HISTORY OF OIL OR GAS WELL
NAVAJO "C" WELL NO. 1

Navajo "C" Well No. 1 was spudded on January 1, 1959 and on January 6, 1959, 16" casing was set at 361' with 400 sacks 8% gel cement followed by 100 sacks neat cement. After waiting on cement, casing and water shut off were tested with 600 pounds pressure for thirty minutes, which held with no drop in pressure. Reduced hole to 13-3/4" at 361' and resumed drilling operations.

10-3/4" casing was landed at 2300' with 1200 sacks 4% gel cement, followed by 100 sacks neat cement. After waiting on cement for 28 hours, casing and water shut off were tested with 1000 pounds pressure for thirty minutes, which held with no drop in pressure. Reduced hole to 9-7/8" at 2300' and resumed drilling operations.

Ran induction electric log, microlog and sonic log at 5550'. 7-5/8" casing was set at 5570' with 150 sacks neat cement. After waiting on cement, casing and water shut-off were tested with 1000 pounds pressure for thirty minutes, which held with no drop in pressure. Top cement by temperature survey 5000'. Reduced hole to 6-1/2" at 5570' and resumed drilling operations.

5" liner was set from 5377' to 7026' and cemented with 210 sacks cement. Re-cemented top of liner with 50 sacks cement, did not hold. Re-cemented top of liner with 50 sacks cement, squeese pressure 1800 psi. After waiting on cement 24 hours plugs were tested with 1250# psi with no drop in pressure. Completion operations were begun.

DST No. 1: 4760-4849 (Cutler) misrun, packer failure due to time element, DST No. 1 was eliminated.

DST No. 2: 5015-5095 (Cutler) tool open 1-1/4 hours. Weak blow, died after 35 minutes. Recovered 30' of drilling mud, no show of oil or gas. 30 minute initial shut in bottom hole pressure 70 pounds. Bottom hole final pressure 60 pounds. 30 minute final shut in bottom hole pressure 60 pounds, bottom hole temperature 140 degrees.

DST No. 3: 5937-6048 (Paradox) tool open 3 hours. Good blow air immediately, gas to surface 10 minutes, gauged 64 MCFPD. Recovered 330' gas cut mud with light rainbow oil. Initial 30 minute shut in bottom hole pressure 3310 pounds. Final bottom hole pressure 160-205 pounds. Final 30 minute shut in bottom hole pressure 1140 pounds. Hydrostatic in 3460 pounds and out 3445 pounds. Bottom hole temperature 165 degrees.

DST No. 4: 6110-6240 (Paradox) initial shut in pressure 45 minutes 3635 pounds. Tool open 3 hours, strong blow of air immediately. Gas to surface in 3 minutes. Gauged 209 MCFPD after 30 minutes. Gauged 149 MCFPD after 1-1/2 hours. Gauged 100 MCFPD after 3 hours. Initial shut in pressure 45 minutes 3180 pounds, initial flowing pressure 160 pounds, final flowing pressure 260 pounds. Recovered 782' of heavy gas with distillate cut mud, no water. Hydrostatic in 3720 pounds and out 3665 pounds. Temperature 170 degrees.

DST No. 5: 6230-6283 (Paradox) tool open 3 hours, gas to surface 6 minutes, too small to measure, recovered 90' gas cut mud. Initial 45 minute shut in pressure 2710 pounds, final pressure 70 - 90 pounds. Final 45 minute shut in pressure 410 pounds, hydrostatic in 3490 pounds, out 3480 pounds. Bottom hole temperature 172 degrees.

DST No. 6: 6284-6343 (Paradox) misrun, tool plugged.

DST No. 7: 6287-6347 (Paradox) tool open 3 hours, gas to surface 10 minutes, too small to measure. Recovered 95' gas cut mud and 2000' salt water. 45 minute initial shut in bottom hole pressure 3620 pounds, bottom hole final pressure 255 - 710 pounds, 45 minute final shut in bottom hole pressure 3435 pounds. Hydrostatic in 3785 pounds and out 3765 pounds. Bottom hole temperature 172 degrees.

