

NORTHWEST PIPELINE JUDY LEE *Mojo* 37
SW/SE Sec 30-T41N-R30E, Apache Co.

P.W.

COUNTY Apache AREA 5 mi. W of Teec-nos-pos LEASE NO. NOO-C-14-20-5425

WELL NAME NORTHWEST PIPELINE CORPORATION ~~WELL~~ #1 *July Lee - Navajo*

LOCATION SW/SE SEC 30 TWP 41N RANGE 30E FOOTAGE 860' FSL - 2310' FEL

ELEV 5464' GR _____ KB SPUD DATE 12-19-74 STATUS DEA TOTAL _____

COMP. DATE 1-24-75 DEPTH 6750
Plugged 1-26-75 6752 per log

CONTRACTOR Arapahoe Drilling Company

CASING SIZE	DEPTH	CEMENT	LINER SIZE & DEPTH	DRILLED BY ROTARY	<u>X</u>
<u>9 5/8"</u>	<u>462</u>	<u>400sacks</u>		DRILLED BY CABLE TOOL	
				PRODUCTIVE RESERVOIR	
				INITIAL PRODUCTION	<u>Dry</u>

FORMATION TOPS	DEPTHS	SOURCE		REMARKS	
		L.L.	E.L.		
Formation	Top	Bottom			
Morrison	Surface	1499'	Leadville	5958'	6236'
Chinle	1494'	2243'	Ouray	6236'	6302'
Moenkopi	2243'	2453'	Elbert	6302'	6493'
De Chelly	2453'	2827'	McCracken	6493'	6612'
Organ Rock	2827'	4300'	Aneth	6612'	6750'
Hermosa	4300'	4975'	Total Depth	6750'	
Ismay	4975'	5098'			
Desert Creek	5098'	5230'			
Akah	5230'	5428'			
Barker Creek	5428'	5668'			
Lower Paradox	5668'	5857'			
Molas	5857'	5958'			

ELECTRIC LOGS	PERFORATED INTERVALS	PROD. INTERVALS	SAMPLE LOG
<u>Dual Induction-log</u>			SAMPLE DESCRP.
<u>Sidewall Neutron Porosity</u>			SAMPLE NO. <u>1764</u>
			CORE ANALYSIS
			DSTs <u>See reverse side</u>

REMARKS _____ APP. TO PLUG 2-24-75
 PLUGGING REP. 2-25-75
 COMP. REPORT 2-24-75

WATER WELL ACCEPTED BY _____
 BOND CO. COMMERCIAL UNION INSURANCE COMPANY *filed in 9/16/39* BOND NO. C-A-71066-29-29
 BOND AMT. \$ 25,000 CANCELED 2-1-83 ORGANIZATION REPORT 12-10-74
 FILING RECEIPT 0274 LOC. PLAT X WELL BOOK X PLAT BOOK X
 API NO. 02-001-20204 DATE ISSUED 12-9-74 DEDICATION S/2 SE/4

PERMIT NUMBER 637
Notified by letter (over)

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

DESIGNATE TYPE OF COMPLETION:

New Well Work-Over Deepen Plug Back Same Reservoir Different Reservoir Oil Gas Dry

DESCRIPTION OF WELL AND LEASE

Operator Northwest Pipeline Corporation		Address P.O. Box 90 Farmington, New Mexico 87401	
Federal, State or Indian Lease Number or name of lessor if fee lease N00-C-14-20-5425		Well Number 1	Field & Reservoir Wildcat
Location 860 ¹ /S & 2310 ¹ /E		County Apache	
Sec. TWP-Range or Block & Survey Sec 20, T141N-R30E			
Date spudded 12-19-74	Date total depth reached 1-24-75	Date completed, ready to produce XX	Elevation (DF, HCB, RT or Gr.) 5464' GR
Elevation of casing hd. Range 5464'		feet	
Total depth 6750	P.B.T.D. ---	Single, dual or triple completion? ---	If this is a dual or triple completion, furnish separate report for each completion. ---
Producing interval (s) for this completion ---		Rotary tools used (interval) all	Cable tools used (interval) ---
Was this well directionally drilled? No	Was directional survey made? No	Was copy of directional survey filed? ---	Date filed ---
Type of electrical or other logs run (check logs filed with the commission) Dual induction, Gamma Sonic, Neutron			Date filed 2-16-75

CASING RECORD

Casing (report all strings set in well—conductor, surface, intermediate, producing, etc.)

Purpose	Size hole drilled	Size casing set	Weight (lb./ft.)	Depth set	Sacks cement	Amt. pulled
Surface	13-3/4"	9-5/8"	32.3	462	400	0

TUBING RECORD

Size	Depth set	Packer set at	Size	Top	Bottom	Sacks cement	Screen (ft.)
in.	ft.	ft.	in.	ft.	ft.		

PERFORATION RECORD

Number per ft.	Size & type	Depth interval	Amt. & kind of material used	Depth interval

ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD

INITIAL PRODUCTION

Date of first production _____ Producing method (indicate if flowing, gas lift or pumping—if pumping, show size & type of pump:)

Date of test	Hrs. tested	Choke size	Oil prod. during test	Gas prod. during test	Water prod. during test	Oil gravity
			bbbls.	MCF	bbbls.	* API (Corr)

Tubing pressure	Casing pressure	Cal'ed rate of Production per 24 hrs.	Oil	Gas	Water	Gas-oil ratio
			bbbls.	MCF	bbbls.	

Disposition of gas (state whether vented, used for fuel or sold):

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Production & Drilling Engineer of the Northwest Pipeline Corporation (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Date February 24, 1975 Signature O. B. Whitenburg js

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FEB 26 1975

Permit No 637

STATE OF ARIZONA

OIL & GAS CONSERVATION COMMISSION

Well Completion or Recompletion Report and Well Log

Form No. 4 File One Copy

(Complete Reverse Side)

DETAIL OF FORMATIONS PENETRATED

Formation	Top	Bottom	Description*
Morrison	Surface	1499'	<p>D.S.T. #1, 5089'-5167' Desert Creek</p> <p>IHH: 2530 Opened tool for 17 minute first flow</p> <p>ISIP: 1788 with weak - Fair blo. Closed tool</p> <p>IFP: 134-158 for 60 minute first closed in press.</p> <p>FFP: 216-260 re-opened tool for 60 minute second</p> <p>FSIP: 640 flow with very weak blo. Closed tool</p> <p>FHH: 2530 for 60 minute second closed press.</p> <p>Rec.: 470' Sli Total time 197 minutes.</p> <p>WCØM</p> <p>D.S.T. #2 6480' - 6555' McCracken</p> <p>IHH: 3200 Opened tool with fair blo,</p> <p>ISIP: 2353 increasing to fair blo in</p> <p>IFP: 47-140 30 minutes. Closed tool for</p> <p>FFP: 158-256 60 minute first closed in</p> <p>FSIP: 2025 press. Tool re-opened with</p> <p>FHH: 3197 weak blo for 60 minutes.</p> <p>Rec: 490' Sli O&GCØM. Total time - 210 minutes.</p> <p>D.S.T. #3 -- 6697' 6750' Aneth</p> <p>IHH: 3251 Opened tool with fair blo-</p> <p>ISIP: 2336 had good blow in 4 min. Had</p> <p>IFP: 396-446 very good blow in 8 min.</p> <p>FFP: 467-1024 Closed tool for 60 min. Tool</p> <p>FSIP: 2296 re-opened with fair blo,</p> <p>FHH: 3240 increasing to good blo in 7</p> <p>Rec: 280' Ø mud. min. Closed tool for 90 min.</p> <p>280' WC & Sli gc Total time 256 minutes.</p> <p>1400' XW-No gas</p>
Chinle	1494'	2243'	
Moenkopi	2243'	2453'	
De Chelly	2453'	2827'	
Organ Rock	2827'	4300'	
Hermosa	4300'	4975'	
Ismay	4975'	5098'	
Desert Creek	5098'	5230'	
Akah	5230'	5428'	
Barker Creek	5428'	5668'	
Lower Paradox	5668'	5857'	
Molas	5857'	5958'	
Leadville	5958'	6236'	
Ouray	6236'	6302'	
Elbert	6302'	6493'	
McCracken	6493'	6612'	
Aneth	6612'	6750'	
Total Depth	6750'		

* Show all important zones of porosity, detail of all cores, and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries.

INSTRUCTIONS:

Attach driller's log or other acceptable log of well.

This Well Completion or Recompletion report and well log shall be filed with the State of Arizona Gas Conservation Commission not later than thirty days after project completion.

WA

APPLICATION TO ABANDON AND PLUG

FIELD Wildcat
OPERATOR Northwest Pipeline Corporation ADDRESS P.O. Box 90 Farmington, N.M. 87401
Federal, State, or Indian Lease Number
or Lessor's Name if Fee Lease Indian N00-C-14-20-5425 WELL NO Judy Lee #1
LOCATION 860'S & 2310'E, Section 30, T41N-R30E GSRM, Apache County, Arizona

TYPE OF WELL dry TOTAL DEPTH 6750'
(Oil, Gas or Dry Hole)
ALLOWABLE (If Assigned)
LAST PRODUCTION TEST OIL _____ (Bbls.) WATER _____ (Bbls.)
GAS _____ (MCF) DATE OF TEST _____
PRODUCING HORIZON _____ PRODUCING FROM _____ TO _____

1. COMPLETE CASING RECORD.

Surface: 9-5/8" 32.3#, H-40, Set @ 450' W/400 sacks

2. FULL DETAILS OF PROPOSED PLAN OF WORK.

Spot 6 Class "B" neat cement plugs as follows in the 7-7/8" hole:
Plug #1 = 140 cubic feet from 6750' to 6400'.
Plug #2 = 80 cubic feet from 5200' to 5000'.
Plug #3 = 80 cubic feet from 4400' to 4200'.
Plug #4 = 80 cubic feet from 2550' to 2350'.
Plug #5 = 60 cubic feet from 550' to 400'.
Surface - 20 cubic feet from 50' to 0'.

Place a dry hole marker in the 9-5/8" surface casing. This marker will be constructed of 4-1/2" pipe and will extend approximately 5' above ground level.

DATE COMMENCING OPERATIONS 1-25-75
NAME OF PERSON DOING WORK O.B. Whitenburg ADDRESS P.O. Box 90 Farmington, N.M.
O.B. Whitenburg Signature
Production & Drilling Engineer Title
Northwest Pipeline Corp. P.O. Box 90 Farmington, N.M. Address
February 24, 1975 Date

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FEB 20 1975
O & G CONS. COM.M.

Date Approved _____
STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
By: _____

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Application to Abandon and Plug
File Two Copies
Form No. 9

Permit No. 637

1-25-75

Call from Bill Strickland - Northwest Pipeline, Farmington

Re: Permission to plug - Granted, Jim Sevelock

Tops:		DST #1: 5080 - 5167, Rec 470 SLI
Morrison	Surface	OCM
Chink	1494	
MaerKopi	2443	DST #2: 6480 - 6555, Rec 490
De Chelly	2453	SLI O&GCM
Organ Rock	2827	
Herмоса	4300	DST #3: 6698 - 6750, Rec
Ismay	4975	2330 SLI O&GCM
Desert Crk	5098	
Akah	5230	
BARKER Crk	5428	
LOWER PARADOX	5668	
Molas	5857	
MISS	5958	
ORAY ORAY	6236	
ELBERT	6302	
77F CRACKEN	6493	
ANETH ANETH	6612	
TD	6750	

(Surf. csg set @ 462)

Plugs = TD → 6400
 5200 - 5000
 4200 - 4400
 2350 - 2550
 400 - 550
 50 - SURFACE

Sent forms 1-27-75

DAILY DRILLING SUMMARY

WELL NAME AND NUMBER SECTION-TWN.-RANGE	CONTRACTOR	RIG NO.	DEPTH YESTER- DAY	DEPTH TODAY	DEPTH TOTAL FOOTAGE	CSG. T.D.	EST. T.D.	NO. OF DAYS	HOLE SIZE	REMARKS
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	6750	6750	6750	462	6750	37	7-7/8	TD 6750'. Now logging. Mud wt 9.2#, Vis 57, WL 7.2 cc, 8% solids, trace of sand. DST #3- Aneth Formation. Interval: 6698-6750' Packer: Top 6690-- Bottom 6698' IF: 16 min-Fair blow immediately-increasing to good blow in 4 min; increased to very good blow in 8 min and thru out flow period (No gas to surface.) ISL: 60 min FF: 90 min: Fair blow immediately - increased to good blow in 7 min. Increased to very good blow in 12 min. After 65 min blow decreased slightly for remainder of flow period. (No gas to surface.) FSI: 90 min. Recovery: 2330' total fluid. 280' drlg mud, 280' salt water cut drlg mud slightly gas cut & 370' mud cut saltwater & 1400' saltwater. IFP: 346-399 ISIP: 2278 FFP: 426-955 FSIP: 2251 IHP: 3177 FHP: 3177 BHT: 136°F Out of hole w/ test tools @ 6:00 pm 1/24/75. Go in & condition mud & hole for logs.
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	6750	6750	6750	462	6750	38	7-7/8	SWS completed logging @ 12:30 pm 1/25/75. GIH w/ open ended drill pipe to PSA. Howco spotted cmt @: Plug #1: 6750' to 6400' w/ 120 sx Cl B Neat #2: 5200' to 5000' w/ 70 sx Cl B Neat #3: 4400' to 4200' w/ 70 sx Cl B Neat #4: 2550' to 2350' w/ 70 sx Cl B Neat #5: 550' to 400' w/ 55sx Cl B Neat Surface: 50' to 0' w/ 15 sx Cl B Neat Remove Bradenhead & set dry hole marker. Rig released @ 9:00 am 1/26/75. (Final Report.) REC'D VLT

DAILY DRILLING SUMMARY

WELL NAME AND NUMBER SECTION-TWN.-RANGE	CONTRACTOR	RIG NO.	DEPTH YESTER- DAY	DEPTH TODAY	TOTAL FOOTAGE	CSG. T.D.	EST. T.D.	NO. OF DAYS	HOLE SIZE	REMARKS
Judy Lee #1 (WC) Apache Co., Utah SE 30-41-30	Arapahoe	6	6214	6314	100	462	6550	30	7-7/8	1° @ 6265'. Now Ø @ 6314' thru lime & chert w/ bit #25. Mud wt. 9.4#, Vis 40, WL 8.4 cc, pH 10, trace of sand.
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	6314	6440	126	462	6550	31	7-7/8	Now Ø @ 6440' thru lime & chert w/ bit #26. Mud wt 9.4#, Vis 43, WL 8.0 cc, FC 2/32", pH 10, & trace of sand.
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	6440	6521	81	462	6550	32	7-7/8	1° @ 6510'. Now Ø @ 6521' thru lime & chert w/ bit #27. Mud wt 9.4#, Vis 42, WL 9.2 cc, FC 2/32", pH 10
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	6521	6565	44	462	6650	33	7-7/8	Drid. to 6565' thru lime & chert w/ bit #27. Mud wt. 9.4#, Vis 50, WL 7.0 cc, FC 2/32", pH 10, trace of sand. Now tripping for DST #2. Plan to test Upper McCracken (6500-6565').
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	6555	6555	0	462	6650	34	7-7/8	Ran DST #2 Interval (McCracken) - 6480-6555'. Tool open @9:40AM. Packer: Top-6472', Bottom 6480'. IF-30 Min - Very weak blow - increased slightly in 3 min. & steady thru out. ISI-60 min. FF- 60 min - very weak blow thr out -no gas to surface FSI-60 min Recovery - 490' slightly oil & gas cut mud. IFP- 93-140 psi ISIP-2358 psi FFP-140-279 psi FSIP-1991 psi IHP-3183 psi FIP -3183 psi Temp - 123°F CORRECTION ON REPORT OF Jan. 21, 1975 DID READ: Depth today 6565- total footage 44 SHOULD READ: Depth Today 6555- total footage 34
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	6577	6654	77	462	6750	35	7-7/8	Now Ø @ 6654 in the Aneth w/ bit #29. Mud wt 9.4#, Vis 45, WL 8.8 cc, FC 2/32", pH 10. Amended TD 6750'. CORRECTION TO REPORT OF January 22: DID read: Depth Today 6555 - Total Footage -0- Should read: Depth Today 6577 - Total Footage 22

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NORTHWEST PIPELINE CORPORATION
DAILY DRILLING SUMMARY

WELL NAME AND NUMBER SECTION-TWN.-RANGE	CONTRACTOR	RIG NO.	DEPTH YESTER- DAY	DEPTH TODAY	TOTAL FOOTAGE	CSG. T.D.	EST. T.D.	NO. OF DAYS	HOLE SIZE	REMARKS
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	5167	5253	86	462	6550	23	7-7/8	Ran DST #1- Interval 5080'-5167' Initial flow- 17 min-weak blow immediately- increased to fair blow in 2 min & thru out flow. Initial SI- 60 min. Final Flow: 60 min; weak blow thru out flow-no gas to surface. Final SI=60 min. Recovery-290' water cut mud & 180' slightly oil & gas cut mud. IFP-116 psig to 140 psig. ISIP-1760 psig. FFP-186 psig to 256 psig. FSIP-605 psig. IHP & FHP-2541 psig BHT - 116°F. Now \emptyset w/ bit #23 thru sd & sh. Mud wt 9.2#, Vis 43 WL 5.6 cc.
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Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	5253	5427	174	462	6550	24	7-7/8	3/4° @ 5427'. Drld. thru sd & sh & lime & chert w/ bit #23. Mud wt 9.5#, Vis 43, WL 7.2 cc, FC 2/32". Now tripping out for bit #24.
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	5427	5518	91	462	6550	25	7-7/8	3/4° @ 5490'. Now \emptyset thru sd & sh & lime & chert w/ bit #25. Mud wt 9.2#, Vis 43, WL 6.0 cc, FC 2/32"
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	5518	5720	202	462	6550	26	7-7/8	Now \emptyset thru sd & sh & lime & chert w/ bit #25. Mud wt 9.3#, Vis 43, WL 6.8 cc, FC 2/32, trace of sand.
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	5720	5912	192	462	6550	27	7-7/8	Now \emptyset thru sd & sh & lime & chert w/ bit #25. Mud wt 9.4#, Vis 44, WL 8.4 cc, FC 2/32", trace of sand.
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	5912	6043	131	462	6550	28	7-7/8	Now \emptyset thru sd & sh & lime & chert w/ bit #25. Mud wt 9.4#, Vis 43, WL 4.6 cc, FC 2/32", trace of sand.
Judy Lee #1 (WC) Apache Co., Arizona SE 30-41-30	Arapahoe	6	6043	6214	171	462	6550	29	7-7/8	Now \emptyset @ 6214' thru sd & sh & lime & chert w/ bit #25. Mud wt 9.4#, Vis 43, WL 8.0 cc, FC 2/32", trace of sand.

