UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY W Z O O N SPONTANEOUS	N O		SELECTED	FORMATION	CORE DIA	HOLE (SNOT)	RATE	NUMBER NOTES	AL PAPER 305 PLATE 25 DRILL	EXPLANATION
SYSTEM GROUP GROUP FORMATION MICROFAUNAL Z HEAVY-MINERAL Z DEPTH (IN FEET) (IN FEET)		RESISTIVITY (OHMS m³/m) 50 100 150 200 250 101 150 200 250 102 150 200 250 103 150 400 450 500		TEST	DEVIA DEVIA COVERY FI-INCHES	METER DOUGH	OF PENETRATION (DASHED WHERE CORED) (AVERAGE MINUTES PER FOOT) 5 10 15 20 25	CORE BIT (SIZE IN 1	BIT (LU LU L	Sandstone Silty sandstone
Ground level		LN=LONG NORMAL SN=SHORT NORMAL	Kelly bushing above ground level No samples received in labratory. Well geologist describes as "Shale, buff, hard, with calcareous concretions" Siltstone and clay shale; with black dull to shiny coal; a trace of white bentonite and clay ironstone Siltstone and 20 percent sandstone. Trace of clay ironstone			150 -16½ -13%		NO.5	1844 171/2	Calcareous sandstone Siltstone Sandy siltstone
200 –			Clay shale, medium-light-gray; some siltstone and sandstone. Up to 25 percent white bentonite containing brown biotite plates Sandstone, light-gray and light-yellowish-gray, hard; grains subangular to subrounded; made up of 80 percent white and clear quarts; some coal particles, dark-colored chert, white chalky mineral, rare mica. Yellowish color of some chips is probably due to siderite			-10%-10%			- 200	Calcareous siltstone Clay shale or claystone
C R E T A C I N U L U K wing-Trochammeina oo i I I I I I I I I I I I I I I I I I I I		SHORT NORMAL AM = 16 INCHES LONG NORMAL AM = 36 INCHES	Clay shale, medium-to medium-light-gray. Trace of aandstone Clay shale, medium-gray, moderately hard; breaks irregularly along bedding planes; finely interlaminated with medium-light-gray sittstone. Black soft coal; and also medium-dark-gray carbonaceous shale. White to light-gray bentonite. Light-grayish-brown bentonitic clay		1 20-0	3 90 [6 1/2 K-25 1	NO.2 - 300	Sandy clay shale or claystone Silty clay shale or claystone Calcareous clay shale or claystone
Gauday			Clay shale, medium- to rarely medium-dark-gray. Trace of siltstone, very fine-grained sandstone, and clay ironstone — Siltstone, light-gray; contains plant impressions, moderately calcareous							Clay ironstone Coal or carbonaceous material
500			Clay shale, medium-light- to medium-dark-gray. Trace of coal and siltstone Clay shale, medium-dark-gray, hard; subconchoidal cleavage parallel to the bedding; silty clay ironstone layers are finely micaceous. Light-gray massive sandstone; grains subangular. A few pelecypods in the clay shale		or 2 20-0	95% -		2	956 NO.3 DDT	Limestone Bentonite Dolomite
-?			Clay shale, medium- to medium-light-gray. Inoceramus prisms and chunks of prisms; also other white mollusk shell fragments Clay shale, medium- to rarely medium-dark-gray; traces of siltstone, coal, ironstone, and some sandstone. White mollusk fragments present						- 600	Cored interval No samples recovered Oit show
700 —			Clay shale, medium-to medium-light-gray; some dark-gray carbonaceous shale; traces of siltstone and ironstone. Mollusk fragments and Incorrossmus		0-20				- 700 - 700 	Gas show Very fine grained f Fine grained Medium grained AM Electrode spacing
Soo			Claystone, medium-gray, hard; silty in part; subconchoidal fracture; bedding indistinct; abundant plant impressions; small amount of thinly laminated dark-gray tales shale—nearly a plant-leaf coquina. Medium-light-gray hard siltstone; few thin carbonaceous laminae; some small-scale cross-bedding		0"? 3 20-0	350		3	800 	BIT SYMBOLS DRILL BITS OSC.1 Hughes OSC.1 OSC.3 Hughes OSC.3 OSQ2 Hughes OSQ-2 OWS
