GEOLOGIC AND ROCK STRUCTURE LOG

COMPANY WH ENGINEERING-TOSCO

CORE HOLE DS1-C1

LOCATION N 661824 E 1295756 CENTRAL ZONE
(COLORADO STATE COORDINATES)
SE¼ SECT 12, T5S, R95W 6PM

ELEVATION 7993.5

DATES DRILLED July 14-15, 1980

CONTRACTOR ARMSTRONG ENGINEERS

DRILLER BILL VAUGHN

RIG CME 55 NX CORE

LOGGED BY W. HELEY, S. HELEY

DATE SEPT 14, 1980

MARKER BED DEPTH DATUM

FRACTURE—PARTING CLASSES

TYPE 1: FRESH BREAK
Drilling induced; clean, unweathered, irregular, rejoins with no visible separation.

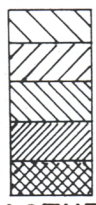
TYPE 2: ROTATED BREAK
Shows grinding in core barrel; origin uncertain since surface features destroyed.

TYPE 3: CLEAN BREAK
Generally smooth, unweathered, unmineralized, surfaces do not rejoin as a Type 1; bedding plane or possible tight joint.

TYPE 4: NATURAL BREAK
Open discontinuity; weathered, slickensided, surfaces, pre-existing.

TYPE 5: HEALED BREAK
Obvious mineralized pre-existing recemented fracture.

FRACTURE SPACING



Very Wide 10'
Wide 3 - 10'
Moderate 1 - 3'
Close .15- 1' R= Rubble
Very Close .15'

FRACTURE CHARACTER

p - polished, s - smooth, r - rough, v-very rough
k - slickensided

INFILLINGS

A - Clay
B - Carbonaceous
C - Clean
F - Oxidized
L - Leach or weathered
M - Marcasite (Pyrite)
N - Nahcolite
Q - Quartz
T - Talc
W - Calcite
U - Unidentified

ROCK QUALITY DESIGNATION(RQD)

1. Sum of Pieces .35' or longer ÷ run length
* 2. Sum of Pieces .35' or longer ÷ 10 feet

DEPTH (FT)	CORE: INTERVAL	CORE: RECOVERY	FRACTURES: FREQUENCY	FRACTURES: SPACING	FRACTURES: CLASS-INFILL-CHARACTER	FRACTURES: DIP	PARTINGS: CLASS-INFILLING	PARTINGS: DEPTH	PARTINGS: DIP	ROCK QUALITY DESIGNATION: PIECE LENGTH	ROCK QUALITY DESIGNATION: VERY POOR/POOR/FAIR/GOOD/EXCELLENT (PERCENT 25 50 75 90)	TESTS	LITHOLOGY	DESCRIPTION AND REMARKS
														(HOLE ON POTENTIAL SLIP AREA)
10														AUGERED TO 40' NO CORE
20														SOIL & ROCK
30														
40	RUBBLE						FLW	RUBBLE						RUBBLE
		9		90°,70°,20°,40°,40 / 45°,50°,30°,35°			WFL	1	.44 .50	28				SILTSTONE
							WC	4	.45					RUBBLE GREY MARLSTONE TUFF RED .1'
50		1			40°		FW	2	1.02 .43					
							WBL	2	.42					SILTSTONE
		2		WN WFL	85° 85°,70		FNW		.47	12				
							FNWL	12						GREY MARLSTONE W/ FREQUENT
		1		W	80°			2	.75					TUFF STRINGERS & LEACHED
60		1		WF	50°			2						CAVITIES, & NACHOLITE
				WF, WB	80°, 85, 10			2	1.00					GREY MARLSTONE - NEAR
				NWF	30°		WL		.63	16				VERTICAL FRACTURES WITH WEATHERED/OXIDIZED SURFACES
				FW	80			RUBBLE						
70														BADLY BROKEN CORE
									2.07					1' LOST CORE
		2		C	60° 70°			2		14				TUFF STRINGER
		3		N	20°,70°,80°			RUBBLE						TAN F.G. SANDSTONE
		1		C	80°		C	1						RUBBLE
80		2			90°,90°			0	1.40					
		2		N F	85° 85°			1	1.00					YELLOW TO
		3		L C	80°,80° 80°			2						TAN SANDSTONE W/ VERTICAL
							WN	Rubble		37				FRACTURES, WEATHERED
		3		W	40° 50° 40°		C	4	.40 .18					SURFACES
90							C	2	.93 1.47					GREY MARLSTONE
		2		WBF	90°, 20°				1.46					
							F FW, C, N		.99					VERTICAL FRACTURES W/ WEATHERED SURFACES.
							FW		2.27	55				
							C, F	5						
100									.84					YELLOW TO TAN SANDSTONE
		2		L, FL	15, 30°		L	2	1.22					
		2		FL F	10°,10° 20°		L	3	1.30					
							F	2	1.10	69				GREY MARLSTONE W/ WEATHERED FRACTURES
	1	1		C	85°		C	1	1.92 .75					
110		1		C	90		C, L	4	.65 .64					
		3		C, LW, WF	80° 80° 30° 50°		C	3						
		1		W	40°		W	3	1.00					YELLOW SANDSTONE LENS
							C	1	.87	55				
		1		C	85°		N	1	2.50					
120		3			85° 85° 20°		NL	0	.93 .17					
							C	1	.60 1.88					RICH OIL SHALE
							W, W, C, C	4	.77					
		4		W, C	85, 40° 70,		L	1	1.09	43				
				W	85°, 70, 90		F W	2						RUBBLE W/ CALCITE COATED SURFACES
130				W	80°, 70, 90 70°, 50°		F, N, L							LEACHED ZONE W/ BIT. MAT'L.
		1		WF	40°		N, NL	5	.50					
		1/2		NL	80		NL	2	1.35					
							C	1	1.57	41				
		1		W	70°			2	.68					
140														RUBBLE
														MISSING CORE DUE TO VOID.
							WAF							? SANDSTONE, LOCATION UNKNOWN
150														
										17				RUBBLE AND MISSING CORE
160		1		F	70°			2	.90 .79					
		1/2		C W	30° 70°, 80°		FN	2						GREY MARLSTONE W/
		2		W, C	20, 40°			R	.40					MANY WEATHERED FRACTURES
										28				45° TO VERTICAL
		1		C	40°			?	1.65					
170		2			60, 20°				.75					
									1.25					GREY MARLSTONE
									1.13 1.15	88			TD	
180														