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DAILY DRILLING SUMMARY

WELL NAME AND NUMBER SECTION-TWN.-RANGE	CONTRACTOR	RIG NO.	DEPTH YESTERDAY	DEPTH TODAY	TOTAL FOOTAGE	C.S. T.D.	EST. T.D.	NO. OF DAYS	HOLE SIZE	REMARKS
Judy Lee #1 (WC) Apache County, Arizona	Arapahoe	6	3465	3739	274	462	6550	9	7-7/8	1/4" @ 3739'. Mud wt. 9.5#, Vis 37, WL 9.8cc, FC 2/32", pH 12.5 Now GPH w/ bit #13.
Judy Lee #1 (WC) Apache County, Arizona	Arapahoe	6	3739	3970	231	462	6550	10	7-7/8	1/2" @ 3928'. Mud wt 9.4#, Vis 36, WL 12.2cc, pH 12. Now thru sd & sh w/ bit #14.
Judy Lee #1 (WC) Apache County, Arizona	Arapahoe	6	3970	4190	220	462	6550	11	7-7/8	Now thru sd & sh w/ bit #14. Mud wt 9.4#, Vis 37, WL 13.2 cc, FC 2/32", pH 9.5.
Judy Lee #1 (WC) Apache County, Arizona	Arapahoe	6	4190	4395	205	462	6550	12	7-7/8	Now thru sd & sh w/ bit #14. Mud wt 9.4#, Vis 36, WL 10, FC 2/32". Lost all 3 cones from bit #14. Drld. on junk for 3-1/2 hrs. Went in w/ junk basket (no recovery). Circ & cond. hole. Now fishing w/ junk basket. Mud wt. 9.5#, Vis. 41, WL 10 cc, filter cake 2/32".
Judy Lee #1 (WC) Apache County, Ariz. SE 30-41-30	Arapahoe	6	4395	4395	-0-	462	6550	14	7-7/8	Drld. on junk 1-1/2 hrs. Went in w/ junk basket & recovered 1 cone & some pes. Went in w/ junk basket & now tripping out w/ same.
Judy Lee #1 (WC) Apache County, Ariz. SE 30-41-30	Arapahoe	6	4395	4395	-0-	462	6550	15	7-7/8	Tripped out w/ junk basket (no recovery). Drld. on junk w/ bit #18 (no footage). Now on junk w/ bit #19 (no footage). Mud wt. 9.4#, Vis. 42, WL 9.2 cc, filter cake 2/32", pH 9.5.

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JAN 6 1974

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WELL NAME AND NUMBER SECTION-TWN.-RANGE	CONTRACTOR	RIG NO.	DEPTH YESTERDAY	DEPTH TODAY	TOTAL DEPTH	CSG. T.D.	EST. T.D.	NO. OF DAYS	HOLE SIZE	REMARKS
Judy Lee #1 (WC) Apache County, Ariz. SE 30-41-30	Arapahoe	6	318	765	447	462	6550	2	7-7/8	Drl'd. 12-1/4" surf. hole to 472' w/ bit #5. 1° @ 472'. Ran 11 hrs. 9-5/8" 36# K55 Srd. csg. (447.88') set @ 462.04' RKB. HWSO cmd. w/ 325 sks. Cl. B w/ 1/4# flocele/sk. & 3% CC. Circ. cmt. to surf. PD @ 12:30 PM, 12/20/74. WOC 12 hrs. Tstd. surf. csm. to 600#/30 min.-OK. Now Ø thru sd. & sh. w/ bit #6. Mud wt. 8.00 Vis. 29.
Judy Lee #1 (WC) Apache County, Ariz. SE 30-41-30	Arapahoe	6	765	1775	1010	462	6550	3	7-7/8	1-3/4° @ 1402'. Now Ø thru sd. & sh. w/ bit #7. Mud wt. 8.9# Vis. 29. WL 18 cc. filter cake 1/32"
Judy Lee #1 (WC) Apache County, Ariz. SE 30-41-30	Arapahoe	6	1775	2461	686	462	6550	4	7-7/8	1° @ 1900. Drl'd. to 2461' thru sd. & sh. w/ bit #8. Mud wt. 9.1# Vis. 30. WL 8.6 cc. filter cake 1/32". 1° @ 2461'. tripping in hole w/ bit #9.
Judy Lee #1 (WC) Apache County, Arizona	Arapahoe	6	2461	2992	531	462	6550	5	7-7/8	Now Ø thru sd & sh & lime w/ bit #9. Mud wt 9.1#, Vis 35, WL 5.2cc, 2/32" filter cake. & trace sand.
Judy Lee #1 (WC) Apache County, Arizona	Arapahoe	6	2992	3136	144	462	6550	6	7-7/8	Now Ø thru sd & sh w/ bit #10. Mud wt 10# Vis 42, WL 5.2cc, filter cake 2/32", pH 9.5. Shut Down f/ Ym
Judy Lee #1 (WC) Apache County, Arizona	Arapahoe	6	3136	3136		462	6550	7	7-7/8	Shut down for Xmas.
Judy Lee #1 (WC) Apache County, Arizona	Arapahoe	6	3136	3465	329	462	6550	8	7-7/8	Now Ø thru sd & sh w/ bit #11. Mud wt 7.5#, Vis 31, WL 0.4cc FC 2/32", trace of sand, pH 8.5. 3/4° @ 3441.

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DEC 26 1974

0-8-60NS-60MM

WELL NAME AND NUMBER SECTION-TWN.-RANGE	CONTRACTOR	RIG NO.	DEPTH YESTER- DAY	DEPTH TODAY	TOTAL FOOTAGE	CSG. T.D.	EST. T.D.	NO. OF DAYS	HOLE SIZE	REMARKS
Judy Lee #1 (WC) Apache County SE 30-41-30	Arapahoe	6					450 6550	1	13-3/4	MOL & RU. Will spud this date.
Judy Lee #1 (WC) Apache County, Ariz. SE 30-41-30	Arapahoe	6					6550		13-3/4	Repaired rotary table & now \emptyset rat hole.
Judy Lee #1 (WC) Apache County, Ariz. SE 30-41-30	Arapahoe	6					6550		13-3/4	Made rig repairs & now continuing to drill rat hole thru boulders.
Judy Lee #1 (WC) Apache County, Ariz. SE 30-41-30	Arapahoe	6	-0-	318	318		6550	1	12-1/4	Drld. rat & mouse hole. Spud @ 4:00 PM, 12/19/74. 3/4" @ 225'. Now \emptyset 12-1/4" surf. hole @ 318' thru sd. & sh. w/ bit #5.

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Dec 19 1974
 U & G TRANS. CORP.

APPLICATION FOR PERMIT TO DRILL OR RE-ENTER

APPLICATION TO DRILL

RE-ENTER OLD WELL

Northwest Pipeline Corporation

NAME OF COMPANY OR OPERATOR

P.O. Box 90

Farmington

New Mexico 87401

Address

City

State

Arapahoe Drilling Company

Drilling Contractor

3200 Southside River Road

Farmington, N.M. 87401

Address

DESCRIPTION OF WELL AND LEASE

~~Section or Indian Lease Number, or~~

N00 C-14-20-5425

Well number

Judy Lee #1

Elevation (ground)

5464'

Nearest distance from proposed location to property or lease line:

860'

feet

Distance from proposed location to nearest drilling completed or applied—for well on the same lease:

none

feet

Number of acres in lease:

2559

Number of wells on lease, including this well, completed in or drilling to this reservoir:

1

If lease, purchased with one or more wells drilled, from whom purchased:

Name

Address

Well location (give footage from section lines)

860' FSL & 2310' FEL

Section—township—range or block and survey

Sec 30, T41N, R30E, GSRM

Dedication (Comply with Rule 195)

80 S/2 SE/4

Field and reservoir (if wildcat, so state)

Wildcat

County

Apache

Distance, in miles, and direction from nearest town or post office

5 miles west of Teec-nos-pos, Arizona

Proposed depth:

6650'

Rotary or cable tools

rotary

Approx. date work will start

Dec 10, 1974

Bond Status: Statement

Amount: \$26,000

Organization Report

On file

Or attached

Filing Fee of \$25.00

Attached

XXX

Remarks:

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Production & Drilling Engineer of the Northwest Pipeline Corporation (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

RECEIVED

DEC 09 1974

O & G CONS. COMM.

Signature

O.B. Whittenburg

JS

December 6, 1974

Date

Permit Number: 637

Approval Date: 12-9-74

Approved By: W.E. [Signature]

Notice: Before sending in this form be sure that you have given all information requested. Much unnecessary correspondence will thus be avoided.

**STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION**

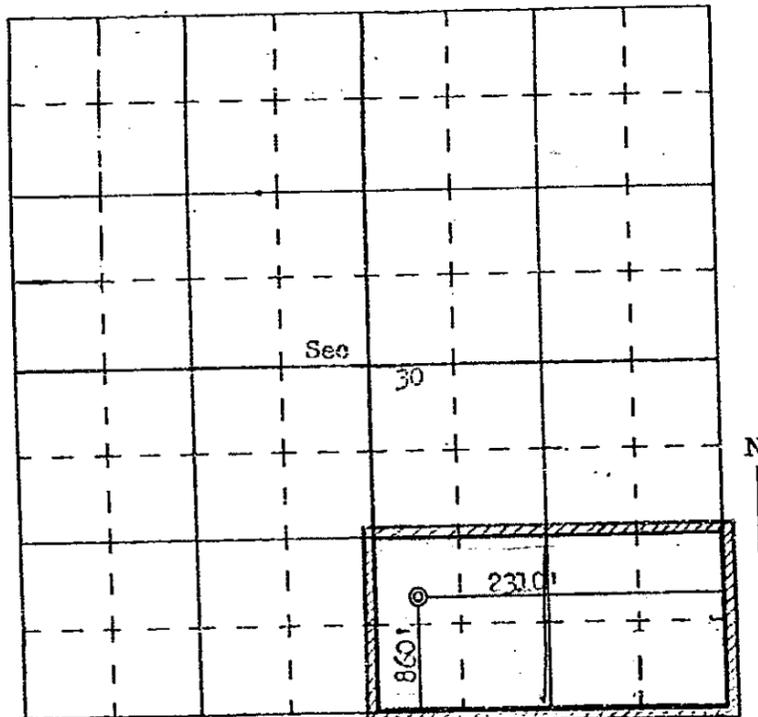
Application to Drill or Re-enter

File Two Copies

Form No. 3

(Complete Reverse Side)

COMPANY Northwest Pipeline Corporation
 LEASE Judy Lee WELL NO. 1
 SEC. 30 T. 11N R. 30E GSRM
Apache County, Arizona
 LOCATION 860' FSL 2310' FEL
 ELEVATION 5464 Ungraded Ground



SCALE—4 INCHES EQUALS 1 MILE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTE OF ACTUAL SURVEYS MADE BY ME UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SEAL: *Fred B. Kerr Jr.*
 Registered Land Surveyor.
 Fred B. Kerr Jr.

SURVEYED November 23, 1974

Laughlin-Simmons & Co. FARMINGTON, N. M.

RECEIVED

DEC 08 1974

O & G CONS. COMM.

#637



PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: NORTHWEST PIPELINE CORPORATION
(OPERATOR)

to drill a well to be known as

JUDY LEE #1
(WELL NAME)

located 860' FSL & 2310' FEL

Section 30 Township 41N Range 30E, Apache County, Arizona.

The S/2 SE/4 of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 9th day of December, 19 74.

OIL AND GAS CONSERVATION COMMISSION

By W.B. [Signature]
EXECUTIVE SECRETARY

PERMIT N^o 637

RECEIPT NO. 0274
API NO. 02-001-20204

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27

SAMPLES ARE REQUIRED

NORTHWEST PIPELINE CORPORATION
#10000000

Sec 30-741A-40E
Apache County, Arizona

637

NORTHWEST PIPELINE CORPORATION
#1 JUDY LEE

Sec 30-T41N-R30E
Apache County, Arizona

ELLIOTT A. RIGGS

Petroleum Geologist

GEOLOGICAL REPORT

of

NORTHWEST PIPELINE CORPORATION
#1 JUDY LEE

Sec 30-T41N-R30E
Apache County, Arizona

Prepared for

NORTHWEST PIPELINE CORPORATION
One Park Central, Suite 1487
Denver, Colorado 80202

by

Elliott A. Riggs
P. O. Box 711
Petroleum Club Plaza Building
Farmington, New Mexico 87401
January 31, 1975

ELLIOTT A. RIGGS

Petroleum Geologist

GEOLOGICAL REPORT

of

NORTHWEST PIPELINE CORP. #1 JUDY LEE

Sec 30-T41N-R30E
Apache County, Arizona

WELL DATA

Location: 880' FSL, 2310' FEL, Sec 30-T41N-R30E, Apache Co., Arizona

Elevation: KB 5477'
DF 5476'
GL 5464'

Depths: All depths measured from KB

Commenced: Spud 4:00 PM, December 19, 1974

Hole Sizes: 12 1/4" to 250'
7 7/8" to 6750'

Casing Record: 9 5/8" to 462'

Cores: None

Drill Stem Tests: DST #1 - 5080-5167'
DST #2 - 6480-6555'
DST #3 - 6698-6750'

Total Depth: Driller 6750'
Schlumberger 6752'

Logs: Schlumberger: Dual Induction Laterlog 462-6746'
Sidewall Neutron Porosity 4800-6752'
BHC Sonic 4800-6752'

Geologist: Sample log 500-6750'
Drilling time log 600-6750'

Mud Log: Omega Well Logging 500-6750'

Quality of Samples: Fair to excellent

Disposition of Spls: Four Corners Sample Cut
641 West Broadway
Farmington, New Mexico 87401

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Hole Difficulties: Difficulty with mouse hole and rat hole due to surface boulders.
No down hole problems.

Fishing Job: Lost cone in hole 4395', lost 2 more cones trying to drill up junk.

Water Flows: None

Lost Circulation: None

Gas Flows: None

Oil Flows: None

Contractor: Arapahoe Drilling Company
P. O. Box 207
Farmington, New Mexico 87401

Tool pusher: Mr. Roy Sheppard
2305 Cochiti
Farmington, New Mexico 87401

Water Source: Wash 300 yards west of rig

Mud Logger: Omega Well Logging Service
Mr. Pat Jamison
P. O. Box 2095
Farmington, New Mexico 87401

Mud Services: Magcobar
Bloomfield Hwy
Farmington, New Mexico 87401

Plugging Record: Permission to P & A and plugging program was secured from regulatory agencies by Mr. Forrest Wood, Northwest Pipeline Corp., Farmington, N. M. Permission to P & A from Northwest Pipeline Corp. & partners in well was obtained from Mr. Jim Lowell and Mr. John M. Parker, Northwest Pipeline Corp., Denver, Colorado. The following plugs were set in accordance with governmental agency instructions:

Plug #1 6750-6400 104 cu ft Class B neat cmt
#2 5200-5000 80 cu ft
#3 4400-4200 80 cu ft
#4 2550-2350 80 cu ft
#5 550- 400 60 cu ft
#6 50- sfc 20 cu ft

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Deviation Record:

Totco

225'	-	3/40
472	-	1 1/4
1402	-	1 3/4
1900	-	1
2461	-	1
2992	-	3/4
3136	-	3/4
3441	-	3/4
3739	-	1/2 (?)
3928	-	1/2 (?)
4397	-	1/2
4478	-	1 1/4
5036	-	3/4
5427	-	3/4
5490	-	1/2
6265	-	1
6510	-	1

Bit Record:

<u>Size</u>	<u>Mfgr</u>	<u>Types</u>	<u>Depth in</u>	<u>Ftge</u>	<u>Hours</u>
11"	STC	DG	Sfc	Rat hole	
11"	STC	DG	Sfc	Mouse hole	
12 1/4"	Sec	S4T	Sfc	35	4
12 1/4"	HTC	X3	35	215	8 3/4
12 1/4"	HTC	X3	250	222	6
7 7/8"	STC	DTJ	472	930	10 3/4
7 7/8"	STC	DG	1402	498	18 1/4
7 7/8"	STC	DGT	1900	561	15 1/2
7 7/8"	STC	DGTH	2461	531	22 1/2
7 7/8"	Sec	S4TG	2992	144	10 1/4
7 7/8"	STC	DGTH	3136	305	15 1/4
7 7/8"	STC	SDGH	3441	298	21 1/2
7 7/8"	STC	DGTH	3739	189	12 1/2
7 7/8"	STC	RB-F3	3928	467	53 1/4
7 7/8"	STC	RR-SDGH	4395	Drlg on junk	
	AAA			Magnet	
7 7/8"	Sec	RR-S4TG	4395	Drlg on junk	
7 7/8"	STC	V2H	4395	Drlg on junk	
7 7/8"	STC	L4H	4395	Drlg on junk	
7 7/8"	STC	T2	4395	Drlg on junk	
7 7/8"	STC	T2	4399	79	15 3/4
7 7/8"	HTC	RB-J44	4478	242	42
7 7/8"	HTC	RB-J33	4720	316	44

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<u>Size</u>	<u>Mfgr</u>	<u>Types</u>	<u>Depth in</u>	<u>Ftge</u>	<u>Hours</u>
7 7/8"	STC	F-4	5036	-	-
7 7/8"	STC	RRF-4	5167	339	47 1/2
7 7/8"	STC	SL4H	5427	73	12 1/4
7 7/8"	STC	F4	5490	725	103
7 7/8"	Reed	FP62	6265	245	49 1/4
7 7/8"	HTC	RB-RG7	6510	45	13 1/4
7 7/8"	HTC	J99	6555	57	18 1/2
7 7/8"	STC	F5	6612		

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STRATIGRAPHY

<u>System</u>	<u>Formation</u>	<u>Depth</u>
<u>JURASSIC</u>	Morrison	Sfc
<u>TRIASSIC</u>	Chinle	1494'
	Moenkopi	2243'
<u>PERMIAN</u>	De Chelly	2453'
	Cutler-Organ Rock	2827'
<u>PENNSYLVANIAN</u>	Hermosa	4300'
	Ismay	4975'
	Desert Creek	5098'
	Akah	5230'
	Barker Creek	5428'
	Lower Paradox	5668'
	Molas	5857'
<u>MISSISSIPPIAN</u>	Leadville	5958'
<u>DEVONIAN</u>	Ouray	6236'
	Elbert	6302'
	McCracken	6493'
	Aneth	6612'
	TD Driller	6750'
	TD Schlumberger	6752'

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DISCUSSION

This report is written at the request of Mr. John M. Parker and Mr. James D. Lowell, Northwest Pipeline Corporation, Denver, Colorado. The writer was retained as consulting geologist on subject well.

Northwest Pipeline Corp. #1 Judy Lee was drilled about 3/4 of a mile southeast of the Miami Oil Producers #1 Miami Navajo 41-53 (30-41N-30E) which was drilled in 1967 to the approximate base of the Devonian Aneth dolomite. The Miami well had about a 40' drilling break near the top of the Pennsylvanian Akah limestone which had a show in the samples and a substantial gas kick on the mud log. This zone was drill stem tested from 5157-5185' and reportedly gauged 1000 mcf with a spray of salt water after 1 hour. This porosity zone was the primary zone of interest in the #1 Judy Lee well and it was anticipated that drilling a well to the south of the Miami well would not only be structurally high but would still penetrate the Akah porosity zone.

About 2 miles southeast of the #1 Judy Lee well, the British American #1 Navajo C was drilled to the Pre-Cambrian in 1960. This well penetrated several thin porosity zones in the top of the Akah and on a long drill stem test from 5101-5338', reported gas to surface in 9" with no gauge. It was anticipated that the #1 Judy Lee well would still be in the good porosity and yet structurally high enough to be capable of a water free gas completion.

