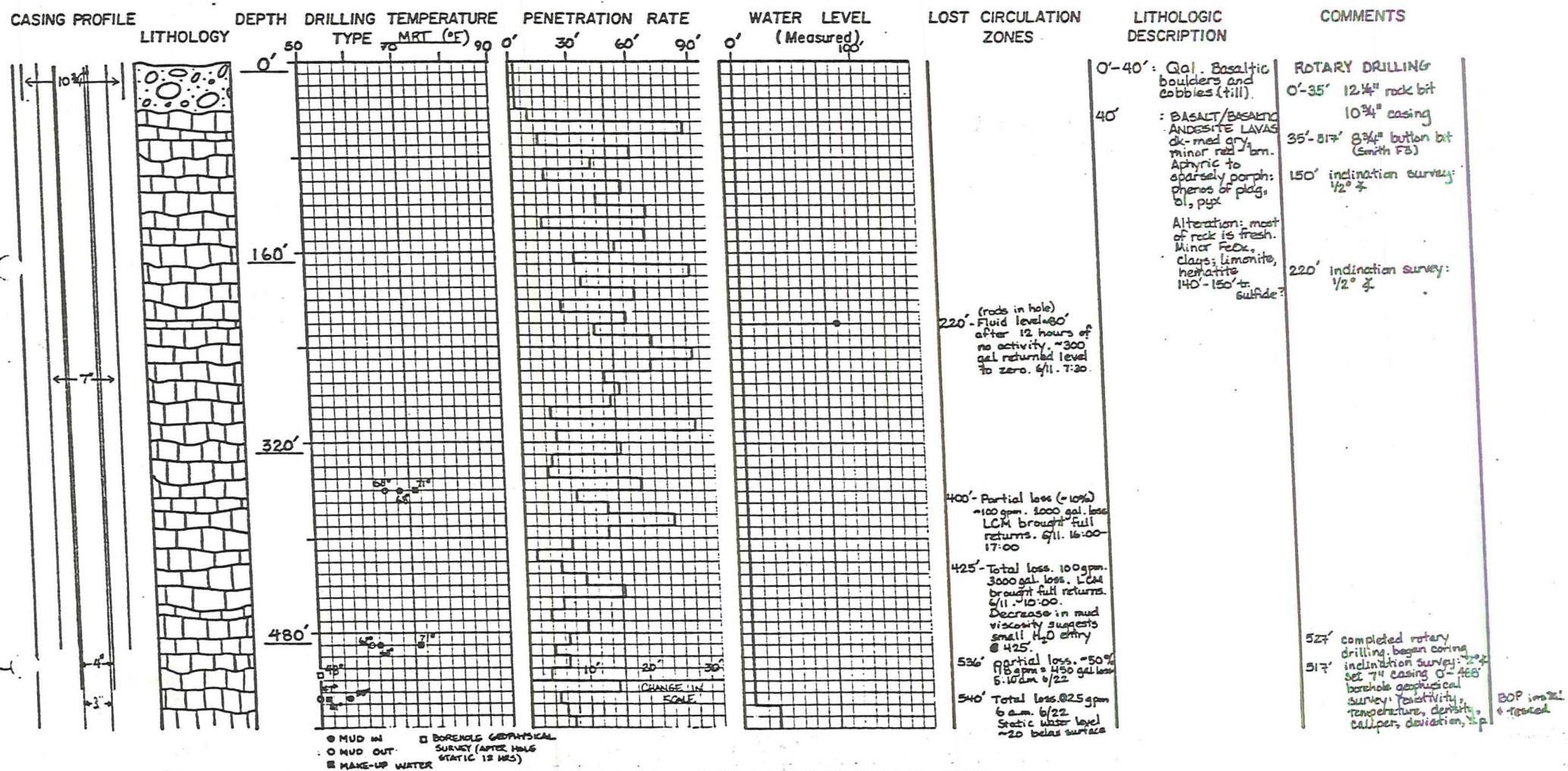




## **Diamond Shamrock** Thermal Power Company

HOLE	<u>CTGH-1</u>	SPUD DATE	<u>6/7/86</u>	COMPLETION DATE		TOTAL DEPTH	
FIELD	<u>CASCADE/CLACKAMAS</u>	COUNTY	<u>MARION</u>	STATE	<u>OREGON</u>	TOTAL VERTICAL DEPTH	
LOCATION	<u>TBS, RBE, SEC. 28</u>	ELEVATION	<u>~3840'</u>	<input type="checkbox"/> KB of	<input checked="" type="checkbox"/> GL	BOTTOM HOLE LOCATION	
CONTRACTOR / RIG	<u>BOYLES BROS. / 882</u>	GEOLOGIST(S)	<u>GOODWIN, McDANIEL</u>			DATE	

