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A New Approach to Development of Voluntary Decommissioning Standards

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INTRODUCTION

The purpose of the Decontamination, Decommissioning, and Reutilization (DDR) Division of the American Nuclear Society (ANS) is to advance the technology of decontamination, decommissioning, and reutilization of former nuclear installations, materials, facilities, and sites [1]. To this end, collective decommissioning industry experiences and lessons learned are shared with others in the nuclear industry and the public.

An integral part of the work of the DDR Division is the preparation of voluntary decommissioning standards that can be used by the decommissioning industry. These standards will be prepared by the recently reestablished DDR Standards Committee, which intends to work cooperatively with other divisions of the ANS and other organizations to develop various decommissioning standards. ASTM International is one of the external organizations involved in the development of consensus standards for the decommissioning of nuclear facilities. This paper describes the new work of the DDR Standards Committee in a cooperative initiative with ASTM International to develop voluntary consensus standards for nuclear decommissioning work.

WORK DESCRIPTION

Depending on the particular contract, the scope of decommissioning work may involve a number of activities, including deactivation/safe shutdown; surveillance and maintenance; material characterization; decontamination; dismantlement; demolition; disposal of demolition debris and other wastes; and final site status surveys. In addition, environmental remediation may be performed in conjunction with the decommissioning or after decommissioning work has been completed. After decommissioning, a site or facility may also be reused for other purposes, such as meeting the needs of the community or business development.

The DDR Division of ANS, with about 1,000 members, has a broad base of experience in domestic and international decommissioning activities at commercial and government nuclear facilities. The

DDR Division and its members are recognized as the experts on decommissioning activities within ANS.

Decommissioning activities at commercial and government facilities must comply with numerous requirements. These requirements can include the submission, review, and approval of planning, financial, radiological, environmental, safety, and other project-specific documents. Permits and formal approvals must typically be obtained before a facility decommissioning project can begin. Regular submittals and reports must contain specific information presented in a required format. Organizations that may issue regulations governing decommissioning work include the Nuclear Regulatory Commission (NRC), U.S. Department of Energy (DOE), Environmental Protection Agency (EPA), and various state and local government agencies.

In addition to required documentation, there is a need for voluntary guidance documents and consensus standards to fill gaps not covered by regulatory authorities. For example, regulatory authorities may specify a desired end result, but not how that result can be achieved. Guidance documents or standards may describe acceptable methods for performing a certain activity or achieving a desired result. Some regulations also state that national consensus standards should be used in certain situations.

Guidance documents and standards may provide a suggested format and content for documentation to address a given topic and contain examples of documentation prepared by other organizations. Guidance documents may also suggest the consolidation of specific information in a document that is not required by a regulatory agency, but would be useful to project staff in accomplishing their work and to others performing similar decommissioning activities in the future.

Several organizations issue guidance documents on nuclear facility decommissioning. For commercial nuclear power plants that are regulated by the NRC, the Electric Power Research Institute and the Institute of Nuclear Power Operations develop decommissioning guidance documents. For nuclear facilities at DOE sites, the Energy Facility Contractors

Group has a task group that develops decommissioning guidance documents. There are also international organizations that develop such guidance, including the International Atomic Energy Agency.

The organizations mentioned above do not develop regulatory requirements, but rather consensus guidance documents to support member organizations. These documents are written by contributing authors. Their use is optional, but may help organizations that lack an experienced staff or are performing an activity for the first time.

There are also organizations that develop voluntary consensus standards. The ANS has a national-level Standards Division that develops nuclear consensus standards in cooperation with the American National Standards Institute (ANSI). All ANS standards receive approval from ANSI and are thus considered American National Standards. The ANS Standards Division and ANSI have developed several nuclear standards, but none are focused on decommissioning work.

Some organizations outside of ANS develop nuclear decommissioning standards, including the Health Physics Society (HPS) and ASTM. The HPS develops voluntary standards on the radiological aspects of decommissioning. ASTM has a Subcommittee E 10.03 on Decommissioning Standards that has published 11 decommissioning Standard Guides [2–12]. ASTM is a volunteer organization (similar to ANS) that encourages experienced industry professionals to participate in the development of consensus standards. Subcommittee E10.03 on Decommissioning Standards currently has about 30 members.

The chair of the DDR Standards Committee and the chair of the ASTM E10.03 Subcommittee have discussed joint projects in which members of their organizations would work together to develop decommissioning standards. The chair of the E10.03 Subcommittee has suggested that voluntary decommissioning standards are needed on the following topics:

- Decommissioning final reports.
- Waste minimization plans for decontamination and decommissioning (D&D) projects.
- Decommissioning data packages/records.
- Decommissioning strategies/alternatives assessments.

- D&D cost estimating.
- Conduct of final release surveys for D&D projects.

Voluntary standards on these topics could be used by both NRC- and non-NRC-regulated facilities undergoing decommissioning.

RESULTS

In response to a notice in the fall 2006 DDR Newsletter, 14 DDR members have volunteered to work on the development of decommissioning standards. The chairs of the DDR and E10.03 committees plan to have their combined membership begin work in mid-2007 to develop a new standard on one of the topics listed above. It is expected that the initial development work will be done by email since most volunteers are actively working in utility, government, and contractor positions across the country.

Volunteers will be asked to draft sections of the standard based on their knowledge, experience, and respective areas of expertise. The contributions from the volunteers will be edited into a draft standard that will then be reviewed by all DDR volunteers and members of the ASTM's Subcommittee E10.03. Details of the writing, editing, and reviewing process will be worked out with ASTM as the work proceeds on the first "pilot" standard. Consideration is also being given to establishing a website to facilitate joint efforts in developing decommissioning standards.

The joint ANS and ASTM Decommissioning Standards Committee is still in its formative stage. The committee welcomes participation by other nuclear industry personnel in the development and review of new standards that can be used in future decommissioning projects.

CONCLUSIONS AND DISCUSSION

Numerous regulations establish many of the high-level regulatory requirements for decommissioning work involving nuclear activities, facilities, or materials. However, there remains a need for additional working-level guidance on many aspects of decommissioning work processes. Voluntary consensus standards can often provide such guidance. The ANS DDR Division has initiated an effort to work jointly with ASTM Subcommittee E10.03 to develop consensus standards that will be useful to organizations performing decommissioning work.

Participation in standards development can be expected to yield several benefits. The main benefit is

that consensus standards on a variety of topics will be available to provide guidance to organizations involved in decommissioning activities. Documents developed by one organization using consensus standards will also be helpful to other organizations performing similar decommissioning activities.

Cooperation with ASTM in developing consensus decommissioning standards will enhance the reputation of both the ANS and the members of the DDR Division. It will also support the efforts of the ASTM's Subcommittee E10.03. Together, the two groups will have a larger base of expertise on which to draw in addressing complex decommissioning issues. This will be true whether the decommissioning activity is regulated by the NRC, DOE, EPA, state and local agencies, or a combination of regulators. Finally, the activity will allow experienced DDR members to help others who will be performing decommissioning work in the future.

Anyone wishing to participate in the development of decommissioning standards should contact the chair of the ANS DDR Standards Committee (Larry Zull), or the chair of the ASTM's Subcommittee 10.03 (Dick Meservey). Both chairs are ANS DDR members.

LEGAL DISCLAIMER

The views expressed are solely those of the authors, and no official support or endorsement of this article by their employers, or the ANS, is intended or should be inferred.

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