

SCIENTIFIC OBSERVATION HOLE PROJECT
(State of Hawaii)

Index Geologic Log for Scientific Observation Hole #2
(1 in. = 100 ft.)

S. Rene Evans
Puna Research Center

Prepared from 1 in. = 2.6 ft. scale geologic logs by

E.A. Novak
S.R. Evans

April 1992

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EXPLANATION FOR INDEX LOG

The index core log of the Scientific Observation Hole #2 includes:

- 1) A combined histogram and stratigraphic column which represents the chip and core log, respectively. Unique important thin units are exaggerated in thickness in order to be visible at this scale.
- 2) A graph of the occurrence of secondary minerals along fractures, in vesicles and in vugs. Further details are in the description column.
- 3) A graph of rock quality designation (RQD) which is a quantitative index of intact pieces of core 4 inches or more in length. Low numbers demonstrate heavily fractured zones. High numbers indicate competent zones.
- 4) A graph of equilibrated down-hole temperature taken on June 6, 1991, 48 hours after completion of coring. Below 6100 feet the temperature profile is from a second run completed that day (55 hours after well completion).
- 5) A discussion of observations from the core: description of lithologies, mineralogy, core loss, brecciation, displacement and other vital points. Unless otherwise specified, lava flows, pillowd intervals, and intrusive bodies are basaltic in composition. The terms rare, sparse, common and abundant represent occurrences <<1%, <1%, 1-5%, >5%, respectively.

The information in this index log has been compiled from the following unpublished sources: Novak, E. and Evans, R., 1991, Scientific Observation Hole #2 Core Descriptions, Deymonaz, J., 1992, Scientific Observation Hole #2 Summary Report of Drilling Operations, and Sykes, M., 1991-92, Preliminary Report of XRD Results.

For further information contact Rene Evans, Geologic Research Associate, Puna Research Center, P.O.Box 1488, Pahoa, Hawaii 96778. TEL (808) 965-9699.

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Lithology

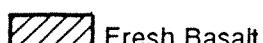
Mud:



Tephra



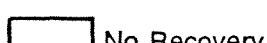
Glass



Fresh Basalt



Altered Basalt



No Recovery

Core:



Tephra



Flow Units



Carbonates



Pillows



Hyaloclastites



Basaltic Intrusions



Diabasic Intrusions

Well: SOH #2

Field: Kapoho

County/State: Hawaii, Hawaii

Location: 19° 29' 30" N lat
154° 52' 0" W long

Elevation: 282 Feet

Spud Date: Feb. 3, 1991

TD Date: May 29, 1991

Drilled Depth: 6802 Feet

Interval Logged: 0-4104' intermittent chip/core

4104 to 6802' core log

Drilling Contractor: Tonto Drilling

Logged by: Puna Research Center staff-

Elizabeth A. Novak and S. Rene Evans

Log Scale: 1 inch = 100 feet vertical

1 inch = 4 5/8 to 1 7/8 inch horizontal

Secondary Mineral Abbreviations

b = blue veneer (clay)

s = smectite/chlorite

z = zeolites

p = pyrite

c = calcite

a = anhydrite/gypsum

o = amorphous silica

q = quartz

e = epidote

m = miscellaneous (analcime,
chalcopyrite, albite, etc.)

