

M-3

DUVAL CORPORATION #27 FEDERAL NO PERMIT
SE SW Sec. 31-T18N-R24E APACHE COUNTY 1-39

1-39

County Apache
Area Holbrook Basin
Lease No. Federal

Well Name Duval Corporation #27 Federal

Location SE SW Sec 31 Twp 18N Range 24E Footage 375' FSL - 2140' FWL
Elev 5390' Gr KB Date 3-26-64 Spud Completed Abandon 4-4-64 Total Depth 1064'?

Contractor _____

Casing Size 4-3/4" Depth 790' Cement _____
Drilled by Rotary _____
Cable Tool _____
Production Horizon _____
Initial Production _____

REMARKS This hole drilled as a potash test.
See file for core lithology. (Footage 790' - 1063')

Elec Logs Gamma Ray-Neutron; Radioactivity Log; Sample Log _____
Applic. Plugging Completion Sample Descript. _____
to Plug Record X Report X Sample Set P-1315
Core Analysis _____
DSTs _____

Water well accepted by _____

Bond Co. & No. None

Bond Am't \$ _____ Canceled _____ Date _____ Organization Report None

Filing Receipt None Dated _____ Well Book X Plat Book X

API No. 02-001-05036 Loc. Plat _____ Dedication None (Strat)

Permit Number None Date Issued _____

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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 Duval Corporation Address 4715 E FT Lowell Rd. Tucson Arizona

Lease Name _____ Well Number 27 Field & Reservoir _____

Location 375' N & 500' W of S 1/2 Cor Sec 31 T1RN R24E Sec.—TWP-Range or Block & Survey

County Apache Permit number _____ Date Issued _____ Previous permit number _____ Date Issued _____

Date spudded 3/26/64 Date total depth reached _____ Date completed, ready to produce 4/4/64 Elevation (DF, RKB, RT or Gr.) _____ feet Elevation of casing hd. flange _____ feet

Total depth 1063 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) _____ 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) Gamma Ray - Neutron Date filed _____

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	Depth set	Packer set at	Size	Top	Bottom	Sacks cement	Screen (ft.)
in.	ft.	ft.	in.	ft.	ft.	ft.	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	Gas prod. during test	Water prod. during test	Oil gravity
			bbls.	MCF	bbls.	* API (Corr)

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

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

<u>Hole No.</u>	<u>Interval (feet)</u>	<u>Formation or Member</u>
25	Ground elevation 6520'	
	0-110	(No samples)
	-652	Bidahochi'
	652-	Upper Petrified Forest
	1495-	Lower Petrified Forest
	1660 (gradational)	Top of greenish-grey
	1930-	Shinarump
	1965-2085	Lower Wupatki
	2085-2370	Coconino
	2370-	Supai
	2467	Top of 1st marker Anhydrite
26	Ground elevation 5740'	
	0-60	Upper Petrified Forest
	60-70	Sonsela
	70-	Lower Petrified Forest
	323-	Top of greenish-grey unit
	745-	Shinarump
	823-908	Lower Wupatki
	908-1245	Coconino
	1245-	Supai
	1331	Top of 1st marker Anhydrite
27	Ground elevation 5390'	
	0-63	Bidahochi
	63-	Chinle, below greenish-grey unit
	142-	Shinarump
	160-438	Lower Wupatki
	438-800	Coconino
	800-	Supai
	902	Top of 1st marker Anhydrite
28	Ground elevation 5880'	
	0-	Upper Petrified Forest
	269-	Lower Petrified Forest
	458-	Top of greenish-grey unit
	1023-	Shinarump
	1040-1176	Lower Wupatki
	1176-1493	Coconino
	1493-	Supai
	1576	Top of 1st marker Anhydrite

PLUGGING RECORD

Operator Duval Corporation		Address 4715 E FT Lowell Rd Tucson, Arizona	
Name of Lease		Well No. 27	Field & Reservoir
Location of Well		Sec-Twp-Rge or Block & Survey	County
375 N E 500 W of S 1/2 Cor Sec 31 T18N R24E			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:	Total depth	Amount well producing when plugged:	
	1063	Oil (bbls/day)	Gas (MCF/day) Water (bbls./day)
Name of each formation containing oil or gas. Indicate which formation open to well-bore 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

FORM 159

DUVAL CORPORATION
INTER-OFFICE MEMORANDUM

1-39

FROM Navajo, Arizona DATE April 14, 1964
TO SECRETARY ATTENTION E.S. JONES
SUBJECT: Duval # 27 Sadral

