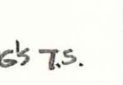


GRAPHIC LOGS

GL04514

DEPTH	ALTERATION							ce ch ca units	qtz UNIT	GRAPHIC GEOLOGY	TR. TRACE 1. WEAK 2. MOD. 3. STRONG	VEINLETS	N	DESCRIPTIONS
	ser	sil	py	MS <sub>2</sub>	chl	cel								
	123	123	123	123	123	123	123							
1150														
1160														THIS CONTACT IS APP @ RT 45° AXIS - SOME SCOURING BY OR EROSION OF SS. PRIOR TO DEPOSITION. NAIVE BUT
1165														XRD SHOWS FLUORITE! @ 1162 variable attitude to comp. folia highly fractured - also variable welding of pumice probable comb. of plastic flow & structural disruption catch units post-date qtz units (here) @ 1162.6 - qtz xl. along unit - at 1st 3mm-
1170														1165-1167 u. disrupted, invasive tuff "moth-eaten", plucky ft-met gray-grn degree of welding highly variable, post. moving forward sup. welding zones post-emplcement movement. definite rip-ups at lower contact with @ 1165 one at 1st. 8cm f. by only 5-7mm wide. at 1/2 of at 1st 80° to core axis - bent plastically in middle fg. qtz xls
1180														1167 - qtz-rich fg ss (subarc?) widely scattered randomly oriented pumice, some open, some ptly filled w/chl, cal in various combinations lots - some construction due to soft-sediment det @ 1174 - swirly contorted bedding, but overall @ n 10° TO CORE AXIS ON ANG
1185														contact @ 1183-1187 @ n 50° slickensided chl/cel. scars 1186.7 - NW AFT green pum. as above xl. rich
1190														



252-2A

WASTORIED DEPTH



DRILL HOLE VC-7A  
LOCATION



LOGGED BY JPH, JNG



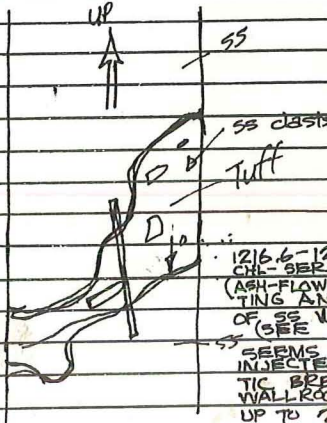
GRAPHIC LOGS										GRAPHIC GEOLOGY	NOTES COMMENTS	DESCRIPTIONS	
DEPTH	ALTERATION					FRACTURING	VEINING & VUG-FILL.	VEINLET FILLING PHASES					
	PERICLITE WMS	SILICA FIBRION WMS	CHL WMS	CAL WMS	DISS. PYRITE WMS			QUARTZ	SERICITE				CHLORITE
1185'													
1186'													
1187'											FRAC. DIP 33°		
											UNDFUL. FRAC. DIP ANG. 25°		
1188'											COMP. FOL. DIP 23°	... TO 1188.4' : MOD. WELDED	
											STRIKE TO FOLN. ↓		
											FRAC. DIP 55°		
1189'											COMP. FOL. DIP 25°	1188.4 - 1192.5' : MOD. TO DENSELY WELDED, XL-RICH RHYOLITE ASX-FLOW TUFF, NONETHELESS POROUS & PUNKY THOUGH COMPETENT. 17-20% FELDSPAR PHENOCRYSTS, AVG. 1.5 MM. DIA. UP TO 4 MM. (VERY RARELY) 7-9% SMOKY-APPEARING Qtz PHENOS, BROKEN TO EUBHEDRAL, COMMONLY BI-PYRAMIDAL, AVG. 1-1.5 MM, UP TO 3 MM IN DIA. 10% PLUMICE VARIABLE ASPECT RATIOS, FROM 1-2/1 TO >10/1, AVG. LENGTH 7-10 MM, AVG. ASPECT RATIO 300/1; 3-4% LITHIC FRAGMENTS (6.9 TO 1188.8'), UP TO 33 MM. DIA. (AVG 8 MM). POM. FELSIC VOLCANIC, LESSER INTM. PHYLIC VOLC. PERLITE, W. AET, Q-FELDSP 33 (LIKE 32). GROUNDMASS, IS LT. GREENISH TO BROWNISH GRAY - BROWNER AREAS PROB. LESS COMPLETE DEVITRIFICATION, OCCUR AS IRREG. MOTTLING IN PATCHES AVG. 7 CM. DIA. INTERCONNECTED (NOTE: LITHICS 2 TO SUBROUNDED).	
1190'											Qtz. VNLT 2.67 MM, DIP 35°		
												ALT: FSPS FRESH TO WEAKLY (LOCALLY MOD.) SERICITIZED; PLUMICE TOTALLY ALT TO GREEN GRAY-GEN (SPINACH) COLOR; CHL-SER AGGREGATE (DRLN) & SO FIAMME CONTRAST STRONGLY W/ G-MASS. - GROUNDMASS IS WHOLLY TO MOSTLY DEVITRIFIED, POSS. WEAKLY SERICITIZED, MORE MAFC LITHICS CHLZP, SERICATED, PERLITE ALT. LIKE FIAMME.	
1191'											VNLTs DIP 30°		
											35 MM CLAST SUBROUND		* 1190.7-1191.2 : < 1 MM. Qtz+CHL VNLTs LOWER ONE W/ 1-2 MM LT. BROWN BLEACHED ZONE, ALL WITH UP TO 10 MM. SILICIFIED HALO ZONES.
1192'													* PYRITE THROUGHOUT - < 0.2%, DISS. SUBH. GRAINS 0.5 MM.
1193'											COMP. FOLN. DIP 27°	1192.5-1193.1' : AS ABOVE EXCEPT ZONE ENTIRELY DENSELY WELDED.	
1194'											8x4 CM. 136L. DACITE LITHIC.		
											HACKLY FRAC. DIP 73°	1194.2-1195.1' : AS ABOVE EXC. WEAKLY WELDED, V. PUNKY, SLIGHT INCREASE IN SERICITIC ALT.	
											Qtz. VNLTs DIP 30-35°		* 1194.2-1194.05: diffuse, irreg. qtz ± py veinlets < 1-2 MM WIFE
1195'											CHL. VNLTs.		* 1194.7-1194.95: DIFFUSE, IRREG. CHL. VNLTs RANDOMLY ORIENTED, 2-3 MM. DIA.