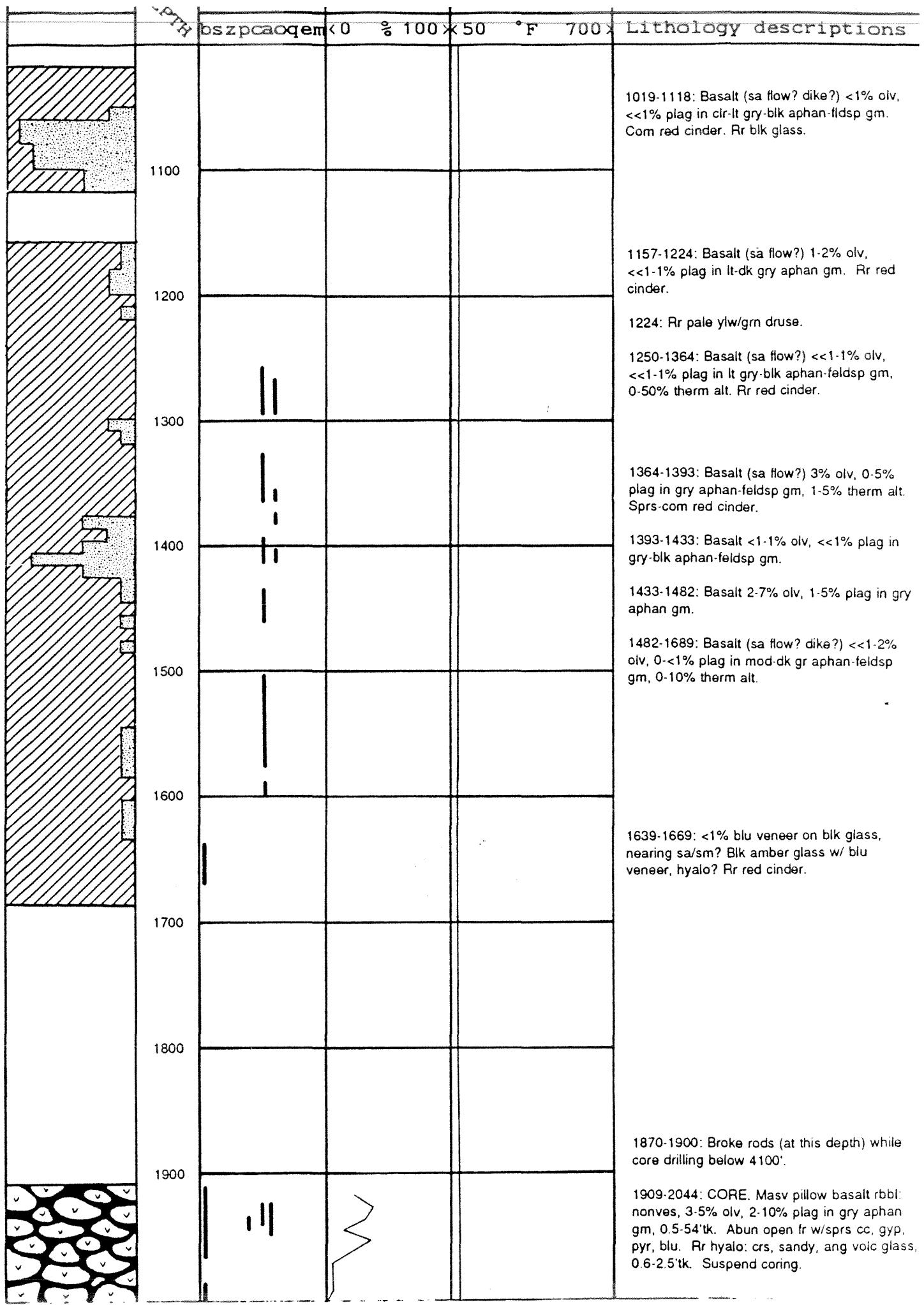
Abbreviations

abun	abundant
alt/rd	altered
anal	analcime
ang	angular
anh	anhydrite
aphan	aphanitic
app	apparent
asil	amorphous silica
blk	black
blu	blue
brec/d	breccia/ted
bslt	basalt
btwn	between
carb	carbonate
cc	calcite
chalcop	chalcopyrite
chl	chlorite
cl	core loss
clr	clear
clsd	closed
com	common
crs	coarse
dikty	diktytaxitic
dk	dark

ep	epidote
feldsp	feldspathic
foss	fossiliferous
fr/ctrd	fracture/d
frags	fragments
gal	galena
gm	groundmass
gr	grain
grn	green
gry	grey
gyp	gypsum
holoxtl	holocrystalline
hyalo	haloclastite
incip	incipient
incr	increasing
intrud	intrude
LC	lost circulation
lt	light
masv	massive
mod	moderate
mord	mordenite
mot	motion
mtrx	matrix
nonfoss	nonfossiliferous
nonves	nonvesicular
occ	occasional
olv	olivine
ox	oxidize/d
pervsv	pervasive/ly
picr	picritic
plag	plagioclase
poss	possible
pyr	pyrite
qtz	quartz
rbbl	rubble
rev	reverse
RQD	rock quality designation

