. 38
Water Loss 7 cc's
Oil 8%

8-14-77 Drilling 7085'
Bit #7
Mud wt. 9
Vis. 55
Water Loss 10
Oil 10%

8-15-77 Drilling 7256'
Mud Wt. 8.8
Vis. 39
Water Loss 10
Oil 8%

8-16-77 Reached total depth of 7525'
Waiting on the logger

8-17-77 Pulling out of hole after circulating to condition the hole.
Mud wt. 9.1
Vis. 58
Temp. 180° very gas cut

8-18-77 Ran 198 joints of 4½ 11.6# csg set at 7494.61. Float collar 7459.05. Stage collar 3102.75. First stage is 400 sacks 50-50 posmix 2% gel 2# salt 6¼# gilsonite per sack. Plug down 9am. 100 sacks 65-35 posmix 12% gel 6¼# gilsonite per sack. Plug down 12:30 p.m. 8/19

8-19-77 Waiting on completion rig.

8-30-77 Aztec completion rig. Moved in rigged up.

8-31-77 Drilled out stage collar @ 3102' cleaned out well to bottom of hole. Pulled tbg. Went in with perforating gun and perforated from 7210' - 7224' 2 shots per foot. Fracked with 81,396 gallons slick water and 80,000# 20- 40 sand. Avg. treating pressure 3250# @ 45 BPM. ISDP 1900# after 15 min. SIP was 1800#. Went in and set bridge plug at 7190'.
Perforated 7106' - 7140' and 7150' - 7158'.
Fracked with 115,500 gallons slick water and 116,000# 20-40 sand. Average treating pressure 3350# at 42 BPM.
ISDP 2200# after 15 min. 1800#. Shut in.

9-1-77 Went in and drilled out bridge plug 7190'. Cleaned out 90 sand in well bore. Came out with bit and ran tubing production string 2-3/8".

9-2-77 Moved NOWSCO - Nitrogen truck in and hooked up to casing side. Pressured up and had leak in donut. Hooked up to tubing and cleaned well out. Shut down.

9-3-77 Pulled tubing up and changed out donut. Reseated tubing and hooked up nitrogen truck. Built up casing pressure to 2400#. Well unloading water, gas and trace of oil. Shut in over-nite.

9-4-77 Opened well, flowed water, oil and gas 8 hrs.
2100# on csg and 10# tbg. Made 19 bbls oil and approx. 120 bbls water - gas increasing. Shut in.

15-3 Well

e 4

5-77

Flowed well 8 hrs. Again oil increasing along with gas.
No measurement reported.

15-3 RECOMPLETION REPORT:

12/6/82:

9:30 A. M. Rig up workover rig.

10:45 A. M. Start pulling 2 3/8" tubing.

2:30 P. M. Start in hole with bit and scraper. Hydro-test tubing in hole to 4000 PSI.

8:30 P. M. Rig down. Hydro-test truck couldn't test last 15 stands of tubing due to paraffin buildup in tubing.

9:20 P. M. Tag bottom with bit and scraper.

9:35 P. M. Come out of hole with bit and scraper.

11:25 P. M. Go in hole with packer.

12/7/82:

1:00 A. M. Set packer above Dakota perforation @ 7000'.

4:30 A. M. Pressure test casing to 1200 PSI @ 2 BPM.
Pressure dropped to 0 PSI with a rate of 3.5 BPM.

4:45 A. M. Pull 3 stands of tubing. Try to pressure test casing again.
Pumped 23 bbls. H_2O with 0 pressure. Shut down.

5:04 A. M. Pull 10 stands. Pressure test casing again.
Packer starts leaking. Set more weight down on it.
Pump on it again. Still have flow out tubing.

5:35 A. M. Shut tubing valve. Pump on it again. 3 BPM @ 800 PSI.
Shut down.
Pull 10 more stands of tubing.

5:54 A. M. Pump on it again. Have flow out tubing. Shut tubing in.
Keep pumping. 2 BPM @ 700 PSI. Shut down.

6:24 A. M. Pull 20 more stands of tubing. Set packer. Try to pressure test casing. Tubing starts flowing. Shut tubing valve.
Pump @ 2 BPM @ 800 PSI. Leaking by packer. Pull packer out of hole.
26 stands from bottom found a split joint of tubing.

8:25 A. M. Pressure test tubing with 56 stands in hole. 2000 PSI.

9:18 A. M. Load tubing with 16 bbls. H_2O.
Load back side with 4 bbls. H_2O. Pressure test casing to 3500 PSI. Bleed off to 500 PSI in 2 min.
Held 500 PSI for 6 min. without any leakoff.
Test to 3500 PSI again with a rate of 2 BPM.
Bleed off to 500 PSI in 1 min.

10:26 A. M. Pull 2 stands. Pressure test again. 2 BPM - 0 pressure.

10:45 A. M. Reset packer. Pump on it again. 2 BPM - 0 PSI.
No returns up tubing.

11:07 A. M. With 88 stands in hole, reset packer. Try to pressure test.
Pump 20 bbls. H_2O. 3.2 BPM @ 1300 PSI.
4.5 BPM @ 1800 PSI.
Shut down. Pressure dropped to 800 PSI in 10 sec.
Held 800 PSI for 2 min. No leak off.

11:35 A. M. Reset packer with 72 stands in hole. Try to pressure test.
Pressure tested to 3500 PSI. Held with no leak off.

11:56 A. M. Reset packer with 80 stands in hole. Pressure test casing.
While pumping, packer unseated @ 800 PSI.

12:05 P. M. Come out of hole with packer.

