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Rules and Directives

Secretary  
U.S. Nuclear Regulatory Commission  
Office Of Nuclear Regulatory Research  
Washington, Dc 20555-001

**SUBJECT: Comments on Draft NUREG-1761 "Radiological Surveys for Controlling Release of Solid Materials"**

The Sacramento Municipal Utility District, Rancho Seco Nuclear Station provides the following comments on Draft NUREG-1761, "Radiological Surveys for Controlling Release of Solid Materials." Rancho Seco has been engaged in Decommissioning activities since 1997 and has gained considerable insight and experience in the application of current guidance in development of a radiological survey program for the safe clearance of solid materials from the Rancho Seco restricted area. The current Nuclear Regulatory Commission (NRC) guidance as contained in NRC IE Circular No. 81-07, "CONTROL OF RADIOACTIVELY CONTAMINATED MATERIAL" and NRC IE Information Notice No. 85-92, "SURVEYS OF WASTES BEFORE DISPOSAL FROM NUCLEAR REACTOR FACILITIES" has been satisfactory to meet the need for developing a radiological monitoring program for survey of solid material that protects public health and safety. The public, the NRC and the Nuclear Industry would be well served by examining the successful application of current guidance before mandating significant changes that would bring previous practices into question.

There are many technical documents already available to be used as references in determining monitoring methods for solid materials. NUREG-1761 will be a valuable addition to the reference library for those charged with the responsibility of establishing radiological monitoring programs for controlling the release of solid materials from nuclear facilities. The only missing component from current guidance is a dose based detection sensitivity requirement with the pathway considerations provided. Current guidance provides for a de facto required sensitivity that assures that a member of the public would not exceed a potential dose of approximately 5 mrem/yr from the release of solid materials currently being released from nuclear facilities. Rancho Seco staff is not aware of any credible scientific study that appears to support a benefit to public health and safety, that would pass a cost benefit analysis, by changing to a monitoring program based on a 1 mrem/yr dose standard. The current guidance provided in IE Circular No.

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*E-RJDS = ADM-03*  
*Call = J. P. ... (REP)*

81-07 and IE Information Notice 85-92 has met the needs of all stakeholders because the guidance establishes a minimum detection sensitivity for monitoring solid materials rather than stating a release limit. A release limit implies that there is an intention to release solid material above the limit rather than apply the "As Low As Reasonably Achievable" philosophy to the monitoring program. The only guidance improvement that would provide unambiguous clarification would be to provide a guidance document that states a dose based minimum sensitivity requirement for solid material radiological survey programs using a realistic pathway analysis rather than the current guidance that is based on contamination as measured in units of activity per unit surface area. In other words the current guidance is only lacking the basis for the stated sensitivity requirement. In order to be compatible with other regulatory requirements the revised guidance should be stated in terms of dose.

Specific comments on NUREG-1761 follow:

**Below Regulatory Concern Issue:**

One of the main weaknesses with this document is the assumption made throughout the document that the NRC will issue guidance on what levels of radioactivity are allowable in released material. The survey requirements contained in this document are the MARSSIM requirements that dictate use of state-of-the-art equipment to ensure detection of radioactivity below the value (assumed to be) provided by the NRC. This assumption demands that the NRC provide guidance that is similar, if not equivalent, to the "Below Regulatory Concern" (BRC) guidance that the NRC failed to provide in years past due to the political repercussions of such a guidance. The value of this document would be achieved if the NRC requires a minimum monitoring sensitivity specified as a potential dose.

Also consider the difference between a MARSSIM-based release process and current regulations: The application of 1761 would require the detection and reporting of activity well below the current guidance level, resulting in the documented release of radioactivity into the public domain. The current application of available guidance results in release of materials with "no detectable activity". The technical difference is of course the equipment used to measure the radioactivity, but the result is dramatic from the public perspective: is the material documented to be radioactively contaminated or documented to have no detectable radioactivity? However, use of state-of-the-art detection equipment to document minute amounts of radioactivity does not (arguably) provide any added benefit to public health and safety.

**Practical Application:**

This document mirrors MARSSIM in developing survey requirements, although for a different application. The MARSSIM, applicable to site release following decommissioning, is used once in the life of a facility. Release of materials from a facility is ongoing, presumably for decades. In practice, the NUREG would be used

once to develop survey requirements and then shelved. It is not practical to approach each release of material as a new, independent event for which the onerous process of DQO development, DCGL determination, selection of survey instrumentation, background determinations, etc. would be carried out. Note also that this could result in release criteria that vary widely from site to site, making it difficult to explain to the public, and difficult for the NRC to oversee. In practical use, the basic process would be developed once resulting in a proceduralized survey requirement for the release of material from each site. Compare this with the state of current regulations that have resulted in practical application of survey requirements that are consistent throughout the industry, and already incorporate most of the components of NUREG-1761, e.g., evaluation of inaccessible areas, impacted vs. non-impacted determinations, sampling for bulk activity, and setting appropriate MDA's.

