

SUMMARY SHEET

ARCO - MOBIL FIGURE FOUR #4-1

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NAME: ARCO - MOBIL Figure 4 #4-1

LOCATION: 1,624' FSL and 2,387' FEL
Section 4, Township 4S, Range 99W
Rio Blanco County, Colorado

ELEVATION: 8,225' Ground. (Datum)

TOTAL DEPTH: 280'

TYPE OF HOLE: NX Core Hole.

CONTRACTOR: Materi Exploration Company

CASING RECORD: None

PLUGGING RECORD: One sack cement in surface hole.

DATE SPURRED: July 26, 1970

DATE COMPLETED: July 29, 1970

<u>FORMATION TOPS:</u>	<u>Cores</u>
Evacuation Creek	-
Parachute Creek	Surface
"A" Groove	148.4'
Mahogany Bed	161.2'
Mahogany Marker	183.3'
Mahogany Ledge	188.1'
"B" Groove (Brown ash bed)	248.2' 261'

LOGGING PACKAGE: None

ARCO - MOBIL, Figure 4 #4-1

Spud: July 26, 1970.

Drilled to 45' with air. Cored with air - first core only.

Core #1 - 45 - 52'9"

45 - 47.2' Marlstone, tan, gray tan, thinly laminated, banded. 45° fracture at top.

47.2 - 48.6' Marlstone, white to tan, badly weathered, ashy, thinly laminated with scattered 1/8" crystal casts.

48.6 - 50.8' Marlstone, brown - dark brown, thinly laminated, banded. Many 45° and 70° fractures. Core probably lost in this zone.

50.8 - 52.75' No recovery.

Core #2 - 52.75 - 61'

52.75 - 57.2' Marlstone, brown, dark brown, thinly laminated, banded. 1" weathered ash at 53.1', 2" gray ash at 53.8', 3" gray ash at 56.1', 1" brown ash at 56.9'.

57.2 - 60.47' Marlstone, tan brown, thinly laminated, banded. 6" badly weathered zone at 58.5'.

Core #3 - 61 - 81'

60.47 - 62.1' Marlstone, as above. 1/2" white ash at 61.1'.

62.1 - 63.3' Marlstone, brown, dark brown, thinly laminated, moderately rich.

63.3 - 64.8' Ash, brown with scattered dark brown marlstone stringers.

64.8 - 80.65' Marlstone, brown - dark brown, gray brown, thinly laminated, slightly banded, rather uniform. Scattered irregular lenticular tan ash lenses 67.3 - 67.7'. 1/2" brown ash at 68.1'. 1" white ash at 73.2'. 1/2" brown ash at 74.9', 1/2" brown ash at 79.5', brown ash at 79.8 - 80.1'.

Core #4 - 81 - 101'

80.65 - 82.1' Marlstone, as above.

Core #4 (Cont.)

82.1 - 83.8' Marlstone, brown - dark brown - brown black, thinly laminated, banded. Moderately rich.

83.8 - 86.1' Marlstone, brown - dark brown, thinly laminated, banded.

86.1 - 89.5' Marlstone, buff, tan - brown, thinly banded. Scattered vertical fracture 88.6 - 89.2'. 1" brown ash at 86.5'.

89.5 - 90.6' Marlstone, brown - dark brown, thinly laminated.

90.6 - 92.6' Marlstone, dark brown, contorted. Porous in lower 5" - may be collapse breccia. Moderately rich.

92.6 - 98' Marlstone, brown - dark brown, thinly laminated, 45° fracture at 95' and 96.9'.

98 - 99.2' Marlstone, gray - tan - brown, thinly laminated, banded. 2" brown ash at top.

Upper Wavy Bed

99.2 - 100.56' Ash, gray and brown with scattered marlstone beds up to $\frac{1}{2}$ " thick.

Core #5 - 101 - 115.25'

100.56 - 101.7' Ash, as above.

101.7 - 102.4' Marlstone, gray tan, gray brown, thinly laminated with irregular $\frac{1}{2}$ " brown ash bed at 102.2'.