1:25 P. M. Out of hole with tubing and packer.
Go in hole with logging tools. Run gas spectrum and cement bond log from 7300' to 6000'.

4:29 P. M. Out of hole with logging tools. CBL showed good cement from 7300' to 5550'.

4:45 P. M. Go in hole with EZ drill bridge plug.

5:04 P. M. Set plug @ 7000'.

5:27 P. M. Test casing. Pumped 20 bbls. 4 BPM @ 1300 PSI.
Shut down. Go in hole with RTTS packer.

6:52 P. M. Close tubing testing valve in top of RTTS.
Pressure test tubing to 3500 PSI.

6:59 P. M. 79 stands of tubing in hole. Set packer @ 4935'. Try to pressure up on casing. Pumped into hole in casing at 2.5 BPM - 1100 PSI.
Test casing below packer. Casing held.

7:18 P. M. Pull 4 stands of tubing. Set packer. Test casing to 3500 PSI. It held.
Test below packer. Would not hold pressure.
Hole is between 75 and 79 stands of tubing.

7:43 P. M. Pull 5 more stands of tubing. Set packer @ 4373'.
Pressure up to 700 PSI on back side of tubing.

7:51 P. M. Establish rate @ 2 BPM 1300 PSI with 5 bbls. H_2O.

7:52 P. M. Start cement. 2¼ BPM 1325 PSI.

7:54 P. M. Increase rate to 3.0 BPM @ 1500 PSI.

7:58 P. M. 3.5 BPM @ 1350 PSI

8:01 P. M. 26 bbls. slurry mixed. Cement on formation, (4952').
1500 PSI, 3½ BPM.

8:05 P. M. 1600 PSI, 3½ BPM.

8:09 P. M. Start displacement. 2100 PSI, 3 BPM.
Mixed total of 50 bbls. of slurry
With 15 bbls. displacement in slow rate to ½ BPM, 900 PSI.

8:12 P. M. Shut down. Wait 5 min. Pump @ ½ BPM, 1300 PSI. 20 bbl. disp. away.

8:14 P. M. Shut down for 10 min. Then pump ½ BPM, 2100 PSI.
21 bbl. disp. away.

8:49 P. M. Release packer; reverse circulate tubing. Come out of hole with tubing and packer.
W. O. C. 12 hours.

12/8/82:

9:00 A. M. Tag cement with bit @ 71 stands. (4435').
Start drilling.

12:48 P. M. Drilled out cement in casing @ 4950'.

1:15 P. M. Pressure tested casing to 1500 PSI. Held pressure.

1:30 P. M. Come out of hole with tubing.
Go in hole with tubing and mill.

4:30 P. M. Tag EZ drill bridge plug @ 7000'.

7:00 P. M. Milled plug out, and pushed to bottom - 7314'.
Circulate hole for 1½ hours.

8:30 P. M. Start out of hole with tubing and mill.

9:48 P. M. Out of hole with tubing.
Go in hole with perforating guns to perforate Dakota "B", Dakota "A", and Greenhorn formations.

10:19 P. M. Perforate Dakota "B" zone @ 7150, 7152, 7154, 7156', 7158, 7210', 7212', 7214', 7216', 7218', 7220' - 4 SPF. 44 holes.

10:51 P. M. Perforate Dakota "A" zone @ 7106', 7108', 7110', 7112', 7114', 7119', 7123', 7125', 7127', 7129' - 4 SPF - 40 holes.

11:30 P. M. Perforate Greenhorn zone @ 7055', 7057', 7061', 7063', 7066', 7068', 7070', 7072', 7074' - 4 SPF - 36 holes.

12/9/82:

12:00 A. M. Go in hole with 2 7/8" tubing and RTTS packer.

4:45 A. M. On bottom with tubing and packer - 6515'.

6:15 A. M. Western pressure tests lines.

6:36 A. M. Try to circulate hole. Pressure went to 1000 PSI with no rate. Must have a plug in the tubing.

6:45 A. M. Try to pump on it again. Pressure started climbing. Took it to 3500 PSI. Shut down.

7:15 A. M. Pull 10 stands. Try to pump on it again. Pressure went up to 3500 PSI. Still have a plug in the tubing.

8:00 A. M. Run in tubing with sand line and sinker bar. Tag plug in tubing @ 3000'.

8:25 A. M. Pull tubing to find plug.
Found a joint of tubing with a rabbit stuck in it.

8:56 A. M. Go back in hole with tubing.

9:52 A. M. Tubing and packer @ 6500'. Circulate hole @ 2 BPM with 89 bbls.

10:40 A. M. Set packer @ 6500'.

10:55 A. M. Pressure up to 1000 PSI on back side.

DAKOTA FRAC

11:09 A. M. Break down. Broke @ 2000 PSI.
Establish rate - 16 BPM @ 3700 PSI.
ISIP = 1750 PSI.

11:14 A. M. Start acid. Drop 8 balls/bbl in 9 bbls. of acid.
1800 PSI @ 3.0 BPM
Drop 8 balls/bbl in 9 bbls.
Run 10 bbl spacer
Drop 6 balls/bbl in 58 bbls. 3000 PSI @ 9 BPM.

11:23 A. M. Balls on formation. 9 BPM @ 2670 PSI.
Ball action 10 BPM @ 2600 PSI.

11:32 A. M. Surge balls off. Packer lets loose. Casing pressure goes to 1400 PSI. Bleed casing pressure off.
Casing @ 0. Tubing @ 850 PSI.

12:09 P. M. Pressure up to 1000 PSI on back side.