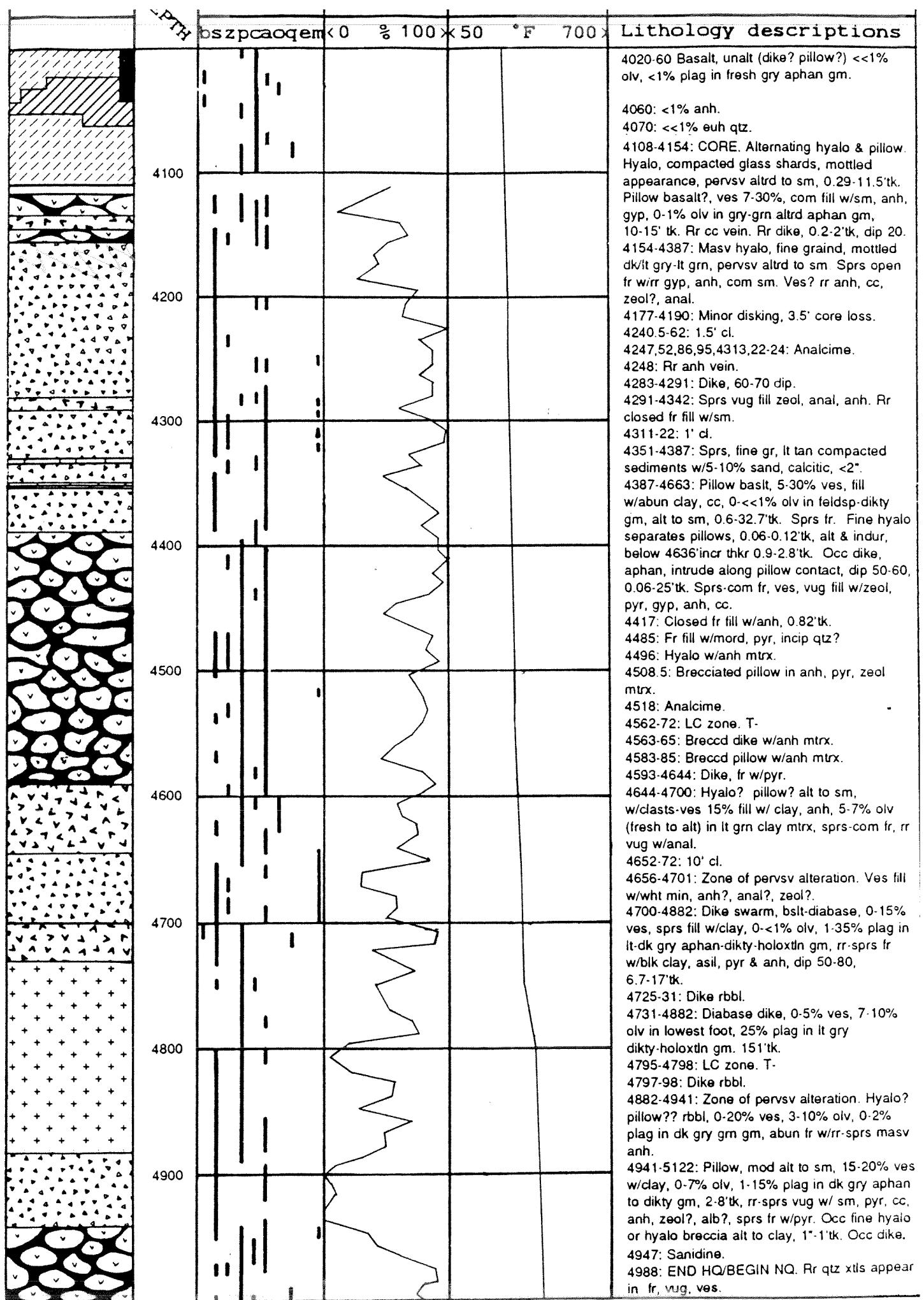
rr	rare
sa	subaerial
sm	submarine/smectite
sphal	sphalerite
sprs	sparse
subvert	subvertical
sulf	sulfur
T-	temperature decrease
T+	temperature increase
therm	thermal
thkr	thicker
tk	thick/ness
tr	trace
v	very
ves	vesicle
volc	volcanic
w/	with
wht	white
xtls	crystals
ylw	yellow
zeol	zeolite

