

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

TRIP REPORT

SUBJECT: 2002 ASTM International Fall Committee Week
Project No. 20.06002.01.081; AI 06002.081.304

DATE/PLACE: November 6–8, 2002
Miami, Florida

AUTHOR: Sean Brossia

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BACKGROUND AND PURPOSE OF TRIP:

The author attended the ASTM G01 Corrosion of Metals Fall Committee week in Miami, Florida from November 6–8, 2002. During the course of the meeting discussions on the development of standard methods for corrosion testing, of interest to work at the Center for Nuclear Waste Regulatory Analyses (CNWRA) were attended. These included: corrosion of nuclear materials (specifically cladding corrosion), atmospheric corrosion, electrochemical testing, corrosion in soils, and in-service corrosion testing and monitoring. A brief synopsis of the points in some of the discussions is provided. Further information can be obtained by contacting the author.

SUMMARY OF PERTINENT POINTS:

A meeting was held to provide an update on developing a standard to test nodular corrosion of nuclear fuel cladding. The major limitation to further work in this area is obtaining reference material which has known in-reactor service history, although some efforts in this area have been made over the past 2 years. Plans for the new long-term (20 year) atmospheric corrosion study was reviewed and panel exposures will begin shortly. The materials being examined include unpainted carbon steels, galvanized and aluminum coated carbon steels, stainless steels, Ni alloys, Ti alloys, and Al alloys with panels being evaluated after 2, 5, 10, and 20 year exposures. The results from these tests are valuable for a number of applications including the proposed repository as it gives some indications of how materials will perform when exposed to environments similar to the wet condensation environment likely in a geologic repository. A Standard Guide is also under preparation outlining the certification and quality assurance procedures for corrosion laboratories which would evaluate if the laboratories have core competencies in corrosion testing and evaluation. At present there are several negative votes on this standard (including one by the author because it specifies how long records must be maintained). The reference standard for conducting potentiodynamic polarization curves has been slated to have a new round robin to verify precision and bias, and further discussion, however there has been very little interest and as a result the standard may be modified. This is important to the CNWRA as this method is used to verify the performance of the potentiostat and the associated data acquisition system attached to it as part of TOP-009. The author also discussed recent work conducted at the CNWRA examining different methods to measure the repassivation potential. Efforts to examine the need to develop this into a standard will be conducted.

CONCLUSIONS:

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These meetings provide an opportunity to highlight work being done at the CNWRA in the area of life prediction, to interact with scientific community on a one-on-one basis, and serve to increase the visibility and credibility of the NRC and CNWRA work on corrosion testing and research. It is suggested that participation in ASTM be continued, especially with the increased interest in the repository program that was demonstrated again at this meeting. In addition, the CNWRA and NRC should continue to look for ways to support the development new ASTM standards that add value and credence to the approaches used in the repository program. In particular, coordination between C26.13 and G01 is needed to assist C26.13 on the corrosion and monitoring aspects involved in long-term nuclear waste disposal.

PROBLEMS ENCOUNTERED:

None.

PENDING ACTIONS:

- Evaluate possible needs in the area of testing standards that may improve credibility to approaches taken by the CNWRA in the repository testing program, particularly with respect to repassivation potential measurements and monitoring.
- Determine possible ways to liaise with the C26-13 technical committee to foster interest, cooperation, assistance, and participation in the development and use of standard test methods important to repository program.

RECOMMENDATIONS:

None.

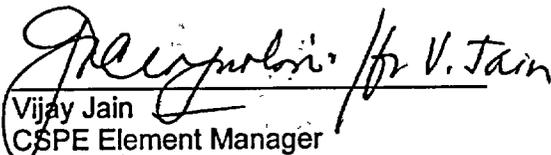
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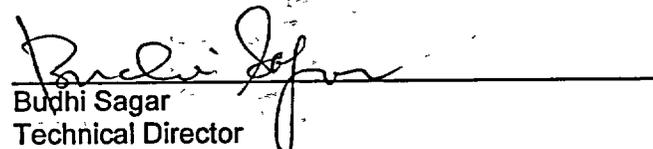
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