

Hole No. 86-23

Coordinates _____

Sheet No. 1

PHILLIPS PETROLEUM CO.

Date Started _____

Collar Elevation _____

Date Completed _____

Total Footage _____

Type Drill _____

Overall Core Recovery _____

Bit Size _____ BDX

GEOLOGIC LOG

Logged By Beall

FROM	TO	FT. OF CORE	FEES	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION		SECTION DEPTH
613	622		1	Tuff, varies fm soft white, chalky to hard, lt grey welded			TUFF
622	636	*	2	AA w/ thin brownish, clay rich layer (soil?)			
636	644	*	3	DK red-brown clay/soil			Paleosol
644	657	*	4	Tuff, as per box "1"			TUFF
657	666		5	Mudflow/lahar - dk red to brown clay/mud w/ andesite boulders/cobbles, etc			
666	675		6	Dark brown clay, mud, cinders			
675	683	*	7	DK brown mud → cinders, dk red, soft			Mud flow/lahar
683	684		8	cinders			
684	690		8	basalt, black, fine grnd			BASALT
690	695	*	9	Basalt, AA			
695	701		9	Cinders			CINDER
701	712	*	10	" dk red to purple			
712	720	*	11	Andesite, med grey fine grnd			ANDESITE
720	722	*	11	DK red cinders, well consolidated			CINDER
722	732		12	Andesite interbedded w/ dark red cinders			
732	742		13				Andesite/Cinder debris flow
742	754		14	AA w/ incn cinders, poorly consolidated			
754	767	*	15				
767	781		16				
781	797		17	Andesite, hard, med grey fine grnd <u>Very</u> broken up in small pieces			
797	808		18	AA			
808	819		19	AA w/ clay alteration, very pulverized rock			ANDESITE
819	828		20	AA, somewhat less broken up			
828	836		21	AA			

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GEOLOGIC LOG

FROM	TO	FT. OF CORE	LOG	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION	SECTION DEPTH
836	842	22		Andesite, AA		ANDESITE
842	848	* 23		" "		
848	852	* 23		Cinders w/ small amts scoriaceous basalt		CINDER
852	860	24		Cinders		
860	864	24		Scoriaceous basalt		
864	869	* 25		BASALT - AA m-lk gray; v. fn. vesicular, "broken; v. fn x 1/4"		
869	872	* 25		VOLCANIC ASH - Red; soft to hard		
872	873	25		BASALT - AA		BASALT
873	877	* 26		BASALT - AA		
877	882	26		Volcanic Ash - reddish gray, hard, occ. basalt		V. ASH / Scoriaceous Bas
882	891	27		Vol. Ash - AA occ. scoriaceous basalt, hard		
891	901	* 28		Vol Ash - AA v. Red may be basalt (w/ TS.)		
901	909	29		Vol Ash - AA		
909	917	30		Vol Ash - AA		
917	920	* 30		Lithic TUFF - brownish gray to lt. tan; soft; numerous frags of basalt, scoria, pumice		LITH TUFF
920	921	31		Vol Ash - See above		V. ASH
921	921.5	31		Lithic tuff - See above		Lithic tuff
921.5	930	* 31		Vol Ash - dk gray to red; becoming more typically scoriaceous at 928.		ASH / CINDER
930	939	32		Cinders - Red		
939	956.5	33-34		Cinder - basalt frags in lower portion		
956.5	958	34		Lithic tuff - See above - becoming gray at 968'		

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GEOLOGIC LOG

FROM	TO	FT. OF CORE	TYPE	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION			SECTION DEPTH
958	1034	X	3542	Litic tuff-lahar? - Angular frag. become cobble sized @ 2999 v. angular (Lahar??) Size decreases @ 1030 and frag becomes more basaltic				Litic tuff/lahar?
1034	1036		42	LAHAR - dk brown matrix w/ cobble sized vesicular basalt frags, matrix in hand				
1036	1045	X	43	LAHAR - AH				
1045	1055		44	LAHAR - AH v. large boulders				
1055	1057		45	LAHAR - AH				
1057	1063		45	V. Ash - dk gray; soft to hard; frags of vesicular basalt; basalt frags are cobble sized; angular				V ASH
1063	1072	X	46	V. Ash - AH				
1072	1079		47	V. Ash - AH				
1079	1080		47	ABSTRACT - m gray; minutely vesicular;				
1080	1089	X	48	A BASALT - AH				ANDESITE
1089	1098		49	A BASALT - AH occ. broken				
1098	1106		50	ANDESITE - AH v. broken				
1106	1115		51	ANDESITE - AH				
1115	1117		52	ANDESITE - AH				
1117	1124		52	CINDER - Red to dk gray; soft to hard; lg. vesic. basalt				
1124	1133	X	53	CINDER - AH				
1133	1142	X	54	BASALT - dk gray; rubble looks like flow breccia; v. minutely vesicular;				BAS
1142	1152	X	55	CINDER - dk gray				

