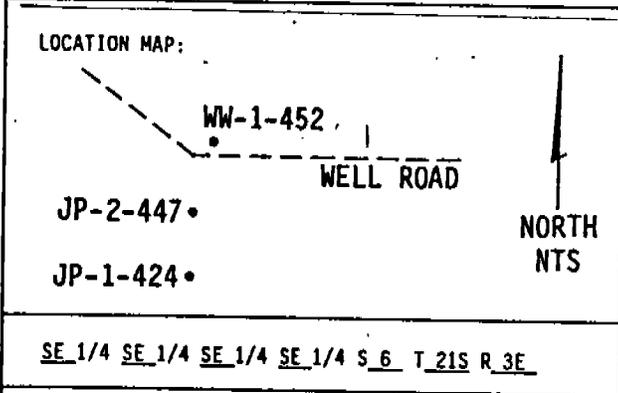


LITHOLOGIC LOG



SITE ID: NASA-WSTF LOCATION ID: JP-1-424

SITE COORDINATES (ft.):
 N 223189.3 E 397426.37

GROUND ELEVATION (ft. MSL): 4444.09 (BRASS CAP)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: AIR-FOAM ROTARY

DRILLING CONTR.: LARJON

DATE STARTED: 31 October 1987 DATE COMPLETED: 25 November 1987

FIELD REP.: JP KASZUBA

COMMENTS: No penetration rates 0'-100'. 12 1/4" bit 0'-100'. 7 7/8" bit 100'-490'. Total Depth = 490'. Bedrock not reached.

LOCATION DESCRIPTION:

SE 1/4 SE 1/4 SE 1/4 SE 1/4 S 6 T 21S R 3E

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
			0'-100' not available	0'-490' cuttings	
5		[Pattern]			0'-5' SURFICIAL ALLUVIUM: Moderate brown (5YR 4/4); fine to medium-grained sand; sub-rounded to subangular; poorly-sorted. Unconsolidated sand. Clastic lithologies include colorless quartz and calcite, grayish black (N2) limestone, moderate red (5R 4/6) siltstone and grayish orange pink (5YR 7/12) sandstone.
10		[Pattern]			5'-490' ALLUVIUM (Santa Fe Group)
15		[Pattern]			5'-15' Pale brown (5YR 5/2) to light brown (5YR 6/4); cuttings are ≤ 0.1 inches diameter; rounded to angular; moderately sorted. Unconsolidated (?) sand and gravel. Cutting lithologies include colorless quartz, grayish black (N2) limestone, moderate red (5R 5/4) siltstone and white (N9) rhyolite.
20		[Pattern]			
25		[Pattern]			15'-60' Light brown (5YR 6/4) to pale yellowish brown (10YR 6/2); cuttings are up to 0.25 inches diameter; average ~ 0.1 inch diameter; subrounded to subangular; moderate sorting. Poorly consolidated (?). Conglomerate comprised of silts through boulders. Clay present @ 20'-60' in amounts < 10% except where noted. Cutting lithologies include colorless quartz and calcite, medium gray (N5) to medium dark gray (N4) limestone, dusky red (5R 3/4) siltstone, grayish orange pink (5YR 7/12) sandstone, medium light gray (N6) chert, white (N9) rhyolite and light brown (5YR 6/4) caliche.
30		[Pattern]			
35		[Pattern]			
40		[Pattern]			20'-25' Clay present as nodules among cuttings.
45		[Pattern]			35'-45' Clay present as nodules among cuttings.
50		[Pattern]			35'-60' Slight increase in average size of cuttings.

Depth	Visual %	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
					<u>ALLUVIUM (Santa Fe Group) Continued</u>
50					
55					
60					60'-130' Light brown (5YR 6/4) to pale yellowish brown (10YR 6/2); cuttings are ≤ 0.1 inch diameter, subrounded to angular, poorly sorted. Poorly consolidated (?). Conglomerate comprised of silts through boulders. Clay present @ 60'-130' in amounts of < 10% except where noted. Cutting lithologies include colorless quartz and calcite, medium gray (N5) to dark gray (N3) limestone, dusky red (5R 3/4) to moderate red (5R 5/4) siltstone, grayish orange pink (5YR 7/12) sandstone, medium light gray (N6) chert, white (N9) rhyolite and light brown (5YR 6/4) caliche.
65					
70					
75					70'-75' Significant decrease in cutting size, average <0.1 inch diameter
80					
85					
90					
95					
100				Begin drillograph	100'-110' Clay present as nodules among cuttings.
105			3		100'-130' Change in drill bits (12 1/4" to 7 7/8") and concurrent increase in penetration rates results in increase in size (~ 0.2 inch diameter average, 0.5 inch diameter maximum) of cuttings.
110			4		
115			5		

