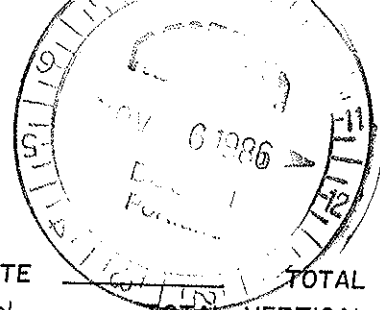


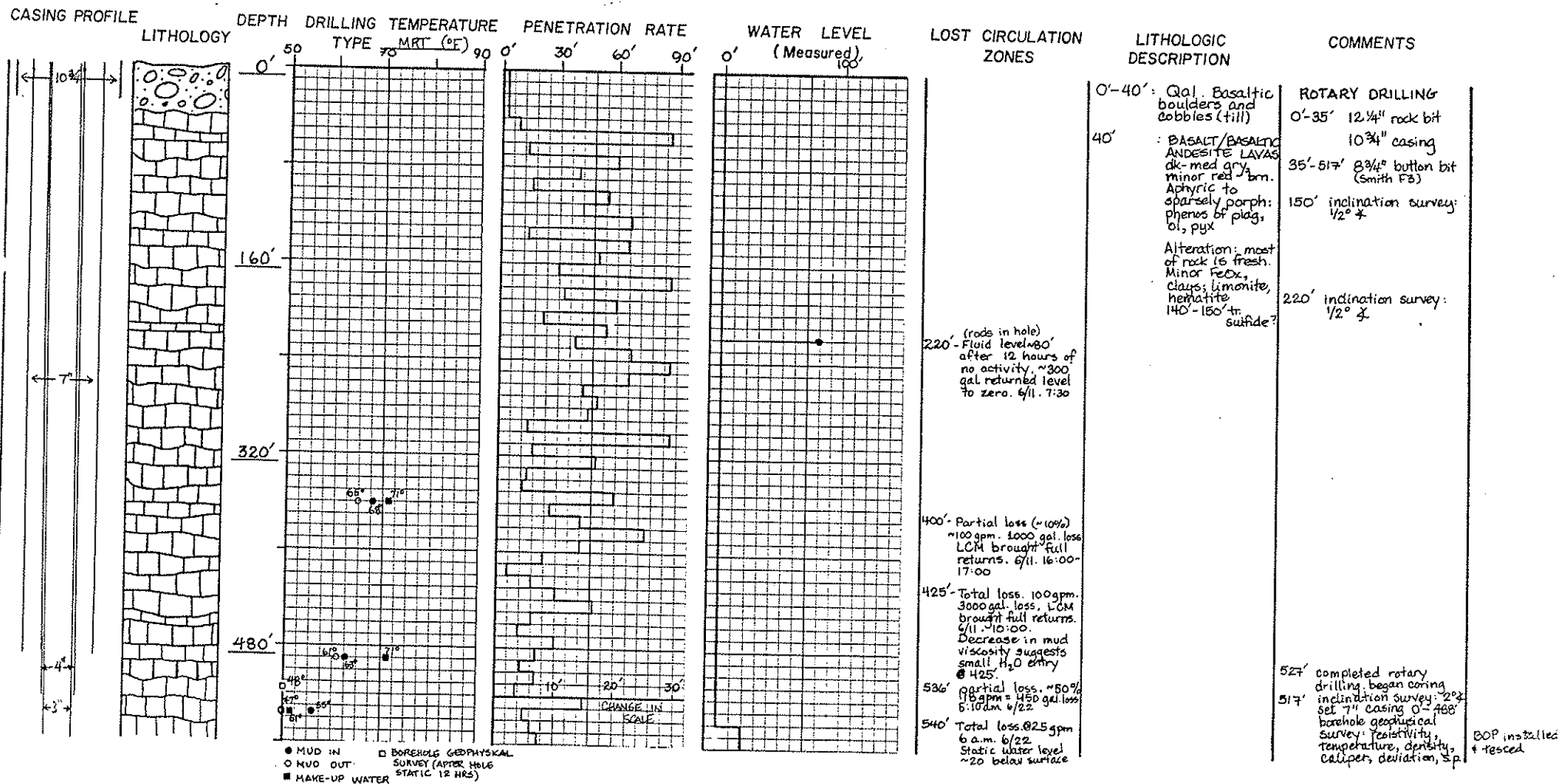


Diamond Shamrock Thermal Power Company



PAGE 1 of 9
FORM 4

HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE _____ TOTAL DEPTH _____
 FIELD CASCADE/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, McDANNEL DATE _____