102.4 - 105.9' Marlstone, tan - brown - dark brown, thinly laminated, slightly banded.

105.9 - 106.8' Marlstone, brown - dark brown, thinly laminated.

106.8 - 107.2' Cavity. Bit dropped 5".

107.2 - 110.5' Marlstone, brown - dark brown, thinly laminated.

Core #5 (Cont.)

110.5 - 111.5' Cavity, bit dropped 1'.

111.5 - 112.4' Breccia, brown - white, badly weathered with solution cavities and some recementation, very porous, drilled fast.

112.4 - 114.3' Marlstone, tan - brown - dark brown, thinly laminated, banded. Dip 10° +. Appears to be 2 - 5° dips throughout core except where noted.

114.3 - 115' Cavity.

115 - 115.25' Marlstone, brown - dark brown, thinly laminated.

Core #6 - 115 - 131'

115.25 - 118.9' Marlstone as above. Scattered irregular vertical fractures with some calcite filled tension fractures.

118.9 - 120.5' Marlstone, buff - tan - brown - dark brown, thinly laminated, banded.

120.5 - 124.3' Marlstone, brown - dark brown, thinly laminated, banded. Calcite filled. Tension fracture in last 5". Moderately rich 122.9 - 123.3'.

124.3 - 128.5' Marlstone, buff - tan - brown - dark brown, thinly laminated, banded. Scattered vertical calcite filled tension fractures.

128.5 - 131.12' Marlstone, tan - brown - dark brown thinly laminated, banded.

Core #7 - 131 - 151'

131.12 - 135.1' Marlstone, as above. 45° fracture at 133.4'.

135.1 - 136' Marlstone, dark brown - black, thinly laminated, banded, rich.

136 - 143.4' Marlstone, tan - brown - dark brown, thinly laminated, banded. Broken zone at 139'. 45° and vertical fracture at 140.1 - 140.5'. Scattered 45° and 90° calcite filled fractures.

Core #7 (Cont.)

- 143.4 - 144' Marlstone, black, thinly laminated, papery. Rich.
- 144 - 146.8' Marlstone, tan, gray brown - brown, thinly laminated, banded. Many calcite filled bedding planes and several vertical and 60° fractures filled with calcite. Occurs only in this well.
- 146.8 - 147.4' Marlstone, black, brown black, thinly laminated. Papery. Rich.
- 147.4 - 148.7' Marlstone, dark gray tan, tan, tan brown, thinly laminated, banded.

"A" Groove

- 148.4 - 151.24' Marlstone, buff, tan, gray tan, thinly laminated, ashy, highly banded.

Core #8 - 151 - 163'.

- 151.24 - 153.1' Marlstone, ashy, tan, thinly laminated, banded, dip flat. Some biscuity.
- 153.1 - 153.6' Collapse breccia and trace marlstone stringers. Recemented with calcite. Bottom inch vuggy! Dip 45° at base.
- 153.6 - 154.7' Marlstone, tan, brown - gray, ashy with 2" gray ash at base.
- 154.7 - 161.2' Sand, gray, very fine grain, slightly marly and very ashy, thin bedded. Dip 10° at top. 30° at 155.6'. 20° at 158'. 2" collapse breccia at 157.7' and 3" at 159.1'. Porous, slightly 10° dips at 159.4'. Scattered fractures throughout - mostly 45°.

Top of Mahogany

- 161.2 - 163.45' Marlstone, gray tan to brown at top, grading to tan - brown with some gray at base, thinly laminated, banded. Dip 2 - 5° - more nearly normal.

