

# DAILY DRILLING REPORT

Prospect Name: Pajarito

Well Name: Navajo Tract 20 - #22-31

Location: 1980' FNL 1980' FWL - Section 31, T 29 N - R 17 W  
San Juan County, New Mexico

Well Type: Wildcat Development Field Extension Other

Objective Zones: Pennsylvanian Paradox Formation

Projected Depth: 7600' Elevations: 5196' GL 5210' KB

Contractor: Loffland Bros. Company

Spud: 2:30 p.m. 4/19/77 Completed: \_\_\_\_\_ Status: \_\_\_\_\_

DATE	DEPTH	DETAILS				
		COMPLETION REPORT				
		FTP(psig)	Oil(bbls.)	Water(bbls.)	Choke size	Hrs. Prod.    Hrs. SI
1/04/78		270	11½	950	21/64"	24
1/05/78		250	16.7	913	21/64"	24
1/06/78		245	20	1079	21/64"	24
1/07/78		265	11	908	21/64"	24
						15 min. (SITP = 425 psig build-up)
1/08/78		265	23.4	1000	21/64"	25
1/09/78		265	20	920	21/64"	24
1/10/78		260	25	922	21/64"	24
1/11/78		260	22	910	21/64"	23
1/12/78		275	22	884	21/64"	23
1/13/78		270	25	1050	21/64"	27 1/2
1/14/78		265	23.3	827	21/64"	21 1/2
1/15/78		270	26.7	930	21/64"	24
1/16/78		275	28.39	916	21/64"	23
1/17/78		275	25	992	21/64"	25
1/18/78		275	28.39	946	21/64"	24
		Shut well in at 9:30 a.m. 1/18/78 for pressure build-up and engineering evaluation.				
1/30/78		Installed flow line and related equipment. Installed larger engine on SWD pump and reconditioned SWD pump. Started well flowing at 5:30 p.m. 1/30/78.				