12:57 P. M. Start pad. 3500 PSI 14.5 BPM

1:07 P. M. 3400 PSI 14.0 BPM

1:32 P. M. 3500 PSI 14.0 BPM

1:39 P. M. 595 bbls. pad away.
Start 1/2 lb/gal sand 3450 PSI 14.0 BPM

1:42 P. M. 1/2 lb/gal sand
on formation 3400 PSI 14.0 BPM
Checked back side pressure. Showed 1800 PSI.
Bleed pressure back to 1500. Climbs to 1900 PSI.
Cut sand. 2500 lbs. sand in formation.

1:47 P. M. Go to flush. Slow rate to 8 BPM, 2500 PSI.
Casing pressure stabilizer @ 1800 PSI.

1:56 P. M. Flush away. 54 bbls. Shut down.
ISIP = 1750 PSI.

2:50 P. M. With 1000 PSI on tubing and casing, bleed tubing pressure off.

3:10 P. M. Unseat packer. Come out of hole.

4:50 P. M. Come out of hole with tubing and packer.
Packer appeared to be in new condition.

5:19 P. M. Go in hole with different packer, tightening every joint of tubing as we go in the hole.

6:42 P. M. @ 6500' with tubing and packer.
Set packer.

6:51 P. M. Pressure up to 1000 PSI on back side.

DAKOTA RE-FRAC

7:08 P. M.	Start pad	14 BPM	3500 PSI
		16 BPM	3450 PSI
7:25 P. M.	Start 1/2 lb/gal sand	15 BPM	3500 PSI
7:28 P. M.	1/2 lb/gal sand on formation	15 BPM	3400 PSI
7:37 P. M.	Start 1 lb/gal sand	15 BPM	3400 PSI
7:41 P. M.	1 lb/gal sand on formation	15 BPM	3250 PSI
		15 BPM	3300 PSI
7:46 P. M.		15 BPM	3300 PSI
7:52 P. M.		15 BPM	3350 PSI
7:55 P. M.		15 BPM	3400 PSI
8:04 P. M.		15 BPM	3500 PSI
8:19 P. M.		15 BPM	3500 PSI
8:28 P. M.		15 BPM	3400 PSI
8:45 P. M.		15 BPM	3400 PSI
9:02 P. M.		15 BPM	3400 PSI
9:14 P. M.		15 BPM	3600 PSI
9:16 P. M.		15 BPM	3500 PSI

9:18 P. M. 15 BPM 3600 PSI

9:23 P. M. 15 BPM 3700 PSI

9:30 P. M. 14 BPM 3700 PSI

9:35 P. M. Blender went down
ISIP = 1950 PSI
Try to flush without blender on line.
Got 80,000 lbs. sand in pipe and formation.

9:51 P. M. Blender on line. 8 BPM, 3300 PSI on flush. Shut down. Flush away.

12/10/82:

12:30 A. M. Tubing pressure down to 900 PSI.
Open tubing up. Making sand.

2:15 A. M. Well still flowing gas-cut water.
Still making sand.

4:00 A. M. Rig broke drive chain while pulling to release packer.

11:00 A. M. Rig is fixed.
Worked packer and tubing string between string wt. and 40,000 lbs total. Came free from sand pack after 15 min. of working it.

1:20 P. M. Came out of hole with tubing and packer.
Rig up Western to displace capacity of casing.

1:29 P. M. Start pumping. 3 BPM 1000 PSI

2:56 P. M. Shut down. Casing displaced.

3:11 P. M. Go in hole with EZ drill B. P.

3:44 P. M. Set B. P. @ 7030'.

4:00 P. M. Pressure test plug to 1500 PSI.
Held pressure for 2½ min. without any leak off.
Bleed pressure off.

4:22 P. M. Perforate Tocito formation @ 6876', 6874', 6872', 6870', 6868', 6866', 6864', 6854', 6852', 6849' 6846' - 4 SPF.

4:52 P. M. Perforate Tocito formation @ 6827', 6825', 6821', 6805', 6803', 6801', 6783', 6776', 6773', 6767', 6759' - 4 SPF
Total 88 holes

TOCITO FRAC:

5:25 P. M. Go in hole with RTTS packer.

6:57 P. M. Set packer @ 6250'.

7:07 P. M. Pressure up on back side to 1000 PSI.

7:15 P. M. Break down. Broke @ 2300 PSI.

Establish rate 3400 PSI @ 9 BPM
ISIP = 1700 PSI

7:22 P. M.	Start acid with 8 balls/bbl	8 BPM	3000 PSI
	Start water with 8 balls/bbl	8 BPM	3000 PSI
	Start 10 bbl spacer Water with 4 balls/bbl	8 BPM	2700 PSI
7:30 P. M.	Balls on formation	10 BPM	2600 PSI
7:33 P. M.	Second set of balls on formation Balled off @ 3400 PSI	10 BPM	3000 PSI
7:37 P. M.	Surge balls off. Let balls fall to bottom of hole. Wait 20 minutes.		