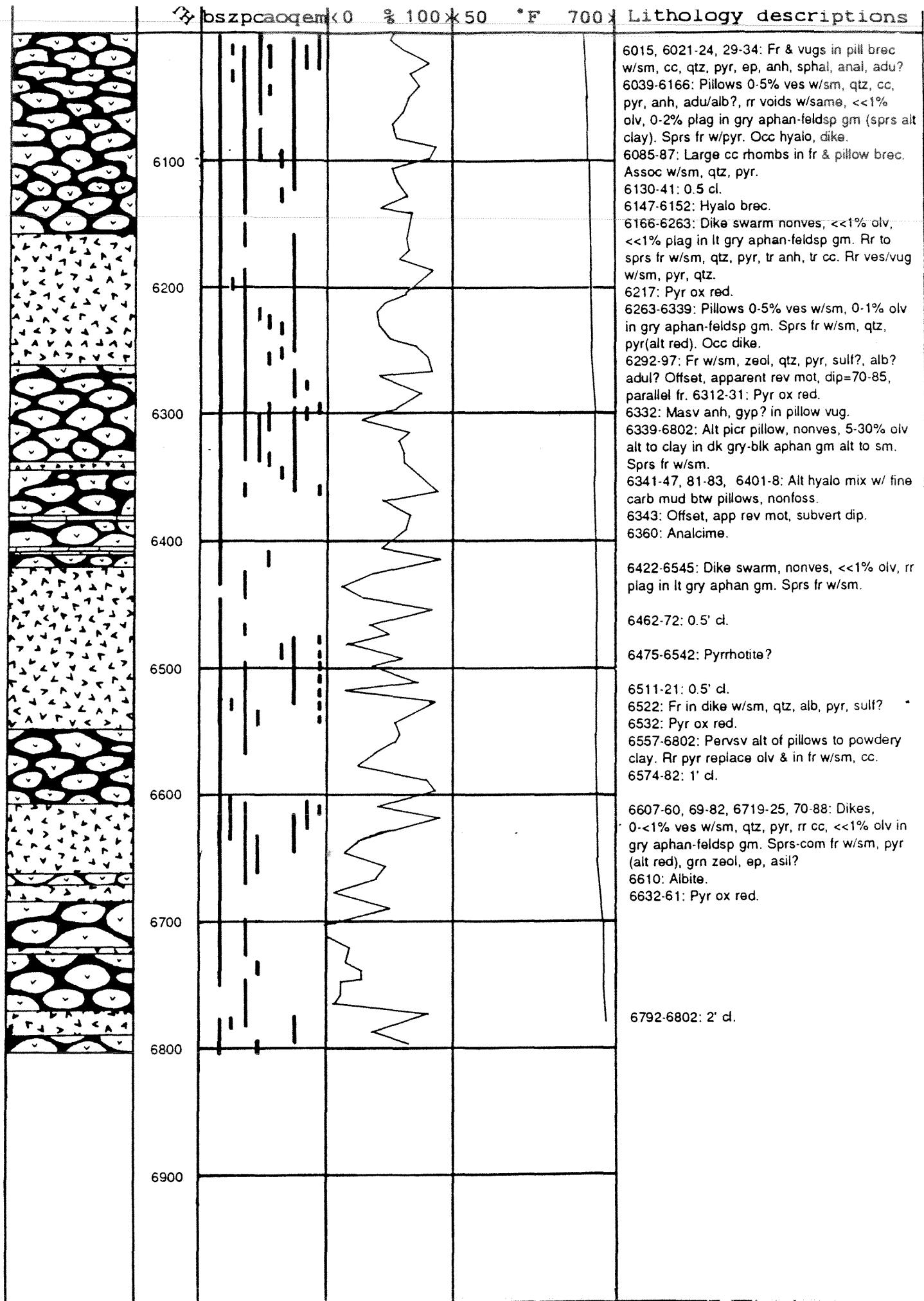
LITHOLOGY	DEPTH	MINERALS	RQD	TEMPERATURE	REMARKS
		bszpcaoqem<0	% 100	50 °F 700	Lithology description
	100				
	200				
	300				
	400				390-441: MUD. Basalt (sa flow?) 0-3% olv <1-3% plag in lt gry aphan-feldsp gm. Sp red cinder. Rr blk glass.
	500				
	600				
	700				
	800				
	900				

