

dugan production corp.

APPLICATION FOR DOWNHOLE COMMINGLING
Flag-Redfern Oil Co.
Aloha #1 & #2 Wells
Unit L & D, Sec. 16, T-28-N, R-11-W
San Juan County, New Mexico
Case No. 7121
Exhibit No. 2-A

FLAG-REDFERN OIL CO.

Aloha #2

850 FNL - 870' FWL
Sec 16 T 28N R11W
San Juan County, NM

MORNING REPORT

- 11-13-80 Moved in and rigged up Morrow Drlg. Co. rig. Spudded 8-3/4" hole at 9:30 a.m. 11-12-80. Drilled 126'. Ran 3 jts. 7" O.D. 23#, 8R, ST&C, "B" Cond csg. T.E. 123.15 set at 125' G.L. Cemented w/ 60 sx class "B". P.O.B. at 3:00 p.m. 11-12-80. Good cement to surface. W.O.C.
- 11-14-80 Repairing hydraulic pump on rig. Well kicked at 500'. Mixed gel and starch. Well is now completely under control. No mud properties available.
- 11-15-80 Drlg. 1100' Wt. 10. Vis 48 Ph 9.5 Wt. 8
No trouble with gas kick on last trip.
- 11-16-80 1400' - Drlg. W.t 10.1 Vis 45
- 11-17-80 T.D. 1740' Ran I.E.S. log by Welex. Now prep to run 2-7/8" tbg. for csg.
- 11-18-80 T.I.H. w/ drill pipe. Circ. hole 1 hr. Laid down drill pipe; rigged up and ran 60 jts 2-7/8" O.D., 6.4#, 10 Rd., NEUE tbg for csg. T.E. 1741.47' set @ 1740' G.L. Cemented w/ 90 sx 2% Lodense followed by 75 sx class "B" neat. Reciprocated pipe OK while cementing. Good returns while cementing. Trace of contaminated cement to surface. P.O.B. @ 3:30 p.m., 11-17-80.
- 11-25-80 Rigged up FWS swabbing unit and Southwest Surveys. Swabbed well down to 1200'. Ran GR/CLL from PBTD 1713' to 1000'. Note: All depths are set back to open hole IES log. Perf zone 1582'-1588', 6', 1 SPF, .43" diam. hole, 6 holes w/ 2-1/8" bi-wire glass jet gun. Perf 1350-1357', 7', 1 SPF, .43" diam hole, 7 holes, w/ 2-1/8 bi-wire glass jet gun. Swabbed well 3 times. Small amount of gas flowing, no liquid entry apparent.

