GROUP FORMATION SERIES GROUP FORMATION (IN FEET) CONE CONE CONE CONE CONE CONE CONE CONE	Z O I- II O O O D	SELECTED LITHOLOGIC	FORMATION	DEVIATION HOLD CASIN CAS	District Library Alaska District RATE OF PENETRATION	E BIT NUMBER SIZE IN INCHES) DRILL BIT (SIZE IN INCHES) HED WHERE REAMED) DEPTH (IN FEET) 61	EXPLANATION OCCUPATION GRAVEI Sandstone
MICHARY ALLUVIUM ALLUVIUM ———————————————————————————————————	(OHMS m³/m) 0 25 50 75 100 125 150 LN 150 200 250 300 LN = LONG NORMAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DESCRIPTION Height of kelly bushing above cellar floor Gravel and sand, contains broken fragments of subrounded black, brown, yellow, green, and red chert granules and pebbles. Numerous angular fragments of yellowish-gray fine-grained to conglomeratic sandstone. Also fragments of white quartz, medium-dark-gray and yellow quartzite, grayish-brown ironstone, and a few other rock fragments	TEST	SHOWN NO SHO		17/4 20 12/4 26	Silty sandstone Calcareous sandstone Siltstone Sandy siltstone
200 —	LONG NORMAL AM=64 INCHES	Clay shale, medium-light- to medium-gray, slightly sericitic; also medium-light-gray siltstone and a trace of sandstone, trace carbonaceous material Clay shale, medium- to medium-dark-gray, rather soft; good cleavage; partings with dark-gray plant impressions and rare thin coaly fragments; rare brownish-gray ironstone laminae; irregular beds of medium-light-gray siltstone and sandstone. Sandstone is "dirty"; 55 percent of grains are white and clear quartz; 30 percent dark minerals, coal particles, and rock fragments, up to 5 percent sericitic material and some ironstone particles; some is crossbedded	-	0°50′ 15½-11¾4-11¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-111¾4-1114	100 2	8 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 14 1 - 12 1	Calcareous clay shale or claystone Clay shale or claystone Sandy clay shale or claystone Silty clay shale or claystone
FERE RENTIATED	n SHORT NORMAL AM=16 INCHES	Coal and carbonaceous shale; trace Sandstone, light-gray, hard, massive; grains subangular and made up of 85 percent white and clear quartz; remainder mostly dark minerals, chert, rock, and coal particles; trace of rather hard chalky white mineral Siltstone, medium-light-gray, argillaceous, hard, brittle, with poor or no cleavage; partings with plant impressions and coaly fragments, ironatone, some clay shale. Sandstone is light gray, hard, massive; 80 percent white and clear quartz grains; remainder made up of rock fragments, coal particles, some dark chert and other minerals, small amount of sericite. Coal dark gray to shiny black, soft, thin bedded, very brittle; some clear yellow amber in coal. Also very carbonaceous medium-to medium-dark-gray clay shale; contains numerous dark gray plant fragment impressions		1°00° 15 — 15 — 4°25° 3 16-0 4 20-0	125 4 125 8 125 4 125 4 125 4 125 4 125 4 125 4	NO.8 15 NO.11 OSQ2 NO.9 NO.9 A	Calcareous siltstone Clay ironstone Coal or carbonaceous material Bentonite
UPPER CRETACEOU NANUSHUK CHANDLER UNDIFI mentimoides boredis NED ZIRCON 90 00 11	form what the same of the same	75 percent medium-gray medium-hard clay shale with fair cleavage; light-gray sandstone-siltstone 25 percent; grains are 75 percent white and clear quartz, scricite quite common; some lenticular beds of shale in sandstone, carbonacceous partings, rare thin coaly layers Clay shale, medium-light- to medium-dark-gray, medium-soft to medium-hard, with fair to good cleavage; thin-bedded in part; some "swirly" bedding; some crossbedding; a few small shell fragmenta—possibly of Linguidz; numerous		0°55' 10°16' 1°15' 6° 6 19-0	125 10	NO.10 OB-2 18 ¹ / ₄ 600	Cored interval No samples recovered Oil show Gas show Very fine grained f
