M-d

DUVAL CORPORATION #24 STATE NO PERMIT
W/2 NW Sec. 18-T18N-R26E APACHE COUNTY 1-50

1-50

County Apache

Area Holbrook Basin

Lease No.

Well Name Duval Corporation #24 State

Location W/2 NW Sec 18 Twp 18N Range 26E Footage 1320' FNL - 330' FWL

Elev 5530' Gr KB Spud Date 3-14-64 ~~Completed~~ Abandon 3-25-64 Total Depth 1224'

Contractor

Drilled by Rotary
Cable Tool

Casing Size	Depth	Cement
4-1/2"	1050'	

Production Horizon

Initial Production

REMARKS This hole drilled as a potash test.

See file for Core Lithology. (Footage 1049.6 - 1223.9')

Elec Logs Radioactivity Log;

Applic. to Plug ___ Plugging Record x Completion Report x

Sample Log
Sample Descript.
Sample Set P-1318
Core Analysis
DSTs

Water well accepted by

Bond Co. & No. None

Bond Am't $ Cancelled Date Organization Report None

Filing Receipt None Dated Well Book x Plat Book x

API No. 02-001-05051 ~~None~~ Loc. Plat ___ Dedication None (Strat)

Permit Number None Date Issued

1-50

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	Address
DUVAL CORPORATION	4715 E. FT. LOWELL Rd, TUCSON, ARIZONA

Lease Name	Well Number	Field & Reservoir
	24	

Location: 1320' SOUTH & 330' E OF N.W. COR. SEC. 16 T 18N, R 26E (Sec.—TWP-Range or Block & Survey)

County	Permit number	Date Issued	Previous permit number	Date Issued
APACHE				

Date spudded	Date total depth reached	Date completed, ready to produce	Elevation (DF, RKB, RT or Gr.) feet	Elevation of casing hd. flange feet
3-11-64	3-25-64	3/25/64		

Total depth	P.B.T.D.	Single, dual or triple completion?	If this is a dual or triple completion, furnish separate report for each completion.
1224			

Producing interval (s) for this completion	Rotary tools used (interval)	Cable tools used (interval)

Was this well directionally drilled?	Was directional survey made?	Was copy of directional survey filed?	Date filed

Type of electrical or other logs run (check logs filed with the commission)	Date filed
RADIOACTIVITY LOG	

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

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

PERFORATION RECORD			ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD	
Number per ft.	Size & type	Depth Interval	Am't. & kind of material used	Depth Interval

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 bbls.	Gas prod. during test MCF	Water prod. during test bbls.	Oil gravity ° API (Corr)

Tubing pressure	Casing pressure	Cal'ted rate of Production per 24 hrs.	Oil bbls.	Gas MCF	Water bbls.	Gas—oil ratio

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 ..... of the ..... (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

..... Signature

STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION

Well Completion or Recompletion Report and Well Log

Form No. P-7 File two copies

PLUGGING RECORD

Operator: DUVAL CORPORATION	Address: 4715 E. FT. LOWELL Rd. TUCSON, ARIZ
Name of Lease	Well No.: 24 — Field & Reservoir
Location of Well: 1320' SOUTH & 230' E OF N.W. COR SEC 18 T18N, R26E	Sec-Twp-Rge or Block & Survey — County: APACHE
Application to drill this well was filed in name of	Has this well ever produced oil or gas — Character of well at completion (initial production): Oil (bbls/day) — Gas (MCF/day) — Dry?
Date plugged: 3-25-64	Total depth: 1224 — Amount well producing when plugged: Oil (bbls/day) — Gas (MCF/day) — Water (bbls./day)

Name of each formation containing oil or gas. Indicate which formation open to wellbore at time of plugging	Fluid content of each formation	Depth interval of each formation	Size, kind & depth of plugs used Indicate zones squeeze cemented, giving amount cement.

CASING RECORD

Size pipe	Put in well (ft.)	Pulled out (ft.)	Left in well (ft.)	Give depth and method of parting casing (shot, ripped etc)	Packers and shoes

Was well filled with mud-laden fluid, according to regulations?

Indicate deepest formation containing fresh water.

