A' — 32 miles — 38 miles — 24 miles — 20 miles — 45 miles — 39 miles — A

API 43-015-10020
American Metal Climax Inc.
Black Dragon Government No. 1
Sec. 32, T. 21 S., R. 13 E.
Emery Co., Utah
Plugged and abandoned, May 13, 1961
Kelly Bushing 5,763 ft

API 43-019-10831
Pan American Petroleum Corp.
Salt Wash No. 1
Sec. 23, T. 29 S., R. 17 E.
Grand Co., Utah
Completed oil well, May 28, 1961
Kelly Bushing 4,394 ft

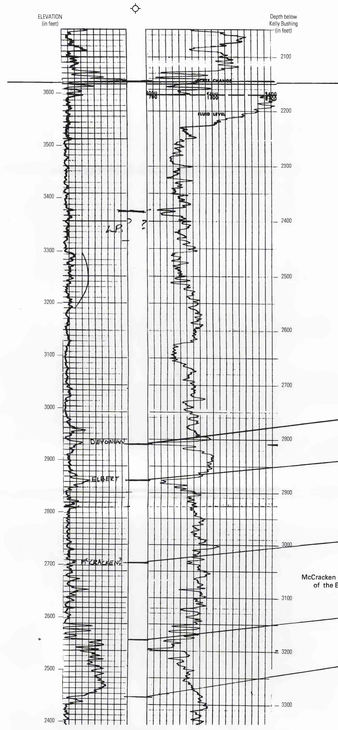
API 43-037-10849
Pan American Petroleum Corp
USA Lockhart No. 1
Sec. 23, T. 29 S., R. 24 E.
San Juan Co., Utah
Plugged and abandoned, September 8, 1961
Kelly Bushing 4,586 ft

API 43-037-16469
Pure Oil Co
Northwest Lisbon No. 1
Sec. 10, T. 30 S., R. 24 E.
San Juan Co., Utah
Completed oil well, January 4, 1960
Kelly Bushing 6,568 ft

API 05-113-05012
Enron Oil and Gas Co
Egnar Unit No. 1
Sec. 30, T. 44 N., R. 19 W.
San Miguel Co., Colo
Completed gas well, January 5, 1961
Kelly Bushing 6,898 ft

API 05-083-06176
Shell Oil Co
Federal 36-36-18 No. 1
Sec. 36, T. 36 N., R. 18 W.
Montezuma Co., Colo
Plugged and abandoned, April 17, 1977
Kelly Bushing 5,878 ft

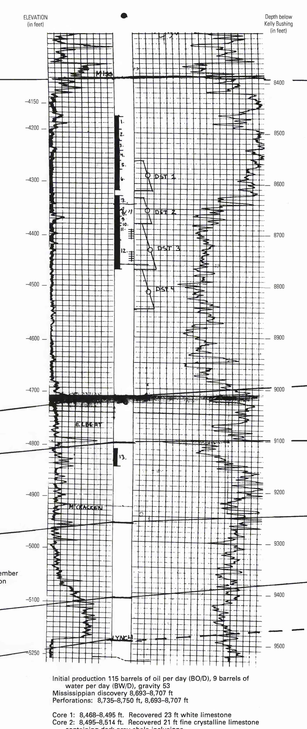
API 05-067-05544
General Operating Co.
Kiket No. 55-17
Sec. 17, T. 34 N., R. 11 W.
La Plata Co., Colo
Plugged and abandoned, April 13, 1959
Kelly Bushing 7,411 ft

