

Noted log copy.

CORE LOG

PROJECT NEWBERRY - OREGON HOLE NUMBER N-1 LOCATION 3600' W and 2750' N of SE cor. Sec. 25 T22S R12E

COMPANY GEO OPERATOR LOGGED BY Michael Johnson & Eugene V. Ciancaneli DATE 9/10/85 GR. ELEV. 5240'

6101875

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
			410					
			420					
			430					
			440					
			450					
			460					
			470					
			480					
			490					
1	100%		500					

487'-564 Andesite, olive black 5Y 2/1 with thin hairline micro-fractures containing initial oxidation. Proceeding gradually downward the core changes color to Andesite medium dark gray N4, with rare anhedral to subhedral olivine phenocryst <1mm. No plagioclase xls observed but the flow does contain magnetite and a single pyrite xl was noted. Upon breaking a fresh surface the rock shows a mottled appearance.

50°
40°

Tr. pyrite
along microfault
clay minerals &
limonite
0499 garnet?

Core recovery began at 487'

PROJECT NEWBERRY - OREGON HOLE NUMBER N-1 LOCATION 3600' W and 2750' N of SE cor. Sec. 25 T22S R12E

COMPANY GEO OPERATOR LOGGED BY Michael Johnson and Eugene V. Ciancaneli DATE 9/10/85 GR. ELEV. 5840'

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
2	100%					85°		
3	100%		510		The mottled color consists of light brownish gray SYR 6/1 patches of a slightly more coarsely xline micaceous mineral in irregular shaped patterns within the very finely xline to glassy medium dark gray andesite. At 493.5 ft a tiny micro fracture contains clay minerals, limonite but no carbonate.	80° 60°		At 530ft. driller attempted to adjust his depth by distim 10ft. of core c a 9ft. run @ 547' driller noted cavity no core. The core however shows evidence that some core may have been ground up so perhaps cavity is an excuse rather than a fact.
4	100%		520		At 497' fracture same as at 493.5'. Below 500ft. andesite medium gray N5. From about 504' to 520' core cut by numerous microfractures or joints dipping 85° to 50° with dip becoming less with depth. At 521' sharp color change andesite dark gray N3 to brownish gray SYR 4/1 color changes back and forth every few feet within the range medium light gray N6 to dark gray N3. Magnetite is fairly abundant est. 2-3% and evenly disseminated through the core. At 541-542' horizontal planar parting in core along tiny parting surfaces. At 558' andesite medium brownish black SYR 3/1 with increasing depth becomes vesicular at 562'.	50°		
5	100%		530					
6	100%		540			0°		
7	100% CAVITY		550	CAVITY?		75° 60°		
8	83.3% 91% 61%		560			15-20° 60°		
9	88%		570					
10	96%		580		564-601.5' Andesite or Basaltic Andesite, oxidized to a depth of approx. 579' to dark reddish brown 10R 3/4 below 579' color varies from medium light gray N6 to light brownish gray SYR 6/1 to medium dark gray N4. This flow is vesicular with some vesicles > 1cm but most are 0.5cm or less. Planar flow structure dips 10-25° can be observed 590' as core becomes less vesicular. This is essentially a glassy to very finely xline rock.			
11	100%		590					
12	100%		600					

PROJECT NEW BERRY - OREGON HOLE NUMBER N-1 LOCATION 3600' W and 2750' N of SE cor Sec. 25 T22S R12E

COMPANY GEO OPERATOR LOGGED BY Michael Johnson and Eugene V. Ciancanelli DATE 9/10/85 GR. ELEV. 5840

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
13	100%		610		with rare tiny <1mm subhedral olivine phenocryst, no plagioclase and finely disseminated magnetite. Unit has a basal breccia.			
14	95%		620		601.5'-662' Basaltic Andesite dark gray N3. Occasional olivine phenocrysts 1mm and rare plagioclase phenocrysts in a very finely xline groundmass with magnetite, vesicular to 614' then dense. Planar flow structure dips 20°-30°.	70°/60° 90°/60°		
15	95%		630		662'-±825' Basaltic Andesite dark gray N3 to medium dark gray N4 essentially same as interval 601.5'-662'. This flow vesicular to 677' and	50°		
16	100%		640		partially oxidized to 677'. There are several zones of intraflow breccia in which the basaltic andesite is broken into individual fragments	20°/50° 40°/70°		
17	100%		650		many of which are vesicular. These zones of intraflow breccia are oxidized to grayish red 10R 4/2 to dark reddish brown 10R 3/4.	70°/65° 45°/50°		
18	57%		660		Intraflow breccia intervals are 685'-686', 691'-703', 707'-716', 736'-749'.	60°/35° 45°/50°		
19	67%		670		The intraflow nonbrecciated rock is basaltic andesite medium dark gray N4 with occasional 1mm olivine phenocryst in a very finely xline to glassy flow banded groundmass. There are rare tiny plagioclase phenocrysts.			
20	69%		680		At 754'-784' Vesicular zone within the basaltic andesite, overall color is brownish gray 5YR 4/1, the vesicles are elongate and the			
21	82%		690		rock has a flow banding dipping about 30°. Vesicles are <0.5cm. This intraflow vesicular zone is similar to the zones at 685'-686',	30°/35° 20°		
22	88%		700		691'-703', 707'-716', 736'-749' except this zone was not brecciated and			

fault - FeOx & slickensides

CORE LOG

PROJECT NEWBERRY - OREGON

HOLE NUMBER N-1

LOCATION 3600' W and 2750' N of SE cor Sec. 25 T228 R12E

COMPANY GEO OPERATOR

LOGGED BY Michael Johnson and Eugene L. Ciancanelli

DATE 9/11/85

GR. ELEV. 5840

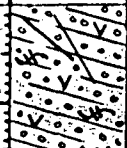

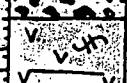
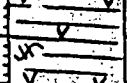
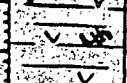
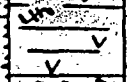




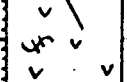

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
23	100%		710		not oxidized so the original rock texture is preserved. There is a planar parting parallel to flow banding. In the nonvesicular zones the light brownish gray 5YR 6/1 patches of more coarsely xline micaceous mineral occur as described at 487'-564'. From 792'-800' brecciated & oxidized zone probably intraflow breccia but could be faulty, color is dark reddish brown 10R 3/4. From 800'-825' vesicular flow banding as at 754'-784' except vesicles range from >3 cm to <0.5 cm. The color of the vesicular band is olive black 5Y 2/1. At approximately 825ft. the core recovery becomes poor and the flow rock is broken up and partially oxidized. It cannot be determined for certain but this is probably the base of this flow unit.	60°		
24	86%		720					
25	100%		730			25°		
26	100%		740			10°		
27	93%		750			20°		
28	83%		760			35°		
29	100%		770			20°		
30	100%		780					
31	92%		790					
32	55%		800			50°		
	43%							

CORE BLOCK MISLABELED AS 745 CHANGE TO 743

792-799 THE DRILLER REPO 3' CORE WAS GROUND UP.

PROJECT NEWBERRY - OREGON HOLE NUMBER N-1 LOCATION 3600'W and 2750'N of SE cor. Sec. 25 T22S R12E

COMPANY GEO OPERATOR LOGGED BY Michael Johnson and Eugene V. Ciancanelli DATE 9/11/85 GR. ELEV. 5840

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
	96%							
33	100%		810		± 825' - 856' Basaltic andesite or Andesite, medium dark gray N4, tingy < 1mm olivine and plagioclase phenocrysts are rare and occur in a very finely xline to glassy groundmass. A crude flow banding dips 0°-25° with some parting surfaces parallel to flow banding. At 854' core becomes vesicular increasing in vesicularity downward. At about 856 lithology change to moderate reddish brown 10R 4/6 "baked zone" which passes downward into olive black 5Y 2/1 cinder material at flow top.	55°/40°		
34	0%		820					
	33%		830					
	80% 9'10"		830					
35	94%		840		856' - 963' Basaltic Andesite, medium dark gray N4, abundant phenocrysts of subhedral to euhedral plagioclase 1-5mm and subhedral olivine 1mm in a very finely xline to glassy groundmass. Down to a depth of 883' the top surface of the flow is auto-brecciated and partially to completely oxidized. As is the case with all above flows this one contains disseminated magnetite. At 937' core becomes vesicular and oxidized to a grayish red 5R 4/2 passing downward to brownish gray 5YR 4/1. At approximately 963' base of flow lithology changes to a "bake zone". Between 962'-963' black glassy obsidian chill zone just above the "bake zone". (glass zone ~ 6" thick ^{under} at base of thick- visicular flow with no basal breccia (hot & fluid) Appears to be fused ash (air fall?).			
36	9'4" = 93%		850					
37	6'4" = 70%		860					
38	7" = 70%		870					
	10" = 100%		880					
39	10" = 100%		890					
40	10" = 100%		900					
41	66% 100%		900					

