Diamond Shamrock
Thermal Power Company

GL04429_5

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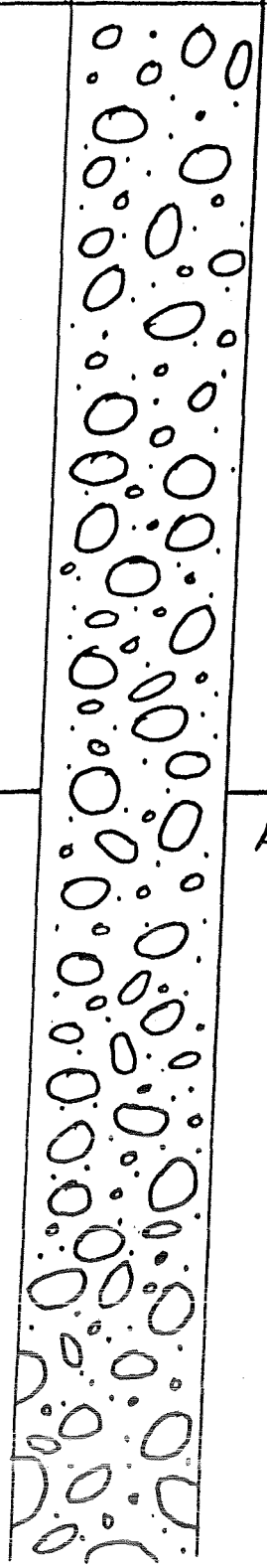
Form 1

CUTTING DESCRIPTION

HOLE CTGH-1
FIELD CASCADES / CLACKAMAS

GEOLOGIST (S) GOODWIN / McDANNEL
BASIS BIN. MICROSCOPE ID DATE 6/86

DEPTH INTERVAL	1" = 5' LITHOLOGY	LITHOLOGIC DESCRIPTION
0-20'		Qal: BOULDERS & COBBLES OF BASALT (GLACIAL TILL) MED GRY → MD. LT. GRY, MINOR REDDISH OXIDATION SPARSELY PORPHYRITIC TO APHYRIC. (PHENOS: PLAG, PYX, OL) ALTERATION: WEATHERING & SURFICIAL OXIDATION
20'-40'		As Above

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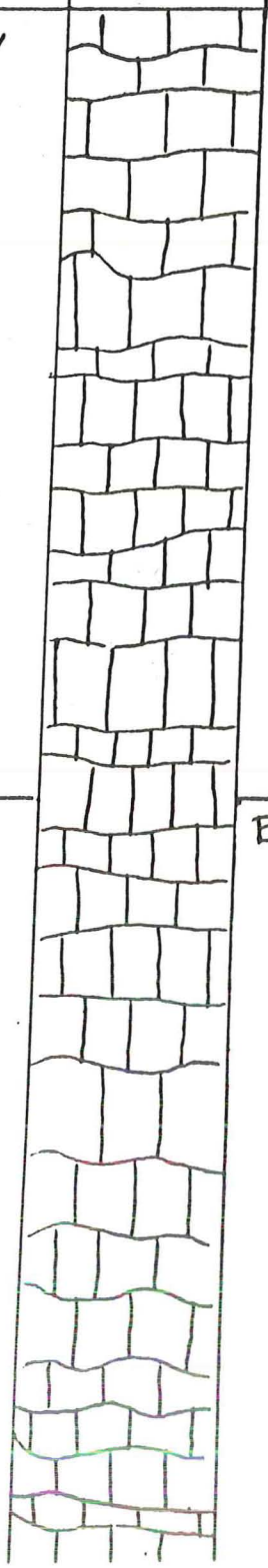
HOLE CTGH-1 GEOLOGIST (S) McDANNEL/GOODWIN

