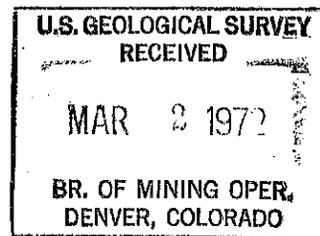


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SUMMARY SHEET

NAME: TOSCO, et al., TG-71-2

LOCATION: 252' FNL and 1054' FEL of
Section 17, Township 3 South, Range 96 West
Rio Blanco County, Colorado

ELEVATION: 6605' ground level

TOTAL DEPTH: 1158.5' - driller

TYPE OF HOLE: Diamond Core Hole (NX Core)

CONTRACTOR: Materi Exploration Company

CASING RECORD: 5-1/2" at 130' with 48 sacks

PLUGGING RECORD: 5-1/2" swedge and 2" gate valve.
Hole turned over to U.S.G.S.

SPUD DATE: December 22, 1971

COMPLETION DATE: January 2, 1972

PUMP TEST: 979' - pumped 224 gallons per minute
T = 4700 gallons per day per foot

1158' - pumped 211 gallons per minute
T = 4600 gallons per day per foot

FORMATION TOPS: Base "A" groove 928'
Mahogany Marker 960'
Top "B" groove 1104'

WATER DATA: See daily drilling reports.

FIELD CORE AND SAMPLE DESCRIPTION

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<u>Interval</u>	<u>Description</u>
<u>Core #1: 801-811'. Cut 10'; recovered 10'.</u>	
801.0 - 811.0'	Marlstone, brown to dark brown, thin laminated, banded. Many 45 and 60° fractures. Some calcite filled fractures. 1/2" gray ash bed at 806.6 and 807.0'. Last foot badly broken. Leached zone 805.0-805.4'.
<u>Core #2: 811-819.4'. Cut 8.4'; recovered 8.4'.</u>	
811.0 - 819.4'	Marlstone, brown to dark brown with some tan brown, thin laminated, banded. Badly broken and some biscuity 811.0-815.6'. Irregular fractures throughout. 1/2" gray ash at 816.1'.
<u>Core #3: 819.4-835.4'. Cut 16.0'; recovered 16.0'.</u>	
819.4 - 821.2'	Marlstone, tan gray brown, thin laminated, banded. Two 45° fractures.
821.2 - 821.9'	Ash, gray with marlstone, laminated.
821.9 - 826.5'	Marlstone, brown, gray brown, tan brown, thin laminated, banded. Irregular 80-60° fracture at 824.3'. 1/2" gray ash at 824.6'.
826.5 - 829.8'	Ash, gray with interbeds of marlstone. Irregular. Marlstone = 50%. (Upper wavy bed?)
829.8 - 835.4'	Marlstone, brown to dark brown, thin laminated, banded. Dips of 5-10°. Many 1/8" lenticular ash beds from 831.9-834.4'.
<u>Core #4: 835.4-847.5'. Cut 12.1'; recovered 9.8'. (Recovered some in next core.)</u>	
835.4 - 845.2'	Marlstone, tan brown-brown-dark brown, thin laminated, banded. Many lenticular gray ash beds 838.8-841.4'. Badly fractured and broken 842.4-845.2'. Scattered nahcolite crystal casts in above broken interval.

Interval

Description

Core #4 (continued)

845.2 - 846.7' Lost.

Core #5: 847.5-861.1'. Cut 13.6'; recovered 14.4'.

846.7 - 849.2' Marlstone, brown to dark brown, thin laminated, banded. Moderately rich. Dip 10°. Scattered thin ash, laminae in last foot.

849.2 - 861.1' Marlstone, tan-brown-gray brown, thin laminated, banded. Core badly fractured 852.0-853.4' but whole. Badly broken 854.1-855.3'. Scattered nahcolite crystal casts in interval. 1/2" gray ash at 856.2'. Vertical and irregular fractures 858.4-860.9'. Core badly broken.

Core #6: 861.1-867.5'. Cut 6.4'; recovered 5.6'.