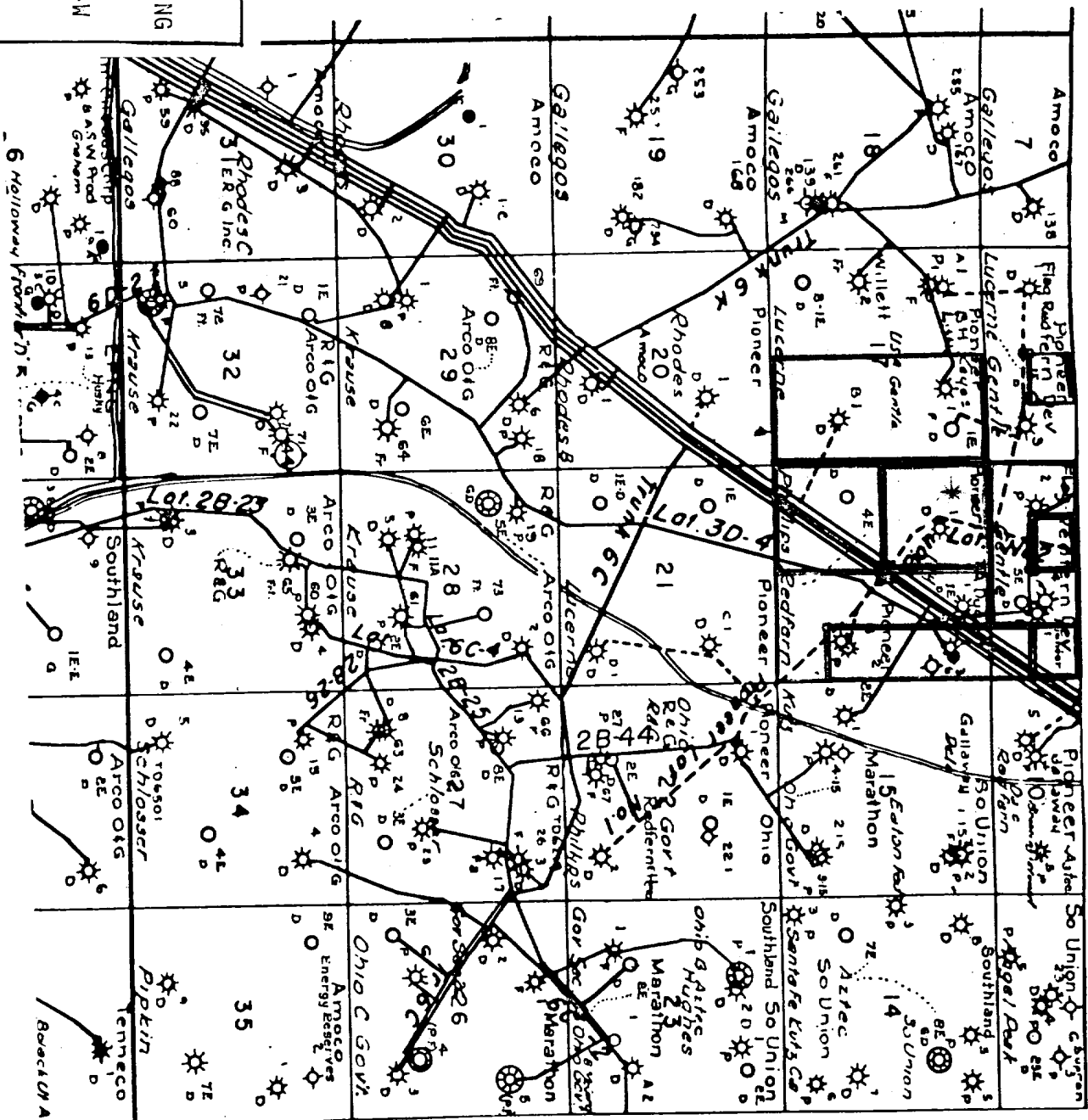
- 11-28-80 Rigged up FWS. Ran Baker model D packer in tension on 43 jts of 1½", 10R, EUE new tubing. T.E. 1399.42' set @ 1398 GL. Small amount of gas flowing up tubing, annulus dead. Rigged up Cementers, Inc. Pumped 150 gals of 15% HCL w/ inhibitor and displaced w/ 3.8 bbls of water. Breakdown pressure 1400 psi. Acid placed @ 3/4 BPM @ 850 psi. ISDP 200. No indications of communications w/ annulus. Pumped 150 gals of 15% HCL w/ inhibitor and displaced w/ 4.5 bbls of water. Breakdown pressure 1600 psi. Acid placed @ 3/4 BPM @ 1100 psi. ISDP 625-psi. Shut annulus in 15 min.-pressure 600 psi. Well flowing back on annulus.
- 11-29-80 Pulled 43 jts of 1½", 10 R, EUE tubing and Baker model D packer. Well unloading while pulling tubing. Swabbing well.
- 12-1-80 Rigged up the Western Co. and foam fraced the P.C. and Fruitland formations (1582-1588 & 1350-1356) w/ 70% quality foam. Pressure tested lines to 3500 psi. Placed 4000 gal pad of 70% quality foam ahead of 5000 gal of 70% quality foam w/ 1 ppg of 10-20 sand, followed by 7500 gals of 70% quality foam w/ 2ppg of 10-20 sand. Placed 2000 gal of 70% quality foam pad and dropped 10 balls (7/8" diam., 1.3 sg) followed by 7500 gals of 70% quality foam w/ 2 ppg of 10-20 sand. Displaced w/ 340 gals of 70% quality foam. ISDP 1000 psi; 15 min. shut-in 900 psi. Maximum pressure 1825 psi, minimum pressure 1600 psi, average pressure 1700 psi. No ball action noted. IR 15 BPM. Materials used: 200,250 SCF of N₂; 35,000# 10-20 sand, 189 bbl of water, 42 gals adafoam, 195 HHP, 6 balls (7/8" diam., 1.3sg). Well opened to atmosphere thru 3/4" choke 2 hrs after treating.
- 12-2-80 Rigged up FWS. Set wellhead. Tagged sand w/ tubing at 1589 GL. Landed tubing string consisting of 1 swab stop (1.25'); 3 jts 1½", 10R, EUE, used tubing (97.62'); 1 Baker model "C" packer set in tension (2.25'); and 45 jts 1½", 10R, EUE, used tubing (1463.34'). T.E. 1564.46' set at 1563 GL, packer set at 1463' GL in tension. Well making gas and slugs of soapy water from tubing and gas from annulus. Well left open for clean up.