DST No. 8: 6360-6435 (Paradox) tool open 3 hours. Good blow air immediately. Gas to surface 7 minutes, 209 MCFPD. Recovered 300' gas cut mud. Initial flowing pressure 195 pounds, final flowing pressure 205 pounds. 45 minute initial final shut in bottom hole pressure 3735 pounds. Hydrostatic in 4005 pounds and out 3990 pounds. Bottom hole temperature 172 degrees.

DST No. 9: 6435-6570 (Paradox) misrun. Tool plugged in 1-1/2 hours. Tool open 3 hours. Gas to surface 12 minutes, too small to measure. Gas weakened and died in 1-1/2 hours. 45 minute shut in pressure initial 2755 pounds, 45 minute shut in pressure final 3675 pounds, initial flowing pressure 1668 pounds, final flowing pressure 1935 pounds. Hydrostatic in 3895 pounds, out 3885 pounds. Recovered 120' gas cut mud.

DST No. 10: 6435-6570 (Paradox) tool open 3-1/2 hours. Good glow air immediately with gas to surface in 26 minutes, too small to measure. Recovered 280' gas cut mud. Initial flowing pressure 155 pounds, final flowing pressure 190 pounds, 1 hour shut in pressure final 3425 pounds. Hydrostatic in 4020 pounds, out 4000 pounds, bottom hole temperature 172 degrees.

DST No. 11: 6585-6670 (Paradox) initial 1 hour shut in bottom hole pressure 3760 pounds. Tool open 3 hours. Good blow air immediately with gas to surface in 10 minutes, too small to measure. Recovered 525' gas cut mud, and 60' salt water, gas cut mud and slight show green oil. Flowing bottom hole pressure 200-245 pounds, final 1 hour shut in bottom hole pressure 3535 pounds. Hydrostatic in 4050 pounds, out 3980 pounds. Bottom hole temperature 175 degrees.

DST No. 12: 6975-7026 (Mississippian) tool open 4 hours. Good blow of air at once. Gas to surface in 30 minutes, too small to measure. Recovered 1680' of free oil and 690' of oil and gas cut mud. No show of water. Initial flowing pressure 200 pounds, final flowing pressure 720 pounds, 1 hour shut in pressure 3940 pounds. Hydrostatic in 4295 pounds, and out 4265 pounds, maximum temperature 188 degrees.

[illegible]
No. 1

[illegible] 1949 [illegible] casing [illegible] sacks [illegible] cement followed by 100 sacks [illegible] cement [illegible] 600 pounds [illegible] cleaned hole to [illegible]

[illegible] cement, [illegible] ground water shut off [illegible] 1000 pounds [illegible] minutes, which held with no drop in pressure. [illegible] drilling operations.

[illegible] log to 5580'. 7-5/8" [illegible] in cement, casing [illegible] 1000 pound pressure for thirty minutes, which held [illegible] pressure [illegible] drilling operations.

5½ liner was set from 7771 to 7904' and cemented with 111 sacks cement. Re-cemented top of liner with [illegible] sacks cement, did not hold. Re-cemented top of liner with [illegible] steam cement, squeeze pressure 1450 psi. After waiting on cement 24 hours [illegible] tested [illegible] with no drop in pressure. Completion operations were begun.