PROJECT NEWBERRY - OREGON

HOLE NUMBER N-1

LOCATION 3600'W and 2750'N of SE cor. Sec. 25 T22S R12E

COMPANY GEO OPERATOR

LOGGED BY Michael Johnson and Eugene V. Ciancanelli

DATE 9/11/85

GR. ELEV. 5840

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
42	100%		910		963' - 1172' Basalt, dark gray N3 to grayish black N2, abundant phenocrysts of subhedral to euhedral plagioclase 1-5mm and subhedral to euhedral olivine < 1-2 mm, also some cumulo-porphyrific clusters of plagioclase and olivine. From 963'-975' the auto-brecciated upper flow surface is oxidized. From 979'-1046' there is a part-oxidized finely vesicular zone with vesicles averaging 1-3 mm. This zone crumbles easily when cored so most of the core is rubble whose overall color is grayish black N2 with some FeOx along fractures and microfractures. At 1046' core becomes non vesicular dense basalt, light brownish gray SYR 6/1, this dense basalt resembles the overlying basaltic andesite except it is full of plagioclase and olivine phenocrysts and the groundmass is very finely xline to glassy. ← 6" fused zone at 962, above oxidized clay all. ash soil(?).	80°/60°		
43	100%		920			60°/60°		
44	100%		930			80°		
45	72% 57%		940					
46	100%		950					
47	100%		960					
48	30% 100%		970					
49	100% 100%		980					
50	89% 55% 60%		990					
			1000					

bake zone

INTERVAL 962-972 DRILLER REPORTS LOSS OF 7' DUE TO WASH AWAY

PROJECT NEWBERRY - OREGON

HOLE NUMBER N-1

LOCATION 3600' W and 2750' N of S.E. cor. Sec. 25 T22S R12E

COMPANY GEO OPERATON

LOGGED BY Michael Johnson and Eugene V. Ciancanelli

DATE 9/12/85

GR. ELEV. 5840

BOX NUMBER	CORE RECOVERY FT.	TEMP. ° F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
51	63%							
	78%		1010		From approximately 1097' - 1103', flow bands ~ 1 mm in thickness and 1-2" apart dip 50°. Within this interval, parting is parallel to subparallel to this angle.	55° / 70° 80° 45° / 20° 35°		
52	83%							
	50%		1020		Groundmass contains abundant fine disseminated magnetite.	25° / 70° 60° / 15° 60°		
53	66%							
	40%		1030		From 1103' - 1117', flow bands are sparse and irregularly spaced, but continue to dip approximately 50° when present.	50° / 80° 60° 40° / 25°		
	72%							
	81%							
54	71%		1040					
55	95%		1050			70° / 20° 50° / 75° 40°		
56	95%		1060					
57	100%		1070			80°		
58	100%		1080			45°		
59	100%		1090			30°		
60	98%		1100			50°		

CORE LOG

PROJECT NEWBERRY

HOLE NUMBER N-1

LOCATION Sec. 25 T225R 12E

DATE 9/13/85 GR. ELEV. 5840

COMPANY GE OPERATOR

LOGGED BY MIKE JOHNSON, Eugene V. Ciarcadelli

DATE 9/13/85 GR. ELEV. 5840

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
60	98%	<100°						
61	98%		1110		From 1117' to 1130', flow bands are horizontal to subhorizontal. Partings (fractures) are primarily 25°			
62	96%		1120		Flow bands are pale red (10R5/4) to light brown (5YR6/4), 2-4 mm apart. From 1130', flow bands are light grey			
63	100%		1130		At approximately 1150', and continuing with depth, there is a decrease in phenocrysts. Plagioclase becomes less			
64	99%		1140		common and olivine is sparse. Fine magnetite is still disseminated throughout. The decrease continues to the bottom of the flow.			
65	98%		1150		<u>1172'-1188': Ash Flow Tuff</u> 1172'-1173' is a dark			
66	99%		1160		reddish-brown (10R3/4) to moderate reddish brown (10R4/6) "baked zone" consisting of lithic fragments up to 3mm			
67	93%		1170		diameter and black glassy fiamme which contain broken subhedral to anhedral plagioclase crystals < 1mm in length.			
68	82%		1190		1173'-1176': olive black (5Y2/1) to brownish black (5Y2/1) basaltic glass with abundant angular to subrounded lithic, probable quartz			
69	83%				fragments up to 1.5 cm in diameter of basalt and moderate reddish-brown (10R4/6) baked, oxidized basalt fragments.			
70	64%				The glass also contains abundant broken subhedral plagioclase			
71	79%		1200		crystals ~2mm or less in length, ~1 mm qtz			

CORE LOG

PROJECT Newberry - Oregon HOLE NUMBER N-1 LOCATION _____ Sec. _____ T _____ R _____
 COMPANY GEO Operator Corp. LOGGED BY Mike Johnson & Eugene V. Ciancanelli DATE 9/13/85 GR. ELEV. 5840

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
71	100%	118°	1210		1176'-1177.2': dark reddish brown (10R 3/4) lithic particles in a clay matrix. This material is extremely friable, possibly related to the 'bake zone' (or chill & oxidized zone)		Fe-oxide	
72	88%		1220		1172.2'-1184': Flame zone: (slightly welded) lithic crystal tuff, light brown (5YR 5/6) to moderate brown (5YR 4/4). Flame are olive black (5Y 2/1) to brownish black (5YR 2/1) basaltic glass shards which are aligned and stretched horizontally. The basaltic glass contains plagioclase phenocryst fragments < 2mm in length. The flame are similar in appearance to the basaltic glass from 1173'-1176'			
73	100%		1230					
74	84%		1240					
75	90%		1250					
76	45% 70% 45% 61% 40% 56%		1260					
77	100%		1270					
78	100%		1280					
79	100%	1290						
80	65% 22%	1300		NO SAMPLE	1184'-1188': lithic crystal tuff a/a, except non-welded, w/ pumice.			

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____

COMPANY _____ LOGGED BY Mike Johnson & Eugene V. Ciancanelli DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
80	0%	100°	1310	NO SAMPLE	without fiamme. From 1187-1188, unit becomes moderate reddish-brown (10R 4/6) to dark reddish brown (10R 3/4)			1294-1312 Driller reports washout - no sample
81	56%		1320	ash	clay rich material, yellow-tan pumice, devitrified, few compressed vitric ash, few scoria lapilli, brn → olive bk → olive brn clay alt. near base.			1318-1319.5 no sample: ash & soil washed away and partially compressed in core barrel.
	86% 62%		1330		1188-1240: basaltic andesite, nonvesicular to finely vesicular (vesicles average < 1mm diameter) with sparse plagioclase and rare olivine phenocrysts. From 1201-1206, unit is mottled			
82	79%		1340		medium grey (N5) and dusky red (5R 3/4) to very dark red (5R 2/6)			
83	94%		1350		The red gradually fades to moderate red (5R 5/4) mottling with depth, and disappears at approximately 12508. Unit is autobrecciated			
84	100%		1360		from 1188-1201. With increasing depth, anhedral plagioclase phenocrysts (1-3 mm in diameter) become common. 1244-1248: mottled med. grey - dusky red (a/a) grades into dusky red cinders and oxidized basalt.			
85	75%		1370		1248-1294: basalt, medium dark gray (N4), finely vesicular to nonvesicular, with sparse olivine, plagioclase and pyroxene microphenocrysts. Auto brecciated from 1248-1266. With increased			
86	97%		1380		depth, olivine & pyroxene disappear while plagioclase becomes common.			
87	70%	1390		1312-1315.5: volcanic ash layer, fine-to medium-grain			limonitic? Fe oxide	
88	63%	1400						