DRILL HOLE VC-2B (S3 INTERVAL)  
 LOCATION SULPHUR SPRINGS, VALLES CALDERA, NM

LOGGED BY J. HULEN  
 11 DECEMBER 1988



DEPTH	GRAPHIC LOGS												GRAPHIC GEOLOGY	NOTES COMMENTS	DESCRIPTIONS	
	ALTERATION					FRACTURING	VEINING & VUG-FILL.	VEIN FILLING		P. & P. VUGS						
	QUARTZ-SERICITE WMS	SILICIFICATION WMS	CHL WMS	CAI WMS	DISS. PYRITE WMS			QUARTZ	SERICITE		CHLORITE	CALCITE				PYRITE
1205'																
1206'															FREE OF TUFF	
															CONTACT DIP N 150	1206-1206.6': WHITE, XL-RICH, PUMICE-POOR, NON-SORTED TUFF, PROBABLE ASH-FLOW (COULD BE INJECTED INTO SANDSTONE)
															IRREG. CONTACT.	1206.6-1220.8': MASSIVE, V. LIGHT BROWNISH TO GREENISH-GRAY, FRIABLE, APP. MOD. WELL-SORTED MED.-GRAINED SANDSTONE.
1207'																
																BREAK
1210'															FRAC. DIP 60°	SCALE CHANGE
1212'																
1214'																
1216'																
1218'																
1220'																
1222'																
1224'																



DRILL HOLE \_\_\_\_\_  
 LOCATION \_\_\_\_\_



LOGGED BY \_\_\_\_\_















DEPTH	GRAPHIC LOGS										VEINLETS	DESCRIPTIONS	
	ALTERATION						ch vms	U <sub>2</sub> OP 98%	GRAPHIC GEOLOGY	% TRACE 1. WEAK 2. MOD. 3. STRONG			
	qtz	sl	act. py	M <sub>2</sub> SO <sub>4</sub>	chl	cal							
580													
570													
560													
550													
540													
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140													
130													
120													
110													
100													
90													
80													
70													
60													
50													

rusted pyrite

181-38 calc. xls

calc. fls 146-3

XRD for 50'

581

183-11

check other side

185-2

146-3

DRILL HOLE VC-2A  
 LOCATION



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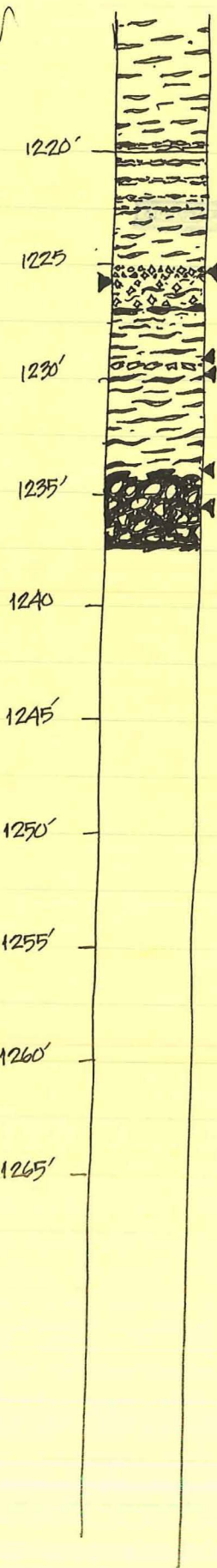
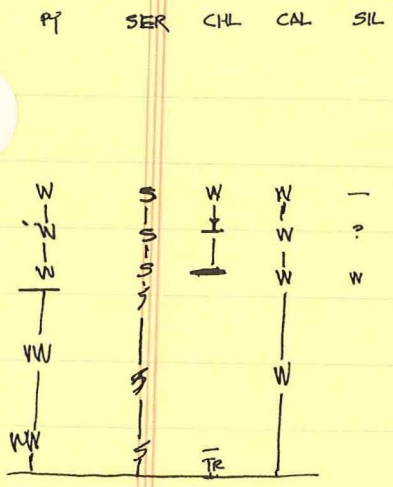












