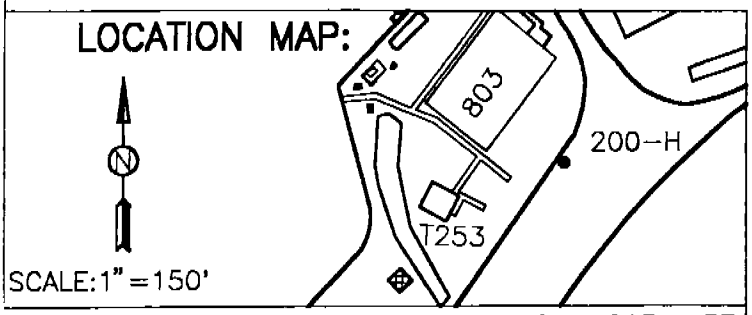
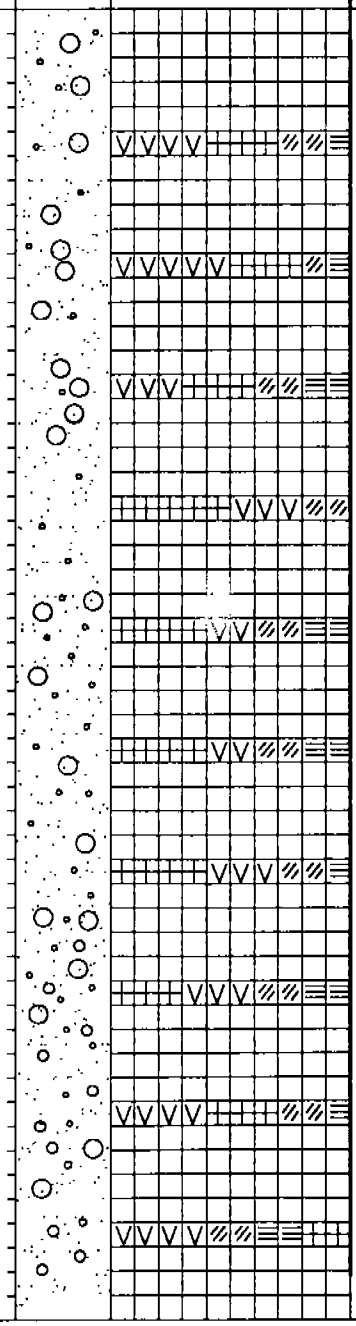
LITHOLGIC LOG



___1/4 ___1/4 NE 1/4 NE 1/4 S 2 T215 R 3E

SITE ID: NASA-WSTF LOCATION ID: 200-H
SITE COORDINATES (FT.):
N 227798.58 E 418075.30
GROUND ELEVATION (FT. MSL): 4882.13
STATE: NEW MEXICO COUNTY: DONA ANA
DRILLING METHOD: MUD ROTARY/AIR FOAM ROTARY
DRILLING CONTR: LARJON DRILLING CO
DATE STARTED: 8-29-94
FIELD REP.: JACOBS, GILES, SUMMERS
COMMENTS: 8 1/2" TRICONE W/MUD 0-70', 3" CORE BARREL 70-74', 4/12" BUTTON/TRICONE W/FOAM 74-464', 5" STEEL CASING TO 92',TOTAL DEPTH = 464'.

DEPTH	LITH	VISUAL %	DRILLING TIME SCALE: MIN.	SAMPLE TYPE AND INTERVAL	LITHOLOGIC DESCRIPTION (LITH., GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SRTG., CONSOL., DIST. FEATURES)
5, 10, 15, 20, 25, 30, 35, 40, 45, 50			TIMED BY DRILLING	CUTTINGS GRAB SAMPLE EVERY 5'.	0'-74' ALLUVIUM (SANTA FE GROUP): CUTTING SAMPLES CONSIST OF MULTI-COLORED 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 SUBANGULAR TO ANGULAR. ANGULAR AND SUBANGULAR GRAINS INCLUDE CHIPS AND BLOCKY CLASTS. THE ALLUVIUM IS AN UNCOLIDATED TO MODERATELY CONSOLIDATED, POORLY SORTED, PEBBLE TO BOULDER, POLYGENETIC CONGLOMERATE. 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. @ 20'-40' ABUNDANT MEDIUM TO DARK GRAY MICROCRYSTALLINE LIMESTONE, WITH MINOR SHELL HASH AND CRINOIDS. SOME BRECCIATED FRAGMENTS SUPPORTED IN A CALCITE MATRIX. @ 50' PREDOMINANTLY CREAM TO TAN RHYOLITE, AND SILTSTONE/MUDSTONE. MICROCRYSTALLINE LIMESTONE LESS THAN 20 PERCENT.