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____

COMPANY _____ LOGGED BY M. J. DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
88	100%	65°	1410		beer bottle brown sand-sized particles of basaltic composition ^{olivine} olive black (5Y 2/1) in color. Vitric, central part is plagioclase ^{central part is plagioclase} of blk. pumice NO phenocrysts.		Fe oxide mottling and fine "webbing"	
89	65%				1315.5 - 1318: moderate brown (5YR 4/4 to 5YR 3/4) soil horizon, silt to clay size particles.			
90	100%		1420		1319.5 - 1363': Basalt or basaltic andesite, med. dk. grey (N-4), sparse olivine, rare plagioclase phenos. 1319.5 - 1331' is auto-brecciated flow top. Rare local vesicles up to 5 mm diameter occur in patches. Plagioclase (anhedral, ~2mm) and olivine become more common w/depth. Color darkens to dark grey (N-3) with depth. At 1355' unit begins to gradually become vesicular with increasing depth.			
91	76%		1430					
92	50%		1440		1363' - 1384': lithic tuff(?) light brown (5YR 5/6) to moderate brown (5YR 4/4) with lithics composed of angular basalt fragments up to 3 cm diam. Unit is competent only from 1374.5' - 1378.5' where it was apparently slightly baked by overlying basalt. Remainder of unit was crumbled by curing process. Fragments of vesicular basalt up to 3" long are interspersed in the tuff unit.			
93	100%		1450					
94	94%		1470		1384' - 1424': Basalt or basaltic andesite; med. grey (N5) to med. dark grey (N-4) with sparse plagioclase phenocrysts (1-2mm) and rare olivine (1-2mm). 1385' - 1389': vesicular, vesicles stretched horizontally, 1-2 cm long, 0.5-1 cm wide. What appear to be intra-flow			
95	58%		1480					
96	100%		1490				Fractures coated with Fe oxide	
97	89%		1500					
98	83%							
	84%							

CORE LOG

PROJECT GEO NEWBERRY

HOLE NUMBER N-1

LOCATION _____

Sec. T R R

COMPANY GEO OPERATOR

LOGGED BY M J.

DATE _____

GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. ° F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
98	84%	54°	1510	[Sketches of vesicular and brecciated textures]	breccias occur at the intervals 1393'-1401' and 1403'-1405'	[Sketches of fractures at 50°, 20°, 30°, 50°]	minor Fe oxide coating fracture surfaces.	
99	79%				These zones are fragmented, often vesicular basalt oxidized greyish-red (SR 4/2) to dusky red (SR 3/4). Plagioclase becomes			
100	82%				rare with depth, as does olivine.			
101	93%				1424'-1511': Andesite to basaltic andesite: brownish grey (5.YRA/1)			
102	95%				to med. grey (N-5) mainly aphyric with rare ol, plag. phenos. Intraflow			
103	77%				breccia is oxidized, grades to vesicular zone which becomes nonvesicular			
104	44%				at 1439'. Vesicular zone (1-5 mm diam.) from 1475'-1481'. Plag.			
105	61%				and olivine phenos become extremely rare with depth. 1494-1496': intra flow			
106	95%				breccia? Fragmented, oxidized, vesicular, with vesicular basaltic (andesite)			
107	84%				underlying.			
108	100	1511'-1544': basalt or basaltic andesite, dark grey (N-3),						
		mainly aphyric, with rare olivine microphenocrysts (1-2 mm diam)						
		1511'-1521': intraflow breccia: fragmented, vesicular,						
		oxidized to dark reddish brown (10.R 3/4) (flow top)						
		1544-1699: basalt or basaltic andesite: flow top material fr.						
		1544-1569' is fragmented to ground up, moderate reddish						
		brown (10.R 4/6) to brick red, with fragments of greyish black (N-2)						
		basalt with abundant euhedral to anhedral plagioclase up to 5 mm						
		in length. Abundant euhedral to anhedral plag. continues with depth,						

Abundant orange Fe oxide coating fractures

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY M. J. - 1640 M. Hagood DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. ° F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
109	150%	54°	1610	V	and pale yellow-green olivine is common. Plagioclase begins to decline in abundance at 1594', and continues to decline with increasing depth. Local appearance of plagioclase up to 2mm between 1625-1626 (local mixing P), but continues to be aphyric w/ coarse olivine	50° 70° 80°	Abundant orange Fe oxide coating fracture surfaces ↓	
110	76%		1620	V		65° 50° 20°		
111	98%		1630	V		75°		
112	97%		1640	V	interflow vesicular zones from 1642-1648 + 1660-1672 vesicles elongated horizontally	50° 70°		
113	80%		1650	V		50° 75° 65° 55°		
114	83%		1660	V		75°		
115	81%		1670	V	Some plagioclase from 1668- up to column	55° 15°		
116	89%		1680	V	soil horizon (?) 1677-1678 - oxidized to reddish brown 10R/3/4	70°		
117	67%		1690	V		70°		
118	82%		1700	V	Almond-shaped vesicles occur sparsely at base of flow	70°		

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____

COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
119	91%	55°	1710'		1689-1732 basalt or basaltic andesite. Flow top from 1684 - color of flow top varies from reddish brown (brick red) 10r 3/4 to N-3, ^{dark gray} highly prismatic, vesiculation commonly elongated in one direction - zones of dense basalt (minor vesiculation) within flow top between 1708' - 1711'. Density and size of vesicles varies - vesicles up to 2 cm long. Flow texture commonly subhorizontal		Fe staining of flow top and along fracture faces	
120	79%		1720'		aphric flow top		wash out	
121	69%		1730'		chilled glassy basalt N-1 (black) aphyric from 1728' - 1732' conchoidal fractures (chilled base?)			
122	8%		1740'		1732-1852 (About basalt or basaltic andesite down PP) - below chilled basalt. Flow top 1732 - 1752. Sparingly aphyric (play up to 2mm in length), oxidized and weathered ^{reddish} gray 10r 4/2 vesicles diminish in density w/ depth		Fe staining along fractures also green staining along fractures	
123	78%		1750'		1748-1752: micro vesicular basalt/basaltic andesite N3 (dark gray) - aphyric, rare olivine < 1mm length		increase in staining & clay along fracture faces yellow clay	
124	24%		1760'		1782-84 - very fine grained, glassy, aphyric N2 basalt fractures conchoidal along macrophyres & dikty texture, melt of			
125	94%		1770'		between 1795 - 1797 - glassy becomes more coarse w/ depth sparse larger vesicles up to 1cm in length (1795-1797)			
126	88%		1780'					
127	81%		1790'					
128	98%		1800'					

PROJECT _____ HOLE NUMBER _____ LOCATION _____ DATE _____
 COMPANY _____ LOGGED BY M. H. GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
126	84%		1810		1860-1876 - Pyroclastic flows & falls (?) bedded with partially compacted pumice lapilli, ash zones, etc. also pumice dikes of glassy, w/rt at base. Colored andesite clasts from a few rows to several can be seen.	med vix 60 40	few yellow & red	
129		54°	1820		Sharp & conical edges, incorporated in an aglyptic, locally the called basalt. 1815-1860 Basalt floor	60 40		
130	95%		1830		1815-1821 amorphous, oxidized to red - flowling - scattered very quantity & was compact, many glassy	70 60 40		
131	100%		1840		1821-1833 - dark gray (183) basalt, sparsely platy, etc. (shy x 530 mm) fragment (pseudomass - flow texture, possible fluid mixing at 1852-1846 micromass zone - oxidized brick red but unoxidized vesicles rounded) join together & form "fractures" - still sparsely platy - flow texture subparallel - see lower part	60 40	small of sulfur upon hammer impact	
132	83%		1850		1800-1876 Basalt composed of angular clasts ranging in size from a few mm to 2 cm in length - clasts of basalt, andesite, but predominantly by low-strain sediment (some clay) of two distinct colors - Yellowish gray (519A) and light blue gray (519 B). Clay may be derived from the ash that are 5 rows from bottom up. Many clasts grade into fine ground, highly weathered & oxidized clay, etc. w/ more sparse clasts & is topped by a fused (labeled sediment) basalt and middle zone is highly micaceous.	60 40		
133	65%		1860			60 40		
134	85%		1870			60 40		
135	96%		1880			60 40		
137	100%		1890			60 40		
138	87%		1900			60 40		

