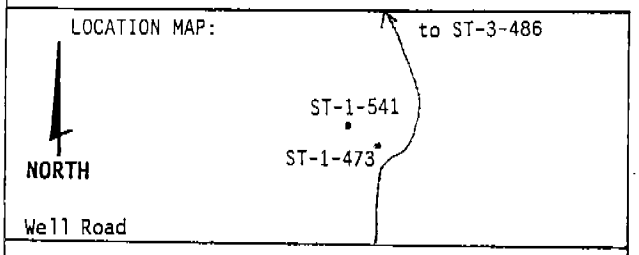
LITHOLOGIC LOG

LOCATION MAP:



SW 1/4 SW 1/4 NW 1/4 SE 1/4 S32 T20S R3E

SITE ID: NASA-WSTF LOCATION ID: ST-1-541

SITE COORDINATES (ft.):

N 229207.06 E 40119.59

GROUND ELEVATION (ft. MSL): 4502.39 (B.C.)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud Rotary/Air Foam Rotary

DRILLING CONTR.: Larjon Drilling Co.

DATE STARTED: 10/29/91 DATE COMPLETED: 11/19/91

FIELD REP.: D. Menzie

COMMENTS: 0'-82' Mud rotary. 12¼" pilot hole reamed to 16". 10" surface casing to 80'. 80'-585' air/foam rotary. Bedrock not reached. Total depth by drillograph is 585'.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
			Timed by driller	Cuttings	0'-365' Alluvium: (Santa Fe Group): Cutting samples consist of multicolored clasts with clay-rich intervals colored light brown (5 YR 6/4) to moderate brown (5 YR 4/4). Cuttings range in size from much less than 0.1 inches (clay and silt size) to 1.0 inches and average 0.1 inches in size. Cuttings are rounded to angular. Rounded and subrounded cuttings are formational grains and comprise 10-50% of individual samples. Angular and subangular cuttings include blocky formation clasts and flat chips broken during drilling. The alluvium is an unconsolidated to moderately consolidated, poorly sorted, pebble to boulder, polygenetic conglomerate. Intermittent clay and caliche-rich intervals are noted in the log. Cutting clasts representing various lithologies occurring in the alluvium are light gray (N7) to grayish-black (N2) limestone, white (N9) iron-stained rhyolite, moderate reddish-brown (10 R 4/6) to dusky red (5 R 3/4) siltstone, dusky brown (5 YR 2/2) sandstone, brownish-black (5 YR 2/1) to dark brownish red (10 R 3/4) andesite, brownish-gray (5 YR 4/1) to dark reddish-brown (10 R 3/4) tuff and lesser amounts of quartz, granite and caliche. Volcanic clasts of andesite and tuff increase gradually with depth such that samples below 365' indicate a volcanic-rich alluvium.
5			23		
10			18		
15			62		
20			17		
25			19		
30			11		
35			20		
40			31		
45			15		
50			20		

0'-82' Mud rotary.

0'-15' Clay-rich interval, clay content 50-60% cuttings range in size from > .1 inches to .2 inches and average less than .1 inches, cutting angular to subrounded.

15'-45' Increase in cutting size, range from .1 to .9 inches, average .4 inches, rounded to angular.

35'-45' Clay-rich interval, clay content 40-50%.

50'-60' Decrease in cutting size to average .2 inches, range from less than .1 to .3 inches, angular chips predominate.

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
				Cuttings (cont'd)		
50			20			
55			8			
60			13		60'-75'	Increase in cuttings size to average .4 inches, rounded and blocky clasts dominate.
65			16		65'-80'	Clay-rich interval, clay content 20-40%.
70			36			
75			25		75'-80'	Decrease in cutting size.
80			44		80'-120'	10-50% grout in cuttings, visual % is for formational clasts, clay content 10-30%.
					80'-130'	Increase in average cutting size to 0.3 inches.
85			9			
90			4			
95			2			
100			3			
105			2			
110			4			
115			4			

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cónt'd)	
115			4		
120			3		
125			4		125'-215' Clay content 10-40%.
130			3		130'-135' Decrease in average cutting size to 0.1 inches.
135			3		135'-160' Increase in average cuttings size to 0.4 inches.
140			3		
145			3		
150			2		
155			3		
160			3		160'-205' Decrease in average cutting size to 0.2 inches.
165			3		
170			4		
175			2		
180			3		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
180			3		
185			2		
190			3		
195			2		
200			3		
205			2		205'-585' Cutting size pretty stable, ranges from less than 0.1 inches to 0.3 inches and averages about 0.1 inches.
210			3		210'-215' First caliche in cuttings ≥ 10%.
215			3		215'-220' Slight increase in drill time.
220			8		
225			2		
230			4		
235			4		235'-245' Caliche 10%.
240			2		
245			5		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
245			5		
250			3		250'-255' Slight increase in drill times. 250'-265' Caliche 10%.
255			6		
260			3		
265			4		
270			3		
275			4		275'-280' Slight increase in drill times. 275'-285' Caliche 10%.
280			7		
285			4		
290			3		290'-295' Caliche 10%.
295			4		295'-310' Clay 10%.
300			4		
305			4		
310			3		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
310			3		
315			4		
320			4		
325			4		325'-335' Caliche 10%.
330			5		330'-340' Volcanic clasts ≥ 60% of sample; consist of andesite, tuff and rhyolite.
335			5		
340			4		340'-345' Caliche 10%.
345			4		
350			5		350'-375' Caliche 10%.
355			5		
360			6		
365			5		365'-585' Volcanic-rich Alluvium (Santa Fe Group): Samples range in color from brownish gray (5 YR 4/1) to moderate reddish brown (10 R 4/6). Cuttings range in size from less than 0.1 inches to 0.3 inches and average 0.1 inches in size. Cuttings are subrounded to angular and poorly sorted. The volcanic-rich alluvium is a moderately consolidated, pebble to boulder, polygenetic conglomerate. Predominant cutting clast lithologies are brownish-black (5YR 2/1) to dark brownish-red (10 R 3/4) andesite and brownish-gray (5 YR 4/1) to dark reddish-brown (10 R 3/4) tuff. Additional lithologies in order of decreasing abundance include limestone, siltstone, rhyolite, siltstone and caliche.
370			3		
375			7		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
375			7		
380			4		
385			5		
390			3		390'-395' Caliche 10%.
395			4		
400			3		
405			6		
410			5		
415			4		415'-545' Caliche 10% of sample. Consists of caliche-cemented sand and caliche-coated clasts larger than sand.
420			4		
425			3		
430			4		
435			4		
440			4		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
440			4		
445			4		
450			3		
455			4		
460			4		
465			3		
470			2		
475			3		
480			4		
485			4		
490			4		
495			4		
500			7		
505			2		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
505			2		
510			2		510'-515' Slight increase in drill times.
515			8		
520			4		
525			5		
530			2		
535			2		
540			3		
545			3		
550			5		
555			5		
560			2		
565			2		
570			3		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
570			3		570'-585' Slight increase in drill times.
575			6		
580			7		
585			7		TD = 585' by drillograph.
590					
595					
600					
605					
610					
615					
620					
625					
630					
635					