TOCITO FRAC

7:58 P. M.	Start pad.	13 BPM @	3450 PSI
8:01 P. M.		14.5 BPM @	3450 PSI
8:06 P. M.		13.5 BPM @	3400 PSI
8:07 P. M.		14.0 BPM @	3500 PSI
8:17 P. M.		13.0 BPM @	3450 PSI
8:23 P. M.	Start 1/2 lb/gal sand	13.0 BPM @	3350 PSI
8:26 P. M.	1/2 lb/gal sand on formation	13.0 BPM @	3300 PSI
8:33 P. M.		13.0 BPM @	3400 PSI
8:39 P. M.		12.0 BPM @	3450 PSI
8:41 P. M.		12.5 BPM @	3600 PSI
8:44 P. M.	on 1/2 lb/gal sand	12.0 BPM @	3650 PSI
8:45 P. M.		12.5 BPM @	3700 PSI
8:47 P. M.	Reach 3750 - Slow rate to	10.0 BPM @	3300 PSI
8:48 P. M.		10.0 BPM @	3400 PSI
8:49 P. M.		10.0 BPM @	3450 PSI
8:50 P. M.		10.0 BPM @	3500 PSI
8:52 P. M.	on 1/2 lb/gal sand	10.0 BPM @	3550 PSI
8:56 P. M.		10.0 BPM @	3600 PSI
			3650 PSI
8:57 P. M.	Slow rate to	8.0 BPM @	3750 PSI (pressure)

		8.0 BPM @ 3550 PSI
8:58 P. M.		8.0 BPM @ 3600 PSI
8:59 P. M.	Have break. 8 BPM - Pressure broke to 3450 PSI	
9:01 P. M.		8.0 BPM @ 3450 PSI
9:04 P. M.		8.0 BPM @ 3450 PSI
9:07 P. M.		8.0 BPM @ 3550 PSI
9:13 P. M.		8.0 BPM @ 3600 PSI
	Slow rate 6 BPM - Pressure went to	3800 PSI
9:15 P. M.	Cut sand @ 852 bbls. slurry	
9:16 P. M.		5.0 BPM @ 3500 PSI
9:17 P. M.	On flush	5.0 BPM @ 3550 PSI
	Shut down	
	29 bbls. flush away	
9:29 P. M.	ISIP = 2100 PSI - 15 min. shut in 2000 PSI	
	Total sand: 11,000 lbs.	
11:00 P. M.	Flow well back through 1/2 inch choke.	

12/11/82:

4:30 A. M.	Remove 1/2" choke. Have show of oil and gas to surface.	
	Unseat RTTS packer.	
6:24 A. M.	Circulate hole down tubing with 83 bbls. Fr H_2O	
		3.0 BPM @ 650 PSI
7:00 A. M.	Come out of hole with tubing and packer.	
8:14 A. M.	Out of hole with tubing and packer.	
	Rig up Bluejet to set retrievable bridge plug.	
8:35 A. M.	Go in hole with retrievable bridge plug.	
9:11 A. M.	Set plug @ 6300'.	
9.28 A. M.	Test plug to 1500 PSI. Held pressure for 5 minutes with no bleed off.	
9:38 A. M.	Go in hole with perforating gun.	
	Hit something in hole @ 540'.	
	Come out of hole with gun.	
9:45 A. M.	Go in hole with junk basket. Run to 6250'.	
10:13 A. M.	Come out of hole with junk basket. Picked up 8 frac balls that Western must have pumped in casing while pressure testing bridge plug.	

10:20 A. M. Go in hole with perforating gun.

10:29 A. M. Perforate Gallup formation @ 6215', 6213', 6208', 6206', 6204', 6200', 6193', 6191', 6189', 6187', 6175'. 4 SPF - 44 holes

10:44 A. M. Go in hole with perforating gun.

10:56 A. M. Perforate Gallup formation @ 6173', 6171', 6169', 6167', 6165', 6163', 6085', 6081', 6073', 6054', 6052' - 4 SPF - 44 holes

11:25 A. M. Go in hole with RTTS packer and tubing.

12:35 P. M. Set packer @ 5700'.

12:50 P. M. Pressure up to 1000 PSI on casing.

GALLUP FRAC:

12:58 P. M. Break down. Broke @ 1300 PSI and 3200 PSI
Establish rate 18 BPM @ 3200 PSI
ISIP = 300 PSI

1:01 P. M. Start acid (7½% Hcl) - 6 bbls. with 6 balls/bbl
Run 5 bbls. H_2O with 6 balls/bbl - 6 BPM @ 1000 PSI
Run 10 bbl H_2O spacer 6 BPM @ 1000 PSI
Run 5 bbl H_2O with 6 balls/bbl 12 BPM @ 1300 PSI
Total: 96 balls
Increase rate to 10 BPM @ 2500 PSI
Have ball action 9 BPM @ 2600 PSI
Balls hit 2 BPM @ 3700 PSI

1:15 P. M. Surge balls off perforations.
Wait 20 minutes for balls to fall.

1:38 P. M. Start pad 22 BPM @ 3400 PSI
24 BPM @ 2900 PSI
24.5 BPM @ 3200 PSI

1:47 P. M. 25 BPM @ 3200 PSI

1:51 P. M. 310 bbls pad away
Start 1/2 lb/gal sand 25 BPM @ 3200 PSI

1:53 P. M. 1/2 lb/gal sand on formation 25 BPM @ 3200 PSI
24 BPM @ 3400 PSI
24.5 BPM @ 3300 PSI