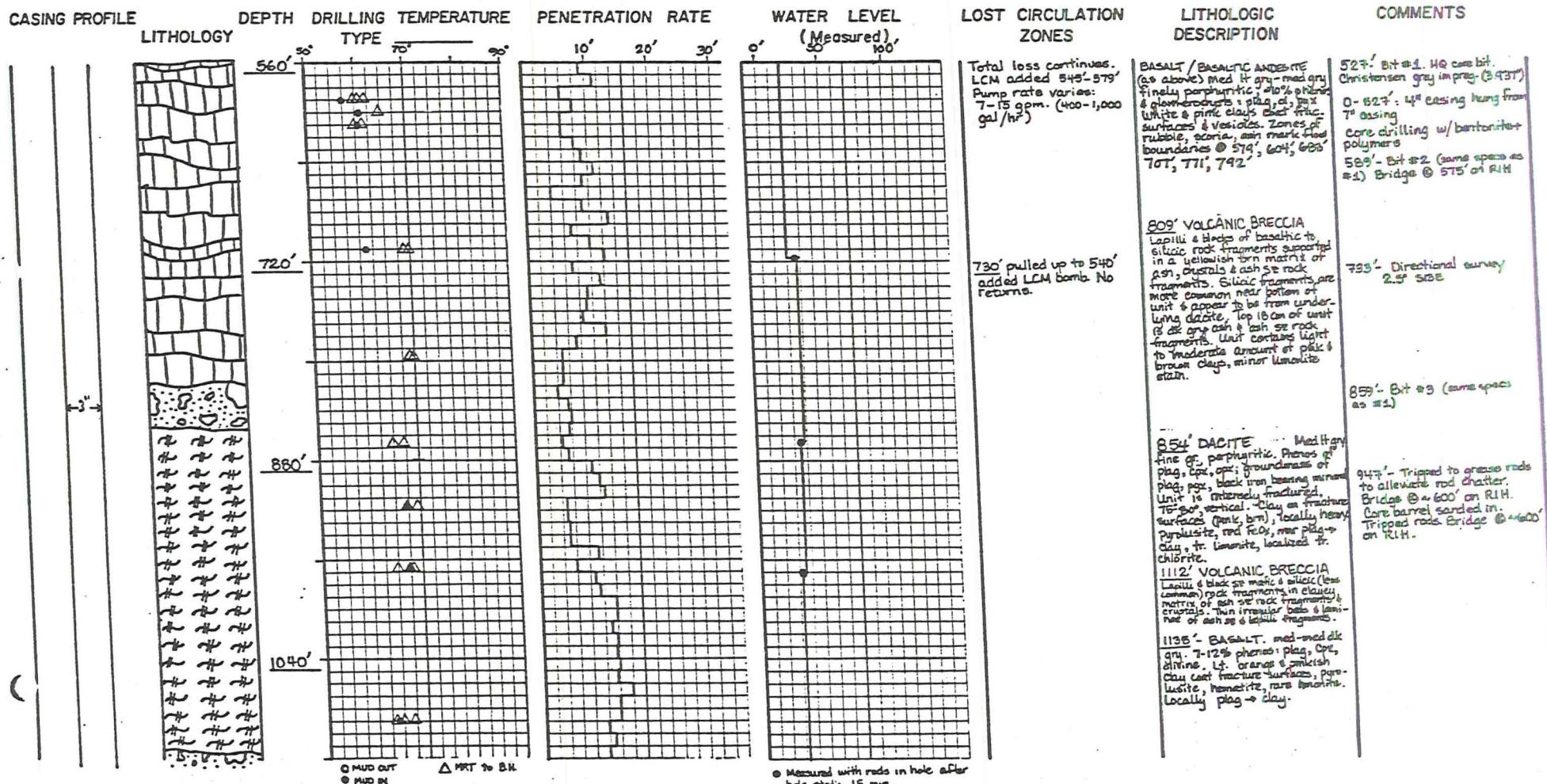




**Diamond Shamrock**  
Thermal Power Company

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HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE \_\_\_\_\_ TOTAL DEPTH \_\_\_\_\_  
 FIELD CASCADES/CLACKAMAS COUNTY MARION STATE OREGON TOTAL VERTICAL DEPTH \_\_\_\_\_  
 LOCATION T8S, R8E, SEC. 28 ELEVATION ~3840'  KB of         GL BOTTOM HOLE LOCATION \_\_\_\_\_  
 CONTRACTOR / RIG BOYLES BROS./882 GEOLOGIST (S) GOODWIN/MCDANIEL DATE \_\_\_\_\_