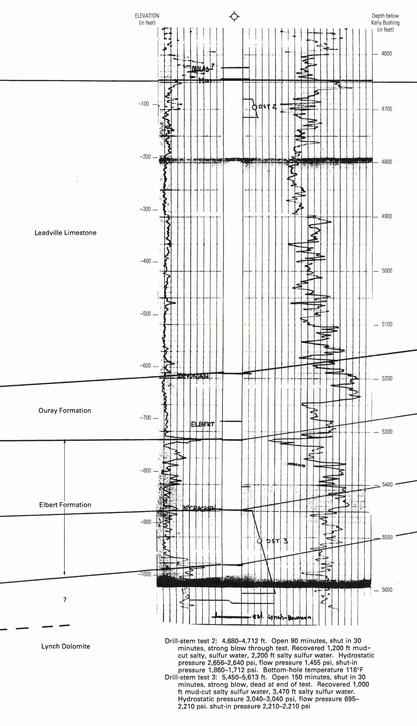


Initial production 115 barrels of oil per day (BO/D), 9 barrels of water per day (BW/D), gravity 53
Mississippian discovery 8,693–8,707 ft
Perforations: 8,736–8,750 ft, 8,693–8,707 ft

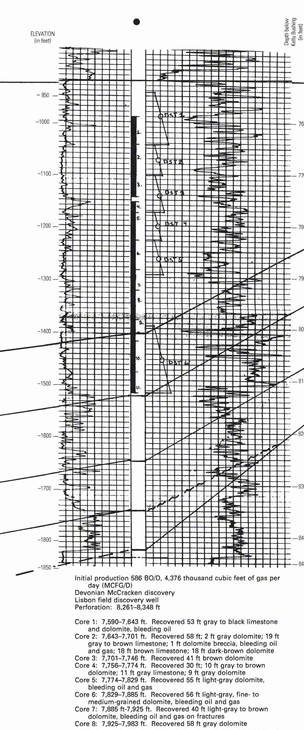
Core 1: 8,468–8,495 ft. Recovered 23 ft white limestone
Core 2: 8,495–8,514 ft. Recovered 21 ft fine crystalline limestone containing dark-gray shale inclusions
Core 3: 8,516–8,534 ft. Recovered 17 ft buff microcrystalline limestone containing chert inclusions
Core 4: 8,534–8,554 ft. Recovered 21 ft light-gray limestone
Core 5: 8,554–8,573 ft. Recovered 19 ft white to buff, coarse-grained to very fine grained limestone
Core 6: 8,573–8,613 ft. Recovered 22 ft white to buff, medium- to coarse-grained limestone
Core 7: 8,623–8,653 ft. Recovered 30 ft white to buff, medium- to coarse-grained limestone.
Core 8: 8,653–8,667 ft. Recovered 14 ft medium- to coarse-grained white dolomite, scattered porosity, hydrocarbon odor
Core 9: 8,667–8,679 ft. Recovered 12 ft medium-gray to white dolomite, good vuggy porosity, hydrocarbon odor, bleeding gas
Core 10: 8,679–8,683 ft. Recovered 4 ft tan to dark-gray dolomite, vuggy porosity, no shows
Core 11: 8,683–8,711 ft. Recovered 28 ft medium-gray to tan dolomite, good vuggy porosity, bleeding gas throughout
Core 12: 8,711–8,766 ft. Recovered 57 ft white to medium-gray, fine to medium-grained dolomite, good hydrocarbon odor, good to excellent porosity
Core 13: 9,121–9,153 ft. Recovered 32 ft: 14 ft tan dolomite; 4 ft green siltstone; 8 ft dolomite with sandstone and siltstone partings; 5 ft mottled green-red shale and sandstone; 1 ft white fine sandstone

Drill-stem test 1: 8,553–8,613 ft. Shut in 30 minutes, open 240 minutes. Initial flow open with gas to surface in 8 minutes recovered 468 ft highly gas cut mud, 330 ft highly gas and water cut mud, 60 ft highly gas cut salt water. Hydrostatic pressure 4,867–4,845 psi, flow pressure 65–360 psi
Drill-stem test 2: 8,629–8,679 ft. Open 95 minutes. Initial flow open with gas to surface in 6 minutes with strong blow immediate and throughout. Recovered 300 ft yellowish condensate, 60 ft condensate-cut slightly brackish water. Hydrostatic pressure 4,870 psi, flow pressure 1,095–1,626 psi, shut-in pressure 3,875 psi
Drill-stem test 3: 8,678–8,768 ft. Open 120 minutes. Initial flow open with weak blow throughout; final flow open with gas to surface in 29 minutes. Recovered 668 ft highly gas cut mud, 704 ft amber gas cut emulsion, 1,858 ft condensate, 610 ft salt water. Hydrostatic pressure 4,870 psi, flow pressure 840–1,585 psi, shut-in pressure 3,875 psi
Drill-stem test 4: 8,768–8,843 ft. Open 90 minutes. Initial flow open with fair to weak blow. Recovered 282 ft slightly water cut mud, 370 ft muddy salt water, 750 ft clear salt water. Hydrostatic pressure 4,075 psi, flow pressure 1,445–4,075 psi, shut-in pressure 4,075 psi