NOTE: @ 1218.6-1218.8' SEVERAL FIAMME ARE BROKEN BY HAZELINE TENSION CRACKS (sketch of crack) MAYBE INDICATING THE ROCK HAS FLOWED AFTER SEMI-SOLIDIFICATION

- 1220' - 1222.5' SEQUENCE OF V. DISTINCTLY-BEDDED, V. THIN, DENSELY WELDED ASH-FLOW TUFFS. INDIVIDUAL BEDS PROBABLY AVG. ~2 CM. THICK, DEFINED BY DIFFERENCES IN XL<sup>s</sup>, LITHIC, PUMICE CONTENT, PROB. ALSO BY ALTERATION DIFF. (✓ THIN-SECTION)
- 1222.5-1225.5' ALTERED XL-RICH DW ASH-FLOW TUFF, V. LT, SLIGHTLY GREENISH-GRAY, PUNKY POROUS-APPEARING, NO FRESH FSP. OF PUMICE, ALL SERICITIZED. 0.3-0.5% PIS. SUB-RSH. PYRITE, AUG. < 0.3 MM. DIA.
- 1225.5-1225.9' EXTREMELY XL-RICH HORIZON IN TUFF. TOTAL XL CONTENT AT LEAST 60-70%, W/ AT LEAST 20-25% QTZ. XLS. SOME APPARENT RELICT GLASS IN MATRIX (SURPRISING IN THAT TEMP OF HYDROTHERMAL FLUIDS IN CONTACT W/ GLASS MUST HAVE BEEN AT LEAST 200°C. NO FSP. PHENOCRYSTS HAVE BEEN SERICITIZED.
- 1225.9-1226.4' SIMILAR TO ABOVE, BUT DISTINCT EUTAXITIC TEXTURE & FEWER XLS OVERALL, & RELATIVELY FEWER QTZ. XLS. (50% & 20%?) T.S.V
- 1226.4-1226.9' DW XL-RICH ASH-FLOW TUFF, SIMILAR TO 1222.5-1225.5'
- 1226.9-1229.3' AS ABOVE. STRONGLY SERICITIZED. MANY FSP. HAVE BEEN ETCHED OUT, GIVING THE ROCK A POCK-MARKED OR SPONGY APPEARANCE. SPARSE SUBRADIAL < 0.3 MM PYRITE XLS & SIMILARLY-SIZE QTZ XLS (✓) HAVE BEEN DEPOSITED IN THE VUGS CREATED BY FSP. DISSOLUTION.
- 1229.3-1229.4' (@ ~40° DIP); NW ASH-FLOW TUFF ALTN. AS ABOVE. UNDEFORMED PUMICE UP TO 13 MM. LENGTH
- 1229.4-1233.8' ALTERED, DENSELY WELDED, XL-RICH FELSK ASH-FLOW TUFF W/ 5% LITHICS. SERICITIZED AS ABOVE. TR CHL BELOW 1233'
- 1233.8-1236.4' MYSTERY ROCK! TEXTURALLY, A BRECCIA, W/ ~30% ANGULAR TO SUBROUNDED CLASTS. AVG. ~7 MM. DIA, BUT FR < 1 TO 30 MM. DIA. EMBEDDED IN A MED TO V. DARK GRAY APPARENTLY GLASSY MATRIX. NO APPARENT BEDDING OR FOLIATION. CLASTS APPEAR MOSTLY TO BE PREVIOUSLY SERICITIZED, OCC. PTLY CHLORITIZED ASH-FLOW TUFF WITH VERY LITTLE ACTUAL PUMICE AS CLASTS. IN OTHER WORDS, MOST OF THE CLASTS ARE ROCK FRAGMENTS. APT. 10% (?) FSP + QTZ. PHENOCRYSTS. ~0.1% PY DISS. IN MATRIX. SEE DRAWING ON MAIN LOG, P. 7 (REVERSE) FOR UPPER CONTACT RELATIONSHIP (SEE JNG NOTES CONCERNING PLASTICITY OF UNITS @ CONTACT).
- 1236.4-1238.3' LITHIC & PUMICE-RICH NW T
- 1238.3-1239' DISTINCTLY BEDDED, PROBABLE AIR-FALL TUFF (10-15 MM band of above rock)
- 1239-1241.3' SAME AS 1236.4-1238.3'
- 1241.3-1242.3' V.V. WELL-BEDDED AIRFALL(?) (10-18 mm. from contact)

OVER FOR LOWER CONTACT →

VC-2A  
DETAILED LOG OF "MYSTERY ZONE"