Core #9 - 163 - 181'

163.45 - 164.4'	Marlstone, as above with scattered biscuity zones and some porosity.
164.4 - 164.8'	Marlstone, dark gray brown to black, thinly laminated, banded. Rich.
164.8 - 169'	Marlstone, buff, tan, light gray, brown, thinly laminated, highly banded, scattered ash blebs. Many brown ash blebs and lenses 167.7 - 168.7'.
169 - 170.6'	Marlstone, dark gray - black, thinly laminated. Rich. 2" brown weathered ash at top and 3" brown ash at 169.9'. Scattered calcite beds up to 1/8" thick along bedding surfaces.
170.6 - 172.5'	Marlstone, dark gray tan - gray brown, thinly laminated, banded.
172.5 - 174'	Marlstone, dark gray tan to black, thinly laminated, banded, rich. Scattered wavy beds of brown ash. About 15% ash.
174 - 180.7'	Marlstone, gray tan - tan brown, thinly laminated, banded. Scattered calcite filled bedding planes and rare 45° calcite filled fractures.

Core #10 - 181 - 201'

180.70 - 180.90'	Marlstone, as above.
180.90 - 183.3'	Marlstone, gray, gray brown, thinly laminated, banded.

Mahogany Marker

183.3 - 183.9'	Ash, brown.
183.9 - 188.1'	Marlstone, gray, gray brown, gray tan, thinly laminated, banded.
188.1 - 189'	Marlstone, black, thinly laminated with several calcite streaks, parallel bedding. Rich.

Core #10 (Cont.)

189 - 193.2' Marlstone, gray tan, gray brown, tan brown, thinly laminated, banded, lean.

193.2 - 194.6' Marlstone, dark gray brown - black, rich, thinly laminated, banded.

194.6 - 195.1' Marlstone, buff, thinly laminated, lean.

195.1 - 200.89' Marlstone, gray brown to brown black to black, thinly laminated to banded. Rich. $\frac{1}{4}$ " brown ash at 197.4'. Dips mostly flat to 25° at base.

Core #11 - 201 - 221'

200.89 - 202.8' Marlstone, as above. Dips highly irregular to about 10° at base. Many small $\frac{1}{2}$ - 2" nahcolite crystal cavities, badly weathered and broken.

202.8 - 205.6' Marlstone, gray brown, thinly laminated, banded, moderately rich.

205.6 - 206.7' Marlstone, gray brown and brown black, thinly laminated, rich.

206.7 - 209.7' Marlstone, gray brown - dark brown, thinly laminated, banded, moderately rich.

209.7 - 211.8' Marlstone, gray brown - brown black, thinly laminated, banded, rich.

211.8 - 213.7' Marlstone, gray brown - dark brown, thinly laminated, moderately rich.

213.7 - 214.8' Marlstone, tan - gray tan, thinly laminated, ashy, porous.

214.8 - 215.6' Badly weathered breccia - probably fill of nahcolite cavity.

215.6 - 219.3' Marlstone, tan, thinly laminated, 2" rich band at 218.0' and .5'.

Core #11 (Cont.)

219.3 - 219.7' Marlstone and ash, Marlstone, brown black, thinly laminated, banded, rich and tan irregular bedded ash. 3/4" white, secondary, coarse crystalline calcite bed at base.

219.7 - 220.57' Marlstone, tan, thinly laminated.

Core #12 - 221' - 241'

220.57 - 221' Marlstone, as above.

221 - 221.8' Marlstone, brown, streaky lenticular bedding. Rich.

221.8 - 222.4' Marlstone, tan, thinly laminated.

222.4 - 224.7' Marlstone, brown - brown black, lenticular, streaky bedding. Rich.

224.7 - 227.6' Marlstone, brown - dark brown, thinly laminated, banded, moderately rich. Flat dips to 225.5' - 45° dips at 225.5' to 5° at base.

227.6 - 229.7' Marlstone, dark gray brown - dark brown, thinly laminated, banded. Rich. Some streaky lenticular bedding.

229.7 - 229.9' Calcite, white, coarse, weathered after nahcolite apparently!

229.9 - 234' Marlstone, buff, tan, thinly laminated, banded, some light gray. Many badly weathered 1/4 - 1/2" nahcolite cavities 231 - 231.3'.

234 - 234.7' Marlstone, gray brown to brown black, thinly laminated, banded. Moderately rich.

234.7 - 240.4' Marlstone, cream, buff - tan - brown and light gray, thinly laminated, banded. 3" dark gray ash at 239.1.