FIELD CASCADES/CLACKAMAS BASIS BIN. MICROSCOPE ID. DATE 6/86

DEPTH INTERVAL	1" = 5' LITHOLOGY	LITHOLOGIC DESCRIPTION
40'-60'		BASALT/BASALTIC ANDESITE: APHYRIC TO SPARSELY PORPHYRITIC MED. GRY TO LT. MED. GRY, MINOR REDDISH BRN. PHENOS TYPICALLY MICROSCOPIC: PLAG, OL, CPX, 50'-60' 75% of INTERVAL IS CINDERY (FLOW BOUNDARY?) ALTERATION: MINOR BROWN CLAY, FeOx, MINOR WHT CLAY (PLAG → CLAY)
60'-80'		BASALT/BASALTIC ANDESITE: AS ABOVE 70'-80' - 50% SMALL VESICLES ALTERATION: AS ABOVE + HEMATITE (FeOx) (COMMON)

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HOLE CTGH-1
FIELD CASCADES/CLACKAMAS

GEOLOGIST (S) GOODWIN/MCDANNEL
BASIS BIN. MICROSCOPE ID. DATE 6/86

DEPTH INTERVAL	1"=5'	LITHOLOGIC DESCRIPTION
80'-100'	LITHOLOGY	BASALT/BASALTIC ANDESITE: MEDIUM GREY TO LT. MED. GRY & MED. REDDISH BRN. APHYRIC TO SPARSELY PORPHYRITIC @ 80'-90': APHYRIC BASALT, BASALTIC ANDESITE 80% WEATHERED TO BROWN CLAYS, HEMATITIC ALTERATION @ 90'-100': 30% RED, OXIDIZED (WEATHERED?), VESSICULAR BASALT/BASALTIC ANDESITE; 40% LT. MED GRY MICROPORPHYRITIC BASALT/BASALTIC ANDESITE W/RESORBED OL PHENOS; 30% BLACK, APHYRIC BASALT/BASALTIC ANDESITE ALTERATION: WEATHERING, FeOx, MNR BRN-RED CLAY
100'-120'		BASALT/BASALTIC ANDESITE: SPAY APHYRIC TO SPARSELY PORPH MED GREY TO DARK GREY, MINOR REDDISH GREY 100'-110': 70% LT. RED BRN + RED DUE TO WEATHERING & OXIDATION, 30% BLACK, DENSE; VESICULAR 110'-120': 60% OXIDIZED & VESICULAR, 40% DARK GREY & DENSE ALTERATION: MINOR FeOx & BROWN CLAY, MINOR WHITE CLAY IN VESICLES

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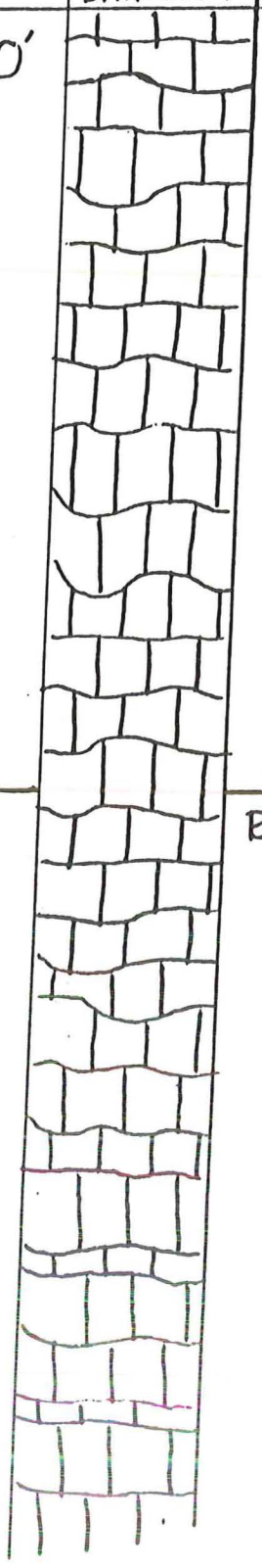
HOLE CTGH-1 GEOLOGIST (S) MCDANNEL/GOODWIN

FIELD CASCADES/CLACKAMAS BASIS BIN. MICROSCOPE ID. DATE 6/86

DEPTH INTERVAL	1"=5' LITHOLOGY	LITHOLOGIC DESCRIPTION
120'–140'		BASALT/BASALTIC ANDESITE: MED. GREY – DUSKY RED APHYRIC TO SPARSELY PORPHYRITIC (CPX) ROCK IS DENSE & UNALTERED
140'–160'		BASALT/BASALTIC ANDESITE: AS ABOVE 140'–150' W/RESORBING PLAG, OL ALTERATION: TR. HEMATITE, CLAY, 140'–150' TR. DISSEMINATED SULFIDES(?)

