Atpo Oil Co. State #1 15N-R 29E
NE/4-NE/4 Sec 22-Twp
Apache County No Permit

P-W

1-11

County Apache

Area St. Johns

Lease No. State 41101

Well Name Argo Oil Company State #1

Location NE NE Sec 22 Twp 15N Range 29E Footage ~1100' ~~660 FNL; 660 FEL~~

Elev 5741 DF ~~Gr~~ 5738 GR KB ____ Spud Date 6-24-43 Complete Abandon 3-30-44 Total Depth ~~2637~~

Contractor: ____ Approx. Cost $ ____

Drilled by Rotary ____
Cable Tool ____

Casing Size	Depth	Cement

Production Horizon ____

Initial Production D & A

5741
2320
+3421

REMARKS: See letter of Dorsey Hager in files re "oil shows"

Elec. Logs (1)

Applic to Plub ____ Plugging Record ____ Completion Report ____

Sample Log X ____ = ____
Sample Descript X
Sample Set 1-7, P-54
Cores ____

Water well - accepted by ____

Bond Co. & No. ____

Bond Am't $ ____ Cancelled ____ Date Organization Report ____

Filing Receipt ____ dated ____ Well Book ____ Plat Book ____

Loc. Plat ____ Dedication ____

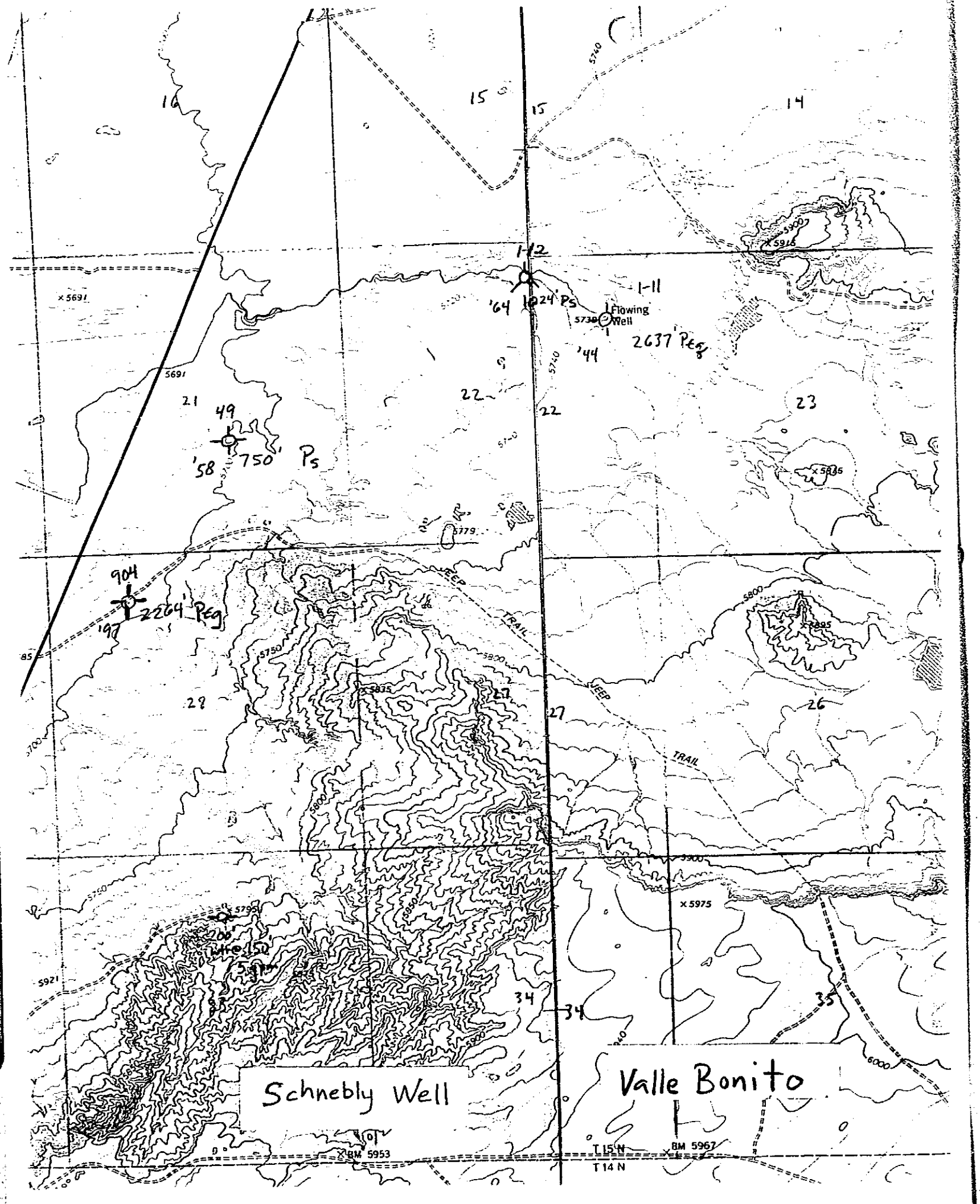
API #02-001-05017

PERMIT NO. None Date Issued ____

1-11

Formation Tops	Scout (Az St. Ld. Dept)	~~Sample~~ (N. Mex Bur Mines)	E. Log	Remarks
Chinle	0	0		
Shinarump	180	—		
San Andres.	249	247		
Glorieta sst.	435	424		
Supai	680.	—		
Yeso	—	647		
Abo		1975		
Quartzite	2320	2350	Quartzite or granite	
T.D	2637	2637		

Core Analysis, DST charts, etc. _____


Schnebly Well
Valle Bonito
Flowing Well
JEEP TRAIL
T 15 N
T 14 N
BM 5953
BM 5967
1-12
1-11
'64
24' Ps
2637' Peg
'44
49
'58
750' Ps
904
2264' Peg
'97
Wire 150
5795
5921
5779
5691
5835
5895
5975
5918
5740
5750
5800
5900
6000
10
15
14
21
22
23
28
27
26
34
35

Apache County, Arizona
Area Zuni River Dome
Operator: Argo Oil Corporation
Lease: State
Well No. 1
Section 22, Township 15N, Range 29E, Elevation 5741derrick floor, 5738 ground
Survey Gila and Salt River Meridian.
NE¼NE¼ Section 22.
Spud 6-24-43 T.D. 2637,TD, Cracked 8-26-44
Tools No. 3 National Machine, Calrk engine, butane fuel
Contractor: C.A. (Stony) Martin
Production: Dry and abandoned; plugged back.
Pro. Gauge: To and kept as a flowing water well.

B R 247	B. Clocieta 515, (5226?)
T. San Andres 247 (5494)	T. Yeso 515? B. Yeso (Coconino) 735, (5006)
B. San Andres 423 (5318)	T. Salt (in Yeso) 822.
T. Clocieta 423	B. Yeso 1700 ? (4041?)--Top Abo?
T. Coconino 423	B. Aco--Top P-E 2320 (3421)

Casing Record

Dia.	Depth, WT, etc.	Cem.
20	fan one 11'6" ft. to 23 ft.	Cem.
15½	241' @ Approx. 251 ft.	set
O.D. 13 3/8	767	set
" " 10 3/4	1660	Cem.
" " 8 5/8	2288	set

4-29 Location surveyed by R.K.DeFord, transit and tape.
6-24 Spudded. Cellar is 9ft. deep; 4 ft. soil underlayed by sand redbed.
Ran 2-" to 23' and cement all the way; also cem. bottom of cellar.
6-27 180: ½ barrel WPH @ 112; 3 barells WPH 150-155.
6-28 235: hole making 7 barrells 7 barrells WPH 180-87, 14 barrells WPH 225-35.
6-29 255; hole fill up @ 5 p.m. at 249 made 21 blr W in 1:10 for 10 min.
6-30 255: ran 15½" to approx 251.
7-2 375: elevation surveyed by RKD: horizontal control by transit & tape highway survey;vertical by planetable from USC&GS BM's Elevations above sea leavel. Well started flowing @ 1 AM from 335 well flowed est 300 bbl WPH,
7-3 375 connected well to flow into slush pit.
7-9 695--693 SD LM
7-13 767: waiting for 13 3/8" csg.
8-21 767: running 13 3/8 O.D. csy.
8-27 767: resumed drilling.
8-28 830: bailed hole dry.
8-29 1031-34: WPH 4W; W case to about 200' from top of hole.
3-31 1092-1095 SDLM; ran 1093 ft. 10 3/4 fix OD Csy-landed @ 1095.
9-2 1150: bailed out water, hole dry. 1240: show air.
9-6 1643-45 W so salty; 900' WH @ 8AM, water rose to within about 300 ft. from top of hole.
9-9 1840; preparing to underream 10 3/4.
9-13 1840: 1325'9" at 10 3/4 in hole, fishing for UR logs.
9-19 1840: logs recovered; lost reaming tools, fishing for tools.
9-21 1840: pulled 10 3/4 tools.
9-22 1840: straight reaming 10" hole.
9-28 1840: RR'd to 1697, hung, fishing for tools.
10-1 1840: drilling 10" hole by reaming tools.
10-6 1840 " " " " " , lost bailer.
10-13 1840 failed to a fish out bailer, drilling up diver.

the permit

Zuni River Dome cont-------

11-1 1840: failed to fish out tools by drilling 10" hole by tools; lugging up 8" tools and drilling 8" hole by tools.
11-10 1840: Ran 32 foot whipstock (10 inch) & cem with 24 sw. Previously had dumped 25-10-12-----47 sax El Toro Cement in hole.
11-15 1840: drilling by whipstock with 10" tools.
11-16 1840 re-cemented whipstock with 40 sacks.
12-1 1840: drilling 12¼" hole by whipstock.
12-3 1840: Ran total of 1650 ft. 10 3/4" ~~including~~ casing hit in hole drilling hole below 1660.
12-5 1840: 10 3/4" set down @ 1660 drilling hole at 1211, wet hole.
12-8 1847: drilling cod shale, wet hole.
12-17 ~~[illegible] 1650-1707~~, W-broken Cement W 52 sax El Toro, stopped plug @ 1640.
12-19 1920: dried out cement 1650-1707 W broken Halliburn hole, 100 sax El Toro stopped plug @ 1640.
12-23 1930: drilled out ~~cement 1650-1707 W broken~~ [redacted]
12-27 1929: 1915"8' of 8 5/8 casing in hole, put on 8" @1929.

1944

1-1 2135: crevice @ 2128, filled hole with rock 2135-2122 drilled hole.
1-9 Fishing for tools.
1-18 2281 Fishing for bailer.
1-19 2285: Fishing for tools.
1-22 2285: Undercutting.
1-23 2290: drilling 2282' 2" of 8 5/8" Csg/ 10"
1-29 bailing W tested 17 bbls. [redacted], 2288'6" of 8 5/8" 10 hole.
2-~~22~~ 2460 Lock fell in on tools. hung up 3 hours.
2-4 2493 Tools hung, fallen loose.
2-4 2529 Fishing for bit.
2-14 2529 Recovered bit.
2-15 2542 Hole bud (crevice?) ~~at~~ 2529-42, filled with rock.
2-16 2542 Drilled out and chucked with rock, tools way up.
2-~~17~~ 2542 Tools recovered.
2-18 2542 Filled hole with rock, fishing for h tools again.
2-20 2552 Drilling ahead.
2-26 2637 T.D. Tools hung up.
3-3 2651 Recovered tools, began pulling 8 5/8" casing.

18

Uncomm

Log on the Zuni River De

0-12 Surface clay (cellar)
12-35 Sandy red shale
35-86 " " " soft
86-100 Gray shale soft
100-112 Gray sandy lime shale
½ blr WPH @ 112.
112-122 Sandy, soft shale
122-125 blown sand and gravel soft
125-142 Red shale, soft.
142-150 brown shale, soft
150-152 " " "
152-155 sand 3 blr WPH
155-180 gray shale, soft
180-210 sand and gravel hole making.
7 brl. WPH 180-187
10 " " 202-210
210-215 Sandy
215-220 redrock
220-225 sand&gravel

225-235 sand
235-241 sand soft
~~[illegible]~~
241-249 Red rock & blu shale @ 244 ft hole drill up, made 21 blr W/1 hr drill
249-255 broken lime
255-265 brown lime, hard
465-295 gray broken lime
295-333 " " " medium
333-335 sand,water:hole filled up in cellar
335-349 sand ~~[illegible]~~
349-355 Brown lime
355-375 brown sd, lime, hole making est. 300 bbl WPH
375-385 brown sdy lime
385-410 Sdy lime
410-424 brown sdy lime
424-435 gray lime
435-447 gray sand, inc W 435-447
447-475 sand
475-540 clay sand inc W 528-540
540-557 Sand
557-647 gray sand
647-680 brown sand
680-691 red sand
691-698 red sale 695-693Sd LM
698-712 red sand
712-727 red shale
727-745 sandy drite
745-749 blue shale
749-756 red sock

752-755 Anhydrite
755-763 Red rock
763-775 ~~[illegible]~~ Anhydrite
775-779 shale & gyp
779-790 Anhydrite
790-801 Andydrite & redrock
801-806 red rock
806-814 ~~[illegible]~~ anhydrite
814-818 rd rock
818-823 soft redrock
823-845 anhydrite & salt, white
845-867 salt & potash
867-878 salt and red shale
878-887 red shale
887-940 salt & potash
940-986 anhydrite & salt
986-995 salt
995-1019 salt & potash
1019-1025 anhydrite
1025-1041 brown lime ~~[illegible]~~ 1031-34, water rose to about 200 feet top hole.
1041-1055 blue shale
1055-1064 brown lime
1064-1068 red shale
106801080 brown lime
1080-1095 lime,1092,1095,SalM
1095-1125 red shale
1125-1150 white soft salt
1150-1170 red sandy shale
1170-1255 salt &potash,show air 1240
1255-2171 soft white salt
1271-1286 brown anhydrite,medium hard
1286-1295 red rock
1295-1310 salt & potash
1310-1320 red shale
1320-1330 blue shale & red rock
1330-1360 gray lime medium hard
1360-1388 soft blue shale
1388-1398 soft red sand
1398-1430 red sandy shale
1430-1480 sandy red rock
1480-1493 broken anhydrite & red rock
1493-1525 soft red shale
1525-1580 red sandy shale
1580-1618 sandy red rock
1618-1630 red rock,salt & anhydrite
1630-1643 broken anhydrite, medium.
1643-1665 brown sandy lime W 1643-65 SW salty rose to 900' from top hole.

19
1/20 permit

Cont.-Log on the Zuni River Dome:

1665-1680	Sandy lime
1680-1705	brown sandy lime
1705-1720	red sandy shale
1720-1732	red rock
1732-1752	soft redshale
1752-1722	red shale
1782-1790	soft red shale
1790-1823	red shale
1823-1826	soft red shale
1826-1837	soft red sand
1837-1854	red shale
1854-1860	lime
1860-1869	red shale
1869-1889	red sandy shale
1889-1944	red shale
1944-1950	red sand
1950-2305	red shale, service at 2128
2305-2320	red sandy shale
2320-2325	grey sand
23252339	hard grey sand, sharp
2339-2346	hard red & white sand
2346-2354	hard grey sand, sharp
2354-2365	hard red sand
2363-2373	hard grey sand
2373-2382	" " " sharp
2382-2389	" " "
2389-2400	grey sandy shale
2400-2408	hard grey sand, sharp
2408-2419	" " "
2419-2428	" " " "
2428-2445	" " "
2445-2455	" " " "
2455-2465	grey sand
2465-2470	hard grey sand, sharp
2470-2476	gray sand
2476-2485	hard grey sand
2485-2493	" " " sharp
2493-2501	" " "
2501-2504	" " " "
2504-2529	" " "
2529-2542	gray sand
2542-2637	hard grey quartzite
2637	Total depth.

20

No permit.

Fort Worth Laboratories
Fort Worth, Texas
10-7-43

Sample of water received from- Argo Oil Corporation, Fort Worth, Texas
Marked:--- Coconino 335-650 Artesia-Argo State # 1 Arizona

Properties of Reaction per cent:	
Primary salinity	72.32
Secondary salinity	15.22
Primary alkalinity	none
Secondary alkalinity	12.46
Per cent rSO4 in rSO4 plus r Cl	23.91
Ratio rCo3 to SO4	0.60
Constituents in parts per million:	
Sodium	1081.1
Calcium	282.0
Magnesium	50.2
Iron and Aluminum oxides	5.0
Sulphate	654.3
Chloride	1340.0
Carbonate	244.8
Silica	15.0
Total	3872.4
Reacting values in per cent:	
Alkalies	
Sodium	36.16
Alkaline Earths	
Calcium	10.77
Magnesium	3.07
Strong Acids	
Sulphate (rSO4)	10.46
Chloride (rCl)	33.31
Weak Acids	
Carbonate (rCO3)	6.23

Hypothetically Combined as:

	Parts per Million	Grains per U.S. Gal.
Calcium Carbonate	408.0	23.66
Calcium Sulphate	403.6	23.41
Magnesium Sulphate	248.2	14.40
Sodium Sulphate	253.8	14.72
Sodium Chloride	2538.8	147.25

Respectfully submitted,
THE FORT WORTH LABORATORIES

Laboratory No. G-32533

124-500-6-42

By R.H. Fash

22
the permit

FortWorth Laboratories
P.O. Box 1379
Fort Worth, Texas
10-7-43

Consulting and Analytical Chemists
and Chemical Engineers.

Sample of Water received from:--------Argo Oil Corporation, Fort Worth, Texas
Marked:----------Water from 1035-65 mixed with 1600 level water 110 ft. Argo State # 1

Properties of Reaction per cent:	
Primary salinity	97.34
Secondary salinity	2.64
Primary alkalinity	None
Secondary alkalinity	0.02
Per cent rSO4 in rSO4 plus rCl	1.74
Ratio rCO3 to rSO4	0.01
Constituents in parts per million:	
Sodium	120316.0
Calcium	1485.1
Magnesium	835.2
Iron and aluminum oxides	92.0
Sulphate	4505.1
Chloride	187200.0
Carbonate	33.6
Silica	48.0
Total	314515.0
Reacting values in per cent:	
Alkalies	
Sodium	48.67
Alkaline Earths	
Calcium	0.59
Magnesium	0.64
Strong Acids	
Sulphate (rSO4)	0.87
Chloride (rCl)	49.12
Weak acids	
Carbonate (rCO3)	0.01

Hypothetically combined as: Parts per million-grains per U.S. Gal.