Secondary zones of interest were considered to be the wildcat prospects

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of porosity being encountered in the Ismay, Desert Creek, Barker Creek, Lower Paradox intervals. In addition, minor oil shows had been obtained in both the Miami and British American wells in the Devonian McCracken sandstone and Devonian Aneth dolomite and thus the possibility existed of encountering commercial accumulations in these intervals.

A remote wildcat possibility that some unforeseen trapping mechanism could have provided an oil or gas accumulation in the Mississippian porosity was possible. Oil is presently being produced about 8 miles to the southwest at Dry Mesa field and a non-flammable helium bearing gas accumulation is present in the old Texaco #1 Navajo "Z" well about 5 miles east of the #1 Judy Lee well in Sec 36-T41N-R30E.

The Northwest Pipeline #1 Judy Lee was drilled with rotary tools to TD. Samples were generally fair to excellent. Regular 20' samples were caught from 500' down to about 1500' primarily due to rapid penetration rate. A 1500' sample interval was decreased to 10' and regular 10' samples were caught to TD except where necessary to shorten interval due to shows and tests. The high quality of samples caught on this well and turned into the Four Corners Sample Cut was primarily due to the fact that the mud logging unit was a crew job with 2 men and the responsibility for catching samples on time was not left to the discretion of the roughnecks on the drilling crew. If this wellsite geologist may be permitted an observation, it would be that catching samples one at a time on time as the mud logging crew did, made a profound difference in the quality of the samples. Over the last few years, the quality and sense of responsibility of the personnel

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on drilling crews has deteriorated to a remarkable low. It was a pleasure to work with good and trustworthy samples and due to the efforts of the mud logging crew, every minor show was seen and evaluated in the samples. Samples were deposited at the Four Corners Sample Cut, Farmington, New Mexico.

Drilling time was recorded on a Star recorder in 1' intervals. Drilling time logs at the scale of 2" = 100' and selected intervals of 5" = 100' are included at the end of this report. A tabulation of drilling times is included with this report.

Samples were examined at the wellsite by the writer from 500' to a TD of 6750'. All samples were examined under a binocular microscope and a Rotary fluoroscope. Each sample was described and tested for shows. Sample description sheets and a wellsite interpretative sample log are included at the end of this report in addition to a copy of a drilling time log superimposed on the electric log run on this well. All substantial or questionable shows were recommended for drill stem test and three DST's were conducted during the drilling of this hole.

Correlation logs used during the drilling of the Northwest Pipeline Corporation #1 Judy Lee are as follows:

Miami #1 Miami Navajo 41-54	NW30-41N-30E
British American #1 Navajo "C"	SW5-40N-30E

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STRUCTURAL TOPS

	<u>Miami #1</u> <u>Miami Navajo</u>	<u>NWP #1 Judy Lee</u>	<u>British American</u> <u>#1 Navajo "C"</u>
KB elevation	5353	5477	5545
De Chelly	+2980	+3024	+3105
Organ Rock	+2621	+2650	+2737
Hermosa	+1165	+1177	+1323
Ismay	+ 466	+ 502	+ 677
Desert Creek	+ 341	+ 379	+ 534
Akah	+ 195	+ 247	+ 426
Molas	- 397	- 380	- 201
Mississippian	- 504	- 481	- 330
Elbert	- 851	- 825	- 610
McCracken	-1041	-1016	- 777
Aneth	-1159	-1135	-----

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ZONES OF INTEREST

De Chelly

The De Chelly sandstone is a potential zone of interest on any closed structure or fault trap in northeast Arizona or southeast Utah. The De Chelly has long been an overlooked zone even though a small amount of production had been obtained years ago on Boundary Butte anticline. A few years ago, Sinclair drilled an exploratory well near the old production at Boundary Butte and obtained commercial amounts of oil. In October, 1974 18 wells on Boundary Butte, from depths of 1000-1500', produced 27,000 BO. Cumulative production to date from these recently completed De Chelly wells is about 3,400,000 BO. With this in mind, it is always prudent to carefully examine the upper portion of the De Chelly for any possible shows. In the Miami well, the wellsite sample description shows the presence of gilsonite (?) at the top of the De Chelly. In the #1 Judy Lee well, dark black carbonaceous debris was seen at approximately the same interval and it was concluded that this was possibly what had been identified as gilsonite (?) in the Miami well. At any rate, no stain or fluorescence was present in the upper portion of the De Chelly nor was a show present on the mud logger.

Examination of the samples does not indicate any commercial oil or gas accumulation at the top of the De Chelly sandstone in the #1 Judy Lee well.

Hermosa

The Hermosa sequence is a generally overlooked section of Pennsylvanian

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rocks in the general Four Corners area. To date the Hermosa has not yielded much commercial production, however some zones have been completed in wells on the East Boundary Butte anticline, a few miles to the northwest of the #1 Judy Lee well. Porosity zones and gas shows are known in the Cities Service and Universal Resource wells several miles to the southwest of the Judy Lee well.

No significant shows were present in the Hermosa section in the Judy Lee well, however about 55' above the Ismay top at 4920', a 3' porosity break was encountered which yielded 20 units of gas show on the hotwire. Sample examination shows this interval to be a tan fine grained limestone with small vuggy porosity and the sample contained 10-15% fluorescence that yielded a fair cut. The zone was too thin to recommend running a drill stem test. While this zone is not particularly attractive by itself, it could in conjunction with deeper zones be comingled if a completion attempt were to be made.

Ismay

The Ismay is a major zone of interest and substantial oil and gas production has been obtained from this interval in southeastern Utah and northeastern Arizona. In the immediate vicinity of the NWPL #1 Judy Lee well, most wells have had shows in the Ismay and tested gas on drill stem test. Substantial amounts of gas have been obtained from the Ismay in this township primarily to the north and east of the #1 Judy Lee well and while not a major zone of interest in this prospect, it was examined very carefully for porosity and shows.

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One foot of porosity at 4991' gave up a 60 unit kick on the hotwire and sample examination showed this interval to be composed of fine grained gray limestone with fine vuggy porosity that yielded a good fluorescence and good cut. Due to the thinness of the zone, a drill stem test was not recommended.

Desert Creek

The Desert Creek zone is the main producing interval at Aneth field about 20 miles north of the Judy Lee well. It also carries shows in north-eastern Arizona and has yielded gas on drill stem test.

The Miami well had two gas kicks in the upper half of the Desert Creek with two small drilling breaks. A drill stem test was run over the upper portion of the Desert Creek, however it did not include two porosity zones just mentioned. The drill stem test yielded gas to surface 50" too small to measure and reported a 3' flare.

In the #1 Judy Lee, the upper half of the Desert Creek contained a fair amount of various grades of vuggy porosity and oomoldic porosity. About 5 drilling breaks of less than 5" per foot were encountered between 5099 and 5158'. These porosity intervals gave up gas readings ranging from 25 units to 160 units. In addition, fluorescence and cut could be obtained from the samples and it was recommended that a drill stem test be conducted over the whole interval. DST #1 was run from 5080-5176' and tested tight recovering only 290' SWCM + 180' SO&GCM. Flowing pressures were low indicating that permeability was low and that for the most part,

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the oomoldic porosity was not effective.

Akah

The Akah is not generally thought of as being a prolific producer in the southern portion of the Paradox basin however at scattered locations, it has been perforated and completed and does contribute reserves to wells that are completed in other zones. The Akah was drill stem tested in the Cities Service #1-A well (21-40N-29E) several miles to the southwest of the Judy Lee well and drill stem tested gas to surface in 25" too small to measure + 300' oil + 300' highly oil and gas cut mud. This interval was perforated in the Cities Service #1-A well and flowed 4200 mcf + 1 BOPH.

The Akah was the primary zone of interest in the Judy Lee well as the Miami well, just 3/4 of a mile to the north, had drilled a 40' drilling break in the upper portion of the Akah and had a very substantial kick on the mud log. A drill stem test was run over this porosity zone and they reported 1000 mcf with a spray of salt water after 1 hour. Miami recovered 1290' salt water on this test. It was anticipated that gaining some structural advantage over the Miami well by moving south would provide a reasonable opportunity for completing a commercial gas well in the upper portion of the Akah.

Subsurface work prepared before the drilling of the Judy Lee well indicated the possibility of being in excess of 100' high to the Miami well if a well were drilled in the southeast quarter of section 30. The results of drilling the Judy Lee well showed that in general, on various

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tops, the well generally ran 25-40' high to the Miami well. The greatest risk in drilling the Judy Lee well was the risk of the porosity zone being absent at the drillsite. While the Miami well had an overall 40' drilling break, the Judy Lee well had a minimum amount of porosity and had a total of only 4' that drilled less than 5" per foot. Mud logger hotwire shows were minimal, ranging from 29-50 units. Sample examination showed the presence of low grade vuggy porosity and minor amounts of leached oomoldic porosity. The shows in the samples were minimal. A drill stem test was not recommended.

In the middle of the Akah a small drilling break was encountered at 5315-17' with two feet drilling faster than 5"/foot. The hotwire measured 13 units and sample examination showed minimal amounts of vuggy and inter-crystalline porosity to be present. This dolomitic interval was a light tan very fine sucrosic unit and the samples contained about 50% blue-green fluorescence. It appeared from sample examination that the porosity was not effective and since the zone was very thin, a drill stem test was not recommended.

In the lower portion of the Akah from 5397-5400', a 3 foot porosity zone was drilled at less than 5"/foot. A minimal amount of vuggy porosity was seen in the samples and it could not be determined whether the drilling break was actually due to a thin sandstone or a thin carbonate unit. A drill stem test was not recommended due to the extremely thin nature of this zone.

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Barker Creek

In the middle of the Barker Creek interval, two thin porosity zones are present from 5558-62' and from 5567-70'. These porosity streaks gave up hotwire kicks of 42 and 66 units respectively. Examination of the samples showed porosity to be primarily leached oolites with considerable amounts of asphalt and fluorescence with fair to good blue-green cut. It could be seen under the microscope that porosity was not effective. The show continued with depth into a tan fine grained dense dolomite, however no effective porosity was present and a drill stem test was not recommended over this minor interval.

A 2' drilling break from 5612-14' gave up a 20 unit kick on the hotwire and scattered very small vugs could be seen under the microscope. A drill stem test was not recommended.

Lower Paradox

The Lower Paradox interval, which in some wells in northeastern Arizona contains significant porosity intervals, contained only minor amounts of vuggy porosity and shows in the #1 Judy Lee well. No significant mud log kicks were present, however, it should be noted that considerable amounts of Chaetetes were drilled up between 5750 and 5800'. Chaetetes coralline material is usually impressive under the microscope in that it shows excellent porosity. However, it should be remembered that being a non-perforate coral, generally the permeability is very low unless it has been fractured or some secondary solution has taken place to breach the

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cell walls. A drill stem test could not be recommended on the lower Paradox interval.

Leadville

The Mississippian Leadville carbonate unit must always be considered a zone of primary interest due to the excellent reservoir characteristics usually encountered in the massive porosity in addition to the thick porous interval available for potential hydrocarbon accumulation. At Lisbon field, about 90 miles to the north, a 2000' tall hydrocarbon column is present and cumulative oil production to September 1, 1974 is about 37,000,000 BO. The Dry Mesa field, a few miles to the southwest of the #1 Judy Lee well, had three wells producing from the Mississippian that have a cumulative to December 1, 1974 of 515,000 BO. The Mississippian carbonates have also served as gas reservoirs in northeastern Arizona with both flammable and low BTU gases being trapped. Gas accumulations close into the Carrizo Mountains are characteristically high in helium and at some point in the future, these low BTU-high helium gas content gas accumulations should have some commercial value. The top of the massive porosity in the #1 Judy Lee well is near the base of the Mississippian and is in a dolomitic unit which carries both vuggy and intercrystalline porosity and is described in the samples as being light tan, fine to medium grained crystalline, sucrosic, fair to good vuggy porosity containing some intercrystalline porosity and in the #1 Judy Lee well, contained fair amounts of gold fluorescence. However, this fluorescence would not cut in chloroethane or yield a cut in the cut dish. In addition, no show was

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present on the mud logger and a drill stem test was not recommended.

Elbert

Several small porosity streaks were present in the Elbert between 6415-6425'. Good control on these porosity breaks was difficult due to malfunction of the automatic driller during penetration of this unit, however sample description showed minor amounts of vuggy and intercrystalline porosity in a tan, fine to coarse grained sucrosic dolomite with scattered asphalt. A very slight show was present on the mud logger and only scattered fluorescence was present in the sample. A drill stem test was not recommended.

McCracken

The upper portion of the McCracken sandstone drilled very hard and carried minor shows. The middle McCracken, sometimes referred to as the "McCracken conglomerate" (which is actually a misnomer), broke down and drilled from 10-15"/foot. The sand in this interval was a fine to coarse grained glauconitic quartzite with much secondary enlargement of the sand grains by quartz with fair intergranular porosity. Much asphalt was present in the interstices of the sand grains and the samples had good fluorescence with a fair blue-green cut. A slight gas kick was measured on the mud logger with measurements of 11-25 units. Since the McCracken sandstone has produced some oil in the general Four Corners area, it was recommended that due to the show and the presence of some porosity, that a drill stem test be conducted. DST #2, 6480-6555' was run with the tool

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opening with a weak blow and no gas to surface. Recovery was 490' SO&GCM with a skim of oil on the 5 gallon bucket and the mud contained a good oil odor.

Aneth

The Aneth dolomite has given up commercial amounts of oil in north-eastern Arizona, notably at the Walker Creek structure near Teec-Nes-Iah. The oil producing zone at Teec-Nes-Iah however is in a weathered dolomite zone immediately underlying the McCracken sand. The Miami well had a porosity zone developed in the lower portion of the Aneth and on drill stem test, recovered gas to surface in 150" too small to measure and 2880' of fluid. Since the fluid was highly oil cut and since the Judy Lee well was running high, it was thought best to drill the zone to see what its potential might be. A good drilling break was present from 6718-6739', most of which drilled less than 5"/foot. The samples showed this interval to be a tan to black, fine to medium grained crystalline, some coarse crystalline dolomite with odor in the sample and a slight green cut with some stain and asphalt being abundant. Fair intercrystalline porosity was present and although the interval did not appear to be saturated with oil, it was thought prudent to run a drill stem test since we were running high to the Miami well. DST #3 was conducted from 6698-6750' and recovered 2330' of fluid, some of which was slightly gas cut. Good gasoline odor was present in the first fluid recovered on the drill stem test. Flowing pressures were good and shut in pressures were high indicating that this interval could be a potential commercial reservoir under suitable trapping conditions.

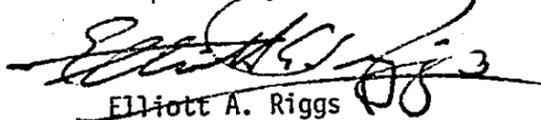
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SUMMARY AND CONCLUSIONS

Northwest Pipeline #1 Judy Lee was drilled to a TD of 6750' without any undue mechanical problems. Samples were fair to excellent due primarily to the efforts of the mud loggers. Examination of the samples in conjunction with evaluation of the drilling breaks and shows with the mud logger and the electric log indicates that commercial hydrocarbon bearing zones are not present in this well. All significant shows and/or porosity were drill stem tested. Analysis of all the data gained during the drilling of this hole indicates that commercial reserves are not present and the well is considered to be a dry hole. All parties of interest gave permission to plug and abandon the well. The USGS and the Arizona Oil & Gas Conservation Commission granted permission to P & A and instructions for emplacement of cement plugs. The #1 Judy Lee well was plugged and abandoned on January 26, 1975.

Respectfully submitted,


Elliott A. Riggs

ELLIOTT A. RIGGS

Petroleum Geologist

NORTHWEST PIPELINE CORP. #1 JUDY LEE

DRILLING TIME

Drilling time recorded in minutes per 10 feet

600-700	2	2	2	3	3	5	5	2	4	5
700-800	8	5	4	6	6	4	3	4	2	2
800-900	6	2	3	3	2	2	2	3	3	3
900-1000	2	3	3	4	5	5	5	5	4	4
1000-1100	4	4	4	4	4	4	4	3	4	5
1100-1200	5	5	4	4	6	7	4	4	3	3
1200-1300	8	4	9	9	9	10	8	8	8	9
1300-1400	11	8	8	10	11	11	9	8	12	15
1400-1500	21*	24	14	12	12	20	19	16	21	12
1500-1600	12	21	24	28	29	27	22	14	15	16
1600-1700	17	18	18	18	21	15	14	14	17	20
1700-1800	20	23	21	21	25	26	25	24	21	19
1800-1900	23	21	20	24	14	11	11	11	13	18
1900-2000	9*	7	6	11	8	9	8	7	6	6
2000-2100	8	9	7	10	12	12	16	18	20	16
2100-2200	18	19	18	22	19	12	11	15	16	22
2200-2300	16	10	23	30	14	24	21	16	7	7
2300-2400	10	9	9	11	11	11	13	29	23	14
2400-2500	9	11	14	22	29	39	20*	19	22	24
2500-2600	14	14	13	16	13	11	11	9	12	13
2600-2700	11	11	7	8	7	4	7	6	5	9
2700-2800	15	9	9	8	6	7	6	10	9	10
2800-2900	7	9	24	46	51	52	53	45	52	52
2900-3000	49	51	40	36	70	61	60	60	65	37*
3000-3100	34	30	13	32	39	38	37	18	12	40
3100-3200	42	39	25	40*	34	29	28	26	26	26
3200-3300	28	29	30	29	30	28	29	23	23	22
3300-3400	24	27	27	27	24	29	27	28	29	28
3400-3500	27	24	27	46	33*	40	51	58	48	32
3500-3600	31	34	31	34	31	35	37	34	42	40
3600-3700	41	35	37	38	36	40	40	48	32	43
3700-3800	42	44	45	55*	33	33	38	37	35	37
3800-3900	36	37	36	40	40	41	38	38	36	37
3900-4000	32	27	34*	89	83	74	67	52	64	65

Drilling time recorded in minutes per 5' X 2

4000-4050	78	84	54	30	48	58	62	56	58	64
4050-4100	64	56	54	52	54	50	60	84	64	60
4100-4150	68	50	58	70	52	54	76	64	54	62
4150-4200	58	80	60	64	66	70	60	80	56	56
4200-4250	62	56	52	64	70	66	68	84	70	56
4250-4300	58	54	58	58	56	48	48	52	54	48
4300-4350	60	64	66	60	60	56	64	62	70	70
4350-4400	70	72	90	80	88	78	84	82	118	134*

ELLIOTT A. RIGGS

Petroleum Geologist

DRILLING TIME

Drilling time recorded in mins p/5' X 2 (cont.)