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GEOLOGIC LOG

FROM	TO	FT. OF CORE	TYPE	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION	SECTION DEPTH
1152	1161		56	Basalt - AA		
1161	1171		57	Scoriaceous Basalt + Cinders		
1171	1180		58	Scoriaceous Basalt + Cinders AA		
1180	1190		59	Scoriaceous Basalt - AA		
1190	1199	*	60	Scoriaceous Basalt - AA		
1199	1209		61	Scoriaceous Basalt - AA		
1209	1219		62	Scoriaceous Basalt + Cinders - AA		
1219	1227		63	Scoriaceous Basalt - AA lg frags		
1227	1236		64	Scoriaceous Basalt - AA		
1236	1245	*	65	Scoriaceous Basalt - becoming less vesicular		
1245	1255		66	Scoriaceous Basalt - more vesicular and broken		
1255	1266		67	Scoriaceous Basalt - AA		
1266	1275		68	Scoriaceous Basalt and Cinders - AA		
1275	1285		69	Basalt, dense, fine grnd, thin zone cinders		
1285	1294		70	Basalt AA		
1294	1303	*	71	Basalt AA, Scoriaceous basalt - finely vesicular, small amt cinders		
1303	1312		72	AA		
1312	1320		73	AA		
1320	1329		74	AA		
1329	1338		75	AA		
1338	1347		76	AA		
1347	1356		77	AA		
1356	1365		78	AA		
1365	1373		79	AA		

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Sheet No. 5

PHILLIPS PETROLEUM CO.

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Collar Elevation _____

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Overall Core Recovery _____

Bit Size _____

Logged By _____

GEOLOGIC LOG

30X

FROM	TO	FT. OF CORE	TIME	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION				SECTION DEPTH	
1373	1383	*	80	Basalt, scoriaceous basalt, cinders						
1383	1392		81	AA						
1392	1401		82	AA						
1401	1410		83	AA						
1410	1419		84	AA						
1419	1427		85	AA						
1427	1437		86	AA						
1437	1445		87	AA						
1445	1454		88	AA						
1454	1463		89	AA						
1463	1472	*	90	AA						
1472	1482		91	AA						
1482	1492		92	AA						
1492	1500		93	AA						
1500	1509		94	AA						
1509	1517		95	AA						
1517	1527		96	AA						
1527	1535		97	AA						
1535	1544		98	AA						
1544	1553		96	AA						
1553	1562	*	97	AA						
1562	1571		98	AA to 1573. From 1573 is a dense basalt.						
1571	1581		99	Basalt. Dark grey and dense.						
1581	1590		100	AA						

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Sheet No. 6

PHILLIPS PETROLEUM CO.

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Overall Core Recovery _____

Bit Size _____

Logged By _____

GEOLOGIC LOG

FROM	TO	FT. OF CORE	TYPE OF CORE	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION		SECTION DEPTH
1590	1599		101	AA			
1599	1608	*	102	AA			
1608	1616		103	AA to 1609. Below 1609 is basalt, scoriaceous basalt and cinders.			
1616	1624		104	Basalt, scoriaceous basalt and cinders			
1624	1637		105	AA			
1637	1643		106	AA			
1643	1652	*	107	AA			
1652	1663		108	AA			
1663	1671		109	AA			
1671	1679		110	AA			
1679	1690		111	AA			
1690	1696.5		112	AA			
1696.5	1706		113	AA			
1706	1716		114	AA			
1716	1725		115	AA			
1725	1732		116	AA			
1732	1742	*	117	AA			
1742	1751		118	AA			
1751	1760		119	AA			
1760	1769		120	AA			
1769	1778		121	AA			
1778	1787		122	AA			
1787	1794.5		123	AA			

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Coordinates _____

Type Drill _____

Bit Size _____

Sheet No. 7

Date Started _____

Date Completed _____

PHILLIPS PETROLEUM CO.

Collar Elevation _____

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Overall Core Recovery _____

Logged By _____

GEOLOGIC LOG

FROM	TO	FT. OF CORE	TYPE BOX	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION				SECTION DEPTH	
1794.5	1803		124	AA						
1803	1813		125	AA						
1813	1822		126	AA						
1822	1830	*	127	AA						
1830	1839		128	AA						
1839	1848		129	AA						
1848	1857		130	AA						
1857	1866	*	130	AA						
1866	1875		131	AA						
1875	1884		132	AA						
1884	1895		133	AA						
1895	1904		134	AA						
1904	1913		135	AA						
1913	1923		136	AA - No cinders						
1923	1931	*	137	AA - No cinders						
1931	1942		138	AA						
1942	1950		139	AA - less oxidation with depth. Core becoming dark gray.						
1950	1959		140	AA						
1959	1966	*	141	AA						
1966	1974		142	AA						
1974	1983		143	AA						
1983	1993		144	AA						
1993	2001		145	AA - No cinders						
2001	2011	*	146	AA						

#130 reported

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Sheet No. 8

PHILLIPS PETROLEUM CO.

