



MZI-11A

WELL HISTORY/DRILLER'S LOG SUMMARY

DDDDDIETADY

MAZAMA I-11A
Crater Lake, Oregon

9/12/86 Move in and rig up Buckner Drilling rotary rig. Drill 8" hole to 24' with air foam.

9/13/86 Drilling 8" hole from 24' to 370' with air and foam.

9/14/86 Drill 8" hole from 370' to 575' with air and foam.

9/15/86 Mix mud and condition hole.

9/16/86 Circulate and condition mud for casing job.

9/17/86 to Run in hole to 575' and circulate--pull out of hole. Rig up and
9/28/86 run 18 joints (575') 4-1/2" - 11.6# N-80 casing with 8 round LF & C threads. Land casing at 575' and circulated with mud. Cemented with Halliburton, ran 3 bbls. of H₂O ahead of 272 cubic feet Class G cement with 1:1 Perlite, 3% gel. Displaced top plug to 545' with 8 bbls. of H₂O. Plug in place at 1500 hours 9/17/86. Good returns (100+ cubic feet). Job witnessed by Steve Henderson and Dennis Simontacchi.

9/29/86 to Weld 6" - 900 series slip on casing head to 4-1/2" casing.
10/7/86 Install hydraulic operated annular and blind rams BOP's with dual controls. Install Hydrogen Sulfide detectors and alarm system. Rig up Longyear core rig and work on BOP's.

10/8/86 Tested BOP's 1/2 hr. each at 700 psi, test ok. Witnessed by Dennis Simontacchi.

10/9/86 Drilled cement from 545' to 575'.

10/10/86 to Coring HQ size (3.50" OD) hole F/575' to 1354'. Fighting
10/24/86 lost circulation.

10/25/86 Run temperature survey.

10/26/86 to Rig down and move off Longyear.
10/29/86

GG:sr:20
Z6132:A5

PROPRIETARY

POSSIBLE LOST CIRCULATION ZONES AND/OR WATER ENTRIES

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It is very difficult to determine exact locations of fluid loss or water entries in the hole during drilling operations. There was no fluid loss reported during the drilling of the surface (0'-575'); however, this was drilled with an air hammer using water and foam mix. There were no water entries in the surface hole which was dry to bottom prior to running casing. There was no observable loss of cement to formation during cementing of the surface casing.

During core drilling (575'-1354') with light mud, a lost circulation zone was reported by the driller at approximately 640'. Upon review of the core, it appears more likely that the fluid loss was between 690' and 693' depth and the standing fluid level while drilling was about 640'.

The attached temperature gradient profile shows a linear gradient in the top 550' of the hole and the bottom 100' or so of the surveyed hole. The thermally perturbed portion of the profile (approximately 550' to 1230') does not suggest cold water entries because the temperature reversals are too minor. These minor reversals probably are reflective of zones where cold drilling fluid was lost to the formation. Since this temperature profile was recorded after only about 20 hours of stabilization, the minor reversals may be the best means of trying to determine where fluid loss actually occurred. Inspection of the core suggests fluid loss zones may occur at the following intervals: significant 690'-693'; major 966'-971'; diffuse 966'-971'; minor 1149'-1152'; minor 1160'-1162'; minor 1263'-1266'; minor 1308'-1314'. These observations on the core do not correspond well to the minor reversals on the temperature log.

There is no evidence to suggest that there were any water entries at all in the hole. The regional water table was not encountered but lies within 200' below the bottom of the hole. The bottom hole elevation is approximately 4700' above sea level and Klamath Marsh is about 4500' above sea level. A cold regional groundwater table, as normally conceptualized, may not be present beneath the site as evidenced by the high heat flow observed in the lower portion of the hole.

Attachment

JLF:sm:42:12:19:86:6138

PROPRIETARY