861.1 - 866.7' Marlstone, brown-dark brown-gray brown, thin laminated, banded. Scattered nahcolite crystal casts 861.7-862.0', 865.0', and 865.8'. Last foot badly broken.

866.7 - 867.5' Lost.

Core #7: 867.5-881.0'. Cut 13.5'; recovered 13.0'.

867.5 - 871.9' Marlstone, tan brown-dark brown-gray brown, thin laminated, banded. Last 8" has numerous gray ash beds also broken. Scattered 45° fractures.

871.9 - 880.5' Marlstone, brown-dark brown, thin laminated, banded. Solid. Two 45° fractures at 872.6'. 30° fractures at 875.5' and 876.7'. 60° fracture at 874.0'.

880.5 - 881.0' Marlstone, as above. Recovered in next core.

Core #8: 881.0-892.0'. Cut 11'; recovered 11.5'.

881.0 - 887.8' Marlstone, brown to dark brown, thin laminated, banded. Broken 883.8-884.3'. 4" vertical fracture at 884.7'.

<u>Interval</u>	<u>Description</u>
<u>Core #8 (continued)</u>	
887.8 - 888.5'	Marlstone, dark brown, thin laminated, banded. Rich.
888.5 - 892.0'	Marlstone, brown-dark brown, thin laminated, banded.
<u>Core #9: 892-901'. Cut 9'; recovered 9'.</u>	
892.0 - 901.0'	Marlstone, brown to dark brown, thin laminated, banded. Several 1" nahcolite cavities at 894.3'. Large nahcolite cavity 895.6-896.3'. 1" band of weathered nahcolite at 896.4' and 2" band of weathered nahcolite at 896.6'. Dip about 10°.
<u>Core #10: 901-911'. Cut 10'; recovered 10'.</u>	
901.0 - 907.0'	Marlstone, tan brown-brown-dark brown to brown black, thin laminated, banded.
907.0 - 909.0'	Marlstone, brown, dark brown. Top foot badly fractured and pitted and solid. Bottom foot badly broken.
909.0 - 911.0'	Marlstone, brown-dark brown, thin laminated, banded. 2" nahcolite cavity at top. Last foot broken.
<u>Core #11: 911.0-919.5'. Cut 8.5'; recovered 8.5'.</u>	
911.0 - 915.0'	Marlstone, brown-dark brown, thin laminated, banded. Moderately rich. Interval from 913.5-914.5' is nahcolite cavity rubble.
915.0 - 917.7'	Marlstone, brown-dark brown-tan brown, thin laminated, banded. Some biscuity.
917.7 - 919.5'	Marlstone, tan-gray brown, thin laminated, banded, biscuity and broken. "A" groove.
<u>Core #12: 919.5-931.0'. Cut 11.5'; recovered 11.0'.</u>	
919.5 - 921.0'	Marlstone, brown-dark brown, thin laminated, banded. Biscuity and broken.

Interval

Description

Core #12 (continued)

921.0 - 928.0'	Marlstone, tan, gray tan-gray, thin laminated, banded. Ashy. 921.0-922.0', no core - bit dropped - assume fracture. "A" groove.
928.0 - 930.5'	Marlstone, buff-tan, thin laminated, banded. Scattered 1/8 to 1/4" ash laminae. (Top Mahogany Zone)
930.5 - 931.0'	Lost.

Core #13: 931.0-949.5'. Cut 18.5'; recovered 18.5'.

931.0 - 932.8'	Marlstone, buff-gray-tan, thin laminated, banded. Broken. Nahcolite cavity rubble in last 3".
932.8 - 933.6'	Marlstone, brown-brown black, thin laminated, banded. Rich.
933.6 - 938.3'	Marlstone, buff-tan-brown-gray brown, thin laminated, banded, with many thin less than 1/4" ash laminae. .1 ash, gray, at 934.9'. Fractured and broken 936.5-938.0'. Many ash laminae in last 3".
938.3 - 949.25'	Marlstone, tan-brown-dark brown-brown black, thin laminated. Strongly banded. Rich. 2" gray ash at 939.0'. 3" brown ash at 940.6', many scattered 1/8 to 1/4" gray and brown ash layers throughout. 60° fracture at 943.3'. Last foot biscuity.