J. HUILEN  
J. GARDNER  
NOV. 17, 1986







DEPTH	GRAPHIC LOGS										GRAPHIC GEOLOGY	VEINLETS	DESCRIPTIONS	
	ALTERATION						IN VNLS.		IN VNLS					7. TRACE 1. WEAK 2. MOD 3. STRONG
	SER	SIL.	PY	MOSE	CHL	CAL	CL	QZ	KT					
1000'													DWTF, as above	
1010'													begin to see <u>glass</u> in 1000' shreds (some) are still dark gray <u>GLASS</u>	
1020'													1014'-1040' v. densely welded v. rich felsic ash flow tuff, med. slightly purplish-gray with dark gray to purplish-gray fram. small (1-2mm) much more flattened than large (up to 5x2 cm) definitely relict glass, especially in framme. Rock is remarkably fresh	
1030'														
1040'													@1040', alt. begins to increase, glass % decr.	
1050'													1040-1047.5' DWTF, as above exc. sl. med bleached-appearing, sl. incr. in alt. still some relict glass, however. dk grn chlt calcite v. vnlts from hairline to 2mm wide. <u>GLASS</u>	
1060'													1049.5-1057' FALLOUT TUFF. v. lt. sil greenish gray dominantly v. v. fine grained but coarser (up to 1cm) pumice & lapilli to 1059' (coarsest and most abundant lapilli to 1059' than gradually diminishing) lapilli selectively chloritized; thin sil pumice clast increase again 1059.5-1056' @ upper contact, comp. form. is discordant (see re-views), but it changes rapidly uphole to concordant.	
1070'													1057-1071' DWTF (NV to v. 1057) t. & much relict glass again esp. framme. v. similar to 104-1040' @ 1071-1071' dramatic incr. in veining - pass some dolomite in centers of some veinlets but mostly chl-calcite some framme partially & secondary alt. to chl-calcite. v. lt. fresh looking overall.	
1080'														
1090'														
1100'													As above: grayish, glassy framme in H., sl. pinkish-gray matrix	
1110'													in veinlets: dk. green chl. intimately intermixed w/ calcite, they late-stage calcite mostly interior, quite pure.	
1120'													veinlets vary from hairline to v. 6mm wide commonly delicately banded rarely swelled to 10mm wide w/ vuggy centers. diss. hem(?) in unit. @ 1116.5-1116.5 curious "orbicular" texture in veinlet	
1130'													1122-1137' zone of mod. intense chl-calcite veining has been fractured w/ some rotation of fragments, infilling of fractures w/ chl/calcite	
1140'													in places where several units, coarse cm scale masses of chl-calcite up to 2' dia. 3cm. dia. STILL GLASS in matrix	
1150'													@1145.5' glass disapp., pumices are green calc. ser. chlted(?) & matrix turns from lt. purplish-gray to v. lt. gray	
1160'													@1152.7' chl/calcite framme 29mm x at least 75mm spongy appearance.	
1170'													S3 SANDSTONE	
1180'													MWT (see detail next page)	
1190'													DWTF, bchd., punky-appearing v. lt. gm gray w. med. ash-gray pumice (framme) becomes less densely welded @ 1196'	
1200'													1194-1195' hairline to 3mm. qtz units forming weak pattern of initially pre-date chl-calcite veinlets.	
1210'													@1208' pumice color chngs. from gray-green to v. lt. gray.	
1220'													1213.5-1214.4 - qtz ser. w/ vnlts broken open with spalerite xls frame on surface.	
1230'													1217.2' @ 1216' qtz-chl-calcite-adularia unit.	
1240'													1219-1223' sequence of v. thin & distinctly bedded ash-flows (avg. 1-2 cm beds) densely welded gray-green framme (chlt. ser.)	
1250'													1223-1225.5' punky, bleached-appearing DWTF	
1260'													1234-1237' ??? DWTF's in lt. black glassy-appearing matrix w/ v. vnlts, similar to 1234-1237' all in 7mm. dia. locally up to 20mm - 100% clast @ 1236.8-1237.0' (0.2')	
1270'													1237-1238' zone of distinctly bedded, poss fall & flow in bed.	
1280'													1241.6' OVER	

in vnlts ser.

DRILL HOLE VC-7A  
LOCATION \_\_\_\_\_



LOGGED BY JBH, JNG  
11/03/86



GRAPHIC LOGS

DESCRIPTIONS

QTZ PHEN.

35-40

440  
OVER

DEPTH	ALTERATION							IN VNLTs		IN VNLTs		GRAPHIC GEOLOGY	VEINLETS	DESCRIPTIONS
	1. WEAK 2. MOD. 3. STRONG							CHL	CAL	QTZ	KF			
	SER	SIL	PY	MO <sub>2</sub>	FRAC	CHL	CAL	CHL	CAL	QTZ	KF			
1500'														DENSELY WELDED, LITHIC-RICH FELSIC ASH-FLOW TUFF, AS ABOVE; PUNKY, DISTINCTIVE GRAY GREEN COLOR DUE TO CHLTEN. PERHAPS MINOR PHENGITE. 10-15% (up to 20%) TO SUBRD LITHICS UP TO AT LST. 40 MM. DIAMETER MOSTLY INTM-TO-FELSIC VOLCS - SOME FLOW-BANDED REF. GREEN COLOR & CHLTEN. OF TUFF COULD REFLECT PRESENCE OF ABUNDANT INTM. LITHICS (IMMEDIATE SOURCE OF IRON DURING ALTN. AT LST 1/2 THE CLASTS HOWEVER ARE APP. AN OLDER WELDED TUFF!) THESE ARE WHITISH, IN STRONG CONTRAST TO MATRIX. REALLY SUSPECT PRESENCE OF PHENGITE IN THESE BX. MANY CLASTS SELECTIVELY PYRITIZED. MANY HAVE PHENGITE RIMS.
1510'														
1520'														
1530'														
1540'														
1550'														
1560'														
1570'														
1580'														
1590'														
1600'														
1610'														
1620'														
1630'														
1640'														
1650'														
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1670'														
1680'														
1690'														
1700'														
1710'														
1720'														
1730'														