- A. NM 020982
Flag-Redfern Oil Co.
- B. NM 010063
Flag-Redfern Oil Co.
- C. NM 013365
Flag-Redfern Oil Co.
- D. NM 013365
Dugan Production Corp.
- E. NM 010063
Flag-Redfern Oil Co.
- F. NM 010063
George E. Willett
Curtis Little
Bradley Keyes
- G. NM 021116
Flag-Redfern Oil Co.
- H. DEDICATED ACREAGE
Aloha #2 Well
Flag-Redfern Oil Co.

ALOHA #2 WELL

OFFSETTING LEASES AND OPERATORS

APPLICATION FOR DOWNHOLE COMMINGLING
Flag-Redfern Oil Co.
Aloha #1 & #2 Wells
Unit L & D, Sec. 16, T-28-N, R-11-W
San Juan County, New Mexico
Case No. 7121
Exhibit No. 1-A



MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 12-10-80																																																																																															
Company Flag Redfern Oil Co.				Connection																																																																																															
Pool Fulcher Kutz P.C.				Formation Pictured Cliffs																																																																																															
Completion Date 12-2-80		Total Depth 1740		Elevation 5578'																																																																																															
Ceq. Size 2-7/8"		Set At 1740		Perforations From 1582 To 1588																																																																																															
Tbg. Size 1-1/4"		Set At 1563		Perforations From open end To																																																																																															
Type Well - Single - Bradenhead - G.C. or G.O. Multiple Gas - dual				Packer Set At 1463'																																																																																															
Producing Thru Tbg.		Reservoir Temp. °F		Baro. Press. - P _a																																																																																															
L		H		Prover																																																																																															
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<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="6">FLOW DATA</th> <th colspan="2">TUBING DATA</th> <th colspan="2">CASING DATA</th> <th rowspan="2">Duration of Flow</th> </tr> <tr> <th>NO.</th> <th>Prover Line Size</th> <th>X</th> <th>Orifice Size</th> <th>Press. p.s.i.g.</th> <th>Diff. h_w</th> <th>Temp. °F</th> <th>Press. p.s.i.g.</th> <th>Temp. °F</th> <th>Press. p.s.i.g.</th> <th>Temp. °F</th> </tr> <tr> <td>SI</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>372</td> <td></td> <td>544</td> <td></td> <td>7 days</td> </tr> <tr> <td>1.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>544</td> <td></td> <td>3 hrs.</td> </tr> <tr> <td>3.</td> <td>1/2 pos. choke</td> <td></td> <td></td> <td>26</td> <td></td> <td>48⁰</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	SI							372		544		7 days	1.												2.									544		3 hrs.	3.	1/2 pos. choke			26		48 ⁰						4.												5.											
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Gas Liquid Hydrocarbon Ratio _____ Mcf/bbl.			
A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.			
Specific Gravity Separator Gas _____		XXXXXX	
Specific Gravity Flowing Fluid _____		XXXXXX	
Critical Pressure _____ P.S.I.A.		P.S.I.A.	
Critical Temperature _____ R		R	

P_c 384 P_c² 147,456

NO.	P ₁ ²	P _w	P _w ²	P _c ² - P _w ²
1				
2				
3	1444		1446	146,010
4				
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.0099$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.0084$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 207$

Absolute Open Flow 207	Mcfd @ 15.025	Angle of Slope θ	Slope, n .85
Remarks:			
Approved By Division	Conducted By Anderson	Calculated By Jacobs	Checked By