Core #14: 949.5-959.0'. Cut 9.5'; recovered 9'.

949.25 - 951.0'	Marlstone, brown-dark brown, thin laminated, banded. Badly broken.
951.0 - 958.4'	Marlstone, tan-brown-dark brown, thin laminated, banded. Moderately rich. 70° fracture at 954.0'.

<u>Interval</u>	<u>Description</u>
<u>Core #15: 959.0-979.0'. Cut 20'; recovered 20.5'.</u>	
958.4 - 960.2'	Marlstone, as above.
960.2 - 960.7'	Ash, gray. (Mahogany Marker.)
960.7 - 962.8'	Marlstone, tan-brown-dark brown, thin laminated, banded.
962.8 - 970.3'	Marlstone, brown-dark brown-gray brown, thin laminated, banded. Rich. Core badly broken 965.0-965.9'.
970.3 - 979.0'	Marlstone, dark brown to black with occasional bands of tan. Very rich. 4" gray ash 971.7-972.0'. Dips of about 20° in last foot.
<u>Core #16: 979.0-996'. Cut 17'; recovered 16.4'.</u>	
979.0 - 984.6'	Marlstone, dark brown-brown black, thin laminated, banded. Rich. 1/4" band of nahcolite crystal cavities at 979.5'.
984.6 - 989.3'	Marlstone, brown-dark brown, thin laminated, banded, grading to tan brown at base. Moderately rich.
989.3 - 995.4'	Marlstone, dark brown-brown black, thin laminated, banded, with some lenticular bedding. Rich. 60° fracture at 991.0'.
995.4 - 996.0'	Lost.
<u>Core #17: 996-1016'. Cut 20'; recovered 19.8'.</u>	
996.0 - 1000.2'	Marlstone, dark brown-brown black, thin laminated, banded. Rich. Many lenses of brown ash from 997.5-1000.2'.
1000.2 - 1009.0'	Marlstone, brown-dark brown, thin laminated, banded. Moderately rich. Some lenticular banding and scattered brown ash blebs.

<u>Interval</u>	<u>Description</u>
<u>Core #17 (continued)</u>	
1009.0 - 1010.5'	Marlstone, brown-dark brown, badly shattered and recemented. Core mostly whole. Scattered nahcolite crystal casts. Many nahcolite crystal casts at top.
1010.5 - 1013.0'	Marlstone, tan-brown-dark brown, thin laminated, banded. Badly broken from 1011.9-1012.6'. Scattered nahcolite crystal casts in broken zone.
1013.0 - 1015.8'	Marlstone, brown-dark brown-brown black, thin laminated, banded. Moderately rich. Some lenticular banding. 60° fracture at 1013.6' and 1013.9'. Vertical fracture in last 6" of core.
1015.8 - 1016.0'	Lost.
<u>Core #18: 1016.0-1031.0'. Cut 15'; recovered 15'.</u>	
1016.0 - 1019.8'	Marlstone, brown-dark brown-brown black, thin laminated, banded. Moderately rich.
1019.8 - 1022.1'	Marlstone, tan-brown, brown, thin laminated, banded. Badly broken with many nahcolite crystal casts.
1022.1 - 1025.0'	Marlstone, dark brown, thin laminated, banded, lenticular banding. Rich.
1025.0 - 1031.0'	Marlstone, tan-brown-dark brown, thin laminated, banded. Moderately rich. Nahcolite cavity at 1025.2'. Many nahcolite crystal casts at 1026.1'. 1/2" nahcolite cavity at 1026.4'.
<u>Core #19: 1031.0-1036.0'. Cut 5'; recovered 3.2'.</u>	
1031.0 - 1034.2'	Marlstone, brown-dark brown, thin laminated, banded. Badly broken throughout. Nahcolite crystal casts at 1031.5-1031.8' and 1033.4-1033.9'.
1034.2 - 1036.0'	Lost.