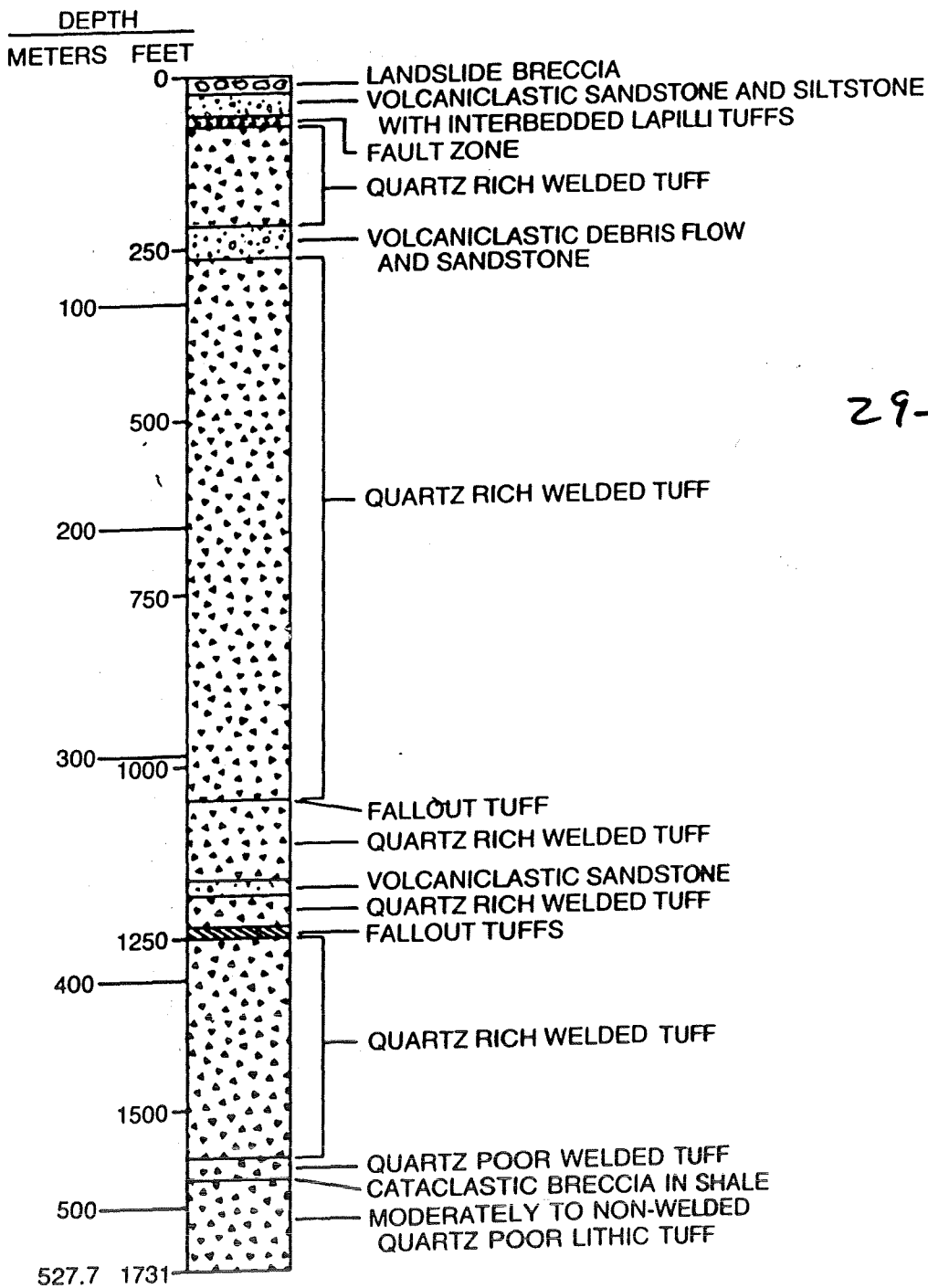
DRILL HOLE VC-2A  
LOCATION SULPHUR SPRINGS, VALLES CALDERA, N.M.



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1/10/86



### VC-2A STRATIGRAPHY



29-6



Depth

Comments

1234 sharp. irreg etc; densely welded tuff over black "breccia"; stringers of black b2 interlocking tuff.

1237 base "black b2" is fallout; gen. well sort'd, poorly sort'd; frags are lithic (alt'd) p. tal & pum. one large clast weld'd tuff > 10 cm dia!?