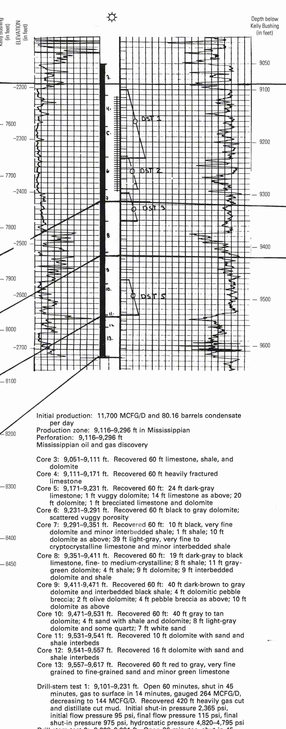
Drill-stem test 2: 4,680–4,712 ft. Open 90 minutes, shut in 30 minutes, strong blow through test. Recovered 1,200 ft mud-cut salty, sulfur water, 2,200 ft salty sulfur water. Hydrostatic pressure 2,656–2,640 psi, flow pressure 1,455 psi, shut-in pressure 1,865–1,712 psi. Bottom-hole temperature 116°F
Drill-stem test 3: 5,460–5,613 ft. Open 150 minutes, shut in 30 minutes, strong blow, dead at end of test. Recovered 1,000 ft mud-cut salty sulfur water, 3,470 ft salty sulfur water. Hydrostatic pressure 3,040–3,040 psi, flow pressure 695–2,210 psi. shut-in pressure 2,210–2,210 psi



Initial production 686 BO/D, 4,376 thousand cubic feet of gas per day (MCF/D)
Devonian McCracken discovery
Lisbon field discovery well
Perforation: 8,261–8,348 ft

Core 1: 7,590–7,643 ft. Recovered 53 ft gray to black limestone and dolomite, bleeding oil
Core 2: 7,643–7,701 ft. Recovered 58 ft; 2 ft gray dolomite; 19 ft gray to brown limestone; 1 ft dolomite breccia, bleeding oil and gas; 18 ft brown limestone; 18 ft dark-brown dolomite
Core 3: 7,701–7,746 ft. Recovered 41 ft brown dolomite
Core 4: 7,756–7,774 ft. Recovered 30 ft; 10 ft gray to brown dolomite; 11 ft gray limestone; 9 ft gray dolomite
Core 5: 7,774–7,829 ft. Recovered 55 ft light-gray dolomite, bleeding oil and gas
Core 6: 7,829–7,885 ft. Recovered 56 ft light-gray, fine- to medium-grained dolomite, bleeding oil and gas
Core 7: 7,885 ft-7,925 ft. Recovered 40 ft light-gray to brown dolomite, bleeding oil and gas on fractures
Core 8: 7,925–7,983 ft. Recovered 58 ft gray dolomite
Core 9: 7,983–8,027 ft. Recovered 44 ft; 15 ft gray dolomite; 2 ft green shale; 1 ft gray limestone; 5 ft green shale; 21 ft gray limestone, fractures, bleeding gas
Core 10: 8,027–8,085 ft. Recovered 58 ft: 6 ft gray limestone, 5 ft brown dolomite, 14 ft gray limestone, 1 ft dolomite, 3 ft limestone as above, 1 ft dolomite, 28 ft gray limestone
Core 11: 8,085–8,126 ft. Recovered 41 ft gray to brown limestone and dolomite with interbeds of green shale
Cores 12–17: In Devonian and older rocks