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____

COMPANY _____ LOGGED BY M. H. DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
138		55°						
139	75%		1910		At the upper contact of the breccia, basalt from the overlying flows mixes w/ sediment. The lower contact meets abruptly w/ chilled basalt at 50° angle. There is indication of flow in the breccia from subalignment of clasts. This setting may indicate disrupted lacustrine material was slumped or flowed while wet + was invaded by basalt?? Another basalt flow was subsequently overlain at 1876'-1915'. Basalt flow 1876-1896 vesicular basalt at top vesicles up to 1cm in length oriented vertically. Clay (tuffaceous sediment) incorporated in fractures + w/ basalt. Vesicular basalt may have invaded the above sediment + incorporated it. Clay is same color as lacustrine sed. basalt is dark gray N3- vesicular zone is brick red oxidized - very phryic (both olivine + pluc < 3mm in length).	20 70	basal portion oxidized to brick red	
140	86%		1920	ash bedded		45	Fe staining from cinder	
141	90%		1930			60	Alteration marked by little	
142	65%		1940			50 60 65		
143	76%		1950			70		
	69%					150		
	42%					45		
144	63%		1960			145		
	72%					45		
	83%					145		
145	64%		1970			70		
	93%					1170		
146	92%		1980	Basaltic ash	1896-1915' med. dk gray N3 basalt, moderately phryic pluc + olivine			
147	88%		1990	basaltic ash	1915-1919' - unsorted rounded tuff clusters of pumice + cinder up to less in length grad. upward into a medium grained tuff. Upper portion of tuff is highly weathered to red brick (light brown 5 ft. 5/6) + was probably soil zone which has weathered to clay ~1 ft. thick pumice lapilli zone 198.5-1919.5 - med. gray ash below.			
148	85%			basaltic cinders		45		

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
148	85%	54°			1982-2010 ^(?) Basaltic ash grading downward to cinders			
149	87%		2010	Basaltic cinders	base of cinders vs flow top scoria-breccia uncertain marks gone on upper contact. base of unit lies directly on vesicular flow top on next flow down	60		
150	91%		2020		1920-1943 ^{o.k.} Basaltic flow: 1920- vesicular flow top, vesicles up to 3 cm in length. local orientation of vesicles - horizontal to 45°. moderate plagioclase w/ plagioclase + olivine less than 1 mm in length. 1933-1943 - massive basalt w/ sparse - common vesicles - microphyric (olivine + plagioclase), med dk gray (N4)	70 40 70	significant Fe staining along fracture lines at this interval - yellow, green, red	
151	92%		2030		1943-1982 Basaltic flow: 1943-1982 vesicular flow top - contact between this flow + the above flow is not clear cut, may be lobes of same event or erupted while lower flow had not solidified	5 35-70°	Fe staining yellow + red clay + iron green clay	
152	94%		2040		dk gray (N3) vesicles from 1943-1982 - 3 cm in length microphyric 1920- dk gray basalt, massive w/ rare vesicles, dk gray N3 - microphyric, fine gr. granular.			
153	96%		2050		pipe vesicles at base of flow.			
154	83%		2060		1982-1989 Basaltic ash, unsorted 1983-down grades to cinders			
155	93%		2070		1982-1989 Basaltic ash, unsorted 1983-down grades to cinders			
156	100%		2080		1982-1989 Basaltic ash, unsorted 1983-down grades to cinders			
157	100%		2090		1982-1989 Basaltic ash, unsorted 1983-down grades to cinders			
158	98%	2100		1982-1989 Basaltic ash, unsorted 1983-down grades to cinders				
159	97%							

PROJECT _____ HOLE NUMBER _____ LOCATION _____ SEC. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

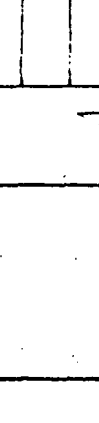
BOX NUMBER	CORE RECOVERY FT.	TEMP. ° F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
159	97%		2110		2010 - 2166' Basalt flow. 1989 - 2002' scoriaceous flow. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
160	100%		2120		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
161	100%		2130		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
162	100%		2140		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
163	100%		2150		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
164	100%		2160		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
165	100%		2170		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
166	63%		2180		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
167	96%		2190		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	
			2200		Flowing + mixing of red + black basalt over upper portion and below. Flow - 2166' poss. basaltic dike (gamma shows 2 units) 1988 - 2010 basaltic ash to cinders	60° 30° 20° 45° 70° 70° 35°	greenish-yellow Fe oxide (+ clay?) filling fractures.	

Gamma - Latite - Rhyolite
 ~ 2167-2169 welded pyroclastic flow blk vitric framme in red clay matrix to solid vitre zone 1.4m thick

Pyroclastic flow
 2170

Diike
 basaltic
 cinders
 2180-2182
 2189-2192
 2193-2195
 2196-2198
 2199-2200

2103-2105' dikelet (a/a) dip 60°, optima. Red basalt
 of dike zone absent. Unit thick. minor vesicularity in dikelet.
 Color of host basalt dikelet with depth to N-3 to N-2.
 Abrupt termination of vesicular zones against non-vesicular zones
 indicates possible magma mixing in host basalt.
 2122-2124: dikelet, a/a, dips 55-70°. Shows minor vesicularity
 (vesicles up to 3mm diam). Vesicle alignment dips ~ 70°
 2142-2145 dikelet, a/a, dips 60°
 2166- basalt or basaltic andesite. Fragmented.



CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
170	100%				flow top, oxidized, vesicular to 2179'	20°		
171	100%		2209 2210		2167-2169: black welded volcaniclastic unit, w/red oxidized basalt and med. grey basalt fragments in a black glassy matrix.	60°	orange-yellow clay + Fe oxide? in	
172	100%		2220		2179-2182: black slightly vesicular basalt dikelet, a/a. Upper portion of dikelet has lost vesicular red basalt fragments incorporated within it. The flow itself contains very sparse plagioclase phenos. yellow-orange 'borders' separate grey basaltic andesite from mottling of same rock with a slightly yellowish (oxidized?) tint locally.	60°	fractures, along flow bands, groundwater Fe staining?	
173	100%		2230		2189-2190 black basalt dikelet? (a/a)	60°		
174	100%		2240	dike	2190-2209: Grayish red (10RA/2) volcanic flow with (Dacite?) common plag. lath phenocrysts, finely disseminated magnetite(?)	70°		
175	100%		2250		2209-2210 black basalt dikelet, a/a. Dike continues to 2252			
176	94%		2260		2216-2252: Aphyric to sparsely physis volcanic (andesitic?) flow, with rare anhedral plag phenos up to 2mm diam.	60°	vesicles lined w/ botryoidal red Fe oxide; Qtz?	
177	86%		2270		2252-2300: basalt or basaltic andesite, in sharp contact w/base of above unit, w/a small finger dikelet of black basalt (a/a) at contact.	60°		
178	98%		2280		Flow contains very abundant anhedral broken plag. xls up to mm diam.			
179	89%		2290		Flow top is vesicular, oxidized greyish-red.			
180	58%							
181	95%		2300		2271-2272: black basalt dikelet, a/a; 2278-2279: dikelet, a/a			

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY Mike Johnson & Bruce Sibbott DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
181	82%				2300-2335: dike, N-A, ^{sparsely} phyric, w/vesicle trains (steep, up to vertical. Fine grained, equigranular, with sparse phenocrysts of plagioclase, rare olivine (assoc. w/plag.). Flow lines are close to vertical. Fine dissemin. magnetite also present. Lower contact shows black glassy chill zone, possible epidote (?) at contact. Basal contact of dike is w/flow breccia below, and snags at 45° angles.	53°/30° 10°/40° 60°	In fractures of dike: rounded, flat (botryoidal?), clear-denticle?	
182	100%		2310	DIKE		45° 20° 20° 30°	Fe oxide stains	
183	100%		2320	DIKE		30°	basal contact: poss epidote?	
184	100%		2330	DIKE		30°	green, glassy mineral, fine grained	
185	97%		2340	DIKE	2335-2351': Andesite (?) flow; sparsely phyric (2%).	10°	olivine altered to iddingsite?	
186	94%		2350	DIKE	2 mm plagioclase lathes; abundant finely dissemin. magnetite; sparse (?) possible olivine, partially altered? Vertical flow lines.	30°/60° 30°		
187	98%		2360	DIKE	Olivine increases w/depth to approx. 2%, and is altered to brick-red (iddingsite?).	10° 15° 20°	2359: calcite, infilling vugs also hematite staining.	
188	100%		2370	DIKE	2351'-2358': dikelet; ophyric, N-A, slightly vesicular.	60°		
189	100%		2380	DIKE	2358'-2421': Same unit as from 2335-2351; begin to pick up calcite partially filling vugs. Flow banding irregular. With depth, crystal boundaries are indistinct, but appear to coarsen; rock takes on a greenish-tint. Fractures parallel flow banding.			
190	96%		2390	DIKE	black (5621)			
191	95%							
192	100%		2400					