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12/3/77		last 2 1/2 hours. Established fluid entry rate of 200' (1.16 bbls.) each 20 minutes. Shut well in @ 5:00 p.m. Total oil accumulated in test tank since perforating = 5'7" (112 bbls.) SITP = 825 psig @ 8:00 a.m. Blew down pressure and started running swab. Could not get below 3600' due to obstruction. Shut down for remainder of weekend.																																										
12/4/77		Shut down.																																										
12/5/77		Prep to pull tbq. and pkr.																																										
12/6/77		SITP 12/5/77 a.m. = 750 psig. Blew down gas pressure. Released pkr. and pulled tbq. and pkr. Removed debris left in tbq. by swabbing unit. Started running tbq. and pkr. With 30 stands left to run, well started kicking. Shut down to control well and remove gas from column. SDON.																																										
12/7/77		Prep to resume running tbq. this a.m. and acidize perforated intervals. Ran tbq. and pkr. Spotted 750 gals. 15% HCl to pkr. Set pkr. at 7128. Pressured tbq. and pkr. did not hold. Reversed out acid. Pulled tbq. and pkr. Changed pkr. Started running back tbq. and pkr. SDON.																																										
12/8/77		Ran tbq. and pkr. Spotted 750 gals. 15% HCl to pkr. Set pkr. at 7128. Pressured tbq. to 2100 psig. Pressure increased to 2250 psig and acid hit perfs. Treated @ 1100 psig up to 1200 psig @ 3/4 to 1 BPM. ISDP = 1100 psig. 10 min. = 1100 psig. Job complete 11:35 a.m. 12/7/77. Shut in 30 min. total. 30 min = 1100 psig. Flushed acid thru perfs w/42 bbls. produced oil. Total load 18 bbls. acid plus 42 bbls. oil flush. Opened thru 18/64" choke to test tank. Flowed as follows:																																										
		<table><tr><th>Time</th><th>FTP (psig)</th><th>Fluid</th></tr><tr><td>12:05 p.m.</td><td>Opened thru 18/64" choke</td><td></td></tr><tr><td>1:05 p.m.</td><td>450</td><td>38 bbls. flush oil</td></tr><tr><td>2:05 p.m.</td><td>300</td><td>23 bbls. flush oil &amp; acid water</td></tr><tr><td>3:05 p.m.</td><td>300</td><td>38 bbls. acid water &amp; salt water</td></tr><tr><td>4:05 p.m.</td><td>300</td><td>35 bbls. salt water w/show oil (est. 1% oil)</td></tr><tr><td>5:05 p.m.</td><td>300</td><td>50 bbls. salt water w/show oil (est. 1% oil)</td></tr><tr><td></td><td></td><td>184 bbls. total</td></tr></table>	Time	FTP (psig)	Fluid	12:05 p.m.	Opened thru 18/64" choke		1:05 p.m.	450	38 bbls. flush oil	2:05 p.m.	300	23 bbls. flush oil & acid water	3:05 p.m.	300	38 bbls. acid water & salt water	4:05 p.m.	300	35 bbls. salt water w/show oil (est. 1% oil)	5:05 p.m.	300	50 bbls. salt water w/show oil (est. 1% oil)			184 bbls. total																		
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12/9/77		SION 8:00 a.m. SITP = 450 psig. Drained water from tank and gauged 5 bbls. oil gain in tank since acid job. Opened well to tank thru 18/64" choke. Flowed well to test tank 12/8/77 a.m. for two hours. Produced 90 bbls. total fluid. Wellhead sample oil cut had increased to 5%. Shut well in. Released and moved out completion rig. Prep to move in portable test separator and second test tank this a.m. to begin extended flow test.																																										
		Located and moved in two different test separators. Both units were unserviceable. Waited for Olman & Heath to build test separator. Moved in and started flow testing well at 2:00 p.m. 12/28/77. SITP = 490 psig. Opened thru test separator on 20/64" choke setting.																																										
12/29/77		<table><tr><th>FTP(psig)</th><th>Oil(bbls.)</th><th>Water(bbls.)</th><th>Choke size</th><th>Hrs.Prod.</th><th>Hrs. SI</th></tr><tr><td>325</td><td>3 1/4</td><td>250 est.</td><td>20/64"</td><td>18</td><td></td></tr><tr><td>12/30/77</td><td>325</td><td>10</td><td>579</td><td>20/64"</td><td>23</td></tr><tr><td>12/31/77</td><td>275</td><td>15</td><td>883</td><td>22/64"</td><td>25</td></tr><tr><td>1/01/78</td><td>270</td><td>6</td><td>1046</td><td>22/64"</td><td>24</td></tr><tr><td>1/02/78</td><td>297</td><td>8 1/4</td><td>988</td><td>21/64"</td><td>22</td></tr><tr><td>1/03/78</td><td>270</td><td>10</td><td>931</td><td>21/64"</td><td>24 1/2</td></tr></table>	FTP(psig)	Oil(bbls.)	Water(bbls.)	Choke size	Hrs.Prod.	Hrs. SI	325	3 1/4	250 est.	20/64"	18		12/30/77	325	10	579	20/64"	23	12/31/77	275	15	883	22/64"	25	1/01/78	270	6	1046	22/64"	24	1/02/78	297	8 1/4	988	21/64"	22	1/03/78	270	10	931	21/64"	24 1/2
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 Spud: 2:30 p.m. 4/19/77 Completed: \_\_\_\_\_ Status: \_\_\_\_\_

