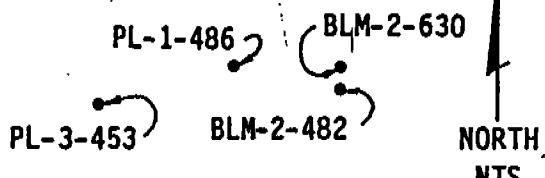


LITHOLOGIC LOG

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LOCATION MAP:



NW 1/4 SW 1/4 SE 1/4 NE 1/4 S 5 T 21S R 3E

SITE ID: NASA-WSTF LOCATION ID: PL-1-486

SITE COORDINATES (ft.):

N 225709.35 E 401823.62

GROUND ELEVATION (ft. MSL): 4518.14 (BRASS CAP)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: MUD & AIR-FOAM ROTARY

DRILLING CONTR.: LARJON

DATE STARTED: 7 SEPTEMBER 1988 DATE COMPLETED: 8 OCTOBER 1988

FIELD REP.: R. COOPER, J. KASZUBA

COMMENTS: 9 7/8" pilot hole reamed to 16" with mud rotary, 0'-

103'. 9 7/8" bit with air-foam 103'-532'. 8" Dennison core 532'-537'. Total depth = 537'. Bedrock not encountered.

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
5	+ + + + V V V V = =		56	0'-532' cuttings	ALLUVIUM (SANTA FE GROUP): Moderate brown (5YR 4/4) to grayish brown (5YR 3/2); cuttings range in size from less than 0.1 inches to 0.40 inches and are angular to subrounded, moderately sorted. Unconsolidated to moderately consolidated (?), polygenetic, pebble to boulder conglomerate. Clay-rich zones noted below. Lithology of cuttings which represent alluvial clasts: light gray (N7) to grayish black (N2) micritic limestone recrystallized to sparite in some samples, dark reddish brown (10R 3/4) to dusky red (5R 3/4) siltstone, grayish green (10GY 5/2) siltstone, white (N9) iron-stained rhyolite, light gray (N7) rhyolite, moderate reddish brown (10R 4/6) to dark reddish brown (10R 3/4) granite, dark gray (N3) aphanitic andesite, very dark red (5R 2/6) porphyritic andesite containing phenocrysts of plagioclase less than 0.1 inches (1 to 2 mm) in diameter, light gray (N7) porphyritic andesite containing plagioclase phenocrysts which are altered to epidote, and white (N9) calcite.
10	+ + + + V V V V / /		62		
15	+ + + + V V V V : :		10		
20	+ + + + V V V V : :		10		
25	+ + + V V V V = =		20		
30	EEEEEHHHVv		20		
35	EEEEEHHHV		52	0'-110'	Average cutting size ranges from 0.1 to 0.2 inches.
40	EEEEEHHHV		53	15'-40'	Caliche and siltstone present in amounts less than 10%.
45	+ + + V V V V : :		26	40'-100'	Siltstone cuttings present in amounts less than 10%.
50	V V M + + + : :		11		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
50	VVVV+++%=%		11		
55	++++VVVV%/%		20		
60	++++VVV%/%		32		
65	====VVVV++%/%		9		
70	++++VVVV%/%		10		
75	+++VVVV=%=%		48		
80	====++VVV%		22		
85	+++VVVV%=%		16		
90	+++VVVVV%=%		16		
95	+++VVVVV%/%		30	100'-235'	Penetration rates are very rapid.
100	++++VVVV%/%		27	100'-115'	Sample predominantly composed of cement from grout (surface casing).
105	++++VVVV%/%		100'-110' not recorded		
110	++++VVVV%/%		begin drillograph	110'-150'	Increase in average cutting size to 0.2 to 0.4 inches.
115	++++VVVVV%/%		3.5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
115	+ + + + V V V : / =		3.5	115'-125'	Clay-rich zone present.
120	+ + V : / = = = =		3.5		
125	+ + V : / = = = =		3.5		
130	+ + + + + V V V : / =		3.5	130'-135'	Clay-rich zone present.
135	+ + + + V V : / = = =		3.5		
140	+ + + + V V V : / =		3.5		
145	+ + + + V V : / =		3.5		
150	+ + + + + V V : / =		3.5	150'-160'	Decrease in average cutting size to 0.1 to 0.2 inches.
155	+ + + + + V V : / =		3		
160	+ + + + V V : / =		3	160'-190'	Increase in average cutting size to 0.2 to 0.4 inches.
165	+ + + V V V : / =		3	160'-205'	Cuttings of cement present (grout caving from above).
170	+ + + V V V : / =		4	170'-190'	Clay-rich zone present.
175	= = = = + V : / =		3.5		
180	= = = = + + V : / =		3.5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
180	====+V::/		3.5		
185	====+V::/		3.5		
190	====+V::/		3.5	190'-200'	Decrease in average cutting size to less than 0.1 inches.
195	====+V::/		3		
200	++++VVV::/		3	200'-240'	Increase in average cutting size to 0.1 to 0.2 inches.
