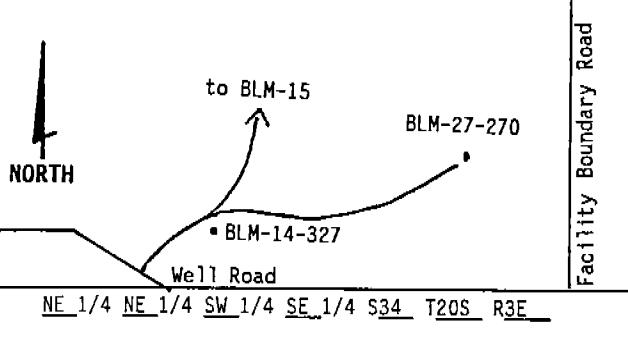


## LITHOLOGIC LOG

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## LOCATION MAP:



SITE ID: NASA-WSTF LOCATION ID: BLM-27-270  
 SITE COORDINATES (ft.):  
 N 228847.832 E 412395.864  
 GROUND ELEVATION (ft. MSL): 4729.75  
 STATE: NEW MEXICO COUNTY: DOÑA ANA  
 DRILLING METHOD: Mud and Air-foam Rotary  
 DRILLING CONTR.: Larjon Drilling Co.  
 DATE STARTED: 05/01/91 DATE COMPLETED: 08/08/91  
 FIELD REP.: G. Contaldo, D. Menzie, J. Chapman-Fahey  
 COMMENTS: 0'-56' mud rotary (12<sup>1</sup>/<sub>2</sub>" mill tooth and reamed to 16"), 56' of 10" surface casing, 56'-343' air-foam rotary (9 7/8" mill tooth), depth to tuff bedrock is 340'. Total Depth = 343'.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
5			No times taken during mud rotary drilling	Cuttings (0'-343')	0'-56' Mud Rotary. 0'-235' <u>Alluvium (Santa Fe Group)</u> : 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 1.3 inches and average 0.1 to 0.2 inches. Cuttings are rounded to angular. Rounded and subrounded cuttings are formation grains and comprise 10-50% of individual samples. Angular and subangular grains include chips and blocky clasts. 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) and greenish-gray (5 GY 6/1) siltstone, white (N9) to light gray (N7) quartz, grayish pink (5 R 8/2) to moderate pink (5 R 7/4) caliche, medium light gray (N6) to light brownish gray (5 YR 6/1) tuff, blackish red (5 R 2/2) andesite, dusky brown (5 YR 2/2) sandstone and minor amounts of chert. Tuff and andesite gradually replace rhyolite as the principle volcanic clast with increasing depth.
10	0 0 0 E E E H H				
15	H H H H Z Z V V				
20	H H H H Z Z Y Y O				
25	H H H V V Z Z : : O				
30	H H H H Z Z V V : : O				
35	H H H H Z Z E E H H				
40	H H H H Z Z E E H V				
45	H H H Y V V V : : O				
50	H H H H H H H Y V / /				

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
50			No times taken for mud rotary	Cuttings (cont'd)	
55			Times from drillograph		56'-343' Air-foam Rotary.
60					
65			4		65'-75' Clay-rich interval, clay content $\geq 10\%$ .
70			3		
75			3		
80			3		80'-125' Cuttings size decreases. Cuttings range in size from 0.3" to < 0.1" and average 0.1". Cuttings mostly subrounded but include angular chips.
85			5		
90			10		90'-95' Clay-rich interval, clay content $\geq 10\%$ .
95			7		
100			11		
105			4		
110			10		
115			10		



Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
180	H H V V V V / / / / 0		36		
185	H H V V V V / / / / 0		33		185'-335' Cuttings size gradually decreases. Size ranges from 0.2" to <0.1" and averages < 0.1".
190	H H V V V V / / / / 0		16		
195	H H H V V V V / / / / 0		14		
200	H H V V V V / / / / 0		16		
205	H H V V V V / / / / 0		28		
210	H H V V V V / / / / 0		22		
215	H H H V V V V V V / / 0		24		
220	H H H V V V V V V / / 0		24		
225	H H H H V V V V V V / / 0		142		
230	V V V V H H H / / / / 0		25		
235	V V V V V V V H H H / / 0		18	235'	Drilling foam changes color from tan to reddish-gray.
240	V V V V V V V V H H / / 0		9	235'-340'	<u>Volcanic-rich Alluvium (Santa Fe Group):</u> Samples range in color from medium gray (N5) to light brownish gray (5 YR 6/1). The volcanic-rich alluvium is a moderately consolidated, pebble to boulder conglomerate. Clasts representing
245	V V V V V V V V H H / / 0		7		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
245	VVVVVVVVVV+/-		7	Cuttings (cont'd)	lithologies in decreasing abundance are medium light gray (N6) to light brownish gray (5 YR 6/1) tuff, blackish red (5 R 2/2) andesite, grayish black (N2) Limestone and lesser amounts of rhyolite, siltstone, and quartz.
250	VVVVVVVVVV+/-		71	245'	Minor bit chatter.
255	VVVVVVVVVVNN+		11		
260	VVVVVVVVVV+/-		9		
265	VVVVVVVVVV+/-		11		
270	VVVVVVVVVV+/-		23	266'	Minor bit chatter.
275	VVVVVVVVVV+/-		20		
280	VVVVVVVVVV+/-		28		
285	VVVVVVVVVV+/-		24		
290	VVVVVVVVVV+/-		8		
295	VVVVVVVVVV+/-		11		
300	VVVVVVVVVV+/-		8		
305	VVVVVVVVVV+/-		8		
310	VVVVVVVVVV+/-		6		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings cont'd	
310	VVVVVVVVVVVVVV		6		
315	VVVVVVVVVVVVVV		7		
320	VVVVVVVVVVVVVV		9		320' Increase in drill times.
325	VVVVVVVVVVVVVV		52		
330	VVVVVVVVVVVVVV		60		
335	VVVVVVVVVVVVVV		21		335'-340' Cuttings size decreases to much less than 0.1". Cuttings still include many rounded and subrounded clasts.
340	VVVVVVVVVVVVVV		56		340'-343' Cuttings size increases to average of 0.1", most clasts angular and 100% tuff.
345					340'-343' <u>Crystal-lithic Ash-flow Tuff (Cueva Tuff?)</u> : Samples range in color from light gray (N7) to light brownish gray (5 YR 6/1). Cuttings are angular to subangular. Crystals in decreasing abundance are quartz, plagioclase, and biotite. Lithic fragments include rhyolite and andesite. Top of bedrock chosen from the combined information of cutting lithology, penetration rates during drilling, and geophysical logs. Some uphole contamination by limestone and siltstone is present in the cuttings samples.
350					
355					
360					
365					
370					
375					