1238 base another fallout, crudely graded frags incl. Abo

1239.5 base of another fallout; mostly fined gr'd

1241.5 base of coarse fallout; frags incl Abo

1247.5 base of fallout; grades coarse sand mix @ base to fine ash @ top About 1247 sm. shear zone w/ clays & slicks.

@ 1247.5 top of mod welded tuff; dip comptr foliation ~ 45°

1274 felds & pums are <sup>peritaxial</sup> leached - looks v. porous

1316 mod-densely weld'd; gray rx; dec. in degree leaching; hi & frac's w/ chl.

1323 less hi & frac's; rest as above

1355 <sup>p<sup>55</sup></sup> I.D. bipyramid gt<sub>3</sub>

1384 dec 20 porosity due to leaching

1360 lithics & pums get green



1385 py gets coarser  
1390 densely welded; sparse hi & frags  
w/ ser-chlor.

1402 cc vein

1407 note that fiamme dip less; maybe  
 $\sim 30^\circ$ ; frags w/ ser & chlor.

1408 to 1410 min'd, cc, cemented cataclastic(?)  
gouge/bz; about lithics in BZ

1420 densely welded; fiamme dip  $\sim 45^\circ$ ; gen  
inc in about  $\frac{1}{3}$  size of lithics from  
1360 to here; now lithics up to 8 cm  
dia.

1428 about coarse lithics up to 10 cm dia;  
NOTE interesting zone of for alt'd  
lithics; weak to mod cc veining,  
lithics comprise  $\sim 50\%$  of the rx,  
up to 20 cm dia frags.

by 1435

1439 25 cm dia. frag of 2px and, to  
dacite, flow bnd'd!

densely welded to 1433; @ 1433 lithics  $\sim 40\%$

1445 lithics approach 75%! Tuff apparently  
moderately welded. lithics incl. Aboy, Keres-  
like <sup>flow bnd'd</sup> dac, and. @ 1445 poss pe dact;  
frags alt'd gneiss prior to eruption  
& chlor cc rinds post eruption.

1452 base of lithic swarm; tuff densely  
welded to base of swarm; rx pervasively  
green. w/in lithic swarm tuff matrix  
became v.v. green; felds also leached along  
w/pervasive green



1475 <sup>same dip to</sup> densely weld'd <sup>blanched</sup> <sup>pervasive</sup> <sup>green</sup>, <60% lithics

1485 <sup>as above</sup> 0.5 to 1 cm wide large vein; <sup>weak</sup> MoS<sub>2</sub>; <sup>late</sup> vuggy Qtz, cc

Paragenesis  
① cc + chlor  
② vug Qtz + MoS<sub>2</sub>

on shear || to vein  
dip on vein ~ 60°; grn. densely welded tuff; feld partially leached.

Two Box  
193's

1489 very weak vuggy Qtz persists; pos ID of bipyramidal Qtz

1505 densely welded; as above; dissem py, grn matrix, pos of lithics (<10%)

1548 cc vein; pos slight dec in degree welding

weak cc veins } 1565 welded tuff grades downwards into  
thinly bedded <sup>densely</sup> welded surges(?)  
1567.7 sharp etc / apparently conformable dip w/ compaction foliation. Fine grained, grey silicified ash ... no apparent etc, but by 1569 looks to be mod welded gray lithic (5-10%) tuff ... by 1570 pervasive green

1571 and @ 1573 mylonitic-looking zones about 3 cm wide - follow compaction foliation

1574 cc veins transverse to foliation.

1580 → euhedra of cc on fac, surface densely welded grn tuff

1590 cc veins ~~at~~ foliation; high fac'd as same fac as cc veins → Note from ~ 1568 to 1590 have not seen any Qtz!



1594 to 1596.5 gouge; TS @ began run 390, 1596/1  
gouge piece w/ mixed lithics from above & below; py, epidote  
cc etc

1596.5 to 1597 grey-grn v. fine ss or shale; defined  
w/ large cc + epidote + chlor frags  
~ 45° cut  $\frac{1}{3}$  ss  $\frac{1}{3}$  underlying tuff.

@ 1597 depositional etc ~ 45° sharp, irreg. of grey  
ss(?) w/ underlying green tuff; tuff has  
sparse <sup>anhedral</sup> gt3; mod to dense(?) welding

1616 tuffs above; v. sparse anhedral gt3

1617 poss MoS<sub>2</sub> + epidote (chlor?) <sup>mod.</sup> frac'd thru  
1623; v. weak MoS<sub>2</sub> (?) on some frags;  
grn mod. welded tuff thru 1624

1625 low # frags w/ <sup>ccs</sup> epidote (?) & MoS<sub>2</sub> (?); mod  
welded grn tuff

amylonitic 1631 cataclastic BZ poss. contains MoS<sub>2</sub>;  
totally annealed w/ lithified gouge

1633.5 thin cataclastic gouge; below this to  
1635.5 is non-welded tuff which is truncated

@ 1635.5 w/ cataclastic gouge w/ some  
open frags thru 1636

1636 non-welded, green lithic tuff; no obvious gt3

1646 non-welded grn lithic tuff; pervasive cc  
in matrix; poss anhedral gt3 here