LITHOLOGIC LOG
(CONTINUED)

LOCATION ID: 200-H

DEPTH	LITH	VISUAL %	DRILLING TIME SCALE: MIN.	SAMPLE TYPE AND INTERVAL	LITHOLOGIC DESCRIPTION (LITH., GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SRTG., CONSOL., DIST. FEATURES)
55			TIMED BY DRILLING	CUTTINGS GRAB SAMPLE EVERY 5'.	
60					@ 60' RHYOLITE, RHYODACITE AND OTHER VOLCANICS ABUNDANT (TO 50 PERCENT).
65					
70					@ 70'–74' LITHIFIED CONGLOMERATE COMPRISING A VARIETY OF PALEOZOIC SEDIMENTARY CLASTS (MUDSTONE, SHALE, AND LIMESTONE) SUPPORTED IN A GRAVELLY SANDY MATRIX. CLASTS ANGULAR TO SUBANGULAR, UP TO 4 INCHES ON LONG AXIS, NO VISIBLE VOLCANICS, INFERRED AS LOVE RANCH FORMATION.
75					
80					74'–150' LIMESTONE: MEDIUM TO DARK GRAY, MICROCRYSTALLINE, LOCALLY FOSSILIFEROUS, ABUNDANT BRECCIATION AND CEMENTATION BY CALCITE WITHIN UPPER 5 FEET.
85					
90			8		@ 90' VERY FINELY CRYSTALLINE, GY, ABUNDANT BROWN CALCITE FILLED FRACTURES, SOME FRACTURE LINED WITH SPARRY CALCITE.
95			7		@ 95' ABUNDANT BRECCIATION AND CALCITE VEINING TO 1/4 INCH IN THICKNESS. VARIABLE SHELL HASH VISIBLE, INCLUDING BRACHIOPOD VALVES.
100			10		
105			7		@ 105'–120' MEDIUM GRAY/BROWN, STRONGER SILT COMPONENT TO LIMESTONE, MICRO? CRYSTALLINE SOME CHIPS SHOW FINE SUBPARALLEL LAMINATION REPRESENTATIVE OF SHALEY INTERVALS, TAN CLAY HORIZON AT 115 FEET, INFERRED FAULT ZONE.
110			9		
115			10		
120			15		

LITHOLOGIC LOG
(CONTINUED)

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125			TIMED BY DRILLING	CUTTINGS GRAB SAMPLE EVERY 5'.	@ 125'-135' MEDIUM GRAY, MICROCRYSTALLINE MATRIX SUPPORTING LARGER FRAGMENTS OF SHELL HASH, VISIBLE CALCITE VEINING TO 1/16 MM IN THICKNESS WITHIN UP TO 5 PERCENT OF SAMPLES, SUBHEDRAL TO EUHEDRAL CALCITE FILLS FRACTURES.
			12		
130					
			12		
135					@ 135'-150' RELATIVELY ABUNDANT SHELL HASH, CRINOIDS AND BRACHIOPODS WITHIN 10 TO 15 PERCENT OF SAMPLE.
			10		
140					
			17		
145					
			11		
150					150'-165' CALCAREOUS SHALE: DARK GRAY TO BLACK, MICROCRYSTALLINE, RELATIVELY SOFT (BREAKS IN FINGERS), SHALEY PARTINGS READILY VISIBLE, IRREGULAR BREAKAGE OF CHIPS ON PARTINGS.
			7		
155					
			6		
160					
			12		165'-185' INTERBEDDED SHALE/MUDSTONE: MEDIUM GRAY BROWN, MODERATELY INDURATED, MICROCRYSTALLINE, MINOR CALCITE MICROVEINLETS WITHIN 5 PERCENT OF CHIPS, NON?FOSSILFEROUS.
165					
			6		
170					
			7		
175					
			7		
180					
			14		185'-200' LIMESTONE: LIGHT TO MEDIUM GRAY, MICROCRYSTALLINE, MODERATELY INDURATED, NON-FOSSILFEROUS.
185					
			14		
190					
			13		

LITHOLOGIC LOG
(CONTINUED)

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DEPTH	LITH	VISUAL %	DRILLING TIME SCALE: MIN.	SAMPLE TYPE AND INTERVAL	LITHOLOGIC DESCRIPTION (LITH., GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SRTG., CONSOL., DIST. FEATURES)
195			TIMED BY DRILLING 10	CUTTINGS GRAB SAMPLE EVERY 5'.	200'–230' SHALE: MEDIUM GRAY/BROWN, FISSILE, ABUNDANT SHALEY PARTINGS, MICROCRYSTALLINE, CALCAREOUS, NO VISIBLE FOSSILS OR SHELL HASH.
200					
205					@ 210'–215' ABUNDANT FIRE LIGHT BROWN LAMINAE, SUBPARALLEL, TO 1 MM IN THICKNESS. VERY FISSILE.
210					
215					
220					@ 225' MIXED MEDIUM GRAY/BROWN AND TAN COLORED SHALE.
225					230'–235' SANDSTONE: LIGHT TO MEDIUM GRAY, INDURATED, COMPRISES SUBANGULAR TO SUBROUNDED GRAINS (BLACK, TAN, GRAY) TO 2 MM IN SIZE, COARSE GRAINED, MICROCRYSTALLINE MATRIX, MATRIX SUPPORTED, GRAINS CALCAREOUS.
230					235'–280' LIMESTONE: LIGHT TO MEDIUM GRAY, MICROCRYSTALLINE, HARD, BRITTLE, MICROFOSSILS, SOME FRACTURES, FILLED WITH CALCITE, TRACE PYRITE. @ 240'–255' SILTY LIMESTONE HORIZON, GRAY TO YELLOW OCHRE STAINING, HIGHLY FRACTURED.
235					
240					
245					
250					@ 240'–255' BLACK CALCAREOUS TO CARBONACEOUS ARGILLIC LIMESTONE, LAMINATED, FISSILE, SOME FRACTURES LINED WITH SPARRY CALCITE, ABUNDANT CRINOIDS AND FUSILINIDS.
255					
260					