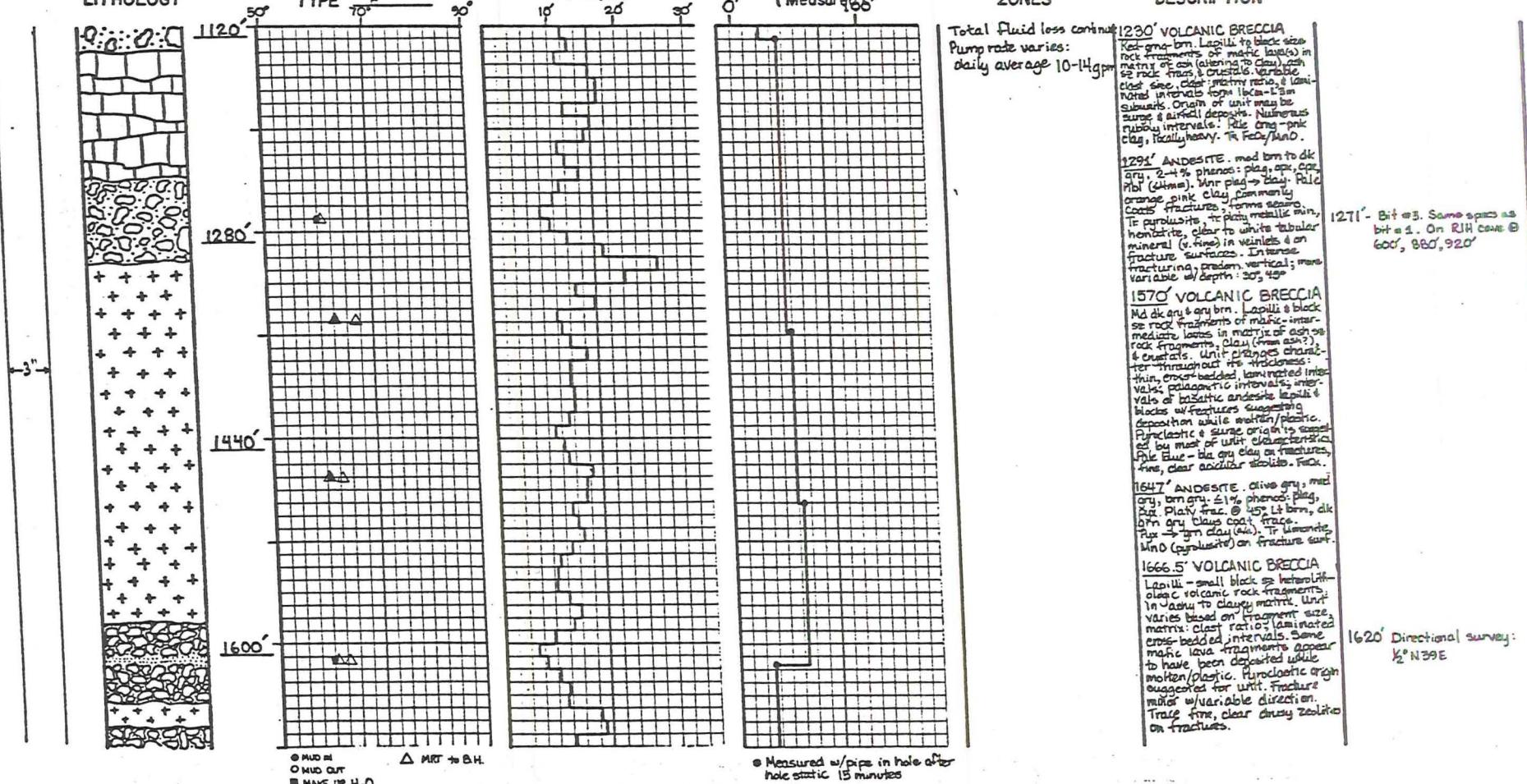


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Thermal Power Company

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HOLE	CTGH-1	SPUD DATE	6/7/86	COMPLETION DATE		TOTAL DEPTH	
FIELD	CASCADES/CLACKAMAS	COUNTY	MARION	STATE	OREGON	TOTAL VERTICAL DEPTH	
LOCATION	Sec. 2B, T8S, R8E	ELEVATION	3840'	<input type="checkbox"/> KB of	<input checked="" type="checkbox"/> GL	BOTTOM HOLE LOCATION	
CONTRACTOR / RIG	BOYLES BROS / 882	GEOLOGIST(S)	GOODWIN/MCDANIEL	DATE			