1666 to 1667 open frac w/ some cc

1680 grn non-welded tuff as above



1697.5 gouge ~ 2cm wide tips ~ ~~60~~<sup>60</sup>  
tuff → 1713 gouge w/ large cc Xtals w/in ~~tuff~~  
5cm X 2cm rug!  
1714 base of gouge  
tuff

1716 2cm-wide gouge  
1723 1cm-wide gouge

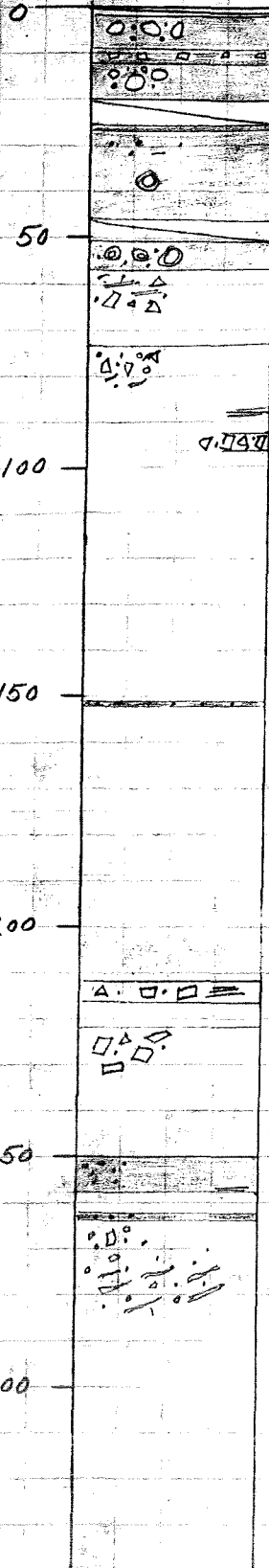
to 1731 grn. non-welded lithic tuff



# VC-2A STRATIGRAPHY

DEPTH  
METERS

FEET



Landslide debris 2-20' ±  
Rhyolite porphyry 9-12'

Volcaniclastic sediments 26' ± - 57'  
with interbedded accretionary lapilli tuffs

Fault zone 57-73'  
clay gouge and breccia

Ash-flow tuff 72-250'  
Gray to bleached, densely welded, fragmental  
Xh rich  
Coarse-gr. breccia 92-96'  
Fault zone 88'

suggy fracture surfaces

Fine-gr. sandstone 151'  
spotted, devitrified

honeycomb suggy  
Fault gouge/breccia 212-17'

Tuff breccia 222-50'

Sandstone 250-58'  
Tuff 258-62'  
Sandstone 262-62.8

Ash-flow tuff 262.8-903'  
Gray, in & out devitrified  
Xh rich  
Green fragments and fiamme  
Xh-lined vugs along fractures

350

patchy devitrification



350

patchy devitification

400



vegs conspicuous 401-91'  
filled with clay and/or pyrite  
and quartz xls

450

bleached and devitified

500

smallest vegs 530-52' ±  
Vein breccia with fluorite xls, 540'

550



Conspicuous green clay veins, pods, + veg fill  
rare fragments

600



green fiamme

650



calcite veins with sblastic selvages



abundant fiamme, distinct flow

700

gray-white tuff, with green clay on fractures,  
and green sericitic alteration of fragments,  
fiamme, + phenos

750

tan/light brown tuff  
green fragments + fiamme



fiamme + phenos

750

tan/light brown tuff  
green fragments + fiamme

800

ivory tuff, green fiamme

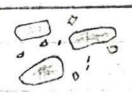
less quartz

850

more quartz

XL rich light brown tuff

900



Poorly welded ash-flow tuff 903-1007.5'  
gray-brown, fewer fragments  
XL rich  
very little green alteration

950

calcite with chloritic selvages

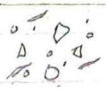
1000



Densely welded obsidian pumice tuff 1007.5-1046' ±  
dark gray, fragmental, swirly fabric  
very little green alteration