Calcium carbonate	56.0	3.25
Calcium Sulphate	4969.5	288.23
Magnesium Sulphate	1250.9	72.55
Magnesium Chloride	2281.5	132.33
Sodium Chloride	305817.1	17737.39

Respectfully submitted,
THE FORT WORTH LABORATORIES

By R. H. Fash

Laboratory No. C-32534
124-500-6-42

21
Chapman

Log on well 4 miles east of bridge on Carrizo from Milton Whites;notebook.

Depth figured:		Thickness recorded:
2-5	top soil	5
5-10	red clay	5
10-30	sand	20
30-40	red clay	10
40-60	sand	20
60-70	red clay	10
70-100	sand and gravel	30
100-112	red clay	12
112-142	spotted blue clay	30
142-152	Soapstone	10
52-107	Oil shale	15
107-179	Soapstone	12
179-219	Red shale	40
219-240	brown shale, sandrock) streaks)	21
240-260	Soft lime	20

23

No permit

Apache County, Arizona
Area Zuni River Dome
Operator: Argo Oil Corporation
Lease: State
Well No. 1
Section 22, Township 15N, Range 29E, Elevation 5741derrick floor, 5738 ground
Survey Gila and Salt River Meridian.
NE¼NE¼ Section 22.
Spud 6-24-43 T.D. 2637,TD, Crached 8-26-44
Tools No. 3 National Machine, Cairk engine, butane fuel
Contractor: C.A. (Stony) Martin
Production: Dry and abandoned; plugged back.
Pro. Gauge: To and kept as a flowing water well.
B R 247 B. Clocieta 515, (5226?)
T. San Andres 247 (5494) T. Yeso 515? B. Yeso (Coconino) 735, (5006)
B. San Andres 423 (5318) T. Salt (in Yeso) 822.
T. Clocieta 423 B. Yeso 1700 ? (4041?)--Top Abo?
T. Coconino 423 B. Aoo--Top P-E 2320 (3421)

Casing Record

Dia.	Depth, WT. etc.	Cem.
20	fan one 11'6" ft. to 23 ft.	Cem.
15½	241' @ Approx. 251 ft.	set
O.D. 13 3/8	767	set
" " 10 3/4	1660	Cem.
" " 8 5/8	2288	set

4-29 Location surveyed by R.K.DeFord, transit and tape.
6-24 Spudded. Cellar is 9ft. deep; 4 ft. soil underlayed by sand redbed. Ran 2-" to 23' and cement all the way; also cem. bottom of cellar.
6-27 180: ½ barrel WPH @ 112; 3 barells WPH 150-155.
6-28 235: hole making 7 barrells 7 barrells WPH 180-87, 14 barrells WPH 225-35.
6-29 255; hole fill up @ 5 p.m. at 249 made 21 blr W in 1:10 for 10 min.
6-30 255: ran 15½" to approx 251.
7-2 375: elevation surveyed by RKD: horizontal control by transit & tape highway survey;vertical by planetable from USC&GS BM's Elevations above sea leavel. Well started flowing @ 1 AM from 335 well flowed est 300 bbl WPH,
7-3 375 connected well to flow into slush pit.
7-9 695--693 BD LM
7-13 767: waiting for 13 3/8" csg.
8-21 767: running 13 3/8 O.D. csg.
8-27 767: resumed drilling.
8-28 830: bailed hole dry.
8-29 1031-34: HFS aW; W case to about 200' from top of hole.
3-31 1092-1095 SdLM; ran 1093 ft. 10 3/4 fix OD Csg-landed @ 1095.
9-2 1150: bailed out water, hole dry. 1240: show air.
9-6 1643-65 W sw salty; 900' WH @ 8AM, water rose to within about 500 ft. from top of hole.
9-9 1840; preparing to undsream 10 3/4.
9-13 1840: 1325'9" at 10 3/4 in hole, fishing for UR logs.
9-19 1840: logs recovered; lost reaming tools, fishing for tools.
9-21 1840: pulled 10 3/4 tools.
9-22 1840: straight reaming 10" hole.
9-28 1840: SR'd to 1697, hung, fishing for tools.
10-1 1840: drilling 10" hole by reaming tools.
10-6 1840 " " " " " , lost bailer.
10-13 1840 failed to fish out bailer, drilling up diver.

No permit

Zuni River Dome cont-------

11-1 1840: failed to fish out tools by drilling 10" hole by tools; lugging up 8" tools and drilling 8" hole by tools.
11-10 1840: Ran 32 foot whipstock (10 inch) & cem with 26 SW. Previously had dumped 25-10-12-----47 sax El Toro Cement in hole.
11-15 1840: drilling by whipstock with 10" tools.
11-16 1840 re-cemented whipstock with 40 sacks.
12-1 1840: drilling 12¼" hole by whipstock.
12-3 1840: Ran total of 1650 ft. 10 3/4" ~~xxxxxxx~~ casing ~~xx~~ in hole drilling hole below 1660.
12-5 1840: 10 3/4" set down @ 1660 drilling hole at 1711, wet hole.
12-8 1847: drilling ced shale, wet hole.
12-17 ~~[illegible] Rubbed out cement with 1650-1707, W broken~~ Cement W 52 sax El Toro, stopped plug @ 1640.
12-19 1920: dried out cement 1650-1707 W broken Kallibeam hole, 100 sax El Toro stopped plug @ 1640.
12-23 1930: drilled out cement 1650-1707 W broke 10.
12-27 1929: 1915"8' of 8 5/8 casing in hole, put on 8" @1929.

<u>1944</u>

1-1 2135: crevice @ 2128, filled hole with rock 2135-2122 drilled hole.
1-9 Fishing for tools.
1-18 2281 Fishing for bailer.
1-19 2285: Fishing for tools.
1-22 2285: Undercutting.
1-25 2290: drilling 2282' 2" of 8 5/8" Csg/ 10"
1-29 bailing W tested 17 hrs. [illegible], 2288'6" of 8 5/8" 10 hole.
2-2 2460 Lock fell in on tools. hung up 3 hours.
2-4 2493 Tools hung, fallen loose.
2-6 2529 Fishing for bit.
2-14 2529 Recovered bit.
2-15 2542 Hole bud (crevice?) 2529-42, filled with rock.
2-16 2542 Drilled out and chucked with rock, tools way up.
2-17 2542 Tools recovered.
2-18 2542 Filled hole with rock, fishing for tools again.
2-20 2552 Drilling ahead.
2-26 2637 T.D. Tools hung up.
3-3 2651 Recovered tools, began pulling 8 5/8" casing.

No permit

Log on the Zuni River Do

0-12 Surface clay (cellar)
12-35 Sandy red shale
35-86 " " " soft
86-100 Gray shale soft
100-112 Gray sandy lime shale
½ blr WPH @ 112.
112-122 Sandy, soft shak
122-125 blown sand and gravel soft
125-142 Red shale, soft.
142-150 brown shale, soft
150-152 " "
152-155 sand 3 blr WPH
155-180 gray shale, soft
180-210 sand and gravel hole making.
7 brl. WPH 180-187
10 " " 202-210
210-215 Sandy
215-220 redrock
220-225 sand&gravel

225-235 sand
235-241 sand soft
~~235-24x~~
241-249 Red rock & blu shale @ 244 ft hole drill up, made 21 blr W/1 hr drill
249-255 broken lime
255-265 brown lime, hard
465-295 gray broken lime
295-333 " " " medium
333-335 sand,water:hole filled up in cellar
335-349 sand ~~xxxxxxxxxxxxxxxxxxx~~
349-355 Brown lime
355-375 brown sd, lime, hole making est. 300 bbl WPH
375-385 brown sdy lime
385-410 Sdy lime
410-424 brown sdy lime
424-435 gray lime
435-447 gray sand, Inc W 435-447
447-475 sand
475-540 clay sand inc W 528-540
540-557 Sand
557-647 gray sand
647-680 brown sand
680-691 red sand
691-698 red sale 695-693Sd LM
698-712 red sand
712-727 red shale
727-745 sandy drite
745-749 blue shale
749-756 red wock
752-755 Anhydrite
755-763 Red rosk
763-775 ~~shalexxxgyp~~Anhydrite
775-779 shale & gyp
779-790 Anhydrite
790-801 Andydrite & redrock
801-806 red rock
806-814 ~~xxxx~~ anhydrite
814-818 rd rock
818-823 soft redrock
823-845 anhydrite & salt, white
845-867 salt & potash
867-878 salt, and red shale
878-887 red shale
887-940 salt & potash
940-986 anhydrite & salt
986-995 salt
995-1019 salt & potash
1019-1025 anhydrite
1025-1041 brown lime ~~HESaW~~ 1031-34,water rose to about 200 feet top hole.
1041-1055 blue shale
1055-1064 brown lime
1064-1068 red shale
106801080 brown lime
1080-1095 lime,1092,1095,SaLM
1095-1125 red shale
1125-1150 white soft salt
1150-1170 red sandy shale
1170-1255 salt &potash,show air 1240
1255-2171 soft white salt
1271-1286 brown anhydrite,medium hard
1286-1295 red rock
1295-1310 salt & potash
1310-1320 red shale
1320-1330 blue shale & red rock
1330-1360 gray lime medium hard
1360-1388 soft blue shale
1388-1398 soft red sand
1398-1430 red sandy shale
1430-1480 sandy red rock
1480-1493 broken anhydrite & red rock
1493-1525 soft red shale
1525-1580 red sandy shale
1580-1618 sandy red rock
1618-1630 red rock,salt & anhydrite
1630-1643 broken anhydrite, medium.
1643-1665 brown sandy lime W 1643-65 SW salty, rose to 900' from top hole.

No permit

Cont.-Log on the Zuni River Dome:

1665-1680	Sandy lime
1680-1705	brown sandy lime
1705-1720	red sandy shale
1720-1732	red rock
1732-1752	soft redshale
1752-1722	red shale
1782-1790	soft red shale
1790-1823	red shale
1823-1826	soft red shale
1826-1837	soft red sand
1837-1854	red shale
1854-1860	lime
1860-1869	red shale
1869-1889	red sandy shale
1889-1944	red shale
1944-1950	red sand
1950-2305	red shale, service at 2128
2305-2320	red sandy shale
2320-2325	grey sand
23232339	hard grey sand, sharp
2339-2346	hard red & white sand
2346-2354	hard grey sand, sharp
2354-2365	hard red sand
2363-2373	hard grey sand
2373-2382	" " " sharp
2382-2389	" " "
2389-2400	grey sandy shale
2400-2408	hard grey sand, sharp
2408-2419	" " "
2419-2428	" " " "
2428-2445	" " "
2445-2435	" " " "
2455-2465	gray sand
2465-2470	hard gray sand, sharp
2470-2476	gray sand
2476-2485	hard gray sand
2485-2493	" " " sharp
2493-2501	" " "
2501-2504	" " " "
2504-2529	" " "
2529-2542	gray sand
2542-2637	hard gray quartzite
2637	Total depth.

No permit

FortWorth Laboratories
P.O. Box 1379
Fort Worth, Texas
10-7-43

Consulting and Analytical Chemists
and Chemical Engineers.

Sample of Water received from:--------Argo Oil Corporation, Fort Worth, Texas
Marked:----------Water from 1035-65 mixed with 1600 level water 110 ft. Argo State # 1

Properties of Reaction per cent:	
Primary salinity	97.34
Secondary salinity	2.64
Primary alkalinity	None
Secondary alkalinity	0.02
Per cent rSO4 in rSO4 plus rCl	1.74
Ratio rCO3 to rSO4	0.01
Constituents in parts per million:	
Sodium	120316.0
Calcium	1485.1
Magnesium	835.2
Iron and aluminum oxides	92.0
Sulphate	4505.1
Chloride	187200.0
Carbonate	33.6
Silica	48.0
Total	314515.0
Reacting values in per cent:	
Alkalies	
Sodium	48.67
Alkaline Earths	
Calcium	0.69
Magnesium	0.64
Strong Acids	
Sulphate (rSO4)	0.87
Chloride (rCl)	49.12
Weak acids	
Carbonate (rCO3)	0.01

Hypothetically combined as:	Parts per million	Parts per million-grains per U.S. Gal.
Calcium carbonate	56.0	3.25
Calcium Sulphate	4969.5	288.23
Magnesium Sulphate	1250.9	72.55
Magnesium Chloride	2281.5	132.33
Sodium Chloride	305817.1	17737.39

Respectfully submitted,
THE FORT WORTH LABORATORIES

By R.H. Fash

Laboratory No. C-32534
124-500-6-42

21
Chloride

Fort Worth Laboratories
Fort Worth, Texas
10-7-43

Sample of water received from- Argo Oil Corporation, Fort Worth, Texas
Marked: --- Coconino 335-650 Artesia-Argo State # 1 Arizona

Properties of Reaction per cent:	
Primary salinity	72.32
Secondary salinity	15.22
Primary alkalinity	none
Secondary alkalinity	12.46
Per cent rSO4 in rSO4 plus r Cl	23.91
Ratio rCo3 to SO4	0.60
Constituents in parts per million:	
Sodium	1081.1
Calcium	282.0
Magnesium	50.2
Iron and Aluminum oxides	5.0
Sulphate	654.3
Chloride	1540.0
Carbonate	244.8
Silica	15.0
Total	3872.4
Reacting values in per cent:	
Alkalies	
Sodium	36.16
Alkaline Earths	
Calcium	10.77
Magnesium	3.07
Strong Acids	
Sulphate (rSO4)	10.46
Chloride (rCl)	33.31
Weak Acids	
Carbonate (rCO3)	6.23

Hypothetically Combined as:	Parts per Million	Grains per U.S. Gal.
Calcium Carbonate	408.0	23.66
Calcium Sulphate	403.6	23.41
Magnesium Sulphate	248.2	14.40
Sodium Sulphate	253.8	14.72
Sodium Chloride	2538.8	147.23

Respectfully submitted,
THE FORT WORTH LABORATORIES

Laboratory No. C-32533

124-500-6-42

By R.H. Fash

22
No permit

Log on well 4 miles east of bridge on Carrizo from Milton Whites;notebook.

Depth figured:		Thickness recorded:
2-5	top soil	5
5-10	red clay	5
10-30	sand	20
30-40	red clay	10
40-60	sand	20
60-70	red clay	10
70-100	sand and gravel	30
100-112	red clay	12
112-142	spotted blue clay	30
142-152	Soapstone	10
52-107	Oil shale	15
107-119	Soapstone	12
179-219	Red shale	40
219-240	brown shale, sandrock) streaks)	21
240-260	Soft lime	20

33
Yopermit

Argo State #1
Sec. 22, T. 15 N., R. 29 E. (A-15-29)22

by Otis E. Coulson

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
12-23	light reddish tan	Rounded, few sub-angular	Quartz, siltstone	Mostly quartz, little siltstone, epidote, magnetite, volcanics, feldspar.	Frosted and rounded quartz grains indicat possible eolian action on grains at some time. Mostly sand size.
23-30	light reddish brown	Rounded to sub-angular	Quartz, volcanics, feldspar	Mostly quartz, some Kaolin material, some volcanic rocks, epidote.	Calcareous material loosely cementing mostly frosted and more or less rounded quartz grains. Arkosic. Mostly sand size.
30-35	light reddish tan	Rounded, some sub-angular	do.	do.	do., quartz possibly worked over by wind and later redeposited by streams as alluvium.
35-41	light tan	do.	do., quartzite and granite. Subangular.	do., mostly rounded.	Probably alluvial material, quartz, probably worked over by wind at some time. Mostly sand size.
41-47	do.	do.	do., but more or less rounded.	do.	do.
47-54	do.	do.	do.	do.	do., but more pebbles.
54-57	do.	do.	do., but no volcanics and subangular.	do., but no volcanics.	do., but few pebbles.
57-60	do.	do.	do.	do.	do., but more pebbles.
60-65	light reddish tan	Rounded to subangular	do.	do.	do., but some calcareous material.
65-71	do.	do.	do.	do.	do., but only fair amount pebbles.
71-75	do.	do.	do.	do.	do., but mostly sand.
75-78	light tan	do.	do.	do.	do

No permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
78-86	grayish tan	subangular, some rounded	Quartz, feldspar, quartzite, volcanics. Subangular.	Some Kaolin material, epidote, volcanics, quartz, subangular to rounded.	Probably alluvial material volcanic and possibly other source rocks.
105-112	tan	do.	do., some arkose material, no quartzite.	Almost all arkose, little quartz.	Probably alluvial material from arkose source rocks.
112-118	grayish tan	do.	Mostly arkose, some quartz.	do.	do.
118-122	light gray	do.	do.	do.	do.
122-125	do.	do.	do.	do.	do.
125-131	light tan	do.	Volcanics.	Volcanics, quartz, little muscovite.	Probably alluvial material from volcanic source rocks. Some calcareous material.
131-135	do.	do.	do.	do.	do.
135-140	light brown	subangular	do.	do.	do.
146-156 50?	light reddish brown	do.	do.	do.	do.
156-162	light tan	subangular, few rounded.	Volcanics, feldspar.	volcanics, feldspar, quartz.	Probably alluvial material from volcanic source rocks. Some calcareous material.
166-170	do.	do.	do.	do.	do.
176-180	do.	do.	do.	do.	do.
187-192	do.	do.	do.	do., but mostly quartz.	do.

No permit

Ango #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
202-210	grayish white	Rounded to subangular	Quartz, volcanics.	Almost all quartz, little volcanics and feldspar	Probably alluvial material from volcanic source rocks.
215-220	light red brown	subangular	Volcanics.	Volcanics, Kaolin, quartz.	do.
225-229	light tan	do.	do.	do.	do.
235-242	grayish white	Rounded to subangular	do., subangular.	Mostly quartz, little volcanics, mostly rounded.	do.
248-255	do.	do.	limestone, volcanics.	Mostly limestone, some volcanics.	Probably alluvial material from limestone and some volcanic source rocks.
255-261	do.	subangular, few angular	do.	do.	do.
265-272	do.	do.	do.	do.	do., almost entirely limestone source.
276-281	do.	subangular to rounded	limestone, little pyrite.	do., also little quartz, pyrite.	do.
286-295	do.	subangular	do., little volcanics.	do., little volcanics.	do.
295-303	do.	rounded to subangular	do.	do., little muscovite.	do., mostly sand size.
312-323	do.	do.	do., but no pyrite.	do.	do.
335-341	do.	do.	do., but no volcanics.	Mostly limestone, little quartz and pyrite, volcanic rocks, muscovite.	do.
347-349	do.	do.	None present.	do., but no pyrite.	do., all sand size.
355-361	do.	subangular to rounded.	limestone, subangular.	do., mostly rounded, no volcanic rocks.	do., but no volcanic source rocks and few pebbles.
371-375	light tan	do.	None present.	limestone, some quartz, little volcanic rocks.	do., possibly little from volcanic source rocks, all sand size.