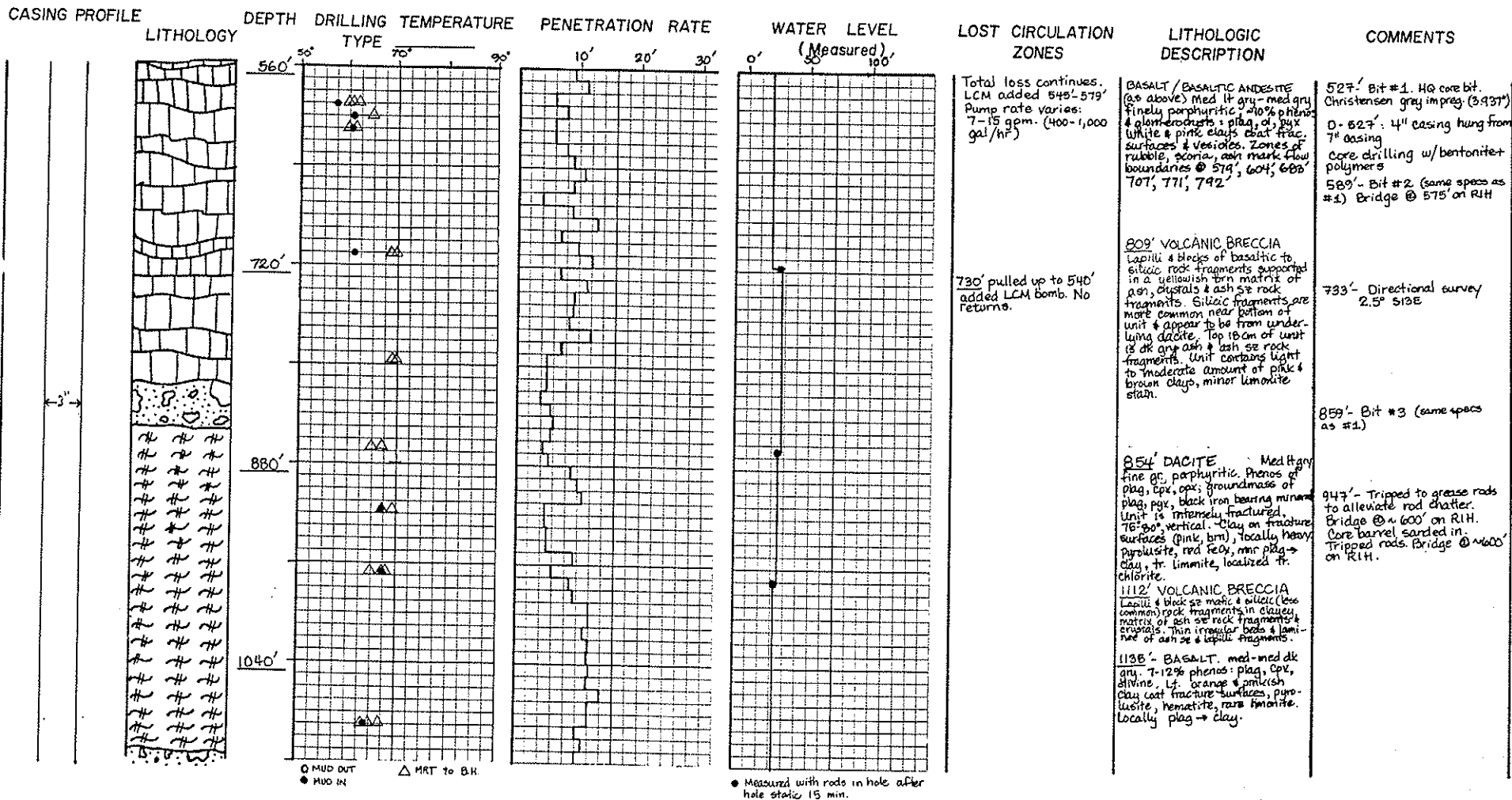
BOP installed + tested



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PAGE 2 of 9
FORM 4

HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE _____ TOTAL DEPTH _____
 FIELD CASCADES/CLACKAMAS COUNTY MARION STATE OREGON TOTAL VERTICAL DEPTH _____
 LOCATION T85, R8E, SEC. 28 ELEVATION ~3840' KB of _____ GL BOTTOM HOLE LOCATION _____
 CONTRACTOR / RIG BOYLES BROS./882 GEOLOGIST (S) GOODWIN/MCDANNEL DATE _____