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 12-17-80	
Company Flag-Redfern Oil Co.		Connection	
Pool Pimon		Formation Fruitland	
Completion Date 12-2-80		Total Depth 1740'	
Plug Back TD 1713'		Elevation 5578'	
Firm or Lease Name Aloha		Well No. #2	
Coq. Size 2-7/8"	Wt. 6.4#	Set At 1740'	Perforations From 1350' To 1357'
Trq. Size 1 1/4"	Wt. 2.4#	Set At 1563'	Perforations From annular space
Type Well - Single - Brdenhead - G.G. or G.O. Multiple Gas Gas Dual		Packer Set At 1463'	
Producing Thru annulus		Baro. Press. - P _a	
Reservoir Temp. °F #		Mean Annual Temp. °F	
County San Juan		State New Mexico	
L	H	G _g .62 est.	% CO ₂ % N ₂ % H ₂ S
Prover		Meter Run Taps	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI							375	60	535	60	7 days
1.											
2.											
3.	pos choke 3/4"			1.0		50	375	60			3 hrs
4.											
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mcfd
1	12.365		13	1.010	.9837	1.000	160
2.							
3.							
4.							
5.							

NO.	P _t	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio _____ Mcf/bbl.
1					A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.
2.					Specific Gravity Separator Gas _____ X X X X X X X X
3.					Specific Gravity Flowing Fluid _____ X X X X X
4.					Critical Pressure _____ P.S.I.A. _____ P.S.I.A.
5.					Critical Temperature _____ R _____ R

P _c 535	P _c ² 286,225	(1) $\frac{P_c^2}{P_t^2 - P_w^2} = \frac{286225}{286056}$	(2) $\left[\frac{P_c^2}{P_t^2 - P_w^2} \right]^n = \frac{.85}{1.001}$	
NO.	P _t ²	P _w	P _t ²	P _c ² - P _w ²
1	169	---	169	286056
2				
3				
4				
5				

Absolute Open Flow 160		Mcf @ 13.025		Angle of Slope @ _____		Slope, n .85	
Remarks: _____							

Approved By Division	Conducted By: Donovan	Calculated By: Donovan	Checked By: Griffith
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NORTHWEST NEW MEXICO PACKER-LEAKAGE TEST

Operator Flag-Redfern Oil Company Lease Aloha Well No. 2
Location of Well: Unit D Sec. 16 Twp. 28 North Rge. 11 West County San Juan
Type of Prod. Method of Prod. Prod. Medium
(Oil or Gas) (Flow or Art. Lift) (Tbg. or Csg.)

Upper Completion	Pinon Fruitland	Gas	Flow	Csg.
Lower Completion	Fulcher-Kutz Pictured Cliffs	Gas	Flow	Tbg.

PRE-FLOW SHUT-IN PRESSURE DATA

Upper Compl	Hour, date	10:00 AM	Length of time shut-in	7 days	SI press. psig	535	Stabilized? (Yes or No)	No
Lower Compl	Hour, date	10:00 AM	Length of time shut-in	7 days	SI press. psig	372	Stabilized? (Yes or No)	NO

FLOW TEST NO. 1

Commenced at (hour, date)* 2:05 PM 2/10/80				Zone producing (Upper or Lower): Lower	
Time (hour, date)	Lapsed time since*	Pressure		Prod. Zone Temp.	Remarks
		Upper Compl.	Lower Compl.		
2:05 PM 12/10/80	0	535	372	49°	Start test 1/2" choke
3:05 PM 12/10/80	1 Hr.	535	47	48°	
4:05 PM 12/10/80	2 Hr.	535	38	48°	
5:05 PM 12/10/80	3 Hr.	535	26	48°	

Production rate during test
Oil: 0 BOPD based on Bbls. in Hrs. Grav. GOR
Gas: 207 AOF MCFPD; Tested thru (Orifice or Meter):

MID-TEST SHUT-IN PRESSURE DATA

Upper Compl	Hour, date	10:00 AM	Length of time shut-in	14 days	SI press. psig	535	Stabilized? (Yes or No)	NO
Lower Compl	Hour, date	5:05 PM	Length of time shut-in	7 days	SI press. psig	372	Stabilized? (Yes or No)	NO