CASING PROFILE	DEPTH	DRILLING TEMPERATURE	PENETRATION RATE	WATER LEVEL	LOST CIRCULATION ZONES	LITHOLOGIC DESCRIPTION	COMMENTS
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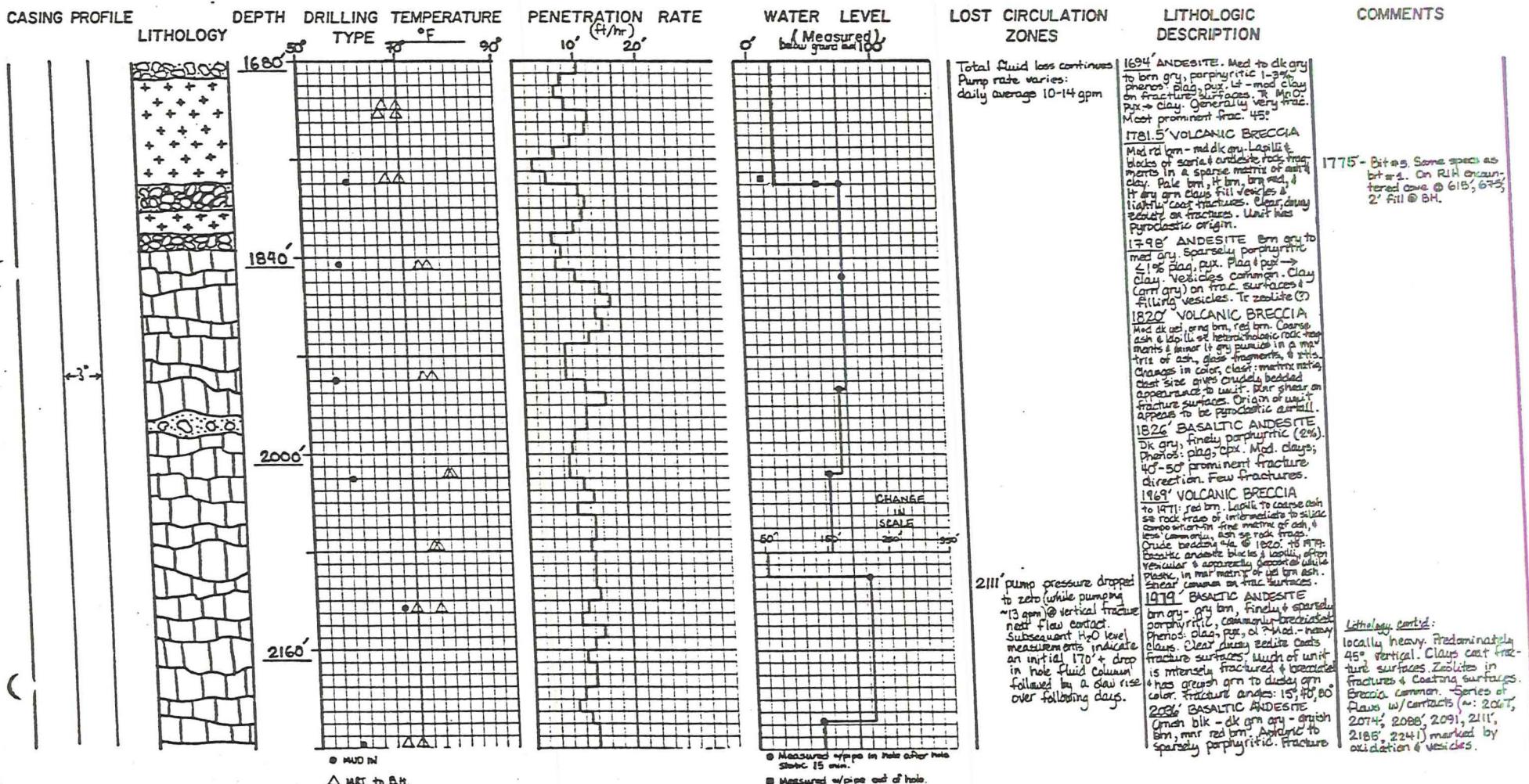




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HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE \_\_\_\_\_ TOTAL DEPTH \_\_\_\_\_  
 FIELD CASCADES/CLACKAMAS COUNTY Marion STATE Oregon TOTAL VERTICAL DEPTH \_\_\_\_\_  
 LOCATION Sec 28, T8S, R8E ELEVATION 3840'  KB of \_\_\_\_\_  GL BOTTOM HOLE LOCATION \_\_\_\_\_  
 CONTRACTOR / RIG Boyles Bros./ 882 GEOLOGIST (S) McDannell/Goodwin DATE \_\_\_\_\_





# **Diamond Shamrock** Thermal Power Company

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HOLE CTGH-1  
FIELD CASCADES / CLACKAMAS  
LOCATION SEC. 2B, T8S, R8E  
CONTRACTOR / RIG BOYLES BROS.

