

2. Well completions

2.1 GPK2

GPK2 is a deepened exploration and research well. It is completed with a floating 7" by 9 5/8" mixed casing string down 4431 m depth. The casing cross-over is at a depth of 501 m. There is no hole diameter change at the casing shoe. The floating casing is anchored and supported in the granite with seven high temperature metal packers and cemented from 4431 m up to app. 4150 m. On surface, the floating 9 5/8" casing is sealed with a dynamic high temperature and high pressure pack-off. GPK2 deviated in a fault zone at about 3890 m depth and built angle up to about 26° before being brought back to near vertical. The inclined hole section is about 1070 m long at inclinations of more than 6°.

4.2 GPK2 wellhead

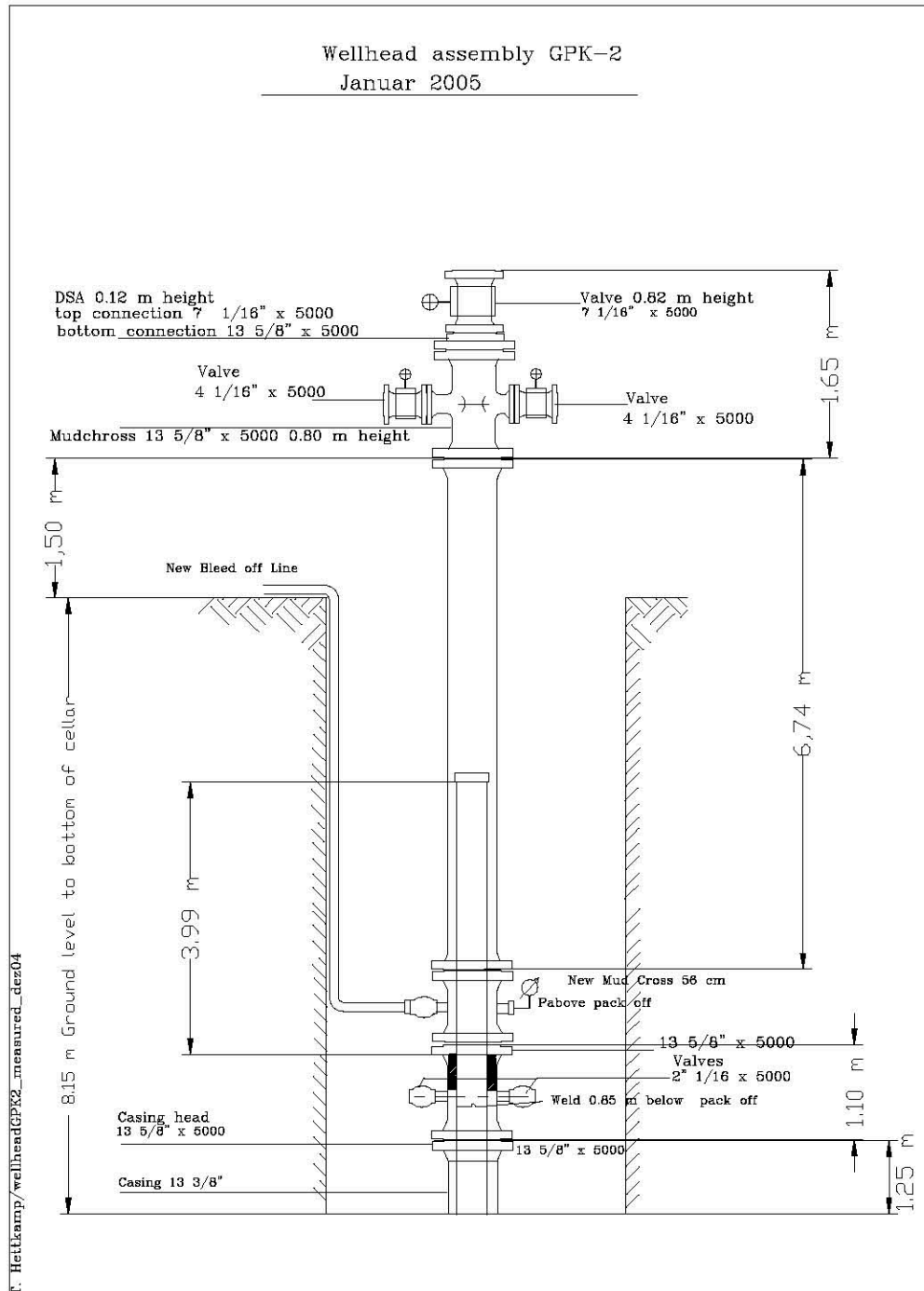


Figure 12: GPK2 wellhead assembly and 9 5/8" casing position in January 2005

During past injection tests in 2001, approx. 2 m of casing were not recovered from GPK2 and thus remained in the hole (buckling). The present wellhead completion for GPK2 foresees only low rate injection tests (average T above 45°C) – beyond this point the casing goes in tension. It is recommended to cross-check the casing length after a production test, to check if the casing length has recovered.

