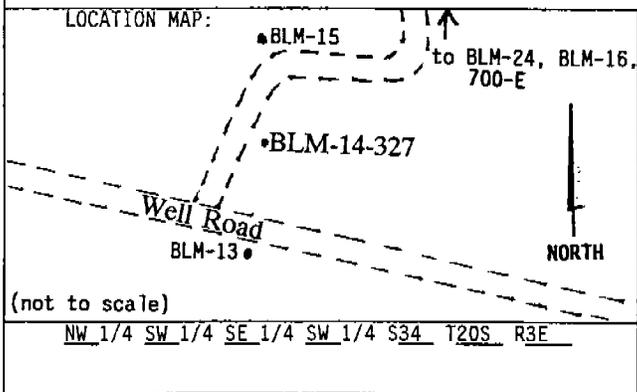


LITHOLOGIC LOG



SITE ID: NASA-WSTF LOCATION ID: BLM-14-327
 SITE COORDINATES (ft.):
 N 228060.48 E 410112.62
 GROUND ELEVATION (ft. MSL): 4675.54 (BC)
 STATE: NEW MEXICO COUNTY: DOÑA ANA
 DRILLING METHOD: Mud/Air-Foam Rotary
 DRILLING CONTR.: Larjon Drilling Co.
 DATE STARTED: 08/30/90 DATE COMPLETED: 09/27/90
 FIELD REP.: M. Canavan/D. Menzie/G. Contaldo
 COMMENTS: 0'-75' mud rotary (12 1/2 pilot, 16" ream). 10" surface casing to 75'. 75'-355' air-foam rotary (9 7/8" tricone bit 75-190')(9" air hammer bit, 190'-355'). Rhyolitic Tuff Bedrock - 270' (determined by geophysical logs). Total Depth(TD) = 355'.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
			0'-75' (timed by driller)	Cuttings (0'-355')	0'-270' Alluvium (Santa Fe Group): Overall color of samples is dusky yellowish brown (10 YR 2/2). Colors of individual clasts are highly variable. Increased percentages of clay imparts a pale reddish brown (10 R 5/4) color to unwashed samples. Cuttings range in size from less than .1" to 1.5" in diameter and in shape from angular to subrounded. The alluvium can be classified as an unconsolidated to partly consolidated polygenetic pebble conglomerate. Rock types include: dark gray (N3) limestone (mudstone-wackestone); greenish gray (5 G 6/1) and grayish red (5 R 4/2) laminated to nonlaminated siltstone; lithic to arenitic sandstones of varying color and cement content; and grayish orange (10 YR 7/4) to moderate red (5 R 4/6) rhyolites. Other igneous rock types present in lesser percentages include granites, andesites and tuffs. Quartzites and cherts are also present in minor quantities. 0'-65' contains much caliche-cemented and coated clasts. Clay-rich (>10%) interval exists from 90'-115'.
5	○○○○+////V		16		0'-65' Caliche interval.
10	○○○+////V		23		15'-20' Clay-rich interval ≥ 10% clay.
15	+++○○○//V		42		0'-75' Cuttings rounded to angular with larger cuttings angular to subrounded and small alluvial grains rounded to subangular. Cuttings range in size from much less than 0.1 inches to 1.1 inches.
20	+++○○○//V		27		
25	+++○○○//V		49		
30	+++////○○○V		16		
35	+++////V○○		23		
40	+++////V○○		24		
45	+++////V○○		27		
50	+++////V○○		17		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
50	/VVVO			Cuttings (cont'd)	
55	/VVVO		24		
60	/VVVO		17		
65	/VVVO		17		65'-75' Clay-rich interval ≥ 10%.
70	/VVV		28		
75	/VVV		18	Start drilllograph	75' Switch to air foam rotary drilling, 9 7/8" tricone milltooth.
80	/VVVO		4		75'-105' Decrease in average cuttings size to 0.1 inches. Cuttings range from much less than 0.1 inches to 0.1 inches. Cutting mostly rounded to subangular.
85	/VVVO		7		80'-105' Caliche interval; ≥ 10-20% caliche.
90	VVVO		6		90'-115' Clay-rich interval ≥ 10-20% clay.
95	VVV		5		
100	VVV		9		
105	VVV		6		
110	VVV		11		110'-125' Slight increase in average cuttings size to 1.5 inches.
115	VVV		9		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
115				Cuttings (cont'd)	
120			6		
125			7		
130			7		130'-150' Caliche interval; ≥ 10% caliche.
135			4		130' Decrease in average cuttings size to 0.1 inches. Cuttings range from much less than 0.1 inches to 0.3 inches. Cuttings rounded to angular with most cuttings rounded to subangular.
140			7		
145			5		
150			5		
155			7		
160			7		160'-165' Clay-rich interval; ≥ 10% clay.
165			6		
170			13		
175			42		175'-180' Increase in cutting times and limestone fraction. Bit chatter due to boulders.
180			31		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
180				Cuttings (cont'd)	
185	VVVVV/		31		185'-195' Cuttings range from .05" to .3" in diameter. 5% calcite-cemented alluvium.
190	VVVVV/		26		190' Switch to 9" air hammer bit.
195	VVVVV/		15		195'-205' Cuttings are uniform in size (.2-.4") and are subangular to subrounded.
200	VVVVV/		15		
205	VVVVV/		15		205'-225' Cuttings are much finer. (<.05"-.2"). Calcite-cemented alluvium still represents 5% of samples.
210	VVVVV/		19		
215	VVVVV/		18		
220	VVVVV/		21		
225	VVVVV/		29		225'-235' Cuttings are slightly coarser grained overall but range from <.05" to .3". Range in shape from angular to subrounded. Calcite-cemented alluvium still present as is Caliche-cemented alluvium.
230	VVVVV/		23		
235	VVVVV/		16		
240	VVVVV/		16		
245	VVVVV/		19		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
245			19	Cuttings (cont'd)	
250	VVVVV/0		19		250'-260' Cuttings range from <.05" to .3" in diameter and are angular to well rounded. "0" symbol represents caliche-cemented alluvium. 5% calcite present.
255	VVVVV/0		18		
260	VVVVV/0		25		
265	VVVVV/0		18		265'-270' Slight increase in volcanic percentage.
270	VVVVV/0		23		270'-275' First indication of brick red volcanic bedrock. Angular and fine grained.
275	VVVVVVV/0		32		270'-355' <u>Rhyolitic Lapilli Ash-Flow Tuff</u> : (top determined from geophysical logs). Grayish pink (5 R 8/2, dry) to dark reddish-brown (10 R 3/4) crystal vitric tuff contains up to 50% an- to euhedral phenocrysts of quartz, plagioclase and biotite in a glassy-ash matrix. Some cuttings show an alignment of phenocrysts and a eutaxitic structure. Cuttings range from silt-size to approximately 1 inch in diameter and are subangular to rounded.
280	VVVVVVV/0		32		
285	VVVVVVV/0		41		280'-295' Limestone, volcanic, and silt-stone cuttings. Subangular to well rounded and uniform in size (.1)". Brick red (wet) tuff ground fine (<.05"-.2"). Angular cuttings contain glass shards and hornblende phenocrysts.
290	VVVVVVV/0		30		
295	VVVVVVV/0		48		
300	VVVVVVV/0		39		300'-305' Increase in very fine-grained (<.05" diameter), ground tuff. Dark reddish-brown in color (10 R 3/4) (brick-red).
305	VVVVVVV/0		39		305'-310' Tuff weathered to a sugary texture.
310	VVVVVVV/0		45		