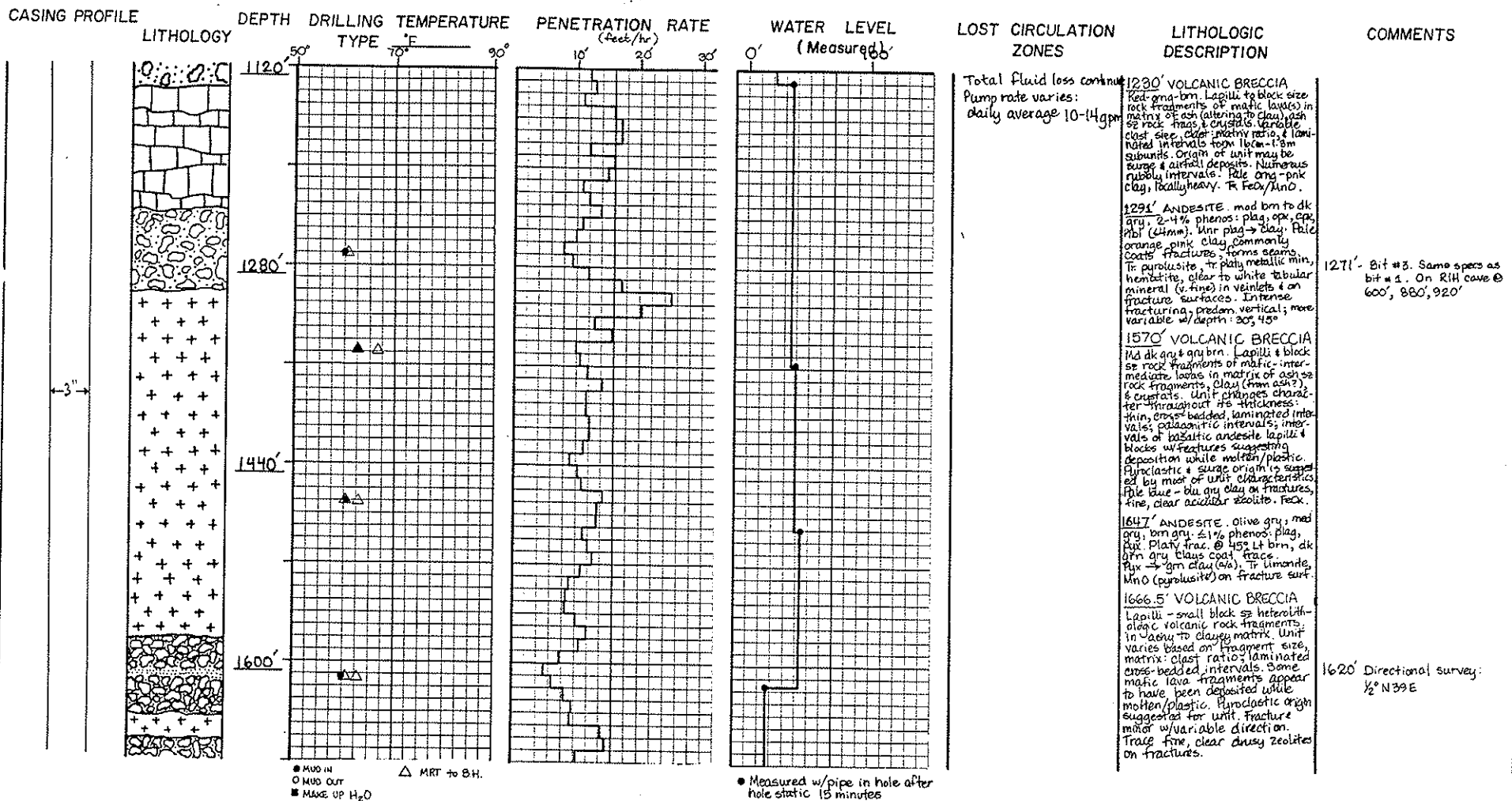




Diamond Shamrock Thermal Power Company

PAGE 3 of 9
FORM 4

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' KB of _____ GL BOTTOM HOLE LOCATION _____
 CONTRACTOR / RIG BOYLES BROS / 882 GEOLOGIST (S) GOODWIN/McDANNEL DATE _____