SPUD DATE 6/7/86  
COUNTY MARION  
ELEVATION ~3840'

COMPLETION DATE \_\_\_\_\_ TOTAL DEPTH \_\_\_\_\_  
STATE OREGON TOTAL VERTICAL DEPTH \_\_\_\_\_  
 KB of \_\_\_\_\_  GL BOTTOM HOLE LOCATION \_\_\_\_\_  
ST (S) GOODWIN/MCDANIEL DATE \_\_\_\_\_

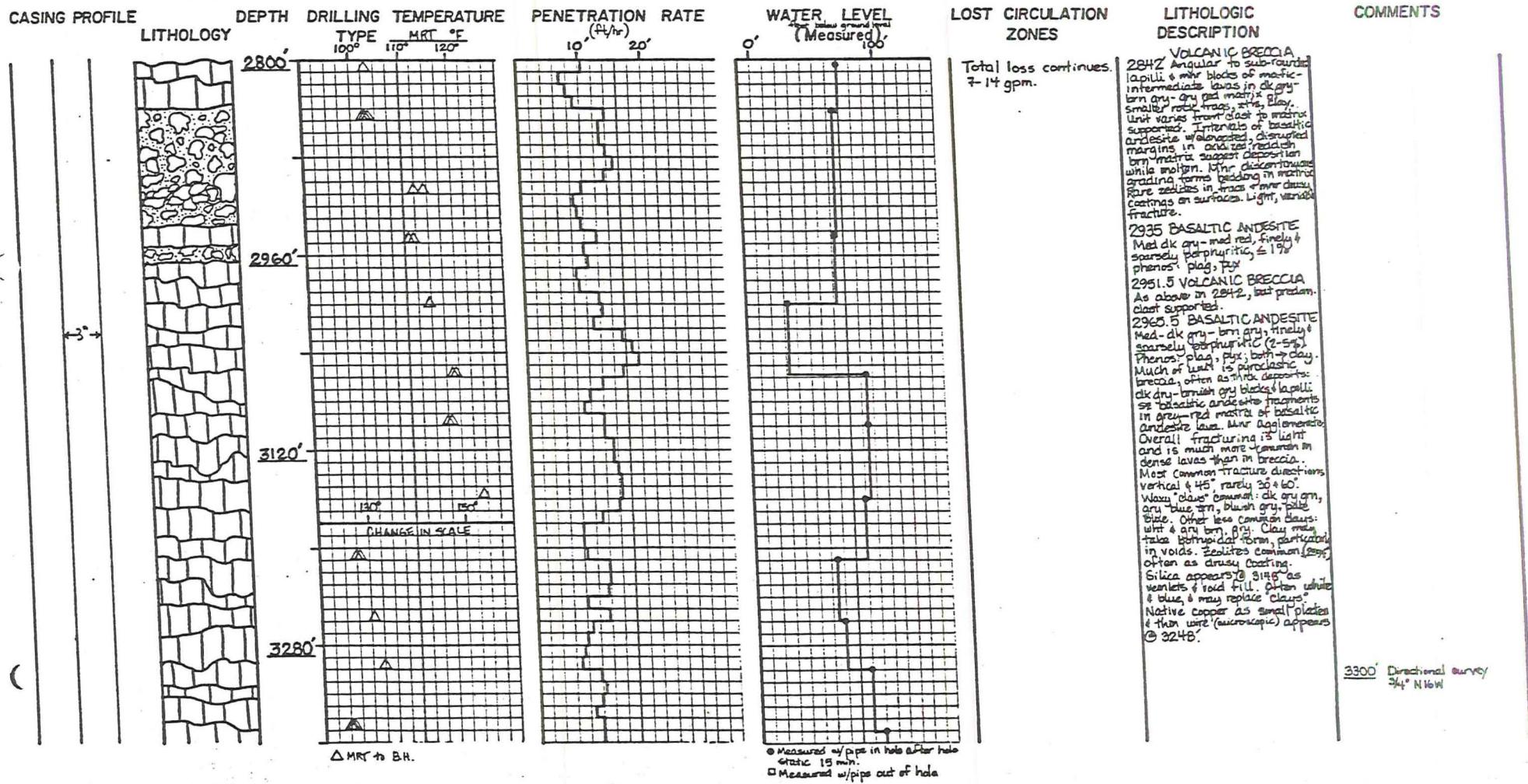
CASING PROFILE	LITHOLOGY	DEPTH	DRILLING TYPE	TEMPERATURE MRT, °F	PENETRATION RATE feet/hr	WATER LEVEL feet below ground level (Measured)	LOST CIRCULATION ZONES	LITHOLOGIC DESCRIPTION	COMMENTS
									2317' VOLCANIC BRECCIA
		2240'		50°	● ▲ ▲	0'			Dk gray, md dk gray, grn red, mod red brn to brownish gray. Lt - med gray angular to subangular lapilli to block size rock fragments in matrix to intermediate levels in a matrix of ash size rock fragments, grn, mnr, crenulas, dk gray clst. Frequent intervals of red & black tuff banded layers often with irregular, elongated lenses. Some suggesting weathered decolor. Most of unit appears to have pyroclastic origin. Mnr intervals of homogeneous pahoehoe basaltic cinderels. Mnr, clst; predom probably green, on fracture surfaces. Irregular fractures, often wavy; sheared surfaces. Mnr vesicles.
		2400'		● ▲					236' BENTONITE (same species as bt. #1). On R/H bridges @ 2260 & 1440'
		2453'							2453' DIRECTIONAL SURVEY: N 45° E, N 12E
		2550'							
		2560'							2453' ANDESITE
		2720'							Md dk gray - lt gray, porphyritic. 10% phenos: plagiocl., opt. felds. Opt. differing to clst. Localized fracturing, brecciation. Pervasive pale blue & pale green clay.
									2550' ANDESITE