Depth	Visual %	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
					ALLUVIUM (Santa Fe Group) Continued
115			5		115'-180' Clay present as nodules among cuttings, comprises significant proportion of lithology.
120			5.5		115'-180' Caliche present as fracture fillings in limestone and as a coating on rounded limestone cuttings.
125			6		
130			8		130'-150' Grayish orange (10YR 7/4) to dark yellowish orange (10YR 6/6); cuttings are 0.1 inch diameter average, 0.4 inch diameter maximum; subrounded to subangular; poorly sorted. Poorly consolidated (?). Conglomerate comprised of clays and silts through pebbles and cobbles. Cutting lithologies include colorless quartz, grayish black (N2) limestone, dusky red (5R 3/4) siltstone, light gray (N7) to medium dark gray (N4) chert, very pale orange (10YR 8/2) to white (N9) rhyolite and light brown (5YR 6/4) caliche.
135			4.5		
140			7		
145			8.5		140'-180' Caliche fragments present among cuttings as a cement binding sand-size fragments of all lithologies noted above.
150			6.5		150'-180' Dark yellowish orange (10YR 6/6); cuttings are 0.1 inch diameter average, 0.25 inch diameter maximum; rounded to subangular; moderately well sorted. Poorly consolidated (?). Clayey conglomerate comprised of clays and silts through sands and gravels. Cutting lithologies include colorless quartz, grayish black (N2) limestone, dusky red (5R 3/4) siltstone, light gray (N7) chert, white (N9) rhyolite and light brown (5YR 6/4) caliche.
155			3		
160			4.5		
165			3		
170			4		
175			3.5		
180			14		180'-190' Grayish orange (10YR 7/4) clay. Unconsolidated (?).

Depth	Visual X	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
					<u>ALLUVIUM (Santa Fe Group) Continued</u>
180			14		180'-190' Not enough returns of cuttings to collect a sample. Clay comprises 100% of the few cuttings circulated to the surface. Drills like clay.
185			17		
190			17.5		190'-210' One sample collected for 20' interval.
195			7		190'-370' Grayish orange (10YR 7/4) to grayish brown (5YR 3/2); cuttings average 0.1 inch diameter, maximum 0.3 inch diameter, rounded to angular; moderate sorting. Poorly consolidated (?). Conglomerate containing silts through gravels ± cobbles. Boulders (?) occur where drilling rates decrease significantly (as noted below). Cutting lithologies include colorless quartz, grayish black (N2) limestone, dusky red (5R 3/4) siltstone, light gray (N7) chert, moderate brown (5YR 3/4) sandstone, white (N9) rhyolite, pale purple (5P 6/2) to grayish purple (5P 4/2) andesite and light brown (5YR 6/4) caliche.
200			3.5		
205			5.5		
210			18.5		205'-210' Drilling rate decreases, greater amounts of cobbles ± boulders present (?). 210'-220' One sample collected for 10' interval.
215			2.5		
220			5		
225			6		225'-330' Drilling rate decreases, greater amounts of cobbles ± boulders present (?).
230			24		230'-270' One sample collected for each 20' interval.
235			2.5		
240			3		
245			2.5		

Depth	Visual %	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
					<u>ALLUVIUM (Santa Fe Group) Continued</u>
245			2.5		245'-250' Drilling rate decreases, greater amounts of cobbles ± boulders present (?).
250			15		
255			3		
260			3		
265			3		
270			3		270'-285' Drilling rate decreases, greater amounts of cobbles ± boulders present (?).
275			5.5		270'-290' One sample collected for each 10' interval.
280			16		
285			12		
290			3		290'-350' One sample collected for each 20' interval.
295			4		290'-360' Orejon andesite comprises significant amount of volcanic constituent (~ 50%). Color of Orejon ranges from pale purple (5P 6/2) to grayish purple (5P 4/2).
300			4		
305			4		
310			4		

Depth	Visual %	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
					ALLUVIUM (Santa Fe Group) Continued
310			4		
315			3		
320			5		
325			6		
330			6		
335			2.5		
340			3		
345			5.5		
350			5		350'-360' Resume 5' sample intervals.
355			3.5		
360			11.5		359'-362' Drill through large boulder. 360'-380' One sample collected for each 10' interval.
365			40		360'-490' Orejon andesite comprises significant component of cuttings.
370			9		370'-490' Medium dark gray (N4) to grayish brown (5YR 3/2); cuttings average \leq 0.1 inch diameter, maximum 0.25 inch diameter, subangular to angular; well sorted. Consolidated (?). Gravelly sandstone (?). Andesite cuttings contain epidote alteration of feldspars and matrix.
375			5		

Depth	Visual %	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
375			5		370'-490' <u>ALLUVIUM (Santa Fe Group) Continued:</u> Lithologies include colorless quartz, dark gray (N3) limestone, dusky red (5R 3/4) siltstone, medium gray (N5) to light gray (N7) chert, dark yellowish brown (10YR 4/2) sandstone, white (N9) to dark yellowish orange (10YR 6/6) rhyolite and grayish purple (5P 4/2) to medium bluish gray (5B 5/1) andesite.
380	VVVVVV		5		
385	VVVVVV		6		380'-390' Resume 5' sample interval.
390	VVVVVV		6		390'-400' One sample for 10' interval.
395			3		
400	VVVVVV		9		400'-440' Resume 5' sample interval.
405	VVVVVV		6		
410	VVVVVV		6		
415	VVVVVV		3		
420	VVVVVV		4		
425	VVVVVV		4		
430	VVVVVV		4.5		
435	VVVVVV		2.5		
440	VVVVVV		7		

Depth	Visual %	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
					<u>ALLUVIUM (Santa Fe Group) Continued</u>
440	+		7		440'-450' One sample for 10' interval.
445			3.5		
450	+		7.5		450'-460' Resume 5' sample interval.
455			5.5		
460	+		4.5		460'-470' One sample for 10' interval.
465			3.5		
470	+		3.5		470'-490' One sample for 20' interval, poor sample.
475			3.5		
480			3.5		
485			3.5		
490	+		6		Total Depth = 490'.
495					
500					
505					