DATE	DEPTH	DETAILS
11/18/77		Rigged up completion rig and started pulling tubing. SDON.
11/19/77		Finished pulling tbg. Perforated in casing 4 squeeze holes 7212-13.
11/20/77		Set cement retainer on wireline 7208-10. Shut down due to high winds. Ran tubing and stinger. Engaged and stung into retainer. SITP = 250 psig immediately. Established injection rate of 1/2 + BPM @ 3250 psig. Mixed 100 sx Class B cement + 0.6% Halad 9 + 18% salt by water weight. Slurry volume = 18 bbls. Spotted slurry and squeezed 5 bbls. thru retainer. Formation squeezed - max. pressure = 3700 psig. Reversed out 13 bbls. slurry. Tripped out w/stinger. SDFN.
11/21/77		Ran 226 jts. 2 7/8" tbg. and Baker Lok Set pkr. Set pkr @ 7128. Swabbed FL down to 1500'±. Rigged up Schlumberger and perforated thru tbg. the intervals 7189-91 and 7197-7203 w/respect to CNL/FDC/GR/Cal dated 5/16/77.
11/22/77		Ran swab and found fluid level @ 1200'. Swabbed from 3200' on first run. Ran swab and found fluid level @ 1800'. Swabbed from 3800'. SDFN. ONSITP = 1300 psig. Opened to tank thru 8/64" choke and blew gas until fluid (oil) reached surface in 23 minutes. FTP with oil to surface reached 425-460 psig. At 12:50 p.m. FTP = 390 psig. Shut in to change flowline. At 1:10 p.m. SITP = 460 psig. Reopened thru 8/64" choke with 380 - 390 psig FTP. Producing oil and no water. At 2:00 p.m. FTP = 340 psig. At 2:20 p.m. FTP = 275 psig. Opened thru 28/64" choke for 10 min. Flow increased and FTP decreased to 140 psig. Reset choke to 10/64" at 2:20 p.m. At 2:40 p.m. FTP = 160 psig. At 3:00 p.m. FTP = 175 psig. At 4:00 p.m. FTP = 200 psig. Producing steady stream of oil at average rate of 2.5± BOPH. Left flowing to test tank overnight.
11/23/77		FTP this a.m. = 280 psig thru 10/64" choke. Produced 14 bbls. oil and no water since 4:00 p.m. 4/22/77. Opened choke to 14/64" @ 9:30 a.m.
11/24/77		TP = 380 psig. Choke frozen. Flowed 14 bbls. oil and no water during last 24 hour period. (Hours produced prior to choke freezing unknown.) Thawed choke and reset to 18/64".
11/25/77		FTP = 25 psig thru 18/64" choke. Produced 10 bbls. oil and 11 bbls. water last 24 hours. Moved in and rigged up swabbing unit. Started running swab @ 2:30 p.m. At 4:30 p.m. swabbing from 7100' with FL returning to 5900' between runs. Oil cut varies from approximately 10% to 15%. Sinker bar broke above swab cups. Left two swab cups, spacer ring, and one foot of aluminum sinker bar in hole. Released swabbing unit and SI well @ 4:30 p.m.
11/26/77		SITP @ 9:00 a.m. = 980 psig.
11/27/77		SITP @ 9:00 a.m. = 980 psig.
11/28/77		SITP @ 9:00 a.m. = 1000 psig. Opened to tank thru 18/64" choke @ 9:00 a.m. Had fluid to surface following gas in 5 minutes. Left flowing to tank. Waiting on pulling unit.
11/29/77		FTP = 110 psig thru 18/64" choke. Produced 15 bbls. oil and 5 bbls. water during last 24 hour period. Waiting on pulling unit.
11/30/77		TP = 90 psig. Choke plugged. Cleaned choke and reset to 18/64". Waiting on pulling unit.
12/1/77		FTP = 50 psig. Produced 10 bbls. oil and 7 bbls. water during last 24 hour period. Waiting on pulling unit.
12/2/77		Moved in and rigged up pulling unit. Swabbed 50 bbls. total fluid. 85% water, 10% rusty emulsion, and 5% oil. Swabbed from packer (7128)