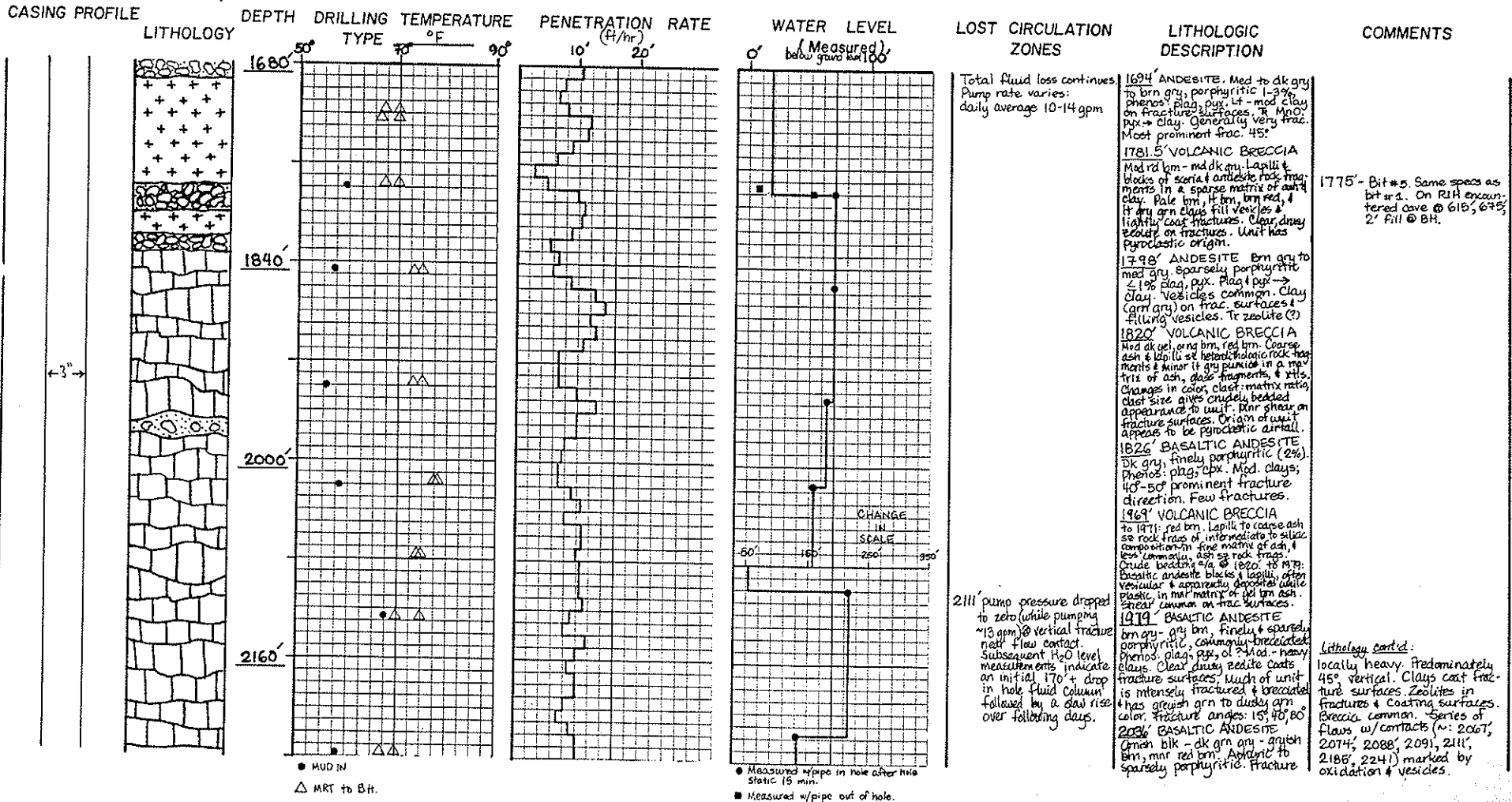


Diamond Shamrock Thermal Power Company

PAGE 4 of 9
FORM 4

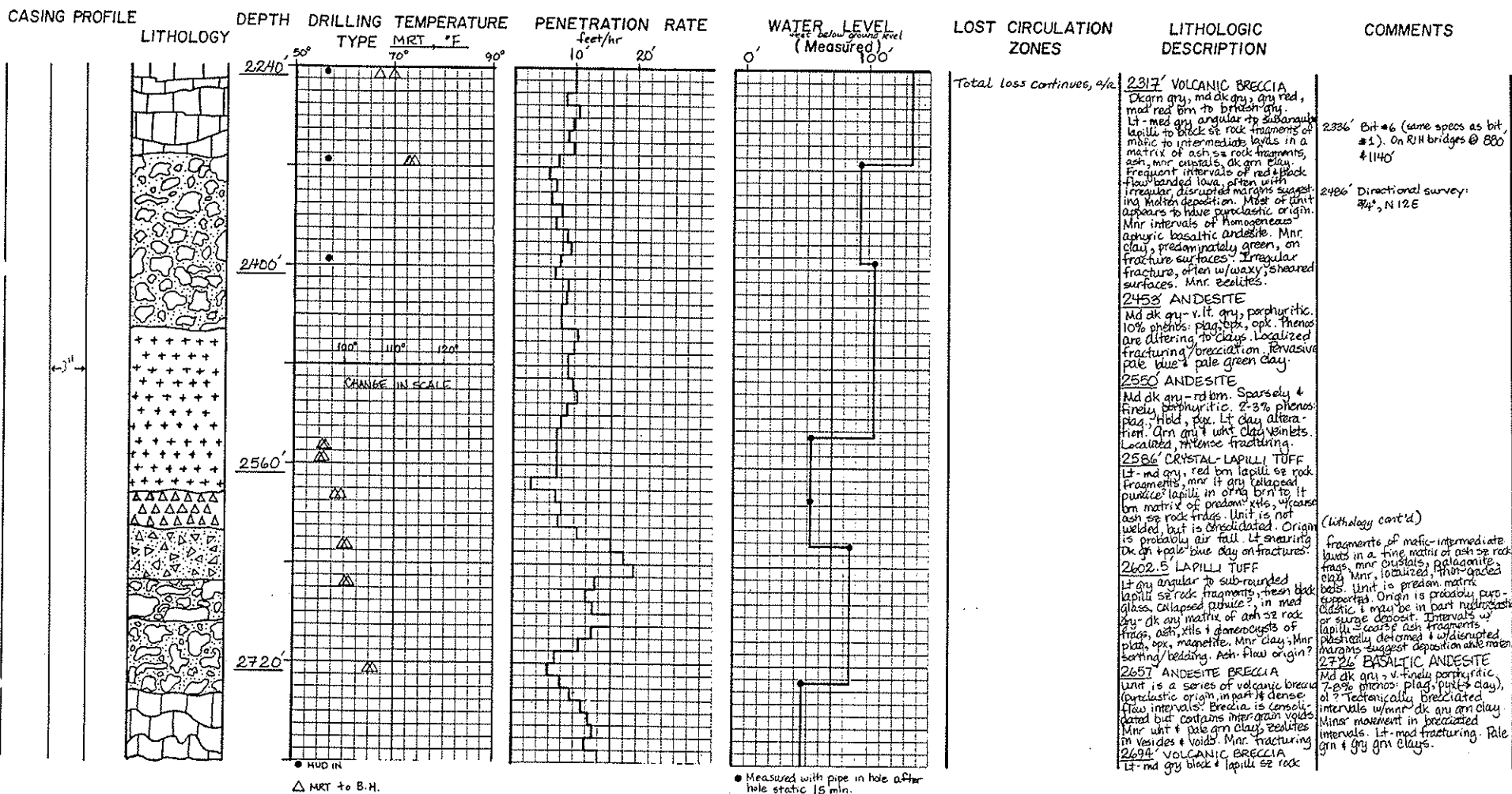
HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE _____ TOTAL DEPTH _____
 FIELD CASCADES/CLACKAMAS COUNTY Marion STATE Oregon TOTAL VERTICAL DEPTH _____
 LOCATION Sec 28, T8S, R8E ELEVATION 3840' KB of _____ GL BOTTOM HOLE LOCATION _____
 CONTRACTOR / RIG Boyles Bros./882 GEOLOGIST (S) McDannel/Goodwin DATE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