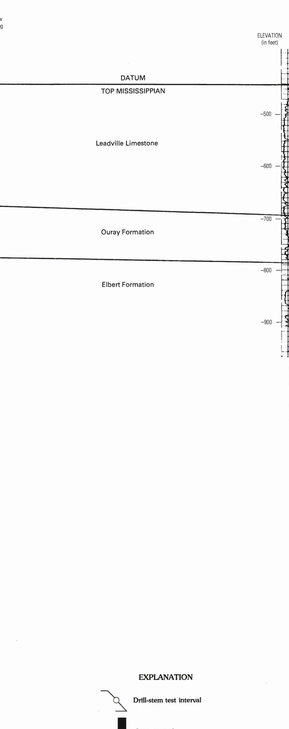
Drill-stem test 1: 7,543–7,643 ft. Open 30 minutes, shut in 72 minutes, gas to surface in 1 minute; distillate to surface in 5 minutes. Gauged 3,300 MCFG/D after 5 minutes. Recovered 120 ft black sulfurous gas cut distillate. Flow pressure 1,360–1,473 psi, shut-in pressure 2,680–2,710 psi, hydrostatic pressure 4,200–4,155 psi
Drill-stem test 2: 7,643–7,701 ft. Open 45 minutes, shut in 60 minutes, gas to surface in 1 minute. At 5 minutes gas flow 7,000 MCFG/D. Flow pressure 1,825–1,840 psi, shut-in pressure 2,790–2,770 psi, hydrostatic pressure 4,210–4,160 psi
Drill-stem test 3: 7,701–7,774 ft. Open 30 minutes, shut in 60 minutes, gas to surface in 2 minutes. Gauged 7,176 MCFG/D. Flow pressure 2,180–2,304 psi, shut-in pressure 2,850–2,770 psi, flow line pressure 190 psi
Drill-stem test 4: 7,774–7,829 ft. Gas to surface in 2 minutes, estimated 1,000 MCFG/D. Flow pressure 300–345 psi, shut-in pressure 2,760–2,730 psi, hydrostatic pressure 4,180 psi
Drill-stem test 5: 7,829–7,895 ft. Open 45 minutes, shut in 60 minutes, gas to surface immediately estimated 10,000 MCFG/D. Recovered 120 ft distillate. Flow pressure 2,300 psi, shut-in pressure 2,740–2,800 psi
Drill-stem test 6: 7,996–8,126 ft. Open 120 minutes, shut in 30 minutes, gas to surface in 9 minutes, gauged 300 MCFG/D. Recovered 220 ft highly gas cut mud. Flow pressure 100 psi, shut-in pressure 2,460–2,190 psi, hydrostatic pressure 4,390–4,370 psi
Drill-stem test 7 and 8: In Devonian and older rocks



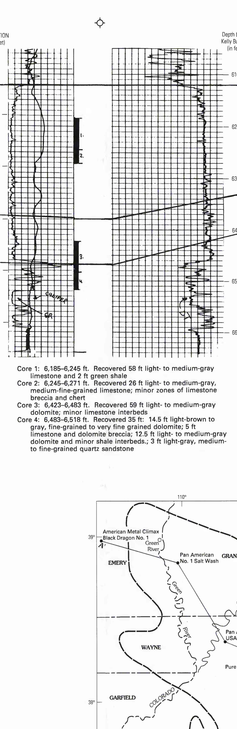
Initial production: 11,700 MCFG/D and 80.16 barrels condensate per day
Production zone: 9,116–9,296 ft in Mississippian
Perforation: 9,116–9,296 ft
Mississippian oil and gas discovery