[illegible] (Miller) [illegible] was drilled.
No. 2, [illegible] (Miller) [illegible] minutes. Recovered 701' [illegible] 30 minute initial shut in bottom hole pressure [illegible] 90 minute [illegible] in bottom hole pressure 65 pounds, bottom hole temperature 160 degrees.
No. 3, [illegible] (Paradox) [illegible] Good blow [illegible] Recovered 1950' gas cut [illegible] 60 minute shut in bottom hole pressure 2260 pounds. [illegible] 80 minute [illegible] bottom hole pressure [illegible] pounds. Bottom hole temperature [illegible] degrees.
[illegible] 45 minutes [illegible] 15 minute [illegible] pounds [illegible]
[illegible] 2470 pounds, initial [illegible] pounds [illegible] recovered [illegible] Hydrostatic [illegible] 1500 pounds. [illegible]
[illegible] 45 minute [illegible] pressure [illegible] pounds [illegible] 172 degrees.
[illegible]
[illegible] 10 minutes [illegible] 45 minute [illegible] pounds [illegible] 2675 pounds [illegible] degrees.
[illegible] Good blow [illegible] Recovered [illegible] initial [illegible] 45 minute initial [illegible] pounds [illegible] 2670 pounds [illegible]
[illegible] 45 minute [illegible] final [illegible] pounds [illegible] Recovered 150' gas cut mud.
[illegible] hours. Good [illegible] Recovered 150' [illegible] pressure 130 pounds [illegible] 4000 pounds [illegible]
[illegible] 10 minutes [illegible] Recovered 525' gas cut [illegible] salt water [illegible] pounds [illegible] 1480 pounds [illegible] degrees.
[illegible] Good blow [illegible] Recovered [illegible] shut in [illegible] pounds [illegible] Hydrostatic [illegible] bottom hole temperature 160 degrees.

Cores were taken on this well as follows: No. 1 6101-61 (Paradox), No. 2 6161-80 (Paradox), No. 3 6180-6240 (Paradox), No. 4 6240-63 (Paradox), No. 5 6263-6283 (Paradox), No. 6 6283-6343 (Paradox), No. 7 6343-6347 (Paradox), No. 8 6347-6369-1/2 (Paradox), No. 9 6369-1/2 - 6403 (Paradox), No. 10 6403-6415 (Paradox), No. 11 6510-6570 (Paradox), No. 12 6610-70 (Paradox), No. 13 6938-6966-1/2 (Molas), No. 14 6966-7026 (Mississippian).

Perforated Mississippian with four shots per foot 6981-6995. Acidized perforations 6981-6995 with 500 gallons 7-1/2% breakdown acid. Breakdown pressure 4600 psi, treating pressure 2600-1900 psi, average injection rate 1-1/2 barrels per minute. Well did not kick off. Swabbed 27 barrels load water, 12 barrels acid water and 11 barrels fluid in 12 hours. Re-acidized perforations 6981-6995 with 1500 gallons 15% acid. Maximum treating pressure 1750 psi, average treating pressure 1700 psi. Well flowed back 27 barrels load water and died. Swabbed 11-1/2 hours and recovered 139 barrels fluid, 36 barrels acid water, 34 barrels salt water and 69 barrels oil. Perforated Mississippian with four shots per foot 7008-7014 with Link jets. Displaced mud with water and set packer at 6953'. Swabbed 32 barrels oil with 75 barrels salt water in 22 hours. Pulled tubing and packer. Set bridge plug at 6910 capped with 10 foot of cement and tested with 1000 pounds which held ok. Perforated Paradox with four shots per foot 6366-6390. Spotted acid and set packer at 6330. Acidized perforations with 1500 gallons 15% regular Breakdown pressure 3100 psi, average treating pressure 1750 psi, average injection rate 2 barrels per minute. Opened well and kicked off and flowed 36 barrels acid water, 25 barrels load water, 208 barrels oil. Killed well and pulled tubing and packer. 2" tubing was set at 6364'. Displaced mud with oil and well came in. Shut in and released rig on April 21, 1959.

Completed as shut in Paradox discovery gas well April 21, 1959. Gas gauged 9000 MCFPD on 32/64" choke with tubing pressure flowing 1450 psi. Produced 125 barrels oil with 15 barrels salt water in 27-1/2 hours or at rate of 109 barrels oil per day with 13 barrels salt water per day. Gas-oil ratio 82,569. Distillate gravity 68.3 - 71.7 degrees API.