									Md dk gray - rd brn. Sparsely & finely porphyritic. 2-3% phenos: plagiocl., opt. Lt clay alteration. Grn gray wlt. Clay veinlets. Localized, intense fracturing.
									2586' CRYSTAL-LAPILLI TUFF
									Lt - md gray, red brn lapilli to rock fragments, mnr lt gray collapsed punctate lapilli in orange brn to lt gray matrix of predom kfs, w/ coarse dk gray rock frags. Unit is not welded, but is cementsed. Origin is probably air fall. Lt sheared dk gray + pale blue clay on fractures.
									2602.5' LAPILLI TUFF
									Lt gray angular to subrounded lapilli to rock fragments, near black glass. Collapsed porule? in med gray dk gray matrix of ash size rock frags, ash, xlt. lt & greenish gray of pink silt, magnetite. Mnr clay. Mnr sorting/bedding. Ash - plow origin?
									2657' ANDESITE BRECCIA
									Unit is a series of volcanic breccia, pyroclastic origin, in part in dense flow intervals. Breccia is cemented but contains intergranular voids. Mnr wlt & pale gray clst, vesicles & voids. Mnr, fracturing.
									2694' VOLCANIC BRECCIA
									Lt - md gray block & lapilli to rock
									(Lithology cont'd.)
									fragments of mafic-intermediate rocks in a fine matrix of ash size rock frags, mnr, vesicles. Plagioclase, olivine, pyroxene, spinel, magnetite, quartz, wlt. Localized, thin-graded, cut, wlt. Intense fracturing.
									2726' BASALTIC ANDESITE
									Md dk gray, d. finely porphyritic. 7-8% phenos: plagiocl., pinkish clst. Opt. ? Tectonically brecciated intervals w/ mafic dk gray ash veins. Minor movement in brecciated intervals. Lt - mod fracturing. Pale gray & grayish gray clst.