FLOW TEST NO. 2

Commenced at (hour, date)** 9:00 AM 12/17/80				Zone producing (Upper or Lower):Upper	
Time (hour, date)	Lapsed time since **	Pressure		Prod. Zone	Remarks
		Upper Compl.	Lower Compl.	Temp.	
9:00 AM 12/17/80	0	535	372	60°	Start test 3/4" choke
10:00 AM 12/17/80	1 Hr.	1	372	54°	
11:00 AM 12/17/80	2 Hr.	1	372	53°	
12:00 AM 12/17/80	3 Hr.	1	372	50°	

Production rate during test
Oil: 0 BOPD based on Bbls. in Hrs. Grav. GOR
Gas: 160 AOF MCFPD; Tested thru (Orifice or Meter):

REMARKS:

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

Operator Flag-Redfern Oil Company
Approved: 19 Thomas Dugan
Agent
Title
Date
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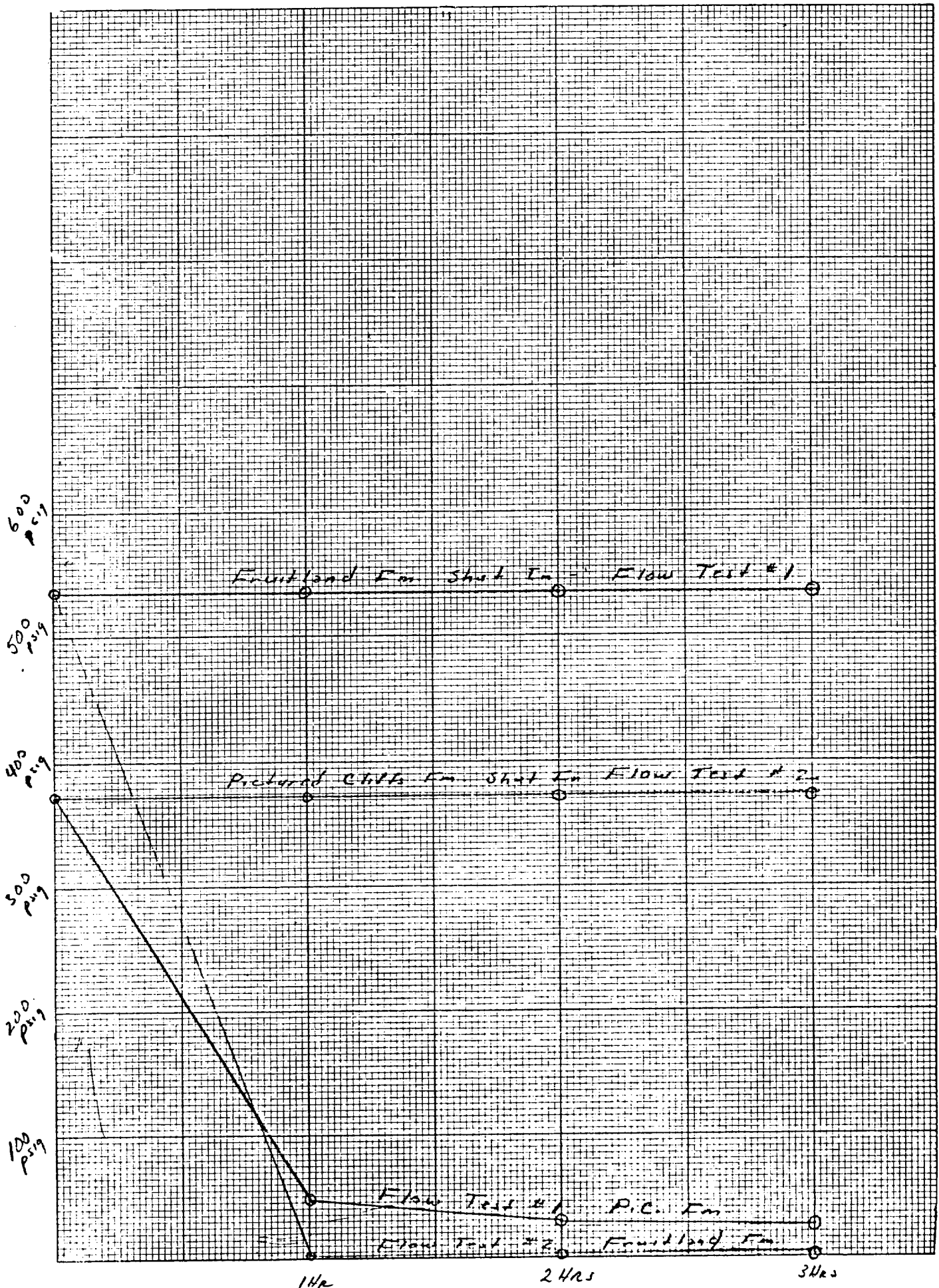
NORTHWEST NEW MEXICO PACKER LEAKAGE TEST INSTRUCTIONS

