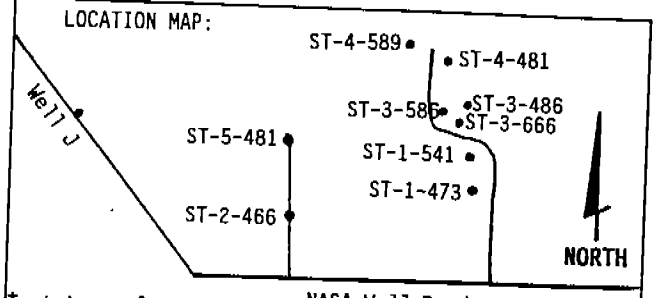
LITHOLOGIC LOG

LOCATION MAP:



*not to scale NASA Well Road

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

SITE ID: NASA-WSTF LOCATION ID: ST-3-666

SITE COORDINATES (ft.):

N 230842.33 E 400629.55

GROUND ELEVATION (ft. MSL): 4494.36' (BC)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud Rotary/Air Foam Rotary

DRILLING CONTR.: Larjon Drilling Co

DATE STARTED: 05/27/92 DATE COMPLETED: 06/12/92

FIELD REP.: D. Menzie, M. Canavan

COMMENTS: 0'-87' mud rotary 12¼" mill tooth bit. Ream to 16" from 0'-87'. Set 87' of 10" steel surface casing. 87'-704' air foam rotary 9 7/8" button bit. Volcanic-rich alluvium at 480'. Total depth = 704' by drillograph.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
5 10 15 20 25 30 35 40 45 50			Timed by driller 5 25 15 20 32 36 37 20 19 9	Cuttings Grab Sample every 5' 0'-704'	0'-~~704'~~ 595 Alluvium (Santa Fe Group): Unwashed samples range in color from moderate brown (5 YR 3/4) to light gray (N8). Samples are comprised of cuttings which range in size from 0.9 inches to much less than 0.1 inches (clay and silt size). Average cutting size is 0.1 to 0.2 inches. Cuttings are rounded to angular. Rounded to subrounded cuttings are formation grains and comprise 20%-60% of individual samples. Subangular to angular cuttings include blocky formation clasts and chips broken during drilling. The alluvium is an unconsolidated to moderately consolidated, poorly sorted, pebble to boulder, polygenetic conglomerate. Intermittent clay and caliche intervals are noted in the log. Cuttings representing lithologies in the alluvium are dark gray (N3) to light olive gray (5 Y 5/2) micritic limestone, white (N9) iron-stained rhyolite, brownish black (5 YR 2/1) sandstone, moderate reddish brown (10 R 4/6) siltstone, light brownish gray (5 YR 6/1) andesite, moderate red (5 R 4/6) tuff, grayish red (5 R 4/2) rhyolite, white (N9) to light gray (N7) quartz, and light gray (N7) caliche. Minor amounts of granite, quartzite, chert, schist and gneiss occur. Andesite, tuff, and rhyolite increase in abundance with depth until the alluvium becomes volcanic-rich (≥ 50% of sample) at 480' below ground surface. 0'-87' Mud rotary. 0'-35' Cuttings are rounded to angular. Range in size from 0.5 inches to less than 0.1 inches. Average size is 0.2 inches. 0'-5' Clay content 40%. 0'-10' Caliche content 10%-20%. 10'-35' Clay content 20%-90%. 15'-30' Caliche content 10%-30%. 35'-60' Cuttings range in size from 0.9 inches to 0.1 inches. Average cutting size is 0.3 inches.