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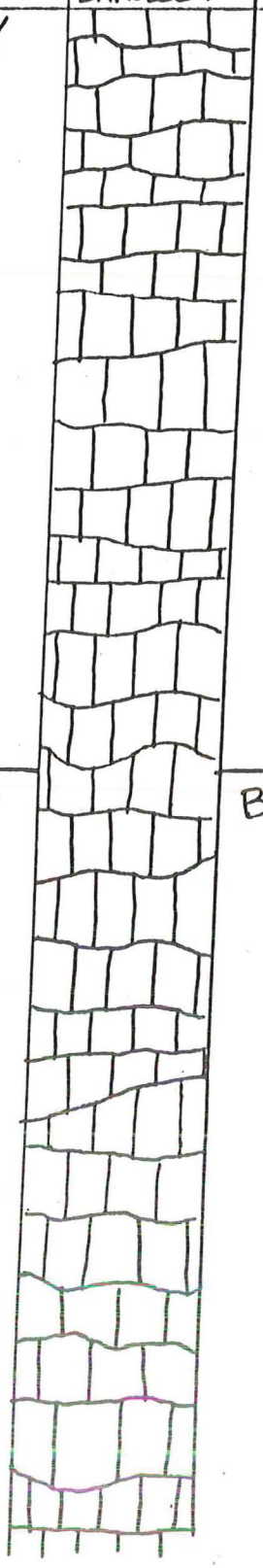
GEOLOGIST (S) GOODWIN/MCDANNEL
BASIS BIN. MICROSCOPE ID. DATE 6/86

DEPTH INTERVAL	1"=5' LITHOLOGY	LITHOLOGIC DESCRIPTION
160'-180'		BASALT/BASALTIC ANDESITE: AS ABOVE DARK GREY → REDDISH BROWN {170'-180': RARE BLACK PYX PHENOS, OL ALTERATION: (MODERATE) LIMONITE, PINKISH CLAY IN VUGS
180'-200'		BASALT/BASALTIC ANDESITE: AS ABOVE {190'-200': ≤15% FRAGMENTS OF BLACK, GLASSY ROCK = CHILLED FLOW MARGIN? ALTERATION: AS ABOVE

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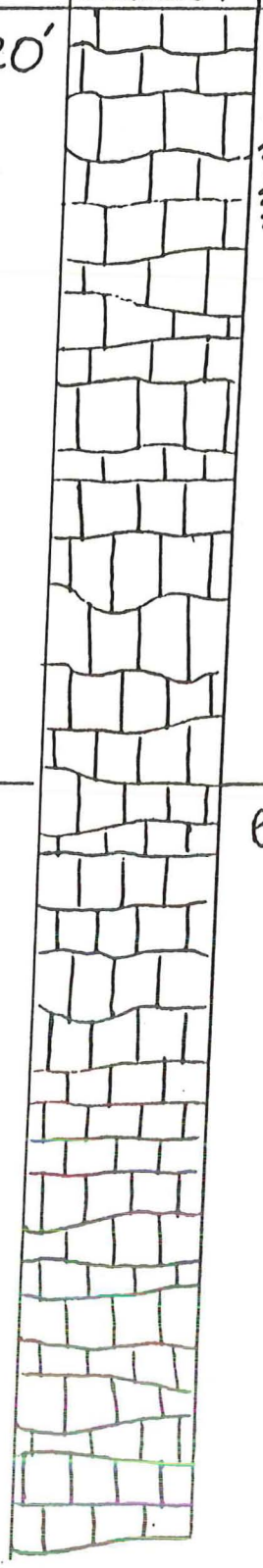
FIELD CASCADES/CLACKAMAS BASIS BIN. MICROSCOPE ID. DATE 6/86