<u>Interval</u>	<u>Description</u>
<u>Core #20: 1036.0-1040.0'. Cut 4'; recovered 4'.</u>	
1036.0 - 1040.0'	Marlstone, tan-brown-dark brown, thin laminated, banded. Core mostly in chips. Scattered nahcolite crystal cavities throughout.
<u>Core #21: 1040.0-1045.0'. Cut 5'; recovered 5'.</u>	
1040.0 - 1045.0'	Marlstone, tan brown-dark brown, thin laminated, banded. Alternately broken and whole - 50-50. Nahcolite crystal cavity at 1042.9 and 1044.8'.
<u>Core #22: 1045.0-1055.0'. Cut 10'; recovered 8'.</u>	
1045.0 - 1048.3	Marlstone, brown-dark brown, thin laminated, banded; wavy laminae. Moderately rich. 2" nahcolite cavity at 1045.7'. Nahcolite crystal casts at 1046.0 and 1047.2'.
1048.3 - 1053.0'	Marlstone, brown-dark brown, thin laminated, banded. Badly broken throughout. Large nahcolite cavity at 1049.0-1049.5'. Chips 1049.5-1051.0'.
1053.0 - 1055.0'	Lost.
<u>Core #23: 1055.0-1063.0'. Cut 8'; recovered 7'.</u>	
1055.0 - 1058.3'	Marlstone, dark brown-brown black, thin laminated, banded. Wavy laminae. Some badly fractured.
1058.3 - 1062.0'	Marlstone, tan-brown-dark brown, thin laminated, banded. Badly fractured from 1059.8-1060.5', but core whole. Nahcolite crystal casts at 1060.8'.
1062.0 - 1063.0'	Lost.
<u>Core #24: 1063.0-1068.0'. Cut 5'; recovered 5'.</u>	
1063.0 - 1068.0'	Marlstone, tan-brown-dark brown, thin laminated, banded. Badly broken except for last 8". Nahcolite crystal casts 1067.0-1067.4'.

<u>Interval</u>	<u>Description</u>
<u>Core #25: 1068.0-1074.5'. Cut 6.5'; recovered 6'.</u>	
1068.0 - 1069.3'	Marlstone, dark brown-brown black, thin laminated, banded. Rich, biscuity.
1069.3 - 1074.0'	Marlstone, tan-brown-dark brown, thin laminated, banded. Badly fractured 1069.3-1071.4' and 1073.0-1074.0'. Abundant nahcolite crystal casts and up to 1" nahcolite cavity from 1071.5-1073.2'.
1074.0 - 1074.5'	Lost.
<u>Core #26: 1074.5-1084.0'. Cut 9.5'; recovered 9.3'.</u>	
1074.5 - 1078.7'	Marlstone, tan-brown-dark brown, thin laminated, banded. Many broken intervals. Very badly weathered section from 1075.8-1076.4'. Nahcolite cavity with rubble fill 1078.2-1078.7'.
1078.7 - 1082.8'	Marlstone, dark brown-brown black, thin laminated, banded, with some wavy laminae. Moderately rich. Many 1-3" brown ash beds from 1079.2-1080.9'.
1082.8 - 1083.7'	Marlstone, tan-brown-dark brown, thin laminated, banded.
<u>Core #27: 1084.0-1092.0'. Cut 8'; recovered 7.0'.</u>	
1083.7 - 1086.5'	Marlstone, dark brown, thin laminated, banded. Moderately rich. Nahcolite cavity rubble 1084.3-1084.7'. Nahcolite crystal casts 1085.3' and 1089.0-1089.7'. Rubble 1089.7-1090.6'.
1090.6 - 1092.0'	Lost.
<u>Core #28: 1092.0-1099.0'. Cut 7'; recovered 6.5'.</u>	
1092.0 - 1093.5'	Marlstone, dark brown, thin laminated, banded. Badly broken.