Core 3: 9,051–9,111 ft. Recovered 60 ft limestone, shale, and dolomite
Core 4: 9,111–9,171 ft. Recovered 60 ft heavily fractured limestone
Core 5: 9,171–9,231 ft. Recovered 60 ft: 24 ft dark-gray limestone; 1 ft vuggy dolomite; 14 ft limestone as above; 20 ft dolomite; 1 ft brecciated limestone and dolomite
Core 6: 9,231–9,291 ft. Recovered 60 ft black to gray dolomite; scattered vuggy porosity
Core 7: 9,291–9,351 ft. Recovered 60 ft: 10 ft black, very fine dolomite and minor interbedded shale; 1 ft shale; 10 ft dolomite as above; 39 ft light-gray, very fine to crystocrystalline limestone and minor interbedded shale
Core 8: 9,351–9,411 ft. Recovered 60 ft: 19 ft dark-gray to black limestone, fine- to medium-crystalline; 8 ft shale; 11 ft gray-green dolomite; 4 ft shale; 9 ft dolomite; 9 ft interbedded dolomite and shale
Core 9: 9,411–9,471 ft. Recovered 60 ft: 40 ft dark-brown to gray dolomite and interbedded black shale; 4 ft dolomitic pebble breccia; 2 ft olive dolomite; 4 ft pebble breccia as above; 10 ft dolomite as above
Core 10: 9,471–9,531 ft. Recovered 60 ft: 40 ft gray to tan dolomite; 4 ft sand with shale and dolomite; 8 ft light-gray dolomite and some quartz; 7 ft white sand
Core 11: 9,531–9,541 ft. Recovered 10 ft dolomite with sand and shale interbeds
Core 12: 9,541–9,557 ft. Recovered 16 ft dolomite with sand and shale interbeds
Core 13: 9,557–9,617 ft. Recovered 60 ft red to gray, very fine grained to fine-grained sand and minor green limestone

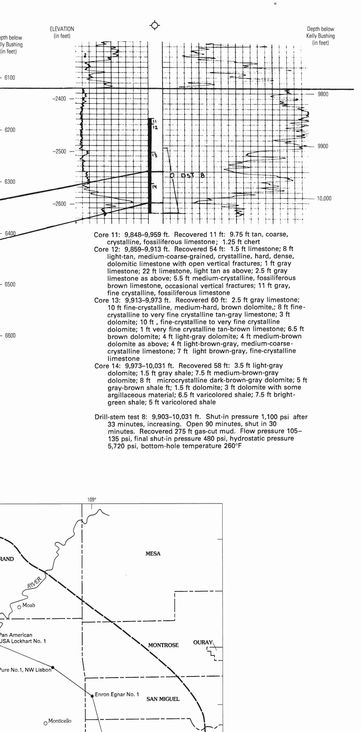
Drill-stem test 1: 9,101–9,231 ft. Open 60 minutes, shut in 45 minutes, gas to surface in 14 minutes, gauged 264 MCFG/D, decreasing to 144 MCFG/D. Recovered 420 ft heavily gas cut and distillate cut mud. Initial shut-in pressure 2,365 psi, initial flow pressure 95 psi, final flow pressure 115 psi, final shut-in pressure 975 psi, hydrostatic pressure 4,820–4,795 psi
Drill-stem test 2: 9,226–9,291 ft. Open 36 minutes, shut in 45 minutes, gas to surface in 3 minutes, gauged 5,548 MCFG/D, recovered 155 ft slightly mud cut distillate. Initial shut-in pressure 2,975 psi, initial flow pressure 1,250 psi, final flow pressure 1,858 psi, final shut-in pressure 2,995 psi, hydrostatic pressure 4,995–4915 psi
Drill-stem test 3: 9,299–9,351 ft. Open 60 minutes, shut in 30 minutes. Recovered 5 ft mud. Initial shut-in pressure 70 psi, initial flow pressure 35 psi, final flow pressure 35 psi, final shut-in pressure 35 psi, hydrostatic pressure 4,960–4,790 psi
Drill-stem test 4: Failed
Drill-stem test 5: 9,463–9,531 ft. Open 60 minutes, shut in 45 minutes. Recovered 300 ft slightly gas cut mud, 90 ft slightly salty water and gas cut mud. Initial shut-in pressure 3,022 psi, initial flow pressure 95 psi, final flow pressure 142 psi, final shut-in pressure 2,700 psi, hydrostatic pressure 5,030 psi.