Location: 375 N., 500 W., of S. 1/2 Cor., sec. 31, T.18N., R.24E.
Date started: 3/16/64
Date completed: 4/1/64
Elevation, C.L.: 5390
Facing Point: 790
Depth, Top Coccolino: 438 (4952) — 5390
Depth, Top Halite: 974 (4466) — 4966
Depth, Top Sylvite: 1001 (4389) — 91
T.D.: 1083

Form 3
2M Sheets 5-54

WHILE WE HAVE THE BEST INTERESTS OF OUR CUSTOMERS AT HEART, WE DO NOT ACCEPT RESPONSIBILITY FOR THE CORRECTNESS THEREOF.
DUVAL CORPORATION

DUVAL SULPHUR & POTASH COMPANY
POTASH DIVISION
CARLSBAD, NEW MEXICO

CORE LITHOLOGY

WELL NO. 27

DEPTH (Feet)		INTERVAL		ESTIM. %		DESCRIPTION
From	To	Feet	Shale	RA		
						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
790 0						START CORING
790 0	811 5	21 5	96	4		Sandstone (coconino?), lt.-dark red-brn., med. hard, slightly calcareous; few irreg. white A/Gyp. blebs, 0.4' 80% zone at 806.0'.
811 5	811 9	0 4	98	2		A/Gyp., white, few tan hard C/S. incls.
811 9	813 9	2 0	95	5		C-S., lt. red brn. med. hard; few small to large gray A blebs.
813 9	817 0	3 1	3	97		A, white- lt. gray; few irreg. red-brn. C-S. incls. in mid. third.
817 0	833 0	16 0	92	8		C-S. to sandstone; num. large, irreg. A blebs grading out down.
833 0	835 5	2 5	3	97		A, white-lt. gray; some V. fine C-S. incls.
835 5	838 2	2 7	96	4		C-S. lt. red-brn., hard, few med. white A incls., 0.1' bands at 835.6' and 838.0'.
838 2	839 1	0 9	-	100		A, white, f.g.
839 1	844 0	4 9	96	4		C-S., red-brn., hard, becoming med. soft and dark in lower half; few irreg. white A blebs.
844 0	845 0	1 0	0	100		A, white.
845 0	849 3	4 3	98	2		C-S., lt. brn., med. soft; few V. thin white A partings.

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 27

CORE LITHOLOGY

PAGE NO. 2

DEPTH (Feet)		INTERVAL		ESTIM. %		DESCRIPTION		
From	To	Feet		Shale	KA			
849	3	854	6	5	3	94	6	C-S., lt. brn., med. hard-med. soft; few lg. white A blebs & numerous thin partings, 0.2' band at 851.0'
854	6	866	7	12	1	95	5	C-S., lt. red-brn., med. soft; few lg. white A blebs & many thin A partings & veinlets, 1.0' of 30% A in top.
866	7	870	6	3	9	3	97	A, lt. gray; few lg. brn. C-S. incl. in bottom 0.8'
870	6	873	3	2	7	97	3	C-S., red-brn., hard; few med. white blebs & occ. thin partings.
873	3	873	5	0	2	-	100	A, white.
873	5	890	1	16	6	98	2	C-S., lt. red-brn., med. soft; few irreg. white A partings & small-lg. blebs.
890	1	891	9	1	8	93	7	C-S., brn., med. soft; numerous small-lg. white-lt. gray A stringers, blebs, & parting, grading in down.
891	9	892	4	0	5	-	100	A, lt. gray, white in top 0.2'.
892	4	896	0	3	6	88	12	C-S., red-brn., med. soft; many small-lg. lt. gray A stringers, blebs, & partings, 0.4' zone 80% A at top, 0.1' band at 894.6'.
896	0	898	2	2	2	5	95	A, lt. gray-white, few lg. brn. C-S., incl. in bottom 0.5'.
898	2	902	2	4	0	97	3	C-S., lt., red-brn, little gray-green; numerous thin white A partings, veinlets, & stringers, decr. down from 4% at top to 2% at base.
902	2	916	6	14	4	-	100	A, lt. gray, slightly banded.
916	6	923	3	6	7	96	4	C-S., lt. red-brn., soft; few small-lg. lt. gray A blebs, 0.2' band at 918.6'.
923	3	923	7	0	4	45	55	A, lt. gray, & C-S., lt. red-brn., soft, mostly in lower half.
923	7							Top of Salt.
923	7	927	4	3	7	2	2	H, cir.-V. clr. in lower half, med. g.; few V. small brn. C-S. incl., grading out down; few small-med. white A stringers.