NAMES AND ADDRESSES OF ADJACENT LEASE OPERATORS OR OWNERS OF THE SURFACE

Name	Address	Direction from this well:

In addition to other information required on this form, if this well was plugged back for use as a fresh water well, give all pertinent details of plugging operations to base of fresh water sand, perforated interval to fresh water sand, name and address of surface owner, and attach letter from surface owner authorizing completion of this well as a water well and agreeing to assume full liability for any subsequent plugging which might be required.

Use reverse side for additional detail

File this form in duplicate with the State of Arizona Oil & Gas Conservation Commission

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the.....of the .....(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 ..... Signature .....

STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION

Plugging Record — File two copies

Form No. P-15

Hole No.	Interval (feet)	Formation or Member
21	Ground elevation 5760'	
	0-100(approx.)	Dune Sand
	100-280	Bidahochi
	280-365	Upper Petrified Forest
	365-400	Sonsela
	400-	Lower Petrified Forest
	765 (GRN log)	Top of greenish-grey unit
	1105-1325	Lower Hupatki
	1325-1500	Coconino
	1500-	Supai
	1676	Top of 1st marker Anhydrite
22A	Ground elevation 5510'	
	0-10	Dune Sand
	10-	Lower Petrified Forest
	70-	Top of greenish-grey unit
	376-	Shinarump
	436-581	Lower Hupatki
	581-900	Coconino
	900-	Supai
	1022	Top of 1st marker Anhydrite
23	Ground elevation 5940'	
	0-60	Dune Sand
	60-390	Bidahochi
	390-	Upper Petrified Forest
	985-	Top of greenish-grey unit
	1525-	Shinarump
	1550-1668	Lower Hupatki
	1668-2068	
	(Hole abandoned at 2068')	
24	Ground elevation 5530'	
	0-	Chinle, near or below top of greenish-grey unit
	425-	Shinarump
	477-647	Lower Hupatki
	647-980	Coconino
	980-	Supai
	1061	Top of 1st marker Anhydrite

1-50

1-50

FORM 159

DUVAL CORPORATION

INTER-OFFICE MEMORANDUM

FROM Navajo, Arizona

DATE April 29, 1964

TO Esperanza

ATTENTION B.G. Lesser

SUBJECT: Duval # 24 State

Location: 1320 FNL, 330 FWL, sec.18, T.18N., R.26E.
Date Started: 3/14/64
Date Completed: 3/25/64
Elevation, G.L.: 5530
Casing Point: 1050
Depth, Top Coconino: 647 (4883)
Depth, Top Halite: 1085 (4445)
Depth, Top Sylvite: 1131 (4399)
T.D.: 1224

4

Form 3
2M Sheets 5-54

DUVAL SULPHUR & POTASH COMPANY
POTASH DIVISION
CARLSBAD, NEW MEXICO

WHILE WE BELIEVE THIS INFORMATION TO BE CORRECT. WE MAKE NO REPRESENTATION WITH RESPECT TO, NOR DO WE ASSUME ANY RESPONSIBILITY FOR, THE CORRECTNESS THEREOF.
DUVAL CORPORATION

CORE LITHOLOGY

WELL NO. 24

DEPTH (Feet) From		To		INTERVAL Feet		ESTIM. % Shale	AA	DESCRIPTION
				Abbreviations:				H - Halite / Gyp - Gypsum
								A - Anhydrite / C-S - Clay-Silt
								P - Polyhalite / med.g. - medium grained
								S - Sylvite / clr - clear
								C - Carnallite / occ - occasional
								f.g. - fine grained / V - Very
								c.g. - coarse grained / incr - increasing
								incl. - inclusions / decr - decreasing
								irreg - irregular / brn - brown
1049	6							START CORING
1049	6	1051	0	1	4	94	6	C-S, red-brn, med hard; numerous thin soft white A/Gyp partings & stringers, 1/4" bands at top, 1050.1', & 1050.6'.
1051	0	1051	3	0	3		100	Gyp, white, grading into A, gray, in lower half.
1051	3	1052	5	1	2	94	6	C-S, red-brn, med. hd.; few white A/Gyp partings, increasing down from 2% at top to 10 % at base.
1052	5	1052	8	0	3		100	A, white, little Gyp.
1052	8	1054	1	1	3	75	25	C-S, lt. brn, little green, hard, decreasing down from 100% at top to 50 % at base; remainder is A, white-gray as numerous veinlets & partings, 0.1' band at 1053.3'.
1054	1	1055	0	0	9	40	60	A, gray, in coarse zones, many fracture fillings & partings in med. soft brn clay.
1055	0	1056	1	1	1	95	5	C-S, red-brn, med. soft; few white A partings & veinlets, 0.2' zone of 20% A at 1055.1'.
1056	1	1056	4	0	3	2	98	A, lt. gray; V few C-S incls.
1056	4	1057	9	1	5	98	2	C-S, brn, med. hard; few irreg white A veinlets.
1057	9	1059	1	1	2	7	93	A, white to lt. gray; 0.2' 80% brn C-S zone at 1058.3'
1059	1	1061	2	2	1	98	2	C-S, lt. brn to red-brn, med. hd.; few white A/Gyp stringers.
1061	2	1074	4	13	2		100	A, lt. to dk. gray, mottled, some white Gyp & brn clay in bottom 0.4'.

