

A LIST OF PUBLISHED REPORTS

ON THE

THERMAL AND THERMOMECHANICAL

PROPERTIES DATA OF ROCK

Office of Nuclear Waste Isolation
Battelle Project Management Division
Columbus, Ohio 43201

June 1984

B407250565 B40705
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Preface

A listing of published references is presented on the topic of thermal and thermomechanical rock mechanics data generated under the National Waste Terminal Storage Program. These references are applicable to the mined geologic disposal in salt (halite) of commercially-generated nuclear waste. In addition, these references encompass both generic and site-specific rock mechanics testing efforts. Copies of these reports and quarterly progress reports of these studies can be obtained from Battelle Project Management Library, 505 King Avenue, Columbus, Ohio 43201.

List of Published Reports

I. Site-Specific Reports

A. Thermal Properties - Laboratory Measurements

1. Lagedrost, J.F. and W. Capps, 1983. Thermal Property and Density Measurements of Samples Taken From Drilling Cores From Potential Geologic Media, BMI/ONWI-522, prepared by Fiber Materials, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
2. Sass, J.H.; A.H. Lackenbruch, and E.P. Smith, 1983. Thermal Data From Well GD-1, Gibson Dome, Paradox Valley, Utah, Open File Report 83-476, U.S. Geologic Survey, Menlo Park, California.

B. Thermomechanical Properties - Laboratory Measurements

1. Pfeifle, T.W.; K.D. Mellegard, and P. Senseny, 1983. Preliminary Constitutive Properties for Salt and Nonsalt Rocks From Four Potential Repository Sites, ONWI-450, prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
2. Nelson, R.A.; J.G. Kocherhaus, and M.R. Schnapp, 1982. In Situ and Laboratory Geotechnical Test Results From Borehole GD-1 in Southeast Utah, ONWI-400, prepared by Woodward-Clyde Consultants for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.

C. Field Testing Efforts

1. Nelson, R.A.; J.G. Kocherhaus, and M.R. Schnapp, 1982. In Situ and Laboratory Geotechnical Test Results From Borehole GD-1 in Southeast Utah, ONWI-400, prepared by Woodward-Clyde Consultants for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.

II. Generic Reports

A. Thermal Properties - Laboratory Measurements

1. Morgan, M.T. and G.A. West, 1980. Thermal Conductivity of the Rocks in the Bureau of Mines Standard Rock Suite, ORNL/TM-7052, prepared by Oak Ridge National Laboratory for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
2. Sass, J.H.; A.H. Lachenbruch, and E.P. Smith, 1983. Temperature Profiles From Salt Valley, Utah, Thermal Conductivity of 10 Samples From Drill Hole DOE3, and Preliminary Estimates of Heat Flow, Open File Report 83-455, U.S. Geological Survey, Menlo Park, California.
3. Smith, D.D., 1976. Thermal Conductivity of Halite Using a Pulsed Laser, Y/DA-7013, Union Carbide Corporation, Nuclear Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
4. Durham, W.B. and A.E. Abey, 1981. Thermal Properties of Avery Island Salt to 573 K and 50 MPa Confining Pressure, UCRL-53128, Lawrence Livermore National Laboratory, Livermore, California.

5. Morgan, M.T., 1979. Thermal Conductivity of Rock Salt From Louisiana Salt Domes, ORNL/TM-6809, Union Carbide Corporation, Nuclear Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

B. Thermomechanical Properties - Laboratory Measurements

1. Hansen, F.D. and K.D. Mellegard, 1980. Creep of 50-mm Diameter Specimens of Dome Salt From Avery Island, Louisiana, ONWI-104, prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
2. Mellegard, K.D.; P.E. Senseny, and F.D. Hansen, 1981. Quasi-Static Strength and Creep Characteristics of 100-mm Diameter Specimens of Salt From Avery Island, Louisiana, ONWI-250, prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
3. Hansen, F.D., 1978. Quasi-Static Strength and Creep Deformational Characteristics of Bedded Salt From the Carey Mine Near Lyons, Kansas, Y/OWI/SUB-78/22303/13, prepared by RE/SPEC, Inc., for the Office of Waste Isolation, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.
4. Carter, N.L., 1978. Petrofabric Analysis of the Deformational Behavior of Lyons, Kansas and Jefferson Island, Louisiana Rock Salt, Y/OWI/SUB-78/22303/9, prepared by RE/SPEC, Inc. for the Office of Waste Isolation, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.