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HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE \_\_\_\_\_ TOTAL DEPTH \_\_\_\_\_  
 FIELD CASCADES/CLACKAMAS COUNTY MARION STATE OREGON TOTAL VERTICAL DEPTH \_\_\_\_\_  
 LOCATION Sec 28, T85, RBE ELEVATION 3840'  KB of \_\_\_\_\_  GL BOTTOM HOLE LOCATION \_\_\_\_\_  
 CONTRACTOR / RIG BOYLE'S BROS./B82 GEOLOGIST (S) GOODWIN/MCDANIEL DATE \_\_\_\_\_



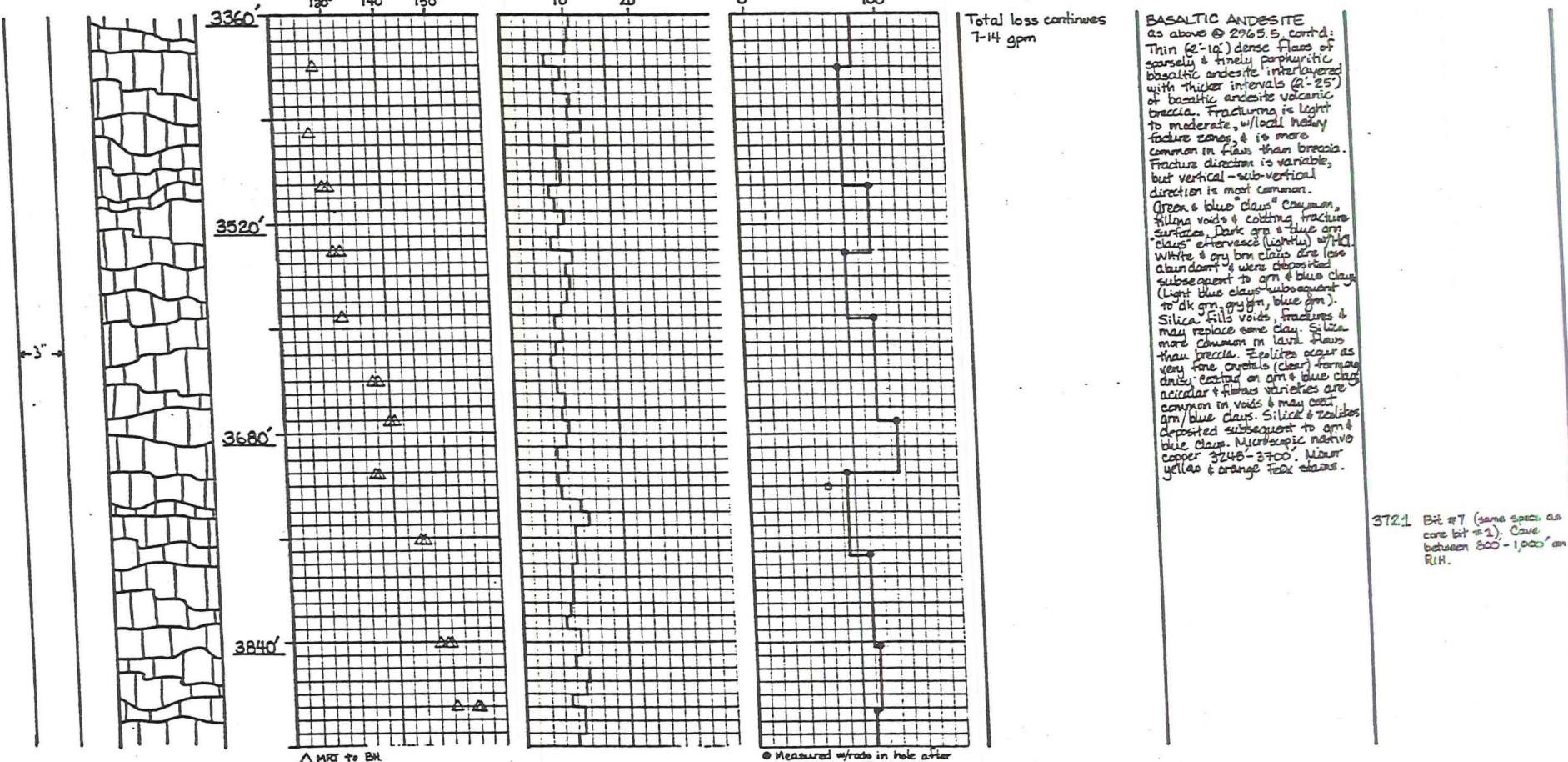


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HOLE	<u>CTGH-1</u>	SPUD DATE	<u>6/7/86</u>	COMPLETION DATE		TOTAL DEPTH	
FIELD	<u>CASCADES/CLACKAMAS</u>	COUNTY	<u>MARION</u>	STATE	<u>OREGON</u>	TOTAL VERTICAL DEPTH	
LOCATION	<u>SEZ 28, T85, RBE</u>	ELEVATION	<u>~3840'</u>	<input type="checkbox"/> KB of	<input type="checkbox"/> GL	BOTTOM HOLE LOCATION	
CONTRACTOR / RIG	<u>BOYLES BROS / 882</u>	GEOLOGIST (S)	<u>MCDANIEL / GOODWIN</u>	DATE			

CASING PROFILE	DEPTH	DRILLING TEMPERATURE	PENETRATION RATE	WATER LEVEL	LOST CIRCULATION ZONES	LITHOLOGIC DESCRIPTION	COMMENTS
LITHOLOGY		TYPE 120° 140° 150°	(ft/hr) 10' 20'	Feet below ground level (Measured), 100'			