Form 3-A
3M Sheets 5-54

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 24 — CORE LITHOLOGY — PAGE NO. 2

DEPTH (Feet) From		DEPTH (Feet) To		INTERVAL Feet		ESTIM. % Shale	ESTIM. % A	DESCRIPTION
1074	4	1081	1	6	7	97	3	C-S, red-brn, soft; few lt. gray A incls., 0.2' 50% zone at 1078.7'.
1081	1	1082	7	1	6	12	88	A, gray; 0.2' soft brn C-S at 1082.2'.
1082	7	1085	7	3	0	95	5	C-S, red-brn, soft; few lt. gray A blebs, 0.2' 30% zone at 1083.8'.
1085	7							TOP OF SALT
1085	7	1089	7	4	0	25		H, med. to c.g.; many small to lg. brn C-S incls., 0.3' zone 60% C-S at 1088.5'.
1089	7	1095	6	5	9	20		H, med. g.; some small to lg. brn C-S incls., decr down from 35% at top to 5% at base.
1095	6	1097	5	1	9	4	2	H, med. to c.g., few small to lg. brn C-S incls.; few lt. gray A stringers & incls., grading in down.
1097	5	1103	5	6	0		100	A, lt. to dk. gray; occ V thin red C-S stringers.
1103	5	1105	2	1	7	2	3	H, c.g., clr in lower half; some A, lt. gray, stringers in top 0.6'; few brn C-S incls., grading out down.
1105	2	1107	4	2	2	18	3	H, f.g. to med.; many lg. brn C-S incls., incr down from 6% at top to 30% at base, 1/2" band at 1105.9'; few white A stringers, irreg 1/2" band at top.
1107	4	1112	7	5	3	4		H, med.g.; some small to lg. brn C-S incls., decr down from 6% at top to 2% at base, 0.2' band at 1109.1'.
1112	7	1116	3	3	6	2	1	H, clr, med. to c.g.; few small brn C-S incls.; occ white A bleb, thin irreg parting at 1116.0'.
1116	3	1120	0	3	7	3		H, med. to c.g., clr in lower half; few small brn C-S incls., decr down from 4% at top to 2% at base.
1120	0	1121	1	1	1	4	3	H, clr, c.g.; V few small brn C-S incls.; 0.1' zone 30% C-S at top, 30% white A at base.
1121	1	1123	1	2	0	30		H, f.g. to med.; some small-lg. brn C-S incls., parting at 1122.9'.
1123	1	1124	6	1	5	4		H, clr, med.-c.g.; few small to lg. brn C-S incls.