Use permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
385-393	light tan	subangular to rounded.	limestone, volcanics.	limestone, some quartz, little volcanic rocks.	Probably alluvial material mostly from limestone and possibly little volcanic source rocks. Mostly sand size.
395-402	do.	do.	limestone.	do., little pyrite.	do.
410-416	do.	do.	do.	do.	do.
424-435	grayish white	subangular	sandstone, quartzite.	sandstone and quartz, quartzite, little pyrite.	Probably alluvial material from quartz sandstone source rocks and quartzite source rocks.
448-455	do.	do.	None present.	quartz, little pyrite.	Probably alluvial material from sandston source rocks.
465-475	do.	do.	Little quartzite.	do.	do.
484-500	white	do.	None present.	do.	do.
505-515	do.	do.	sandstone	do.	do.
528-540	light tan	do.	None present.	do.	do.
545-557	do.	do.	sandstone	do.	do.
568-577	do.	do.	do., little quartzite.	do.	do., possibly little from quartzite sour
584-590	do.	do.	do., but no quartzite.	do.	do., but no quartzite source rocks.
602-609	do.	do.	do.	do.	do.
618-687	do.	do.	do.	do.	do.
640-647	do.	do.	do.	do.	do.
655-663	light yellowish brown	do.	do.	do., but no pyrite and much more very fine quartz or feldspar.	do., but more pebbles, less uniform grai size, and much more very fine material.
671-676	do.	subangular to rounded.	do.	do., average grain size much smaller	Probably alluvial material from sandston source rocks.

No permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
680-691	light yellowish brown	Subangular	Sandstone	Quartz or feldspar, little pyrite and much less very fine material.	Probably alluvial material from sandstone source rocks.
695-698	do.	do.	Sandstone, quartzite	quartz, sandstone.	do., also quartzite source rocks.
703-708	do.	do.	sandstone	quartz	do., but no quartzite.
713-719	do.	do.	do.	do., little pyrite	do.
723-727	do.	do., some rounded	do., quartzite	do.	do.
731-735	do.	do.	do., little limestone, calcite.	do.	Probably alluvial material.
738-741	grayish tan	subangular	Dolomite, feldspar, quartzite.	dolomite, feldspar, quartz.	do.
745-749	light gray	do.	dolomite, feldspar.	dolomite, quartz, feldspar.	Probably alluvial material. Mostly dolomite.
752-755	light tan	do.,	do., little quartzite.	do.	do., mostly feldspar
767-773	do.	subangular to rounded	do.	do.	do.
781-786	do.	do.	feldspar, little siltstone	feldspar	do., 95% feldspar, no dolomite
793-797	do.	do.	do.	do.	do., some calcareous cementing material.
801-805	light brown	subangular	do.	do., but much Kaolin to calcareous cementing material.	do., but much calcareous cementing material.
811-814	light tan	do.	do.	feldspar	Probably alluvial material.
818-823	light brown	do.	do., some halite	do., but much silt and calcareous cementing material.	do., some halite
830-844	light tan	Subangular to rounded	halite, little feldspar	halite, possibly little feldspar	Mostly halite.

No permeability

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
856-867	light tan	Subangular to rounded	halite, little feldspar, little quartzite	halite, possibly little feldspar	Mostly halite.
878-887	light brown	do.	do.	do., quartz, silt	do.
896 -909	light tan	do.	do., but no quartzite	do.	do.
920- 932	do.	Subangular	do.	do.	do.
950 -965	do.	do.	do.	do.	do.
976 -986	light grayish tan	do.	do.	do., but no silt	do.
995 -1006	light tan	do.	do., some siltstone	do.	do.
1018-1034	light gray	do.	dolomite, anhydrite	dolomite, anhydrite	Probably alluvial material.
1037-1043	light brown	do.	do., little halite	dolomite, little halite, little quartz, little anhydrite	do.
1055-1061	do.	do.	do., little siltstone	do., but more quartz	do.
1066-1077	do.	do., few rounded	do.	do.	do.
1081-1092	light tan	do.	do.	do.	do.
1100-1110	do.	Subangular	Quartz, feldspar	Mostly quartz, some very fine quartz or Kaolin material	do., some calcareous cementing material
1125-1141	do.	do.	halite	halite, kaolin, little magnetite	Some halite
1150-1163	light brown	Subangular to rounded	sandstone, feldspar, quartz, halite	quartz, little magnetite	do.
1176-1190	light tan	do.	sandstone, halite feldspar	quartz, feldspar, halite	do.
1205-1222	light gray	do.	halite, dolomite	halite, dolomite	Typical association halite and dolomite
1239-1255	do.	do.	do., little sandstone	do.	do.

No permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
1271-1286	light gray	Subangular to rounded	halite and gypsum	halite and gypsum	Association halite and gypsum
1295-1308	light tan	do.	halite, little sandstone	halite	Halite
1321-1330	light gray	do.	dolomite, little sandstone	dolomite, quartz	Probably alluvial material
1340-1350	do.	do.	limestone	limestone	do.
1360-1370	do.	do.	do.	do.	do.
1398-1410	light brown	Rounded	sandstone	sandstone, quartz	Probably alluvial material from sandstone source rocks.
1420-1430	do.	do.	halite, sandstone	halite, quartz	Probably alluvial material.
1440-1455	do.	Subangular to rounded	do.	do.	do.
1467-1480	do.	do.	do., little dolomite	do.	do.
1494-1506	do.	rounded	sandstone, little feldspar	sandstone, quartz	do.
1520-1527	do.	subangular to rounded	do., some halite	do., some halite	do.
1539-1550	do.	do.	halite, sandstone	halite, quartz	do.
1563-1580	do.	do.	halite, little sandstone	halite, quartz	do.
1592-1605	do.	do.	do.	do.	do.
1618-1630	light tan	Subangular	do.	do.	do., almost all halite.
1642-1662	light gray	rounded, fe subangular	limestone, little feldspar, little ss.	limestone	Probably alluvial material.
1662-1682	do.	do.	do.	do.	do., but few pebbles, mostly sand sized.
1682-1703	light reddish brown	subangular	sandstone, siltstone, little halite	sandstone, siltstone, quartz	Probably alluvial material.
1721-1726	light brown	do.	sandstone	sandstone, quartz	do.
1732-1752	do.	subangular to rounded	do., feldspar	do.	do.
1757-1762	do.	do.	do.	do.	do.

No permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2mm.	Remarks
1767-1775	light brown	Subangular to rounded	sandstone	sandstone, quartz	Probably alluvial material, almost entirely very fine sand.
1782-1786	do.	do.,	do., little gypsum	do.	Probably alluvial material.
1790-1800	do.	rounded to subangular	siltstone, little feldspar	siltstone, quartz	do.
1805-1810	do.	do.	do.	do.	do.
1815-1819	do.	subangular	siltstone	do.	do., almost all silt.
1823-1826	light red brown	do.	do., possibly little gypsum	do.	Probably alluvial material
1836-1840	do.	do.	do.	do.	do.
1847-1850	light tan	do.	do., feldspar possibly	do.	do.
1857-1860	do.	do.	do., dolomite	do., dolomite	do.
1863-1866	light red-brown	do.	do.	do., little magnetitie	do.
1869-1875	do.	rounded	do., no dolomite	do., no dolomite, little feldspar	do.
1880-1885	do.	rounded to subangular	siltstone, little dolomite and feldspar	do., with dolomite	do.
1889-1894	do.	do.	do.	do., but with quartz	do.
1900-1905	do.	subangular	do., with limestone instead of dolomite	do., limestone instead of dolomite	do., mostly silt
1911-1916	do.	rounded to subangular	do., no limestone, some dolomite	do., dolomite instead of limestone	do., less silt
1920-1925	do.	do.	Mostly siltstone with little magnetite	Angular feldspar and quartz grains	do., more silt, little calcareous cement
1937-1944	do.	do.	do., rounded	do., angular	do.
1950-1957	do.	subangular	do., not rounded	do.	do.
1957-1966	tan	subangular	siltstone	quartz grains	Alluvial, little calcareous cement.
1973-1980	do.	do.	do.	do.	do., calcareous cement holding silt together.

No permit

Argo #1, Arizona (Cont.) By Schminke

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
1988-1996	tan	subangular	siltstone	quartz grains	Alluvial, mostly silt. Calcareous cement.
2003-2012	light red brown	do.	do.	do.	do.
2019-2029	do.	do.	do.	do.	do., less calcareous cement.
2037-2051	tan	do.	do.	do., 95% of total	do., more calcareous cement.
2063-2073	do.	do.	do.	do., 65%	do.
2084-2092	do.	do.	none present	do.	do.
2103-2118	do.	do.	siltstone	do.	do.
2128-2135	do.	do.	none present	do.	do.
2135-2142	do.	do.	siltstone and vesicular volcanics	do., little vesicular volcanics	do., some volcanics
2150-2158	do.	do.	siltstone, little limestone, and little quartzite	silt, little limestone, little quartzite	do., no volcanics
2166-2171	do.	do.	do., no limestone	do., no limestone	do.
2179-2185	do.	do.	siltstone	do., no quartzite	do.
2188-2196	light reddish tan	subangular	little limestone, siltstone	quartz grains	Alluvial from siltstone and limestone source rock.
2200-2205	do.	do.	do.	do.	do.
2205-2208	do.	do.	do.	do.	do.
2212-2219	do.	do.	do., no limestone	do.	do., no limestone
2225-2230	do.	do.	do.	do.	do.
2233-2240	do.	do.	do.	do.	do.
2244-2249	do.	do.	do.	do.	do.
2254-2261	do.	do.	do., some quartzite	do.	do., some quartzite.
2267-2275	do.	do.	do., no quartzite	do.	do., possibly some badly weathered feldspar. no quartzite.
2281-2285	red brown	do.	do., some magnetite	do., some magnetite	do., no feldspar

No permeat

Argo #1, Arizona (Cont.)

by Schminke

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
2290-2296	Red brown	Subangular	siltstone, some magnetite	quartz grains, some magnetite	Alluvial from siltstone source rocks.
2300-2305	light reddish tan	do.	do., no magnetite	do., no magnetite	do.
2312-2320	grayish tan	do.	do., quartzite	quartz sand and quartzite	do., quite a bit of quartzite, possibly is bedrock.
2325-2333	pale brown	do.	none present	quartz sand and quartzite	Bedrock - quartzite is blackish and fine grained.
2339-2346	do.	do.	sandstone, some quartzite	do.	do., some sandstone also.
2350-2354	do.	do.	quartzite	do.	do., no sandstone.
2359-2363	do.	do.	do.	do.	do.
2368-2373	do.	do.	do.	do.	do.
2382-2390	do.	do.	do.	do.	do.
2395-2400	do.	do.	do.	do.	do., source rock is quartzite.
2408-2413	grayish brown	do.	do.	do.	do.
2419-2425	do.	do.	do.	do.	do.
2428-2434	do.	do.	do., some very fine sandstone	do.	do., some sandstone.
2440-2445	do.	angular to subangular	do., no sandstone	do.	do., no sandstone
2450-2455	brownish gray	do.	do.	do.	do.
2458-2465	do.	do.	do.	do.	do.
2470-2476	tanish gray	do.	do.	do.	do.
2482-2485	grayish tan	subangular	quartzite	do.	Bedrock - source rock is quartzite.
2489-2493	tanish gray	do.	do.	do.	do.
2496-2501	do.	do.	do.	do.	do.
2505-2509	do.	do.	do.	do.	do.

Argo #1, Arizona (Cont.) by Schwinke

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
2518-2525	Tanish gray	Subangular	Quartzite, some loosely cemented sandstone	Quartz sand and quartzite	Bedrock - source rock is quartzite.
2529-2542	light olive brown	do.	quartzite and magnetite with a limonite stain	quartzite and magnetite with a limonite stain	Alluvial - magnetite probably altering to limonite.
2542-2543	tan to gray	do.	quartzite and quartz	quartz sand , quartzite	From 2529-2542 hole filled with surface rock and redrilled to straighten.
2543-2544	tanish gray	do.	quartzite	Mostly quartzite with some quartz sand	Bedrock - source rock quartzite.
2547-2550	do.	do.	do.	do.	do.
2552-2556	do.	do.	do.	do.	do.
2563-2568	do.	do.	do.	do.	do.
2571-2576	do.	do.	do.	do.	do.
2580-2583	brownish gray	do.	do., some loosely cemented sandstone	do.	do., some sandstone.
2586-2590	grayish red	do.	quartzite	quartz grains and quartzite	Bedrock continues probably
2593-2597	brownish gray	do.	do.	do.	do.
2600-2605	do.	do.	do.	do.	do.
2610-2615	grayish tan	do.	do.	do.	do.
2618-2622	do.	do.	do.	do.	do.
2625-2627	do.	do.	do., and loosely cemented sandstone	do.	do., some sandstone
2632-2637					

No permit

Argo State #1
Sec. 22, T. 15 N., R. 29 E. (A-15-29)22

by Otis B. Coulson

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
12-23	light reddish tan	Rounded, few sub-angular	Quartz, siltstone	Mostly quartz, little siltstone, epidote, magnetite, volcanics, feldspar.	Frosted and rounded quartz grains indicate possible eolian action on grains at some time. Mostly sand size.
23-30	light reddish brown	Rounded to sub-angular	Quartz, volcanics, feldspar	Mostly quartz, some Kaolin material, some volcanic rocks, epidote.	Calcareous material loosely cementing mostly frosted and more or less rounded quartz grains. Arkosic. Mostly sand size.
30-35	light reddish tan	Rounded, some sub-angular	do.	do.	do., quartz possibly worked over by wind and later redeposited by streams as alluvium.
35-41	light tan	do.	do., quartzite and granite. Subangular.	do., mostly rounded.	Probably alluvial material, quartz, probably worked over by wind at some time. Mostly sand size.
41-47	do.	do.	do., but more or less rounded.	do.	do.
47-54	do.	do.	do.	do.	do., but more pebbles.
54-57	do.	do.	do., but no volcanics and subangular.	do., but no volcanics.	do., but few pebbles.
57-60	do.	do.	do.	do.	do., but more pebbles.
60-65	light reddish tan	Rounded to subangular	do.	do.	do., but some calcareous material.
65-71	do.	do.	do.	do.	do., but only fair amount pebbles.
71-75	do.	do.	do.	do.	do., but mostly sand.
75-78	light tan	do.	do.	do.	do

No permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
78-86	grayish tan	subangular, some rounded	Quartz, feldspar, quartzite, volcanics. Subangular.	Some Kaolin material, epidote, volcanics, quartz, subangular to rounded.	Probably alluvial material volcanic and possibly other source rocks.
105-112	tan	do.	do., some arkose material, no quartzite.	Almost all arkose, little quartz.	Probably alluvial material from arkose source rocks.
112-116	grayish tan	do.	Mostly arkose, some quartz.	do.	do.
116-122	light gray	do.	do.	do.	do.
122-125	do.	do.	do.	do.	do.
125-131	light tan	do.	Volcanics.	Volcanics, quartz, little muscovite.	Probably alluvial material from volcanic source rocks. Some calcareous material.
131-135	do.	do.	do.	do.	do.
135-140	light brown	subangular	do.	do.	do.
146-156 50?	light reddish brown	do.	do.	do.	do.
156-162	light tan	subangular, few rounded.	Volcanics, feldspar.	volcanics, feldspar, quartz.	Probably alluvial material from volcanic source rocks. Some calcareous material.
166-170	do.	do.	do.	do.	do.
176-180	do.	do.	do.	do.	do.
187-192	do.	do.	do.	do., but mostly quartz.	do.

No permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
202-210	grayish white	Rounded to subangular	Quartz, volcanics.	Almost all quartz, little volcanics and feldspar	Probably alluvial material from volcanic source rocks.
215-220	light red brown	subangular	Volcanics.	Volcanics, Kaolin, quartz.	do.
225-229	light tan	do.	do.	do.	do.
235-242	grayish white	Rounded to subangular	do., subangular.	Mostly quartz, little volcanics, mostly rounded.	do.
248-255	do.	do.	limestone, volcanics.	Mostly limestone, some volcanics.	Probably alluvial material from limestone and some volcanic source rocks.
255-261	do.	subangular, few angular	do.	do.	do.
265-272	do.	do.	do.	do.	do., almost entirely limestone source.
276-281	do.	subangular to rounded	limestone, little pyrite.	do., also little quartz.	do.
286-295	do.	subangular	do., little volcanics.	do., little volcanics.	do.
295-303	do.	rounded to subangular	do.	do., little muscovite.	do., mostly sand size.
312-323	do.	do.	do., but no pyrite.	do.	do.
335-341	do.	do.	do., but no volcanics.	Mostly limestone, little quartz and pyrite, volcanic rocks, muscovite.	do.
347-349	do.	do.	None present.	do., but no pyrite.	do., all sand size.
355-361	do.	subangular to rounded.	limestone, subangular.	do., mostly rounded, no volcanic rocks.	do., but no volcanic source rocks and few pebbles.
371-375	light tan	do.	None present.	limestone, some quartz, little volcanic rocks.	do., possibly little from volcanic source rocks, all sand size.