205	++++VV::/		3		
210	++++VVVV::/		3		
215	++++VVVV::/		3		
220	++++VVVV::/		3		
225	++++VVVV::/		3		
230	++++VVVV::/		3		
235	++++VVVV::/		9	230'-250'	Decrease in penetration rates, bit not turning smoothly. Drilling through boulders (?).
240	++++VVVV::/		14	240'-250'	Decrease in average cutting size to less than 0.1 inches. Cuttings are predominantly angular flakes.
245	++++VVVV::/		6		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
245	+ + + + VVVZ//		6		
250	+ + + + VVVVZ//		6	250'-260' 250'-270'	Resume rapid penetration rates Increase in average cutting size to 0.1 to 0.2 inches.
255	+ + + + VVVVZ//		4		
260	+ + + + VVVVZ//		5	260'-530'	Decrease in penetration rates. Occasional intervals are drilled rapidly.
265	+ + + + VVVVZ//		14		
270	+ + + + VVVVZ//		11	270'-530'	Increased range of cutting sizes occurs as a result of drilling with stiff foam (Quik-Foam/EZ-Mud mixture).
275	+ + + + VVVVZ//		10	270'-290'	Decrease in average cutting sizes to less than 0.1 inches. Cuttings range up to 0.2 inches.
280	+ + + + VVVVZ//		13		
285	+ + + + VVVVVZ//		10		
290	+ + + + VVVVVVZ//		8	290'-310'	Increase in average cutting size to 0.2 to 0.4 inches.
295	+ + + + VVVVVVZ//		7		
300	+ + + + + VVVVZ//		7		
305	+ + + + VVVVZ//		6		
310	VVVVVV+ + + Z//		6		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
310	VVVVV+:://		6	310'-390'	Decrease in average cutting sizes to 0.1 to 0.3 inches.
315	+++VVVV:://		4.5		
320	+++:VVVV:://		6		
325	+++VVVV:://		5		
330	+++:VVVV:://		8		
335	VVVVV+:://		11	335'-530'	Andesite is most abundant cutting in samples as noted in visual percent column.
340	+++:VVVV:://		9		
345	VVVVV+:://		11		
350	+++:VVVV:://		11	350'-375'	Light gray (N7) porphyritic andesite (containing plagioclase phenocrysts altered to epidote) comprises at least half of igneous cuttings.
355	VVVVV+:://		14		
360	VVVVVV+:://		9		
365	VVVVVV+:://		11		
370	VVVVVV+:://		15		
375	VVVVV+:://		7		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
375	VVVVVV++:/		7		
380	VVVVVV++:/		8		
385	VVVVV++:/		9		
390	VVVVV++:/		4	390'-450'	Decrease in average cutting size to 0.1 to 0.2 inches. Size decrease corresponds to refilling of water truck and is probably result of thinner air-foam and EZ-mud.
395	VVVVV++:/		22		
400	VVVVV++:/		6		
405	VVVVV++:/		8		
410	VVVVV++:/		8		
415	VVVVV++:/		11		
420	VVVVV++:/		6		
425	++++VVV:/		6		
430	VVVVV++:/		9		
435	VVVVV++:/		10		
440	VVVVV++:/		9		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
440	VVVVVV+++:://		9		
445	VVVVVV+++:://		11		
450	VVVVVV+++:://		6	450'-470'	Increase in average cutting size to 0.1 to 0.3 inches. Cutting size increase corresponds to addition of more Quik-Foam to drilling fluid (more viscous fluid circulates larger cuttings to surface).
455	VVVVVV+++:://		7		
460	VVVVVVVV+++:://		7		
465	VVVVVVVV+++:://		7		
470	VVVVVVVV+++:://		5	470'-490'	Decrease in average cutting size to 0.1 inches. Cutting size decrease corresponds to a thinning of drilling fluid from water-bearing zone. Thinner foam does not lift coarse cuttings.
475	VVVVVVVV+++:://		4		
480	VVVVVV+++:://		7		
485	VVVVVV+++:://		11		
490	VVVVVV+++:://		7	490'-510'	Increase in average cutting size to 0.1 to 0.2 inches. Cutting size increase corresponds to addition of Quik-Foam to drilling fluid.
495	VVVVVV+++:://		3		
500	VVVVVV+++:://		3		
505	VVVVVV+++:://		8		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
505	VVVVV+++//		8		
510	VVVVV+++//		5	510'-515'	Decrease in average cutting size to 0.1 inches.
515	VVVVV+++//		6	515'-530'	Increase in average cutting size to 0.1 to 0.2 inches.
520	VVVVV+++//		5		
525	VVVVV+++//		6		
530	VVVVV+++//		3	532'-537' core	****core interval**** see attached description
535		End Drillograph			Total Depth = 537'.
540					
545					
550					
555					
560					
565					
570					