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. ° F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
192	100%			#	2421' - 2505'			
193	100%		2410	#	Basalt or basaltic andesite; med. dark grey (N-3)	80°		
194	96%		2420	#	coarsening with depth, with sparse plag. phenols. mafics are	80°		
	46%			#	oxidized with depth (magnetite to hematite?). Flow top breccia			
195	92%		2430	#	to 2432' is oxidized, vesicular, fragmented. Mafics		oxidation of mafics	
				basaltic ash thin	and plag. (?) crystals have very indistinct boundaries (cooling			
196	94%		2440	#	growth?) and may be poikilitic in texture. Crystals are	30° 80°	Calcite spars in vugs;	
					up to 3mm in length, average. 2490 - 2505: basal breccia,		micro-clay in vugs - granular brown calcite?	
					darkens, becomes vesicular, oxidized.			
197	95%		2450	#	2505 - 2540.4' : volcanic ash, grades to ash and cinders, brick-	20°		
					red, to 2512' cinders, basalt fragments and ash are ^{compacted,} welded			
198	100%		2460	#	not-oxidized. From this depth down color changes with depth to med. dark			
199	97%		2470	#	grey (N-4) cemented with clay ^{and ash.} welded cinders which grades into med. grey (N-5)	70°	small anhedral (2mm) fgs on fracture surfaces;	
200	100%		2480	#	basaltic andesite (?), aphyric, non-vesicular, at 2540.	30° 40° 45°	green clay-like mineral in fractures (calcite)	
201	100%		2490	#	Rare anhedral plag. xls occur with depth. Vesicular zone	20°	Calcite spars in open fractures and vugs.	
202	100%			#	toward bottom of flow, oxidized reddish-grey (2590 - 2602)			
203	100%		2500	#				

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
203	107%							
204	93%		2510		2505 - Basaltic ash & cinders, cinder cone?	30°	Rare splined to flat growth, white trans-parenc on fracture surfaces - chalcidary?	
205	100%		2520					
206	96%		2530		2616 - 2651' Basaltic andesite(?) aphyric, med. grey (N-5) with ^{dark} greenish-grey (56Y4/1) chlorite(?) in fractures, clear cubic mineral filling vugs.		2551: dusky blue (SPB 3/2) powder on fracture surfaces.	
207	100%		2540		2540.4 - Vesicular basalt. Flows, no phenocrysts.		Fe oxide deposition on fracture surfaces	
208	98%		2550		~2590 flow to flow contact, vesicular, little flow breccia			
209	100%		2560		2651' - 2677' Basaltic Andesite med. dark grey basalt (N-4), with sparse plagioclase phenocrysts. 2651 - 2667 is flow top breccia,	30° 75°	2666: clear cubic mineral (H ~ 2) filling vugs - penetrative turns noted.	
210	100%		2570		vesicular, oxidized - 2668-2673 has elongate vesicles, very stretched, some of which pass all the way through the core. Plagioclase becomes common w/depth, sparse	10°		
211	100%		2580		divine occurs.			
212	97%		2590			70°		
213	100%							
214			2600					

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING
214	100%			# v	2616 inter-flow contact, or flow base.	20° / 60°		
	95%		2610	v #	2677-2682 : basalt breccia in matrix of light		clear cubic	
215	83%			•••••	olive brown (5Y 5/6) quartz-rich sand (?) - possible		in vugs.	
			2620	•••••	hyaloclastic flow bottom.	10°	chlorite (?)	
216	96%			# #			on fracture	
			2630	o #			surfaces.	
217	98%			# #	2682-2725': Basalt or basaltic andesite, med. dark	10°		
			2640	# #	grey (N.4), with occasional plagioclase and olivine phenocrysts and rare pyroxene. Flow banding is horizontal to subhorizontal. Plagioclase becomes common, olivine			
218	98%			o #	occasional with depth.	100°		
			2650	# #		35° / 50°	light bluish-grey (5B7/1) to pale (5B4.2) blue powdery coating of vesicles	
219	100%			•••••		30°	2668'-2673'	
			2660	•••••			clear to white (H~3?) mineral fills smaller vugs.	
220	90%			v v				
			2670	v v				
221	92%			•••••				
			2680	•••••				
222	92%			v v		70°		
			2690	v v		80° / 15°		
223	100%			# #		85°	green clay (?) in fractures	
			2700	v #				
224	98%			v #				

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
225	98%		2710	V #	2725-2729: Volcaniclastic sediment (?): coarse sand.	10°/30°	pale whitish-green botryoidal (Flattened) H=4 mm or fractures	
	93%	V V						
226	100%		2720	V #	size clastics including quartz (?), plagioclase and mafic xls (hornblende?), possibly fining downward, with large (6-7cm) vesicular basalt fragments incorporated within the sediment (?)	15°/60°		
227	96%		2730	V #	basaltic ash, 1 ft. bedded. Sediment (?) shows color banding which coincides with bedding: color banding grades from moderate brown (5YR 4/4) to light brown (5YR 5/6) to yellow-cream colored. Bedding is near horizontal to dipping 15°. Color bands vary in thickness from 2-5 cm. Basalt fragments appear to have 'baked' sediment at contacts with it. These contacts are brick-red, 2-4 mm thick. Basalt appears slightly glossy at those contacts. - Scoria clasts edges (contact) are wet from the moderate sorted, coarse grain ash matrix, <u>no</u> barke			
228	88%		2740	V #	2729-2823': Basalt or basaltic andesite, med. dark grey (N-4), with common plag. and occasional olivine phenocrysts. May be the same unit which occurs from 2882'-2725'. Unit is brecciated to 2762', then becomes dense, non-vesicular, w/ mafics oxidized red (hematite?); Occasional glomerophyrocysts of plag. + (iddingsite to fresh) diorine noted.	10°/50°	small vesicles Filled w/ white mineral, H<5.	
229	78%		2750	V #				
230	67%		2760	V #	2729-2823': Basalt or basaltic andesite, med. dark grey (N-4), with common plag. and occasional olivine phenocrysts. May be the same unit which occurs from 2882'-2725'. Unit is brecciated to 2762', then becomes dense, non-vesicular, w/ mafics oxidized red (hematite?); Occasional glomerophyrocysts of plag. + (iddingsite to fresh) diorine noted.	10°/70°	or glassy contacts.	
231	95%		2770	V #				
232	91%		2780	V #	2729-2823': Basalt or basaltic andesite, med. dark grey (N-4), with common plag. and occasional olivine phenocrysts. May be the same unit which occurs from 2882'-2725'. Unit is brecciated to 2762', then becomes dense, non-vesicular, w/ mafics oxidized red (hematite?); Occasional glomerophyrocysts of plag. + (iddingsite to fresh) diorine noted.	10°/70°	small vesicles Filled w/ white mineral, H<5.	
233	100%		2790	V #				
234	96%		2790	V #	2729-2823': Basalt or basaltic andesite, med. dark grey (N-4), with common plag. and occasional olivine phenocrysts. May be the same unit which occurs from 2882'-2725'. Unit is brecciated to 2762', then becomes dense, non-vesicular, w/ mafics oxidized red (hematite?); Occasional glomerophyrocysts of plag. + (iddingsite to fresh) diorine noted.	10°/70°	small vesicles Filled w/ white mineral, H<5.	
235	100%		2800	V #				

