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The Engineering Group of the Geological Society

21st Regional Conference

University of Sheffield, 16–19 September 1985

Groundwater in Engineering Geology

The technical sessions below have been arranged by cause rather than by engineering effect. This approach has been adopted so that contributors may specifically highlight the groundwater aspects of their investigations. It is hoped by this emphasis to achieve a new awareness of groundwater in engineering geology by connecting facts and case histories across the whole range of engineering construction.

Within each session all appropriate engineering projects will be dealt with (tunnels, mines, deep excavations, cuttings, embankments, slopes, foundations, and waste disposal).

The Effects of Groundwater

Session 1. **Engineering problems posed by groundwater**

–a very broad overview by a guest speaker or speakers

–case histories outlining problems of inadequate groundwater investigation leading to later problems

Session 2. **Changes in groundwater conditions**

–changes in groundwater level; quality (including toxic wastes); transmissivity and storage; recharge; pore water pressure with time

–long- and short-term effects of changes in groundwater levels on foundations, tunnels, and slopes

–effects of engineering structures on groundwater

–rising groundwater levels in cities

Session 3. **Effects of groundwater on soils and rocks**

–weathering and softening

–shear strength and compressibility

–frost damage; permafrost

–groundwater composition; solubility (including release of gas)

Session 4. **Effects of groundwater on construction material**

–groundwater composition; extreme conditions

–aggregates—unbound (+filters); bound (+concrete)

–steel and timber (+cathodic protection etc.)

Field visits

–field excursions

–possibility of incorporating field demonstrations

The Investigation of Groundwater

Session 5. **Natural chemistry of groundwater**

–organic and inorganic (normal and extreme conditions)

–natural isotopes (stable and unstable) and their use as tracers

–groundwater characteristics of geological formations

–mixing of waters

Session 6. **Engineering investigation for groundwater quality**

–field sampling (where and how); storage and transport of samples

–laboratory testing

–presentation and interpretation of results

–remote sensing; surface and borehole geophysics

Session 7. **Investigations for groundwater quantity and flow**

–field surveys (where); what to do and how; borehole testing; use of tracers; surface and borehole geophysics

–permeability and storage with depth

–presentation of results

Session 8. **Prediction of groundwater conditions**

–methods available (including simple methods used in the field, i.e. resistivity paper and flow nets as well as more complex methods); use of models; analogues; field tests

–desk study and remote sensing

The Control of Groundwater

Session 9. **Monitoring groundwater conditions**

–pressure; hydraulic gradient; quality; permeability; water level; storage and saturation

–geotechnical borehole instrumentation

Session 10. **Control of groundwater by exclusion**

–boundaries (natural and artificial); grouting; frezing; compressed air

–tunnelling and surface engineering

Session 11. **Control of groundwater by removal**

–wells; well points; drains; adits; electro-osmosis

–mining and civil engineering

Session 12. **Contractual and legal matters**
–control of flow, pressure and quality
–consequences of settlement; loss of support; expansion; inability to dewater or depressurize in allotted time
–consequences of other changes

Up-to-date information, further details, and booking forms are available from: Miss Caroline Symonds, Specialist Groups Secretary, The Geological Society, Burlington House, Piccadilly, London W1V 0JU. *Telephone:* 01-734 2510/2356.

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U.S. National Committee on Rock Mechanics, NAS/NRC

27th U.S. Symposium on Rock Mechanics

The University of Alabama, 23–25 June 1986

Call for papers

Rock Mechanics—Key to Energy Production

Tentative session areas and topics

Basic and general
Complex ground
Stress measurement
Rock characterization
Subsidence

Exploration and mining
Explosives and blasting
Rock excavation
Uranium mining
Coal and lignite mining

Petroleum natural gas
Deep well drilling
Hydraulic fracturing

Unconventional resources
Coalbed methane recovery
Oil shale production
In situ gasification
Geothermal energy

Civil projects
Nuclear waste disposal
Underground storage
Hydroelectric power

Abstracts

Proposed papers will be judged on the basis of a two-page, 500-word, detailed abstract (double spaced). Authors are asked to identify the appropriate area or session for their papers.

Papers

Accepted papers will be limited to eight printed pages (two columns typed, reduced in size) and must be submitted as camera-ready copy. Proceedings will be published in advance of the Symposium by the Society of Mining Engineers of AIME.

Schedule

Detailed abstract due 27 September 1985
Authors notified of acceptance 2 December 1985
Final papers due 1 March 1986

Participating societies

Association of Engineering Geologists; American Society of Civil Engineers; Society of Explosives Engineers; Society of Mining Engineers, AIME; Society of Petroleum Engineers, AIME

Submit abstracts to Dr Howard L. Hartman, Symposium Chairman, Department of Mineral Engineering, The University of Alabama, P.O. Box 1468, University, AL 35486, USA. *Telephone:* 010 1 205 348-6578