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DATE	DEPTH	DETAILS
5/14/77	6970'	Drilling. Made 156 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 1608' in 180 hrs. MUD WT. 9.6, VIS 42. Lost approx. 150 bbls. mud while drilling the interval 6928-70. 15-20 BPH gradual loss.
5/15/77	7138'	Drilling. Made 168 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 1776' in 205 3/4 hrs. MUD WT. 9.7, VIS 47. No mud loss past 24 hrs. Drilling Break: 7015-7020 from 7-8 m/f to 2 m/f. Total gas increased on hot wire from 4 units BG to 15 units max. Chromatograph: C <sub>1</sub> = 26 from 5, C <sub>2</sub> = 16 from 1, C <sub>3</sub> = 4 from 0. Ls, brn, tan, gry, calcite filled veins and vugs, few pieces w/yellow fluor. and cut.
5/16/77	7260'	Logging. Made 122 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 1898' in 217 1/2 hrs. MUD WT. 9.7, VIS 42. Drilling Break: 7179-85 from 7-8 m/f to 3 m/f. Total gas increased from 6 units BG to 12 units max. Chromatograph: C <sub>1</sub> = 23 from 10, C <sub>2</sub> = 11 from 1, C <sub>3</sub> = 4 from 0, C <sub>4</sub> = 2 from 0. Samples as above. Drilling Break: 7189-7211 from 6-7 m/f to 2 m/f. Total gas increased from 7 units BG to 30 units max. Chromatograph: C <sub>1</sub> = 51 from 9, C <sub>2</sub> = 32 from 6, C <sub>3</sub> = 15 from 4, C <sub>4</sub> = 6 from 2. Samples as above.
5/17/77	7260'	Circulating and conditioning hole to run casing. Ran logs as follows: DIL/SP, CNL/FDC/GR/Cal, and High Resolution Dipmeter. Drillers TD -7260' Logger TD 7266'.
5/18/77	7260'	Running 5 1/2" casing.
5/19/77	7260'	Ran 173 jts. 5 1/2" 15.5# ST&C K-55 casing. (7284') Set at 7265'. Cmtg. with 125 sx C1 "B" 18% salt, 2% gel cement. Good returns throughout cmtg. PD 8:55 a.m. 5/18/77. Released rig at 9:00 p.m. 5/18/77.
		Log Tops: Dakota 1357 (+3853) Morrison 1583 (+3627) Todilto 2617 (+2593) Entrada 2624 (+2586) Shinarump 4078 (+1132) De Chelly 4222 (+ 988) Organ Rock 4706 (+ 504) Upper Hermosa 6075 (-865) Paradox 6725 (-1515)
		NOTE: Shoe @ 7265' Float Collar @ 7252'
		<u>COMPLETION REPORT</u>
9/30/77		Moving in and rigging up completion rig.
10/1/77		Tubing arrived on location at 9:00 a.m. Unloaded and tallied tubing. Prep to trip in hole with tubing, bit and scraper.
10/2/77		Shut down for Sunday.
10/3/77		Running tubing with bit and casing scraper.
10/4/77	7252' PBTD	Ran tubing with bit and scraper. Cleaned out to float collar (PBTD) at 7252'. Circulated hole clean. SDON. Started pulling tubing and tools this a.m. Prep to run Cement Bond log.
10/5/77	7252' PBTD	Pulled tubing, bit and casing scraper. Rigging up Schlumberger. Ran Cement Bond log. Good bond from PBTD to 6950' with the exception of 7197-7218 (questionable bond across this interval; appears that porous zones may have taken cement). Rigged down Schlumberger. SDON.
10/6/77	7252' PBTD	Ran 229 joints tubing in hole open ended. Flanged up wellhead. Released rig @ 1:00 p.m. 10/5/77.

