

Geothermal

Well Testing and Evaluation

Well testing plays a key role in exploration and production drilling, well maintenance, and geothermal field management.



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Geothermal well testing involves an array of measurements aimed at gathering information on well characteristics, production potential, and reservoir properties. Stimulation of wells for the purpose of enhancing their output also falls within this category.

Iceland GeoSurvey employs a number of geophysicists, chemists, reservoir physicists, engineers, and technicians with long experience in all aspects of geothermal well testing and evaluation. These specialists have conducted such work in nearly all drilled geothermal fields in Iceland, and they have been involved in well testing and evaluation projects worldwide.

Iceland GeoSurvey owns and operates logging trucks and a multitude of logging tools for wireline and electrical logging. Iceland GeoSurvey also runs a chemical laboratory.

Iceland GeoSurvey offers geothermal well testing and evaluation services as follows:

▶ **Temperature and pressure logging**

Well logging is used to determine the physical state of a reservoir, to locate feed-zones, and to determine general well conditions. The logging can be carried out either with the well flowing or shut-in.

▶ **Well test design**

Iceland GeoSurvey staff design and execute well tests and perform associated pressure transient analyses. This involves single-well tests, including flow tests, injection tests, and recovery tests, and also multi-well tests, such as interference tests. Their purpose is to determine reservoir properties and well characteristics.

▶ **Well stimulation**

Well stimulation serves to improve the productivity and injectivity of geothermal wells. The stimulation involves cold water injection, thermal cycling, airlift, and chemical treatment. All these methods aim at opening up and cleaning out existing fractures, and forming new ones. Downhole packers are commonly used to stimulate low-temperature wells.

▶ **Tracer tests**

Tracer tests are conducted to delineate connections between different wells, in particular between reinjection and production wells, and to study flow paths in geothermal systems. They are most often used to determine the feasibility of proposed long-term reinjection schemes in resource management.

▶ **Evaluation of wells**

The physical, chemical, and mechanical characteristics of the wells are evaluated. The integrity of the wells is verified to ensure their safe operation.

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