100%

PROJECT _____ HOLE NUMBER _____ LOCATION _____ DATE _____
 COMPANY _____ LOGGED BY _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
235								
236	100%		2810	V #	Unit becomes more coarsely crystalline with depth, and olivine and plagioclase phenos become common. Carver xlinity shows vague grain boundaries, and may be poikilitic. Vague flow bedding, where present, appears to be subhorizontal to horizontal	200° 	green clay (?) along fracture surfaces.	
237	98%		2820	V #				
238	97%		2830	V #	2823-2850': basaltic ash unit, moderate reddish brown (10K4/6) to dark reddish brown ash with angular fragments of vesicular basalt up to 5 cm diameter incorporated in the ash matrix. Smaller fragments are volcanic lithics which are tan to light grey and may be more siliceous.	30° 		
239	93%		2840	V #	Rare plagioclase xls also occur surrounded by ash matrix. Color changes with depth from more orange tinted to dark red, and vesicular basalt, although fragmental makes up most of unit (beginning at approx. 2822'). permeable	45° 		
240	82%		2850	V #	2850-2880.5': Basalt, med. dark grey (N-4) with stretched vesicles beneath flow-top up to 3 cm long. Common plagioclase phenos, occasional olivine	60° 	rare crumpled yellow botryoidal numerous in vesicle	
241	100%		flow	V #		70° 		
242	96%		2860	V #				
243	94%		2870	V #				
244	94%		2880	V #				
245	98%		2890	V #	2880.5'-2890': Ash unit, similar to unit from 2823-2850, 10K4/6 to 10K3/4 colored ash with glassy to vesicular ash appears to have vs. sand type permeability.		rare clear cubic (?) phen in vesicles. Ash	
246	98%		2900	V #				

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
246	89%		2910	V # V #	basalt to more siliceous fragments up to a cm in length, in a red ash matrix, to 2888'. 2888'-2890' - grades from red to pale cream to pale yellow, w/a gritty to clay rich texture. Red chastic fragments indicate some flow of unit into crevages of underlying cinders.	30° 50°	2888': green translucent xln mineral-epidote?	
247	100%		2920	# V				
248	95%		2930	# V				
249	86%		2940	# V	2890 - 2942' : Basaltic andesite, med. dark grey, N-4, with abundant anhedral plagioclase phenocrysts (~2mm) and	60°	2943.5': Possible K-spar - secondary biotite in hairline fracture. but propylitic alteration (epidote)	
250	93%		2950	# V	rich to occasional olivine and pyroxene (?) phenocr. Tr. diss mt. From 2890' - 2912' dark grey (N-3) cinders, plag-rich			
251	81%		2960	V #	within a dark grey (N-3) ash matrix. From 2942 - 2950': reddish brown baked tuff mixed with			
252	57%		2970	V #	fragments of basaltic cinder. 2950 - 3002': Basaltic andesite, dark grey (N-3), minor			
253	35%		2980	V #	anhedral plagioclase phenocrysts (~2mm); highly vesicular to a depth of 2985'	40°		
254	81%		2990	V #				
255	92%		3000	# V	Inter flow contact with scoriaeous flow breccia oxidized red.			

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY W. Dansart DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. ° F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
257								
258	91%		3010	V #	3002'-3069': Basaltic andesite porphyry, grayish brown (5YR 3/2) to dark gray (N-3). Abundant anhedral to subhedral plagioclase phenocrysts (~3mm) showing a random orientation. Hairline fractures and vugs often filled with calcite.	88/ 40°		
259	97%		3020	H V				
260	98%		3030	V H				
261	95%		3040	H V				
262			3050	V H				
263	100%		3060	V H				
264	92%		3070	H V				
265	97%		3080	V H			300°	
266	92%		3090	H V				
267	100%		3100	V H				
					3069'-3114': Basaltic andesite with common subhedral to anhedral plagioclase phenocrysts (~3mm); gray (N-4). Sparse olivine crystals. Chlorite is common fracture mineral. Calcite fills some vugs.			

CORE LOG

PROJECT _____

HOLE NUMBER _____

LOCATION _____

Sec. _____

T _____

R _____

COMPANY _____

LOGGED BY W. Dancant & M. Johnson

DATE _____

GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
268	10%				lapilli-ash has horizontal bedding, clasts flattened vertically.			
269	100%		3110	AV ✓	3113-3118 Lapilli-ash, compacted, clay alt., impermeable - (Wrong) 3114-3211' Fault breccia, lt greenish gray to med brown, rounded to subangular breccia clasts up to 5cm across in a med-sized matrix. Fault appears to dip 40°. Numerous basaltic dikes, intrude the fault zone at ~50°. Calcite is main veg filling material.	50°	cc	
270	98%		3120	AV ✓	Later faulting has affected dike rock.	40°		
271	98%		3130	AV ✓	Rock which was intruded by dike material is moderate reddish brown (10R 4/6) to dark reddish brown (10R 3/4) clay-rich (ashy) matrix material with breccia fragments of brick red to dark gray (N-3) basalt, all sizes up to 5 cm. diameter. Dike material is composed of med. dark grey (N4) to dark grey (N3) basalt which often contains fine vesicles. Basalt contains common anhedral to subhedral plagioclase up to 2mm in length.	25° 35°		
272	98%		3140	AV ✓	Intrusive contacts are abundant but erratic in this interval. Some 'blabs' of dike basalt are wholly	50°	olive green celadonite (?) along fractures, in vugs.	
273	98%		3150	AV ✓	3186' fault breccia 3' in. ~45° dip, open breccia, no shear. surrounded by the red brecciated country rock. Chill margins can be observed along the edges of these 'blabs'. Most contacts of dike are 'wormy', but one	60°	sea-green chlorite (?) veins along fractures, amorphous paste (n-nug)	
274	78%		3160	AV ✓		30°	calcite in vugs; also as finely radiating needles in fractures.	
275	98%		3170	AV ✓		30°		
276	100%		3180	AV ✓		55°		
277	86%		3190	AV ✓		60°		
278	80%		3200	AV ✓		40°	3180: white anhedral min: H2S-4 (n-nug)	

Cinder cone cut by dikes.

279

CORE LOG

PROJECT _____

HOLE NUMBER _____

LOCATION _____

Sec. _____

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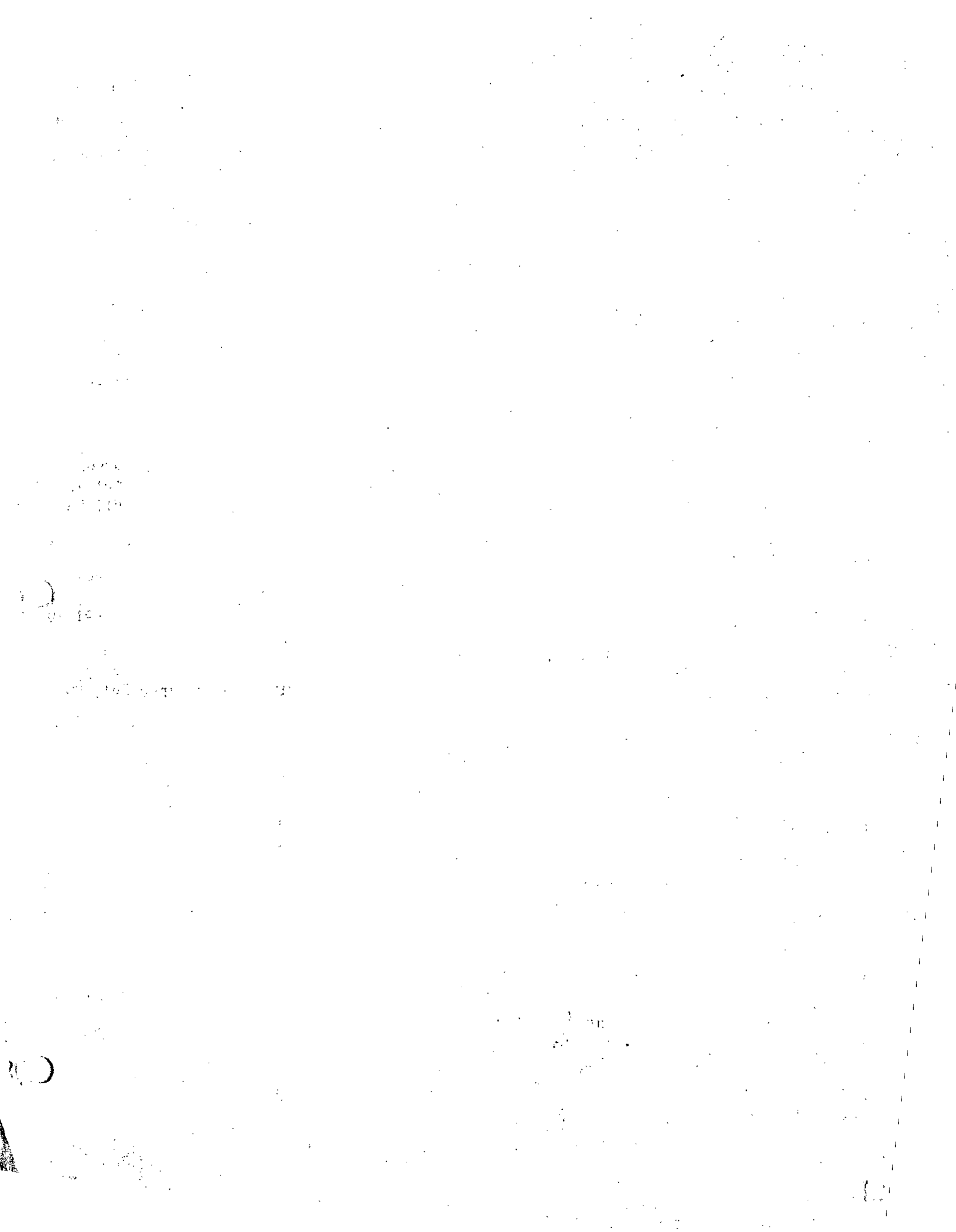
COMPANY _____