1050

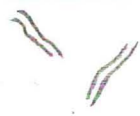
Air-fall tuff 1049.2-54' ±



Fragmental tuff 1054 ± - 1167.5'  
gray, XL rich, fiamme

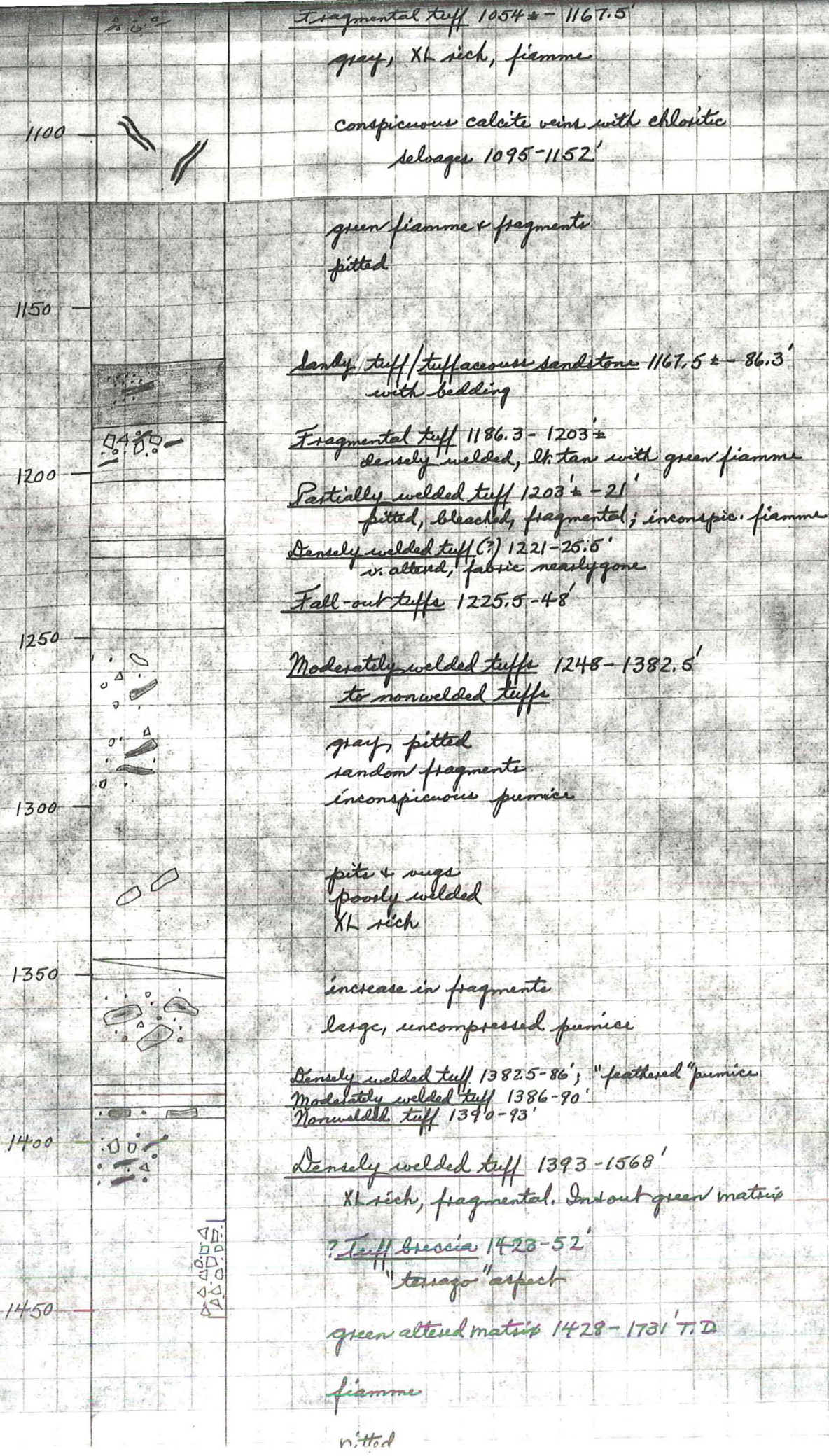
1100

conspicuous calcite veins with chloritic  
selvages 1095-1152'



green fiamme + fragments  
pitted





Fragmental tuff 1054 ± - 1167.5'

gray, Xh rich, fiamme

conspicuous calcite veins with chloritic selvages 1095-1152'

green fiamme & fragments  
pitted

Sandy tuff / tuffaceous sandstone 1167.5 ± - 86.3'  
with bedding

Fragmental tuff 1186.3 - 1203 ±  
densely welded, Xh tan with green fiamme

Partially welded tuff 1203 ± - 21'  
pitted, bleached, fragmental; inconspic. fiamme

Densely welded tuff (?) 1221 - 25.5'  
w. altered, fabric nearly gone

Fall-out tuffs 1225.5 - 48'

Moderately welded tuffs 1248 - 1382.5'  
to nonwelded tuffs

gray, pitted  
random fragments  
inconspicuous pumice

pits & vugs  
poorly welded  
Xh rich

increase in fragments  
large, uncompressed pumice

Densely welded tuff 1382.5 - 86'; "feathered" pumice

Moderately welded tuff 1386 - 90'

Nonwelded tuff 1390 - 93'

Densely welded tuff 1393 - 1568'

Xh rich, fragmental. In situ green matrix

? Tuff breccia 1423 - 52'

"terrago" aspect

green altered matrix 1428 - 1731' T.D.

fiamme

pitted



green altered matrix 1428-1731 T.D.

fiamme

pitted

1500

1550

? welded pumice grains 1565.5, 1567.5'

Nonwelded tuff 1568-96'

No quartz

Mylonites in/out 1570-85'

? Cataclastic st./intrusion breccia? 1596-96.4'

Welded tuff 1597.7-1633'

Quartz to 1610 ±

No quartz 1610 ± - 36 ±

Mylonite 1630

Nonwelded tuff 1633-36'; no quartz

Moderately to densely welded tuff 1636-1731'

conspicuously fragmental

quartz 5-10%

1600

1650

1700

1731' T.D.

quartz 8% 1715-31'

numerous fragments 1719-31'