2:01 P. M. Start 1 lb/gal sand 25 BPM @ 3400 PSI

2:03 P. M. 1 lb/gal sand on formation 25 BPM @ 3300 PSI

2:07 P. M. 25 BPM @ 3400 PSI
24 BPM @ 3500 PSI

2:16 P. M. 24 BPM @ 3600 PSI

2:20 P. M. 23 BPM @ 3800 PSI

2:21 P. M.	On 1 lb/gal sand	24 BPM @ 3700 PSI
2:25 P. M.		23 BPM @ 3800 PSI
2:28 P. M.	Pump starts leaking-Shut it down. With 1 pump on line, rate falls to	17 BPM @ 2400 PSI
2:42 P. M.		16 BPM @ 2600 PSI 13 BPM @ 2600 PSI
3:00 P. M.	On 1 lb/gal sand	13 BPM @ 2600 PSI
3:06 P. M.		13 BPM @ 3000 PSI
3:21 P. M.	Start 1 1/2 lb/gal sand	13 BPM @ 2700 PSI
3:25 P. M.	1 1/2 lb/gal sand on formation	13 BPM @ 2600 PSI
3:30 P. M.	Pressure went to 4500 PSI. Shut down. ISIP = 200 PSI 10 min shut in - 100 PSI 65,000 lbs sand in 2021 bbls. slurry pumped Shut well in for 1.5 hours. Tubing pressure falls to 50 PSI.	
5:15 P. M.	Flow well back. Have show of oil and gas during flow back.	
8:15 P. M.	Flow slows down enough to pull tubing and packer.	
9:45 P. M.	Go in hole with retrieving head and tubing to retrieve bridge plug @ 6300'. Tag sand @ 6176'. Start to circulate sand out of casing. Circulate down to 6180'. Gallup formation starts flowing H_2O and sand. Sand covers retrieving head.	

12/12/82:

Tubing is stuck in hole.
Cut off 150' of tubing.
Go in hole with wash-over pipe.
Wash over tubing down to retrieving head. Come out of hole with washover pipe.

12/13/82:

Out of hole with washover pipe. Go in hole with overshot to latch on tubing. Get ahold of tubing. Move it 5-6' up hole. Overshot grip lets go.

12/14/82: Come out of hole with 24" overshot. Go in hole with 36" overshot.
Get back on tubing with 36" overshot. Jar stuck tubing 50' up hole . Tubing becomes unstuck. Come out of hole with tubing.

12/15/82: Retrieve bridge plug @ 6300'. Mill out EZ Drill plug @ 7030'. Clean out to T. D. - 7314'. Land tubing @ 7243'.

CHACE OIL COMPANY, INC.

313 Washington S.E.

Albuquerque, New Mexico 87108

(505) 266-5562

January 10, 1983

Mr. John S. Keller
U. S. Dept of the Interior
Bureau of Land Management
P. O Drawer 600
Farmington, NM 87401

Re: Commingling of Well 15-3, Chacon Dakota Associated Pool

Dear Mr. Keller:

This is to notify the Bureau of Land Management that Chace Oil Company, Inc. has applied under the Oil Conservation Commission rule 303-C for authority to commingle the Gallup, Tocito, Greenhorn, and Dakota production.

The application is submitted for the Chace Oil Company, Inc. 15-3 well in Unit 'F', of Section 20, T23N,R3W, Sandoval County, New Mexico.

Very truly yours,

Ross Easterling

Ross Easterling
Landman

RE/ss

CHACE OIL COMPANY, INC.
313 Washington S.E.
Albuquerque, New Mexico 87108
(505) 266-5562

January 13, 1983

Amoco Production Company
Amoco Building
Denver, Colorado 80202

Attention: Laura H. Greeley

Re: Chace Apache 15-3 Well
Unit 'F' - 1850' FNL & 1850' FWL
Section 20, T23N,R3W
Sandoval County, New Mexico

Gentlemen:

By executing this Waiver in the space provided below, Amoco Production Company, as offset operator, will indicate that they are not adverse to downhole commingling of Gallup production with the Chacon Dakota in the above referenced well.

Very truly yours,

Ross Easterling

Ross Easterling
Landman

RE/ss

WAIVER APPROVED

_____
AMOCO PRODUCTION COMPANY

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. 7754
Order No. R-7178

APPLICATION OF CHACE OIL COMPANY,
INC. FOR DOWNHOLE COMMINGLING,
SANDOVAL COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on December 16, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 5th day of January, 1983, 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, Chace Oil Company, Inc., is the owner and operator of the Chace Apache 15 Well No. 2, located in Unit I of Section 20, Township 23 North, Range 3 West, NMPM, Sandoval County, New Mexico.

(3) That the applicant seeks authority to commingle Gallup and Dakota production within the wellbore of the above-described well.

(4) That from the Gallup zone, the subject well is capable of low marginal production only.

(5) That from the Dakota zone, the subject well is capable of low marginal production only.

(6) That the proposed commingling may result in the recovery of additional hydrocarbons from each of the subject pools, thereby preventing waste, and will not violate correlative rights.

(7) That the reservoir characteristics of each of the subject zones are such that underground waste would not be caused by the proposed commingling provided that the well is not shut-in for an extended period.

(8) That to afford the Division the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator should notify the Aztec district office of the Division any time the subject well is shut-in for 7 consecutive days.

(9) That in order to allocate the commingled production to each of the commingled zones in the wells, applicant should consult with the supervisor of the Aztec district office of the Division and determine an allocation formula for each of the production zones.

IT IS THEREFORE ORDERED:

(1) That the applicant, Chace Oil Company, Inc., is hereby authorized to commingle Gallup and Dakota production within the wellbore of the Chace Apache 15 Well No. 2, located in Unit I of Section 20, Township 23 North, Range 3 West, NMPM, Sandoval County, New Mexico.

(2) That the applicant shall consult with the Supervisor of the Aztec district office of the Division and determine an allocation formula for the allocation of production to each zone in each of the subject wells.

(3) That the operator of the subject well shall immediately notify the Division's Aztec district office any time the well has been shut-in for 7 consecutive days and shall concurrently present, to the Division, a plan for remedial action.

