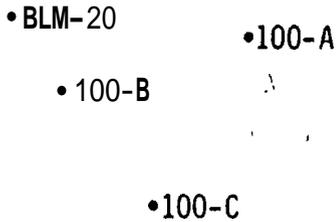


# LITHOLOGIC LOG

LOCATION MAP:



SITE ID: NASA-WSTF LOCATION ID: 100-A-182

SITE COORDINATES (ft.):

N 223399.14 E 416627.43

GROUND ELEVATION (ft. MSL): 4842.36 (BRASS CAP)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud Rotary, 0'-65'; Air-Foam Rotary 65'-221'

DRILLING CONTR.: Larjon

DATE STARTED: 08 May 1989 DATE COMPLETED: 30 May 1989

FIELD REP.: J. Kaszuba

COMMENTS: 12 1/4" pilot hole reamed to 16". 0'-65'. 9 7/8" borehole 65'-215'. 4" borehole 215'-221' (core). Bedrock

SE 1/4 NW 1/4 SW 1/4 SE 1/4 S 2 T 21S R 3E

LOCATION DESCRIPTION: at 87'. Total Depth = 221'.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
			0-65' time recorded manually	0'-215' cuttings	0'-10' Surficial Alluvium: Light brown (5 YR 6/4) to pale brown (5 YR 5/2). Cuttings range from less than 0.1 inch to 1.0 inch, are rounded to angular and poorly sorted. Unconsolidated silty, sandy gravel containing abundant boulders. Caliche occurs as discrete grains and as coatings on grains. Cutting lithologies same as described below.
5			36		
10			19		
15			15		10'-87' Alluvium (Santa Fe Group): Pale brown (5 YR 5/2) to grayish brown (5 YR 3/2), cuttings range in size from less than 0.1 inch to 1.0 inch, average sizes and shapes noted below. Unconsolidated to semi-consolidated, polygenetic conglomerate containing clasts ranging in size from silts to boulders. Silt-rich in the uppermost 10'. Caliche-bearing horizons occur in uppermost 25' and lowermost 7'. Clay-bearing interval occurs near contact with bedrock. Boulders occur throughout the alluvial section. Cutting lithologies include light gray (N7) to dark gray (N3) limestone, white (N9) to dark gray (N3) limestone, white (N9) rhyolite, dark reddish brown (10 R 3/4) siltstone, moderate brown (5 YR 4/4) sandstone, transparent to very light gray (N8) quartz, grayish orange (10 YR 7/4) caliche., mottled (colorless and red) granite, grayish red (10 R 4/2) andesite and moderate brown (5 YR 4/4) clay.
20			26		
25			22		
30			15		
35			11		10'-50' Average size of cuttings is 0.1-0.2 inch. Cuttings are subrounded to angular and represent unconsolidated sandy alluvium.
40			21		
45			6		
50			8		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
				0'-215' Cuttings		
50	VVVV++	[Dotted Lithology]	a		50'-87' Average size of cuttings increases to 0.25 inch. Cuttings are subrounded to angular and represent semi-consolidated gravelly alluvium.	
55	VVVV++		14			
60	++++VVVV		17			
65	++++VVVV		4	Begin Drillograph		
70	++++VVVV		5			
75	++++VVVV		5			
80	++++VVVV		5			
a5	VVVV++		16			
90	++++VVO		8			87'-105' Sandstone (Panther Seep Formation): Sample is dark yellowish orange (10 YR 6/6) to moderate yellowish brown (10 YR 5/4) in color; cuttings range from less than 0.1 to 0.9 inch in diameter, average 0.25 inch; subangular; poorly sorted. Sandstone containing fine- to coarse-grained, poorly sorted, subrounded to angular grains of quartz, biotite and granitic rock fragments. The sandstone is effervescent with HCL acid (calcite cement), is friable and displays no sedimentary structures.
95	++++		7			
00	++++	5				
05	++++	7				
10	++++	13				
15	++++	17		105'-150' Sandstone (Panther Seep Formation): Sample is light olive gray (5 Y 5/2) in color; cuttings range from less than 0.1 to 1.0 inch in diameter, average 0.25 inch; subangular to angular, poorly sorted. Sandstone containing fine- to coarse-grained, poorly sorted, subrounded to subangular grains of quartz and feldspar cemented by hematite, limonite and calcite (effervesces with HCL). Presence of iron oxide cement indicates previous influx of groundwater. No sedimentary structures are visible. Limonite especially prevalent in lowermost 5 feet.		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				0'-215' cuttings	
115			17		
120			7		
125			10		
130			6		
135			5		
140			7		
145			7		
150			10		150'-176' <u>Sandy Limestone (Panther Seep Formation)</u> : Sample is grayish brown (5 YR 3/2) to dusky brown (5 YR 2/2) in color; cuttings range in size from less than 0.1 to 0.7 inch, average 0.3 inch; cuttings are angular flakes and are moderately sorted. Sandy, micritic limestone. Sand comprises approximately 25% of the rock and is composed of fine-grained, rounded quartz. Limestone is slightly fissile and contains approximately 10% clay. Colorless calcite cuttings (less than 10%) occur within lowermost 5 feet. Calcite-filled fractures also occur within this interval.
155			7		
160			9		
165			14		
170			a		
175			10		176'-195' <u>Limestone (Panther Seep Formation)</u> : Sample is dark gray (N3) to grayish black (N2) and moderate yellowish brown (10 YR 5/4) in color; cuttings range in size from less than 0.1 to 0.75 inch in
180			a		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
180	+	[Lithology]	8	0'-215' cuttings	176'-195' diameter, average 0.3 inch; cuttings are angular flakes which are moderately sorted. Limestone is micritic. Calcite cuttings occur between 176' and 195' in amounts less than 10%. This calcite presumably fills fractures within the limestone. Approximately 30% of the sample between 180' and 195' is moderate yellowish brown in color from the presence of limonite. The presence of limonite indicates an influx of ground-water through the limestone.
185	+	[Lithology]	9		
190	+	[Lithology]	6		
195	+	[Lithology]	4		
200	+	[Lithology]	6		195'-200' <u>Chert (Panther Seep Formation)</u> : Sample is grayish black (N2) to black (N1) and light blive gray (5 Y 6/1) in color; cuttings range in size from less than 0.1 to 0.7 inch, average 0.2 inch; cuttings are angular and moderately sorted. Chert intermixed with limestone. The sample indicates this unit is composed of 70% chert and 30% limestone.
205	+	[Lithology]	37		200'-221' <u>Limestone (Panther Seep Formation)</u> : Sample is moderate brown (5 YR 4/4) and grayish black (N2) in color; cuttings range in size from less than 0.1 inch to 0.5 inch, average 0.2 inch; cuttings are angular and well sorted. Micritic limestone. The limestone is predominantly moderate brown in color between 200' and 210 . Brown and black limestone occur in subequal amounts between 210' and 215'. Calcite cuttings (less than 10%) occur between 210' and 215 . This calcite probably fills fractures in the limestone. The brown color is from the presence of limonite. Minor amounts of limonite also occur within the black limestone. The limonite indicates an influx of ground-water through the limestone.
210	+	[Lithology]	15		
215	+	[Lithology]	14	215'-221' Core	
220		[Lithology]	88		
225					215'-221' *****Core Interval***** (See Attached Core Description)
230					Total Depth = 221'
235					
240					
245					