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Water well logging and automatic log interpretation technology

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The presented work is fully practical. Hydrogeological (water) well logging is very different from a petroleum well logging in terms of equipment and budget. A water uplift well cost is quite low, and it is not make a big economic sense to use automatic well logging systems for it. Hence, a lot of engineers are trying to "invent" their own resistivity logging tools or just use a conventional AMNB equipment for surface electrical prospecting to explore the water wells. It is feasible, because a water depth and, consequently, the logging cable length is usually limited by 200 m, it is not hard to pull the cable manually. Such a solution is very cheap and easy to implement. However, the process of logging take time and includes hundreds of steps. So, errors in the process is often.

The aim of this work is to adapt electric resistivity imaging system SibEr for well logging, simplify the logging process and create the possibility for a well drilling team to make the well logging themselves, including the recommendation of the filter installation depth.

The solution includes:

- Hardware: well logging cable with 32 (24) takeouts at the bottom hole end with 20 cm spacing;
- Embedded software for resistivity and induced polarization data acquisition;
- Data processing software to create the logging report with diagrams and suggested filter intervals.