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4/29/77	3380'	Drilling. Made 440 feet. Bit #6- 8 3/4" STC F-3 in at 2566' made 814 ft. in 37 3/4 hrs. Had 2" to 2 1/2" water flow @ 2980'. Salinity 900 PPM. Drilling fluid is water.
4/30/77	3923'	Trip for bit change. Made 543'. Bit #6- 8 3/4" STC F-3 in at 2566' out at 3923' made 1357' in 63 1/2 hrs. Survey: 3/4° @ 3610'. MUD WT. 8.4, VIS 48, FL water, WOB 35,000.
5/1/77	4550'	Drilling. Made 627 feet. Bit #7- 8 3/4" HTC J-22 in at 3923' made 627' in 16 hrs. Survey: 1/2° @ 3923'. MUD WT. 8.5, VIS 48, WOB 40,000.
5/2/77	4900'	Mixing mud. Made 350 feet. Bit #7- 8 3/4" HTC J-22 in at 3923' made 977' in 30 1/4 hrs. MUD WT. 8.5, VIS 31, WOB 35-40,000. Drilled 31' sand 4669-4700 and got a 6" water flow (3100 ppm Chlorides). Top: Shinarump 4030' - 22' high to Amerada 20-1.
5/3/77	5031'	Drilling. Made 131 feet. Bit #7- 8 3/4" HTC J-22 in at 3923' made 1108' in 39 1/2 hrs. MUD WT. 9.3, VIS 42, WOB 40,000. Controlled water flow from interval 4669-4700 with 9.3 ppg mud.
5/4/77	5358'	Drilling. Made 327 feet. Bit #7- 8 3/4" HTC J-22 in at 3923' made 1435' in 63 1/2 hrs. MUD WT. 9.3, VIS 41. WOB 25-45,000.
5/5/77	5507'	Drilling. Made 149 feet. Bit #7- 8 3/4" HTC J-22 in at 3923' out at 5362' made 1439 feet in 64 hrs. Bit #8- 8 3/4" STC F-3 in at 5362' made 145' in 13 hrs. Survey: 3/4° @ 5362'. MUD WT. 9.3, VIS 45. WOB 35,000. 9.3 mud wt. cut to 9.1 while tripping at 5362'. Raised mud wt. to 9.4.
5/6/77	5780'	Drilling. Made 273 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 418 feet in 37 hrs. MUD WT. 9.3+, VIS 39. WOB 35-45,000.
5/7/77	5965'	Drilling. Made 185 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 603' in 57 1/2 hrs. Survey: 1° @ 5860'. MUD WT. 9.4, VIS 39, WOB 35-45,000.
5/8/77	6205'	Drilling. Made 240 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 843' in 81 1/2 hrs. MUD WT. 9.3, VIS 38. WOB 40,000.
5/9/77	6415'	Drilling. Made 210 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 1053' in 105 1/2 hrs. MUD WT. 9.5, VIS 40, WOB 40,000.
5/10/77	6577'	Mixing mud and attempting to kill water flow. Made 162 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 1215' in 122 1/4 hrs. MUD WT. 9.5, VIS. 40. Lost circulation at 6577' while drilling at approximately 12 midnight 5/9/77. Mixed and pumped pills and regained circulation. Now trying to control water flow. Pipe became stuck while going back to bottom.
5/11/77	6577'	Staging oil and pipe lax. Bit #8- 8 3/4" STC F-3 in at 5362' made 1215' in 122 1/4 hrs. Controlled water flow and spotted 70 bbls. diesel oil w/105 gallons pipe lax to free stuck pipe. Lost approx. 2500 bbls. mud due to lost circulation and water flow dilution.
5/12/77	6655'	Drilling. Made 78 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 1293' in 132 3/4 hrs. MUD WT. 9.7, VIS 42, WOB 40,000. Drill string came free at 12:15 p.m. 5/11/77. Pulled 20 stands and conditioned mud in preparation for drilling ahead. Total time lost due to lost circulation, water flow, and stuck pipe = 43 hrs. Resumed drilling new hole at 7:00 p.m. 5/11/77. Hole has taken approx. 300 bbls. mud last 10 1/2 hrs.
5/13/77	6814'	Drilling. Made 159 feet. Bit #8- 8 3/4" STC F-3 in at 5362' made 1452 feet in 156 1/4 hrs. MUD WT. 9.7, VIS 42, WOB 35-40,000. Hole has taken approx. 150 bbls. mud last 24 hrs. w/ no appreciable loss during last 12 hrs. Background gas is 4-6 units. Sample Top: Paradox