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Overall Core Recovery _____

Bit Size _____

Logged By _____

GEOLOGIC LOG

FROM	TO	FT. OF CORE	TYPE	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION		SECTION DEPTH	
2011	2019		147	AA Basaltic Cinders - vesicular; lenticular flow breccia				
2019	2029		148	AA				
2029	2035		149	AA				
2035	2038		149	BASALT - M. gray; less vesicular; massive				
2038	2046	*	150	BASALT - AA				
2046	2055		151	BASALT - AA becoming more vesicular - water stains too				BASALT
2055	2057		152	BASALT - AA				
2057	2066		152	BASALTIC CINDERS - ^{dk gray} soft to hard; lenticular ash in places;				CINDER
2066	2074	*	153	BASALTIC CINDERS - AA hard - massive				
2074	2085		154	BASALTIC CINDERS - AA				
2085	2095		155	BASALT - M gray; vesicular at top grading into massive; v. fr. xtlw				BASALT
2095	2105	*	156	BASALT - AA				
2105	2112.5		157	BASALT - AA				
2112.5	2115		157	BASALT CINDER - Red to dk gray; see hard				
2115	2125		158	Cinder - AA				
2125	2131		159	Cinder - AA				CINDER
2131	2143	*	160	Cinder AA occ ash stringer				
2143	2153		161	Cinder AA				
2153	2159		162	BASALT - M gray; v. fr. Hnz; massive				BASALT
2159	2169		163	BASALT - AA				

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GEOLOGIC LOG

FROM	TO	FT. OF CORE	TYPE	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION		SECTION DEPTH
2169	2170	*	164	BASALT-AA			
2170	2176	*	164	CINDER - brown; soft-band; occ. scoraceous			
2176	2179	*	164	BASALT - M-dk gray; fn xtlw, massive; occ vesicle w/zeolite			
2179	2181		165	BASALT-AA			
2181	2188		165	CINDER/ASH - dk gray - red; basid; occ. angular frags. of ash			
2188	2196	*	166	CINDER/ASH-AA			
2196	2200		167	CINDER/ASH-AA			
2200	2205		167	BASALT - M-dk gray; vesicular at top grading into more massive; med xtlw; sl. porph. (andesite?)			
2205	2215		168	BASALT-AA			
2215	2225		169	BASALT-AA			
2225	2233	*	170	BASALT-AA			
2233	2239		171	BASALT-AA			
2239	2242		171	CINDER - red; hard/welded; occ. scoraceous			
2242	2251		172	CINDER - Red-Gray; AA			
2251	2255	*	173	CINDER			
2255	2260	*	173	ANDESITE - M gray; porph., massive to broken no vesicles			
2260	2262		174	ANDESITE-AA			
2262	2269	*	174	CINDER - dk reddish gray; hard occ. punky;			
2269	2271		175	CINDER-AA			
2271	2278		175	ANDESITE ^{Robert} - M. Gray; occ. blks of cinder rubble			

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GEOLOGIC LOG

FROM	TO	FT. OF CORE	TYPE	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION		SECTION DEPTH
2278	2286		176	ANDESITE-AA			ANDESITE
2286	2292	*	177	ANDESITE-AA			
2293	2306		177	CINDER/ASH - dk brn to dk gray; hard; welded; occ vesicular frag of cinder			CINDER
2296	2305		178	BASALT (ANDESITE?) - dk gray; vesicular at top grading into massive; v. fn. XTLN			
2305	2315	*	179	BASALT-AA			BASALT
2315	2319		180	BASALT-AA			
2319	2324	*	180	ASH/CINDER - brownish gray; welded; hard; occ scoriaceous frag.			CINDER
2324	2333		181	ASH/CINDER-AA			
2333	2340		182	Ash/cinders grading to blk, fine grnd basalt, small phenos plag + pyroxene			
2340	2349		182	Basalt AA grading to highly vesicular/scoriaceous			
2349	2359		184	Basalt, solid w/ large vesicles			
2358	2366	*	185	Basalt, fine grnd, solid, dense			
2366	2376		186	Basalt, highly vesic to scoriaceous, black w/ small white plag phenos			
2376	2385		187	AA			
2385	2394		188	AA			
2394	2403	* 186	189	AA			
2403	2494		190-199	Basalt AA blk, fine grnd basalt w/ small white plag phenos, Texture varies from essentially non-vesicular thru coarsely vesicular (large vesicles) and finely vesicular/scoriaceous. Mostly solid, unfractured rx			

