Drilling And Testing Geothermal Wells Home Esmap

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Drilling And Testing Geothermal Wells
Sadiq J. Zarrouk, Katie McLean, in Geothermal Well Test Analysis, 2019. 3.9 Summary. Geothermal wells are larger in diameter than wells drilled by all other industries, and they require specialised drilling practices. Geothermal wells are also designed and completed differently depending on the type of geothermal system and the intended well utilisation.

Geothermal Wells - an overview | ScienceDirect Topics
Following the drilling and thermal recovery of the wells they will be flow tested for a period of one to three months in order to evaluate the characteristics of the geothermal reservoir and to collect necessary information for the subsequent design work for a geothermal power plant if found feasible. Infiltration ponds and/or shallow wells for the drilling fluids and geothermal brine will be installed close to the drill sites.

DRILLING AND TESTING OF GEOTHERMAL EXPLORATION WELLS IN ...
DRILLING AND TESTING GEOTHERMAL WELLS A Presentatoni or Tf he World Bank July 2012 Geothermal Training Event Geothermal Resource Group, Inc. was founded in 1992 to provide drilling engineering and supervision services to geothermal energy operators worldwide.

Drilling and testing geothermal wells - ESMAP
When it comes to geothermal well drilling, we ensure that every task we are required to do is done to the best possible standard. From the installation of the connection pipework and manifold systems to the testing of the pipework and addition of heat loss fluid to the completed system.

Geothermal Well Drilling Services UK – Teckna Group
AMFAC and Dillingham, has drilled and tested two geothermal wells in the Puna Geothermal Field, Hawaii, USA. The field is located in the East Rift Zone of Kilauea which is one of the world's most active volcanoes. The wells were drilled to a depth of 7,290 and 8,005 feet and completed with 9 5/8" production casing to 4,200

1 1984 DRILLING AND TESTING GEOTHERMAL WELLS IN AN ACTIVE ...
GEOTHERMAL WELL LOGGING AND TESTING by Pierre UNGEMACH 1. INTRODUCTION Logging and testing of geothermal wells are essential segments of any field exploration and development strategy addressing relevant reservoir engineering and resource management issues. They constitute in deed a too vast domain, actually the substance of numerous books,

GEOTHERMAL WELL LOGGING AND TESTING
5. Planning of drilling & testing In general, planning of the first standard geothermal well will be a process lasting 6-12 months. The following wells may be planned while the first drilling takes place, so the first well will be costlier than the subsequent ones. Budgeting and planning as a minimum should cover: Regulatory requirements

Guidelines to Geothermal Projects - WellPerform
The deeper the well, the more other things come in to play (such as subsurface conditions, earth type, etc). Geothermal drilling equipment typically does not drill any less than 150 feet, as this can be done by traditional potable water well drill rigs. As a rule of thumb, assume that 200 feet of well depth can provide you with 500 square feet of HVAC in your home.

Introduction to Geothermal Drilling – Geothermal Pros and Cons
tests on the well, utilising the drilling rig equipment, and in particularly the rig pumps, before rigging down and removal of the rig from the wellsite. These tests, the completion tests, are designed to identify potential feed zones in the well, to provide an estimate of the total effective permeability of the well, and to establish

Geothermal Well Completion Tests
Geothermal drilling relies on technology used in the oil and gas industry modified for high temperature applications and larger well diameters. Well testing and reservoir engineering rely on techniques developed in the oil and gas industry for highly fractured reservoirs because the

Handbook of Best Practices for Geothermal Drilling
Drilling and testing geothermal wells in an active volcanic domain, Puna Geothermal Field, Hawaii, USA . By W.L. D'Olier and J.L. Iovenitti. Abstract. Thermal Power Company, Operator for the Puna Geothermal Venture which includes AMFAC and Dillingham, has drilled and tested two geothermal wells in the Puna Geothermal Field, Hawaii, USA. The ...

Drilling and testing geothermal wells in an active ...
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Apex Drilling Services provides specialist drilling services throughout the UK including geothermal, water wells, contamination drilling, coal bed methane and ground investigation to name but a few.

