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| <p>Fractured Rock Conference Field Day September 16, 2004</p> |  |
| <p>Bedrock Bioremediation Center Affiliations and Funding</p> |  |
| <p>Station 1: Drilling</p> | <p>Drilling at the Bedrock Bioremediation Center's (BBC) field site, located at Pease International Tradeport (Portsmouth, NH), is performed to obtain rock cores for microbial, geochemical and lithological studies, as well as to produce boreholes used in the research project. Standard rotary drilling is used with water as the drilling fluid. Because the integrity of the cores is of paramount importance, especially with respect to their microbial composition, unique drilling protocols are followed, including: telescoping casing, non-recirculation of drilling water, bleach decontamination of drilling materials and special core processing to limit exposure to air.</p> |
| <p>Drilling Techniques</p> | <p>Each of the BBC boreholes have telescoping casing set down to the top of competent bedrock to avoid contamination from the overburden and weathered bedrock. All the boreholes are cored using a 6" coring bit and a triple barrel coring device, except BBC7 which was drilled using a tri-cone button bit. Drilling water is de-oxygenated by bubbling nitrogen into it before entering the drill stem to help maintain the anaerobic environment which exists in the bedrock. The cores are retrieved through a column of de-oxygenated water and capped to stop oxygen from entering them. The cores are transported to a nitrogen-filled anaerobic chamber using a box purged of oxygen. After being extruded from the box into the anaerobic chamber using an hydraulic ram, the cores undergo microbial, geochemical and lithologic processing.</p> |
| <p>Drilling Parameter Recorder</p> | <p>Drilling parameter recorders consist of computerized systems which monitor a series of sensors installed on any conventional rig for the purpose of collecting information on the drilling process. The recorded data includes penetration rate, down thrust pressure, rod torque, rotation rate, and drilling fluid pressure and flow. The data for the different drilling parameters are acquired automatically and displayed in real time on the strip chart and LCD screen of a rugged rig-mounted recorder operated by the driller. The data are also stored electronically for further analysis. The system allows the user to collect high-resolution data with respect to depth. The overall objective for using the DPR on the BBC project was to evaluate if the system had the ability to help in the identification of bedrock fractures, stratigraphic variations and other subsurface features. For this project, headed by Professor Jean Benoit (jean.benoit@unh.edu), the CL88n system manufactured by Jean Lutz (Jurançon, France) was used.</p> |
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