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Sheet No. 11

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GEOLOGIC LOG

150 X

FROM	TO	FT. OF CORE	REMARKS	METALLIZATION			SECTION DEPTH
2494	2589	200-209	A.A				
2589	2675	210-219	A.A. but generally more broken-rubby. Muddy/carbonaceous zone 2641-2663. Some strange rx in this interval 2663-2675 Scoriaceous basalt/breccia				
2675	2723	220-224	Scoriaceous basalt + flow breccia, red brown to red orange cindery matrix generally well consolidated. Clasts of scoria and basalt				
2723	2729	225	AA but grading to dense, pink to grey or dk purple, fine grnd andesite or "bleached" basalt				
2729	2765	226-229	Dense, fine grnd dk lavender to black basalt				
2765	2854	230-239	Basalt, dense, blk, solid, fine grnd w/abund small pyroxene phenos				
2854	2947	240-249	A.A				
2947	3008	250-256	A.A. w/lots chloritization on high angle fractures				
3008	3013	256	A.A. w/semi consolidated cinder zones				
3013	3021	257	Cinders, dk red, poor to med consolidated w scoriaceous basalt				
3021	3031	* 258	A.A				
3031	3041	* 259	A.A				
3041	3051	260	A.A				
3051	3065	261	Basalt, scoriaceous to amygdaloidal, dk red to muddy brown w/extreme chloritization				
3065	3072	262	Basalt - Black, fine grnd, solid, dense, fresh, chlorite on fracts				
3072	3081	263	A.A				
3081	3087	* 264	A.A				
3087	3090	264	Basalt, dk brick red to brown-black, Altered/oxidized				
3090	3098	* 265	Basalt - amygdaloidal to fine grnd - massive, amygdulose				

Cinders
Basalt flow w/interflowing mudflow

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Sheet No. 12

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Logged By Ball

GEOLOGIC LOG

FROM	TO	FT. OF CORE	TYPE	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION		SECTION DEPTH
3098	3106	266	Basalt	Basalt, black, fine grnd, fresh, few large vesicles lined with chalcedony			
3106	3115	267	Basalt	Basalt black, fine grnd, fresh			
3115	3125	268	Basalt	Basalt AA to vesicular			
3125	3125	269	AA	AA - chalcedony lining vesicles, filling amygdules			
3135	3144	270	AA	AA -			
3144	3153	271	Basalt	Basalt, fine grnd, fresh, black			
3153	3162	272	Basalt	Basalt/AA w/very fine (<1mm) dark sub horizontal bands			
3162	3169	273	AA	AA } on cut surfaces, rk shows a very finely spotted texture with small (1-2mm) white "spots" possibly			
3169	3178	274	AA				
3178	3186	275	AA	AA } relict phenocrysts of plag w/indistinct grain borders			
3186	3193	276	AA				
3193	3202	277	AA				
3202	3212	278	AA				
3212	3221	279	AA	AA but spotted texture disappearing			
3221	3230	280	Basalt	AA, basalt, black, fine grnd, very fresh			
3230	3238.5	281	AA				
3238.5	3240	282	AA				
3240	3248.5	282	Interflow	Interflow mud, cinders, clay, bright brick red to dk brown, grading into weathered basalt w/large vesicles completely silica filled			
3248.5	3256	283	Altered Basalt	Altered Basalt, AA, dk brown			
3256	3266	284	Basalt	Basalt, altered, silica replacement in groundmass + silica fracture filling			
3266	3275	285	AA	AA			

Basalt AA w/very fine (<1mm) dark sub horizontal bands

Silica in cracks + vesicles

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GEOLOGIC LOG

Basalt flows w/inter flow mud/clay

FROM	TO	FT. OF CORE	TYPE OF CORE	ROCK DESCRIPTION, ALTERATION AND REMARKS	METALLIZATION			SECTION DEPTH	
3275	3284		286	Altered basalt, dk red-brown to black, vesicles, vugs and fractures filled w/silica					
3284	3293		287	AA grading to fresher basalt w/less silica, Chlorite on high & fractures					
3293	2302		288	Basalt, fresh, black, fine grad					
3302	3303		289	AA					
3303	3304		289	Interflow mud, clay, dk red brown					
3304	3311		289	Basalt, highly altered, silica filling vugs, fractures + vesicles light to dark reddish brown					
3311	3320		290	AA grading to fresher dk green-black, silica-AA					
3320	3329		291	Basalt, Fresh, dense, solid, fine grad, silica filling vugs + vesicles					
3329	3338		292	AA					
3338	3346		293	AA					
3346	3355.5		294	AA					
3355.5	3364		295	AA					
3364	3374		296	AA					
3374	3384		297	AA					
3384	3393		298	AA					
3393	3400		299						
			300						
			301						
			302						
			303						
			304						
			305						
	3471		305	Box reads "3471 to 3459" ?? Box reads "3471 to 3459" . .					