CASING PROFILE



Lithology cont'd:
 locally heavy. Predominately 45° vertical. Clays coat fracture surfaces. Zeolites in fractures & coating surfaces. Breccia common. Series of flaws w/ contacts (w: 2007', 2074', 2088', 2091', 2111', 2188', 2241') marked by oxidation & vesicles.

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' KB of _____ GL BOTTOM HOLE LOCATION _____
 CONTRACTOR / RIG BOYLES BROS / 882 GEOLOGIST (S) GOODWIN / MCDANNEL DATE _____

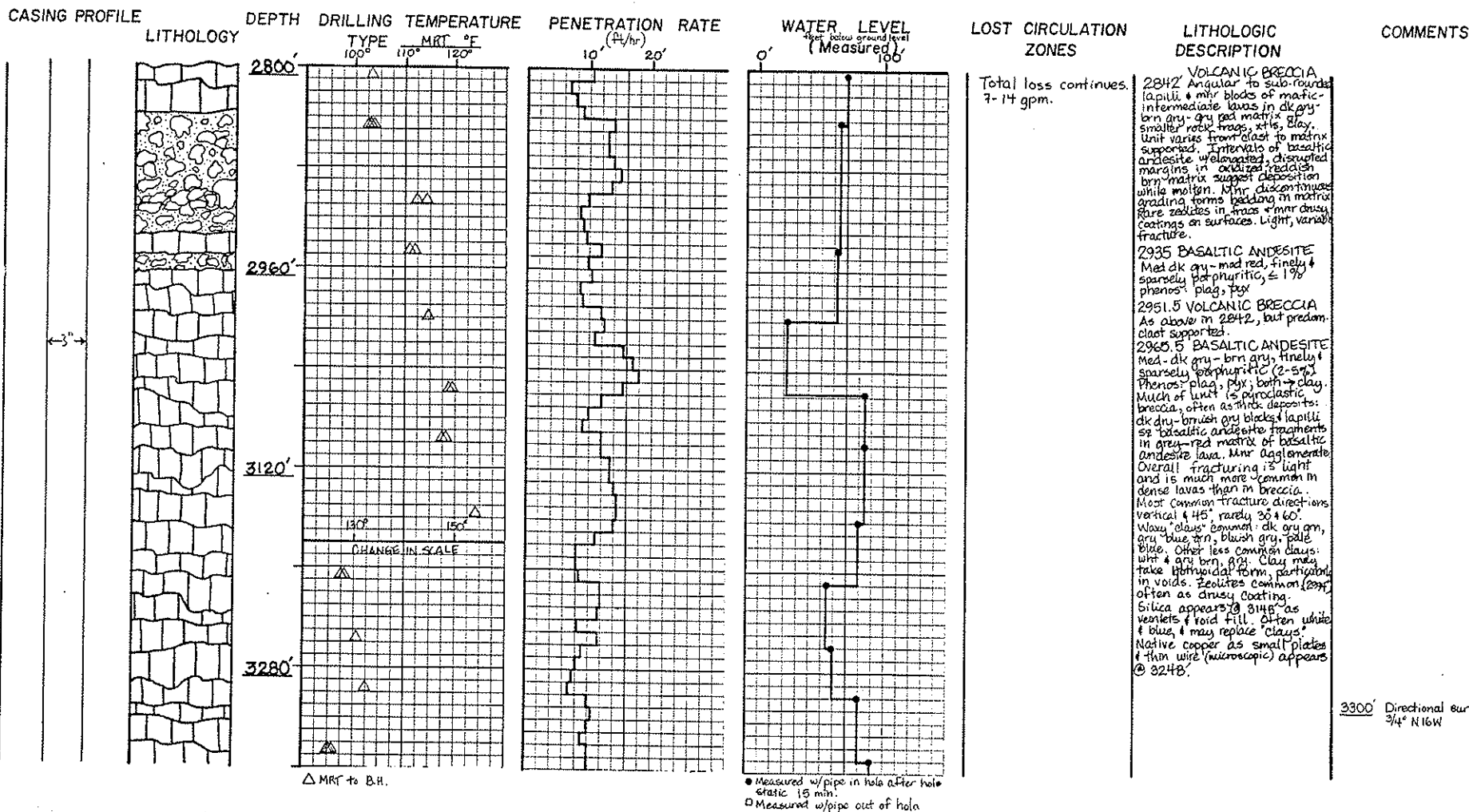




Diamond Shamrock Thermal Power Company

PAGE 6 of 9
FORM 4

HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE _____ TOTAL DEPTH _____
 FIELD CASCADES/CLACKAMAS COUNTY MARION STATE OREGON TOTAL VERTICAL DEPTH _____
 LOCATION Sec 20, T85, R8E ELEVATION 3840' KB of _____ GL BOTTOM HOLE LOCATION _____
 CONTRACTOR / RIG BOYLES BROS./BB2 GEOLOGIST (S) GOODWIN/MCDANNEL DATE _____