LOGGED BY M. Johnson + W. Paquet

DATE _____

GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
279	93%		3210		contact was measured to have 70° dip, further to have 50° dip.			
280	90%		3220		3211 - 3330' basaltic andesite, mod. dark grey (N-4) with occasional olivine and plagioclase phenocrysts. Cooling fractures consistently dip 50-70°, and are commonly spaced 1/2 to 1 inch apart. Top of flow is broken, finely vesicular, w/ red Fe-oxide coating vesicles. This rock is hornfelsic below 3254'. Many hairline fractures which dip from 50-80° are filled with fine grained brown secondary biotite. High angle (70°) fractures (several mm's thick) cut the biotite filled hem. stain. Hairline fractures which are spaced from 1/2 inch to 1 inch apart. These later stage fracture sets are filled with calcite and show an envelope of chlorite (biotite?) in contact with the wall rock, K-spar ^{no.} may also be present. High angle plains are flow surfaces, cross-core fractures are cooling joints.		3227: set of green fracture coating - may	
281	95%		3230				fractures filled w/ calcite	
282	100%		3240				flow plains	
283	100%		3250					
284	100%		3260				fractures filled with biotite, calcite, chlorite and K-spar(?)	
285	91%		3270					
286	91%		3280					
287	89%		3290					
288	100%		3300					
289	100%							



PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY W. Damsart DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
290	100%		3310	✕ ✕ ✕	3330-3349': Volcanic breccia, dark reddish brown (10R 3/4) to brownish black (5YR 2/1). Angular to subangular fragments up to 1ft across in a mud to cinder sized matrix. Rock is weakly fractured but very vesicular in spots, maybe fragments from old flow tops. Calcite and chlorite are main cavity filling minerals.	76 81	vesicles filled with calcite and chlorite	
291	100%		3320	✕ ✕ ✕		77 80		
292	100%		3330	✕ ✕ ✕		very weak		
293	93%		3340	▲ ▲ ▲	3349-3351: Tuff, grayish olive (10Y 4/2) with numerous flattened pumice fragments. Matrix is soft clay. impermeable.			
294	96%		3350	▲ ▲ ▲	non-welded ash-flow tuff, top 2 feet are clay all. & flattened.			
295	99%		3360	● ● ●	3351-3365': Volcanic pebble-conglomerate, multicolored lapilli ash-flow tuff. obsidian lapilli. Volcanic pebbles (up to 1" across) in a very light gray clay to silt matrix. Orientation of pebbles are roughly horizontal. (slight flattening)			
296	98%		3370	▲ ▲ ▲				
297	98%		3380	▲ ▲ ▲	3365-3384': basaltic cinders-flow breccia to dark reddish brown (5YR 2/1). Angular to subrounded fragments up to 6" across, sand sized matrix.			
298	97%		3390	✕ ✕ ✕				
299	97%		3400	✕ ✕ ✕	3384-3416': Latite porphyry(?). Grayish red (10R 4/2) to med gray (N5)			

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY W. Donsart, M. Johnson DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. °F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
301	100%		240	✓	very small (<1mm) phenocrysts of plagioclase, olivine, and biotite in a fine grained matrix. Minor brecciation evident throughout unit.	weak ↓	Minor open space filling by calcite and zeolites	
302	75%		342	✓	3416-3440 clay alt. and compacted, impermeable	weak ↓		
303	99%		343	Lappilli Tuff	3416'-3440': Lappilli tuff, dk reddish brown (10R 3/4), dark greenish gray (5G 7 4/11) to olive black (5Y 2/1) in color crumpled with subangular to subrounded volcanic rock fragments up to 3 inches across. Show irregular contacts with flows above and below.	weak ↓	3434' minor slickensides	
304	96%		344	✓		barren		
305	95%		345	✓	3440'-3463': Andesite (?) med gray (N-5) partially recrystallized fine grained rock. Vesicular from 3456' but moderately fractured. Traces of epidote (?) and chlorite (?) in vesicles. Flow has massive appearance and remnant foliation (30-60°) below 3456'.	barren	traces of chlorite (?) epidote (?)	
306	88%		346	✓		barren		
307	63%		347	cinders		barren		
308	90%		348	✓	3463-3473: basaltic (?) tuff unit, dark grey (N-3) to dark reddish brown (10R 3/4) with angular vesicular to nonvesicular basalt fragments incorporated in drk dshy matrix. Clasts are up to 6 cm in diam.	25 10		
309	88%		349	cinders		25 10		
310	90%		350	✓	3473-3487: andesite? - aphyric, dense, med. light grey (N-6).	25 10		
311	100%		350	✓				

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____

COMPANY _____ LOGGED BY M. Johnson DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
311	100%							
312	98%		3510		3487-3492: ^{Cinders} Fault unit, showing variegated orange and grey flow structure at upper contact, grading into dark grey ashy material w/ few basaltic clasts.			
313	86%		3520		3492-3520: Andesite or basaltic andesite, with common subequal plg phen's (~2mm) which become very abundant w/ depth. Fine vesicles filled w/ white mineral, H~4 (zeolite?). Rare flow bands dip ~10-15°.			
314	82%		3530					
315	95%		3540					
316	100%		3550		3520-3538: Andesite, med. grey (N-5) with occasional subequal plg. phen's (2mm). Fractures, mineral filled, are abundant. Top of unit is broken, oxidized brick-red, vesicular.		3520-3538 calcite-epidote(?) chlorite veins (?) with epidote(?) replacing host rock up to 1" from vein selvages.	
317	98%		3560					
318	95%		3570		3538-3566: ^{basaltic} Basalt or andesite, med. grey (N-4) to dark grey (N-3), vesicular, with red oxidized zone at upper contact. Very fine plg laths in upper portion (poss. basalt like(?) Unit is vesicular fr. 3539'-3563'.			
319	98%		3580					
320	96%		3590		3566-3595: basaltic andesite (?), med. grey (N-4)			
321	82%				aphyric			
	97%		3600		3595-3596: fault zone? chlorite(?) stringers, minor			