LOCATION ID: ST-3-666

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	40'-45' Clay content 10%.
50			9		45'-50' Caliche content 10%. 50'-65' Clay content 40%-80%.
55			21		
60			20		60'-385' Cuttings range in size from less than 0.1 inches to 0.5 inches and average 0.2 inches.
65			26		65'-75' Caliche content 10%.
70			30		
75			17		75'-155' Clay content 10%-70%.
80			28		
85			40 Timed by drillograph		87'-704' Air Foam Rotary. 87'-95' 10%-30% of sample is grout. Visual % lithology is for formation cuttings only.
90			2		90'-155' Caliche content 10%-20%.
95			4		
100			4		
105			5		
110			5		
115			4		

LOCATION ID: ST-3-666

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
115			4		
120			7		
125			6		
130			5		
135			5		
140			3		
145			6		
150			6		
155			5		
160			4		160'-170' Clay content 10%.
165			4		165'-190' Caliche content 10%-20%.
170			12		
175			3		175'-185' Clay content 10%-20%.
180			5		

LOCATION ID: ST-3-666

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
180			5		
185			5		
190			5		
195			7		
200			5		200'-225' Caliche content 10%.
205			8		
210			4		
215			5		215'-220' Clay content 10%.
220			6		
225			5		
230			4		
235			9		
240			4		
245			7		

LOCATION ID: ST-3-666

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
245			7		
250			3		
255			11		
260			5		
265			6		
270			6		
275			6		
280			8		
285			4		
290			7		
295			6		
300			6		
305			7		
310			8		

LOCATION ID: ST-3-666

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
310			8		
315			5		
320			9		
325			7		
330			5		
335			4		
340			7		
345			10		
350			7		
355			6		
360			6		
365			10		
370			7		
375			8		

LOCATION ID: ST-3-666

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
375			8		
380			9		
385			8		385'-405' Decrease in average cutting size to 0.1 inches, cuttings are angular to subangular.
390			8		
395			12		
400			8		
405			7		405'-515' Slight increase in cutting size to 0.2 inches.
410			9		
415			7		
420			6		
425			6		
430			6		
435			7		
440			4		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
440			4		
445			6		
450			5		
455			11		
460			6		
465			5		
470			4		
475			5		
480			4		480' ~~704'~~ 595' Volcanic-rich Alluvium (Santa Fe Group): Samples range in color from light brownish gray (5 YR 6/1) to moderate red (5 R 4/6). Cuttings range in size from 0.6 inches to less than 0.1 inches. Average cutting size is 0.1 inches. Average cutting size is 0.1 to 0.2 inches. Cuttings are sub-rounded to angular and poorly sorted. The volcanic-rich alluvium is a moderately consolidated, pebble to boulder, polygenetic conglomerate. Predominant cutting lithologies are moderate red (5 R 4/6) tuff, light brownish gray (5 YR 6/1) andesite, and grayish red (5 R 4/2) rhyolite. Additional lithologies include minor amounts of clay, limestone, siltstone, and caliche.
485			4		
490			4		
495			4		
500			4		
505			4		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
505			4		
510			4		
515			5		515'-704' Cuttings range in size from less than 0.1 to 0.6 inches. Average size is 0.1 to 0.2 inches. Cuttings are subrounded to angular and poorly sorted.
520			4		
525			4		
530			6		
535			5		
540			5		
545			6		
550			5		
555			4		
560			4		
565			5		
570			9		

LOCATION ID: ST-3-666

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
570			9		
575			4		
580			5		
585			6		585'-590' Clay 10%.
590			9		590'-704' 95%-100% angular to subangular chips of red tuff, grayish red rhyolite and brownish gray andesite.
595			4		595'-704' TUFF (CUEVA TUFF?). See Addendum to file
600			5		
605			6		
610			13		
615			8		
620			8		
625			8		
630			6		
635			7		

LOCATION ID: ST-3-666

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
635			7		
640			9		
645			8		
650			9		
655			8		
660			8		660'-675' Clay balls in cuttings comprise 10% of sample.
665			7		
670			8		
675			14		
680			10		
685			10		685'-695' Clay balls in cuttings comprise 10%-20% of sample.
690			6		
695			6		
700			9		704' = TD by drillograph.