240.4 - 240.82' Marlstone, dark brown - brown black, thinly laminated, rich. Many calcite bands, parallel bedding. 3/8" dark gray ash at top.

Core #13 - 241 - 261'

240.82 - 241.1'	Marlstone, as above.
241.1 - 243.3'	Marlstone, buff, gray, tan - brown, thinly laminated, banded. Scattered lenticular gray ash beds.
243.3 - 244.3'	Marlstone, dark brown - brown, black, thinly laminated, banded. Rich.
244.3 - 245.3'	Marlstone, brown - dark brown, thinly laminated, banded.
245.3 - 247.6'	Marlstone, buff, tan - brown - dark brown, thinly laminated, banded, some gray laminae. Gray splochy area in mid portion of core.
247.6 - 248.2'	Marlstone, brown - dark brown, thinly laminated, banded, rich.
<u>"B" Groove</u>	
248.2 - 250.9'	Ash, gray, white, brown with scattered laminations of oil shale.
250.9 - 252.8'	Marlstone, brown - dark brown, thinly laminated, banded, moderately rich.
252.8 - 256.5'	Interbedded marlstone, tan - brown, thinly laminated and gray and tan ash. Vuggy with many white fine crystals lining vugs.
256.5 - 258'	Marlstone, brown - dark brown, thinly laminated, banded, mid part brecciated and recemented with calcite.
258 - 261.02'	Marlstone, buff - tan - gray - brown - dark brown, thinly laminated, highly banded. Scattered irregular patches of gray calcite.

Core #14 - 261 - 281'

261.02 - 263.8'	Marlstone, buff - tan - thinly laminated. 1.5" gray ash bed at 261.1', 3" dark gray ash at 262.7'.
<u>"B" Groove??</u>	
263.8 - 268.6'	Marlstone, ashy, dull, grainy with many porous ash beds. Scattered $\frac{1}{4}$ - $\frac{1}{2}$ " nahcolite crystal cavities in last foot.
268.6 - 272'	Marlstone, thinly laminated, gray and tan.
272 - 274.4'	Interbedded marlstone and ash. Marlstone, tan, massive to thinly laminated, and ash, porous and white; recrystallized, vuggy.
274.4 - 275.8'	Marlstone, brown - dark brown, dark gray brown, thinly laminated. Moderately rich.
275.8 - 277.5'	Marlstone, buff, tan - brown, thinly laminated with contorted zones. 3" trash filled nahcolite cavity at 276.1'. Core badly broken at 276.8 - 277.1'.
277.5 - 279'	Marlstone, buff tan - brown, thinly laminated with scattered rich streaks. 2 - $\frac{1}{2}$ " gray ash beds near base.
279 - 280.31'	Marlstone, buff - tan, thinly laminated, banded with 1" gray ash at base.
Total Depth:	281'

PROGNOSIS

ARCO - Mobil, Figure Four #4-1
Section 4, Township 4S, Range 99W
Rio Blanco County, Colorado