0 U U U U U U U U U U U U U U U U U U U			Sandstone, light-gray; trace of white calcite; also quite a large amount of medium-gray clay shale Inoceramus prisms Sandstone, light-gray, rather soft; mostly white and clear quartz; some dark chert, trace brownish-gray ironstone, trace coal		0*50*				- 1000 NG 5	Hughes OWS 28 Reed 2B RHO Reed hole opener RT Reed type T PBR Security PBR hole opener SOW Security OW
ω α			Claystone, medium-dark-gray, hard; with some tendency to develop shaly fracture; abundant plant remains; scattered thin coaly laminae; a few iron-		0°50′	5		K-24	-1100	DDT Smith DDT CORE BITS K.24 Reed K-24 hard formation K.25 Reed K-25 soft formation
W W	30 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Claystone, medium-dark-gray, hard; with some tendency to develop shaly fracture; abundant plant remains; scattered thin coaly laminae; a few ironstone concretions around which cone-in-cone structure has developed; lowest 3 1/2 ft of recovery is silty, medium-gray, finely micaceous, and has thin laminae of siltstone with small-scale crossbedding. A 34" fault plane with well-developed slickensides and calcite fill 2 ft from bottom		0"? 0"20" 4 10-0	90		[4	NO.6 OSQ-2	Location: Lat 69°25′21″ N Long 154′34′04″ W Elevation: Kelly bushing, 840 feet approx Ground, 822 feet approx Spudded: April 22,1951 Completed: July 6, 1951 Total depth: 4,020 feet Status: Dry and abandoned Drilling and engineering data compiled from records of Arctic Contractors
Q Z Q 1300 —	4	E E	Coal and black shale, 30 percent Inoceramus prisms Sandstone, light-gray, hard; grains subangular to subrounded; largely white quartz, plus some clear quartz grains, dark chert, and other minerals; partings with black carbonaceous plant impressions. Medium-gray hard clay shale or claystone with poor cleavage; also medium-light-gray silty claystone or argillaceous siltstone; many plant impressions; irregular fracture; one-eighth inch of coal at base of interval. No shows		5* 1*10' 5. 7-0	80 150		E 4	NO.7 - 1300 NO.8 OWS -	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
α ω × O – 1400			Coal and dark-gray carbonaceous shale, black, shiny to dull, brittle. Two in of medium-dark-gray very hard dense dolomite, with conchoidal fracture; near-vertical veins of yellowish-gray dolomite crystals. No show at 1410 ft. Medium-dark-to medium-light-gray hard claystone and clay shale with poor cleavage; abundant plant fragments interbedded with hard light-to medium-light-gray siltstone and sandstone; stringers of dark carbonaceous material; some crossbedding		6 18-0	4 75 150		<u>K</u> .25	RERUN - 1400 NO.7 - DDT - DDT - NO.9 - NO.9 OWS - NO.9	
1500			Clay shale or claystone, medium-dark- to dark-gray, medium-hard; with poor cleavage and conchoidal fracture; scattered very thin lenses of coal; layer of clear greenish-yellow amber one-quarter in. thick at 1508 ft; rare silckensides Siltstone and some very fine sandstone, light-gray; also medium-to medium-dark-gray clay shale; plant impression trace of coal; pelecypod fragments and Incoranus prims		0°45′	100 5		K-24	NO.10 - 1500	
1600 -			Clay shale, medium-light- to medium-dark-gray, rare dark-gray; trace of silt-stone and coal		0*40*				NO.11 - 05C-3 - 1700	
1800			Sandstone, light-gray; grains subangular to subrounded; primarily white and clear quarts; remainder is dark chert and black coal grains, also scattered grains of a greenish mineral; plant impressions; trace of coal Inoceramus prisms Clay shale; 90 percent, and 10 percent siltstone. Medium-dark-gray hard clay shale with poor to fair cleavage; contains scattered coaly plant fragments. Medium-light-gray hard siltstone; present as irregular laminae and lenses in shale; slight suggestion of small-scale crossbedding; very rare slightly yellowish-gray ironstone nodules; one 45° slickenside at 1906 ft		0°45′ 1° 8 9-0	75		7	NO.12 - DDT - 1800 NO.13 - OWS	