ANDSTAND AND LOWER AND LOW		Coal, shiny black, with blocky fracture; 5 percent Coal and carbonaceous shale; trace Claystone, medium-dark-gray, hard, with irregular fracture; very small amount of siltstone		1°30°	125 6-8	K-25 10% LW-3 V - 90% NO.14 K-2P	Fine grained m Medium grained c Coarse grained vc Very coarse AM Electrode spacing BIT SYMBOLS DRILL BITS LW 3 Hughes LW-3 OSC-1
900 -		Sandstone, medium-light-gray, hard, massive in part; subangular to sub- rounded white and clear quartz grains make up 75 percent of rock; remainder is rock and carbonaceous particles, sericite, and pyrite; grades down to siltatone and clay shale Sandstone, light-gray, massive, hard, with irregular fracture for the most part but also medium soft and breaks easily parallel to bedding; salt-and- pepper in the coarser beds; 75-80 percent white and clear quartz; remainder mostly dark-colored chert, rock fragments, carbonaceous and clay iron- stone particles, rare mica and soft opaque white particles (weathered feldspar?), rare yellowish-brown clay ironstone nodules; grades downward to interbedded siltatone and clay shale	Test 1, 838-862 ft: 3/8-in. bean. Open 2 hr. No odor or gas to surface. Closed 10 min. Recovered 90 ft drilling fluid, possibly slightly cut by drilling fluid filtrate. Flow pressure 0; bottom-hole pressure 50 psi. Salinity of drilling fluid and recovered fluid 540 ppm Test 2, 866-899 ft; 3/8-in. bean. Open 3 hr. No odor or gas to surface. Recovered 322 ft water. Salinity of mud 550 ppm; salinity of fluid 800 ppm. Bottom-hole pressure 125 psi	5° 14 14-0 3°-8° 15 10-0 6° 2°05′ 16 9-0	60 6-8 60 6-8 65 6-8 60 6-8	8 — 800 9 — 10 — — — — — — — — — — — — — — — — —	Hughes OSC-1 OSC-3 Hughes OSC-3 OSQ-2 Hughes OSQ-2 OWS Hughes OWS 2LB Reed 2 liquid blast RHO Reed hole opener RT Reed T
1000 — RUN 3		Clay shale and claystone, medium-to medium-dark-gray, silty, micaceous, hard, with poor or no cleavage, irregular fracture; rare carbonaceous-coaly plant impressions; first occurrence of Ditrupa sp. at 979 ft Sandstone, medium-light-gray, hard, massive; 85 percent of rock is subangular, rarely subrounded, white and clear quartz grains; remainder mostly rock fragments, dark chert, sericite; also some medium-light-to medium-gray siltstone; some ironstone; carbonaceous partings; small-scale crossbedding rare; grades into medium-gray to medium-dark-gray silty clay shale Clay shale, medium-to medium-dark-gray, very silty, hard; fair to poor cleavage, small black carbonaceous plant impressions		7° 2°00′ 18 20-0 3° 2°00′ 19 20-0 4°-6° 20 20-0 7° 2°30′ 21 19-0 3° 22 20-0	70 6 125 6 60 6-8 60 6 60 6 60 6 60 6 60 6 60 6	7 1/2 1000	OB-2 Security OB-2 SC Security C SHO Security hole opener SOW Security OW DDT Smith DDT K-2P Smith K2P
1200 —		 □ Ditrupa sp. □ Clay shale, medium- to medium-dark-gray; trace siltstone □ Clay shale and claystone, medium- to medium-dark-gray, quite silty, medium-hard, with poor cleavage; small pelecypods, including Arctica? sp., Modiolus? sp., Psilomya? sp., and Panope sp. found throughout □ Ditrupa sp. 		2°15′ 2°15′ 2°15′ 23 19-0	160 4 160 4 160 2 60 4 160 2	NO.19 DDT — 1200 — 1200 — NO.20 — NO.21 — 1300	S-2 Smith 2 CORE BITS K-24 Reed K-24, hard formation K-25 Reed K-25, soft formation Location: Lat 68° 57′ 58″ N Long 151° 55′ 02″ W Elevation: Kelly bushing, 660 feet