4400-4450	130*	116	126	104	100	106	96	106	112	102
4450-4500	102	106	102	114	96	112*	106	96	96	102
4500-4550	86	88	82	88	92	84	90	100	98	122
4550-4600	104	90	100	94	84	88	88	72	94	96
4600-4650	92	112	112	118	90	98	88	118	96	96
4650-4700	98	88	100	90	100	86	88	106	94	104
4700-4750	92	104	94	88	102*	100	82	70	64	64
4750-4800	54	76	84	72	78	72	84	76	80	88
4800-4850	78	68	68	80	78	64	74	78	62	56
4850-4900	60	68	66	72	78	72	82	94	104	100
4900-4950	80	60	74	58	66	74	54	70	64	104
4950-5000	80	112	94	88	78	76	88	88	72	76
5000-5050	86	92	98	100	98	88	90	80*	90	72
5050-5100	76	68	74	52	48	62	62	62	66	48
5100-5150	52	42	52	62	62	22	46	50	62	64
5150-5200	20	50	54	64*	78	82	62	68	88	76
5200-5250	80	78	74	82	84	76	46	74	54	72
5250-5300	72	64	72	96	78	72	64	68	70	88
5300-5350	68	58	64	52	84	70	94	88	74	62
5350-5400	58	58	50	76	82	82	82	70	76	50
5400-5450	66	64	76	80	84	110*	92	100	104	96
5450-5500	118	112	112	136	114	104	98	130	72*	76
5500-5550	72	92	76	84	76	60	68	60	90	68
5550-5600	76	62	54	54	74	70	90	62	58	66
5600-5650	66	88	72	62	56	58	58	60	58	72
5650-5700	68	64	66	66	72	72	66	46	56	92
5700-5750	68	62	82	82	72	78	80	72	50	64
5750-5800	56	54	60	82	72	42	64	66	62	68
5800-5850	58	74	80	60	72	68	84	82	72	84
5850-5900	88	102	76	104	50	78	66	54	64	76
5900-5950	58	58	90	88	76	84	82	74	96	90
5950-6000	90	114	132	112	134	96	94	88	90	82
6000-6050	88	90	94	92	83	100	114	128	104	82
6050-6100	82	74	102	106	114	102	82	80	76	62
6100-6150	72	80	74	76	74	66	80	84	88	88
6150-6200	82	84	86	84	76	68	80	66	74	50
6200-6250	72	66	58	62	48	48	48	84	92	96
6250-6300	100	102	114*	110	108	92	58	74	112	180
6300-6350	166	166	142	134	134	106	92	100	102	102
6350-6400	104	132	116	120	120	112	96	116	112	116
6400-6450	120	100	92	66	62	78	90	110	92	112
6450-6500	106	112	120	104	114	122	104	128	98	96
6500-6550	114	126*	126	180	146	268	166	150	102	160
6550-6600	178	126*	152	224	360	214	214	268	152	110
6600-6650	112	120	113*	120	116	116	114	120	130	92
6650-6700	90	92	102	102	120	110	100	72	82	70
6700-6750	70	68	70	52	38	42	56	56	108	116

ELLIOTT A. RIGGS

Petroleum Geologist

DRILLING TIME (Cont.)

	Drilling time recorded in minutes p/1' X 10									
4910-4920	66	73	--	78	68	70	62	60	50	42
4920-4930	32	44	73	96	90	88	100	64	68	68
4980-4990	88	88	86	89	88	89	88	90	95	65
4990-5000	40	59	73	105	78	74	70	78	75	79
5090-5100	66	71	65	66	61	62	55	49	51	25
5100-5110	39	50	55	51	55	50	52	32	25	39
5110-5120	49	50	55	53	51	72	60	57	62	60
5120-5130	65	61	56	62	50	30	23	20	15	20
5130-5140	21	25	49	67	62	46	32	46	60	65
5140-5150	60	63	46	84	53	70	70	72	50	60
5150-5160	15	10	10	20	35	40	45	55	55	55
5160-	53	55	50	50	58	50	60	58	60	--
5220-5230	103	70	89	61	93	69	78	90	77	67
5230-5240	35	35	32	50	72	61	91	79	77	61
5240-5250	49	28	52	65	76	66	62	63	84	83
5290-5300	70	69	69	66	74	69	78	75	90	111
5300-5310	94	80	52	48	60	54	52	55	58	59
5310-5320	56	63	62	78	52	42	32	50	60	65
5320-5330	83	80	93	79	80	60	70	68	69	85
5390-5400	55	75	80	83	89	95	61	40	25	27
5400-5410	64	63	69	63	62	65	65	70	58	55
5550-5560	62	62	73	90	86	74	72	85	43	32
5560-5570	30	26	69	69	76	60	75	36	33	45
5570-5580	51	67	72	70	92	78	66	64	70	68
5610-5620	112	112	40	40	50	53	60	56	64	77
6400-6410	115	80	160	95	158	80	140	80	130	67
6410-6420	120	100	75	100	65	100	40	33	85	55
6420-6430	40	30	85	55	85	75	85	90	50	90
6430-6440	110	115	80	130	--	--	--	--	--	--
					Auto driller partly malfunction					
6520-6530	--	--	--	--	--	--	--	--	325	155
6530-6540	115	120	180	220	215	220	160	140	130	92
6540-6550	78	138	116	95	96	95	140	107	135	125
6550-6560	170	145	183	180	155	--	--	--	--	--
6700-6710	62	80	60	85	60	80	75	63	62	65
6710-6720	80	52	70	80	70	75	60	50	45	38
6720-6730	34	39	38	34	50	35	52	43	49	33
6730-6740	40	52	60	60	65	62	48	52	50	67
6740-6750	68	96	123	116	142	90	116	140	122	108

WELL SITE DRILL STEM TEST REPORT

DATE: Jan. 10, 1975

COMPANY: Northwest Pipeline Corp. WELL: #1 Judy Lee

LOCATION: SE $\frac{1}{4}$ SEC: 30 TWP: 41N RGE: 30E

COUNTY: Apache Co. STATE: Arizona

TESTED BY: Halliburton

DST NO: #1 TD: 5167'

INTERVAL TESTED FROM: 5080 TO: 5167'

PACKERS: 2 - 6 3/4

MUD WGT: 9.2 + VIS: 53

HOLE SIZE: 7 7/8" DP: 4 1/2" X H DC: 6 1/4" X H

SURFACE CHOKE: variable BH CHOKE: 1/4"

TYPE ANCHOR USED: 2 DC + 27 Howco perf anchor

TOP BOMB BOT BOMB

					<u>BLOW:</u>
<u>INIT OPEN:</u> 17" mins.		IHP	MALFUNCTION	2541	
Op w/wk blo, inc to fair 2",		IFP		116	
cont to end period		FFP		140	
<u>INIT SHUTIN:</u> hrs. 60 mins.		ISIP		1760	
<u>FLOW PERIOD:</u> hrs. 60 mins.		IFP	186		
Op w/wk blo, barely bubbling at		FFP	256		
end, 2" below sfc bucket					
<u>FIN SHUTIN:</u> hrs. 60 mins.		FSIP	605		
		FHP	2541		

BHT: 1160, 1160 F

RECOVERY: 290' SIWCM + 180' SI0&GCM (w/good oil odor) few droplets
1t yell oil came to sfc of bucket

PRESS:

CHOKE:

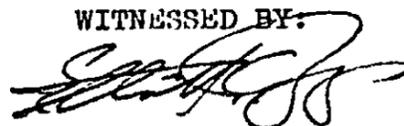
EST FLOW:

REMARKS: Test conducted by Mr. E. N. Walsh for NWPL
2nd SI show depletion of reservoir, lack of permeability
* See separate sheet

GAS/& FLUID SPLS:

2 fluid spls to NWPL, Farmington

WITNESSED BY:



Elliott A. Riggs
Petroleum Geologist
Box 711
Farmington, New Mexico

#1 JUDY LEE

DST #1 5080-5167'

After DST, pulled 130,000" to unseat pkrs, jars went off twice.

After pulling test tool and when going in hole to drill, string stopped 17' off btm (about 5150') and took weight, set down on bridge with 30,000#. Broke out single joint, put on Kelly and rotated down through bridge and went to bottom. Driller did not believe that this was fill, but a bridge at the porosity zone in the lower portion of the test interval.

Comment:

I'm not sure what down hole conditions this situation represents, however one thing that was peculiar to this DST was that we didn't re-establish the blow during the flow period that we had during the 17" pre-flow.

[Handwritten signature]

DRILLING MUD REPORT

MAO 377 (API FORM 67-1)



P. O. BOX 6504
HOUSTON, TEXAS 77005



DRILLING MUD REPORT

REPORT NO. 19

DATE 1-10 19 75 DEPTH 5167

API WELL NO.	STATE	COUNTY	WELL	S/T

OILFIELD PRODUCTS DIVISION
Dresser Industries, Inc.

OPER. OR ADDRESS NORTHWEST PIPELINE RIG	CONTRACTOR ARAPAHOE RIG	RIG NO. 6
REPORT FOR MR. WALSH	REPORT FOR MR. SHEPHERD	SPUD DATE 12-19-74
WELL NAME AND NO. JUDY LEE #1	FIELD OR BLOCK NO. W/C	SECTION, TOWNSHIP, RANGE 30 41N 30E
	COUNTY, PARISH, OR OFFSHORE AREA APACHE	STATE OR PROVINCE ARIZONA

OPERATION		CASING		MUD VOLUME (BBL)		CIRCULATION DATA			
Present Activity TRIP IN HOLE	Bit Size (in.) 7 7/8	Surface 9 5/8 in. at 462 Ft.	Intermediate In. at Ft.	Hole 325	Pits 300	Pump Size X In. 5 1/2 14	Annular Vel. (Ft./Min.) Opposite DP 179	Pump Make EMSCO	Opposite Collar 350
Drill Pipe Size 4 1/2	No. 22	Production or Liner In. at Ft.	In Storage 625	Bbl/Stroke .112	Stroke/Min. 60	Circulating Pressure psi 1050	Bottoms Up (Min.) 79	System Total (Min.) 93	
Drill Collar Size 6 1/4	Type XH	Mud Type GEL/SPERSENE		Bbl/Min. 6.7					

Sample from <input type="checkbox"/> Flowline <input checked="" type="checkbox"/> Pit Flowline Temperature °F	MUD PROPERTIES		EQUIPMENT			
	SIZE	HRS./TOUR	SIZE	HRS./TOUR	SIZE	HRS./TOUR
Time Sample Taken	1620	1745	Centrifuge		Desilter	
Depth (ft.)	5167	5167	Degasser		Shaker	ALL TIME
Weight (ppg) (lb./cu. ft.)	9.3	8.5	Desander	ALL TIME	Other	
Mud Gradient (psi/ft.)			DAILY COST	372.43	CUMULATIVE COST	6730.81
Funnel Viscosity (sec./qt.) API at °F	45	160	MUD PROPERTIES SPECIFICATIONS			
Plastic Viscosity cps at °F	25	41	WEIGHT	9.3	VISCOSITY	28-40
Yield Point (lb./100 sq. ft.)	10	28	FILTRATE < 10.00			
Gel Strength (lb./100 sq. ft.) 10 sec./10 min.	113	112	BY AUTHORITY: <input type="checkbox"/> OPERATOR'S WRITTEN <input type="checkbox"/> DRILLING CONTRACTOR <input type="checkbox"/> OPERATOR'S REPRESENTATIVE <input type="checkbox"/> OTHER			
pH <input checked="" type="checkbox"/> Strip <input type="checkbox"/> Meter	11	10.5	MUD CONTAINS			
Filtrate API (ml./30 min.)	5.6	6	TOUR TREATMENT			
API HP-HT Filtrate (ml./30 min.) °F			<input type="checkbox"/> Magcohar	SX	NONE	
Cake Thickness 32nd in. API <input type="checkbox"/> HP-HT <input type="checkbox"/>	2	2	<input type="checkbox"/> MagcoGel	SX		
Alkalinity, Mud (Pm)	1.9	4	<input type="checkbox"/> Salt Gel	SX		
Alkalinity, Filtrate (P/MF)	8.11	4.13	<input type="checkbox"/> Spersene	SX		
Salt <input type="checkbox"/> ppm <input type="checkbox"/> Chloride <input checked="" type="checkbox"/> ppm	5800	2300	<input type="checkbox"/> XP-20	SX		
Calcium <input checked="" type="checkbox"/> ppm <input type="checkbox"/> Gyp (ppb)	160	120	<input type="checkbox"/> TannAthin	SX		
Sand Content (% by Vol.)	TR	TR	<input type="checkbox"/> Caustic Soda	SX		
Solids Content (% by Vol.)	8	8	<input type="checkbox"/> My-Lo-Jel	SX		
Oil Content (% by Vol.)	0	0	<input type="checkbox"/> Resinex	SX		
Water Content (% by Vol.)	92	92	<input type="checkbox"/> Lime	SX		
Methylene Blue Capacity <input type="checkbox"/> (ml/ml mud) <input type="checkbox"/> (equiv. #/bbl. bent.)			<input type="checkbox"/> Gypsum	SX		

REMARKS—Give operation, depth and nature of any problems encountered

- Drilling @
 - Circulating @ SMALL STREAM OF WATER WHILE DRILLING
 - Fishing @
 - Stuck pipe @
 - Tip hole @
 - Kick @
 - Lost Returns @
- THANKS

MAGCOBAR ENGINEER LARRY WATTENBURGER	HOME ADDRESS FARMINGTON	PHONE 325-6114
MOBILE UNIT	WAREHOUSE LOCATION	PHONE 325-2937



CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS
WATER ANALYSIS

File RP-4-WA-347

Company Northwest Pipeline Well Name Judy Lee #1 Sample No. 2
 Formation Paradox Depth * Sampled From DST #1 Top Sample
 Location SEC 30-41N-30E Field Wildcat County Apache State Arizona
 Date Sampled 1-10-75 Date Analyzed 2-10-75 Engineer APH/RGC

*Information not supplied

Total Dissolved Solids 12423 mg/L Calc

Sp. Gr. 1.002 @ 75 °F.

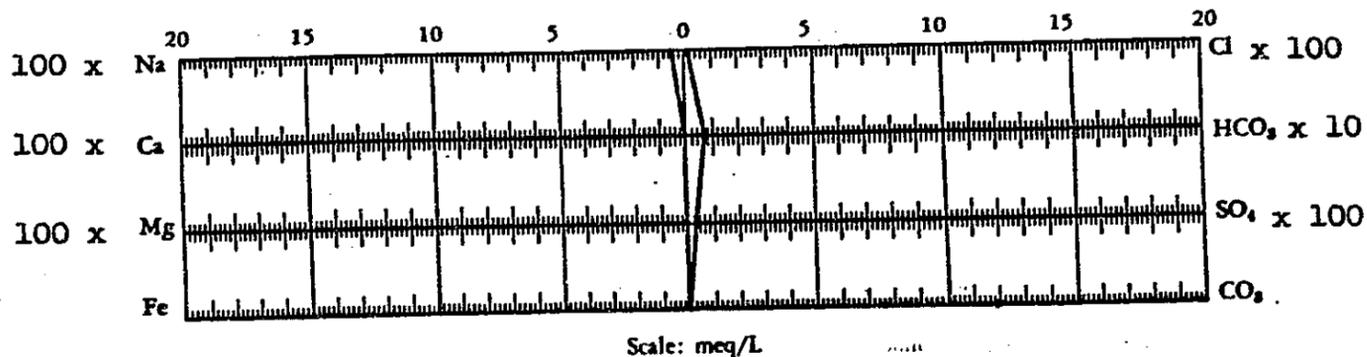
Resistivity 2.35 ohm-meters @ 75 °F. Meas

Hydrogen Sulfide Absent

pH 9.2

Constituents	meq/L	mg/L
Sodium	<u>50.1</u>	<u>1152</u>
Calcium	<u>0.9</u>	<u>18</u>
Magnesium	<u>0.4</u>	<u>5</u>
Iron	<u>NIL</u>	<u>NIL</u>
Barium	<u>NIL</u>	<u>NIL</u>

Constituents	meq/L	mg/L
Chloride	<u>7.5</u>	<u>266</u>
Bicarbonate	<u>6.2</u>	<u>378</u>
Sulfate	<u>25.7</u>	<u>1236</u>
Carbonate	<u>12.0</u>	<u>360</u>
Hydroxide	<u>NIL</u>	<u>NIL</u>



All analyses except iron determination performed on a filtered sample.



CORE LABORATORIES, INC.
 Petroleum Reservoir Engineering
 DALLAS, TEXAS
 WATER ANALYSIS

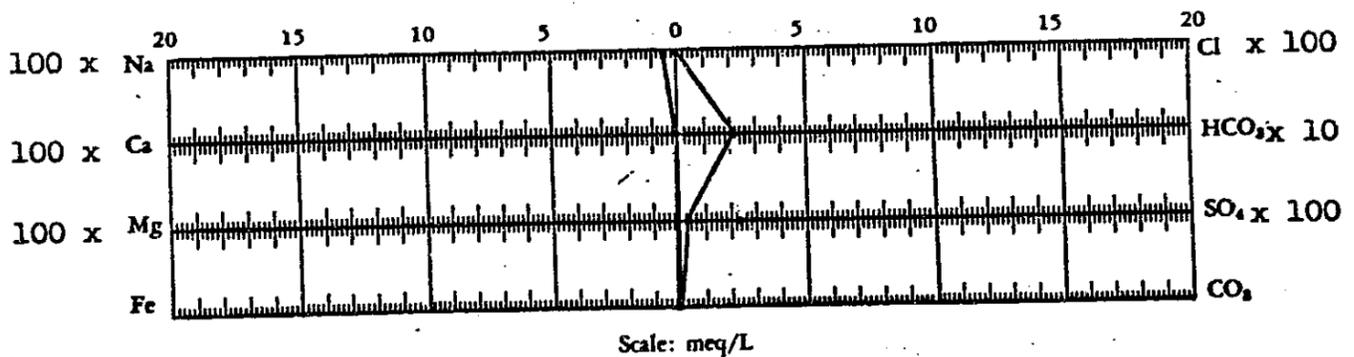
File RP-4-WA-347

Company Northwest Pipeline Well Name Judy Lee #1 Sample No. 1
 Formation Paradox Depth * Sampled From Bottom Sample
 Location SEC 30-41N-30E Field Wildcat County Apache State Arizona
 Date Sampled 1-10-75 Date Analyzed 2-10-75 Engineer APH/RGC

*Information not supplied

Total Dissolved Solids 3739 mg/L Calc Sp. Gr. 1.006 @ 75 °F.
 Resistivity 1.24 ohm-meters @ 75 °F. Meas Hydrogen Sulfide Absent
 pH 8.3

Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	46.6	1071	Chloride	5.6	198
Calcium	2.5	50	Bicarbonate	20.8	1269
Magnesium	1.0	12	Sulfate	23.7	1139
Iron	NIL	NIL	Carbonate	NIL	NIL
Barium	NIL	NIL	Hydroxide	NIL	NIL

