



FINAL REPORT

**Project Activity ORD-FY04-012
Yucca Mountain Climate Technical Support Representative
DOE Cooperative Agreement DE-FC28-04RW12232**

The primary objective of Project Activity ORD-FY04-012, "Yucca Mountain Climate Technical Support Representative," was to provide the Office of Civilian Radioactive Waste Management (OCRWM) with expertise on past, present, and future climate scenarios and to support the technical elements of the Yucca Mountain Project (YMP) climate program. The Climate Technical Support Representative was to explain, defend, and interpret the YMP climate program to the various audiences during Site Recommendation and License Application. This technical support representative was to support DOE management in the preparation and review of documents, and to participate in comment response for the Final Environmental Impact Statement, the Site Recommendation Hearings, the NRC Sufficiency Comments, and other forums as designated by DOE management.

The activity was designated *Quality Affecting* and was originally approved as a 57 month activity with a total budget of \$764,123. However, per DOE, the workscope for this activity was transferred to a subcontract with Sandia National Laboratory 12 months prior to its originally scheduled end date. Project personnel were notified only eight weeks before the revised effective end date that the project was to be terminated prematurely. In addition, DOE's disbursements for the activity only totaled \$562,726—\$201,397 less than the total approved budget.

Because the activity was terminated 12 months early and experienced a 27% reduction in budget, it was not possible to complete all components of the tasks as originally envisioned. Activities not completed include the qualification of climate datasets and the production of a *qualified* technical report.

The following final report is therefore an unqualified summary of the activities that were completed given the reduced time and funding.

A handwritten signature in black ink, appearing to read "R. Keeler".

Raymond E. Keeler
Nuclear Waste Cooperative Agreement Project Director



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Task ORD-FY04-012

Yucca Mountain Climate Technical Support Representative

Period October 1, 2003 through September 30, 2007

Saxon E. Sharpe

QA documents and training

- Attended HRC QA training workshops and completed on line QA training
- QA and QT training completed for all personnel
- Participated in DOE and HRC audits
- Completed SIP and training matrix
- Completed IPR-022, "Creation of Climate Files for Climate Station Histories"
- Completed IPR-023, "Creation of GIS Data Sets for Climate Parameters and Report Graphics"
- Completed Arc View Software Qualification
- Submitted scientific notebooks UCCSN-DRI-070 Vol. 1 and UCCSN-DRI-070 Vol. 2
- Attended Lead Laboratory Software Management Training

Publications

- Sharpe, S.E. (2003) Future Climate Analysis – 10,000 to 1,000,000 Years After Present. Office of Civilian Radioactive Waste Management. MOD-01-001 Rev. 01. Yucca Mountain Project (<http://hrcweb.nevada.edu/qa/Report/MOD-01-001.pdf>)
- Sharpe, S.E. (2004) Chapter 6, Climate: Past Present and Future, Yucca Mountain Site Description Revision 02. Civilian Radioactive Waste Management System Management and Operating Contractor. Yucca Mountain Project
- Sharpe, S.E. (2007) Using modern through mid-Pleistocene climate proxy data to bound future variations in infiltration at Yucca Mountain, Nevada, *in* Levich, R.A., and Stuckless, J.S., eds., The Geology and Climatology of Yucca Mountain and Vicinity, Southern Nevada and California: Geological Society of America Memoir 199, p. 155-205, doi: 10.1130/2007.1199(05)

Presentations

- Sharpe, S.E. (2003) Yucca Mountain Climate: Past Present and Future. *In* "Program and Abstracts GSA Annual Meeting", 2-5 November, 2003. Seattle, WA. (Invited speaker)
- Sharpe, S.E. (2004) Yucca Mountain Climate: Past, Present, and Future. U.S. D.O.E. Office of Civilian Radioactive Waste Management. March 9-10 Las Vegas, NV. (Invited Presentation to the Nuclear Waste Technical Review Board Panel)
- Sharpe, S., McCurdy, G., Chambers, M., Kemp, H. (2004) Climate Summaries: Yucca Mountain DOE Meteorological Monitoring Sites. *In* "Program and Abstracts GSA Annual Meeting", 7-10 November, 2004. Denver, CO. (Invited speaker)

- Sharpe, S. (2007) Yucca Mountain Climate: Past Present and Future, presentation to DOE and other guests
- Sharpe (2007) Using the Precession Methodology to Time Past Glacial and Interglacial Climates. In "Program and Abstracts GSA Annual Meeting", October, 2007. Denver, CO. (abstract submitted and accepted)

Document reviews

- Reviewed climate sections of "Technical Basis Report # 1, Climate and Infiltration"
- Reviewed Chapter 6, Site Description, prior to AP 2.14 review
- Completed technical reviews on climate and infiltration chapter of the License Application Draft Document
- Completed technical reviews on climate and infiltration chapter of the Site Recommendation Draft Document
- Completed technical reviews on high-level climate and infiltration documents
- Reviewed Rev. 9 of QAP-2.0

Modern climate summary data

- Completed photo documentation of the 9 DOE YMP meteorological stations and 3 precipitation sites
- Completed web site additions listing all DTN numbers, associated data, and products through 2006
- Daily meteorological data downloaded to web site (<http://ymp.dri.edu/>) and checked through December 2006
- Added NTS climate data to website (<http://nts.dri.edu/>)
- Completed station history files and metadata through 2006
- Completed and submitted historical climate summaries for stations 1-9 through 2006

Project transferred to Lead Lab, October 1, 2007