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 27

CORE LITHOLOGY

PAGE NO. 3

DEPTH (Feet)		INTERVAL		ESTIM. %		DESCRIPTION		
From	To	Feet	Shale	EA				
927	4	931	3	3	9	4	1	H, med.g.; numerous small red-brn. C-S. incls., V. few small white A stringers.
931	3	933	9	2	6	1	1	H, V. clr., med.; V. few small red-brn. C-S. incls. & white A stringers.
933	9	934	8	0	9	3	-	H, med.g.; few small-lg. red-brn. C-S. incls., thin irreg. parting at 934.2'; occ. small white A bleb in lower half.
934	8	935	6	0	8	-	1	H, V. clr., med.; occ. small white A stringer.
935	6	937	3	1	7	6	2	H, med.g.; many small-lg. brn. C-S. incls.; few small white A blebs, 0.1' band at top.
937	3	939	0	1	7	50	2	H, med.g.; & C-S., red-brn., soft, decr. down from 80% at top to 20% at base; few small white A blebs.
939	0	943	3	4	3	20	-	H, f.g.-med.; many small-lg. red-brn. C-S. incls., 0.4' 60% zone at 941.7', parting at 941.1'; occ. small white A stringers.
943	3	946	5	3	2	50	-	H, med., & C-S, red-brn, med. soft, decr. down from 60% at top to 40% at base.
946	5	949	2	2	7	8	-	H, med.g.; some small-lg. brn. C-S incls.; occ. white A stringer; slickenside at 947.2' at thin C-S. parting.
949	2	951	2	2	0	35	2	H, med.; some small-V. lg. red-brn. C-S. incls., 0.2' band at 950.3'; few small white A blebs in lower half.
951	2	956	5	5	3	7	3	H, med.; some small-med. lt. red-brn. C-S. incls.; few small-lg white A stringers grading in down.
956	5	964	5	8	0	-	92	A, lt. gray; some H, f.g., intergrowths, grading in down from 958.5'.
964	5	965	4	0	9	10	4	H, clr., med.g.; several small-med. white A stringers & partings; V. few thin brn. C-S. incls., parting at 964.6'.

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 27

CORE LITHOLOGY

PAGE NO. 4

DEPTH (Feet)		INTERVAL		ESTIM. %		DESCRIPTION
From	To	Feet	Feet	Shale	SP	
965 4	967 2	1	8	-	2	H, V. clr., c.g.; few tan A/P zones & gray A stringers; occ. brn. C-S. incl.
967 2	967 7	0	5	4	2	H, med.; some small-ig. red-brn. C-S., grading in down a few white A stringers.
967 7	972 1	4	4	85	3	C-S., lt. red-brn., some H, f.g. med.; 0.2' white A band, at 970.3'.
972 1	973 9	1	8	35	-	H, f.g.-med.; many V. lg. red-brn. C-S. incls., 0.2' 80% zone at 973.6'.
973 9	977 4	3	5	4	2	H, f.g.-med.; some small-med. red-brn. C-S. incls.; few white A stringers; thin parting at 975.1'.
977 4	980 4	3	0	2	2	H, clr., c.g.; few thin white A & brn. C-S. stringers.
980 4	983 1	2	7	5	-	H, med.; some red-brn. C-S. incls., decr. down from 7% at top to 3% at base; occ. thin white A stringers.
983 1	985 2	2	1	2	2	H, clr.-tan, c.g.; few small brn. C-S. & white A stringers.
985 2	989 3	4	1	80	1	C-S., red-brn., med. hard; some H, med., as irreg. blebs, veinlets, & zones; 1/2" lt gray band at top.
989 3	990 6	1	3	7	-	H, med.g.; some small-ig. brn. C-S. incls.; decr. down from 12% at top to 2% at base; occ. white A bleb.
990 6	991 0	0	4	90	-	C-S., red-brn., med. soft; some H, f.g., as irreg. veinlets.
991 0	994 3	3	3	8	1	H, med.-c.g.; some small-ig. red-brn. C-S. incls., decr. down from 12% at top to 4% at base; V. few white A stringers.
994 3	994 7	0	4	2	-	H, clr., c.g., few small med. brn. C-S. incls.
994 7	997 5	2	8	45	1	H, med.-c.g. & C-S., red-brn., as lg. irreg. incls.; V. few white A stringers.
997 5	998 4	0	9	2	3	H, med. c.g., some small white A stringers, thin parting at 998.1', few small brn. C-S. incls.