(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
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

S E A L

CHACE OIL COMPANY, INC.

313 Washington S.E.

Albuquerque, New Mexico 87108

(505) 266-5562

January 21, 1983

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

Re: Application for approval of downhole commingling
Chace Apache 15-3 Well
Unit 'F' - 1850' FNL and 1850' FWL
Section 20, T23N,R3W
Sandoval County, New Mexico

Gentlemen:

Please refer to my letter dated January 19, 1983, regarding the above referenced application.

Enclosed is the waiver, or waivers, as a supplement to that application, necessary to dispense with the 20 day waiting period, referred to in Paragraph No. 3 of the Oil Conservation Division's Rule 303-C.

A copy has also been sent to the Aztec District Office.

Sincerely,

Ross Easterling
Landman

RE/ss

CHACE OIL COMPANY, INC.
313 Washington S.E.
Albuquerque, New Mexico 87108
(505) 266-5562

January 13, 1983

Amoco Production Company
Amoco Building
Denver, Colorado 80202

Attention: Laura H. Greeley

Re: Chace Apache 15-3 Well
Unit 'F' - 1850' FNL & 1850' FWL
Section 20, T23N,R3W
Sandoval County, New Mexico

Gentlemen:

By executing this Waiver in the space provided below, Amoco Production Company, as offset operator, will indicate that they are not adverse to downhole commingling of Gallup production with the Chacon Dakota in the above referenced well.

Very truly yours,

Ross Easterling

Ross Easterling
Landman

RE/ss

WAIVER APPROVED

R.B. Giles

AMOCO PRODUCTION COMPANY

1/18/83

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

March 11, 1983

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Ron Gordon, Geologist
Ross Easterling, Landman
Chace Oil Company, Inc.
313 Washington, S.E.
Albuquerque, New Mexico 87108

RE: Allocation of Production Study for R-Order No's: DHC-388, 389, 393, 394, and R-7178

Gentlemen:

Your "Allocation of Production Study" for the above referenced orders, has been reviewed and has been found satisfactory with this office. Production is therefore allocated, as found in your study, according to the following formula;

WELL		ORDER NO.	GALLUP	DAKOTA
#1-47-JV		DHC-388		
	Oil		25%	75%
	Gas		44%	56%
Chace Apache 15-2		R-7178		
	Oil		21%	79%
	Gas		44%	56%
Chace Apache 54-3		DHC-389		
	Oil		21%	79%
	Gas		44%	56%
Chace Apache 54-10		DHC-393		
	Oil		27%	73%
	Gas		44%	56%
Chace Apache 54-11		DHC-394		
	Oil		18%	82%
	Gas		44%	56%

If you have any questions concerning this matter, contact Gilbert P. Quintana at 827-5807.

Sincerely,

JOE D. RAMEY,
Director

JDR/GPQ/dv

Enc.

cc: Aztec District Office
DHC-388,389,393,394, and
R-7178

DHC-389

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

TONEY ANAYA
GOVERNOR

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

March 22, 1983

Mr. Gilbert Quintana
Oil Conservation Division
P. O. Box 2088
Santa Fe NM 87501

Re: Chace Oil Company--Downhole Commingled Wells

Dear Gilbert;

After reviewing the recommended allocations for the referenced wells from the letter of February 17, 1983, I think that they are acceptable as shown on page two of that letter.

If you have any questions please call this office.

Yours truly,

Frank T. Chavez
District Supervisor

FTC:gc

Enc.

The allocation of production formula for the two zones is presented below for each well:

Well:		Gallup:	Dakota:
#1-47-JV			
	Oil	25%	75%
	Gas	TSTM	TSTM
Chace Apache 15-2			
	Oil	21%	79%
	Gas	44%	56%
Chace Apache 15-3			
	Oil	21%	79%
	Gas	44%	56%
Chace Apache 54-10			
	Oil	27%	73%
	Gas	44%	56%
Chace Apache 54-11			
	Oil	18%	82%
	Gas	44%	56%

This report is submitted in compliance with the conditions set forth in the Oil Conservation Commission Orders, (referenced above), which grant Chace Oil Company, Inc. approval for downhole commingling in the subject wells.

Very truly yours,

Ron Gordon
Geologist

Ross Easterling
Landman

RE/ss

Memo

From
Gilbert P. Quintana
Petroleum Engineer

To File; Order Nos; DHC-388, 389, 393, 394, and R-7178

Allocation Formula Calculations

Sufficient producing trends to establish a consistent and/or reliable allocation formula were not yet available. Therefore allocation of liquid production was based on volumetric reserves estimates. Gas allocation was based on data from Amoco's offset well in the NE/4/NE/4 Section 8, T23N, R3W, Sandoval County.

Dakota Test 598 MCF ≃ 56%
Gallup Test 469 MCF ≃ 44%
1069 MCF

Under the circumstances of inconclusive data this was the simplest and most reliable method.

Gilbert Quintana
3/10/83

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

TABLE OF CONTENTS

ALLOCATION OF PRODUCTION STUDY

CHACE OIL COMPANY, INC.

313 Washington S.E.

Albuquerque, New Mexico 87108

(505) 266-5562

February 17, 1983

Mr. Gilbert Quintana
Oil Conservation Division
P. O. Box 2088
Santa Fe, NM 87501

Mr. Frank T. Chavez
Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

Gentlemen:

The following report is submitted to document and present an allocation of production formula for five (5) commingled wells owned and operated by Chace Oil Company, Inc.