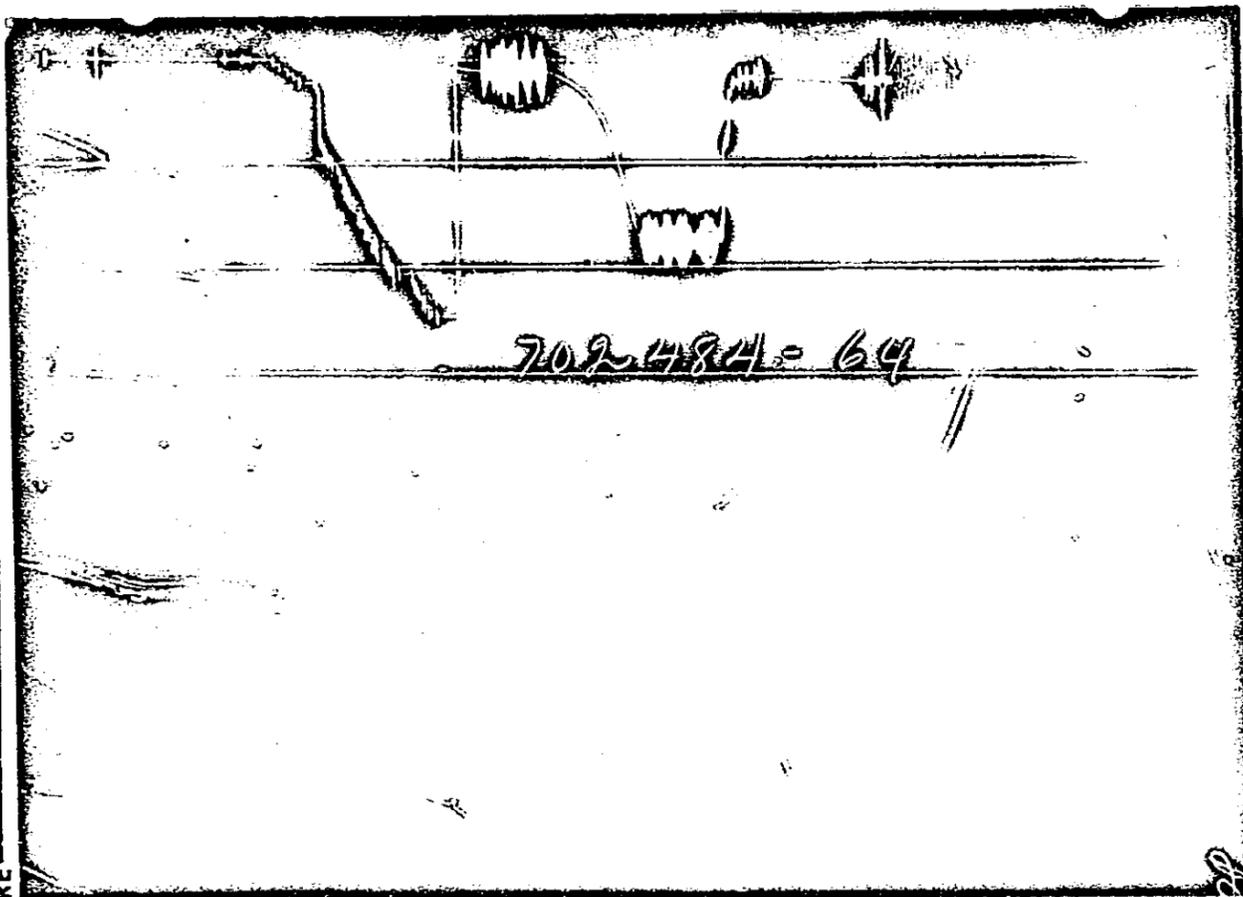


All analyses except iron determination performed on a filtered sample.

FLUID SAMPLE DATA				Date	Ticket Number
Sampler Pressure _____ P.S.I.G. at Surface				1-10-75	702484
Recovery: Cu. Ft. Gas _____				Kind of Job	Halliburton District
cc. Oil _____				OPEN HOLE	FARMINGTON
cc. Water _____				Tester	Witness
cc. Mud _____				MR. PULTE	MR. RIGGS
Tot. Liquid cc. _____				Drilling Contractor	DR
Gravity _____ * API @ _____ * F.				EQUIPMENT & HOLE DATA	
Gas/Oil Ratio _____ cu. ft./bbl.				Formation Tested	Ismay
RESISTIVITY _____ CHLORIDE CONTENT _____				Elevation	5469' Ft.
Recovery Water @ _____ * F. _____ ppm				Net Productive Interval	- Ft.
Recovery Mud @ _____ * F. _____ ppm				All Depths Measured From	Ground Level
Recovery Mud Filtrate @ _____ * F. _____ ppm				Total Depth	5167' Ft.
Mud Pit Sample @ _____ * F. _____ ppm				Main Hole/Casing Size	7 7/8"
Mud Pit Sample Filtrate @ _____ * F. _____ ppm				Drill Collar Length	621' I.D. 2 1/2"
Mud Weight 9.3 vis 58 cp				Drill Pipe Length	5473' I.D. 3.826"
				Packer Depth(s)	5083'-5089' Ft.
				Depth Tester Valve	5065' Ft.
TYPE		AMOUNT	Depth Back Pres. Valve	Surface Choke	Bottom Choke
Cushion					
Recovered		470 Feet of	slightly water cut drilling mud		
Recovered		Feet of			
Recovered		Feet of			
Recovered		Feet of			
Recovered		Feet of			
Remarks					
Opened tool for 17 minute first flow with a weak to a fair blow. Closed tool for 60 minute first closed in pressure. Reopened tool for 60 minute second flow with a very weak blow. Closed tool for 60 minute second closed in pressure.					
TEMPERATURE	Gauge No. 64	Gauge No. 69	Gauge No.	TIME	
	Depth: 5070 Ft.	Depth: 5163 Ft.	Depth: _____ Ft.	Hour Clock	Tool
Calc.	12 Hour Clock	24 Hour Clock	Blanked Off	Blanked Off	Opened 8:27 P.M.
Est. 120 *F.	Blanked Off No	Blanked Off Yes	Blanked Off	Blanked Off	Opened _____ A.M.
Actual *F.	Pressures		Pressures		Bypass 11:42 P.M.
	Field	Office	Field	Office	Reported
Initial Hydrostatic		2478		2530	Minutes
First Period	Initial	CLOCK SLIPPING		134	
	Final	THROUGHOUT TEST.		158	
	Closed in	NO RELIABLE		1788	17
Second Period	Initial	PRESSURES CAN BE		216	
	Final	READ FROM THIS		260	60
	Closed in	CHART.		640	60
Third Period	Initial				
	Final				
	Closed in				
	Final Hydrostatic			2530	

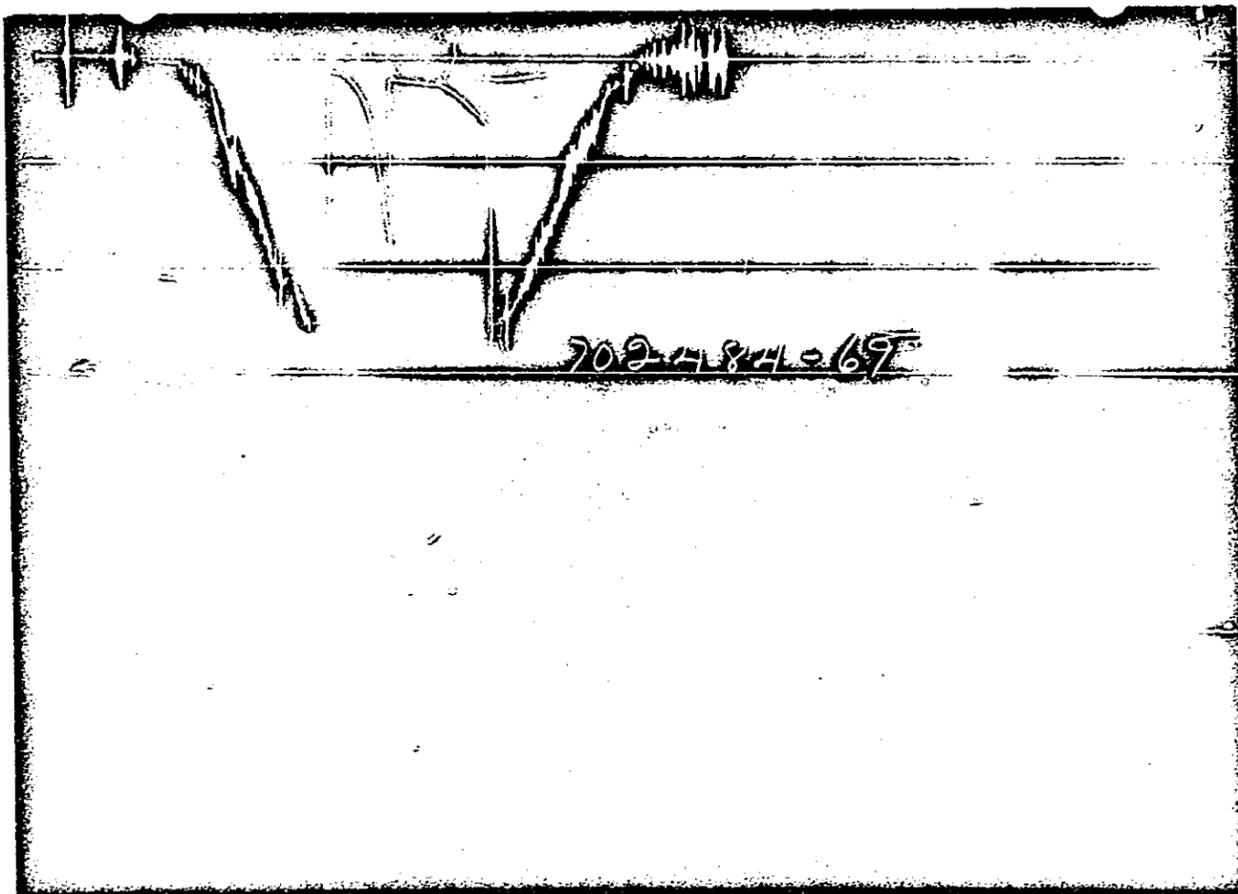
Legal Location Sec. 10-30-75, Rm. W0-41N-30E
 Lease Name JUDY LEE
 Well No. 1
 Test No. 1
 Field Area TESPOSNES WILDCAT
 Meo. From Tester Valve
 County APACHE
 State ARIZONA

5089-5167'
 Tested Interval
 NORTHWEST PIPELINE CORPORATION
 Lease Owner/Company Name



PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.

WELL SITE DRILL STEM TEST REPORT

DATE: Jan. 21, 1975

COMPANY: Northwest Pipeline Corp. WELL: #1 Judy Lee

LOCATION: SE $\frac{1}{4}$ SEC: 30 TWP: 41N RGE: 30E

COUNTY: Apache Co. STATE: Arizona

TESTED BY: Halliburton, Mr. Elmo Davis

DST NO: #2 TD: 6555'

INTERVAL TESTED FROM: 6480 TO: 6555'

PACKERS: 2 - 6 3/4"

MUD WGT: 9.3 VIS: 54

HOLE SIZE: 7 7/8" DP: 4 1/2" X H DC: 6 1/2" X H

SURFACE CHOKE: variable BH CHOKE: 1/4"

TYPE ANCHOR USED: Howco perf + DC

TOP BOMB BOT BOMB

				<u>BLOW:</u>
<u>INIT OPEN:</u> 30 mins.	IHP	3183	3253	
Op w/v. wk blo immed., inc	IFP	93	94	
sl in 3", steady thruout	FFP	140	141	
<u>INIT SHUTIN:</u> hrs. 60 mins.	ISIP	2358	2377	
<u>FLOW PERIOD:</u> hrs. 60 mins.	IFP	140	188	
Op w/v. wk blo immed, inc sl	FFP	279	282	
in 3", steady				
<u>FIN SHUTIN:</u> hrs. 60 mins.	FSIP	1991	2053	
	FHP	3183	3253	

BHT: 1230F

RECOVERY: Total fluid 490' SO&GCM, as follows:

30' DM
180' SO&GCM, skim grn oil in bucket, DM pnk
280' SO&HGCM, DM grn, stg oil odor, sweet, STD kick slightly

PRESS:

CHOKE:

EST FLOW:

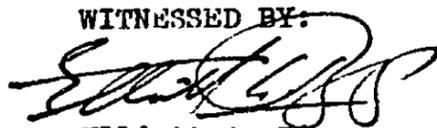
REMARKS:

Test conducted for NWPL by Mr. E. N. Walsh
2nd SI shows depletion of reservoir and lack of permeability

GAS/& FLUID SPLS:

2 mud spls, top test tool, one to NWPL
in Farmington

WITNESSED BY:


Elliott A. Riggs
Petroleum Geologist
Box 711
Farmington, New Mexico

DRILLING MUD REPORT

MAO 37 (API FORM 47-1)



P. O. BOX 6504
HOUSTON, TEXAS 77005



DRILLING MUD REPORT

REPORT NO.

DATE 1-22-78 DEPTH _____
 API WELL NO. _____ STATE _____ COUNTY _____ WELL _____ S/T _____

OILFIELD PRODUCTS DIVISION
Dresser Industries, Inc.

OPER. OR NORTHWEST P. DELINE CONTRACTOR APALACHE RIG NO. 6
 ADDRESS Big ADDRESS Big SPUD DATE 12-19-74
 REPORT FOR MR. WALSH REPORT FOR MR. SHELDON SECTION, TOWNSHIP, RANGE _____

WELL NAME AND NO. JUDY LEE #1 FIELD OR BLOCK NO. _____ COUNTY, PARISH, OR OFFSHORE AREA _____ STATE OR PROVINCE ARIZONA

OPERATION	CASING		MUD VOLUME (BBL)		CIRCULATION DATA		
	Surface	Intermediate	Hole	Pits	Pump Size	X in.	Annular Vel. (Ft./Min.)
Present Activity	In. at _____ Ft. _____	In. at _____ Ft. _____	Total Circulating Volume	In Storage	Pump Make	Model	Opposite DP
Bit Size (In.)	No.	In. at _____ Ft. _____	In Storage	Bbl/Stroke	Stroke/Min.	Circulating Pressure psi	Opposite Collar
Drill Pipe Size	Type	In. at _____ Ft. _____	Bbl/Min.	Stroke/Min.	System	Bottoms Up (Min.)	Total (Min.)
Drill Collar Size	Length	Mud Type					

Sample from <input type="checkbox"/> Flowline <input type="checkbox"/> Pit	MUD PROPERTIES		EQUIPMENT	
	Flowline Temperature _____ °F	_____	SIZE	HRS./TOUR
Time Sample Taken	1:30 P.M.	10:30 A.M.	Centrifuge	Desilter
Depth (ft.)	6555	6555	Degasser	Shaker
Weight <input checked="" type="checkbox"/> (ppg) <input type="checkbox"/> (lb./cu. ft.)	9.3	7.6	Desander	Other
Mud Gradient (psi/ft.)	—	—	DAILY COST _____ CUMULATIVE COST _____	
Funnel Viscosity (sec./qt.) API at _____ °F	54	235	MUD PROPERTIES SPECIFICATIONS	
Plastic Viscosity cps at _____ °F	27	5	WEIGHT	VISCOSITY
Yield Point (lb./100 sq. ft.)	14	23	BY AUTHORITY: <input type="checkbox"/> OPERATOR'S WRITTEN <input type="checkbox"/> DRILLING CONTRACTOR	
Gel Strength (lb./100 sq. ft.) 10 sec./10 min.	2.7	5.40	<input type="checkbox"/> OPERATOR'S REPRESENTATIVE <input type="checkbox"/> OTHER	
pH <input checked="" type="checkbox"/> Strip <input type="checkbox"/> Meter	10.0	7.5	MUD CONTAINS	TOUR TREATMENT
Filtrate API (ml./30 min.)	7.0	N.C.	<input type="checkbox"/> Magco-bar	SX
API HP-HT Filtrate (ml./30 min.) _____ °F	—	—	<input type="checkbox"/> Magcogel	SX
Cake Thickness 32nd in. API <input type="checkbox"/> HP-HT <input type="checkbox"/>	2/32	—	<input type="checkbox"/> Salt Gel	SX
Alkalinity, Mud (Pm)	—	—	<input type="checkbox"/> Spersene	SX
Alkalinity, Filtrate (Pf/Mf)	0.6/1.1	0.1/0.7	<input type="checkbox"/> XP-20	SX
Salt <input type="checkbox"/> ppm <input type="checkbox"/> Chloride <input type="checkbox"/> ppm	900	12,500	<input type="checkbox"/> TannAthine	SX
Calcium <input type="checkbox"/> ppm <input type="checkbox"/> Gyp (ppb)	40	TRA	<input type="checkbox"/> Caustic Soda	SX
Sand Content (% by Vol.)	TRA	—	<input type="checkbox"/> My-Lo-Jel	SX
Solids Content (% by Vol.)	7%	11%	<input type="checkbox"/> Resinex	SX
Oil Content (% by Vol.)	—	—	<input type="checkbox"/> Lime	SX
Water Content (% by Vol.)	93%	89%	<input type="checkbox"/> Gypsum	SX
Methylene Blue Capacity <input type="checkbox"/> (ml/ml mud) <input type="checkbox"/> (cc/bbl. bent.)	—	—	MUD CONTAINS TO BE REMOVED FOR _____	

REMARKS—Give operation, depth and nature of any problems encountered

Drilling @ _____
 Circulating @ _____
 Fishing @ _____
 Stuck pipe @ _____
 T hole @ _____
 Kick @ _____
 Lost Returns @ _____

MAGCOBAR ENGINEERS WALTER BURGER & MULLIS HOME ADDRESS _____ PHONE _____
 MOBILE UNIT _____ WAREHOUSE LOCATION _____ PHONE _____



DRILLING MUD REPORT

MAG 39F (API FORM 47-1)

P. O. BOX 6504
HOUSTON, TEXAS 77005



DRILLING MUD REPORT
 DATE 1-22-78 REPORT NO. _____
 DEPTH _____
 API WELL NO. _____ STATE _____ COUNTY _____ WELL _____ S/T _____

OILFIELD PRODUCTS DIVISION
Dresser Industries, Inc.