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 27

CORE LITHOLOGY

PAGE NO. 5

DEPTH (Feet)		INTERVAL		ESTIM. %		DESCRIPTION
From	To	Feet	Shale	RA		
998	4	1001	45v	3	05	2 1 H, clr., c.g.; few small red-brn. C-S. incls.; V. few small white A stringers.
1001	45	1001	80	0	35	3 - H, clr. to tan, med. to c.g.; few irreg. brn C-S. incls. & stringers.
1001	80	1002	25	0	45	1 2 H, clr., med. grned. few small milky to red-rimmed milky S blebs; few gray A blebs & thin irreg. partings at base; occ. brn. C-S. incl. Est. K ₂ O/S = 3%.
1002	25	1002	85	0	60	- - H, V. clr., c.g.; some large clr.-milky S bleb in middle third, few in top & base; occ. V. small brn. C-S. incl. Est. K ₂ O/S = 10%
1002	85	1003	05	0	20	- 20 H, clr., c.g.; many lg. irreg. gray A stringers, & partings; few small to lg. red-rimmed milky S blebs. Est. K ₂ O/S = 8%.
1003	05	1003	40	0	35	- - H, V. clr., c.g.; few V. lg. milky S blebs in lower half. Est. K ₂ O/S = 12%
1003	40	1003	55	0	15	- 35 H, clr., c.g.; many large gray A stringers & incls.; some large milky S blebs; few tan P stringers. Est. K ₂ O/S = 20%
1003	55	1003	70	0	15	- - H, V. clr., c.g.; some V. lg. milky S. blebs. Est. K ₂ O/S = 22%
1003	70	1004	15	0	45	- 8 H, clr., c.g.; some milky S blebs, in lower half; zone of 25% A in top third. Est. K ₂ O/S = 10%
1004	15	1004	80	0	65	- 55 A, gray; some H, clr., med.; few small-med.g. milky red-rimmed milky S blebs. Est. K ₂ O/S = 5%
1004	80	1006	00	1	20	- 2 H, clr., med.-c.g.; some milky to red-rimmed milky S blebs, incr. down from 15% at top to 35% S at base; few gray A stringers. Est. K ₂ O/S = 15%
1006	00	1007	95	1	95	10 - H, med.g.; some small-med. lt. brn. C-S. incls., decr. down from 15% at top to 5% at base. Est. K ₂ O/S = 0%
1007	95	1009	60	1	65	4 - H, f.g.-med.; few small-med. lt. red-brn. C-S. incls. Est. K ₂ O/S = 0%.

DUVAL SULPHUR & POTASH COMPANY

WELL NO. 27

CORE LITHOLOGY

PAGE NO. 6

DEPTH (Feet)		INTERVAL		ESTIM. %		DESCRIPTION
From	To	Feet		Shale	S ₂	
1009	60	1009	90	0	30	4 - H, med.; some small brn. C-S. incis.
1009	90	1010	65	0	75	4 - S, milky to red-rimmed milky, C.g.; some H, cir., c.g. few small brn. C-S. incis., incr. down from 2% at top to 6% at base. Est. K ₂ O/S = 35%.
1010	65	1011	35	0	70	2 5 H, med.g., cir.; some thin gray-tan A/P stringers, few brn. C-S. incis.; few milky-red-rimmed milky S blebs. Est. K ₂ O/S = 6%.
1011	35	1011	90	0	55	- 5 H, cir., med.-c.g., some A, gray, & pink A/P stringers; few milky small-ig. S blebs.
1011	90	1012	40	0	50	- - H, cir., med.; few small milky S blebs decr. down. Est. K ₂ O/S = 5%.
1012	40	1013	10	0	70	- - H, cir., f.g.; V. few small S blebs. Est. K ₂ O/S = 2%.
1013	1	1017	6	4	5	18 1 H, med.; many small-ig. lt. red-brn. soft., C-S. incis. & zones, 0.1' band at 1015.7'; V. few white A blebs.
1017	6	1021	3	3	7	7 2 H, med.; some med. red-brn. C-S. incis., decr. down from 10% at top to 4% at base; few white A stringers.
1021	3	1022	2	0	9	2 2 H, fairly cir.; med.; few white A stringers & small red-brn C-S incis.; thin white A parting at 1021.6'.
1022	2	1027	3	5	1	1 2 H, cir., med. c.g.; few small white A stringers; occ small brn. C-S. incis.
1027	3	1029	2	1	9	- 1 H, V. cir., med.-c.g.; V. few white A stringers.
1029	2	1030	6	1	4	85 2 C-S., soft, red-brn.; some H, med.; few white A blebs, in top 0.2', 1/2" gray A band at top.
1030	6	1033	7	3	1	45 1 H, med., & C-S, soft, red-brn., incr. down from 30% at top to 60% at base; some white A in top 0.3'.
1033	7	1036	5	2	8	15 - H, med. g.; many lg. brn. C-S. incis., decr. down from 25% at top to 5% at base.
1036	5	1038	5	2	0	3 1 H, fairly cir., med., few small-med. red-brn. C-S. incis., V. few small lt. gray-white A stringers, grading in down.