Apex Drilling South Wales - Water Wells | Geothermal
These included test wells for validation of innovative technologies and laboratories for material testing. New technologies tested Project partners focused on both traditional production wells and deeper wells where the pressure is as high as 150 bar and temperatures exceed 400 °C, testing the technologies under in situ conditions in laboratories and existing geothermal environments.

Enhancing life-time of geothermal wells - EU funded ...
“DEEP Earth Energy Production Corp. (the “Corporation” or “DEEP”) is pleased to announce that the 2019-2020 winter drilling and testing program is complete. DEEP drilled four new wells to further define the geothermal field reservoir parameters and test 3D seismic and airborne geophysical data.

DEEP Concludes 2019-2020 Winter Drilling and Testing ...
We execute geothermal drilling projects from well site selection through design, bidding, contracting, management, testing and clean-up. With a cumulative experience of more than 150,000 meters of drilling depth over the past three decades, we are uniquely qualified to help you achieve your drilling objectives.

Geothermal Drilling: From Exploration to Complete Field ...
This vast renewable energy source can be utilised for both electricity generation and direct use applications. It has the potential to provide the world's energy needs for future generations. This energy is accessed through drilling and testing of geothermal wells.

Geothermal Well Test Analysis | ScienceDirect
DEEP Earth Energy Production Corp. has announced that the 2019-2020 winter drilling and testing program is complete. DEEP drilled four new wells to further define the geothermal field reservoir parameters and test 3D seismic and airborne geophysical data. These are the deepest wells ever drilled in Saskatchewan.

Experience in the DOE's Wells of Opportunity program, drilling and testing geopressured-geothermal reservoirs is reviewed and some conclusions concerning drilling and completion practices, ways to cut operating costs for these tests, and long-term production applications are presented.

Geothermal Well Test Analysis: Fundamentals, Applications and Advanced Techniques provides a comprehensive review of the geothermal pressure transient analysis methodology and its similarities and differences with petroleum and groundwater well test analysis. Also discussed are the different tests undertaken in geothermal wells during completion testing, output/production testing, and the interpretation of data. In addition, the book focuses on pressure transient analysis by numerical simulation and inverse methods, also covering the familiar pressure derivative plot. Finally, non-standard geothermal pressure transient behaviors are analyzed and interpreted by numerical techniques for cases beyond the limit of existing analytical techniques. Provides a guide on the analysis of well test data in geothermal wells, including pressure transient analysis, completion testing and output testing Presents practical information on how to avoid common issues with data collection in geothermal wells Uses SI units, converting existing equations and models found in literature to this unit system instead of oilfield units

Two geothermal test wells were drilled in January 1983, in Antelope Canyon to access the potential for resource utilization by the City of Caliente's proposed space heating district. Both holes, drilled into bedrock at 220 feet, encountered hot water in the upper part of the hole (40 to 100 feet) and cooler water below (100 to 210 feet). A series of pumping tests were completed in February 1983, including pump-efficiency tests, stepped draw-down tests, and 1-, 2-, and 3-day sustained pumping tests. The test results indicated that the transmissivity of the thermal aquifer is very, very high. Five water samples were collected for chemical analyses during the course of CD-1 pump tests. The samples were collected to determine the water quality for the proposed space heating district and possible reinjection, and to establish a water chemistry base-line for comparative analysis of fluid chemistry during the course of the pumping and from subsequent development. 7 refs., 18 figs., 3 tabs.