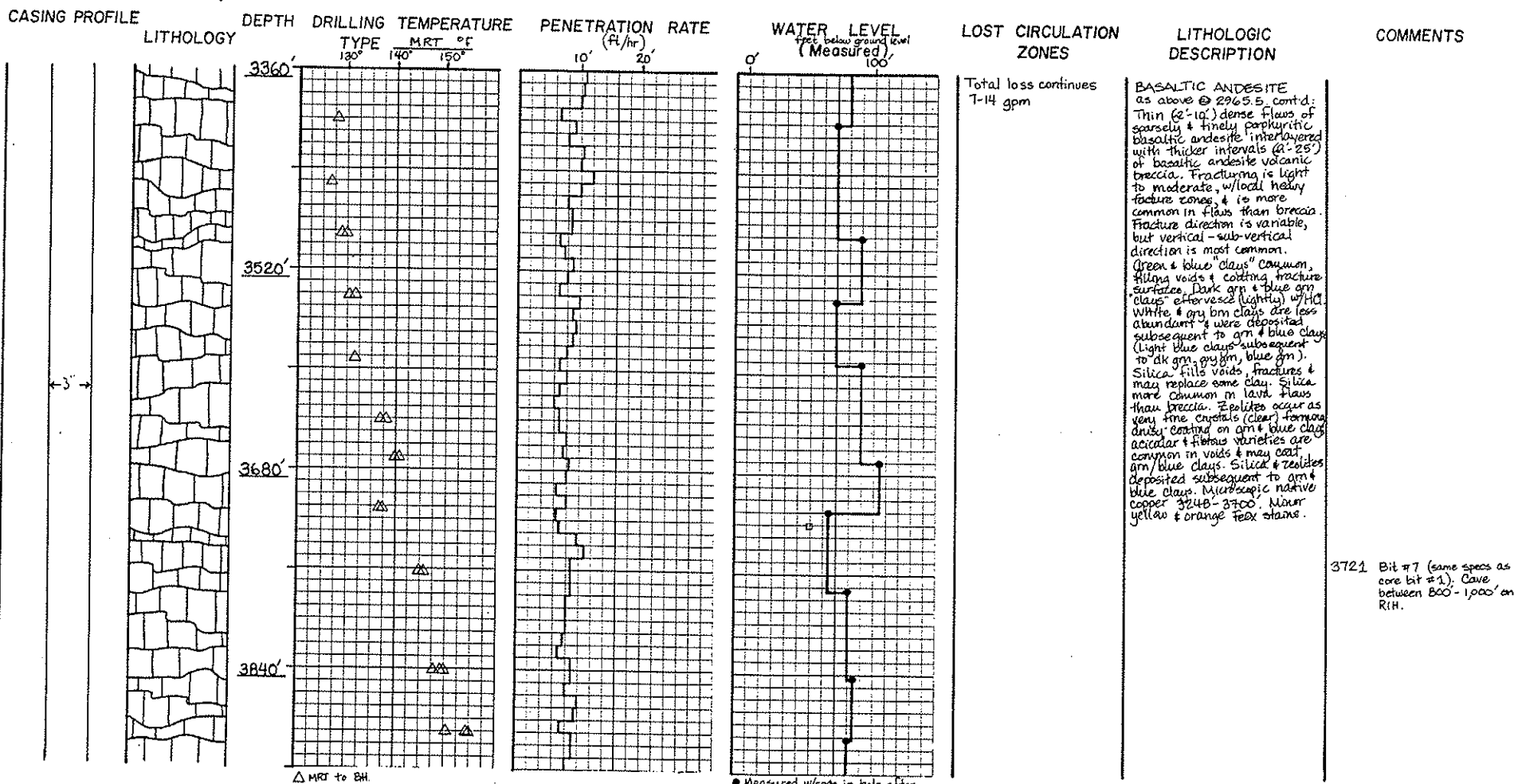




Diamond Shamrock Thermal Power Company

PAGE 7 of 9
FORM 4

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 / BB2 GEOLOGIST (S) MCDANIEL / GOODWIN DATE _____

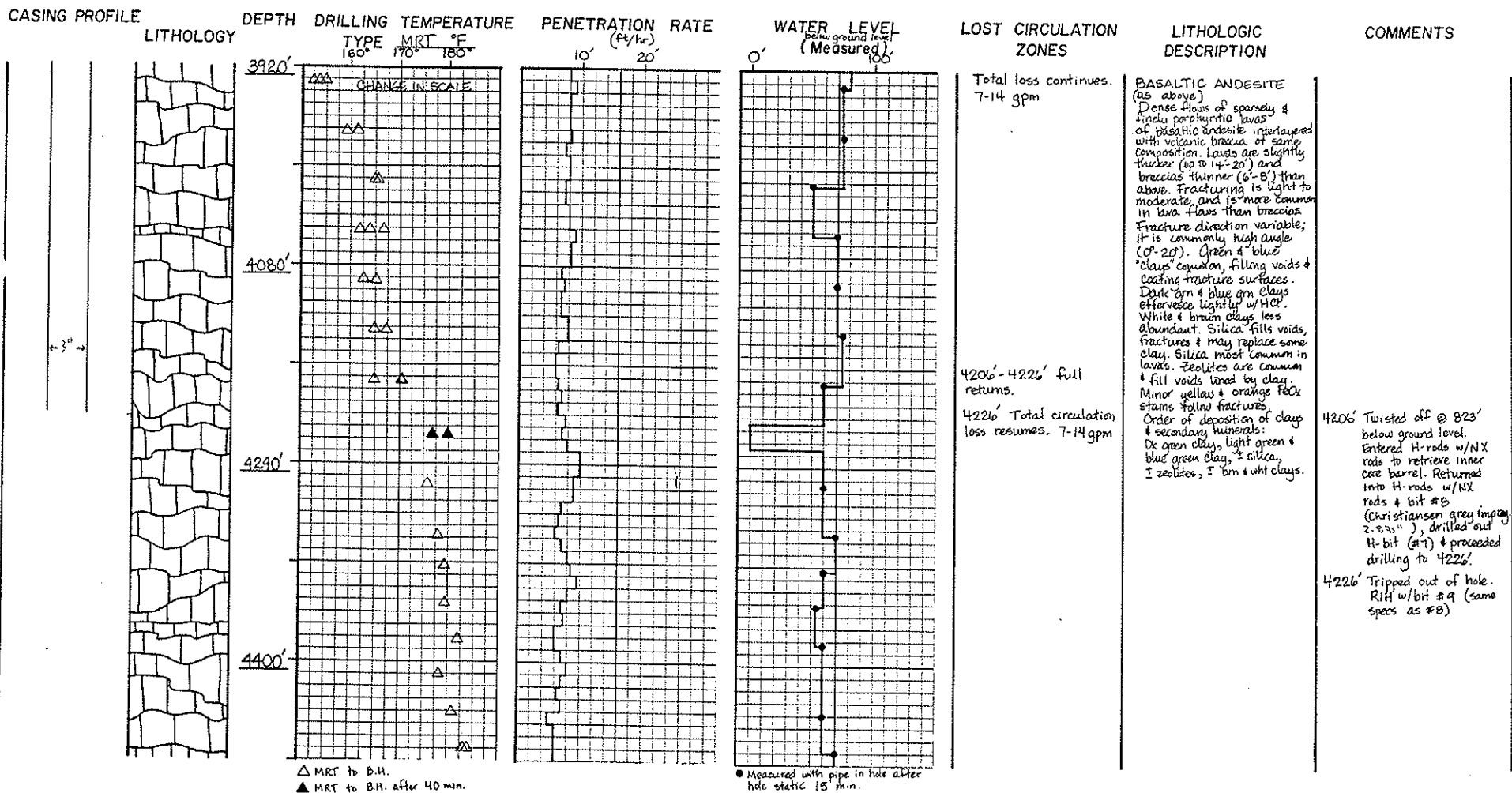


△ Measured w/reads in hole after
hole static ≥ 15 minutes
□ Measured w/reads out of hole



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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. 22, T8S, R8E ELEVATION ~3840' KB of _____ GL BOTTOM HOLE LOCATION _____
 CONTRACTOR / RIG BOYLES BROS./BB2 GEOLOGIST (S) GOODWIN/MCDANNEL DATE _____