OPER. JR. Northwest P. DeLine CONTRACTOR APALAC RIG NO. 6
 ADDRESS Ry ADDRESS Ry SPUD DATE 12-19-74
 REPORT FOR MR. Walsh REPORT FOR MR. Shepherd SECTION, TOWNSHIP, RANGE _____

WELL NAME AND NO. SUDY LEE #1 FIELD OR BLOCK NO. _____ COUNTY WACHE STATE OR PROVINCE ARIZONA
 OPERATION _____ CASING _____ MUD VOLUME (BBL) _____ CIRCULATION DATA _____
 Present Activity _____ Surface _____ Hole _____ Pits _____ Pump Size X In. Annular Vel. (Ft./Min.) _____
 Bit Size (in.) _____ No. _____ Intermediate _____ Total Circulating Volume _____ Pump Make _____ Opposite DP _____
 Drill Pipe Size _____ Type _____ Production or Liner _____ In Storage _____ Bbl/Stroke Stroke/Min. Model _____ Opposite Collar _____
 Drill Collar Size _____ Length _____ Mud _____ Bbl/Min. _____ Circulating Pressure psi _____
 Type _____ Bottoms Up (Min.) _____ System Total (Min.) _____

Sample from <input type="checkbox"/> Flowline <input type="checkbox"/> Pit	MUD PROPERTIES		EQUIPMENT	
	Flowline Temperature °F	SIZE	HRS./TOUR	SIZE
Time Sample Taken	<u>1:30 P.M.</u>	<u>10:30 A.M.</u>	Centrifuge	Desilter
Depth (ft.)	<u>6555</u>	<u>6555</u>	Degasser	Shaker
Weight <input checked="" type="checkbox"/> (ppg) <input type="checkbox"/> (lb./cu. ft.)	<u>9.3</u>	<u>7.6</u>	Desander	Other
Mud Gradient (psi/ft.)	—	—	DAILY COST _____ CUMULATIVE COST _____	
Funnel Viscosity (sec./qt.) API at _____ °F	<u>34</u>	<u>235</u>	MUD PROPERTIES SPECIFICATIONS	
Plastic Viscosity cps at _____ °F	<u>27</u>	<u>5</u>	WEIGHT	VISCOSITY
Yield Point (lb./100 sq. ft.)	<u>14</u>	<u>23</u>	BY AUTHORITY: <input type="checkbox"/> OPERATOR'S WRITTEN <input type="checkbox"/> DRILLING CONTRACTOR	
Gel Strength (lb./100 sq. ft.) 10 sec./10 min.	<u>2.7</u>	<u>5.40</u>	<input type="checkbox"/> OPERATOR'S REPRESENTATIVE <input type="checkbox"/> OTHER	
pH <input checked="" type="checkbox"/> Strip <input type="checkbox"/> Meter	<u>10.0</u>	<u>7.5</u>	MUD CONTAINS	TOUR TREATMENT
Filtrate API (ml./30 min.)	<u>7.0</u>	<u>N.C.</u>	<input type="checkbox"/> Magcohar	<input type="checkbox"/> SX
API HP-HT Filtrate (ml/30 min.) °F	—	—	<input type="checkbox"/> Magcogel	<input type="checkbox"/> SX
Cake Thickness 32nd in. API <input type="checkbox"/> HP-HT <input type="checkbox"/>	<u>2/32</u>	—	<input type="checkbox"/> Salt Gel	<input type="checkbox"/> SX
Alkalinity, Mud (Pm)	—	—	<input type="checkbox"/> Spersene	<input type="checkbox"/> SX
Alkalinity, Filtrate (Pf/Mf)	<u>0.6/1.1</u>	<u>0.10/7</u>	<input type="checkbox"/> XP-20	<input type="checkbox"/> SX
Salt <input type="checkbox"/> ppm <input type="checkbox"/> Chloride <input type="checkbox"/> ppm	<u>900</u>	<u>12,500</u>	<input type="checkbox"/> TannAthin	<input type="checkbox"/> SX
Calcium <input checked="" type="checkbox"/> ppm <input type="checkbox"/> Gyp (ppb)	<u>40</u>	<u>TRA</u>	<input type="checkbox"/> Caustic Soda	<input type="checkbox"/> SX
Sand Content (% by Vol.)	<u>TRA</u>	—	<input type="checkbox"/> My-Lo-Jel	<input type="checkbox"/> SX
Solids Content (% by Vol.)	<u>7%</u>	<u>11%</u>	<input type="checkbox"/> Resinex	<input type="checkbox"/> SX
Oil Content (% by Vol.)	—	—	<input type="checkbox"/> Lime	<input type="checkbox"/> SX
Water Content (% by Vol.)	<u>93%</u>	<u>89%</u>	<input type="checkbox"/> Gypsum	<input type="checkbox"/> SX
Methylene Blue Capacity: <input type="checkbox"/> (ml/ml mud) <input type="checkbox"/> (equiv. lb./bbl. bent.)	—	—	CONTROL OF REMOVAL OF _____	

REMARKS—Give operation, depth and nature of any problems encountered

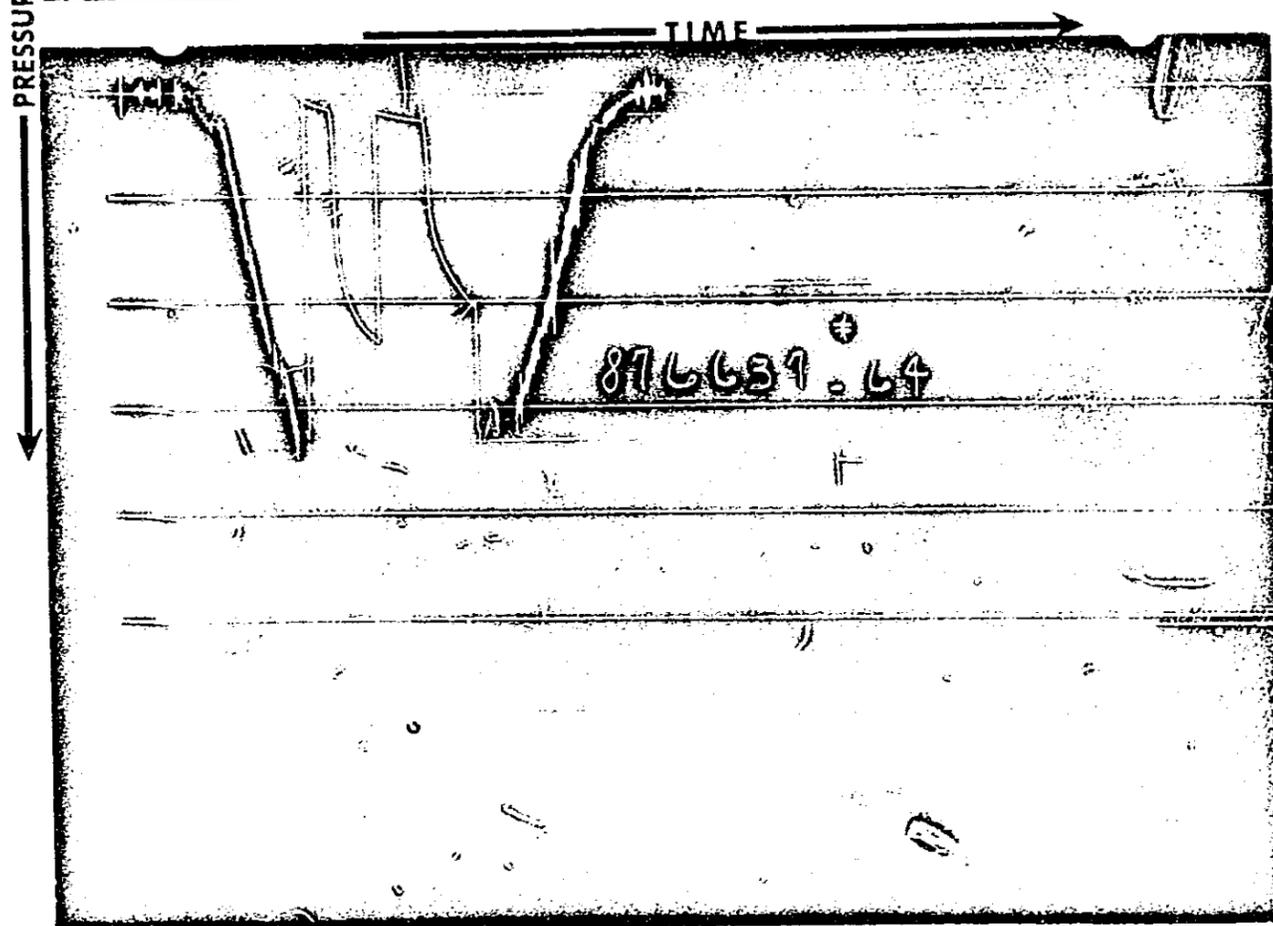
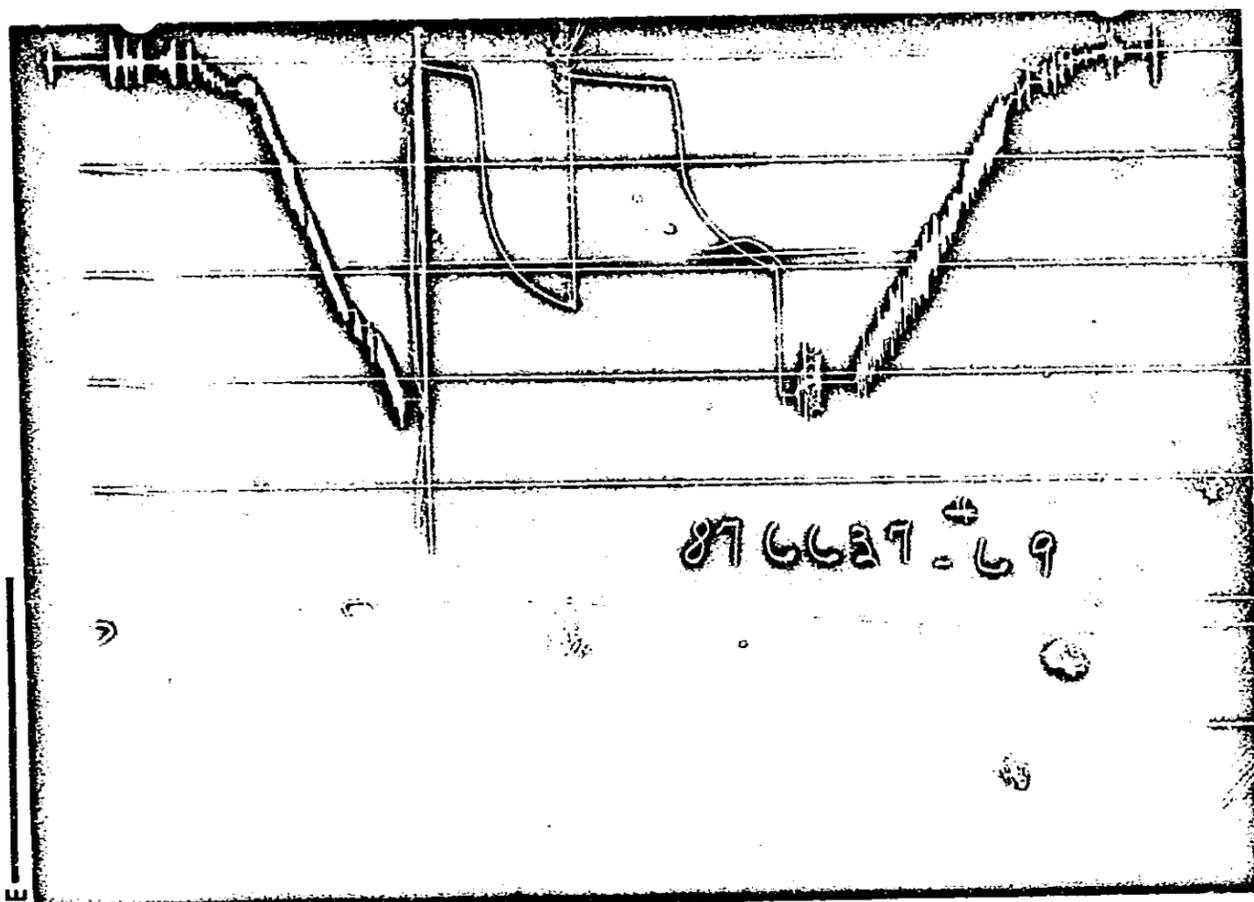
Drilling @
 Circulating @
 Fishing @
 Stuck pipe @
 T hole @
 Kick @
 Lost Returns @

MAGCOBAR ENGINEERS Wattenburger & Mullis HOME ADDRESS _____ PHONE _____
 MOBILE UNIT _____ WAREHOUSE LOCATION _____ PHONE _____
 PRINTED IN U.S.A. THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS AS SET FORTH ON THE REVERSE SIDE

FLUID SAMPLE DATA				Date	1-21-75	Ticket Number	876637
Sampler Pressure _____ P.S.I.G. at Surface	Recovery: Cu. Ft. Gas _____		Kind of Job		OPEN HOLE	Halliburton District	FARMINGTON
cc. Oil _____	cc. Water _____		Tester		DAVIS	Witness	WALSH
cc. Mud _____	Tot. Liquid cc. _____		Drilling Contractor		ARAPAHOE # 6	NM S	
Gravity _____ * API @ _____ *F.	Gas/Oil Ratio _____ cu. ft./bbl.		EQUIPMENT & HOLE DATA				
RESISTIVITY _____	CHLORIDE CONTENT _____		Formation Tested		McCracken		
Recovery Water @ _____ *F. _____ ppm	Recovery Mud @ _____ *F. _____ ppm		Elevation _____ Ft.		Net Productive Interval 75' Ft.		
Recovery Mud Filtrate @ _____ *F. _____ ppm	Mud Pit Sample @ _____ *F. _____ ppm		All Depths Measured From		Rotary Kelly Bushing		
Mud Pit Sample Filtrate @ _____ *F. _____ ppm	Mud Weight 9.2 vis 54 cp		Total Depth		6555' Ft.		
Cushion TYPE AMOUNT		NONE		Depth Back Pres. Valve		NONE	
Surface Choke		3/4" ADJ.		Bottom Choke		3/4"	
Recovered	490'	Feet of	slightly oil and gas cut mud				
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Remarks Tool opened with a weak blow - which increased to a fair blow in 30 minutes. Closed tool for a 58 minute first closed in pressure. Tool reopened with a weak blow for 60 minutes. Took a 61 minute second closed in pressure.							
TEMPERATURE	Gauge No. 69	Gauge No. 64	Gauge No.	TIME			
Depth:	6445' Ft.	6551' Ft.	Depth:				
Est. *F.	12	Hour Clock	24	Hour Clock	Tool Opened 9:00 A.M.		
Actual 123 *F.	Blanked Off	??	Blanked Off	YES	Blanked Off		
	Pressures		Pressures		Pressures		
	Field	Office	Field	Office	Field	Office	Reported Minutes
Initial Hydrostatic	3183	3200	3253	3234	Computed Minutes		
First Period Flow	Initial	93	47	94	101		
	Final	140	140	141	176	30	31
	Closed in	2358	2353	2377	2386	60	58
Second Period Flow	Initial	140	158	188	211		
	Final	229	256	282	286	60	60
	Closed in	1991	2025	2053	2058	60	61
Final Hydrostatic	3183	3197	3253	3230			

Legal Location Sec. 1 Twp. 30E Range 30 - 41N - 30E
 Lease Name JUDY LEE
 Well No. 1
 Test No. 2
 Field Area WILDCAT
 Med. From Tester Valve
 County APACHE
 State ARIZONA
 Tested Interval 6480' - 6555'

NORTHWEST PIPELINE CORPORATION
 Lease Owner/Company Name



Each Horizontal Line Equal to 1000 p.s.i.

WELL SITE DRILL STEM TEST REPORT

DATE: January 24, 1975

COMPANY: Northwest Pipeline Corp. WELL: #1 Judy Lee

LOCATION: SE $\frac{1}{4}$ SEC: 30 TWP: 41N RGE: 30E

COUNTY: Apache Co. STATE: Arizona

TESTED BY: Halliburton - Mr. Dick Headrick

DST NO: #3 TD: 6750'

INTERVAL TESTED FROM: 6698 TO: 6750'

PACKERS: 2 - 6 3/4"

MUD WGT: 9.2# VIS: 57

HOLE SIZE: 7 7/8" DP: 4 1/2" X H DG: 6 1/2" X H

SURFACE CHOKE: variable BH CHOKE: 1/4"

TYPE ANCHOR USED: Howco perf + DC

	<u>TOP BOMB</u>	<u>BOT BOMB</u>	<u>BLOW:</u>
<u>INIT OPEN:</u> 15 mins.	IHP 3177	3244	
Op w/fair blo 3", inc to	IFP 346	357	
good 4", btm of bucket, no GTS	FFP 399	397	
<u>INIT SHUTIN:</u> hrs. 60 mins.	ISIP 2278	2334	
<u>FLOW PERIOD:</u> hrs. 90 mins.	IFP 426	437	
Op w/fair blo, inc to v. good in	FFP 955	1016	
7", dec after 65", no GTS			
<u>FIN SHUTIN:</u> hrs. 90 mins.	FSIP 2251	2268	
	FHP 3177	3178	

BHT: 134, 1380F.

RECOVERY: 2330' total fluid, as follows:

280' DM
280' SIG&SWCM - good gasoline odor
370' SIG&MCSM - good gasoline odor
1400' SW, no GC

PRESS:

CHOKES:

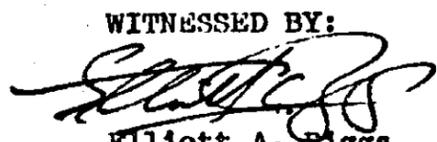
EST FLOW:

REMARKS:

GAS/& FLUID SPLS:

1 set water samples to NWPL, Farmington,
for analysis
1 set to Elliott A. Riggs

WITNESSED BY:


Elliott A. Riggs
Petroleum Geologist
Box 711
Farmington, New Mexico

DRILLING MUD DEPARTMENT



P. O. BOX 988 - FARMINGTON, NEW MEXICO 87401

January 28, 1975

Northwest Pipeline Corp.
Judy Lee #1
Apache County, Arizona
D.S.T. #3 6750' on 1-24-75
Water Analysis for Mr. Elliot Riggs

Total Hardness	500 ppm
Calcium	22 ppm
Magnesium	5832 ppm
Iron - (Fe)	0 ppm
Chlorides	52,000 ppm
Sulfates	875 ppm
Bicarbonates	0 ppm
Carbonates	264 ppm
Hydroxyl	0 ppm
Ph	5.8

Joe M. Kinney
Willis Mullis

1342-A

HALLIBURTON DIVISION LABORATORY
HALLIBURTON COMPANY
MIDLAND DIVISION

LABORATORY WATER ANALYSIS No. _____

Elliot Riggs
Northwest Pipeline Corp.

Date 1-24-75

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by Elliot Riggs Date Rec. 1-24-75

Well No. Judy Lee No.1 Depth _____ Formation _____

County Apache, Arizona Field wildcat Source DST No.3

Resistivity	<u>0.117 @ 63° F</u>	_____	_____
Specific Gravity	_____	_____	_____
pH	<u>7</u>	_____	_____
Calcium (Ca)	<u>7450 *</u>	_____	_____ *MPL
Magnesium (Mg)	<u>1200 *</u>	_____	_____
Chlorides (Cl)	<u>47166 *</u>	_____	_____
Sulfates (SO ₄)	<u>15 *</u>	_____	_____
Bicarbonates (HCO ₃)	<u>1074 *</u>	_____	_____
Soluble Iron (Fe)	<u>408 *</u>	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Remarks: _____ *Milligrams per liter

Respectfully submitted,

Analyst: John Alexander
CC: _____

HALLIBURTON COMPANY

By John Alexander
LABORATORY MANAGER

NOTICE

This report is limited to the described sample tested. Any user of this report agrees that Halliburton shall not be liable for any loss or damage, whether it be to act or omission, resulting from such report or its use.

FORM 66-205
 (REV. 10-1-64)
 USED IN U.S.A.