Another real possibility is that application of this document in conjunction with NUREG-1640 and a low dose limit (1 mrem is a commonly proposed limit) would make surveying of material for release too costly to be practical, increasing the overall cost of nuclear power while providing no benefit to public health and safety.

**Documentation Requirements:**

Application of the MARSSIM to decommissioning resulting in license termination is a demanding, but in the end workable<sup>1</sup>, means to accomplish the unique and *singular event* of site release. Each facility faces site-specific situations for which the MARSSIM provides a solution. In contrast, material free release is not unique, not site-specific, nor a singular event: it is an ongoing *process*. Guidance would be much better served if focused on the documentation (and implied approval) of the free release *process*, rather than requiring onerous documentation on released materials that in many circumstances cannot be traced once released.

**The Background Issue:**

A major technical difficulty in applying the MARSSIM to the site release process is the determination of what constitutes background activity. Much effort has been spent by the industry in trying to develop a practical way of dealing with this issue in the site release process. However, for the vast majority of materials that will be released from a nuclear power facility, this is not an issue. Most of the materials that would be candidates for unrestricted release (outside of the decommissioning process) do not contain naturally occurring radionuclides<sup>2</sup>. Likewise, if the material can be removed from the site, it can

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<sup>1</sup> Or presumably workable, since MARSSIM has yet to be used to terminate a site license.

<sup>2</sup> Under current guidelines, the use of state-of-the-art equipment is necessary to determine that any radioactivity present is due to naturally occurring isotopes, and the detection of any radioactivity of site origin disqualifies the material from release considerations.

be moved to an area with relatively low background in order to perform the necessary release surveys. Therefore, the issue of background radiation is not applicable to the majority of materials that are candidates for release from a power facility.

**Survey Unit:**

When surveying a building or field for final release, it is easy to assign "survey units" in the application of MARSSIM. However, when a mechanic brings a handful of tools out of a radiologically controlled area, it is difficult to imagine imposing requirements to perform and document each of these steps: an historical assessment of the tools, determinations that identify this set of tools as a "survey unit", a determination on the classification of the survey unit (i.e., tools), develop through the DQO process a survey specifically for the survey unit (i.e., tools), determine appropriate material backgrounds for the survey unit (i.e., tools), determine DCGL's for the survey unit (i.e., tools), survey the tools, apply a statistical test based upon the survey results for the survey unit (i.e., tools), and have a committee determine if the tools may then be released from the controlled area. It is clear that this document does not provide guidance that is practically applicable to the circumstances at power reactor sites.

**Scanning Surveys:**

Section 5.2.3.1 implies that qualified technicians are not capable of accurately recording the results of a scan survey. There is no technical basis for this statement; it is clearly a statement of the opinion of the author(s). The nuclear power industry relies heavily upon the ability of technicians to be able to accurately document survey results.

**Industry Needs:**

What the industry could use is clear, unambiguous guidance from the NRC on the release issue. Unlike other processes at power reactor sites that are very site specific (e.g., liquid and gaseous effluents, and site release), release of solid materials for recycling, unrestricted landfill disposal, or for other uses could be dealt with universally. NUREG-1761 could provide the NRC with the technical basis to develop guidance for use by the industry, but the onerous MARSSIM-type process should not be imposed upon the industry for the free release of materials. The Rancho Seco procedures for release of materials based upon the available regulatory guidance provides a model for the industry for clear, practical implementation and has been used successfully during the decommissioning process to safely clear over 8 million pounds of material from the site.

Editorial Comments:

LINE 824: USE OF THE ALPHA CHARACTER VS. THE LETTER "A"

LINE 868: REFERS TO SECTION 10

LINE 1382: STRIKE "NOT" TO READ: "...TC-99 DOES NOT HAVE DIFFERENT CHEMICAL PROPERTIES..."

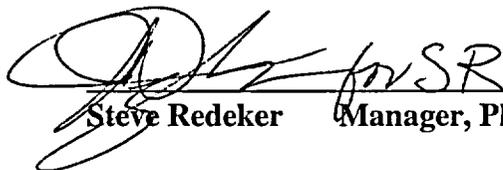
Line 1519: Table 4.4 vs. 9.1

Line 1552: Table 4.5 vs. 9.2

Line 2971: DCGL<sub>w</sub> vs. DCGL<sub>c</sub>

Line 3337: Table 6.3 vs. 12.3

Appendix A: figures A-2, A-3, A-5 have reversed graphs; figures A-2, A-3 have graph titles misplaced

  
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CC: RIC 1D.001