Use permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
385-393	light tan	subangular to rounded.	limestone, volcanics.	limestone, some quartz, little volcanic rocks.	Probably alluvial material mostly from limestone and possibly little volcanic source rocks. Mostly sand size.
395-402	do.	do.	limestone.	do., little pyrite.	do.
410-416	do.	do.	do.	do.	do.
424-435	grayish white	subangular	sandstone, quartzite.	sandstone and quartz, quartzite, little pyrite.	Probably alluvial material from quartz sandstone source rocks and quartzite source rocks.
448-455	do.	do.	None present.	quartz, little pyrite.	Probably alluvial material from sandstone source rocks.
465-475	do.	do.	Little quartzite.	do.	do.
484-500	white	do.	None present.	do.	do.
505-515	do.	do.	sandstone	do.	do.
528-540	light tan	do.	None present.	do.	do.
545-557	do.	do.	sandstone	do.	do.
568-577	do.	do.	do., little quartzite.	do.	do., possibly little from quartzite sourc
584-590	do.	do.	do., but no quartzite.	do.	do., but no quartzite source rocks.
602-609	do.	do.	do.	do.	do.
618-627	do.	do.	do.	do.	do.
640-647	do.	do.	do.	do.	do.
655-663	light yellowish brown	do.	do.	do., but no pyrite and much more very fine quartz or feldspar.	do., but more pebbles, less uniform grain size, and much more very fine material.
671-676	do.	subangular to rounded.	do.	do., average grain size much smaller	Probably alluvial material from sandstone source rocks.

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Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
680-691	light yellowish brown	Subangular	Sandstone	Quartz or feldspar, little pyrite and much less very fine material.	Probably alluvial material from sandstone source rocks.
695-698	do.	do.	Sandstone, quartzite	quartz, sandstone.	do., also quartzite source rocks.
703-708	do.	do.	sandstone	quartz	do., but no quartzite.
713-719	do.	do.	do.	do., little pyrite	do.
723-727	do.	do., some rounded	do., quartzite	do.	do.
731-735	do.	do.	do., little limestone, calcite.	do.	Probably alluvial material.
738-741	grayish tan	subangular	Dolomite, feldspar, quartzite.	dolomite, feldspar, quartz.	do.
745-749	light gray	do.	dolomite, feldspar.	dolomite, quartz, feldspar.	Probably alluvial material. Mostly dolomite.
752-755	light tan	do.,	do., little quartzite.	do.	do., mostly feldspar
767-773	do.	subangular to rounded	do.	do.	do.
781-786	do.	do.	feldspar, little siltstone	feldspar	do., 95% feldspar, no dolomite
793-797	do.	do.	do.	do.	do., some calcareous cementing material.
801-805	light brown	subangular	do.	do., but much Kaolin to calcareous cementing material.	do., but much calcareous cementing material.
811-814	light tan	do.	do.	feldspar	Probably alluvial material.
818-823	light brown	do.	do., some halite	do., but much silt and calcareous cementing material.	do., some halite
830-844	light tan	Subangular to rounded	halite, little feldspar	halite, possibly little feldspar	Mostly halite.

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Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
856-867	Light tan	Subangular to rounded	halite, little feldspar, little quartzite	halite, possibly little feldspar	Mostly halite.
878-887	Light brown	do.	do.	do., quartz, silt	do.
896 -909	Light tan	do.	do., but no quartzite	do.	do.
920- 932	do.	Subangular	do.	do.	do.
950 -965	do.	do.	do.	do.	do.
976 -986	Light grayish tan	do.	do.	do., but no silt	do.
995 -1006	Light tan	do.	do., some siltstone	do.	do.
1018-1034	Light gray	do.	dolomite, anhydrite	dolomite, anhydrite	Probably alluvial material.
1037-1043	Light brown	do.	do., little halite	dolomite, little halite, little quartz, little anhydrite	do.
1055-1061	do.	do.	do., little siltstone	do., but more quartz	do.
1066-1077	do.	do., few rounded	do.	do.	do.
1081-1092	Light tan	do.	do.	do.	do.
1100-1110	do.	Subangular	Quartz, feldspar	Mostly quartz, some very fine quartz or Kaolin material	do., some calcareous cementing material
1125-1141	do.	do.	halite	halite, kaolin, little magnetite	Some halite
1150-1163	Light brown	Subangular to rounded	sandstone, feldspar, quartz, halite	quartz, little magnetite	do.
1176-1190	Light tan	do.	sandstone, halite feldspar	quartz, feldspar, halite	do.
1205-1222	Light gray	do.	halite, dolomite	halite, dolomite	Typical association halite and dolomite
1239-1255	do.	do.	do., little sandstone	do.	do.

No permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
856-867	light tan	Subangular to rounded	halite, little feldspar, little quartzite	halite, possibly little feldspar	Mostly halite.
878-887	light brown	do.	do.	do., quartz, silt	do.
896 -909	light tan	do.	do., but no quartzite	do.	do.
920- 932	do.	Subangular	do.	do.	do.
950 -965	do.	do.	do.	do.	do.
976 -986	light grayish tan	do.	do.	do., but no silt	do.
995 -1006	light tan	do.	do., some siltstone	do.	do.
1018-1034	light gray	do.	dolomite, anhydrite	dolomite, anhydrite	Probably alluvial material.
1037-1043	light brown	do.	do., little halite	dolomite, little halite, little quartz, little anhydrite	do.
1055-1061	do.	do.	do., little siltstone	do., but more quartz	do.
1066-1077	do.	do., few rounded	do.	do.	do.
1081-1092	light tan	do.	do.	do.	do., some calcareous cementing material
1100-1110	do.	Subangular	Quartz, feldspar	Mostly quartz, some very fine quartz or Kaolin material	Some halite
1125-1141	do.	do.	halite	halite, kaolin, little magnetite	do.
1150-1163	light brown	Subangular to rounded	sandstone, feldspar, quartz, halite	quartz, little magnetite	do.
1176-1190	light tan	do.	sandstone, halite feldspar	quartz, feldspar, halite	Typical association halite and dolomite
1205-1222	light gray	do.	halite, dolomite	halite, dolomite	do.
1239-1255	do.	do.	do., little sandstone	do.	

No permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
1271-1286	light gray	Subangular to rounded	halite and gypsum	halite and gypsum	Association halite and gypsum
1295-1308	light tan	do.	halite, little sandstone	halite	Halite
1321-1330	light gray	do.	dolomite, little sandstone	dolomite, quartz	Probably alluvial material
1340-1350	do.	do.	limestone	limestone	do.
1360-1370	do.	do.	do.	do.	do.
1398-1410	light brown	Rounded	sandstone	sandstone, quartz	Probably alluvial material from sandstone source rocks.
1420-1430	do.	do.	halite, sandstone	halite, quartz	Probably alluvial material.
1440-1455	do.	Subangular to rounded	do.	do.	do.
1467-1480	do.	do.	do., little dolomite	do.	do.
1494-1506	do.	rounded	sandstone, little feldspar	sandstone, quartz	do.
1520-1527	do.	subangular to rounded	do., some halite	do., some halite	do.
1539-1550	do.	do.	halite, sandstone	halite, quartz	do.
1563-1580	do.	do.	halite, little sandstone	halite, quartz	do.
1592-1605	do.	do.	do.	do.	do.
1616-1630	light tan	Subangular	do.	do.	do., almost all halite.
1642-1662	light gray	rounded, few subangular	limestone, little feldspar, little qz.	limestone	Probably alluvial material.
1662-1682	do.	do.	do.	do.	do., but few pebbles, mostly sand sized.
1682-1703	light reddish brown	subangular	sandstone, siltstone, little halite	sandstone, siltstone, quartz	Probably alluvial material.
1721-1726	light brown	do.	sandstone	sandstone, quartz	do.
1732-1752	do.	subangular to rounded	do., feldspar	do.	do.
1757-1762	do.	do.	do.	do.	do.

Use permit

Argo #1, Arizona (Cont.)

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2mm.	Remarks
1767-1775	light brown	Subangular to rounded	sandstone	sandstone, quartz	Probably alluvial material, almost entirely very fine sand.
1782-1786	do.	do..	do., little gypsum	do.	Probably alluvial material.
1790-1800	do.	rounded to subangular	siltstone, little feldspar	siltstone, quartz	do.
1805-1810	do.	do.	do.	do.	do.
1815-1819	do.	subangular	siltstone	do.	do., almost all silt.
1823-1826	light red brown	do.	do., possibly little gypsum	do.	Probably alluvial material
1836-1840	do.	do.	do.	do.	do.
1847-1850	light tan	do.	do., feldspar possibly	do.	do.
1857-1860	do.	do.	do., dolomite	do., dolomite	do.
1863-1866	light red-brown	do.	do.	do., little magnetitic	do.
1869-1875	do.	rounded	do., no dolomite	do., no dolomite, little feldspar	do.
1880-1885	do.	rounded to subangular	siltstone, little dolomite and feldspar	do., with dolomite	do.
1889-1894	do.	do.	do.	do., but with quartz	do.
1900-1905	do.	subangular	do., with limestone instead of dolomite	do., limestone instead of dolomite	do., mostly silt
1911-1916	do.	rounded to subangular	do., no limestone, some dolomite	do., dolomite instead of limestone	do., less silt
1920-1925	do.	do.	Mostly siltstone with little magnetite	Angular feldspar and quartz grains	do., more silt, little calcareous cement
1937-1944	do.	do.	do., rounded	do., angular	do.
1950-1957	do.	subangular	do., not rounded	do.	do.
1957-1966	tan	subangular	siltstone	quartz grains	Alluvial, little calcareous cement.
1973-1980	do.	do.	do.	do.	do., calcareous cement holding silt together.

No record

Argo #1, Arizona (Cont.) By Schminke

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
1986-1996	tan	subangular	siltstone	quartz grains	Alluvial, mostly silt. Calcareous cement.
2003-2012	light red brown	do.	do.	do.	do.
2019-2029	do.	do.	do.	do.	do., less calcareous cement.
2037-2051	tan	do.	do.	do., 95% of total	do., more calcareous cement.
2063-2073	do.	do.	do.	do., 65%	do.
2084-2092	do.	do.	none present	do.	do.
2103-2118	do.	do.	siltstone	do.	do.
2128-2135	do.	do.	none present	do.	do.
2135-2142	do.	do.	siltstone and vesicular volcanics	do., little vesicular volcanics	do., some volcanics
2150-2158	do.	do.	siltstone, little limestone, and little quartzite	silt, little limestone, little quartzite	do., no volcanics
2166-2171	do.	do.	do., no limestone	do., no limestone	do.
2179-2185	do.	do.	siltstone	do., no quartzite	do.
2188-2196	light reddish tan	subangular	little limestone, siltstone	quartz grains	Alluvial from siltstone and limestone source rock.
2200-2205	do.	do.	do.	do.	do.
2205-2208	do.	do.	do.	do.	do.
2212-2219	do.	do.	do., no limestone	do.	do., no limestone
2225-2230	do.	do.	do.	do.	do.
2233-2240	do.	do.	do.	do.	do.
2244-2249	do.	do.	do.	do.	do.
2254-2261	do.	do.	do., some quartzite	do.	do., some quartzite.
2267-2275	do.	do.	do., no quartzite	do.	do., possibly some badly weathered feldspar, no quartzite.
2281-2285	red brown	do.	do., some magnetite	do., some magnetite	do., no feldspar

No permit

Argo #1, Arizona (Cont.) by Schminke

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
2290-2296	Red brown	Subangular	siltstone, some magnetite	quartz grains, some magnetite	Alluvial from siltstone source rocks.
2300-2305	light reddish tan	do.	do., no magnetite	do., no magnetite	do.
2312-2320	grayish tan	do.	do., quartzite	quartz sand and quartzite	do., quite a bit of quartzite, possibly is bedrock.
2325-2333	pale brown	do.	none present	quartz sand and quartzite	Bedrock - quartzite is blackish and fine grained.
2339-2346	do.	do.	sandstone, some quartzite	do.	do., some sandstone also.
2350-2354	do.	do.	quartzite	do.	do., no sandstone.
2359-2363	do.	do.	do.	do.	do.
2368-2373	do.	do.	do.	do.	do.
2382-2390	do.	do.	do.	do.	do.
2395-2400	do.	do.	do.	do.	do., source rock is quartzite.
2408-2413	grayish brown	do.	do.	do.	do.
2419-2425	do.	do.	do.	do.	do.
2428-2434	do.	do.	do., some very fine sandstone	do.	do., some sandstone.
2440-2445	do.	angular to subangular	do., no sandstone	do.	do., no sandstone
2450-2455	brownish gray	do.	do.	do.	do.
2458-2465	do.	do.	do.	do.	do.
2470-2476	tanish gray	do.	do.	do.	do.
2482-2485	grayish tan	subangular	quartzite	do.	Bedrock - source rock is quartzite.
2489-2493	tanish gray	do.	do.	do.	do.
2496-2501	do.	do.	do.	do.	do.
2505-2509	do.	do.	do.	do.	do.

Argo #1, Arizona (Cont.) by Schminke

Depth	Color	Angularity	Composition: Over 2 mm.	Composition: Under 2 mm.	Remarks
2518-2525	Tanish gray	Subangular	Quartzite, some loosely cemented sandstone	Quartz sand and quartzite	Bedrock - source rock is quartzite.
2529-2542	light olive brown	do.	quartzite and magnetite with a limonite stain	quartzite and magnetite with a limonite stain	Alluvial - magnetite probably altering to limonite.
2542-2543	tan to gray	do.	quartzite and quartz	quartz sand , quartzite	From 2529-2542 hole filled with surface rock and redrilled to straighten.
2543-2544	tanish gray	do.	quartzite	Mostly quartzite with some quartz sand	Bedrock - source rock quartzite.
2547-2550	do.	do.	do.	do.	do.
2552-2556	do.	do.	do.	do.	do.
2563-2568	do.	do.	do.	do.	do.
2571-2576	do.	do.	do.	do.	do.
2580-2583	brownish gray	do.	do., some loosely cemented sandstone	do.	do., some sandstone.
2588-2590	grayish red	do.	quartzite	quartz grains and quartzite	Bedrock continues probably
2595-2597	brownish gray	do.	do.	do.	do.
2600-2605	do.	do.	do.	do.	do.
2610-2615	grayish tan	do.	do.	do.	do.
2618-2622	do.	do.	do.	do.	do.
2625-2627	do.	do.	do., and loosely cemented sandstone	do.	do., some sandstone
2632-2637					

No permit

1-11 T15N R29E Argo Oil Corp
Abandoned 44

0	50	clay (cellar)
50	85	sdy red sh, soft
85	100	gray sh, soft
100	120	sandy lime shells, medium gray
120	130	sdy shl soft
130	150	sh red brown
150	155	gravel, water
155	180	sh gray, soft
180	210	sand, gravel
210	220	red rock
220	240	sand, gravel
240	250	red rock and blue sh
250	260	broken lime
260	280	lime, hard brown
280	330	broken lime, med, gray
330	335	sand water
335	350	sand
350	430	lime sandy brown and gray
430	450	sand gray
450	560	sand brown
460	500	sand red
500	550	sand brown
550	710	sand red
710	730	sh red
730	740	anhydrite
740	750	sh blue
750	810	red rock
810	845	anhydrite - salt white
845	895	salt
895	900	sh red
900	990	salt
990	995	anhydrite and salt white
995	1020	salt
1020	1040	lime brown
1040	1050	sh blue

1050	1070	lime brown
1070	1080	sh red
1080	1100	lime brown
1100	1130	sh red
1130	1150	salt soft white
1150	1170	sh sdy red
1170	1270	salt soft white
1270	1275	andhydrite med brown
1295	1300	red rock soft
1300	1310	salt
1310	1330	sh soft blue
1330	1360	lime med gray
1360	1390	sh soft blue
1390	1400	sand soft red
1400	1430	sh sdy red
1430	1440	sdy red rock
1440	1450	andhydrite broken
1450	1550	sh soft red
1550	1580	sh red
1580	1625	red rock sdy
1625	1630	andhyrite salt
1630	1700	lime sdy soft brown
1700	1720	sh sdy red
1720	1730	red rock
1730	1820	sh soft red
1820	1840	soft red
1840	1855	sh red
1855	1860	lime
1860	1940	sh sdy red
1940	1950	sand red
1950	2320	sh red
2320	2540	snd hard gray
2540	2610	quartzite
2610	2637	sand hard gray (Precambraim)

T15N R29E Argo Oil Corp
Abandoned 44

0	50	clay (cellar)
50	85	sdy red sh, soft
85	100	gray sh, soft
100	120	sandy lime shells, medium gray
120	130	sdy shl soft
130	150	sh red brown
150	155	gravel, water
155	180	sh gray, soft
180	210	sand, gravel
210	220	red rock
220	240	sand, gravel
240	250	red rock and blue sh
250	260	broken lime
260	280	lime, hard brown
280	330	broken lime, med, gray
330	335	sand water
335	350	sand
350	430	lime sandy brown and gray
430	450	sand gray
450	560	sand brown
460	500	sand red
500	550	sand brown
550	710	sand red
710	730	sh red
730	740	anhydrite
740	750	sh blue
750	810	red rock
810	845	anhydrite - salt white
845	895	salt
895	900	sh red
900	990	salt
990	995	anhydrite and salt white
995	1020	salt
1020	1040	lime brown
1040	1050	sh blue

1050	1070	lime brown
1070	1080	sh red
1080	1100	lime brown
1100	1130	sh red
1130	1150	salt soft white
1150	1170	sh sdy red
1170	1270	salt soft white
1270	1275	andhydrite med brown
1295	1300	red rock soft
1300	1310	salt
1310	1330	sh soft blue
1330	1360	lime med gray
1360	1390	sh soft blue
1390	1400	sand soft red
1400	1430	sh sdy red
1430	1440	sdy red rock
1440	1450	andhydrite broken
1450	1550	sh soft red
1550	1580	sh red
1580	1625	red rock sdy
1625	1630	andhyrite salt
1630	1700	lime sdy soft brown
1700	1720	sh sdy red
1720	1730	red rock
1730	1820	sh soft red
1820	1840	soft red
1840	1855	sh red
1855	1860	lime
1860	1940	sh sdy red
1940	1950	sand red
1950	2320	sh red
2320	2540	snd hard gray
2540	2610	quartzite
2610	2637	sand hard gray (Precambraim)

WELL LOG

ARGO OIL CORPORATION,
1406 Fort Worth National Bank Bldg.,
Fort Worth, 2, Texas

ARGO -STATE NO. 1
Located 660 feet S. of North line and 660 feet
W. of East line of Section 22, Township 15 N., Range 29 E.
Apache County, Arizona

Drilling commenced: June 24, 1943
Drilling completed:

From	To	Formation
0	12	Surface clay (Cellar)
12	86	Sandy red shale, soft
86	100	Grey Shale, soft
100	112	Sandy Lime Shells, medium gray
112	122	Sandy shale, soft
122	125	Sandy & Gravel, soft, brown
125	142	Shale, soft, red
142	150	Shale, soft, brown
150	155	Gravel-water
155	180	Gray Shale, soft
180	210	Sand & Gravel
210	215	Sandy red rock - Gravel
215	220	Red rock
220	225	Sand & Gravel
225	235	Sand
235	241	Sand, soft
241	249	Red rock & Blue Shale
249	255	Broken lime
255	265	Lime, hard, brown
265	333	Broken lime, medium, grey
333	335	Sand-water
335	349	Sand
349	355	Broken lime
355	375	Sandy lime, brown
375	424	Sandy lime, brown
424	435	Grey lime
435	647	Sand, grey
647	680	Sand, brown
680	691	Sand, red
691	698	Shale, red
698	703	Sand, red
703	712	Sand, red
712	727	Shale, red
727	745	Anhydrite
745	749	Shale, blue
749	752	Red rock
752	755	Anhydrite
755	765	Red rock
765	775	Anhydrite
775	779	Shale & Gyp. red
779	790	Anhydrite
790	801	Anhydrite & Red Rock
801	806	Red rock
806	814	Anhydrite
814	823	Red rock, soft
823	845	Anhydrite & Salt, white
845	878	Salt
878	887	Shale, red
887	940	Salt
940	986	Anhydrite & salt, white
986	1019	Salt
1019	1025	Anhydrite
1025	1041	Lime, brown
1041	1055	Shale, blue
1055	1064	Lime, brown
1064	1068	Shale, red
1068	1080	Lime, brown
1080	1095	Lime
1095	1125	Shale, red
1125	1150	Salt, soft, white

No permit

WELL LOG

ARGO OIL CORPORATION - ARGO - STATE NO. 1

660 FNL; 660 FEL Sec 22 - 15N - 29E

Apache Co.