1400		Claystone, medium- to medium-dark-gray, very silty; pelecypods and crinoid ossicles; Ditrupa sp. also present. Light-to medium-light-gray sandstone and siltstone, clayey intercalations; 80 percent white and clear quartz; remainder is rock fragments, chert, carbonaceous particles, thin coal and clay ironstone layers; alickensides at 1871 ft Clay shale, medium- to medium-dark-gray, slightly silty, medium-hard, poor to fair cleavage; 45° slickensides common; some with white costings on fault planes; rare plant impressions, Inoceramus sp., Entolium sp., and Ditrupa sp Clay shale and claystone, medium- to medium-dark-gray, slightly silty, moderately hard, with poor or no cleavage, irregular fracture. Two inches of soft, waxy light-gray bentonitic shale at 1475 1/2 ft; slickensides fairly common; pelecypod at 1475 ft		2*00' 24 18-0 4* 25 20-0 5*10* 26 17-0 2*30' 27 14-0 4*-12* 28 17-0	65 6 60 160 2 160 2 160 2 4 70 4 60 3-4 160 3	24 NO.22 SOW	Ground, 645 feet Spudded: May1, 1952 Completed: August 8, 1952 Total depth: 3,939 feet Status: Dry and abandoned Drilling and engineering data compiled from records of Arctic Contractors Electric log by Schlumberger Well Surveying Corporation All depths are measured from the top of the kelly bushing Colors were determined by comparison of dry samples with the National Research Council Rock Color Chart, 1948
1500 —		Clay shale, medium-dark-gray, silty and slightly sandy, medium-hard, with poor cleavage; up to 15 percent medium-hard siltstone with fair to good cleavage; small amount of crossbedding, Inoceramus sp., Thracia kissoumi McLearn and Psilomyo sp., a fragment of Cleonicerus? sp. and Ditrupa sp. fragments present		2°50′ 5°-8° 2°30′ 29 20-0	70 4 60 4 160 2 3 2	NO.25 - 1600 NO.26	
1700		Clay shale, medium-to medium-dark-gray, primarily the latter. Inoceramus and Ditrupa sp. at 1660-1670 ft Clay shale and claystone, medium-to medium-dark-gray, moderately hard, with poor or no cleavage; grades rarely to silistone; a few slickensides with a white aragonite coating nearly parallel bedding at 1761 ft. Ditrupa sp., a pelecypod, and echinoid spines present		2°15' 2°00' 7° 30 16-0	160 2 3 160 3 65 4 160 2	NO.27 1700 1700 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800 1800	
1900 — RUN 4		Siltatone and sandatone, medium-light to medium-gray, hard; grains are 85 percent white and clear quartz; remainder is rock fragments, dark chert, and pyrite. Medium-gray very silty claystone without cleavage; some vertical fracture. Ditrupa sp. present Interbedded siltatone and clay shale. Clay shale is medium gray to medium dark gray, rather hard, with poor to fair cleavage, rare pyrite, and rare plant impressions. Siltatone is medium light gray to medium gray, moderately hard; cleavage good where present, small amount of crossbedding. Ditrupa sp. and pelecypod present Siltatone, medium-light-gray, with fair to good cleavage; and medium-gray to medium-dark-gray, moderately hard clay shale; numerous silty streaks; a few flattened worm-tube-like objects; a pelecypod Thracia kissoumi McLearn at 2017 ft	Test 3, 1938-1971 ft; 5/16-in. bean. Open 1 hr. Slight puff and very light blow of air for 5 min. Recovered 16 ft mud; flow pressure 0. Salinity of drilling fluid 750 ppm; salinity of recovered mud 800 ppm	2°00' 31 10-0 4° 32 17-0 4° 33 16-0 34 7-0	80 4 60 5 160 2 2-3 160 3 65 4 60 4 160 3	31 NO.29 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900 - 1900	,
2100		a few flattened worm-tube-like objects; a pelecypod Thracia kissoumi McLearn at 2017 ft Ditrupa sp. Clay shale, medium-dark-gray; trace siltatone Sandstone, light- to medium-light-gray, very silty; cleavage good where present; grains subangular to subrounded, 85 percent white and clear quartz grains; remainder is rock fragments and dark chert. Also medium-light-gray hard siltstone with good cleavage, carbonaceous-micaceous partings		1°45′ 4*-8* 36 12-0	160 3 60 4 60 6 160 4	7½ NO.31 35 NO.31 	
Q		Siltstone, medium-light-gray and medium-gray, moderately hard; poor to good cleavage; numerous thin layers of medium-dark-gray clay shale; small amount of crossbedding; Inocerumus sp. at 2210 ft Sandstone, light-gray; grains subangular to rarely subrounded; made up of 80 percent white and clear quartz; also rock fragments, carbonaceous particles; argillaceous cement Clay shale, medium- to medium-dark-gray; and medium-light-gray siltstone		2* 1*45′ 37 10-0	60 5 150 3 160 3 150 4 160 4	NO.33 - 2200 NO.34 - 2300 - 2300 - 2	