Form 3-A
3M Sheets 5-54

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 24 — CORE LITHOLOGY — PAGE NO. 3

DEPTH (Feet) From		DEPTH (Feet) To		INTERVAL Feet		ESTIM. % Shale	ESTIM. % AA	DESCRIPTION
1124	6	1125	2	0	6	50		C-S, brn, med. hd., & H, c.g. & veinlets in C-S, decr down from 90% at top to 10% at base.
1125	2	1127	4	2	2	8		H, clr., c.g.; some lg. brn C-S incls., incr down from 4% at top to 12% at base; occ V small white A bleb.
1127	4	1127	7	0	3	80		C-S, lt. brn, med. hard; some H as schistose veinlets.
1127	7	1129	0	1	3	45	2	H, f.g. & C-S, lt. brn, parting at 1128.6'; few small white A blebs.
1129	0	1131	32	2	32	5		H, f.g. to med., some small to med. brn C-S incls., decr down from 8% at top to 2% at base.
1131	32	1131	72	0	40	3		H, clr, med. to c.g.; few brn C-S incl. & stringers occ a blebs, occ S bleb K_2O/S = 1%
1131	72	1132	00	0	28	25		H, clr c.g.; some brn C-S incl. & stringers; occ A bleb K_2O/S = 0
1132	00	1132	40	0	40	3	1	H, clr med., V few brn C-S incl.; V few A blebs; some red rimmed milky S blebs est K_2O/S = 10%
1132	40	1134	20	1	80	30		H, clr, med. to c.g.; some brn C-S incl. & stringers; occ A bleb; occ S bleb K_2O/S = 0
1134	20	1136	52	2	32	2	1	H clr, med to c.g.; few brn C-S blebs, V few gray A incl. & stringers; V few red rimmed milky S blebs est. K_2O/S = 2%.
1136	52	1137	74	1	22			H clr, med.; V few brn C-S incl.; few gray A blebs & stringers occ S bleb K_2O/S = 1%
1137	74	1138	77	1	03	3		H clr.; med to c.g.; few brn C-S incl.; occ gray A bleb.
1138	77	1139	76	0	99	2		H clr med. to c.g.; V few brn C-S blebs; occ tan A blebs & stringers, occ C blebs, V few red rimmed milky S blebs Est. K_2O/S = 2%
1139	76	1140	10	0	34	1		H & milky S; V few brn C-S blebs, K_2O/S = 30%
1140	10	1140	54	0	44	1	3	H clr fine to med.; V few brn C-S incl. few gray A incl & stringers, few milky S blebs Est K_2O/S = 6%

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4 Sheets 5-54

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 24 — CORE LITHOLOGY — PAGE NO. 4

DEPTH (Feet) From		DEPTH (Feet) To		INTERVAL Feet		ESTIM. % Shale	ESTIM. % BA	DESCRIPTION
1140	54	1140	76	0	22	6	1	H & milky S, some brn C-S incl, v few gray A blebs est. K_2O/S = 30%.
1140	76	1141	43	0	67		50	A tan & clr H, some red rimmed milky S blebs & stringers est. K_2O/S = 5%
1141	43	1141	91	0	48			H clr, c.g.; occ brn C-S incl. gray A blebs; occ S bleb. K_2O/S = 1%
1141	91	1142	49	0	58	1		H & milky S; V few brn C-S incl., est. K_2O/S = 25%.
1142	49	1142	69	0	20			H clr c.g., occ milky S blebs est. K_2O/S = 2%
1142	69	1144	17	1	48	12	2	H clr med.; some brn C-S blebs & stringers, V few gray A blebs, occ S bleb est K_2O/S = 1%
1144	17	1145	17	1	0	4	2	H clr med to c.g.; few brn C-S incl & stringers; V few gray A incl; V few red rimmed milky S blebs est K_2O/S = 3%
1145	17	1146	82	1	65	3	3	H clr, fine to med; few brn C-S incl.; few gray A incl & stringers; few red rimmed milky S blebs est K_2O/S = 5%
1146	82	1148	27	1	45	1	3	H clr, fine to med.; V few brown C-S blebs; few gray A incl & stringers, occ S blebs K_2O/S = 1%
1148	27	1148	67	0	40			H clr med to c.g., occ large red rimmed milky S blebs est K_2O/S = 12%
1148	67	1149	48	0	81	1	1	H clr med.; V few brn C-S blebs, V few A incl; occ S bleb K_2O/S = 71%
1149	48	1156	5	7	02	35		H, med.; many V lg. brn C-S incls., 0.2' 80% zones at 1151.8', 1153.8', & 1154.3'; occ. small white A bleb.
1156	5	1157	3	0	8	1		H, clr., c.g.; few med. brn C-S incls. in top 0.3'.
1157	3	1162	7	5	4	5	2	H, med. to c.g.; some small-med. brn. C-S incls. & stringers; few white A stringers in top & bottom thirds. (Core is broken up in most of interval).
1162	7	1164	0	1	3	2		H, clr to pink; c.g.; few red-brn C-S stringers.
1164	0	1166	5	2	5	1	2	H, clr, c.g.; V few small-lg. lt. gray A stringer; occ small C-S incl.