TD 2637

Spud 6-24-43

1150	1170	Sandy shale, red
1170	1271	Salt, soft, white
1271	1286	Anhydrite, medium, brown
1286	1295	Red rock, soft
1295	1310	Salt
1310	1320	Shale, red
1320	1330	Blue shale & Red rock
1330	1360	Lime, medium, grey
1360	1388	Shale, blue, soft
1388	1398	Sand, red, soft
1398	1430	Shale, sandy, red
1430	1480	Sandy red rock
1480	1493	Broken anhydrite & Red rock
1493	1525	Shale, soft, red
1525	1580	Sandy shale, red
1580	1618	Sandy red rock
1618	1630	Red rock, salt, anhydrite
1630	1643	Broken anhydrite, medium
1643	1705	Sandy lime, soft, brown
1705	1720	Sandy shale, red
1720	1732	Red rock
1732	1826	Shale, soft, red
1826	1837	Sand, soft, red
1837	1854	Shale, red
1854	1860	Lime
1860	1869	Shale, red
1869	1889	Sandy shale, red
1889	1944	Shale, red
1944	1950	Sand, red
1950	2305	Shale, red
2305	2320	Sandy shale, red
2320	2325	Sand, grey
2325	2339	Sand, hard, grey, sharp
2339	2346	Red sand, hard
2346	2354	Sand, hard, grey, sharp
2354	2363	Sand, hard, red
2363	2390	Sand, hard, grey
2390	2400	Sandy shale, grey
2400	2542	Sand, hard, grey
2542	2627	Quartzite
2627	2632	Sand, hard, gray
2632	2637 T.D.	Quartzite

FORMATION TOPS FROM STATE LAND DEPARTMENT FILES - ARGO STATE #1

0 - 180	Chinle
180 - 249	Shinarump
249 - 435	San Andres - LS member
435 - 680	Gloneta - SS member
680 - 2320	Supai
2320	Pre-Cambrian Quartzite

TD - 2637

FORMATION TOPS by NEW MEXICO BUREAU OF MINES, ARGO STATE #1 APACHE COUNTY

0 - 247	Chinle
247 - 424	San Andres
424 - 647	Gloneta
647 - 1975 ?	Yeso
?1975 - 2350	Ako
2350	Quartzite or granite
T.D. - 2637	

No permit

WELL LOG

ARGO OIL CORPORATION,
1406 Fort Worth National Bank Bldg.,
Fort Worth, 2, Texas

ARGO -STATE NO. 1
Located 660 feet S. of North line and 660 feet
W. of East line of Section 22, Township 15 N., Range 29 E.
Apache County, Arizona

Drilling commenced: June 24, 1943
Drilling completed:

From	To	Formation
0	12	Surface clay (Cellar)
12	86	Sandy red shale, soft
86	100	Grey Shale, soft
100	112	Sandy Lime Shells, medium gray
112	122	Sandy shale, soft
122	125	Sandy & Gravel, soft, brown
125	142	Shale, soft, red
142	150	Shale, soft, brown
150	155	Gravel-water
155	180	Gray Shale, soft
180	210	Sand & Gravel
210	215	Sandy red rock - Gravel
215	220	Red rock
220	225	Sand & Gravel
225	235	Sand
235	241	Sand, soft
241	249	Red rock & Blue Shale
249	255	Broken lime
255	265	Lime, hard, brown
265	333	Broken lime, medium, grey
333	335	Sand-water
335	349	Sand
349	355	Broken lime
355	375	Sandy lime, brown
375	424	Sandy lime, brown
424	435	Grey lime
435	647	Sand, grey
647	680	Sand, brown
680	691	Sand, red
691	698	Shale, red
698	703	Sand, red
703	712	Sand, red
712	727	Shale, red
727	745	Anhydrite
745	749	Shale, blue
749	752	Red rock
752	755	Anhydrite
755	765	Red rock
765	775	Anhydrite
775	779	Shale & Gyp. red
779	790	Anhydrite
790	801	Anhydrite & Red Rock
801	806	Red rock
806	814	Anhydrite
814	823	Red rock, soft
823	845	Anhydrite & Salt, white
845	878	Salt
878	887	Shale, red
887	940	Salt
940	986	Anhydrite & salt, white
986	1019	Salt
1019	1025	Anhydrite
1025	1041	Lime, brown
1041	1055	Shale, blue
1055	1064	Lime, brown
1064	1068	Shale, red
1068	1080	Lime, brown
1080	1095	Lime
1095	1125	Shale, red
1125	1150	Salt, soft, white

No permit

WELL LOG

ARGO OIL CORPORATION - ARGO - STATE NO. 1

660 FNL; 660 FEL Sec 22 - 15N - 29E

Apache Co.

TD 2637

Spud 6-24-43

1150	1170	Sandy shale, red
1170	1271	Salt, soft, white
1271	1286	Anhydrite, medium, brown
1286	1295	Red rock, soft
1295	1310	Salt
1310	1320	Shale, red
1320	1330	Blue shale & Red rock
1330	1360	Lime, medium, grey
1360	1388	Shale, blue, soft
1388	1398	Sand, red, soft
1398	1430	Shale, sandy, red
1430	1480	Sandy red rock
1480	1493	Broken anhydrite & Red rock
1493	1525	Shale, soft, red
1525	1580	Sandy shale, red
1580	1618	Sandy red rock
1618	1630	Red rock, salt, anhydrite
1630	1643	Broken anhydrite, medium
1643	1705	Sandy lime, soft, brown
1705	1720	Sandy shale, red
1720	1732	Red rock
1732	1826	Shale, soft, red
1826	1837	Sand, soft, red
1837	1854	Shale, red
1854	1860	Lime
1860	1869	Shale, red
1869	1889	Sandy shale, red
1889	1944	Shale, red
1944	1950	Sand, red
1950	2305	Shale, red
2305	2320	Sandy shale, red
2320	2325	Sand, grey
2325	2339	Sand, hard, grey, sharp
2339	2346	Red sand, hard
2346	2354	Sand, hard, grey, sharp
2354	2363	Sand, hard, red
2363	2390	Sand, hard, grey
2390	2400	Sandy shale, grey
2400	2542	Sand, hard, grey
2542	2627	Quartzite
2627	2632	Sand, hard, gray
2632	2637 T.D.	Quartzite

FORMATION TOPS FROM STATE LAND DEPARTMENT FILES - ARGO STATE #1

0 -	180	Chinle
180 -	249	Shinarump
249 -	435	San Andres - LS member
435 -	680	Gloneta - SS member
680 -	2320	Supai
2320		Pre-Cambrian Quartzite

TD - 2637

FORMATION TOPS by NEW MEXICO BUREAU OF MINES, ARGO STATE #1 APACHE COUNTY

0 -	247	Chinle
247 -	424	San Andres
424 -	647	Gloneta
647 -	1975 ?	Yeso
?1975 -	2350	Ako
2350		Quartzite or granite
T.D. -	2637	

No permit

WELL LOG

ARGO OIL CORPORATION,
1406 Fort Worth National Bank Bldg.,
Fort Worth, 2, Texas

ARGO -STATE NO. 1
Located 660 feet S. of North line and 660 feet
W. of East line of Section 22, Township 15 N., Range 29 E.
Apache County, Arizona

Drilling commenced: June 24, 1943
Drilling completed:

From	To	Formation
0	12	Surface clay (Cellar)
12	86	Sandy red shale, soft
86	100	Grey Shale, soft
100	112	Sandy Lime Shells, medium gray
112	122	Sandy shale, soft
122	125	Sandy & Gravel, soft, brown
125	142	Shale, soft, red
142	150	Shale, soft, brown
150	155	Gravel-water
155	180	Gray Shale, soft
180	210	Sand & Gravel
210	215	Sandy red rock - Gravel
215	220	Red rock
220	225	Sand & Gravel
225	235	Sand
235	241	Sand, soft
241	249	Red rock & Blue Shale
249	255	Broken lime
255	265	Lime, hard, brown
265	333	Broken lime, medium, grey
333	335	Sand-water
335	349	Sand
349	355	Broken lime
355	375	Sandy lime, brown
375	424	Sandy lime, brown
424	435	Grey lime
435	647	Sand, grey
647	680	Sand, brown
680	691	Sand, red
691	698	Shale, red
698	703	Sand, red
703	712	Sand, red
712	727	Shale, red
727	745	Anhydrite
745	749	Shale, blue
749	752	Red rock
752	755	Anhydrite
755	765	Red rock
765	775	Anhydrite
775	779	Shale & Gyp. red
779	790	Anhydrite
790	801	Anhydrite & Red Rock
801	806	Red rock
806	814	Anhydrite
814	823	Red rock, soft
823	845	Anhydrite & Salt, white
845	878	Salt
878	887	Shale, red
887	940	Salt
940	986	Anhydrite & salt, white
986	1019	Salt
1019	1025	Anhydrite
1025	1041	Lime, brown
1041	1055	Shale, blue
1055	1064	Lime, brown
1064	1068	Shale, red
1068	1080	Lime, brown
1080	1095	Lime
1095	1125	Shale, red
1125	1150	Salt, soft, white

No permit

WELL LOG

ARGO OIL CORPORATION - ARGO - STATE NO. 1

660 FNL; 660 FEL Sec 22 - 15N - 29E

Apache Co.

TD 2637

Spud 6-24-43

1150	1170	Sandy shale, red
1170	1271	Salt, soft, white
1271	1286	Anhydrite, medium, brown
1286	1295	Red rock, soft
1295	1310	Salt
1310	1320	Shale, red
1320	1330	Blue shale & Red rock
1330	1360	Lime, medium, grey
1360	1388	Shale, blue, soft
1388	1398	Sand, red, soft
1398	1430	Shale, sandy, red
1430	1480	Sandy red rock
1480	1493	Broken anhydrite & Red rock
1493	1525	Shale, soft, red
1525	1580	Sandy shale, red
1580	1618	Sandy red rock
1618	1630	Red rock, salt, anhydrite
1630	1643	Broken anhydrite, medium
1643	1705	Sandy lime, soft, brown
1705	1720	Sandy shale, red
1720	1732	Red rock
1732	1826	Shale, soft, red
1826	1837	Sand, soft, red
1837	1854	Shale, red
1854	1860	Lime
1860	1869	Shale, red
1869	1889	Sandy shale, red
1889	1944	Shale, red
1944	1950	Sand, red
1950	2305	Shale, red
2305	2320	Sandy shale, red
2320	2325	Sand, grey
2325	2339	Sand, hard, grey, sharp
2339	2346	Red sand, hard
2346	2354	Sand, hard, grey, sharp
2354	2363	Sand, hard, red
2363	2390	Sand, hard, grey
2390	2400	Sandy shale, grey
2400	2542	Sand, hard, grey
2542	2627	Quartzite
2627	2632	Sand, hard, gray
2632	2637 T.D.	Quartzite

FORMATION TOPS FROM STATE LAND DEPARTMENT FILES - ARGO STATE #1

0 - 180	Chinle	
180 - 249	Shinarump	
249 - 435	San Andres	- LS member
435 - 680	Gloneta	- SS member
680 - 2320	Supai	
2320	Pre-Cambrian Quartzite	

TD - 2637

FORMATION TOPS by NEW MEXICO BUREAU OF MINES, ARGO STATE #1 APACHE COUNTY

0 - 247	Chinle
247 - 424	San Andres
424 - 647	Gloneta
647 - 1975 ?	Yeso
?1975 - 2350	Ako
2350	Quartzite or granite
T.D. - 2637	

No permit

WELL LOG

ARGO OIL CORPORATION,
1406 Fort Worth National Bank Bldg.,
Fort Worth, 2, Texas

ARGO -STATE NO. 1
Located 660 feet S. of North line and 660 feet
W. of East line of Section 22, Township 15 N., Range 29 E.
Apache County, Arizona

Drilling commenced: June 24, 1943
Drilling completed:

From	To	Formation
0	12	Surface clay (Cellar)
12	86	Sandy red shale, soft
86	100	Grey Shale, soft
100	112	Sandy Lime Shells, medium gray
112	122	Sandy shale, soft
122	125	Sandy & Gravel, soft, brown
125	142	Shale, soft, red
142	150	Shale, soft, brown
150	155	Gravel-water
155	180	Gray Shale, soft
180	210	Sand & Gravel
210	215	Sandy red rock - Gravel
215	220	Red rock
220	225	Sand & Gravel
225	235	Sand
235	241	Sand, soft
241	249	Red rock & Blue Shale
249	255	Broken lime
255	265	Lime, hard, brown
265	333	Broken lime, medium, grey
333	335	Sand-water
335	349	Sand
349	355	Broken lime
355	375	Sandy lime, brown
375	424	Sandy lime, brown
424	435	Grey lime
435	647	Sand, grey
647	680	Sand, brown
680	691	Sand, red
691	698	Shale, red
698	703	Sand, red
703	712	Sand, red
712	727	Shale, red
727	745	Anhydrite
745	749	Shale, blue
749	752	Red rock
752	755	Anhydrite
755	765	Red rock
765	775	Anhydrite
775	779	Shale & Gyp. red
779	790	Anhydrite
790	801	Anhydrite & Red Rock
801	806	Red rock
806	814	Anhydrite
814	823	Red rock, soft
823	845	Anhydrite & Salt, white
845	878	Salt
878	887	Shale, red
887	940	Salt
940	986	Anhydrite & salt, white
986	1019	Salt
1019	1025	Anhydrite
1025	1041	Lime, brown
1041	1055	Shale, blue
1055	1064	Lime, brown
1064	1068	Shale, red
1068	1080	Lime, brown
1080	1095	Lime
1095	1125	Shale, red
1125	1150	Salt, soft, white

No permit

WELL LOG

ARGO OIL CORPORATION - ARGO - STATE NO. 1

660FNL; 660 FEL Sec 22 - 15N - 29E

Apache Co.

TD 2637

Spud 6-24-43

1150	1170	Sandy shale, red
1170	1271	Salt, soft, white
1271	1286	Anhydrite, medium, brown
1286	1295	Red rock, soft
1295	1310	Salt
1310	1320	Shale, red
1320	1330	Blue shale & Red rock
1330	1360	Lime, medium, grey
1360	1388	Shale, blue, soft
1388	1398	Sand, red, soft
1398	1430	Shale, sandy, red
1430	1480	Sandy red rock
1480	1493	Broken anhydrite & Red rock
1493	1525	Shale, soft, red
1525	1580	Sandy shale, red
1580	1618	Sandy red rock
1618	1630	Red rock, salt, anhydrite
1630	1643	Broken anhydrite, medium
1643	1705	Sandy lime, soft, brown
1705	1720	Sandy shale, red
1720	1732	Red rock
1732	1826	Shale, soft, red
1826	1837	Sand, soft, red
1837	1854	Shale, red
1854	1860	Lime
1860	1869	Shale, red
1869	1889	Sandy shale, red
1889	1944	Shale, red
1944	1950	Sand, red
1950	2305	Shale, red
2305	2320	Sandy shale, red
2320	2325	Sand, grey
2325	2339	Sand, hard, grey, sharp
2339	2346	Red sand, hard
2346	2354	Sand, hard, grey, sharp
2354	2363	Sand, hard, red
2363	2390	Sand, hard, grey
2390	2400	Sandy shale, grey
2400	2542	Sand, hard, grey
2542	2627	Quartzite
2627	2632	Sand, hard, gray
2632	2637 T.D.	Quartzite

FORMATION TOPS FROM STATE LAND DEPARTMENT FILES - ARGO STATE #1

0 - 180		Chinle
180 - 249		Shinarump
249 - 435		San Andres - LS member
435 - 680		Gloneta - SS member
680 - 2320		Supai
2320		Pre-Cambrian Quartzite

TD - 2637

FORMATION TOPS by NEW MEXICO BUREAU OF MINES, ARGO STATE #1 APACHE COUNTY

0 - 247	Chinle
247 - 424	San Andres
424 - 647	Gloneta
647 - 1975 ?	Yeso
?1975 - 2350	Ako
2350	Quartzite or granite
T.D. - 2637	

No permit

Formation Tops by New Mexico Bureau of Mines

Argo State #1 - Apache Co.