DEPTH INTERVAL	1"=5' LITHOLOGY	LITHOLOGIC DESCRIPTION
200'-220'		BASALT/BASALTIC ANDESITE: (AS ABOVE) APHYRIC TO SPARSELY PORPHYRITIC MEDIUM DK GREY → DUSKY RED 200'-210' ≤1% RESORBING OLIVINE, ≤2% PLAG PHENOS, 210'-220' TR BROWN PYX BLACK, GLASSY FRAGMENTS = CHILLED FLOW MARGIN/TOP ALTERATION: MNR. HEMATITE MNR BROWN & WHITE CLAY IN VOIDS, (FILLING & COATING); WEATHERING
220'-240'		BASALT/BASALTIC ANDESITE: AS ABOVE ALTERATION: INCREASED FeOx (WEATHERING)

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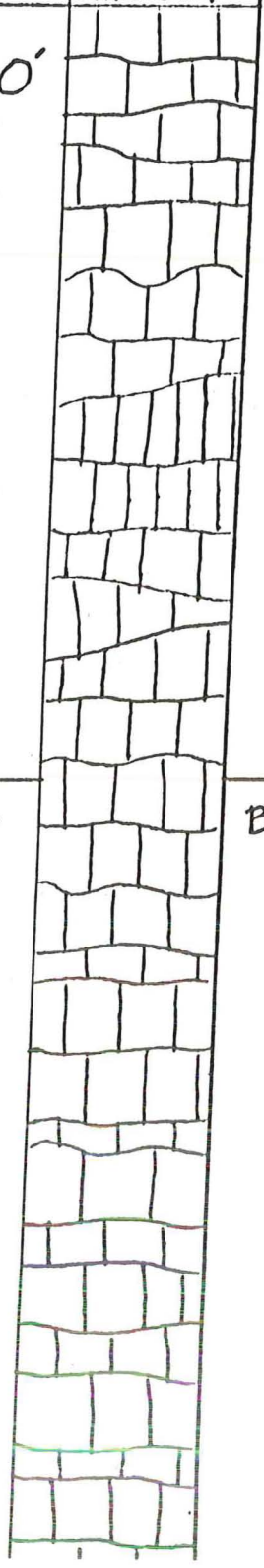
FIELD CASCADES / CLACKAMAS BASIS BIN. MICROSCOPE ID. DATE 6/86

DEPTH INTERVAL	1" = 5' LITHOLOGY	LITHOLOGIC DESCRIPTION
240'-260'		BASALT / BASALTIC ANDESITE: (AS ABOVE) APHYRIC TO SPARSELY PORPHYRITIC. MED. DK GREY → MINOR RED 250'-260' - BLACK GLASSY FRAGMENTS — CHILLED MARGINS? ALTERATION: MINOR FeOx, CLAYS IN SMALL VESICLES
260'-280'		BASALT / BASALTIC ANDESITE: (AS ABOVE) (W/ONLY MINOR DUSKY RED) 260'-270' - PREDOMINATELY MICROPORPHYRITIC SAMPLE 270'-280' - FRESHER, LESS VESICULAR & LESS WEATHERED THAN PREVIOUS 20' ALTERATION: V. MINOR FeOx

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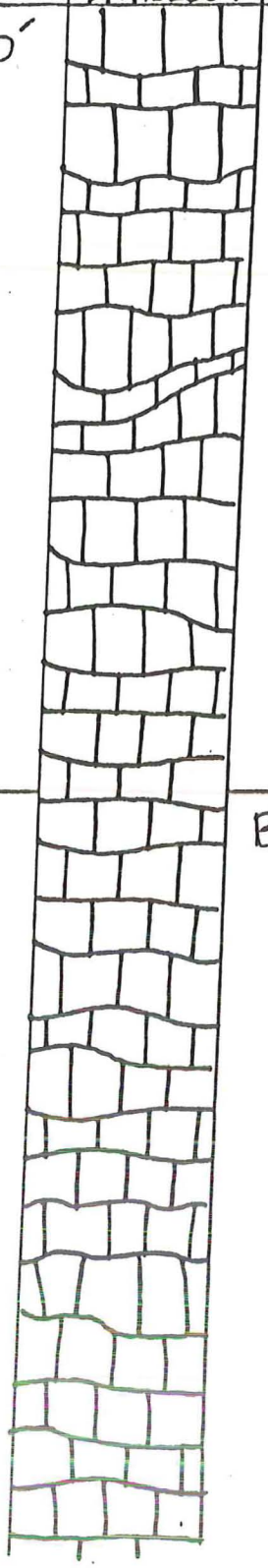
GEOLOGIST (S) GOODWIN/McDANNEL
BASIS BIN. MICROSCOPE ID. DATE 6/86