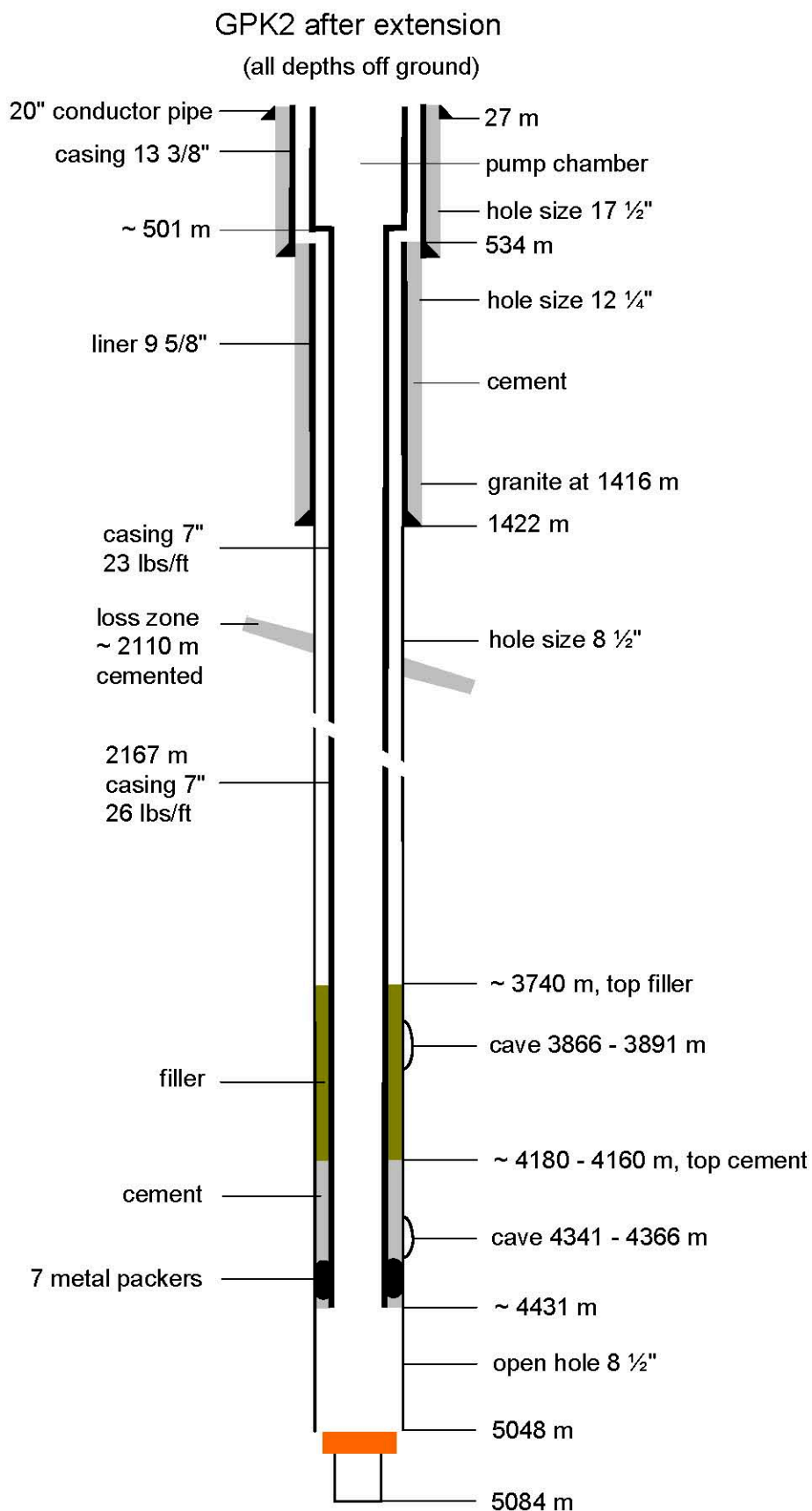


Figure 1: Completion of GPK2 after extension in 1999 (all depths off ground)