0 - 247	Chinle ✓
247 - 424	San Andres
424 - 647	Glorieta
647 - 1975?	~~Abo~~ Yeso
1975? - 2350	Abo
2350	Quartzite or Granite.
TD - 2637	

Formation tops from State Land Dept. Files

Argo State #1 -

0 - 160	Chinle
160 - 249	Shinarump
249 - 435	San Andres - LS member
435 - 680	Glorieta - SS member
680 - 2320	Supai
2320 -	Pre-Cambrian Quartzite.
TD 2637	

No permit

1-11

WELL LOG

ARGO OIL CORPORATION,
1406 Fort Worth National Bank Bldg.,
Fort Worth, 2, Texas

ARGO-STATE NO. 1
Located 660 feet S. of North line and 660 feet
W. of East line of Section 22, Township 15 N., Range 29 E.
Apache County, Arizona

Drilling commenced: June 24, 1943
Drilling completed: Feb 1944

Abd. 3-30-44 - Strip log

From	To	Formation
0	12	Surface clay (Cellar)
12	86	Sandy red shale, soft
86	100	Grey Shale, soft
100	112	Sandy Lime Shells, medium, gray
112	122	Sandy shale, soft
122	125	Sandy & Gravel, soft, brown
125	142	Shale, soft, red
142	150	Shale, soft, brown
150	155	Gravel-water
155	180	Gray Shale, soft
180	210	Sand & Gravel
210	215	Sandy red rock - Gravel
215	220	Red rock
220	225	Sand & Gravel
225	235	Sand
235	241	Sand, soft
241	249	Red rock & Blue Shale
249	255	Broken lime
255	265	Lime, hard, brown
265	333	Broken lime, medium, grey
333	335	Sand-water
335	349	Sand
349	355	Broken lime
355	375	Sandy lime, brown
375	424	Sandy lime, brown
424	435	Grey lime
435	647	Sand, grey
647	680	Sand, brown
680	691	Sand, red
691	698	Shale, red
698	703	Sand, red
703	712	Sand, red
712	727	Shale, red
727	745	Anhydrite
745	749	Shale, blue
749	752	Red rock
752	755	Anhydrite
755	765	Red rock
765	775	Anhydrite
775	779	Shale & Gyp. red
779	790	Anhydrite
790	801	Anhydrite & Red rock
801	806	Red rock
806	814	Anhydrite
814	823	Red rock, soft
823	845	Anhydrite & salt, white
845	878	Salt
878	887	Shale, red
887	940	Salt
940	986	Anhydrite & salt, white

chinle

Glorieta

San Andres - 15
Abo

San Andres
Glorieta Granite
Supai

Tops:
Chinle - surface
San Andres - 247
Glorieta - 424
Yeso - 647
Abo - 1975?
Quartzite or granite - 2350
TD - 2637

5741
424
+ 5317

No permit

Page 2.

986	1019	Salt
1019	1025	Anhydrite
1025	1041	Lime, brown
1041	1055	Shale, blue
1055	1064	Lime, brown
1064	1068	Shale, red
1068	1080	Lime, brown
1080	1095	Lime
1095	1125	Shale, red
1125	1150	Salt, soft, white
1150	1170	Sandy shale, red
1170	1271	Salt, soft, white
1271	1286	Anhudrite, medium, brown
1286	1295	Red rock, soft
1295	1310	Salt
1310	1320	Shale, red
1320	1330	Blue shale & Red rock
1330	1360	Lime, medium, grey
1360	1388	Shale, blue, soft
1388	1398	Sand, red, soft
1398	1430	Shale, sandy, red
1430	1480	Sandy red rock
1480	1493	Broken anhydrite & Red rock
1493	1525	Shale, soft, red
1525	1580	Sandy shale, red
1580	1618	Sandy red rock
1618	1630	Red rock, salt, anhydrite
1630	1643	Broken anyhdrite, medium
1643	1705	Sandy lime, soft, brown
1705	1720	Sandy shale, red
1720	1732	Red rock
1732	1826	Shale, soft, red
1826	1837	Sand, soft, red
1837	1854	Shale, red
1854	1860	Lime
1860	1869	Shale, red
1869	1889	Sandy shale, red
1889	1944	Shale, red
1944	1950	Sand, red
1950	2305	Shale, red
2305	2320	Sandy shale, red
2320	2325	Sand, grey
2325	2339	Sand, hard, grey, sharp
2339	2346	Red sand, hard
2346	2354	Sand, hard, grey, sharp
2354	2363	Sand, hard, red
2363	2390	Sand, hard, grey
2390	2400	Sandy, shale, grey
2400	2542	Sand, hard, grey
2542	2627	Quartzite
2627	2632	Sand, hard, gray
2632	2637 T. D.	Quartzite

Sugar

SS Probable

3

No permit

RECEIVED
STATE LAND DEPT.
OF ARIZONA

WELL LOG

ARGO OIL CORPORATION,
1406 Fort Worth National Bank Bldg.,
Fort Worth 2, Texas.

ARGO-STATE NO. 1
Located 660 feet S. of North line and 660 feet
W. of East line of Section 22, Township 15N, Range 29E,
Apache County, Arizona.

Drilling commenced: June 24, 1943
Drilling completed:

From	To	Formation
0	12	Surface clay (Cellar)
12	86	Sandy red shale, soft
86	100	Grey shale, soft
100	112	Sandy Lime Shells, medium, grey
112	122	Sandy shale, soft
122	125	Sand & Gravel, soft, brown
125	142	Shale, soft, & red
142	150	Shale, soft, brown
150	155	Gravel-water
155	180	Gray shale, soft
180	210	Sand & Gravel
210	215	Sandy red rock - Gravel
215	220	Red rock
220	225	Sand & Gravel
225	235	Sand
235	241	Sand, soft
241	249	Red rock & Blue Shale
249	255	Broken lime
255	265	Lime, hard, brown
265	333	Broken lime, medium, grey
333	335	Sand-water
335	349	Sand
349	355	Broken lime
355	375	Sandy lime, brown
375	424	Sandy lime, brown
424	435	Grey lime
435	647	Sand, grey
647	680	Sand, brown
680	691	Sand, red
691	698	Shale, red
698	703	Sand, red
703	712	Sand, red
712	727	Shale, red
727	745	Anhydrite
745	749	Shale, blue
749	752	Red rock
752	755	Anhydrite
755	765	Red rock
765	775	Anhydrite
775	779	Shale & Gyp, red
779	790	Anhydrite
790	801	Anhydrite & Red rock
801	806	Red rock
806	814	Anhydrite
814	823	Red rock, soft
823	845	Anhydrite & Salt, white
845	878	Salt
878	887	Shale, red
887	940	Salt
940	986	Anhydrite & salt, white
986	1019	Salt
1019	1025	Anhydrite
1025	1041	Lime, brown
1041	1055	Shale, blue
1055	1064	Lime, brown

No permit

From	To	Formation
1064	1068	Shale, red
1068	1080	Lime, brown
1080	1095	Lime
1095	1125	Shale, red
1125	1150	Salt, soft, white
1150	1170	Sandy shale, red
1170	1271	Salt, soft, white
1271	1286	Anhydrite, medium, brown
1286	1295	Red rock, soft
1295	1310	Salt
1310	1320	Shale, red
1320	1330	Blue shale & Red rock
1330	1360	Lime, medium, grey
1360	1388	Shale, blue, soft
1388	1398	Sand, red, soft
1398	1430	Shale, sandy, red
1430	1480	Sandy red rock
1480	1493	Broken anhydrite & Red rock
1493	1525	Shale, soft, red
1525	1580	Sandy shale, red
1580	1618	Sandy red rock
1618	1630	Red rock, salt, anhydrite
1630	1643	Broken anhydrite, medium
1643	1705	Sandy lime, soft, brown
1705	1720	Sandy shale, red
1720	1732	Red rock
1732	1826	Shale, soft, red
1826	1837	Sand, soft, red
1837	1854	Shale, red
1854	1860	Lime
1860	1869	Shale, red
1869	1889	Sandy shale, red
1889	1944	Shale, red
1944	1950	Sand, red
1950	2305	Shale, red
2305	2320	Sandy shale, red
2320	2325	Sand, grey
2325	2339	Sand, hard, grey, sharp
2339	2346	Red sand, hard
2346	2354	Sand, hard, grey, sharp
2354	2363	Sand, hard, red
2363	2390	Sand, hard, grey
2390	2400	Sandy shale, grey
2400	2542	Sand, hard, grey

10

No permit

(Supplement to log previously furnished)

ARGO OIL CORPORATION
Argo-State No. 1

From	To	Formation
2542	2627	Quartzite
2627	2632	Sand, hard, gray
2632	2637 T. D.	Quartzite

RECEIVED
STATE OF ARIZONA

Unpermit

Dup to file 207

WELL LOG

ARGO OIL CORPORATION,
1406 Fort Worth National Bank Bldg.,
Fort Worth 2, Texas.

ARGO-STATE NO. 1
Located 660 feet S. of North line and 660 feet
W. of East line of Section 22, Township 15 N., Range 29 E,
Apache County, Arizona.

Drilling commenced: June 24, 1943
Drilling completed:

From	To	Formation
0	12	Surface clay (Cellar)
12	86	Sandy red shale, soft
86	100	Grey shale, soft
100	112	Sandy Lime Shells, medium, gray
112	122	Sandy shale, soft
122	125	Sand & Gravel, soft, brown
125	142	Shale, soft, red
142	150	Shale, soft, brown
150	155	Gravel-water
155	180	Gray shale, soft
180	210	Sand & Gravel
210	215	Sandy red rock - Gravel
215	220	Red rock
220	225	Sand & Gravel
225	235	Sand
235	241	Sand, soft
241	249	Red rock & Blue Shale
249	255	Broken lime
255	265	Lime, hard, brown
265	333	Broken Lime, medium, grey
333	335	Sand-water
335	349	Sand
349	355	Broken lime
355	375	Sandy lime, brown
375	424	Sandy lime, brown
424	435	Grey lime
435	647	Sand, grey
647	680	Sand, brown
680	691	Sand, red
691	698	Shale, red
698	703	Sand, red
703	712	Sand, red
712	727	Shale, red
727	745	Anhydrite
745	749	Shale, blue
749	752	Red rock
752	755	Anhydrite
755	765	Red rock
765	775	Anhydrite
775	779	Shale & Gyp, red
779	790	Anhydrite
790	801	Anhydrite & Red rock
801	806	Red rock
806	814	Anhydrite
814	823	Red rock, soft
823	845	Anhydrite & Salt, white
845	873	Salt
873	887	Shale, red
887	940	Salt
940	986	Anhydrite & salt, white
986	1019	Salt
1019	1025	Anhydrite
1025	1041	Lime, brown

No permit

From	To	Formation
1041	1055	Shale, blue
1055	1064	Lime, brown
1064	1068	Shale, red
1068	1080	Lime, brown
1080	1095	Lime
1095	1125	Shale, red
1125	1150	Salt, soft, white
1150	1170	Sandy shale, red
1170	1271	Salt, soft, white
1271	1286	Anhydrite, medium, brown
1286	1295	Red rock, soft
1295	1310	Salt
1310	1320	Shale, red
1320	1330	Blue shale & Red rock
1330	1360	Lime, medium, grey
1360	1388	Shale, blue, soft
1388	1398	Sand, red, soft
1398	1430	Shale, sandy, red
1430	1480	Sandy red rock
1480	1493	Broken anhydrite & Red rock
1493	1525	Shale, soft, red
1525	1580	Sandy shale, red
1580	1618	Sandy red rock
1618	1630	Red rock, salt, anhydrite
1630	1643	Broken anhydrite, medium
1643	1705	Sandy lime, soft, brown
1705	1720	Sandy shale, red
1720	1732	Red rock
1732	1826	Shale, soft, red
1826	1837	Sand, soft, red
1837	1854	Shale, red
1854	1860	Lime
1860	1869	Shale, red
1869	1889	Sandy shale, red
1889	1944	Shale, red
1944	1950	Sand, red
1950	2305	Shale, red
2305	2320	Sandy shale, red
2320	2325	Sand, grey
2325	2339	Sand, hard, grey, sharp
2339	2346	Red sand, hard
2346	2354	Sand, hard, grey, sharp
2354	2363	Sand, hard, red
2363	2390	Sand, hard, grey
2390	2400	Sandy shale, grey
2400	2542	Sand, hard, grey

No permit

(Supplement to log previously furnished)

ARGO OIL CORPORATION
Argo-State No. 1

From	To	Formation
2542	2627	Quartzite
2627	2632	Sand, hard, gray
2632	2637 T. D.	Quartzite

Mo 8

FORM O. & G. 1
18

ARIZONA STATE LAND DEPARTMENT

Sundry Notices and Reports on Wells

Lease ~~or~~ ~~Permit~~ No. 41101

Notice of intention to drill	
Notice of intention to change plans	
Notice of date for test of water shut-off	
Report on result of test of water shut-off	
Notice of intention to re-drill or repair well	
Notice of intention to shoot	
Subsequent record of shooting	
Record of perforating casing	
Notice of intention to pull or otherwise alter casing	
Notice of intention to abandon well	
Subsequent report of abandonment	X
Supplementary well history	

(Indicate above by check mark nature of report, notice or other data)

March 30 19 44

Following is a (~~Notice of intention to do work~~) (Report of work done) on land under (~~permit~~) (lease) described as follows:

Well No. 1 — 22 (Section) — 15N (Township) — 29E (Range)

The well is located 660 feet (N) (S) of North line and 660 feet (E) (W) of East line of

Section 22-15N-29E

The elevation of the derrick floor above sea level is ..... feet

DETAILS OF PLAN OF WORK

(State names of an expected depth to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other proposed work.)

Filled hole w/ mud to 2200 feet. Pulled all 8 5/8" casing. Filled 10" hole w/ mud and put in 15 sacks cement at 1425'. Ripped pipe off at 1425' and pulled same. Filled 13" hole w/ mud to 1000'. Bridged and cemented w/ 20 sacks at 1000'. Mudded hole to 915' cemented w/ 20 sacks to 890'. Mudded hole to 810', bridged to 800', cemented w/ 20 sacks to 780'. Mudded hole to 680'. Pulled 13" casing. Put 16" flowing joint in 16" casing with 8" lead line into pond. Okeyed by ranch foreman as satisfactory.

Approved ..... Date

Arizona State Land Department

Company ARCO OIL CORPORATION

By R. C. Johnson

District Superintendent
Title

Address 1406 Fort Worth Natl. Bank Bldg., Fort Worth 2, Texas.

Address .....

NOTE:—Reports on this form to be submitted in triplicate to the Commissioner for approval.

Supplement to previous well log inclosed.

14

No permit

FORM O. & G. 1
18

ARIZONA STATE LAND DEPARTMENT

Sundry Notices and Reports on Wells

Lease ~~or Permit~~ No. 41101

Notice of intention to drill	
Notice of intention to change plans	
Notice of date for test of water shut-off	
Report on result of test of water shut-off	
Notice of intention to re-drill or repair well	
Notice of intention to shoot	
Subsequent record of shooting	
Record of perforating casing	
Notice of intention to pull or otherwise alter casing	
Notice of intention to abandon well	
Subsequent report of abandonment	X
Supplementary well history	

(Indicate above by check mark nature of report, notice or other data)

March 30 19 44

Following is a (~~Notice of intention to do work~~) on land under (~~permit~~) described as follows:
(Report of work done) (lease)

Well No. 1 22 (Section) 15N (Township) 29E (Range)

The well is located 660 feet (S) of North line and 660 feet (W) of East line of

Section 22-15N-29E

The elevation of the derrick floor above sea level is ..... feet

DETAILS OF PLAN OF WORK

(State names of an expected depth to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other proposed work.)

Filled hole w/ mud to 2200 feet. Pulled all 8 5/8" casing. Filled 10" hole w/ mud and put in 15 sacks cement at 1425'. Ripped pipe off at 1425' and pulled same. Filled 13" hole w/ mud to 1000'. Bridged and cemented w/ 20 sacks at 1000'. Mudded hole to 915' cemented w/ 20 sacks to 890'. Mudded hole to 810', bridged to 800', cemented w/ 20 sacks to 780'. Mudded hole to 680'. Pulled 13" casing. Put 16" flowing joint in 16" casing with 8" lead line into pond. Okeyed by ranch foreman as satisfactory.

Approved ..... Date

Company ARGO OIL CORPORATION

By [signature]

District Superintendent
Title

[signature]
Arizona State Land Department

Address 1406 Fort Worth Natl. Bank Bldg., Fort Worth 2, Texas.

Address .....

NOTE:—Reports on this form to be submitted in triplicate to the Commissioner for approval.

14 Supplement to previous well log inclosed.

No permit

FORM O. & G. 1
18

ARIZONA STATE LAND DEPARTMENT

Sundry Notices and Reports on Wells

Lease ~~or Permit~~ No. 41101

Notice of intention to drill	
Notice of intention to change plans	
Notice of date for test of water shut-off	
Report on result of test of water shut-off	
Notice of intention to re-drill or repair well	
Notice of intention to shoot	
Subsequent record of shooting	
Record of perforating casing	
Notice of intention to pull or otherwise alter casing	
Notice of intention to abandon well	X
Subsequent report of abandonment	
Supplementary well history	

(Indicate above by check mark nature of report, notice or other data)

RECEIVED
FEB 26 1944
STATE LAND DEPT.
OF ARIZONA

February 24 19 44

Following is a (Notice of intention to do work) on land under (~~permit~~) described as follows:
(~~Report of work done~~) (lease) #41101

Well No. 1 22 (Section) 15N (Township) 29E (Range)

The well is located 660 feet (N) (S) of North line and 660 feet (E) (W) of East line of

Section 22-15N-29E

The elevation of the derrick floor above sea level is El. from topo map 5360' feet

DETAILS OF PLAN OF WORK

(State names of an expected depth to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other proposed work.) Will fill hole with mud to bottom of 8 5/8" casing, which is landed at 2288'. Will pull 8 5/8" casing, then fill hole to 10¾" casing landed at 1660'. 10¾" casing probably will have to be ripped off at about 1600'. Will recover all 10¾" possible, then dump 15 sacks of cement over stub of casing left in hole. Will then fill hole with mud to 1000', which is above first salt water encountered. Will then dump cement and test for water shut off. When water shut off will fill with mud to 800' and put in another cement plug for safety. Will then pull 13" casing and conduct artesian water to drainage ditch, should you desire, otherwise will cement it off, and pull 16" OD casing. Then fill hole with mud, cementing marker in cellar and fill cellar.

Approved
Date

Arizona State Land Department

Address

Company ARGO OIL CORPORATION.

By

District Superintendent
Title

Address 1406 Fort Worth Natl. Bank Bldg., Fort Worth 2, Texas.