PAN AMERICAN PETROLEUM CORPORATION
 RESEARCH CENTER
 WATER ANALYSIS

G. R. NEWTON

LOCATION SAMPLED: Division Denver District South Area Farmington
 Operator (Plant) Miami Oil Producers Well No. 1 Lease Navajo 41-54
 State (Province) Arizona County (Parish) Apache
 Twp. 41N Rng. 30E Sec. 30 Quarter (Loc.) NENW Other (Meridian) G and GRM
 Field name _____ Wildcat () Field Well ()
 Sample collected from DST No. 4 Sample used for detailed analyses Bottom of DST
 Sample collected by Weldon Julander Date 12-12-67
 Interval sampled 6600' to 6635' Interval name Lynch Dolo (Jamb.)
 Recovery 150' HO and GCM, 1400' HO and GC Salt Water, 1330' Salt Water
 Form 97 transmitted by Paul W. Lewis Date transmitted 12-12-67
 Technical Service request authorized by _____ Office _____
 Technical Service Number: 5822-CS

ORGANIC CONSTITUENTS in mg/l

	TOP	MUD
Benzene		
Toluene		
Phenols		
HC Gases		

DESCRIPTION OF SAMPLE

Condition as received Good
 Color Quebracho
 Odor Petroleum
 Suspended solids Oxides
 Bottom sediment Oxides
 Oil content Film

QUALITY OF SAMPLE

Chloride ion mg/l: BOTTOM 58,900 Tank 30 Mud Pit 1,250
 Comments on quality No. 1 Bottom - 56,000

This sample probably is mostly formation fluid.

CONVENTIONAL MAJOR ION ANALYSIS

	Major Ions mg/l ¹	% of Total Major Ions	Reaction Value meq/l ²	% of Total Reaction Value
Sodium Na ⁺	26,585	27.06	1,155.37	34.21
Calcium Ca ⁺⁺	7,960	8.10	397.20	11.75
Magnesium Mg ⁺⁺	1,050	1.07	86.31	2.57
Potassium K ⁺	1,445	1.48	37.05	1.09
Chloride Cl ⁻	58,900	59.96	1,660.93	49.15
Bicarbonate HCO ₃ ⁻	1,320	1.34	21.65	.64
Sulfate SO ₄ ⁻	970	.99	20.13	.59
Carbonate CO ₃ ⁻	0	0	0	0
TOTAL	98,230	100.00	3,379.24	100.00

Total solids by evaporation 100,220 mg/l
 NaCl resistivity equivalent (Dunlap) 97,433 mg/l
 Resistivity .078 ohm-meters at 77 °F
 pH 6.2 Specific gravity 1.072 at 72 °F
 Ryznar stability index (2pHs-pH) _____ at _____ °F

OTHER IONS AND DISSOLVED SOLIDS

CATIONS	mg/l	ANIONS	mg/l	OTHERS	mg/l
Lithium Li ⁺		Bromide Br ⁻	198	Iron Fe	
		Iodide I ⁻	0	Boron B	
				Silica SiO ₂	

¹ Data previously reported on Form 66 7-62 under the heading P.P.M. was actually in milligrams per liter. By definition, ppm = mg/l / 100. gr.
² meq/l means milligram equivalents per liter.

MARKS AND CONCLUSIONS:
J. I. Severson/Terry Cooper

(See Attached)



CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS
WATER ANALYSIS

File RP-4-WA-347

Company Northwest Pipeline Well Name Judy Lee #1 Sample No. 4
 Formation Paradox Depth * Sampled From DST#3 Top Fluid
 Location SEC 30-41N-30E Field Wildcat County Apache State Arizona
 Date Sampled 1-10-75 Date Analyzed 2-10-75 Engineer APH/RGC

*Information not supplied

Total Dissolved Solids 36939 mg/L Calc

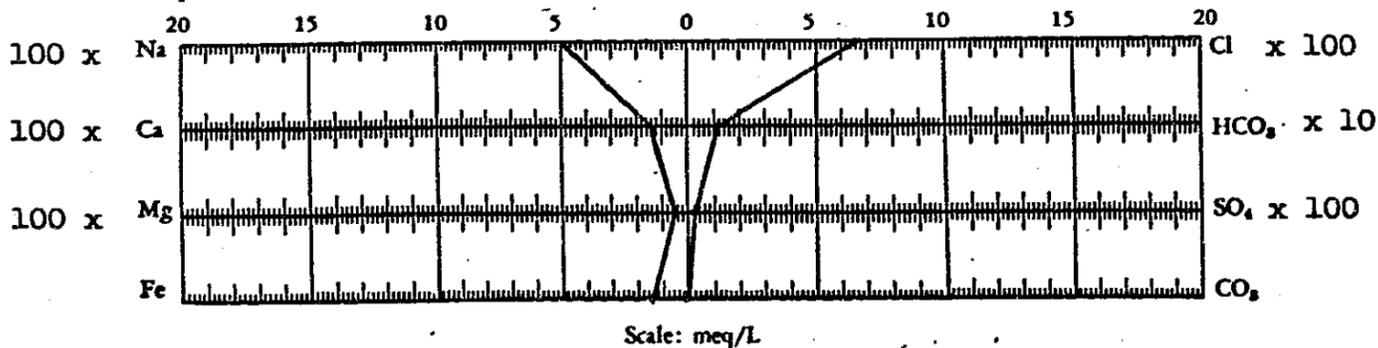
Sp. Gr. 0.032 @ 75 °F.

Resistivity 0.22 ohm-meters @ 75 °F. Meas

Hydrogen Sulfide Absent

pH 6.85

Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	<u>487.4</u>	<u>11205</u>	Chloride	<u>650.1</u>	<u>23044</u>
Calcium	<u>142.0</u>	<u>2966</u>	Bicarbonate	<u>11.6</u>	<u>708</u>
Magnesium	<u>52.0</u>	<u>632</u>	Sulfate	<u>21.1</u>	<u>1015</u>
Iron	<u>1.4</u>	<u>39</u>	Carbonate	<u>NIL</u>	<u>NIL</u>
Barium	<u>NIL</u>	<u>NIL</u>	Hydroxide	<u>NIL</u>	<u>NIL</u>



All analyses except iron determination performed on a filtered sample.



CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS
 WATER ANALYSIS

File RP-4-WA-347

Company Northwest Pipeline Well Name Judy Lee #1 Sample No. 3
 Formation Paradox Depth * Sampled From DST#3 Middle Fluid
 Location SEC 30-41N-30E Field Wildcat County Apache State Arizona
 Date Sampled 1-10-75 Date Analyzed 2-10-75 Engineer APH/RGC

*Information not supplied

Total Dissolved Solids 62316 mg/L Calc

Sp. Gr. 1.048 @ 75 °F.

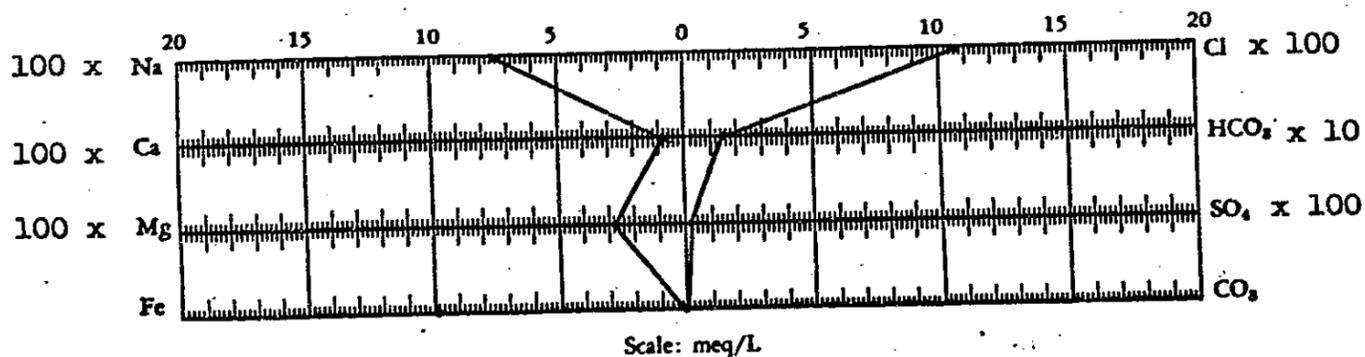
Resistivity 0.135 ohm-meters @ 75 °F. Meas

Hydrogen Sulfide Absent

pH 6.2

Constituents	meq/L	mg/L
Sodium	<u>749.2</u>	<u>17225</u>
Calcium	<u>84.0</u>	<u>1683</u>
Magnesium	<u>265.9</u>	<u>3233</u>
Iron	<u>9.8</u>	<u>274</u>
Barium	<u>NIL</u>	<u>NIL</u>

Constituents	meq/L	mg/L
Chloride	<u>1073.6</u>	<u>38023</u>
Bicarbonate	<u>14.6</u>	<u>887</u>
Sulfate	<u>20.7</u>	<u>992</u>
Carbonate	<u>NIL</u>	<u>NIL</u>
Hydroxide	<u>NIL</u>	<u>NIL</u>



All analyses except iron determination performed on a filtered sample.



CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS
WATER ANALYSIS

File RP-4-WA-347

Company Northwest Pipeline Well Name Judy Lee #1 Sample No. 5
 Formation Paradox Depth * Sampled From DST#3 Top Tools
 Location SEC 30-41N-30E Field Wildcat County Apache State Arizona
 Date Sampled 1-10-75 Date Analyzed 2-10-75 Engineer APH/RGC

*Information not supplied

Total Dissolved Solids 109848 mg/L Calc

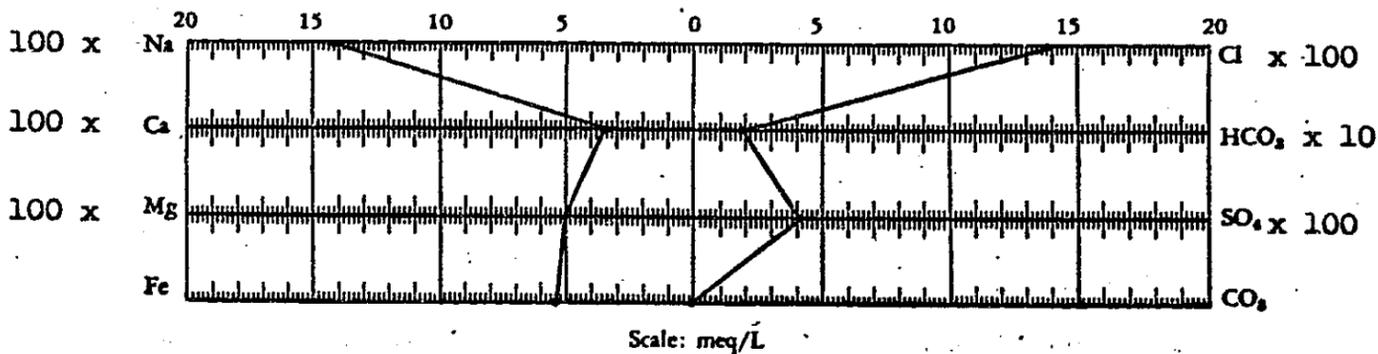
Sp. Gr. 1.046 @ 75°F.

Resistivity 0.125 ohm-meters @ 75 °F. Meas

Hydrogen Sulfide Absent

pH 6.0

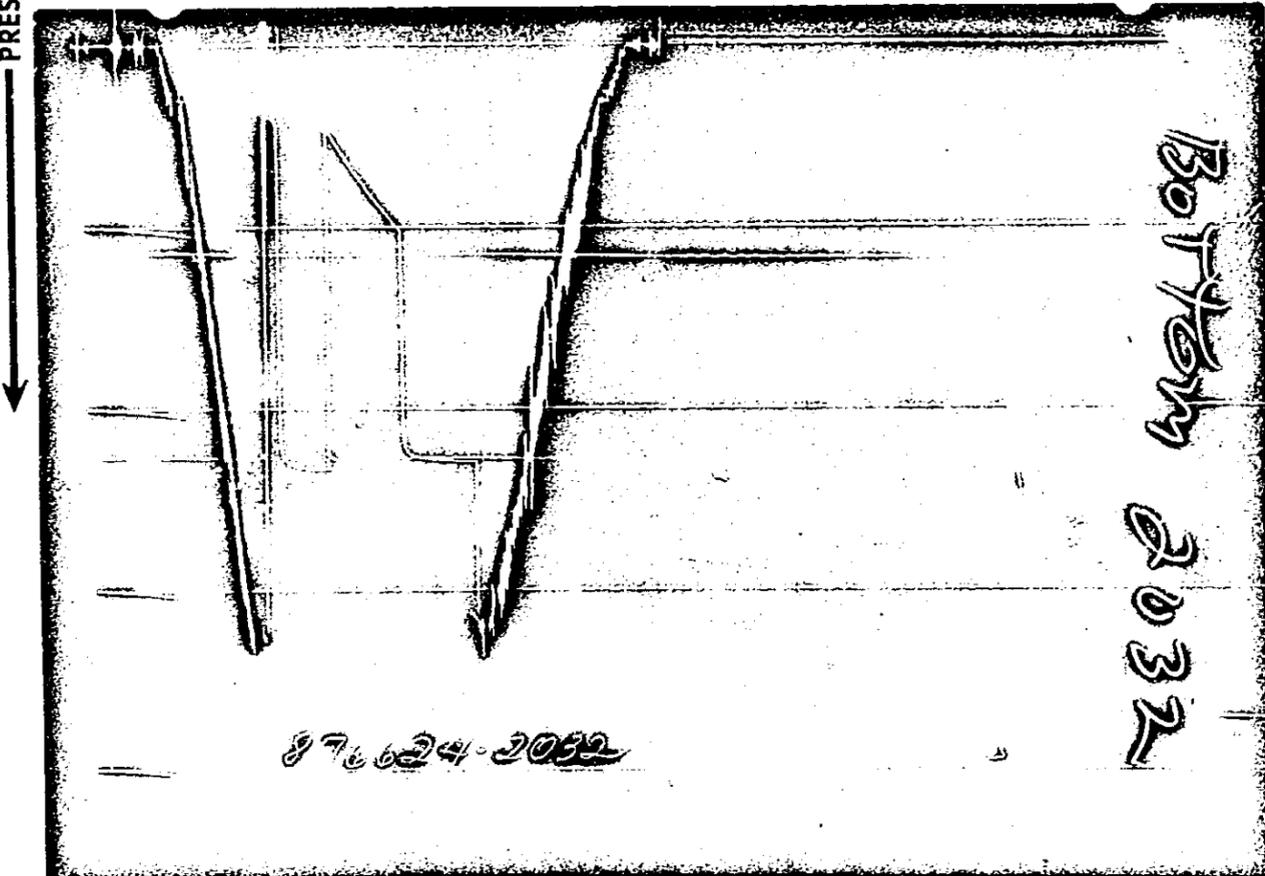
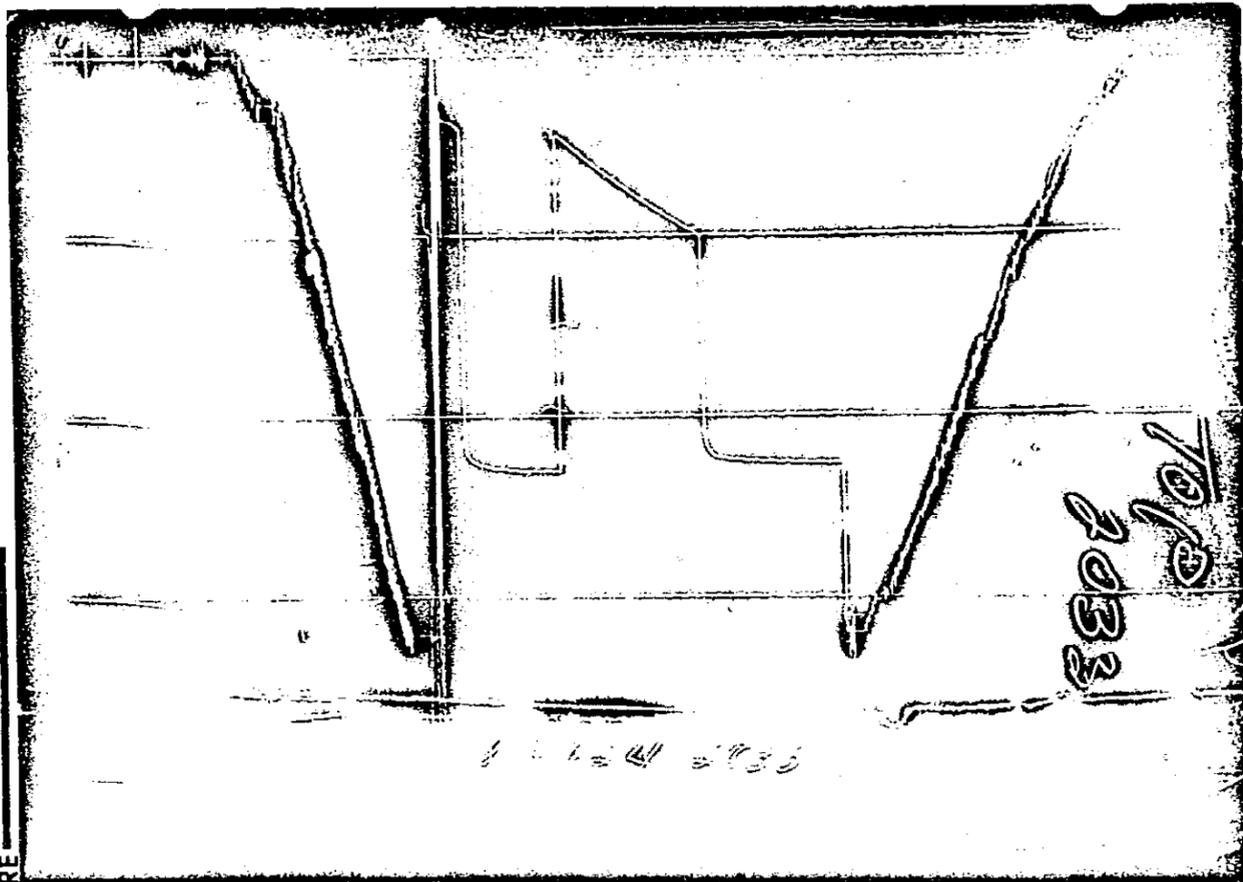
Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	<u>1424.0</u>	<u>32738</u>	Chloride	<u>1381.7</u>	<u>48978</u>
Calcium	<u>336.0</u>	<u>6733</u>	Bicarbonate	<u>19.0</u>	<u>720</u>
Magnesium	<u>50.0</u>	<u>608</u>	Sulfate	<u>414.7</u>	<u>19920</u>
Iron	<u>5.4</u>	<u>151</u>	Carbonate	<u>NIL</u>	<u>NIL</u>
Barium	<u>NIL</u>	<u>NIL</u>	Hydroxide	<u>NIL</u>	<u>NIL</u>



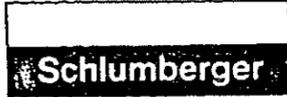
All analyses except iron determination performed on a filtered sample.