5. Stickney, R.G., 1979. Case History Rock Mechanics Examination of the Jefferson Island Salt Mine: III. Evaluation of Laboratory Specimen Dimensions on the Uniaxial Strength and Deformational Characteristics of Dome Salt, Y/OWI/SUB-77/22303/7, prepared by RE/SPEC, Inc. for the Office of Waste Isolation, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.
6. Hansen, F.D., 1978. Case History Rock Mechanics Examination of the Jefferson Island Salt Mine: II. Laboratory Evaluation of Strength and Creep Deformation Characteristics of Dome Salt Under Confining Pressure, Y/OWI/SUB-77/22303/5, prepared by RE/SPEC, Inc. for the Office of Waste Isolation, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.
7. Hansen, F.D. and P.F. Gnirk, 1975. Design Aspects of the Alpha Repository: III. Uniaxial Quasi-Static and Creep Properties of the Site Rock, ORNL-SUB-4269-10, prepared by RE/SPEC, Inc. for Holifield National Laboratory, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.
8. Carter, N.L., 1983. Creep and Creep-Rupture of Rocksalt, ONWI-224, prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
9. Hansen, F.D. and K.D. Mellegard, 1980. Quasi-Static Strength and Deformational Characteristics of Domal Salt From Avery Island, Louisiana, ONWI-116, prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.

10. Gnirk, P.F.; E.R. Hoskins; W.G. Pariseau; J.E. Russell, and W.R. Wawersik, 1972. Analysis and Evaluation of the Rock Mechanics Aspects of the Proposed Salt Mine Repository, ORNL/SUB-3706/1, prepared by RE/SPEC, Inc. for Oak Ridge National Laboratory, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.
11. Gnirk, P.F.; W.G. Pariseau; J.E. Russell; W.R. Wawersik; G.D. Callahan, and H. Hovland, 1973. Analysis and Evaluation of the Rock Mechanics Aspects of the Proposed Salt Mine Repository, ORNL/SUB-3706/2, prepared by RE/SPEC, Inc. for Oak Ridge National Laboratory, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.
12. Bradshaw, R.L. and W.C. McClain, 1971. Project Salt Vault: A Demonstration of the Disposal of High Activity Solidified Wastes in Underground Salt Mines, ORNL-4555, Oak Ridge National Laboratory, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.
13. Lomenick, T.F., 1968. Accelerated Deformation of Rock Salt at Elevated Temperature and Pressure and Its Implications for High Level Radioactive Waste Disposal, ORNL TM-2102, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
14. Hansen, F.D. Experimental Consolidation of Granulated Rock Salt With Application to Sleeve Buckling, ORNL/SUB-4269/21, prepared by RE/SPEC, Inc. for the Office of Waste Isolation, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.

15. Gunter, B.D. and F.L. Park, 1961. The Physical Properties of Rock Salt as Influenced by Gamma Rays, ORNL-3027, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
16. Dropek, R.K. and W.R. Wawersik, 1976. Pressure-Temperature Creep Testing as Applied to a Commercial Rock Salt, Y/OWI/SUB-4269/23, prepared by the University of Utah for the Office of Waste Isolation, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.
17. Carter, N.L. and F.D. Hansen, 1980. Mechanical Behavior of Avery Island Halite: A Preliminary Analysis, ONWI-100, prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.

C. Field Testing Efforts

1. Van Sambeek, L.L., 1980. Avery Island Heater Tests: Temperature Measurements for the First 300 Days, ONWI 190(1), prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
2. Van Sambeek, L.L.; R.G. Stickney, and K.B. DeJong, 1981. Avery Island Heater Tests: Displacement and Stress Data for the First 300 Days, ONWI-190(2), prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
3. Blankenship, D.A. and R.G. Stickney, 1983. Nitrogen Gas Permeability Tests at Avery Island, ONWI-190(3), prepared by RE/SPEC, Inc., for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
4. Van Sambeek, L.L.; R.G. Stickney, and K.B. DeJong, 1983. Avery Island Heater Tests: Measured Data for 1000 Days of Heating, ONWI-190(5), prepared by RE/SPEC, Inc. for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio.
5. Bradshaw, R.L. and W.C. McClain, 1971. Project Salt Vault: A Demonstration of the Disposal of High Activity Solidified Wastes in Underground Salt Mines, ORNL-4555, Oak Ridge National Laboratory, Union Carbide Corporation, Nuclear Division, Oak Ridge, Tennessee.