The work reported herein is a continuation of the program initiated under DOE contract E(10-1)-1546* entitled "Program to Design and Experimentally Test an Improved Geothermal Bit"; the program is now DOE Contract EG-76-C-1546*. The objective of the program has been to accelerate the commercial availability of a tolling cutter drill bit for geothermal applications. Data and experimental tests needed to develop a bit suited to the harsh thermal, abrasive, and chemical environment of the more problematic geothermal wells, including those drilled with air, have been obtained. Efforts were directed at the improvement of both the sealed (lubricated) and unsealed types of bits. The unsealed bit effort included determination of the rationale for materials selection, the selection of steels for the bit body, cutters, and bearings, the selection of tungsten carbide alloys for the friction bearing, and preliminary investigation of optimized tungsten carbide drilling inserts. Bits build** with the new materials were tested under stimulated wellbore conditions. The sealed bit effort provided for the evaluation of candidate high temperature seals and lubricants, utilizing two specially developed test apparatus which simulate the conditions found in a sealed bit operating in a geothermal wellbore. Phase I of the program was devoted largely to (1) the study of the geothermal environment and the failure mechanisms of existing geothermal drill bits, (2) the design and construction of separate facilities for testing both drill-bit seals and full-scale drill bits under simulated geothermal drilling conditions, and (3) fabrication of the MK-I research drill bits from high-temperature steels, and testing in the geothermal drill-bit test facility. The work accomplished in Phase I is reported in References 1 through 9. In Phase II, the first generation experimental bits were tested in the geothermal drill-bit test facility. Test results indicated that hardness retention at temperature, but not at the expense of fracture toughness, was a primary requirement for geothermal bit bearings. Materials selections for the MK-II bit were made based on these results. Also in Phase II, effort was directed at the screening of elastomers for use as a high-temperature seal for sealed bits. References 10 though 13 report the work performed in Phase II. This report summarizes the work on Phase III, encompassing the period from May 18, 1977, to May 19, 1978. There were two major tasks in Phase III which consisted of material selection, fabrication and testing of MK-III bits and Seal and lubricant evaluation. [DJE -2005].

Maurer Engineering developed special high-temperature geothermal turbodrills for LANL in the 1970s to overcome motor temperature limitations. These turbodrills were used to drill the directional portions of LANL's Hot Dry Rock Geothermal Wells at Fenton Hill, New Mexico. The Hot Dry Rock concept is to drill parallel inclined wells (35-degree inclination), hydraulically fracture between these wells, and then circulate cold water down one well and through the fractures and produce hot water out of the second well. At the time LANL drilled the Fenton Hill wells, the LANL turbodrill was the only motor in the world that would drill at the high temperatures encountered in these wells. It was difficult to operate the turbodrills continuously at low speed due to the low torque output of the LANL turbodrills. The turbodrills would stall frequently and could only be restarted by lifting the bit off bottom. This allowed the bit to rotate at very high speeds, and as a result, there was excessive wear in the bearings and on the gauge of insert roller bits due to these high rotary speeds. In 1998, Maurer Engineering developed an Advanced Geothermal Turbodrill (AGT) for the National Advanced Drilling and Excavation Technology (NADET) at MIT by adding a planetary speed reducer to the LANL turbodrill to increase its torque and reduce its rotary speed. Drilling tests were conducted with the AGT using 12 1/2-inch insert roller bits in Texas Pink Granite. The drilling tests were very successful, with the AGT drilling 94 ft/hr in Texas Pink Granite compared to 45 ft/hr with the LANL turbodrill and 42 ft/hr with a rotary drill. Field tests are currently being planned in Mexico and in geothermal wells in California to demonstrate the ability of the AGT to increase drilling rates and reduce drilling costs.

The principal objectives of the geopressured-geothermal reservoir resource assessment program are to obtain data related to the following: 1.2.1--Reservoir parameters and characteristics, including permeability, porosity, areal extent, net thickness of productive sands, methane content, and formation compressibilities; 1.2.2--Ability of a geopressured well to flow at the high rates, i.e., 40,000 bbls/day, expected to achieve the resource recovery required for economic commercial operations; 1.2.3--Reservoir production drive mechanisms and physical and chemical changes that may occur with various production rates and conditions; 1.2.4--Aquifer fluid properties, including chemical composition, dissolved and suspended solids, hydrocarbon content, in situ temperature, and pressure; 1.2.5--Techniques and strategies for completion and production of geopressured wells for methane, thermal, and hydraulic energy production, including examination of producibility using computer simulators employing parameters determined by well testing; 1.2.6--Disposal well parameters, such as optimum injection rate and pressures (transient and pseudo steady state), chemical compatibility of fluids, temperature-solubility relationships, and the economic considerations of injection, including evaluation of filtering and inhibition techniques in the process steam; and 1.2.7--The long-term environmental effects of an extensive commercial application of geopressured-geothermal energy, i.e., subsidence, induced seismicity, and fluid disposal.