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MEMORANDUM

To: Drs. Anthony Hechanova and Gary Cerefice, HRC
From: Drs. Ajit Roy and Brendan O’Toole, MEG
Date: June 17, 2002

Subject: AAA Task-10 Quarterly (03/01, 2002 –05/31, 2002) Report

Introduction

The objective of this task is to evaluate the elevated temperature tensile properties of Alloy EP-823, a leading target material for accelerator-driven waste transmutation applications. The test material will be thermally treated prior to evaluation of its tensile properties at temperatures relevant to the transmutation applications. The deformation characteristics of tensile specimens, upon completion of testing, will be evaluated by surface analytical techniques including scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The overall results are expected to provide a mechanistic understanding of high-temperature deformation behavior of Alloy EP-823 as a function of heat treatment.

Personnel

The current project participants are listed below.

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Collaborator (DOE): Dr. Stuart A. Maloy, Los Alamos National Laboratory, New Mexico
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Highlights of Accomplishment

- Smooth tensile specimens of Alloy EP-823 have been machined from heat-treated round bars processed by the Timken Company, Canton, Ohio. Ambient temperature mechanical properties are currently being evaluated using the existing MTS unit in TBE B150.
• The high-temperature and inert gas chamber with extension rod assembly, system software and extensometer that were ordered during this past quarter to perform high-temperature mechanical testing of Alloy EP-823 has been installed in the existing MTS machine. Water and gas lines are currently being connected to this experimental system.

• An IDR is being prepared to receive a quotation from the UNLV Planning & Construction (PC) Department to add a 220-V power line for high-temperature testing inside the installed chamber.

Problems

Initiation of high-temperature testing using the inert gas chamber is contingent upon the installation of the additional power line. Assuming that the 220-V power line is installed in a reasonable timeframe, no problems are anticipated.

Status of Funds

Expenditures incurred during this quarter are within the target amount allocated.

Plans for Next Quarter

• Complete water and gas lines connection.
• Prepare an IDR for quotation from UNLV PC department.
• Perform additional thermal treatments of bar materials.
• Continue ambient-temperature mechanical properties evaluation.
• Add power lines for high-temperature testing.