CEOUS		Clay shale, medium-dark-gray, moderately hard, slightly micaceous, with fair cleavage; rare carbonaceous plant fragments; very rare slightly silty streaks; pelecypods (Yoldia kiasoumi McLearn and Thracia?) and tiny crinoid osaicles present Siltatone and some sandatone, medium-light-gray, slightly soft and friable to very hard, excellent or no cleavage. Sandatone made up largely of white and clear quartz, also rock and coal particles, micaceous material, shaly intercalations, rare carbonaceous partings, rare light-olive-gray clay ironstone lenses		38 0-0 1°45' 39 0-0 40 10-0 5° 2°00' 41 9-0 2°-3° 42 14-0 5° 43 10-0	60 4-6	36 NO.35 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 2400 24	
TOROK AND TUKTU UNDIFF Verneutlinoides borea		Clay shale, light-gray, bentonitic; trace Sandstone 60 percent, light-gray; grades to siltstone; also 40 percent medium-dark-gray clay shale Siltstone, light- to medium-light-gray, up to 50 percent medium-dark-gray clay shale. Trace sandstone at 2620-2640 ft Clay shale and claystone, medium-gray, very slightly silty, moderately hard.		1*30'	160 4 150 6 60 6	NO.37 2600	
2800 —		Clay shale and claystone, medium-gray, very slightly silty, moderately hard, with poor cleavage; very rare irregular silty laminae; very rare small light-olive-gray clay ironstone nodules Clay shale, medium- to medium-dark-gray; traces of siltstone		1*15*	160 4 150 6 160 5	749 NO.38 — 2700 	
2900 —		Clay shale, medium-gray, medium-hard, with good cleavage; numerous medium-light-gray silty partings, but no thick laminae; a few low-angle slickensided surfaces at 2540 ft		1°50′ 45 20-0	150 4 160 4	45 NO.40	
3100		Clay shale, medium- to medium-dark-gray (mostly the latter); traces of medium-light-gray siltstone Clay shale, medium-gray, medium-hard; good to excellent cleavage; tends to fracture at 75° angle; medium-light-gray silty partings and laminae; also numerous tiny vermicular clay shale inclusions in upper part of core	·	2°00′ ~95% → 1°50′ 46 19-6	150 160 150 4	NO.41 - 3100 - 3100 - 3200	
3300		Clay shale, medium- to medium-dark-gray; rare traces of siltstone Clay shale, medium- to medium-dark-gray, medium-hard; good to very good cleavage; very little silt present		0°20′ 1°15′ 47 !3-0	150 6 150 6 150 6 150 6 150 6	NO.43 OSQ-2 - 3300 - 3300 - 7 NO.44 OSC-3	
3500 —		Clay shale, medium- to medium-dark-gray; rare traces of siltstone Clay shale, medium-dark-gray, medium-hard; excellent cleavage; no silt		5* 1*30′ 48 7-0	60 6 150 6	- 3400 	
3700		Clay shale, medium-to medium-dark-gray; scattered traces of medium-light-to medium-gray siltatone; rare traces of light-gray sandstone Clay shale, medium-gray, moderately hard; good cleavage; negligible amount of silt; alickensided surfaces approximately parallel bedding in at least six places.		1°20' 1°10' 35° 49 12-0	150 6 60 6 150 6		
3800		Clay shale, medium- to medium-dark-gray; scattered traces of medium-light-to medium-gray siltstone	Test 5, 3834-3939 ft: Light blow for 4 min, after which bean plugged. Test unsuccessful fest 6, 3834-3939 ft: No bean. Open 45 min. Strong initial puff of gas tapering to faint blow for 6 min, then few intermittent weak puffs for remainder of test. Closed 10 min. Recovered 330 ft alightly gas-cut mud. Pressure recorder failed	2°45′ 23° 1°30′ <u>50 8-0</u> $471/2 \Rightarrow$	150 6 150 6 50 6 150 6		
depth 3939		Clay shale, medium-to medium-dark-gray, moderately hard; good cleavage; rare small pyrite nodules; near-vertical slickensides in cores 50 and 51 partly coated with white material GRANDSTAND TEST W	fluid 1000 ppm 20	23° 51 3-0 461/4>	50 6	-24 51 8/4 20 20 gged by Florence M. Robinson	