FLUID SAMPLE DATA				Date	1-24-75	Ticket Number	876624
Sampler Pressure _____ P.S.I.G. at Surface				Kind of Job	OPEN HOLE	Holliburton District	FARMINGTON
Recovery: Cu. Ft. Gas _____ cc. Oil _____ cc. Water _____ cc. Mud _____ Tot. Liquid cc. _____				Tester	HEADRICK	Witness	WALSH
Gravity _____ ° API @ _____ ° F.				Drilling Contractor	ARAPAHOE DRILLING COMPANY RIG # 6		
Gas/Oil Ratio _____ cu. ft./bbl.				EQUIPMENT & HOLE DATA SM- NM S			
RESISTIVITY _____ CHLORIDE CONTENT _____				Formation Tested	Aneth		
Recovery Water @ _____ ° F. _____ ppm				Elevation	5457'	Ft.	
Recovery Mud @ _____ ° F. _____ ppm				Net Productive Interval	16'	Ft.	
Recovery Mud Filtrate @ _____ ° F. _____ ppm				All Depths Measured From	Rotary Kelly Bushing		
Mud Pit Sample @ _____ ° F. _____ ppm				Total Depth	6750'	Ft.	
Mud Pit Sample Filtrate @ _____ ° F. _____ ppm				Main Hole/Casing Size	7 7/8"		
Mud Weight 9.4 vis 50 cp				Drill Collar Length	550'	I.D.	2.25"
Cushion TYPE AMOUNT				Drill Pipe Length	6110'	I.D.	3.826"
NONE				Packer Depth(s)	6691' - 6697' Ft.		
Depth Back Pres. Valve NONE				Depth Tester Valve	6679'	Ft.	
Surface Choke 3/4" ADJ				Bottom Choke 3/4"			
Recovered 280' Feet of drilling mud				Field Area WILDCAT			
Recovered 280' Feet of water cut mud - slightly gas cut				Mud From Tester Valve			
Recovered 370' Feet of mud cut salt water - slightly gas cut				County APACHE			
Recovered 1400' Feet of salt water - no gas				State ARIZONA			
covered Feet of				APACHE			
Remarks Tool opened @ 0935 with a fair blow - in 4 minutes had a good blow - in 8 minutes had a very good blow. Tool was open for 16 minutes. Closed tool for a 60 minute first closed in pressure. Tool reopened with an immediate fair blow. In 7 minutes increased to a good blow - in 60 minutes had a slight decrease. At 12:21 closed tool for a 90 minute second closed in pressure. No gas to the surface. At 1350 pulled packers. INITIAL CLOSED IN PRESSURE WAS QUESTIONABLE.				Tested Interval 6697' - 6750' - 53'			
TEMPERATURE		Gauge No. 2033	Gauge No. 2032	Gauge No.	TIME		
Depth: 6683' Ft.		Depth: 6746' Ft.	Depth: _____ Ft.	Hour Clock			Tool Opened 0951 A.M.
Est. _____ ° F.		Blanked Off NO	Blanked Off YES	Blanked Off			Open 1221 P.M.
Actual 136 ° F.		Pressures		Pressures		Pressures	
		Field	Office	Field	Office	Field	Office
Initial Hydrostatic		3176.7	3228	3244.0	3251	Reported	Computed
Flow Initial		345.8	339	357.7	396	Minutes	Minutes
Flow Final		399.0	419	396.9	446	16	16
Closed In		2277.7	2311	2333.7	2336	60	60
Flow Initial		425.6	455	436.6	476	90	91
Flow Final		955.1	1008	1015.8	1024	90	90
Closed In		2251.3	2269	2267.8	2296		
Flow Initial							
Flow Final							
Closed In							
Final Hydrostatic		3116.1	3208	3178	3240		

Legal Location Sec - Top - Rng. 30 - 41N - 30E
 Lease Name JUDY LEE
 Well No. 1
 Test No. 3
 Tested Interval 6697' - 6750' - 53'
 Lease Owner/Company Name NORTHWEST PIPELINE CORPORATION



Each Horizontal Line Equal to 1000 p.s.i.



SCHLUMBERGER WELL SERVICES
5000 GULF FREEWAY, P.O. BOX 2175
HOUSTON, TEXAS 77001, (713) 828-2511

January 27, 1975

PL REPLY TO
P.O. BOX 250
FARMINGTON, NEW MEXICO 87401

Mr. Elliott Riggs
Petroleum Club Plaza
Farmington, New Mexico 87401

Northwest Pipeline Corporation
Judy Lee #1
Sec. 30 41N 30E
Apache County, Arizona

DEPTH	R _w	R _t	Ø _s	Ø _n	S _{ws}	S _{wn} %
6735-45	.1	65	0	15	100	23
6725-35	.1	80	0	15	--	21
6715-25	.1	160	0	12	--	20
6550-66	.1	15	9	4	90	100
6541-50	.1	20	10	6	68	100
6232-38	.1	25	4	10	100	61
6226-36	.1	5	4	10	100	100
6216-26	.1	5	6	12	100	91
6206-16	.1	3	8	22	100	75
5401	.15	150	6	6	54	54
5099-5101	.15	200	4	--	66	--
5126-33	.15	100	6	10	60	37
5153-55	.15	250	12	17	19	13

$$R_w = .109 @ 73^{\circ}$$

68,000 PPM of NaCl

L. S. Laude
Field Engineer

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

ELLIOTT A. RIGGS

Petroleum Geologist

WELL HISTORY

December 16, 1974 Rig up
17, Rig up, mix mud, WO Rotary table
18, Drl rat hole & mouse hole, boulders, stuck in rat hole
19, Drlg rat hole, mouse hole, boulders
20, Spud sfc hole 4:00 PM, depth at 11:59 PM 85'
Drlg, had 42' of boulders, rig up to run 9 5/8" sfc csg, ran 11 jts 9 5/8" 36.0# K-55 csg (447.88 + shoe 0.66' - 448.54') set at 462.04' with 325 sx Class B cmt w/1/2" flocele p/sx & 3% CaCl, plug down at 12:30 PM 12-20-74, cmt circ, WOC, nipple up
21, WOC, top cmt at 426', depth at 11:59 PM 1575'
22, Drlg, depth at 11:59 PM 2320'
23, Drlg, depth at 11:59 PM 2920'
24, Drlg, make trip, drlg, drain wtr lines, POOH for Christmas, depth at 11:59 PM 3136'
25, Dry watch, Christmas Day
26, GIH, drlg by 9:30 AM, depth at 11:59 PM 3410'
27, Mud fluffed due to anhydrite, depth at 11:59 PM 3710'
28, Make trip, wash 25' to btm, drlg, make trip, lost Totco, found Totco in top DC, depth at 11:59 PM 3928', ran button bit
29, Wash 20' to btm after trip, drlg, depth at 11:59 PM 4134'
30, Drlg, depth at 11:59 PM 4393'
31, Drlg, POOH, left 1 cone in hole, GIH, drill on junk, POOH, left 2 more cones in hole, GIH w/magnet, circ for junk and condition mud, chain out w/magnet, depth at 11:59 PM 4395'
January 1, 1975 WO globe basket, GIH w/globe basket, GIH w/bit, drill on junk, POOH, GIH w/magnet, POOH w/magnet, depth at 11:59 PM 4395'
2, GIH w/magnet, fishing w/magnet, POOH, GIH w/bit, drl on junk, POOH, GIH w/bit, drill on junk & circ, POOH, depth at 11:59 PM 4395' (?)
3, GIH w/bit & junk basket & circ, drlg on junk, POOH, GIH w/mill and junk basket, milling on junk, POOH w/mill, GIH w/bit, drlg on junk, depth at 11:59 PM 4403'
4, Drlg on junk, POOH & strap pipe, no correction, GIH w/bit, wash 10' to btm, depth at 11:59 PM 4496'
5, Drlg, depth at 11:59 PM 4640'
6, Drlg, make trip at 4720', GIH, wash 20' to btm, snowing, depth at 11:59 PM 4758'

ELLIOTT A. RIGGS

Petroleum Geologist

January 7, 1975 Drlg, depth at 11:59 PM 4929'
8, Drlg, make trip, drlg, depth at 11:59 PM 5060'
9, Drlg, circ to cond mud for DST #1, depth at 11:59
PM 5167'
10, Conduct DST #1 5080-5167', rec 480' SIG&OCM,
depth at 11:59 PM 5205'
11, Drlg, depth at 11:59 PM 5390'
12, Drlg, make trip & survey, GIH, wash 10' to btm,
depth at 11:59 PM 5490'
13, Make trip, wash 30' to btm, drlg, depth at 11:59
PM 5662'
14, Drlg, depth at 11:59 PM 5857'
15, Drlg, work on pump, drilling w/stand-by pump, dec
RPM 45 to 35, dec pump press 1000 to 550, dec wgt
on bit 45,000 to 35,000, depth at 11:59 PM 6005'
16, Drlg, drlg w/stand-by pump, depth at 11:59 PM 6160'
17, Drlg, still drlg w/stand-by pump, make trip at
6265', wash 65' to btm, drlg w/stand-by pump, depth
at 11:59 PM 6285'
18, Drlg, stand-by pump, depth at 11:59 PM 6400'
19, Drlg, make trip, survey, depth at 11:59 PM 6510'
20, Drlg, circ for DST, make short trip, depth at
11:59 PM 6555'
21, Make trip, pick up DST tool, GIH w/Halliburton test
tool, conduct test, cut drlg line, GIH, wash 8' to
btm, drlg, depth at 11:59 PM 6562'
22, Drlg, make trip, wash 10' to btm, depth at 11:59
PM 6621'
23, Drlg, TD 6750', 8:00 PM, condition mud for DST #3,
circulate up samples, make short trip 10 stds,
depth at 11:59 PM 6750'
24, Come out of hole, weld Kelly Chuck, pick up test
tool, conduct DST #3, GIH condition hole for logs
25, Log with Schlumberger
Permission to P & A
Plug #1 6750-6400 104 cu ft Class B neat cmt
#2 5200-5000 80 cu ft
#3 4400-4200 80 cu ft
#4 2550-2350 80 cu ft
#5 550-400 60 cu ft
#6 50- sfc 20 cu ft
26, Finish P & A w/Halliburton

ELLIOTT A. RIGGS

Petroleum Geologist

LOG AND REPORT DISTRIBUTION

	<u>2 Cuts</u> <u>Spls</u>	<u>DST</u> <u>Charts</u>	<u>Log</u> <u>Field</u>	<u>Log</u> <u>Final</u>	<u>Mud</u> <u>Log</u>	<u>Sepia</u>	<u>Geol</u> <u>Report</u>
Northwest Pipeline Corp. Attn: Mr. John M. Parker One Park Central, Suite 1487 Denver, Colorado 80202	-	2	1	2	2	film	2
Northwest Pipeline Corp. Attn: Mr. R. W. Keener P. O. Box 1526 Salt Lake City, Utah 84110	-	2	1	2	2	-	2
Northwest Pipeline Corp. Attn: Mr. Forrest Wood P. O. Box 90 Farmington, N. M. 87401	-	2	1	2	2	-	2
Kimbark Associates Attn: Mr. W. K. Arbuckle 808 Lincoln Tower Bldg. 1860 Lincoln St. Denver, Colorado 80203	-	5	3	5	5	-	4
Elliott A. Riggs P. O. Box 711 Farmington, N. M. 87401	-	1	1	1	1	Sepia	1
U. S. Geological Survey P. O. Box 959 Farmington, N. M. 87401	-	-	-	2	-	-	-
The Navajo Tribe Office of Mineral Development Window Rock, Arizona 86515	-	-	-	1	-	-	-
Arizona Oil Cons. Comm. 4515 N. 7th Avenue Phoenix, Arizona 85013	1	-	-	1	-	-	-

5-12-76

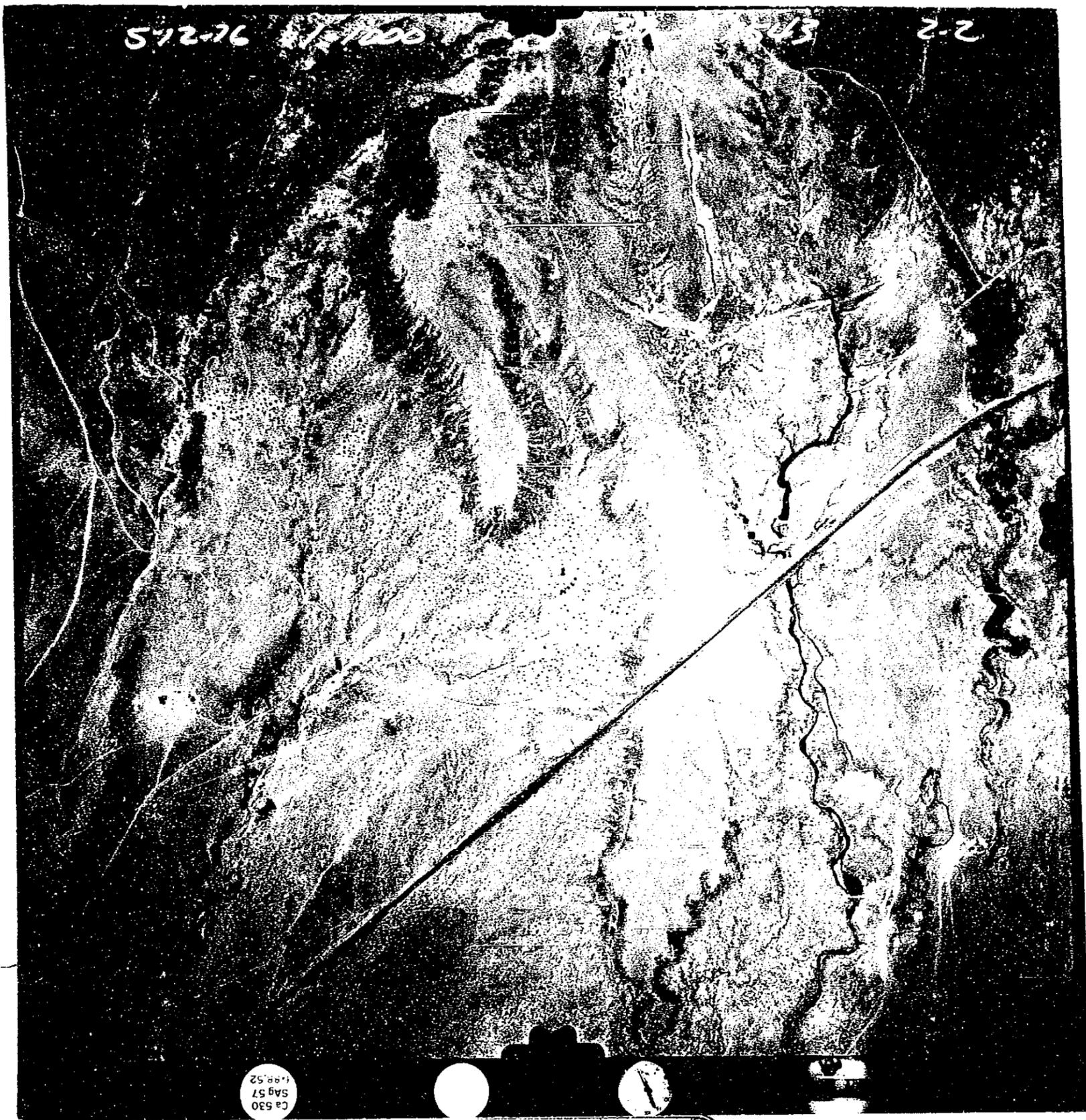
1-1000

7543

2-1



Ca 530
SAG 57
1-89.52



542-76

2-2

Ca 530
SAG 57
198.52

XXXXXXXXXXXX 8686 N. Central
XXXX Suite 106, 85020

Mrs. Jo Ratcliff
Four Corners Sample Cut Association
P. O. Box 899
Farmington, N.M. 87401

RE: Northwest Pipeline Company
SE/SE Sec 30, T41N, R30E
Judy Lee #1
Permit #637

Dear Jo:

We received the samples today on the above referenced well; however, they came collect. It is the rule of this Commission that all samples be forwarded to our office freight prepaid. You have always done this in the past and we are at a lost to understand the change.

In the future any company submitting samples to you for cutting that do not wish freight charges included in your fee, please advise this office so that we may notify them of their obligation to the state of Arizona.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/sl

March 14, 1975

Ms. Kay Waller
Petro-Well Libraries Inc.
150 Security Life Building
1616 Glenarm Place
Denver, Colorado 80202

Re: January - March Current File Material

Dear Kay:

Enclosed you will find the following current material for January through March, 1975.

Data - Completion report and miscellaneous reports on Northwest Pipeline Judy Lee #1, File #637

Logs - Dual Induction - Laterolog and Sidewall Neutron Porosity Log

Data - Completion report and miscellaneous reports on Duval No. 46, File #623

Logs - Radioactivity Log

Very truly yours,

Mrs. Rhema Brandt
Secretary to W. E. Allen
Director, Enforcement Section

WEA/rlb

Encs.

Logs returned 4-18-75

February 19, 1975

Mr. O. B. Whitenberg
Northwest Pipeline Corporation
Production & Drilling
P. O. Box 90
Farmington, New Mexico 87401

Re: Northwest Pipeline Judy Lee #1
SW/SE Section 30-T41N-R30E
Apache County, Permit No. 637

Dear Mr. Whitenberg:

As of this date we have received neither the completion report,
plugging report, nor logs on the above referenced well.

May we have this information as quickly as possible.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/rlb

Encs.

January 7, 1975

Mr. Jim Webster
Photogrammetry & Mapping Services
Highway Division
Department of Transportation
1739 W. Jackson, Room 61
Phoenix, Arizona 85007

Re: Well Site Photographs

Dear Mr. Webster:

Attached is a copy of Application to Drill for the Northwest Pipeline Corporation Judy Lee #1, Permit #637. The well was spudded on 12-19-74, however, they are still drilling at this time.

Very truly yours,

Mrs. Rhema Brandt
Secretary to W. E. Allen
Director, Enforcement Section

/rlb

Enc.

December 9, 1974

Mr. O. B. Whitenberg
Northwest Pipeline Corporation
Production & Drilling
P. O. Box 90
Barmington, New Mexico 87401

Re: Northwest Pipeline Judy Lee #1
SW/SE Section 30-T41N-R30E
Apache County, Permit #637

Dear Mr. Whitenberg:

Enclosed please find Receipt No. 0274 covering the \$25.00 filing fee, a copy of your approved bond, approved Application to Drill and Permit to Drill No. 637.

If we can be of any further assistance, please advise.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/rlb

Encs.

December 9, 1974

Mrs. Jo Ratcliff
Four Corners Sample Cut Association
P. O. Box 899
Farmington, New Mexico 87401

Dear Mrs. Ratcliff:

The following permit was issued December 9, 1974.

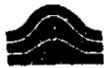
Northwest Pipeline Judy Lee #1
SW/SE Section 30-T41N-R30E
Apache County, Permit #637

Very truly yours,

Rhema L. Brandt
Secretary to W. E. Allen
Director, Enforcement Section

/rlb

Northwest Pipeline Corporation



PRODUCTION & DRILLING
P. O. BOX 90
FARMINGTON, NEW MEXICO 87401

December 6, 1974

Mr. W.E. Allen
Director, Enforcement Section
Oil & Gas Conservation Commission
State of Arizona
4515 North 7th Avenue
Phoenix, Arizona 85013

Dear Mr. Allen:

Enclosed is the Application for Permit to Drill, a certified plat of the well location and the \$25.00 drilling permit fee.

The performance bond and the organization report are being prepared and will be sent to your office when completed.

Your help and cooperation is very much appreciated.

Very truly yours,
Northwest Pipeline Corporation


O.B. Whitenburg
Production & Drilling Engineer

Enc:
OBW/js

RECEIVED

DEC 09 1974

O & G CONS. COMM.