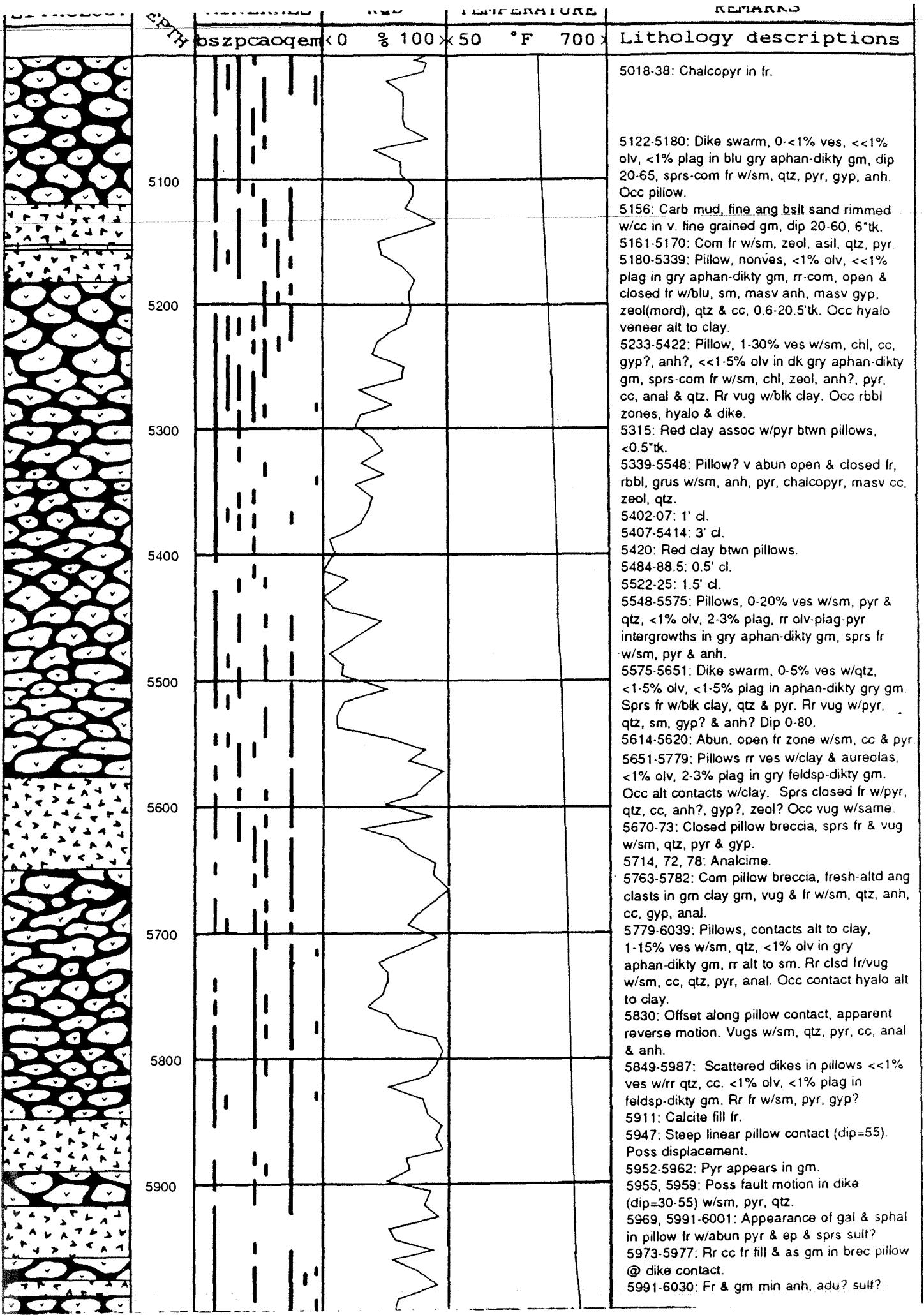


	bszpcqem	<0	% 100	50	°F	700	Lithology descriptions
							1909-2044: Cl in pillow rbbl as follows:
							1909-13: 2' cl. 1929-43: 2.5' cl. 1952-90: 21'
							cl. 1994-98: 1' cl. 1999-2001: 1' cl. 2004-20:
							11.5' cl. 2021-23: 1' cl. 2024-29.5: 5.5' cl.
							2031-38: 5.5' cl. 2043-44: 0.5' cl.
2100							
2200							
2300							
2400							
2500							
2600							
2700							
2800							2785-2830: CORE. Pillow: nonves, 3-10% olv, <1-3% plag in dk gry aphan gm, 1.1-14'tk. Frctrd patches altrd to sm. Com open fr & rbbl w/ blue. Sprs gyp, cc. Fr w/clay seams. Unable to maintain open hole, clay squeezing in. Suspend coring.
2900							2790-2793.5: 0.5' cl.

Lithology	Depth	MATERIALS	XRD	TEMPERATURE		REMARKS
				%	°F	
	3100	oszpcqem	<0	100	50	700
	3200					
	3300					
	3400					
	3500					
	3600					
	3700		1			
Hatched	3800		1			
	3820					3711-4104: MUD. Gry grn clay lumps, alt fine grained halo? Rr blk glass w/blu veneer <<1%. Rr orange cinder above 3820.
	3900		1			3810-3870: Basalt, alt to gry grn clay & unalt, <1% olv, <1% plag in gry aphan gm. Sprs Cc loose & in vug.
			1			3938: Rust min lumps appear <1-10%. XRD @ 4065 show plag, aug, clay.







KEY TO GRAPHIC LOG

FLOW UNITS: Designation includes A'a, Pahoehoe and Transitional flows. Orange color denotes thermal oxydation.



INTRUSIVES: Dikes and Sills.