1900	vi OD f-n		and lenses in shale; slight suggestion of small-scale crossbedding; very rare slightly yellowish-gray ironstone nodules; one 45° slickenside at 1806 ft Sandstone, light-gray, fine- to medium-grained, hard; grains subangular to subrounded; 80 percent white and clear quartz; remainder is carbonaceous particles and dark chert; argillaceous cement		Q*5Q*	150			NO.14 OSC.3	
2000			White material, slightly to moderately calcareous; may be fault gouge; slickensides present Clay shale, siltstone, and sandstone, interbedded; also up to 10 percent black shiny coal. No show at 2080 ft		0*45'	4			NO.15	
Verneutitinoides bor			Siltatone, 25 percent, interbedded, with 75 percent claystone (or clay shale). Medium-dark-gray hard claystone with poor cleavage and conchoidal fracture; small amount of clay ironatone. Light-to medium-light-gray hard slightly sandy siltatone; some swirly bedding in upper 2 ft.		1* 0*50' 9 12-0	50 150 9 % 6 →		1 6	NO.16	
2200 —		n, c	Sandstone, light-gray; grains subangular to subrounded; rare rounded coarse grains; mostly white and clear quartz; some brownish chert and siderite particles: coal particles		0*30′	5			NO.18 — 2200	
2300	66 La		Sandstone, similar to interval 2230-2230 ft above Sandstone, rather porous to drop test Clay shale, medium- to dark-gray, hard; with fair to good cleavage and conchoidal fracture; very rare carbonaceous plant impressions. Lower portion is 65 percent interbedded siltatone, 20 percent sandstone, and 15 percent clay shale. Medium-light-gray hard tight siltatone and sandstone; silty to very fine grained; mostly white and clear quarts; small amount of		0°45′	75	,	T 9	NO.20 — 2300 — 2300 — — — — — — — — — — — — — — — — — —	
2400 —	88		silty to very fine grained; mostly white and clear quartz; small amount of crossbedding		0°40′	125			NO.23	
2600 − 2			Sandstone, light-gray, probably rather soft; 85 percent white and clear quartz; remainder is dark chert, dark rock particles, and coal particles. Crinoid ossicle 2540-2550 ft		1*00'	150			NO.25 +	
			Limestone, medium-dark-gray, some chips with brownish cast, argillaceous, hard; white vein calcite present No show Sandstone, light- to medium-light-gray, hard; grains subangular to subrounded; 80-90 percent white and clear quartz; remainder is dark carbonaceous particles, dark chert and rock fragments; scattered irregular coaly streaks and carbonaceous plant impressions; a few small yellowish-gray clay ironstone nodules. Medium-dark- to dark-gray hard clay shale to claystone with fair to no cleavage and subconchoidal fracture; very coaly inclusions; contains small (one-quarter in dismeter) incipient cone-in-cone structures; near-vertical slickensides at the very base of the clay shale interval		2° 2° 11 1-0 12 18-0 0°30′	125	<u></u>	10 E11	NO.28	
W W W W W W W W W W W W W W W W W W W					0*50'				NO.31 - 2800 - 2800 - 90.32	
2900 — RUN 4	90		Sandstone, light-gray; mostly white and clear quartz; also dark chert, rock fragments, carbonaceous material, and pyrite			100 5			NO.33 — 2900 NO.34 — 05C-3	
3000 — 30			Sandstone, light-gray, massive, hard; uniform with irregular fracture; grains subangular to subrounded; composed of as much as 30 percent white and clear quartz; remainder mostly dark chert and coal particles; very rare coaly plant impressions; one pale-brown clay ironstone concretion at 3017 ft	Test 1, 2984-3027 ft: 75/8-in. hole; tester open 1 hr 26 min, produced light steady blow of gas and 90 ft of gas-cut mud Test 2, 3415-3762 ft: 95/8-in. hole; packer	1° 13 20-0 14 10-0 15 10-0	110	[<u>-</u>	644 12 13 14	NO.35 - 3000 - 3	