DEPTH INTERVAL	LITHOLOGIC DESCRIPTION
	LITHOLOGY
280'-300'	BASALT/BASALTIC ANDESITE: GREYISH BLACK TO BROWNISH GREY SPARSELY PORPHYRITIC - PHENOS OF PLAG & OL 290'-300' - INCREASED VESICULARITY (CONTACT?) ALTERATION: MINOR CLAY(S) IN VESICLES √ RARE LIMONITE, FeOX METALLIC COATING ON WHITE CLAY (?) 280'-290'
300'-320'	BASALT/BASALTIC ANDESITE · (AS ABOVE) + MINOR BLACK, GLASSY FRAGS → CHILLED CONTACT/MARGIN ALTERATION: TR → COMMON WHITE CLAY (?) IN GROUNDMASS TR LIMONITE ON GLASSY FRAGS



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HOLE CTGH-1
FIELD CASCADES/CLACKAMAS

GEOLOGIST (S) MCDANNEL/GOODWIN
BASIS BIND. MICROSCOPE ID. DATE 6/86

EPTH INTERVAL	LITHOLOGIC DESCRIPTION
	LITHOLOGY
20' - 340'	BASALT/BASALTIC ANDESITE: MED. GRY → DUSKY RED APHYRIC TO SPARSELY PORPHYRITIC PHENOS OF PLAG, OL, PYX (YELLOW OPX?) GLASSY, BLACK, FRAGS = CHILLED CONTACT/MARGIN ALTERATION: CONCENTRATED IN SCORIACEOUS FRAGS & VESICULAR FRAGS. COMMON EARTHY HEMATITE, LIMONITE, FeOx. TR. WHITE CLAY(?) IN SMALL VEINLETS
40'-360'	BASALT/BASALTIC ANDESITE: (AS ABOVE) INCREASE TO 50% DUSKY RED COLOR ALTERATION: AS ABOVE, + WHITE, AMORPHOUS (CLAY?) MAT'L (LOT) IN VESICLES

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CUTTING DESCRIPTION

HOLE CTGH-1
FIELD CASCADES/CLACKAMAS

GEOLOGIST (S) GOODWIN/McDANNEL
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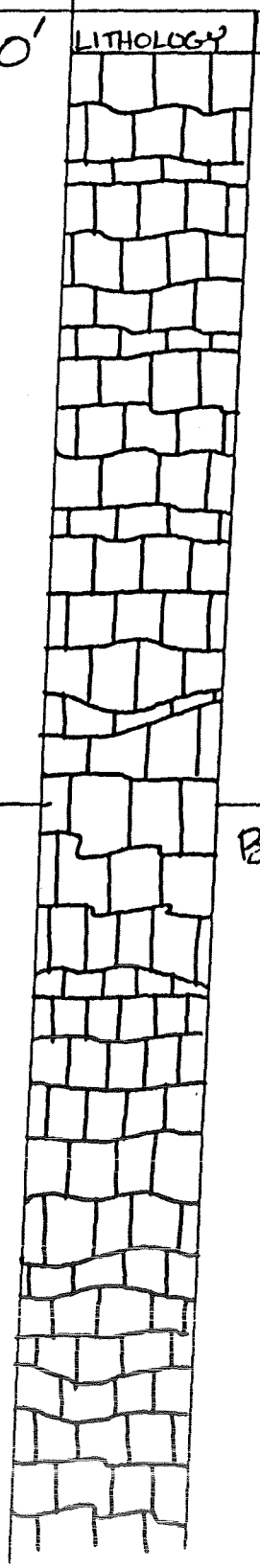
DEPTH INTERVAL	LITHOLOGIC DESCRIPTION
360'-380'	LITHOLOGY BASALT/BASALTIC ANDESITE: PREDOM. APHYRIC, LESS COMMON SPARSELY PORPH. BRN GRY – DARK GREY, DUSKY RED (~209) PHENOS: PLAG, OL, BLACK PYX ALTERATION: 370'-400' PERVASIVE. FeOx, SOFT, AMORPH. WHITE MAT'L (CLAY?). HEMATITE & LIMONITE COMMON TR. SULFIDE(?)
380'-400'	BASALT/BASALTIC ANDESITE: (AS ABOVE) ALTERATION: AS ABOVE