ASH BEDS



CORAL

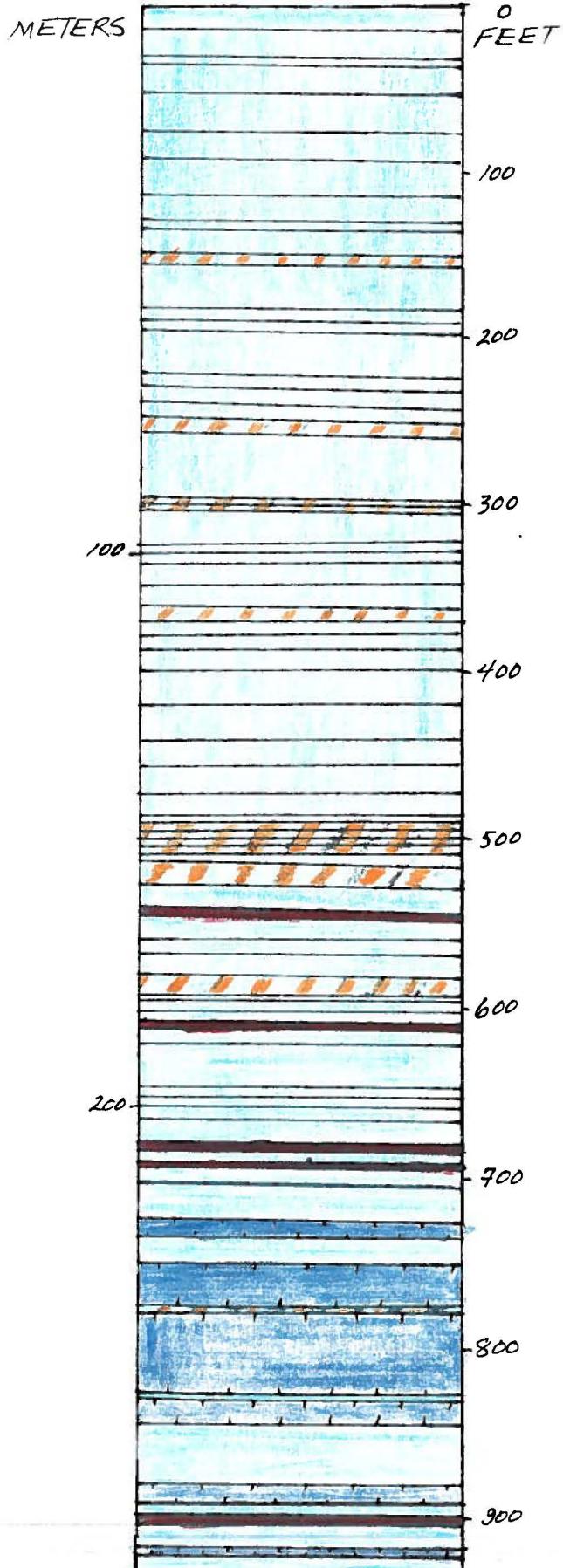


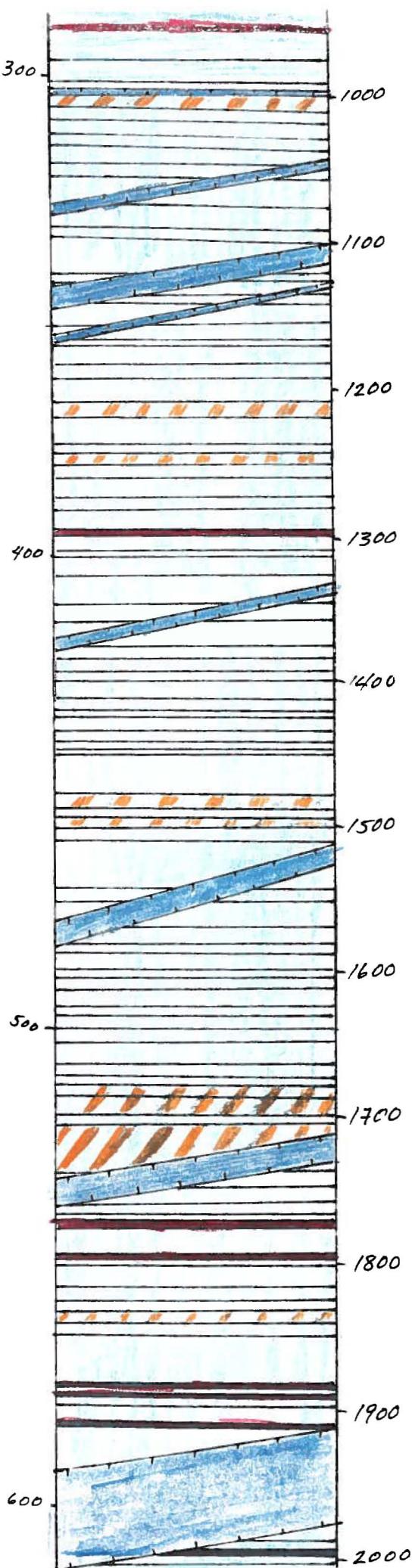
PILLOW AND HYALOCLATITE

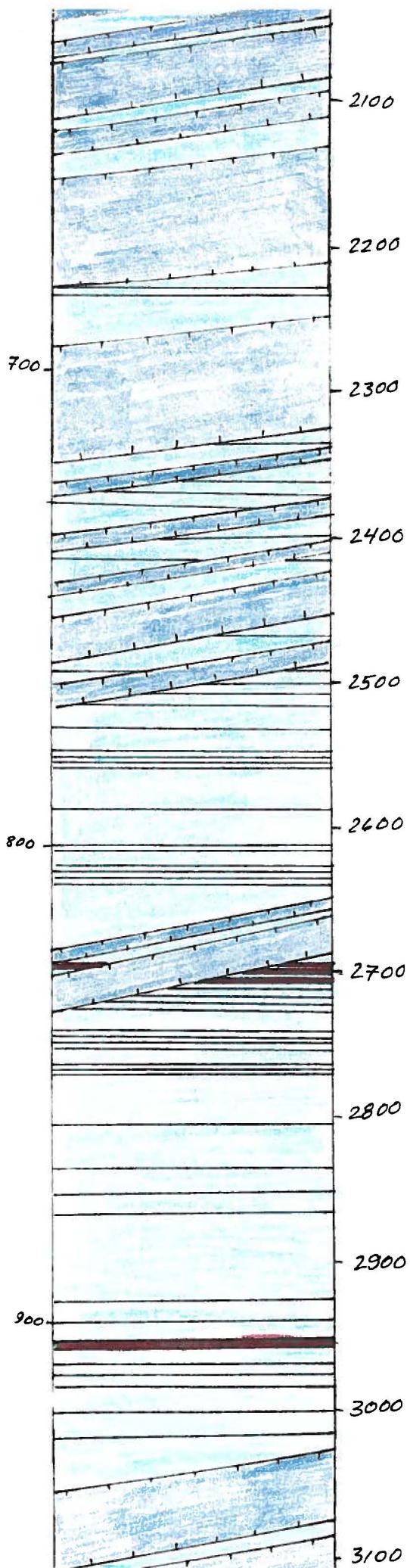
GRAPHIC LOG OF SOH 4

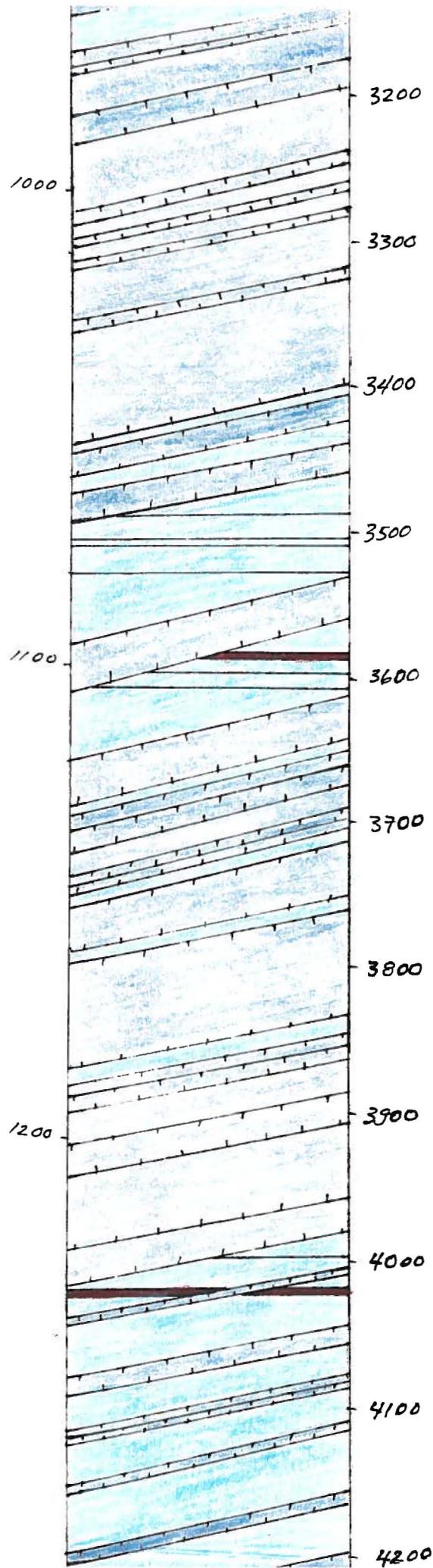
Here is presented a graphical representation of SOH 4. The total number of units found was 1463 (based on units/box) this includes dikes, a'a, pahoehoe, ash, sand, carbonates and pillows/hyaloclastites. The pahoehoe designation includes transitional lavas that are rheologically in between a'a and pahoehoe. Sand is a term used for all core sand like in morphology, this designation is made regardless of unit type. In the pillow /hyaloclastite group are fine grained littoral deposits ash-like in size.