Z 3100			Clay shale, medium-dark-gray, medium-hard; poor to good cleavage and sub-conchoidal fracture; rare coaly plant fragments; thin layers of black shiny coal at 3108 ft and 3114 ft. Up to 40 percent light-gray hard siltatone; alternates and grades with the clay shale; some tiny crossbeds	failed, no test	3° 16 20-0 1° 17 14-0 0°50′	75		15	NO 38 - 3100 NO 38	
3200— 3300— 3300—			Sandstone, light-gray, mostly massive, hard; grains subangular to subrounded; 90 percent white and clear quartz; remainder is mostly dark chert and some coal particles; very rare carbonaceous partings; calcareous cement Clay shale and claystone, medium-dark- to dark-gray, medium-hard; poor to good cleavage. Dark-gray to grayish-black brittle coal and very car- bonaceous shale with flaky cleavage. Light-gray medium-hard sandstone with fractures parallel to the bedding; subangular to subrounded grains; 85 percent white and clear quartz; remainder is mostly dark chert and some coal particles; very rare carbonaceous partings		2½° 18 15-0			18	NO.40	
No N		-n	Sandstone, light- to medium-light-gray, massive, hard; irregular fracture; grains subangular to subrounded: 70-35 percent white and clear quartz; up to 25 percent dark-brown and black chert; remainder is rock fragments and some rare minerals, calcareous cement, very rare clayey laminae or lenticles. Upper 2 ft of core 20 has 3 slickensided fracture planes coated with hard white calcareous material; dip 35° to vertical	Test 4, 3400-3471 ft: 9 5/8-in. hole; packer failed, no test Test 5, 3408-3471 ft: Packer failed, no test Test 6, 3423-3471 ft: Packer failed, no test	20 12-0	100 5		19	NO.43 - 3400	
3500-	**************************************			acser lailed, no test	20 12-0 21 15-0				NO.44 - OSC-1	
3600— 			Siltatone, 30 percent, interbedded with 70 percent clay shale. Medium-light-gray hard siltatone with good cleavage parallel the bedding; carbonaceous micaceous partings. Medium-to medium-dark-gray hard clay shale with fair cleavage; silty, partly pyritized. Ditrupa sp. found at 3551 ft. No show at 3657 ft Siltatone, light-gray, hard; good to excellent cleavage parallel the bedding; some sandy laminae, dark carbonaceous partings common; at 3662 ft is an	Test 3, 3658-3762 ft: 9 5/8-in. hole; tester	1°-4° 22 7-0		\- <u>-</u>	[21	NO.45 - OWS - NO.46 - OSC.3 - 3600	
3700—		*	Siltstone, light-gray, hard; good to excellent cleavage parallel the bedding; some sandy laminae, dark carbonaceous partings common; at 3862 ft is an inch-thick layer of subangular clay shale fragments—a local conglomerate. Seven ft of medium-to medium-light-gray very silty hard claystone at the bottom of the interval. Dirtupa sp., crinoid fragments, and pelecypods found at 3672 and 3676 ft. Inocerumus prisms in microfossil cut Siltstone, 90 percent; 10 percent clay shale. Light-to medium-light-gray hard siltstone with fair to good cleavage. Medium- to medium-dark; gray hard clay shale occurs as laminae no thicker than 2 in. in the silt; poor cleavage	open 1 hr. Produced light blow of air, no fluid, no pressure	2°-6° 23 10-0 2° 24 15-0 2°-1°10′ 25 17-0	110 5		22 23	NO.47 OSC-1 - 3700 - 3700	
3800 — 3800 — — — — — — — — — — — — — — — — — —			L cleavage		1.00					
3900-			Siltatone and clay shale; interbedded with all gradations, slightly more silty than argillaceous. Light- to medium-gray siltatone, finely micaceous, moderately hard; good cleavage parallel the bedding; rare slightly sandy streaks; small-scale crossbedding; medium- to medium-dark-gray medium-hard clay shale with good cleavage; some swirty bedding in first foot						NO.50 DDT	
4000— Total depth- 4020		~}	streaks; small-scale crossbedding; medium- to medium-dark-gray medium-hard clay shale with good cleavage; some swirty bedding in first foot GRAPHIC LOG OF TITALUK	TEST WELL 1, A	r 25 19-0	- 6Vs-		25 Logged	by Florence M. Robinson	466356 O -59 (In pocket)