The subject wells are completed in the Chacon Dakota Associated Pool, as well as an Undesignated Gallup Member or Members. Descriptions of the well locations and Conservation Division Order Numbers are listed below:

Well:	Description:	Order No.:
#1-47-JV	I-12-23N-04W	DHC-388
Chace Apache 15-2	I-20-23N-04W	R-7178
Chace Apache 15-3	F-20-23N-03W	DHC-389
Chace Apache 54-10	I- 3-22N-03W	DHC-393
Chace Apache 54-11	K- 3-22N-03W	DHC-394

Evaluation of the production histories of the offset wells and the subject wells, nearby test data, and our (in house) reserves study of the producing zones has enabled us to conclude that the Gallup and Dakota zones are capable of low to marginal production only, and that allocation of production attributable to each zone has been derived by reserve determination for oil and test data for gas.

The allocation of production formula for the two zones is presented below for each well:

Well:		Gallup:	Dakota:
#1-47-JV			
	Oil	25%	75%
	Gas	TSTM	TSTM
Chace Apache 15-2			
	Oil	21%	79%
	Gas	44%	56%
Chace Apache 15-3			
	Oil	21%	79%
	Gas	44%	56%
Chace Apache 54-10			
	Oil	27%	73%
	Gas	44%	56%
Chace Apache 54-11			
	Oil	18%	82%
	Gas	44%	56%

This report is submitted in compliance with the conditions set forth in the Oil Conservation Commission Orders, (referenced above), which grant Chace Oil Company, Inc. approval for downhole commingling in the subject wells.

Very truly yours,

Ron Gordon
Geologist

Ross Easterling
Landman

RE/ss

PRODUCTION HISTORY

Field: Chacon

Well: Chace Apache 15-2

Initial Production: 8/1977

Zones Completed: Dakota

Previous Year, (1982), by Month:

	Oil/Bbls.	Gas/MCF
January	8	304
February	23	171
March	0	0
April	0	0
May	0	0
June	0	0
July	0	0
August	0	0
September	129	12
October	13	26
November	See other sheet	
December	See other sheet	
Total:	173	513

Historical by Year:

	Oil/Bbls.	Gas/MCF
1981	1612	3614
1980	1706	5392
1979	2583	10190
1978	5582	8299
1977	4608	4212
Total Cumulative Prod.:	16264 Bbls.	32220 MCF

Remarks: This is production prior to workover of 11/1982.

PRODUCTION HISTORY

Field: Chacon

Well: Chace Apache 15-2

Date of Workover: 11/8/82

Zones Recompleted: Dakota, Greenhorn, Tocito, Gallup

Production, (by month), since workover:

	Oil/Bbls.	Gas/MCF
November	623	318
December	266	33
Total:	889	351

PRODUCTION HISTORY

Field: Chacon

Well: Chace Apache 15-3

Initial Production: 9/1977

Zones Completed: Dakota

Previous Year, (1982), by month:

	Oil/Bbls.	Gas/MCF
January	112	51
February	51	17
March	40	370
April	118	437
May	110	24
June	88	0
July	116	10
August	92	245
September	165	419
October	135	391
November	82	327
December	See other sheet	
Total:	1109	2291

Historical By Year:

	Oil/Bbls.	Gas/MCF
1981	1359	4015
1980	1616	4686
1979	2158	4908
1978	3575	2761
1977	2424	0
Total Cumulative Prod.:	12241 Bbls.	18661 MCF

Remarks: This is production prior to workover of 12/1982.

PRODUCTION HISTORY

Field: Chacon

Well: Chace Apache 15-3

Date of Workover: 12/6/82

Zones Recompleted: Dakota, Greenhorn, Tocito, Gallup

Production, (by month), since workover:

	Oil/Bbls.	Gas/MCF
December	133	393

PRODUCTION HISTORY

Field: Chacon

Well: Chace Apache 47-1-JV

Initial Production: 2/1982

Zones Completed: Greenhorn, Dakota

Production History:

	Oil/Bbls.	Gas/MCF
1982		
January		0
February	163	0
March	105	0
April	434	0
May	184	0
June	146	0
July	126	0
August	108	0
September	0	0
October	0	0
November	0	0
December	See other sheet	
Total:	1266	0

Remarks: This is production prior to workover of 12/1982.

PRODUCTION HISTORY

Field: Chacon

Well: Chace Apache 41-1-JV

Date of Workover: 12/11/82

Zones Recompleted: Dakota, Greenhorn, Tocito, Gallup

Production History, (by month), since workover:

	Oil/Bbls.	Gas/MCF
December	1056	0

PRODUCTION HISTORY

Field: Chacon

Well: Chace Apache 54-10

Initial Production: 11/1982

Zones Completed: Dakota, Greenhorn, Tocito

Production History:

	Oil/Bbls.	Gas/MCF
November	1901	0
December	1424	0
Total:	3325	0

PRODUCTION HISTORY

Field: Chacon

Well: Chace Apache 54-11

Initial Production: 7/1982

Zones Completed: Dakota, Tocito

Production History:

	Oil/Bbls.	Gas/MCF
July	234	0
August	1106	0
September	581	0
October	620	1787
November	627	463
December	536	161
Total:	3704	2411

CHACE OIL COMPANY
RESERVE DATA & OIL RESERVES
VOLUMES @ 14.73 PSIA & 60° F.

