

## SCOPE OF WORK FOR DAVID DEERE

Re: Review of the Department of Energy's Disposal Criticality Methodology Technical Report, Rev. 01.

As a part of technical assistance provided to the Nuclear Regulatory Commission (NRC) by the Center for Nuclear Waste Regulatory Analyses (CNWRA) for overseeing the development of a geologic repository for high-level radioactive wastes at Yucca Mountain, NV, the CNWRA has been tasked to review the subject report on repository disposal criticality. The CNWRA would like Mr. David Deere to assist in this review.

The efforts by Mr. Deere in this review will be two-fold:

- (I) To provide independent verification of selected calculations summarized in the Disposal Criticality Methodology Report using ORIGEN2, MCNP4A, and possibly SCALE. If calculations using the later code are required, then Mr. Deere will also have to complete installation tests of the code since it is not currently installed on a CNWRA computer.
- (II) To provide a review of the assumptions and methods used in the report (i.e., a technical review).

Mr. Deere will work directly with Dr. Mark Jarzemba in performing these efforts. This work will need to be completed by May 6, 1998.

**Estimated Level of Effort: 80 hrs**

# **SUPPORT FOR CONSULTANT/SUBCONTRACTOR REQUEST**

Date: February 18, 1998

**CONSULTANT/SUBCONTRACTOR:** David Deere

## **RATIONALE FOR USING AND PROGRAMMATIC IMPACT OF NOT USING CONSULTANT/SUBCONTRACTOR:**

The Al-clad fuels project is currently using CNWRA core staff for reviews of SRS documents. However, due to the limited availability of CNWRA core staff in the area of nuclear criticality, Mr. Deere's assistance is needed so that CNWRA staff can complete the necessary activities without impacting other projects. Without his assistance, the CNWRA staff will not be able to provide timely input to DOE regarding the suitability of Al-clad fuels for geologic disposal.

## **STATEMENT OF WORK:**

The objective of the project is to evaluate the documents supplied by SRS pertinent to the eventual geologic disposal of DOE Aluminum clad spent nuclear fuels. The primary focus of the consultant activity will be the evaluation of the criticality calculations performed for the fuels. Independent verification of the calculations is not necessary, but the review should focus on the evaluation of assumptions made in performing the criticality calculations. The review should also include determination that the codes utilized for the criticality evaluation were used correctly by examining the input and output data. Total hours of work required is estimated to be about 100.

## **LIST OF ELIGIBLE CONSULTANTS/SUBCONTRACTORS CONSIDERED:**

None

## **RATIONALE FOR SOLE/SINGLE SOURCE SELECTION:**

Mr. Deere has previous experience on reviewing safety issues related to nuclear material processing and performing criticality calculations. He is available in a short time frame.

## **RATIONALE FOR NOT USING SwRI RESOURCES:**

Unfamiliarity with criticality calculations.

## **PROGRAMMATIC IMPACT ON CNWRA WORK:**

None

**RATIONALE FOR RATE(S):** Consistent with rates other consultants have quoted with similar level of educational and work experience.