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<u>Interval</u>	<u>Description</u>
<u>Core #28 (continued)</u>	
1093.5 - 1094.0'	Ash, brown.
1094.0 - 1094.9'	Ash, brown and marlstone, brown, interbedded. Nahcolite crystal casts in 3" brown marlstone at top.
1094.9 - 1098.5'	Marlstone, brown-dark brown, thin laminated, banded. Badly broken throughout. Tiny white crystals in last 8". Top foot looks like nahcolite cavity rubble.
1098.5 - 1099.0'	Lost.
<u>Core #29: 1099.0-1111.0'. Cut 12'; recovered 7.5'.</u>	
1099.0 - 1105.4'	Marlstone, brown-dark brown, thin laminated, banded. 2" brown ash at 1099.6', 2" ash at 1101.1', 1" at 1101.6'. Nahcolite crystal casts 1100.8-1101.0'. Nahcolite crystal casts at 1102.5 and 1104.5' and 1103.4'. Scattered white crystals 1099.8-1100.0'.
1105.4 - 1106.5	Marlstone, gray-gray brown, thin laminated, banded. Biscuity and broken. Scattered zones of white crystals.
1106.5 - 1111.0'	Lost.
<u>Core #30: 1111.0-1121.0'. Cut 10'; recovered 5.8'.</u>	
1111.0 - 1116.8'	Marlstone, gray-gray brown and brown, thin laminated, banded. Broken and biscuity throughout. Many zones of tiny white crystals. Nahcolite crystal casts at 1111.6'.
1116.8 - 1121.0'	Lost.
<u>Core #31: 1121.0-1134.5'. Cut 13.5'; recovered 12.5'.</u>	
1121.0 - 1123.9'	Marlstone, gray, thin laminated, banded. Biscuity and some broken. "B" groove.
1123.9 - 1125.5'	Marlstone, tan, brown, thin laminated, banded, with scattered white crystal zones.

<u>Interval</u>	<u>Description</u>
<u>Core #31 (continued)</u>	
1125.5 - 1126.7'	Ash, gray with scattered marl beds.
1126.7 - 1131.5'	Marlstone, brown-dark brown, thin laminated, banded, lenticular bedding throughout. Rich. 3" nahcolite cavity at 1127.8', 2" at 1129.4', nahcolite crystal casts at 1130.0'. Some broken zones.
1131.5 - 1133.2'	Marlstone, buff-tan-brown, thin laminated, banded, broken throughout.
1133.2 - 1133.5'	Marlstone, brown-dark brown, thin laminated, banded. Moderately rich.
1133.5 - 1134.5'	Lost.
<u>Core #32: 1134.5-1148.0'. Cut 13.5'; recovered 13.5'.</u>	
1134.5 - 1136.0'	Marlstone, brown-dark brown, thin laminated, banded, lenticular bedding through. Several 60° fractures. Rich.
1136.0 - 1141.0'	Marlstone, tan-brown-dark brown, thin laminated, banded. Moderately rich. Rubble from 1138.3-1139.0' suggests nahcolite cavity. 1" tan ash at 1140.4'.
1141.0 - 1145.0'	Marlstone, buff-tan-brown-dark brown, gray brown, thin laminated, banded. 2" tan ash at 1141.6' and 6" tan ash 1144.2-1144.7'.
1145.0 - 1148.0'	Marlstone, tan to dark brown and some gray brown, thin laminated, banded. Vertical fracture through last foot.
<u>Core #33: 1148.0-1152.0'. Cut 4'; recovered 2'.</u>	
1148.0 - 1148.2'	Marlstone, as above.
1148.2 - 1152.0'	Lost.

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<u>Interval</u>	<u>Description</u>
<u>Core #34: 1152.0-1158.5'. Cut 6.5'; recovered 5'.</u>	
1152.0 - 1157.0'	Marlstone, buff, tan-brown, thin laminated, banded. Core mostly broken. 1/2" brown ash 1155.2'.
1157.0 - 1158.5'	Lost.

Total Depth: 1158.5' (driller)