

SUPPORT FOR CONTRACTOR REQUEST

CONTRACTOR:

Nicholas Christofi

RATE:

/hour (unchanged from the previous contract)

PERIOD OF PERFORMANCE:

June 1, 1999 through July 1, 2000

STATEMENT OF WORK:

Review of DOE documents (and others from the literature) related to microbial effects on the proposed high-level waste repository at Yucca Mountain. Consultation on the significance of microbial effects on waste containment and transport.

ESTIMATED UTILIZATION:

160 hours

PRIOR CONTRACTOR WORK EXPERIENCE WITH SWRI:

This is an extension of an existing consulting contract with SwRI.

PROGRAMMATIC NEED FOR CONTRACTOR WORK:

This work supports activities under the Evolution of the Near-Field Environment Key Technical Issue.

LIST OF ELIGIBLE CONSULTANTS CONSIDERED:

None

RATIONALE FOR SOLE/SINGLE SOURCE SELECTION:

This is a renewal of a previous consulting agreement. Dr. Christofi is an internationally recognized expert in microbiology with particular experience making interpretations related to nuclear waste disposal. This experience includes work on a variety of sites for the European Commission, UK DOE, Nirex, and British Nuclear Fuels. Dr. Christofi was awarded the Keith Medal by the Royal Scottish Society for Arts, Science, and Technology in 1989 for his work on microbiology related to nuclear waste disposal. Further, he is familiar with CNWRA procedures and personnel.

RATIONALE FOR NOT USING SwRI RESOURCES:

No resources exist at SwRI for conducting this scope of work.

PROJECT NUMBER:

20-1402-561

SUPPORT FOR CONSULTANT REQUEST

May 8, 1998

CONSULTANT: Nicholas Christofi

RATIONALE FOR USING AND PROGRAMMATIC IMPACT OF NOT USING CONSULTANT:

This consultancy is established to support the Evolution of the Near-Field Environment KTI (20-1402-561) by reviewing DOE and NRC documents related to the effects of microbes on repository performance. The results of these reviews will be used to support development of the ENFE IRSR.

STATEMENT OF WORK:

Documents to be reviewed (no particular order):

1. Civilian Radioactive Waste Management System Management & Operations Contractors' "Reference Design Description for a Geologic Repository, Rev 01," available at <http://www.ymp.gov/general/reference/rdd/default.htm>.
2. Reference Repository Design presentation by James A. Blink to 1st meeting of Near Field Environment Expert Elicitation on 11/5/97. (R. Green at meeting; and it contains the conceptual figures as time slices).
3. ENFE IRSR, Rev 0 - primarily section 2 and 4.
4. Angell et al., 1996 "Evolution of the Near-Field Environment in the Proposed High-Level Waste Repository at Yucca Mountain--A Review of Hypotheses" - especially the microbiology section and the conclusions, the language is likely to form the basis for the NRC's language on microbial effects.

Documents to review:

1. "TSPA-VA Methods & Assumptions Report" - Sections 6.3 "Near Field Geochemical Environment" and 6.6 "Engineered Barrier Transport System."
2. "Near-Field and Altered-Zone Environment Report Volume 1: Technical Basis for EBS Design, Rev. 1," 1997, Wilder, pg. 3-12, 20-22, 46 - 47.
4. David Sassani's presentation at the technical exchange 3/98, "Near-Field Geochemical Environment Abstraction for TSPA-VA."
5. John App's presentation to Near-Field Expert Elicitation Panel on 12/4/97 on nutrients in the unsaturated zone and Bill's trip report discussion of the presentation.

6. "Final Report Waste Package Degradation Expert Elicitation Project, August 18, 1997," (see Sridhar), pgs. 3-13 - 3-14, and BL-1 thru BL-21.

7. "Near-Field and Altered-Zone Environment Report Volume 2," 1996, Wilder, UCRL-LR-124998, Chapter 6 (Introduced Materials).

8. "Synthesis Report on Thermally Driven Coupled Processes," Hardin and Chestnut, UCRL-ID-128495, 1997, pgs. 2-65 - 2-70 and 3-48. (The CD report)

9. "Microbial Activity at Yucca Mountain," UCRL-ID-122256, Horn and Meike, 1995, available <http://www.llnl.gov/tid/lof/documents/pdf/228190.pdf>

LIST OF ELIGIBLE CONSULTANTS CONSIDERED:

None. [Peter Angell became programmatically unavailable for this work.]

RATIONALE FOR SOLE/SINGLE SOURCE SELECTION:

Dr. Christofi is an internationally recognized expert on microbial effects. Specifically, he has extensive experience evaluating the effects of microorganisms on nuclear waste disposal. This experience includes work on a variety of sites for the European Commission, UK DOE, Nirex, and British Nuclear Fuels. Dr. Christofi was awarded the Keith Medal by the Royal Scottish Society for Arts, Science, and Technology in 1989 for his work on microbiology related to nuclear waste disposal.

RATIONALE FOR NOT USING SwRI RESOURCES:

No resources exist at SwRI for conducting this scope of work.

PROGRAMMATIC IMPACT ON CNWRA WORK:

This consultancy will support Intermediate Milestone (1402-561-800) Input to Evolution of the Near-Field Environment IRSR, Rev. 1 - Letter Report.

RATIONALE FOR RATE:

Estimated duration/hours: 200 hours

Estimated rate/hour:

WORK BREAKDOWN STRUCTURE NUMBERS:

20-1402-561