AREA Chacon '15' area COUNTY Sandoval

STATE New Mexico DATE Reserves as of 1-1-83

Geological Age Reservoir Name	Gallup Assoc. 15-2	Dakota 15-2	Gall.Assoc. 15-3	Dakota 15-3		
Average Depth						
Limiting Contact						
No. Wells Producing						
Productive Area, Acres	40	160	40	160		
Average Net Sand, Feet	48	49	55	56		
Reservoir Volume, Ac. Ft.	1920	7840	2200	8960		
Average Porosity, %	6.0	8.0	6.0	8.0		
Average Connate Water, %	60	50	60	50		
Liquid Specific Gravity, API						
Formation Volume Factor	1.160	2.105	1.160	2.105		
Orig. Oil in Place, Bbl./Ac. Ft.	160	147	160	147		
Orig. Oil in Place Reservoir, Bbls.	307200	1152480	352000	1317120		
Oil Recovery Factor, %	5	5	5	5		
Orig. Recoverable Oil, Bbls.	15360	57624	17600	65856		
Cum. Oil Production, Bbls.	187	16966	28	12346		
Remaining Rec. Oil, Bbls.	15173	40658	17572	53510		
% of O.R.R. attributable to each formation	21%	79%	21%	79%		

CHACE OIL COMPANY
RESERVE DATA & OIL RESERVES
VOLUMES @ 14.73 PSIA & 60° F.

AREA Chacon 47-1 area COUNTY Rio Arriba

STATE New Mexico DATE Reserves of 1-1-83

Geological Age						
Reservoir Name	Gallup	Assoc. 47-1-JV	Dakota 47-1-JV			
Average Depth						
Limiting Contact						
No. Wells Producing						
Productive Area, Acres		40	160			
Average Net Sand, Feet		52	24			
Reservoir Volume, Ac. Ft.		2080	3840			
Average Porosity, %		6.0	8.0			
Average Connate Water, %		60	50			
Liquid Specific Gravity, API						
Formation Volume Factor		1.000	1.000			
Orig. Oil in Place, Bbl./Ac. Ft.		186	310			
Orig. Oil in Place Reservoir, Bbls.		386880	1190400			
Oil Recovery Factor, %		6	6			
Orig. Recoverable Oil, Bbls.		23213	71424			
Cum. Oil Production, Bbls.		264	2058			
Remaining Rec. Oil, Bbls.		22949	69366			
% of O.R.R. attributable to each formation		25%	75%			

CHACE OIL COMPANY
RESERVE DATA & OIL RESERVES
VOLUMES @ 14.73 PSIA & 60° F.

AREA Chacon '54' area COUNTY Sandoval

STATE New Mexico DATE Reserves as of 1-1-83

Geological Age						
Reservoir Name	Gallup Assoc. 54-10	Dakota 54-10	Gal.Assoc. 54-11	Dakota 54-11		
Average Depth						
Limiting Contact						
No. Wells Producing						
Productive Area, Acres	40	160	40	160		
Average Net Sand, Feet	30	22	11	14		
Reservoir Volume, Ac. Ft.	1200	3520	440	2240		
Average Porosity, %	6.0	8.0	6.0	8.0		
Average Connate Water, %	60	50	60	50		
Liquid Specific Gravity, API						
Formation Volume Factor	1.160	2.105	1.160	2.105		
Orig. Oil in Place, Bbl./Ac. Ft.	160	147	160	147		
Orig. Oil in Place Reservoir, Bbls.	192000	517440	70400	329280		
Oil Recovery Factor, %	10	10	10	10		
Orig. Recoverable Oil, Bbls.	19200	51744	7040	32928		
Cum. Oil Production, Bbls.	898	2427	667	3037		
Remaining Rec. Oil, Bbls.	18302	49317	6373	29891		
% of O.R.R. attributable to each formation	27%	73%	18%	82%		

Chace Oil Company, Inc.
313 Washington, S. E.
Albuquerque, NM 87108

Commingling Study

PRODUCTION - OFFSETTING WELLS

Chace Well	Offsetting Well	Location	Date I. P.	1-1-83 Cum. Prod.	Zones Completed
47-1-JV	None				
15-2	Chace 15-1	NE,NE Sec. 20 T23N,R4W	4/1977	17,931 B. O. 106,980 MCF	Dakota
15-3	As above				
54-10	Chace 54-1	NE,NE Sec. 3 T22N,R3W	11/1978	9,558 B. O. 84,276 MCF	Dakota
54-11	Chace 54-9	NE,NW Sec. 3 T22N,R3W	8/1981	9,009 B. O. 4,854 MCF	Dakota

Chace Oil Company, Inc.
313 Washington, SE
Albuquerque, NM 87108

Commingling Study

TEST DATA

Well: Amoco Production Company
#2-396 Jicarilla

Location: SE/4, Section 8, T23N,R3W
Rio Arriba County, New Mexico

Dakota Zone - Pressure @ 7600' 2094 PSIA

Date	Choke	FTP	Oil Rate Bbls/Day	Gas Rate MCFD
8-14-82	20/64	220	22	663
8-15-82	20/64	220	20	606
8-16-82	20/64	200	15	630
8-17-82	20/64	200	16 .53	583
8-21-82	20/64	210	13	591
8-22-82	20/64	210	13	591
8-23-82	20/64	210	14	548
8-24-82	20/64	210	20	571

Gallup Zone - Rressure @ 7400' 2010 PSIA

Date	Choke	FTP	Oil Rate Bbls/Day	Gas Rate MCFD
9-3-82	20/64	240	22	539
9-4-82	20/64	225	15	447
9-5-82	20/64	210	15	427
9-6-82	20/64	210	18 .47	478
9-7-82	20/64	190	13	427
9-8-82	20/64	240	22	539
9-9-82	20/64	200	11	427