Form 3-A
3M Sheets 5-54

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 24 CORE LITHOLOGY PAGE NO. 5

DEPTH (Feet) From		DEPTH (Feet) To		INTERVAL Feet		ESTIM. % Shale	ESTIM. % ΣA	DESCRIPTION
1166	5	1167	7	1	2	2		H, clr, med.-c.g.; few small brn C-S incls., grading out down; occ thin white A stringer.
1167	7	1169	6	1	9	65		C-S, red brn, med. soft, decr down from 90% at top to 40% at base; some H, f.g.-med.
1169	6	1173	3	3	7	15		H, f.g.-med.; some small-lg. soft brn C-S incls., decr down from 25% at top to 5% at base, some green clay in top 0.3'.
1173	3	1182	4			2	1	H, fairly clr, med.g.; few small lt. brn C-S incls.; occ small white A bleb in top half.
1182	4	1185	9	3	5	2		H, clr, c.g.; V few small small brn C-S incls., incr down from 1% at top to 3% at base; occ small white A stringers.
1185	9	1186	1	0	2	75	2	C-S, lt. red-brn, soft; some H, f.g.; few white A stringers.
1186	1	1187	9	1	8			H, V clr, V c.g.; occ brn C-S stringer.
1187	9	1190	1	2	2	5		H, med.-c.g.; some small-lg.brn C-S incls., 0.2' 30% zone at base.
1190	1	1192	4	2	3	3	1	H, c.g.; few small-lg. brn C-S incls.; V few small white A stringers in bottom third.
1192	4	1197	6	5	2	1	4	H, V clr, c.g.; V few brn C-S incls. in top 0.8', few lt. gray A stringers, numerous bands, 1/4" bands at 1195.0', 1195.8', 1196.8', & 1197.1'.
1197	6	1198	8	1	2		85	A, lt. gray; some H, f.g., intergrowths, grading out down.
1198	8	1199	2	0	4	100		C-S, dk. red-brn, soft, little gray C-S in top half.
1199	2	1200	4	1	2	10	1	H, med; some brn C-S incls., decr down from 15% at top to 5% at base; V few white A blebs.
1200	4	1204	0	3	6	2	2	H, med, clr; few small brn C-S incls., decr down from 3% at top to 1% at base; few small white A stringers.
1204	0	1208	4	4	4	1	2	H, clr, med-c.g.; few lt. gray A stringers, irreg 3" band at 1205.4'; V few red-brn C-S incls., mostly in lower half.