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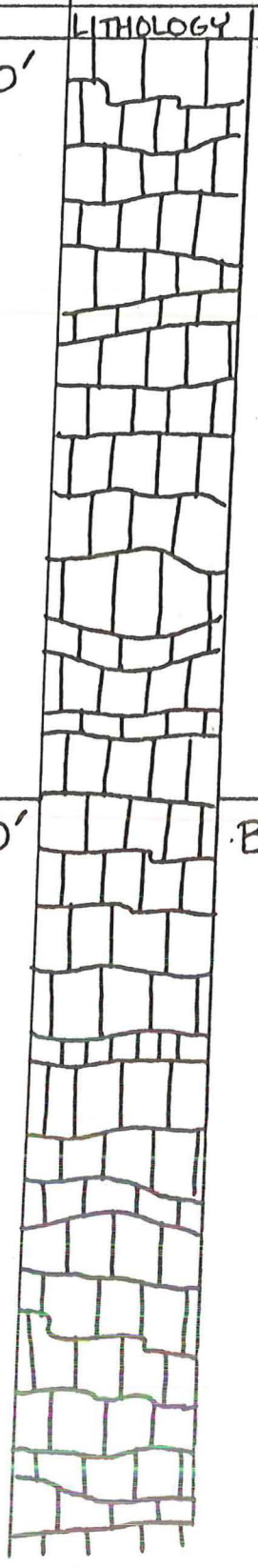
CUTTING DESCRIPTION

HOLE CTGH-1 GEOLOGIST (S) GOODWIN/MCDANNEL

FIELD CASCADES/CLACKAMAS BASIS BIN. MICROSCOPE ID. DATE 6/12/86

DEPTH INTERVAL	LITHOLOGIC DESCRIPTION
	LITHOLOGY
400'-420'	BASALT/BASALTIC ANDESITE: GRAYISH RED – APHYRIC - SPARSELY PORPHYRITIC GRAYISH BRN PHENOS OF PLAG & OL ALTERATION: PERVASNE FeOx. MINOR HEMATITE & CLAYS. TR WHITE, SOFT, AMORPHOUS MAT'L (CLAY?) IN VEINLETS.
420'-440'	BASALT/BASALTIC ANDESITE: AS ABOVE MED. DK GREY – BROWNISH GREY ALTERATION: AS ABOVE, BUT LESS PERVASIVE



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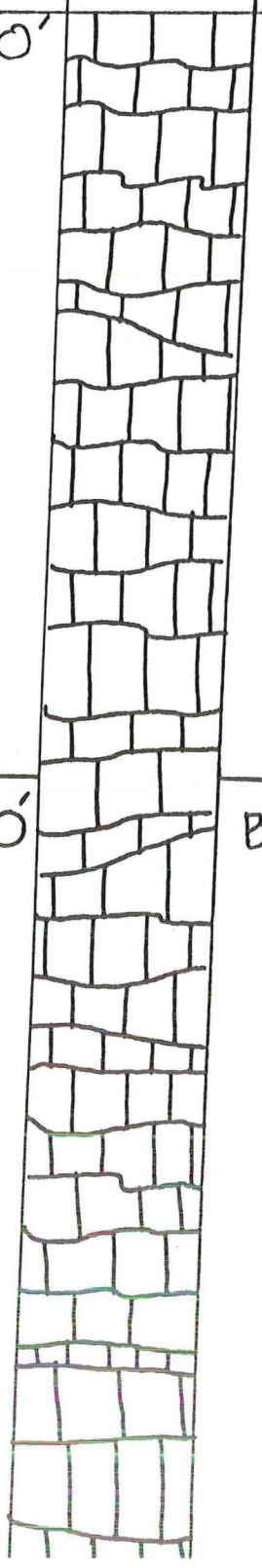
HOLE CTGH-1
FIELD CASCADES/CLACKAMAS