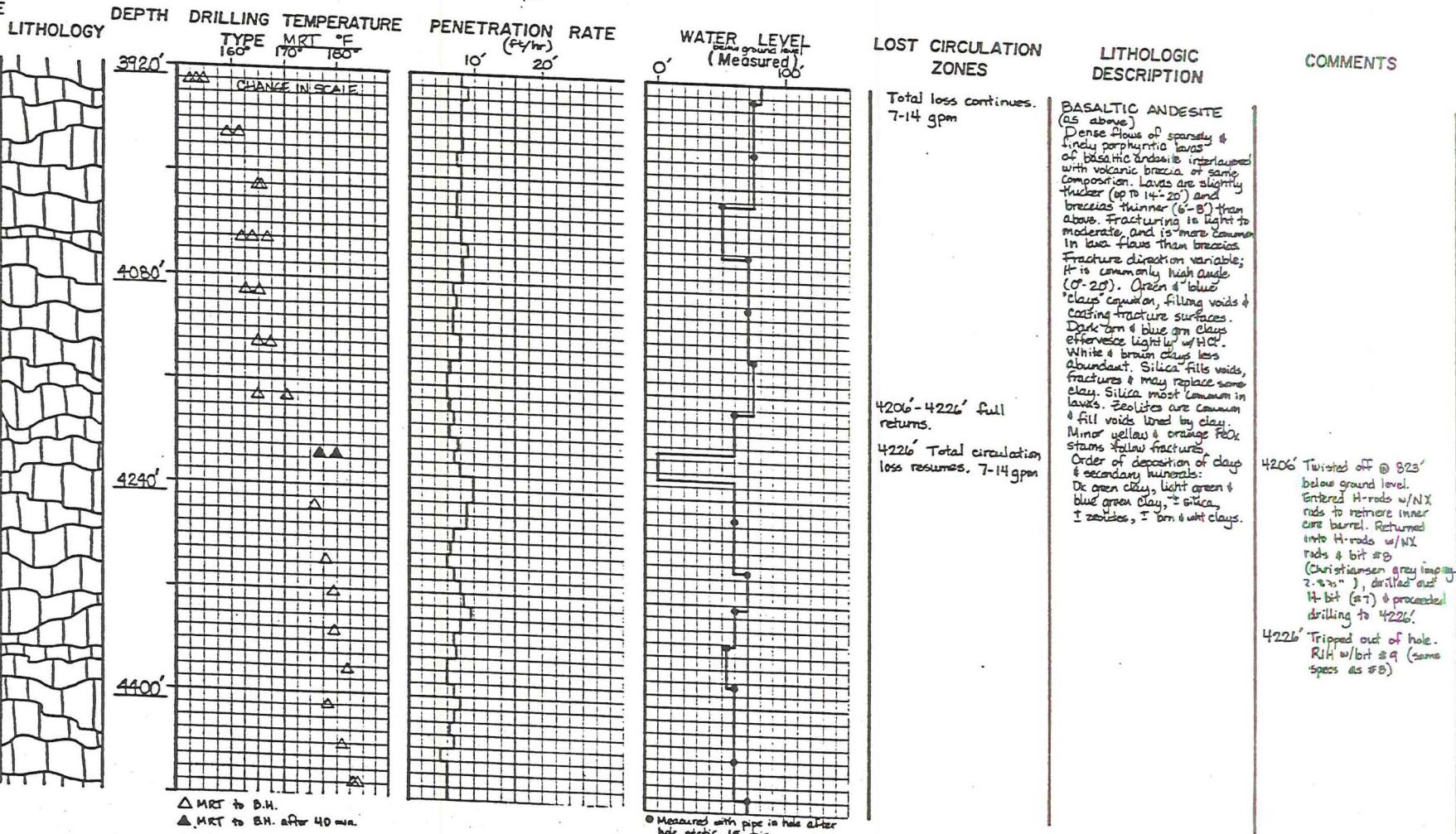


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Thermal Power Company

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HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE \_\_\_\_\_ TOTAL DEPTH \_\_\_\_\_  
 FIELD CASCADES/CLACKAMAS COUNTY MARION STATE OREGON TOTAL VERTICAL DEPTH \_\_\_\_\_  
 LOCATION SEC.28, T8S, R8E ELEVATION ~3840' KB of \_\_\_\_\_ GL BOTTOM HOLE LOCATION \_\_\_\_\_  
 CONTRACTOR / RIG BOYLES BROS./882 GEOLOGIST(S) GOODWIN/MCDANIEL DATE \_\_\_\_\_

CASING PROFILE





**Diamond Shamrock**  
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HOLE CTGH-1  
FIELD CASCADES/CLACKAMAS  
LOCATION SEC 28, T8S, R8E  
CONTRACTOR / RIG BOYLES BROS/882

SPUD DATE 6/7/86  
COUNTY MARION  
ELEVATION ~3840'

COMPLETION DATE \_\_\_\_\_  
STATE OREGON  
 KB of \_\_\_\_\_  GL  
GEOLOGIST (S) \_\_\_\_\_

TOTAL DEPTH \_\_\_\_\_  
TOTAL VERTICAL DEPTH \_\_\_\_\_  
BOTTOM HOLE LOCATION \_\_\_\_\_  
DATE \_\_\_\_\_