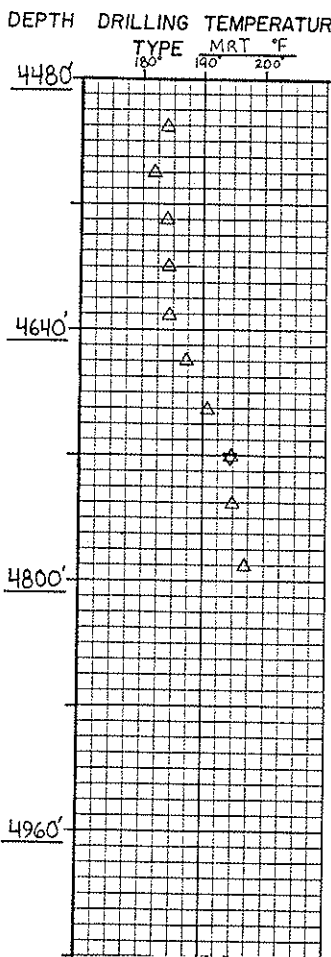
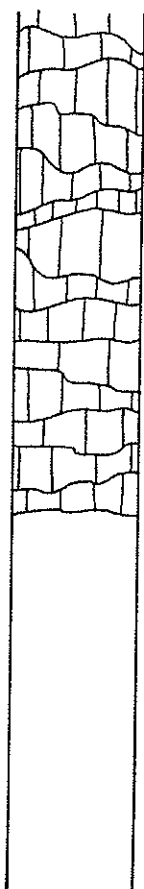


Diamond Shamrock Thermal Power Company

PAGE 9 of 9
FORM 4

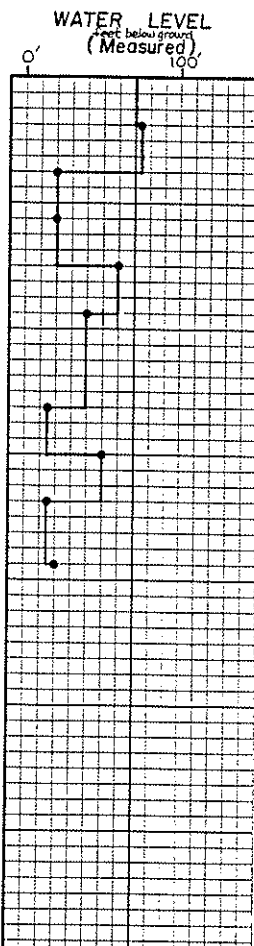
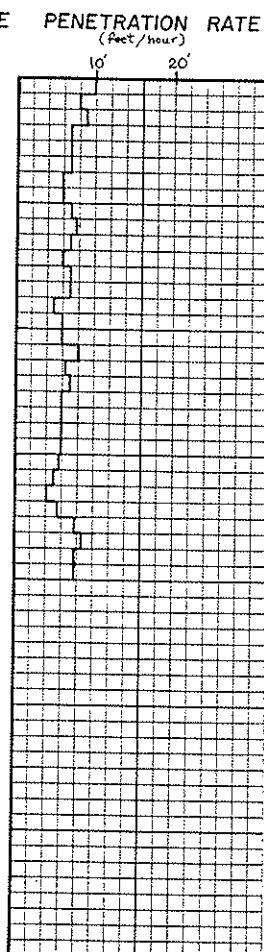
HOLE CTGH-1 SPUD DATE 6/7/86 COMPLETION DATE _____ TOTAL DEPTH _____
 FIELD CASCADES/CLACKAMAS COUNTY MARION STATE OREGON TOTAL VERTICAL DEPTH _____
 LOCATION SEC 28, T8S, R8E ELEVATION ~3840' KB of _____ GL BOTTOM HOLE LOCATION _____
 CONTRACTOR / RIG BOYLES BROS/882 GEOLOGIST (S) _____ DATE _____

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



△ MRT TO B.H.

☆ MRT TO B.H. AFTER HOLE STATIC 4 HRS



● Measured with pipe in hole, after hole static 15 min.

LOST CIRCULATION ZONES

~4480' pump rate increased to ~15 gpm due to high torque.

LITHOLOGIC DESCRIPTION

BASALTIC ANDESITE (as above)
 Dense flows of sparsely & finely porphyritic to aphyric basaltic andesite, inter-layered with volcanic (pyroclastic) breccia. In the lower 500-400' of the unit breccias are generally thicker than flows. Flows are often as thin as 4'-6'. Fracturing is generally light & concentrated in the flows. Fine blue clays common as void fill & fracture coatings (light). Silica fills voids & fractures & is much more common in lavas than breccias. Zeolites are common, particularly in breccias. Clays typically precede zeolites. Silica (hydrous) may coat some zeolites. Mn+ yellow & orange FeOx stains & clays along fractures; these are typically localized in their occurrence. Fracture surfaces are typically sheared & may have thin serpentine & hematite.