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____

COMPANY _____ LOGGED BY M. Johnson DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. OF	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
322	97%			# V	silicification, brecciation - slickens. Pass. minor serpentine	—	chlorite (?) in fractures;	
323	97%		3610	# V	3596 - 3621: basaltic andesite, med. grey (N-5) to med. dark grey (N-4) aphyric, vesicular	IS	white to pale yellow mineral in vesicles	
324	81%		3620	o V #	3621 - 3662: basaltic andesite ^(N-5) vesicular to ~3635;	—	H-4.	
325	67% 53%		3630	#	common sea green chlorite (?) filling open spaces of flow top breccia; also along fractures.	—	minor calcite in vesicles	3630: latch failure - ground rock - POT.
326	100%		3640	#	3662 - 3664: Tuffaceous unit, light reddish brown with black glassy fiamme-like structure aligned horizontally. Grades down into yellow-orange ashy material with rare black glassy fragments	—	dark yellowish botryoidal mineral in vesicles	
327	100%		3650	# V	3664 - 3694: basaltic andesite, med. grey (N-5), aphyric, w/chlorite (?) along fractures, pale blue-green powder, lining vugs, fractures, common calcite in vugs. Vesicles elongate to rounded.	40 70	3595 - serpentine + chlorite? (grey)	
328	95%		3660	V #	3694 - 3708: Tuff unit: oxidized dusky red at overlying contact (SR 3/4) grades to black baked zone? which grades to greenish grey (56Y 8/1) to dark greenish grey (56Y 6/1) Unit	60 70	white to translucent radiating xls of calcite in fractures, open space. pale blue-green powder in vugs, fractures	
329	97%		3670	# V		—	white vein material - zeolite? N-4	
330	98%		3680	V #		60 30		
331	97%		3690	# V		—		
332	96%		3700	# V		12 50		

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____

COMPANY _____ LOGGED BY M. Johnson & B. Dancoot DATE _____ GR. ELEV. _____

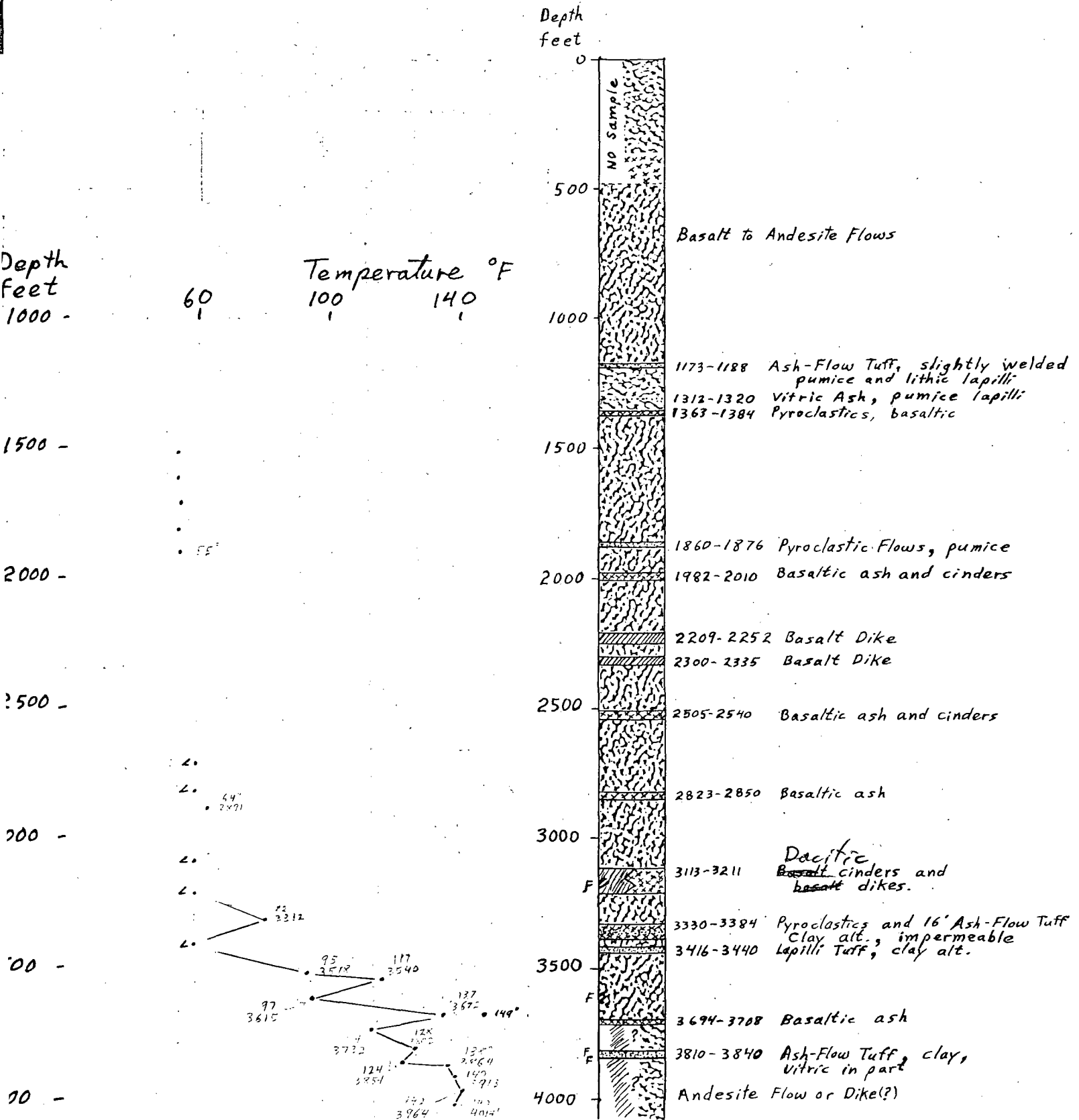
BOX NUMBER	CORE RECOVERY FT.	TEMP. ° F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
332	96%							
333	100%		3710		contains abundant basalt clasts and common plagioclase phenocrysts in a clay-rich matrix. Fragments decrease in abundance with depth. Pure clay occurs for 6" from		chlorite (?) along fractures	
334	85%		3720	# v	3703 - 3703.5. Beneath this depth fragments are rare - occ. feldspar als.	50 35	calcite in vugs.	
335	100%		3730	v # v	basalt	11 A0	pale blue-green powder on fracture surfaces.	
336	100%		3740	# v	3708 - 3712: dikelet, dark grey (N-3) to greyish black (N-2) with common plagioclase laths; contact dips ~30°. Vesicular, vesicles dip ~60°.			
337	100%		3750	v #	3712 - 3810': (basaltic) andesite, med. grey (N-5) w/ abundant plagioclase laths. Flow banding, where present,			
338	81%		3760	# v	has 60-90° dip. Upper contact irregular along fractures by basaltic dike material. Rock is cut by numerous horizontal fractures up to 20°. Fracture filling minerals appear to be calcite, chlorite.		chlorite calcite in horizontal fractures	
339	97%		3770	# v				
340	98%		3780	v #	Fractures begin to become subhorizontal toward bottom of flow, commonly spaced 1/2 - 1" apart, filled w/ calcite + chlorite (?). At 3804' plag. phen. become,			
341	88%		3790	# v	very abundant, flow banding shows light & dark grey chaotic swirling, rock becomes vuggy.			
342	98%			# v				
343	98%		3800	# v				

CORE LOG

PROJECT _____ HOLE NUMBER _____ LOCATION _____ Sec. _____ T _____ R _____
 COMPANY _____ LOGGED BY _____ DATE _____ GR. ELEV. _____

BOX NUMBER	CORE RECOVERY FT.	TEMP. ° F	DEPTH FT.	LITHOLOGY	LITHOLOGIC DESCRIPTION	FRACTURES	ALTERATION	DRILLING INFORMATION
343	98%			V #	3810 - 3840': Tuff unit, brick red clay rich, showing			
	100%		3810	#	flow structure; in fault contact with overlying unit, and			
344				#	faulted with black glassy plagioclase rich tuff unit (appears			
345	97%		3820	#	to be ash flow, glass matrix). Softer brick red to greenish		green clay (?)	
346	97%		3830	#	grey clay-rich portion appears to have been injected along			
				#	faults and fractures. Fault angles: 50°, 70°. Fault appears			
				#	to be only local movement - poss. related to shear action of overlying flow			
347	81%		3840	#	3840' - Andesite(?), med. grey (N-5), w/ abundant		chlorite,	
	78%			#	subhedral plagioclase, ^{flow is} deuterically altered along shears. Fault		calcite along	
348	95%		3850	#	contact (minor slick) at upper surface - localized?		fractures,	
				#	(Extends to below 4100?)		flow	
				#			shear.	
349	100%		3860	#				
				#			plagioclase may	
350	100%		3870	#			be slightly	
				#			altered - see	
351	87%		3880	#			etc.?	
				#				
352	100%		3890	#				
				#				
353	100%		3900	#				
				#				

GEO-NEWBERRY CORE HOLE N-1



GEO-NEWBERRY N-1