1. A packer leakage test shall be commenced on each multiply completed well within seven days after actual completion of the well, and annually thereafter as prescribed by the order authorizing the multiple completion. Such tests shall also be commenced on all multiple completions within seven days following recompletion and/or chemical or fracture treatment, and whenever remedial work has been done on a well during which the packer or the tubing have been disturbed. Tests shall also be taken at any time that communication is suspected or when requested by the Division.
2. At least 72 hours prior to the commencement of any packer leakage test, the operator shall notify the Division in writing of the exact time the test is to be commenced. Offset operators shall also be so notified.
3. The packer leakage test shall commence when both zones of the dual completion are shut-in for pressure stabilization. Both zones shall remain shut-in until the well-head pressure in each has stabilized, provided however, that they need not remain shut-in more than seven days.
4. For Flow Test No. 1, one zone of the dual completion shall be produced at the normal rate of production while the other zone remains shut-in. Such test shall be continued for seven days in the case of a gas well, and for 24 hours in the case of an oil well. *Note:* If, on an initial packer leakage test, a gas well is being flowed to the atmosphere due to the lack of a pipeline connection the flow period shall be three hours.
5. Following completion of Flow Test No. 1, the well shall again be shut-in, in accordance with Paragraph 3 above.
6. Flow Test No. 2 shall be conducted even though no leak was indicated during Flow Test No. 1. Procedure for Flow Test No. 2 is to be the same as for Flow Test No. 1 except that the previously produced zone shall remain shut-in while the zone which was previously shut-in is produced.

7. Pressures for gas-zone tests must be measured on each zone with a deadweight pressure gauge at time intervals as follows: before tests; immediately prior to the beginning of each flow period; at fifteen-minute intervals during the first hour thereof; and at hourly intervals thereafter, including one pressure measurement immediately prior to the conclusion of each flow period. Tests for oil zones shall begin at the beginning of each flow period, at least one hour after the well is shut-in (at approximately the midway point) and immediately prior to the conclusion of each flow period. Other pressures may be taken and used, or may be requested on wells which have previously shown satisfactory test data.

24-hour oil zone tests: All pressures, throughout the entire test, shall be continuously measured and recorded with recording pressure gauges, the accuracy of which must be checked at least twice, once at the beginning and once at the end of each test, with a deadweight pressure gauge. If a well is a gas-oil or an oil-gas dual completion, the recording gauge shall be required on the oil zone only, with deadweight pressures as required above being taken on the gas zone.

8. The results of the above-described tests shall be filed in triplicate within 15 days after completion of the test. Tests shall be filed with the Artec District Office of the Oil Conservation Division, Northwest New Mexico Packer Leakage Test Form Revised 10-1-78, with all deadweight pressures indicated thereon as well as the flowing temperature (gas zones only) and gravity and GOR (oil zones only). A pressure versus time curve for each zone of each test shall be constructed on the reverse side of the Packer Leakage Test Form with all deadweight pressure points taken indicated thereon. For oil zones, the pressure curve should also indicate all key pressure changes which may be reflected by the recording gauge charts. These key pressure changes should also be tabulated on the front of the Packer Leakage Test Form.



APPLICATION FOR DOWNHOLE COMINGLING

Flag-Redfern Oil Co.

Aloha #1 & #2 Wells

Unit L & D, Sec. 16, T-28-N, R-11-W

San Juan County, New Mexico

Case No. 7121

Exhibit No. 3-A

DIAGRAMMATIC SKETCH
DUAL GAS COMPLETION

Flag-Redfern Co.

Aloha #2

850 FNL - 870' FWL

Sec 16 T28N R11W

San Juan County, NM