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DATE	DEPTH	DETAILS
2/28/77		Staked location.
3/01/77		Submitted application and supporting documents to USGS and BIA.
thru		Solicited bids for drilling contractor. Finalized plans for initiating
4/10/77		project. Obtained necessary approvals from various regulatory agencies.
4/11/77		Started building access road and location. Preparing to move in
		Loffland Bros. Co. drilling rig later this week.
4/12/77		Completing location and starting to build reserve pit. Rig will start
		arriving late this p.m. or tomorrow a.m.
4/13/77		Location complete. Building reserve pit.
4/14/77		Moving in rotary tools.
4/15/77		Moving in rotary tools. Prep to rig up.
4/16/77		Rigging up rotary tools.
4/17/77		Rigging up rotary tools.
4/18/77		Rigging up rotary tools. Prep to spud this p.m. or tomorrow a.m.
4/19/77		Prep to spud.
4/20/77	180'	Prep to cement 13 3/8" casing. Drilled mouse hole and rat hole.
		Spudded 17 1/2" hole at 2:30 p.m. 4/19/77. Bit #1- 17 1/2" Security
		4TJ. Made 180' in 9 1/2 hrs. Surveys: 1 1/4" @ 73', 1 1/4" @ 128' and
		3/4" @ 180'. MUD WT. 9.0, VIS 45. Ran 5 jts. (199.94') 13 3/8" csg.
		Landed at 180' KB.
4/21/77	180'	Tripping in to drill cmt. Cmt. csg. w/200 sx C1 "H" + 2% CaCl. Cmt.
		circulated. WOC. Nippled up. Tested BOP to 1000 psig. Held okay.
		Tripped in with Bit #2. Tagged cmt. at 123'. Bit #2- 12 1/4" Smith DT
		w/3-12 jets.
4/22/77	925'	Drilling. Made 745 feet. Bit #2- 12 1/4" Smith DTJ in at 180' made 745'
		in 17 3/4 hrs. Surveys: 3/4" @ 280', 3/4" @ 430', 1/2" @ 600' and 1/4"
		@ 845'. MUD WT. 8.7, VIS 29.
4/23/77	1606'	Circulating to trip. Made 681'. Bit #2- 12 1/4" STC DT in at 180'
		out at 945' made 765 ft. in 18 1/4 hrs., Bit #3- 12 1/4" DS 3/16 in at
		945' out at 1606' made 661' in 17 3/4 hrs. Surveys: 3/4" @ 945', 1/2"
		@ 1293'. MUD WT. 8.6, VIS 29. Dakota top 1310 (+3900) 17' high
		to Amerada 1-20. 1st water flow from Morrison @ 1640.
4/24/77	1840'	Drilling. Made 234'. Bit #3- 12 1/4" STC DS 3/16 in at 945' out at
		1606' made 661 feet in 17 3/4 hr. Bit #4- 12 1/4" STC DT 2/14 in at 1606'
		made 234 in 20 hrs. Surveys: 1/4" @ 1606'. MUD WT. 9.1, VIS 36.
4/25/77	2265'	Drilling. Made 425'. Bit #4- 12 1/4" STC DT 2/14 in at 1606 out at 1845'
		made 239' in 21 hrs. Bit #5- 12 1/4" STC F-3 3/15 in at 1845' made 420'
		in 16 1/2 hrs. Survey: 1/4" @ 2074'. MUD WT. 9.1, VIS 37. 2nd water
		flow occurred at 1940'.
4/26/77	2566'	Tripping out to run csg. Made 301 feet. Bit #5- 12 1/4" Smith F3 in
		at 1845' out at 2566' made 721 feet in 37 hrs. Had third water flow
		at 2460'. Cut 9.4 mud to 9.1-9.2.
4/27/77	2566'	Picking up 6 1/2" drill collars. Ran 59 jts. 36# K-55 ST&C 9 5/8" csg.
		and 1 jt. LT&C csg. (2542 feet total) Set @ 2559' KB. Cmt'd. w/
		166 sx Howco C1 "B" + 2% CC. Cmt. in place 6:00 p.m. 4/26/77.
4/28/77	2940'	Drilling. Made 374 feet. Bit #6- 8 3/4" STC F-3 in at 2566' made 374 ft.
		in 14 hrs. Tagged cement at 2512'. Drilled hard cement to csg. shoe.
		Circulated rat hole & shut down to check for water flow below csg. Had
		no flow. Started drilling new hole. Drilling fluid is water.