GEOLOGIST (S) MCDANNEL/GOODWIN
BASIS BIN. MICROSCOPE ID. DATE 6/12/86

DEPTH INTERVAL	LITHOLOGIC DESCRIPTION
440'-460'	BASALT/BASALTIC ANDESITE: MED DK GREY TO BRICK RED FINELY PORPHYRITIC: PLAG & OL 450-460'- PREDOM. RED OXIDIZED GROUNDMASS INCREASE IN PHENOCRYST CONTENT. (MAY BE ILLUSION DUE TO RED GM) FLOW BOUNDARY? PHENOS MAY APPEAR AS FREE CRYSTALS (< 5%) ALTERATION: PERVASIVELY Fe OXIDIZED ALTERED GROUNDMASS → MINOR CLAY, LIMONITE
460'-480'	BASALT/BASALTIC ANDESITE: MED. DK GREY → BRICK RED 460'-470': 50% MED. DK. GREY, 50% BRICK RED APHYRIC TO → SPARSELY PORPHYRITIC PLAG, OL MORE VESICULAR & MORE OXIDATION THAN ABOVE → FLOW BOUNDARY? ALTERATION: PERVASIVE FeO_x; LIMONITE, HEMATITE TR. WHT, AMORPHOUS, SOFT MATL (CLAY?)



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HOLE CTGH-1 GEOLOGIST (S) GOODWIN/McDANNEL

FIELD CASCADES/CLACKAMAS BASIS BIN. MICROSCOPE ID. DATE 6/12/86

DEPTH INTERVAL	LITHOLOGIC DESCRIPTION
	LITHOLOGY
480'-500'	BASALT / BASALTIC ANDESITE! MED. DK. GREY to BRICK RED APHYRIC TO SPARSELY PORPHYRITIC PHENOS: PLAG, OL, ± PYX {480'-490' - SLIGHTLY MORE Fe OXIDIZED THAN 490'-500' INTERVAL ALTERATION: FeOx & MINOR CLAYS (PINKISH, ORANGE, WHT) ↳ COATS VOIDS
500'-520'	BASALT / BASALTIC ANDESITE: AS ABOVE {510'-517' - INCREASED FeOx ALTERATION: SAME AS ABOVE {517'-520' - CONTAMINATED SAMPLE (RUBBER, METAL, SLOUGH, LCMS)

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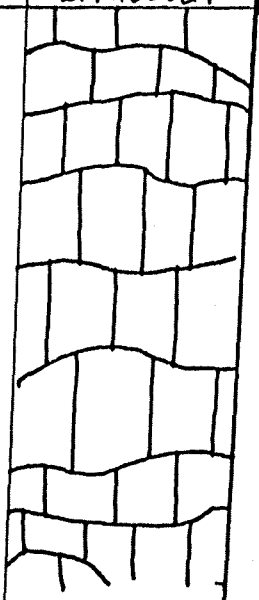
CUTTING DESCRIPTION

HOLE CTGH-1
FIELD CASCADES/CLACKAMAS

GEOLOGIST (S) McDANNEL/GOODWIN
BASIS BIN. MICROSCOPE ID. DATE 6/22/86

DEPTH INTERVAL	LITHOLOGIC DESCRIPTION
	LITHOLOGY
520'-527'	

BASALT / BASALTIC ANDESITE :

MED. DK. GRAY to BRICK RED
APHYRIC to SPARSELY PORPHYRITIC
PHENOS : PLAG., OL, ± PYX.

{ 520'-527' CONTAMINATED SAMPLE (RUBBER, CEMENT, METAL, SLOUGH, & LCMS = 75% of SAMPLE)

ALTERATION : FeOx & MINOR CLAYS COAT VOIDS (PINKISH, ORANGE, WHITE)

—— END OF CUTTING DESCRIPTION ——

HOLE DESCRIPTION CONTINUES with PAGE 1 CORE DESCRIPTION (FORM 2)