LITHOLOGIC LOG
(CONTINUED)

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265			TIMED BY DRILLING	CUTTINGS GRAB SAMPLE EVERY 5'.	@ 270'–275' BLACK CARBONEOUS SHALE HORIZONS.
270					
					280'–345' SHALE: SILTY SHALE, REDDISH GRAY, SOFT, FRIABLE, WELL LAMINATED SLIGHTLY CALCAREOUS.
275			57		
280			68		
					@ 290'–310' GRAY, LESS SILTY, SLIGHTLY MORE CALCAREOUS, WELL LAMINATED, SOFT.
285			7		
290			14		
295			12		
300			24		
305			7		
					@ 325'–345' GRAY, BELDMING HARDER AND MORE CALCAREOUS, ABUNDANT SMALL HAIRLINE FRACTURES FILLED WITH CALCITE.
310			12		
315			6		
320			7		
325			7		
330			18		

LITHOLOGIC LOG
(CONTINUED)

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DEPTH	LITH	VISUAL %	DRILLING TIME SCALE: MIN.	SAMPLE TYPE AND INTERVAL	LITHOLOGIC DESCRIPTION (LITH., GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SRTG., CONSOL., DIST. FEATURES)
335			TIMED BY DRILLING	CUTTINGS GRAB SAMPLE EVERY 5'.	
			9		
340					
			11		
345					345'–370' MIXED LIMESTONE/MUDSTONE: SLIGHTLY SHALEY,VERY HIGHLY FRACTURED, NUMEROUS HAIRLINE FRACTURES FILLED WITH CACCITE, HARD, LESS LAMINATED, MORE BLOCKY IN STRUCTURE.
			15		@ 355'–360' ABUNDANT LIMESTONE: DARK GRAY, BLACK, BLOCKY, HARD, NUMEROUS MICROFOSSILS PRESENT.
350					
			16		
355					
			12		@ 365'–370' DARK GRAY TO BLACK, SHALEY MUDSTONE, FISSILE, WELL DEVELOPED SHALEY PARTINGS, MODERATELY INDURATED, MICROCRYSTALLINE, 5 PERCENT CHIPS WITH CALCITE VEINLETS TO 0.5 MM THICKNESS.
360					
			34		
365					
			54		
370					370'–375' LIMESTONE: MEDIUM GRAY, FINE TO MEDIUM GRAINED, CLASTS SUSPENDED IN CALCITE MATRIX, DETRITAL, GRANULAR.
375					375'–400' SHALE: DARK GRAY TO BLACK, FISSILE, POORLY INDURATED, MICROCRYSTALLINE, MUD AND TRACE SILT, NO QUARTZ VEINS, CALCAREOUS.
380					
385					
390					
395					400'–464' LIMESTONE: BLACK TO DARK GRAY, ARGILLIC, CARBONACEOUS, HARD, DENSE, PYRITIC IN PLACES, NON-FOSSILIFEROUS.
400					

LITHOLOGIC LOG
(CONTINUED)

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DEPTH	LITH	VISUAL %	DRILLING TIME SCALE: MIN.	SAMPLE TYPE AND INTERVAL	LITHOLOGIC DESCRIPTION (LITH., GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SRTG., CONSOL., DIST. FEATURES)
405			TIMED BY DRILLING	CUTTINGS GRAB SAMPLE EVERY 5'.	
410					
415					
420					@ 425'–430' INTERBEDDED SHALE HORIZONS, BLACK, SOFT, WELL LAMINATED, SLIGHTLY CALCAREOUS, SILTY.
425					
430					
			42		
435					@ 435'–440' HIGHLY FRACTURED WITH ABUNDANT SPARRY CALCITE FILLED FRACTURES, ABUNDANT DISSEMINATED PYRITE.
			54		
440					
			58		
445					@ 445' HIGHLY FRACTURED, ABUNDANT SPARRY CALCITE INFIL.
			67		
450					@ 450'–464' BLACK, DARK GRAY, EXTREMELY FRACTURED, ABUNDANT SPARRY CALCITE LINED FRACTURES, LOCALLY BRECCIATED.
			87		
455					
			64		
460					TOTAL DEPTH (TD) AT 464 FEET.
465					
470					