m 3-A
t Sheets 5-54

DUVAL SULPHUR & POTASH COMPANY

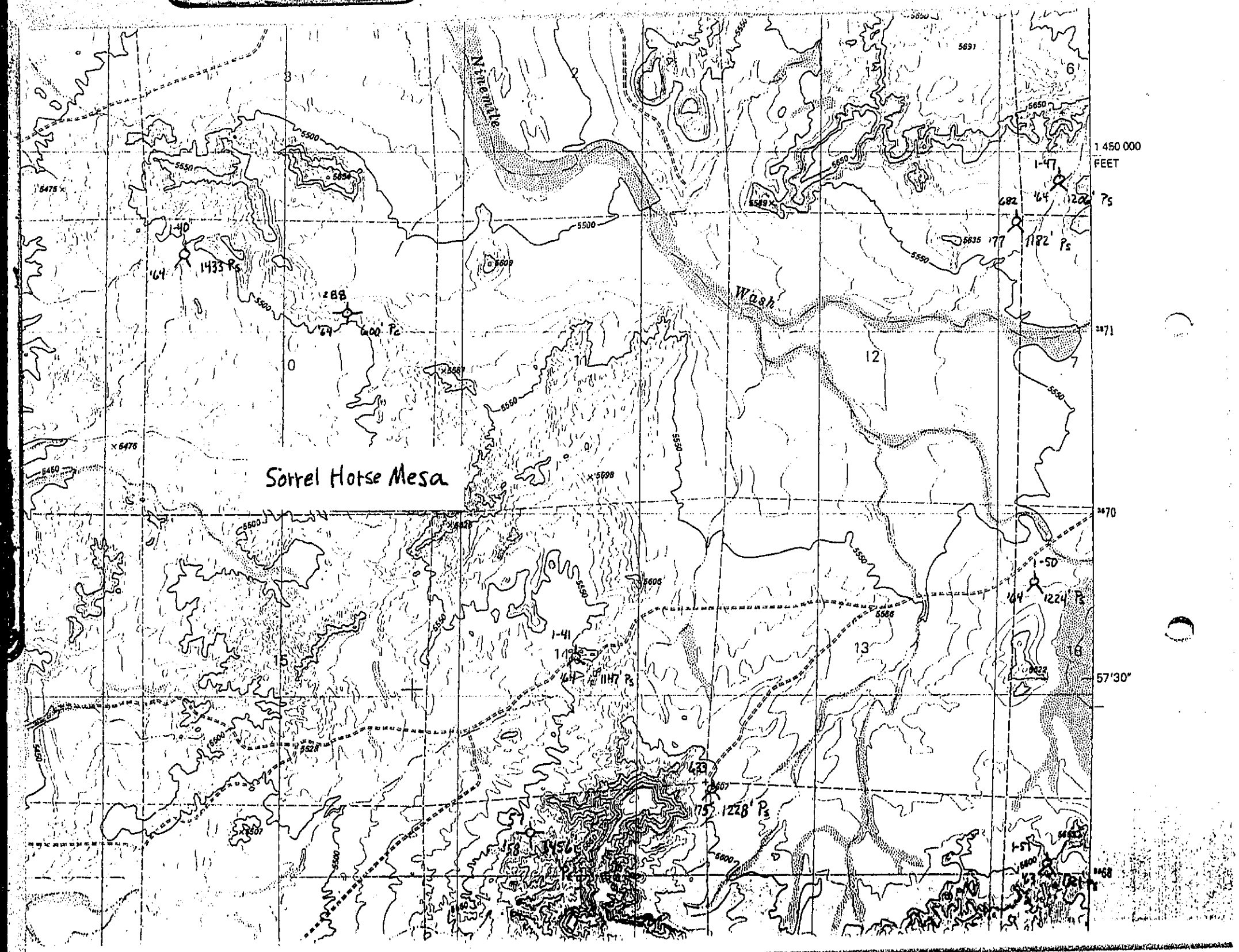
WELL NO. 24 — CORE LITHOLOGY — PAGE NO. 6

DEPTH (Feet) From		To		INTERVAL Feet		ESTIM. % Shale	EA	DESCRIPTION
1208	4	1209	1	1	0		90	A, lt. gray-white; few H, f.g., intergrowths.
1209	1	1211	5	2	4	5	2	H, med.g.; some brn C-S incls., 0.1' zone 80% at
								1210.0'; few small white A stringers.
1211	5	1213	1	1	6	2	1	H, clr, f.g.-med; few small lt. brn C-S incls.; V
								few white A stringers.
1213	1	1215	2	2	1	3	2	H, clr, med.g.; few small-med. brn C-S incls.;
								few white A stringers.
1215	2	1218	6	3	4		2	H, V clr, med.-c.g.; few small-med. lt. gray A
								stringers.
1218	6	1218	8	0	2		60	A, gray; many lg. H, f.g., intergrowths.
1218	8	1219	1	0	3		8	H, fairly clr, f.g.-med.; numerous small white-gray
								A stringers.
1219	1	1222	2	3	1	35	2	H, f.g.; many V lg. lt. brn C-S incls., 0.1' bands at
								1219.4' & 1221.3', few white A stringers, thin
								parting at top.
1222	2	1223	9	1	7	70		C-S, lt. red-brn, decr down from 90% at top to 40%
								at 0.2' above base, 0.2' band at base.
1223	9							TOTAL DEPTH

LOGGED BY B. F. McGuire

J. M. Magraw

K. E. Ellers


Sorrel Horse Mesa
Nine mile
Wash
1 450 000
FEET
57'30"