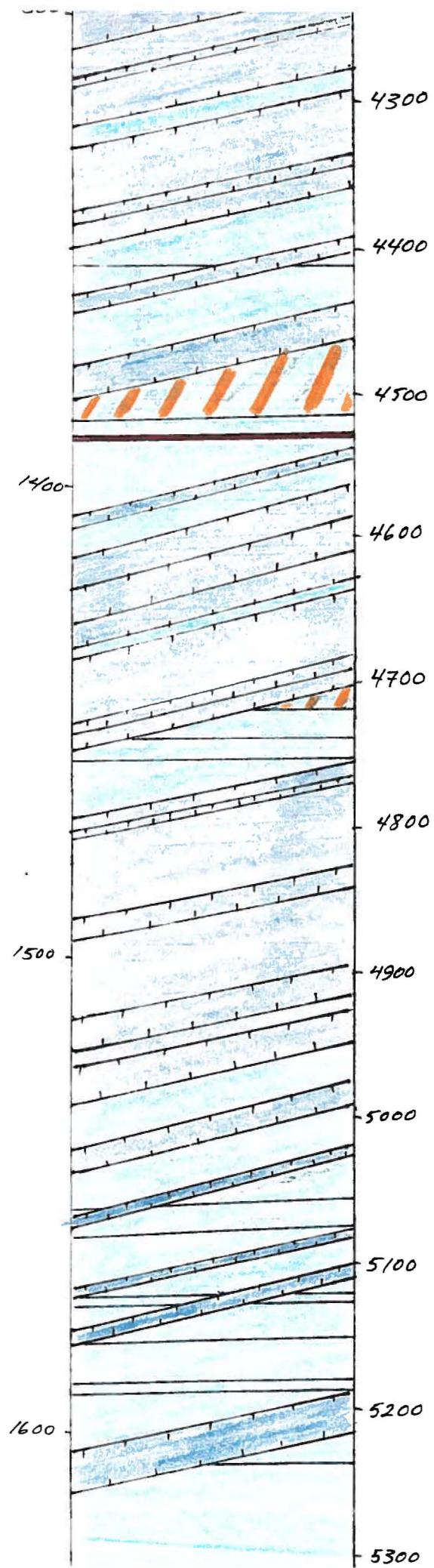
UNIT	PERCENT OF CORE
Dike	33.2 %
Pahoehoe	35.2
A'a	21.7
Ash	1.1
Pillows and Hyaloclastite	7.6
Carbonates	1.03
Sand	0.17

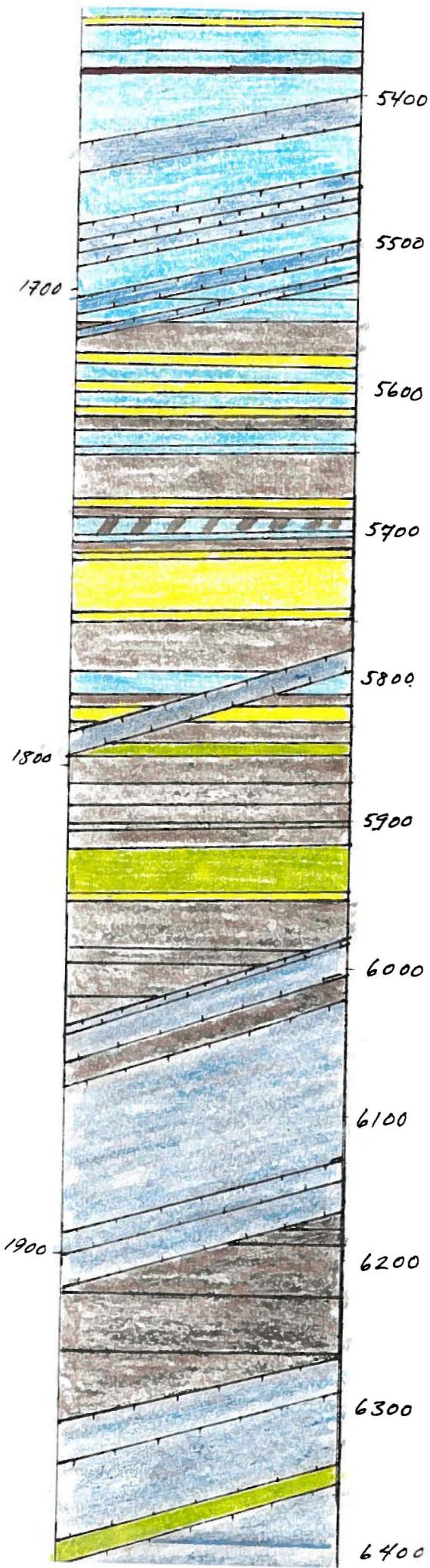


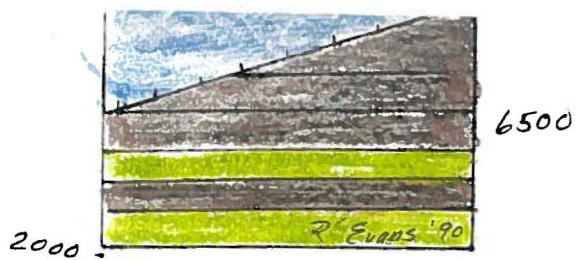












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