DATUM
TOP MISSISSIPPIAN
Leadville Limestone
Ouray Formation
Elbert Formation



Core 1: 6,185–6,245 ft. Recovered 58 ft light- to medium-gray limestone and 2 ft green shale
Core 2: 6,245–6,271 ft. Recovered 26 ft light- to medium-gray, medium-fine-grained limestone; minor zones of limestone breccia and chert
Core 3: 6,423–6,483 ft. Recovered 59 ft light- to medium-gray dolomite; minor limestone interbeds
Core 4: 6,483–6,518 ft. Recovered 35 ft: 14.5 ft light-brown to gray, fine-grained to very fine grained dolomite; 5 ft limestone and dolomite breccia; 12.5 ft light- to medium-gray dolomite and minor shale interbeds.; 3 ft light-gray, medium- to fine-grained quartz sandstone



Core 11: 9,848–9,959 ft. Recovered 11 ft: 9.75 ft tan, coarse, crystalline, fossiliferous limestone; 1.25 ft chert
Core 12: 9,859–9,913 ft. Recovered 54 ft: 1.5 ft limestone; 8 ft light-tan, medium-coarse-grained, crystalline, hard, dense, dolomitic limestone with open vertical fractures; 1 ft gray limestone; 22 ft limestone, light tan as above; 2.5 ft gray limestone as above; 5.5 ft medium-crystalline, fossiliferous brown limestone, occasional vertical fractures; 11 ft gray, fine crystalline, fossiliferous limestone
Core 13: 9,913–9,973 ft. Recovered 60 ft: 2.5 ft gray limestone; 10 ft fine-crystalline, medium-hard, brown dolomite.; 8 ft fine-crystalline to very fine crystalline tan-gray limestone; 3 ft dolomite; 10 ft., fine crystalline to very fine crystalline dolomite; 1 ft very fine crystalline tan-brown limestone; 6.5 ft brown dolomite; 4 ft light-gray dolomite; 4 ft medium-brown dolomite as above; 4 ft light-brown-gray, medium-coarse-crystalline limestone; 7 ft light brown-gray, fine-crystalline limestone
Core 14: 9,973–10,031 ft. Recovered 58 ft: 3.5 ft light-gray dolomite; 1.5 ft gray shale; 7.5 ft medium-brown-gray dolomite; 8 ft microcrystalline dark-brown-gray dolomite; 5 ft gray-brown shale ft; 1.5 ft dolomite; 3 ft dolomite with some argillaceous material; 6.5 ft varicolored shale; 7.5 ft bright-green shale; 5 ft varicolored shale

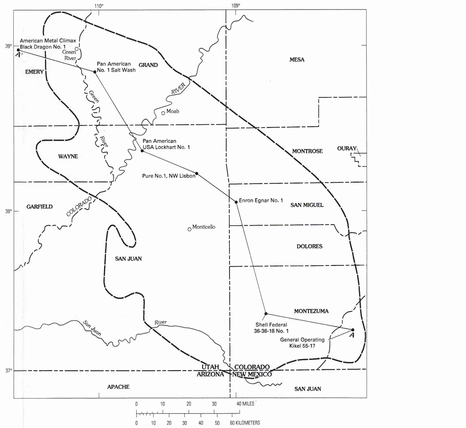
Drill-stem test 8: 9,903–10,031 ft. Shut-in pressure 1,100 psi after 33 minutes, increasing. Open 90 minutes, shut in 30 minutes. Recovered 275 ft gas-cut mud. Flow pressure 105–135 psi, final shut-in pressure 480 psi, hydrostatic pressure 5,720 psi, bottom-hole temperature 260°F

EXPLANATION

Drill-stem test interval

Core interval

Production perforation interval



LOCATION MAP

Electrical logs used to construct the sections were obtained at the Denver Earth Resources Library, Denver, Colorado. Depths below the surface are given in feet, alongside each log. There are markings on the logs that do not particularly pertain to this publication.

CROSS SECTION *A*–*A*′ SHOWING THICKENING OF THE LEADVILLE LIMESTONE IN A NORTHWESTERLY DIRECTION ACROSS THE PARADOX BASIN, COLORADO AND UTAH

By
James A. Cappa
1995