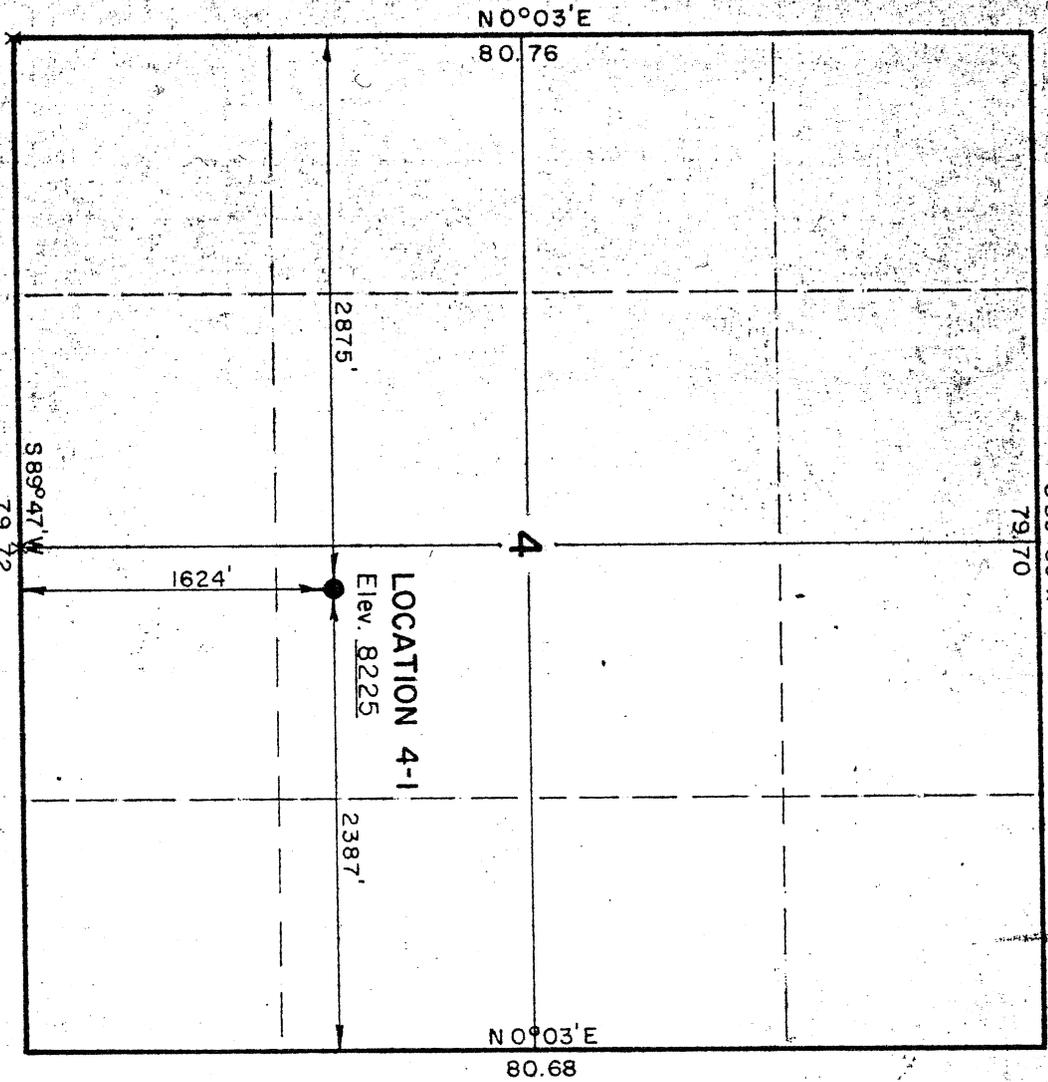
Location:	2,750' FWL and 1,000' FSL of Section	
Elevation:	8,300'	
Total Depth:	340'	
Geologic Tops:	Evacuation Creek	Surface
	Parachute Creek	10' <u>+</u>
	Mahogany Zone	225'
	Mahogany Marker	250' (+8,050')
	"B" Groove	335'
	Total Depth	340'

Coring Program: Continuous coring, 175' to total depth -
NX core.

F. R. Scheerer
February 20, 1970

T 4 S, R 99 W, 6th P.M.

PROJECT
ATLANTIC RICHFIELD CO.
 WELL LOCATION AS SHOWN IN SECTION 4
 T4S, R99W, 6th P.M. RIO BLANCO COUNTY,
 COLORADO.



X = Corners Located



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
 FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY
 SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
 BEST OF MY KNOWLEDGE AND BELIEF.

Deane Stewart

REGISTERED LAND SURVEYOR
 REGISTRATION NO 9186
 STATE OF COLORADO

UINTAH ENGINEERING & LAND SURVEYING
 P.O. BOX Q - 110 EAST - FIRST SOUTH
 VERNAL, UTAH - 84078

SCALE	1" = 1000'	DATE	16 June 1970
PARTY	GS-MS-RK	REFERENCES	GLO Township Plat
WEATHER	Fair & Warm	FILE	ATLANTIC RICHFIELD