NOTE:—Reports on this form to be submitted in triplicate to the Commissioner for approval.

16
no permit

FORM O. & G. 3

ARIZONA
STATE LAND DEPARTMENT

Lease ~~or Permit~~ No. 41101

Lessee's Monthly Report of Operations

The following is a correct report of operations and production (including drilling and producing wells) for the month of February 1944

Agent's Address 1406 Ft. Worth Natl. Bank Bldg., Fort Worth 2, Texas

Telephone 2-2149

Company ARGO OIL CORPORATION,

Signed [signature]

Agent's Title District Superintendent

Section and ¼ of ¼	Township	Range	Days Produced	Barrels of Oil	Gravity	Cubic Feet of Gas (in Thousands)	Gallons of Gasoline	Barrels of Water (if None so State)	Remarks (if drilling, depth; if shutdown, cause; date and result of test for gasoline content of gas)
NE¼ NW¼									
Sec. 22	15N	29E	-	-	-	-	-	-	Preparing to abandon at 2637'

NOTE:—There were no runs or sales of oil; no runs or sales of gas; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE:—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in triplicate with the Commissioner by the 6th of the succeeding month, unless otherwise directed by the Commissioner.

Approved: [signature]
Date

ARGO OIL CORPORATION,
Company

By [signature]
District Superintendent.
1406 Fort Worth Natl. Bank Bldg.,
Fort Worth 2, Texas
Address

18

Permission to abandon this well is granted upon the condition that the proper plugging of the well below the first artisian water strata is carried out as proposed and suggested in your report, in order that the artisian flow of water may be available to the Seven V Cattle Company, providing they meet your terms for carrying out these operations.

[signature]
O. C. Williams.
State Land Commissioner.

15
No permit

FORM O. & G. 3

ARIZONA
STATE LAND DEPARTMENT

Lease ~~or Permit~~ No. 41101

Lessee's Monthly Report of Operations

The following is a correct report of operations and production (including drilling and producing wells) for the month of January 1944

Agent's Address 1406 Ft. Worth Natl. Bank Bldg.,
Fort Worth 2, Texas

Telephone 2-2149

Company ARGO OIL CORPORATION,

Signed [signature]

Agent's Title District Superintendent

Section and ¼ of ¼	Township	Range	Days Produced	Barrels of Oil	Gravity	Cubic Feet of Gas (in Thousands)	Gallons of Gasoline	Barrels of Water (if None so State)	Remarks (if drilling, depth; if shutdown, cause; date and result of test for gasoline content of gas)
NE¼ NE¼									
Sec. 22	15N	29E	-	-	-	-	-	-	Drilling at 2400'

NOTE:—There were no runs or sales of oil; no runs or sales of gas; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE:—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in triplicate with the Commissioner by the 6th of the succeeding month, unless otherwise directed by the Commissioner.

Approved: [signature]
Date

ARGO OIL CORPORATION,
Company

By [signature]
Title District Superintendent

1406 Ft. Worth Natl. Bank Bldg.,
Fort Worth 2, Texas
Address

no permit

FORM O. & G. 3

ARIZONA
STATE LAND DEPARTMENT

Lease ~~or Permit~~ No. 41101

Lessee's Monthly Report of Operations

The following is a correct report of operations and production (including drilling and producing wells) for the month of December 19 43

Agent's Address 1406 Ft. Worth Natl. Bank Bldg. Company ARGO OIL CORPORATION,
Fort Worth 2, Texas Signed [signature]
Telephone 2-2149 Agent's Title District Superintendent

Section and ¼ of ¼	Township	Range	Days Produced	Barrels of Oil	Gravity	Cubic Feet of Gas (in Thousands)	Gallons of Gasoline	Barrels of Water (if None so State)	Remarks (if drilling, depth; if shutdown, cause; date and result of test for gasoline content of gas)
NE¼ NE¼									
Sec. 22	15N	29E	-	-	-	-	-	-	Ran 8" pipe at 1960'.
									Drilling at 2130'.

NOTE:—There were no runs or sales of oil; no runs or sales of gas; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE:—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in triplicate with the Commissioner by the 6th of the succeeding month, unless otherwise directed by the Commissioner.

Approved: [signature]
Date

ARGO OIL CORPORATION,
Company
By [signature]
Title District Superintendent
1406 Ft. Worth Natl. Bank Bldg.,
Ft. Worth 2, Texas Address

No permit

FORM O. & G. 3

ARIZONA
STATE LAND DEPARTMENT

Lease ~~or~~ ~~Permit~~ No. 41101

Lessee's Monthly Report of Operations

The following is a correct report of operations and production (including drilling and producing wells) for the month of November 19 43

Agent's Address 1406 Ft. Worth Natl. Bank Bldg., Fort Worth 2, Texas

Telephone 2-4917 LD 236

Company ARGO OIL CORPORATION

Signed [signature]

Agent's Title District Superintendent

Section and ¼ of ¼	Township	Range	Days Produced	Barrels of Oil	Gravity	Cubic Feet of Gas (in Thousands)	Gallons of Gasoline	Barrels of Water (if None so State)	Remarks (if drilling, depth; if shutdown, cause; date and result of test for gasoline content of gas)
NE¼ NE¼									
Sec. 22	15N	29E	-	-	-	-	-	-	Sidetracking tools.
									Drilling at 1700'.

NOTE:—There were no runs or sales of oil; no runs or sales of gas; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE:—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in triplicate with the Commissioner by the 6th of the succeeding month, unless otherwise directed by the Commissioner.

Approved: O. C. Williams
Date

ARGO OIL CORPORATION
Company

By [signature]
Title District Superintendent

1406 Ft. Worth Natl. Bank Bldg.,
Fort Worth 2, Texas
Address

No permit

FORM O. & G. 3

ARIZONA
STATE LAND DEPARTMENT

Lease ~~or Permit~~ No. 41101

Lessee's Monthly Report of Operations

The following is a correct report of operations and production (including drilling and producing wells) for the month of October 1943

Agent's Address 1406 Ft. Worth Natl. Bank Bldg., Fort Worth 2, Texas

Telephone 2-4917 LD 236

Company ARGO OIL CORPORATION,

Signed R. J. Simon

Agent's Title District Superintendent

Section and ¼ of ¼	Township	Range	Days Produced	Barrels of Oil	Gravity	Cubic Feet of Gas (in Thousands)	Gallons of Gasoline	Barrels of Water (if None so State)	Remarks (if drilling, depth; if shutdown, cause; date and result of test for gasoline content of gas)
NE¼ NE¼ Sec. 22	15N	29E	-	-	-	-	-	-	TD 1840'. Fishing for tools.

NOTE:—There were no runs or sales of oil; no runs or sales of gas; ..... runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE:—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in triplicate with the Commissioner by the 6th of the succeeding month, unless otherwise directed by the Commissioner.

Approved: C. C. Williams
Date

ARGO OIL CORPORATION,
Company

By R. J. Simon
Title District Superintendent

1406 Ft. Worth Natl. Bank Bldg.,
Ft. Worth 2, Texas
Address

1-11

No permit

ARIZONA GEOLOGICAL SURVEY 416 W. CONGRESS, SUITE 100, TUCSON, AZ 85701

FAX

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500

Larry D. Fellows
Director and State Geologist

Date: 5-27-97

Number of pages including cover sheet: 7

To: George Scott Jr

Phone:

Fax phone: 505-622-6671

CC:

From: Steve Ranzi

Phone: (520) 770-3500

Fax phone: (520) 770-3505

REMARKS: ☐ Urgent ☑ For your review ☐ Reply ASAP ☐ Please comment

Completion rpt + well summary by Atso Oil Corp. = one of best I've seen for providing good info.

Apache County, Arizoo
Area Zuni River Dome
Operator: Argo Oil Corporation
Lease: State
Well No. 1
Section 22, Township 15N, Range 29E, Elevation 5741derrick floor, 5738 ground
Survey Gila and Salt River Meridian.
NE¼NE¼ Section 22.
Spud 6-24-43 T.D. 2637,TD, Crached 8-26-44
Tools No. 3 National Machine, Cairk engine, butane fuel
Contractor: C.A. (Stony) Martin
Production: Dry and abandoned; plugged back.
Pro. Gauge: To and kept as a flowing water well.
B R 247 B. Clocieta 515, (5226?)
T. San Andres 247 (5494) T. Yeso 515? B. Yeso (Coconino) 735, (5006)
B. San Andres 423 (5318) T. Salt (in Yeso) 822.
T. Clocieta 423 B. Yeso 1700 ? (4041?)--Top Abo?
T. Coconino 423 B. Aoo--Top P-E 2320 (3421)

Casing Record

Dia.	Depth, WT. etc.	Cem.
20	fan one 11'6" ft. to 23 ft.	Cem.
15½	241' @ Approx. 251 ft.	set
O.D. 13 3/8	767	set
" " 10 3/4	1660	Cem.
" " 8 5/8	2288	set

4-29 Location surveyed by R.K.DeFord, transit and tape.
6-24 Spudded. Cellar is 9ft. deep; 4 ft. soil underxxxlayed by sand redbed. Ran 2-" to 23' and cement all the way; also cem. bottom of xx cellar.
6-27 180: ½ barrel WPH @ 112; 3 barells WPH 150-155.
6-28 235: hole making 7 barrells 7 barrells WPH 180-87, 14 barrells WPH 225-35.
6-29 255; hole fill up @ 5 p.m. at 249 made 21 blr W in 1:10 for 10 min.
6-30 255: ran 15½" to approx 251.
7-2 375: elevation surveyed by RKD: horizontal control by transit & tape highway survey;vertical by planetable from USC&CS RM's Elevations above sea leavel. Well started flowing @ 1 AM from 335 well flowed est 300 bbl WPH,
7-3 375 connected well to flow into slush pit.
7-9 695--693 SD LM
7-13 767: waiting for 13 3/8" csg.
8-21 767: running 13 3/8 O.D. csy.
8-27 767: resumed drilling.
8-28 830: bailed hole dry.
8-29 1031-34: RPS aW; W case to about 200' from top of hole.
3-31 1092-1095 SdLM; ran 1093 ft. 10 3/4 fix OD Csy-landed @ 1095.
9-2 1150: bailed out water, hole dry. 1240: show air.
9-6 1643-65 W sw salty; 900' WH @ 8AM, water rose to within about 500 ft. from top of hole.
9-9 1840; preparing to underseam 10 3/4.
9-13 1840: 1325'9" at 10 3/4 in hole, fishing for UR logs.
9-19 1840: logs recovered; lost reaming tools, fishing for tools.
9-21 1840: pulled 10 3/4 tools.
9-22 1840: straight reaming 10" hole.
9-28 1840: SR'd to 1697, hung, fishing for tools.
10-1 1840: drilling 10" hole by reaming tools.
10-6 1840 " " " " " , lost bailer.
10-13 1840 failed to x fish out bailer, drilling up diver.

Zuni River Dome cont-------

11-1 1840: failed to fish out tools by drilling 10" hole by tools; lugging up 8" tools and drilling 8" hole by tools.
11-10 1840: Ran 32 foot whipstock (10 inch) & cem with 26 SW. Previously had dumped 25-10-12-----47 sax El Toro Cement in hole.
11-15 1840: drilling by whipstock with 10" tools.
11-16 1840 re-cemented whipstock with 40 sacks.
12-1 1840: drilling 12¼" hole by whipstock.
12-3 1840: Ran total of 1650 ft. 10 3/4" ~~[illegible]~~ casing ~~hk~~ in hole drilling hole below 1660.
12-5 1840: 10 3/4" set down @ 1660 drilling hole at 1711, wet hole.
12-8 1847: drilling red shale, wet hole.
12-17 ~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~ ~~1650-1707~~, W-broken Cement W 52 sax El Toro, stopped plug @ 1640.
12-19 1920: dried out cement 1650-1707 W broken Hallibeam hole, 100 sax El Toro stopped plug @ 1640.
12-23 1930: drilled out cement 1650-1707 W broke 10.
12-27 1929: 1915"8' of 8 5/8 casing in hole, put on 8" @1929.

1964

1-1 2135: crevice @ 2128, filled hole with rock 2135-2122 drilled hole.
1-9 Fishing for tools.
1-18 2281 Fishing for bailer.
1-19 2285: Fishing for tools.
1-22 2285: Undercutting.
1-25 2290: drilling 2282' 2" of 8 5/8" Csg/ 10"
1-29 bailing W tested 17 blrs. [illegible], 2288'6" of 8 5/8" 10 hole.
2-~~12~~ 2460 Lock fell in on tools. hung up 3 hours.
2-4 2493 Tools hung, fallen loose.
2-6 2529 Fishing for bit.
2-14 2529 Recovered bit.
2-15 2542 Hole bud (crevice?) ~~at~~ 2529-42, filled with rock.
2-16 2542 Drilled out and chucked with rock, tools way up.
2-~~1~~27 2542 Tools recovered.
2-18 2542 Filled hole with rock, fishing for ~~h~~ tools again.
2-20 2552 Drilling ahead.
2-26 2637 T.D. Tools hung up.
3-3 2651 Recovered tools, began pulling 8 5/8" cashing.

Log on the Zuni River D

0-12 Surface clay (cellar)
12-35 Sandy red shale
35-86 " " " soft
86-100 Gray shale soft
100-112 Gray sandy lime shale
½ blr WPH @ 112.
112-122 Sandy, soft shale
122-125 blown sand and gravel soft
125-142 Red shale, soft.
142-150 brown shale, soft
150-152 " "
152-155 sand 3 blr WPH
155-180 gray shale, soft
180-210 sand and gravel hole making.
7 brl. WPH 180-187
10 " " 202-210
210-215 Sandy
215-220 redrock
220-225 sand&gravel

225-235 sand
235-241 sand soft
~~235-24x~~
241-249 Red rock & blu shale @ 244 ft hole drill up, made 21 blr W/1 hr drill
249-255 broken lime
255-265 brown lime, hard
465-295 gray broken lime
295-333 " " " medium
333-335 sand,water:hole filled up in cellar
335-349 sand ~~xxxxxxxxxxxxxxxxxx~~
349-355 Brown lime
355-375 brown sd, lime, hole making
est. 300 bbl WPH
375-385 brown sdy lime
385-410 Sdy lime
410-424 brown sdy lime
424-435 gray lime
435-447 gray sand, Inc W 435-447
447-475 sand
475-540 clay sand inc W 528-540
540-557 Sand
557-647 gray sand
647-680 brown sand
680-691 red sand
691-698 red sale 695-693Sd LM
698-712 red sand
712-727 red shale
727-745 sandy drite
745-749 blue shale
749-756 red sock

752-755 Anhydrite
755-763 Red rock
763-775 ~~shalexxxgyp~~Anhydrite
775-779 shale & gyp
779-790 Anhydrite
790-801 Andydrite & redrock
801-806 red rock
806-814 ~~xxxxx~~ anhydrite
814-818 rd rock
818-823 soft redrock
823-845 anhydrite & salt, white
845-867 salt & potash
867-878 salt, and red shale
878-887 red shale
887-940 salt & potash
940-986 anhydrite & salt
986-995 salt
995-1019 salt & potash
1019-1025 anhydrite
1025-1041 brown lime ~~HKSaW~~ 1031-34,water ros to about 200 feet top hole.
1041-1055 blue shale
1055-1064 brown lime
1064-1068 red shale
106801080 brown lime
1080-1095 lime,1092,1095,SaLM
1095-1125 red shale
1125-1150 white soft salt
1150-1170 red sandy shale
1170-1255 salt &potash,show air 1240
1255-2171 soft white salt
1271-1286 brown anhydrite,medium hard
1286-1295 red rock
1295-1310 salt & potash
1310-1320 red shale
1320-1330 blue shale & red rock
1330-1360 gray lime medium hard
1360-1388 soft blue shale
1388-1398 soft red sand
1398-1430 red sandy shale
1430-1480 sandy red rock
1480-1493 broken anhydrite & red rock
1493-1525 soft red shale
1525-1580 red sandy shale
1580-1618 sandy red rock
1618-1630 red rock,salt & anhydrite
1630-1643 broken anhydrite, medium.
1643-1665 brown sandy lime W 1643-65 SW sa rose to 900' from top hole.

19

Cont.-Log on the Zuni River Dome:

1665-1680	Sandy lime
1680-1705	brown sandy lime
1705-1720	red sandy shale
1720-1732	red rock
1732-1752	soft redshale
1752-1722	red shale
1782-1790	soft red shale
1790-1823	red shale
1823-1826	soft red shale
1826-1837	soft red sand
1837-1854	red shale
1854-1860	lime
1860-1869	red shale
1869-1889	red sandy shale
1889-1944	red shale
1944-1950	red sand
1950-2305	red shale, service at 2128
2305-2320	red sandy shale
2320-2325	grey sand
23252339	hard grey sand, sharp
2339-2346	hard red & white sand
2346-2354	hard grey sand, sharp
2354-2365	hard red sand
2363-2373	hard grey sand
2373-2382	" " " sharp
2382-2389	" " "
2389-2400	grey sandy shale
2400-2408	hard grey sand, sharp
2408-2419	" " "
2419-2428	" " " "
2428-2445	" " "
2445-2455	" " " "
2455-2465	grey sand
2465-2470	hard grey sand, sharp
2470-2476	grey sand
2476-2485	hard grey sand
2485-2493	" " " sharp
2493-2501	" " "
2501-2504	" " " "
2504-2529	" " "
2529-2542	grey sand
2542-2637	hard grey quartzite
2637	Total depth.

30

Incomplete

Fort Worth Laboratories
Fort Worth, Texas
10-7-43

Sample of water received from- Argo Oil Corporation, Fort Worth, Texas
Marked: --- Coconino 335-650 Artesia-Argo State # 1 Arizona

Properties of Reaction per cent:	
Primary salinity	72.32
Secondary salinity	15.22
Primary alkalinity	none
Secondary alkalinity	12.46
Per cent rSO4 in rSO4 plus r Cl	23.91
Ratio rCo3 to SO4	0.60
Constituents in parts per million:	
Sodium	1081.1
Calcium	282.0
Magnesium	50.2
Iron and Aluminum oxides	5.0
Sulphate	654.3
Chloride	1540.0
Carbonate	244.8
Silica	15.0
Total	3872.4
Reacting values in per cent:	
Alkalies	
Sodium	36.16
Alkaline Earths	
Calcium	10.77
Magnesium	3.07
Strong Acids	
Sulphate (rSO4)	10.46
Chloride (rCl)	33.31
Weak Acids	
Carbonate (rCO3)	6.23

Hypothetically Combined as: Parts per Million Grains per U.S. Gal.

Calcium Carbonate	408.0	23.66
Calcium Sulphate	403.6	23.41
Magnesium Sulphate	248.2	14.40
Sodium Sulphate	253.8	14.72
Sodium Chloride	2538.3	147.25

Respectfully submitted,
THE FORT WORTH LABORATORIES

Laboratory No. C-32533

124-500-6-42

By R.H. Fash

22
Homewood

FortWorth Laboratories
P.O. Box 1379
Fort Worth, Texas
10-7-43

Consulting and Analytical Chemists
and Chemical Engineers.

Sample of Water received from:--------Argo Oil Corporation, Fort Worth, Texas
Marked:----------Water from 1035-65 mixed with 1600 level water 110 ft. Argo State # 1

Properties of Reaction per cent:	
Primary salinity	97.34
Secondary salinity	2.64
Primary alkalinity	None
Secondary alkalinity	0.02
Per cent rSO4 in rSO4 plus rCl	1.74
Ratio rCO3 to rSO4	0.01
Constituents in parts per million:	
Sodium	120316.0
Calcium	1435.1
Magnesium	835.2
Iron and aluminum oxides	92.0
Sulphate	4505.1
Chloride	187200.0
Carbonate	33.6
Silica	48.0
Total	314515.0
Reacting values in per cent:	
Alkalies	
Sodium	48.67
Alkaline Earths	
Calcium	0.69
Magnesium	0.64
Strong Acids	
Sulphate (rSO4)	0.87
Chloride (rCl)	49.12
Weak acids	
Carbonate (rCO3)	0.01

Hypothetically combined as: Parts per million-grains per U.S. Gal.

Calcium carbonate	56.0	3.25
Calcium Sulphate	4969.3	288.23
Magnesium Sulphate	1250.9	72.55
Magnesium Chloride	2281.5	132.33
Sodium Chloride	305817.1	17737.39

Respectfully submitted,
THE FORT WORTH LABORATORIES

By R.H. Fash

Laboratory No. C-32534
124-500-6-42

21

January 3, 1996

Memo: Alan Emmendorfer, Petroleum Consultant
From: SR Steve Rauzi, Arizona Geological Survey
Re: Argo Oil Company test

Pertinent information on the Argo test that we talked about is enclosed. This includes selected correspondence, drilling history, two water analyses, lithologic descriptions and tops by various geologists, and the sample log mentioned in Bannister's letter of September 1966.

September 16, 1966

Mr. Roy A. Sharp
3034 Perry Street
Denver, Colorado 80212

Re: Argo Oil Company #1 State well
NE NE 22-15N-29E, Apache County

Dear Roy:

In reply to your letter of September 14, 1966, please be advised that the only log we have on the captioned well is a sample log. I doubt that this log will reproduce satisfactorily. However, should you want us to try, we shall be glad to see what we can do with it.

In general, we have no satisfactory facilities in the state to reproduce logs and we are trying to arrange with Rocky Mountain Well Log Service Co., 1753 Champa Street, Denver, to get some service of this type. I don't know that they have a log on this well, however, you might ask them.

Very truly yours,

John Bannister
Executive Secretary
mr

Roy A. Sharp OIL OPERATOR. SPECIALIZING IN ARIZONA OPPORTUNITIES
OVER 45 YEARS MID CONT'NT & RKY MTN OIL ACTIVITIES.
3034 PERRY ST. DENVER, COLORADO 80212 PHO 477-2689
DRILLING DEALS BLOCK ASSEMBLIES

9-14-66

Mr. John Bannister
Exec. Sec.
Oil & Gas Conservation Com.
Rm 202, 1624 W. Adams
Phoenix

Dear John:

Can you please send me a good copy of the Argo well log in sec 22 15N 29E. Apache County, So I can have additional copies made here? Some how my copy has disappeared.

Thanks for everything, I am
Yours truly
Roy A. Sharp

RECEIVED
SEP 16 1966
STATE O & G
CONS. COMM.

TEL. 5-9832

908 CONTINENTAL BANK BLDG.
SALT LAKE CITY 1, UTAH

DORSEY HAGER
CONSULTING GEOLOGIST

August 18, 1953

Mr. Phillip W. Johnson, Geologist
State Land Department
Phoenix, Arizona

Dear Mr. Johnson:

In going over the wells in your list there is only one I found that I know about and that is the Argo Oil Co. State #1, Apache County, in which there were no showings reported. in your report

I was there and I distinctly saw a heavy, tarry oil between 900-1000 feet. There was also another showing between 1400-1500 feet. I saw the tar myself. Unless the oil was carried in, and I don't believe that to be the case, they certainly had some kind of showing.

That hole was not played up. I think you can check this through other sources.

Sincerely yours,

Dorsey Hager

Dorsey Hager

DH:pc

ARIZONA
STATE LAND DEPARTMENT

Noted by	To	By
Ans. by		Date

RECEIVED
AUG 20 1953
STATE LAND DEPT.

No permit

March 6, 1952

Mr. James M. Alcorn
Geological Department
Sun Oil Company
Post Office, Box 512
Roswell, New Mexico

Dear Mr. Alcorn:

We are in receipt of your letter of March 3rd concerning information on the Argo Oil Company State #1 Well, section 22, township 15 north, range 29 east.

We have made a thorough check of our files and find that there has been only one well drilled in the above mentioned location, namely the aforementioned well. We do find however, that at one time a second well had been contemplated but was never started.

At your request we are inclosing a copy of the Well Log along with two copies of our pamphlet entitled, "Exploratory Deep Wells of the State of Arizona." If we can be of any further service to you in the future, please feel free to call upon us.

Very truly yours,

James R. Burger,
Deputy State Land Commissioner

JRB:mb
Encl. (3)

No permit

GENERAL OFFICES: PHILADELPHIA, PA.

SUN OIL COMPANY

SOUTHWEST DIVISION

~~XXXXXXXXXXXXXXXXXXXXXXXX~~
~~XXXXXXXXXXXXXXXXXXXXXXXX~~

J. H. PRESSLEY
AGENT AND MANAGER
S. M. GLADNEY
AGENT AND ASSISTANT MANAGER

JNO. G. PEW
VICE PRESIDENT & DIRECTOR
PHILADELPHIA 3, PA.
JOHN A. RITTER
PRODUCTION SUPERINTENDENT
DALLAS 2, TEXAS

Post Office Box 512
Roswell, New Mexico

March 3, 1952

Mr. W. W. Lane
State Land Commissioner
State Land Department
Capitol Annex Building
Phoenix, Arizona

Dear Sir:

Our records designate a well drilled in Apache County, section 22, township 15 north, range 29 east, as the Argo Oil Company - State #1. Huddle and Dobrovolny in their U. S. G. S. Oil and Gas Investigations Preliminary Chart #10 (1945), indicate a well drilled in what I presume the same location as the Argo Oil Company - State #2. If there have been two tests drilled in the area of this section, I would appreciate your forwarding the pertinent details regarding both. I suspect that only one well is concerned and if so, please inform whether its correct designation is the "State #1" or "State #2".

In addition to the above, please forward two copies of the latest revision of the State Land Department's list showing "Exploratory Deep Wells of the State of Arizona".

I shall appreciate being put on your permanent mailing list for publications pertinent to the oil industry.

Thank you very kindly.

Very truly yours,

SUN OIL COMPANY

James M. Alcorn

James M. Alcorn
Geological Department

ARIZONA STATE LAND DEPARTMENT		
Noted by	To	Date
Ans. by		Date

JMA:tL

RECEIVED MAR 5 1952 STATE LAND DEPT.

No permit

ARGO OIL CORPORATION
FIRST NATIONAL BANK BUILDING
DENVER, COLORADO

RECEIVED
DEC 11 1944
STATE LAND DEPT.
OF ARIZONA

GILBERT J. MUELLER
VICE-PRESIDENT

December 7, 1944
"Remember Pearl Harbor"

A-2066: Arizona 41101
Apache County, Arizona

Messrs. Phil A. Cornell, H. J. Platt, and Earl Platt,
c/o H. J. Platt,
St. Johns, Arizona.

Gentlemen:

We are planning to release to the State of Arizona, before January 14, 1945, the next rental date, Oil and Gas Prospecting Initial Permit OP-41101, covering all or parts of Sections 8, 10, 12, 14, 16, 20, 22, 24, 28, and 36, T. 15 N., R. 29 E., G&SRM, Apache County, Arizona. During February, 1944, we completed State well No. 1 on the NE¼NE¼ Sec. 22, without obtaining commercial production.

It is possible, however, that you may prefer to have assignment made back to you so that you may continue the lease in force by the payment of rental. If you should wish an assignment please let us know at your early convenience. If we do not hear from you by January 1, 1945, we shall assume that you are satisfied to have us proceed with the release to the State.

Very truly yours,

Original signed
Gilbert J. Mueller

S
cc Fort Worth Office
State Land Commissioner, Phoenix, Arizona

No permit

April 25, 1944

Mr. R. J. Simon, District Superintendent
Argo Oil Corporation
1406 Fort Worth Natl. Bank Bldg.
Fort Worth, 2, Texas

Dear Mr. Simon:

We are returning to you, herewith, copies of reports of your company for the period ending February 24, 1944 and March 30, 1944, which have been approved.

Very truly yours,

STATE LAND DEPARTMENT

O. C. Williams
State Land Commissioner

bg

enc.

No permit

April 18, 1944

Mr. Burt E. Price
Colburn Hotel
Denver, Colorado

Dear Mr. Price:

Your letter of March 28 arrived at the office during my absence.

The Argo Oil Corporation sent in their remittance which was accepted and their leases are now in good standing.

I am happy to hear that you have recovered and will look forward to your next visit.

Sincerely yours,

O. C. Williams
State Land Commissioner

bg

No permit

The MIDWEST OIL COMPANY

FIRST NATIONAL BANK BUILDING

DENVER, COLO.

L.G. CROSIER
SECRETARY AND TREASURER

RECEIVED
MAR 30 1944
STATE LAND DEPT.
OF ARIZONA

March 28, 1944

Re: State of Arizona Leases
OP-41702
41703
41704
41705
41706
Apache County, Arizona

REGISTERED MAIL

State Land Department
State of Arizona
Phoenix, Arizona

Gentlemen:

We enclose herewith check, payable to your order, in the amount of $2,049.20, which amount is sent to you as rental in lieu of drilling and covering the privilege of deferring the commencement of a well for twelve months from March 18, 1944, under Oil and Gas Prospecting Initial Permits dated March 18, 1943, executed by State Land Department of Arizona to The Midwest Oil Company, covering:

OP-41702 -	$457.30
41703 -	443.40
41704 -	455.20
41705 -	184.00
41706 -	509.30
	$2,049.20

Will you kindly sign the receipt on the enclosed copy of this letter and return to me in the enclosed stamped envelope.

Yours very truly,

L G Crosier

Treasurer

C N
Enc

Phoenix, Arizona, March 31, 1944.

Received of The Midwest Oil Company $2,049.20 in payment of the above rentals.

STATE LAND DEPARTMENT OF ARIZONA

By Laura Weik
Cashier

No permit

ON CAPITOL HILL

The Colburn Hotel
Denver, Colorado

100 Outside Rooms and Suites with Private Baths
Dining Room and Garage in Connection

RECEIVED
MAR 30 1944
STATE LAND DEPT.
OF ARIZONA

EXECUTIVE OFFICE
L. M. BARTHEL, MANAGER

3/28.44

Dear O.P.

Argo Oil Corp. find they neglected a rental payment on the Butters structure and I suggested they send you a check and if consistent please accept same as I would like to see them retain this flat intact as there is a possibility of another well on this structure. Nothing definate but it is being considered.

I am well at last and hope to see you soon now.

Kind personal regards.

Sincerely
Burt B. Price.

No permit

CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

WESTERN UNION

1201 (03)

SYMBOLS
DL = Day Letter
NT = Overnight Telegram
LC = Deferred Cable
NLT = Cable Night Letter
Ship Radiogram

A. N. WILLIAMS, PRESIDENT
NEWCOMB CARLTON, CHAIRMAN OF THE BOARD
J. C. WILLEVER, FIRST VICE-PRESIDENT

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

RECEIVED
MAR 1 1944
STATE LAND DEPT.
ARIZONA

FNA114 DL=BJ FTWORTH TEX 1 331P

O C WILLIAMS=

STATE LAND COMMISSIONER PHNX=

OUR GEOLOGICAL DEPARTMENT OF OPINION THAT FURTHER DRILLING ON ZUNI RIVER WELL IS USELESS ACCORDINGLY WE ARE STARTING PLUGGING OPERATIONS. WILL FORWARD BY MAIL MORE DETAIL AS TO GEOLOGICAL REASONS FOR ABONDONMENT. COMPANY HAS UNDER CONSIDERATION POSSIBILITY OF DRILLING ANOTHER TEST ON ONE OF STRUCTURES TO SOUTH HOWEVER DEFINITE DECISION NOT YET MADE=

ARGO OIL CORP.

ZUNI: No permit

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

ARGO OIL CORPORATION
FORT WORTH NATIONAL BANK BUILDING
FORT WORTH, TEXAS.

R. I. SIMON
SUPERINTENDENT OF OPERATIONS
IN OKLAHOMA, TEXAS AND
NEW MEXICO

GENERAL OFFICE
FIRST NATIONAL BANK BUILDING
DENVER, COLORADO

Office 29149 H.W.D.
Name 7-2988

February 24, 1944

1051 Midland
R. K. Bedford

RECEIVED
FEB 26 1944
STATE LAND DEPT.
OF ARIZONA

A-2066,
Argo-State No. 1
Apache County, Arizona.

Mr. O. C. Williams, Land Commissioner,
Phoenix, Arizona.

Dear Mr. Williams:

I am inclosing herewith, in triplicate, Form 1, "Notice of Intention to Abandon Well", together with copies of the well log to a depth of 2542'. We have been drilling in what our Geological Department says is the pre-Cambrian formation since 2330', and which the drillers have logged as sand, not knowing what else to call it. At the present time they are able to make a few feet a day, and I have left instructions to proceed with what hole they can make until this application to abandon has been approved by you.

I have written on Form 1, which is inclosed, my idea of the proper way to abandon this well, in that there is no porous formation below 1650'. It should be perfectly satisfactory to fill this hole with mud to 1600', after removing both the 8 5/8" and 10¾" casing, then install a cement plug at approximately 1600' or any place between 1640' and 1100', which will segregate the water encountered at 1640' and at 1050'. Both of these stratas of water were salt water. Then, by putting in a cement plug above the 1050' water, it will stop any contact between the salt water and the fresh water above it. I propose to put in two cement plugs in this section, one immediately above the 1050' water, then, after testing to ascertain for sure that the hole is dry, I will fill up to immediately below the 13" pipe, which, as you know, has the Coconino water behind it. Then I will put in another cement plug for safety before removing the 13" casing. I presume you will want this water from the Coconino sand saved, and, of course, the State, as landowner, has the right to purchase what necessary material it will take to save the water. This will involve approximately 240' of 16" OD casing, at a price of $4.069 per foot, plus what wellhead fittings are necessary, which should be an additional $50.00. I have written Mr. Byrne, the attorney for the 7-V ranches, asking him for a commitment from the 7-V ranches as to whether or not they wish to pay this amount and keep the water for the ranch in the event the State does not care to exercise this option. Personally, I think the water should be saved. Although analysis shows it is not good for irrigation purposes, the 7-V cattle sure seem to thrive on it. In the event neither of you wish to exercise this option, of course I will cement this water off and abandon the hole in the regular manner.

No permit

I will appreciate hearing from you at your earliest convenience.

With kindest regards, I remain

Very truly yours,

R. Stinson

RIS:m.
Incs.

No permit

Flagstaff, Arizona
February 22, 1944

Mr. Burt E. Price
Colburn Hotel
Denver, Colorado

Dear Burt:

I understand that the Argo is down an additonal 300 feet. For your information, the following is quoted from the Oil and Gas Resources of New Mexico, by Dean E. Winchester:

> "Probably most if not all of the granite reported in wells in northeastern New Mexico is "Granite wash" or arkose, composed almost wholly of fragments of granite, which have been but little altered during erosion and deposition as a true sedimentary rock. Recent studies of outcropping formations, as well as cuttings from borings, have proved that beds of arkose exist in the Permian and Pennsylvanian sedimentary formations above as well as below beds of shale and limestone rich in organic material and associated sands, which should constitute good reservoir rocks for oil and gas which might originate in the shale and limestone. Deeper drilling, therefore, is warranted on many of the anticlinal folds in northeastern New Mexico. Until tested the deep formations below the arkose beds are prospective sources of commercial production of oil and gas."

I hope that you will keep me advised regarding the well, as I am very much interested in keeping up to date on its progress.

I also understand that they are quite optimistic about the showings in the Holbrook well.

With kindest regards, I remain

Yours very truly,

James E. Babbitt.

c

No permit

Atlas Oil Corporation
Fort Worth National Bank Bldg.
Fort Worth, Texas
December 7, 1943

Mr. Ronald K. DeFord
Box 1614
Midland, Texas

Dear Ron:

Every time I have seen you I have neglected to give you copies of the water analyses of our Zant River well, so I am enclosing them herewith.

The last dope on the well is that the pipe is set down at 1602' but the water did not shut off. Either we don't have an adequate seat, or we are not deep enough, or the water is channeling from the other hole. In any event, I think we can stop it without too much trouble, and will keep you posted.

With kindest regards, I remain,

Very truly yours,

RIS (R. I. Simson)

24
Chopermit

Argo Oil Corporation
Fort Worth National Bank Bldg.
Fort Worth, Texas
December 7, 1962

Mr. Ronald K. DeFord:
Box 1814
Midland, Texas

Dear Ron:

Every time I have seen you I have neglected to give you copies of the water analyses of our Zuni River well, so I am enclosing them herewith.

The last dope on the well is that the pipe is set down at 1662' but the water did not shut off. Either we don't have an adequate seat, or we are not deep enough, or the water is channeling from the other hole. In any event, I think we can whip it without too much trouble, and will keep you posted.

With kindest regards, I remain,

Very truly yours,

RIS (R. I. Sinson)

24
Chopermit