DEVELOPMENT AND USE OF GENERIC DOCUMENTS FOR ASSESSING THE IMPACTS OF TRANSPORTING NUCLEAR MATERIALS[a]

Theodore A. Wolff
Sandia National Laboratories
Albuquerque, NM 87185

ABSTRACT

Generic documents for assessing the impacts of transporting nuclear materials have both attractive and limiting features. The generic document approach, which involves developing compendia of information, can assist those who must deal with transportation issues in specific environmental documents or who need a general information source or a key to more detailed information. The generic approach does not eliminate the need for site-specific or project-specific analyses.

BACKGROUND AND OVERVIEW

In 1978, Sandia National Laboratories established a Transportation Technology Center (TTC) to support transportation responsibilities of the US Department of Energy's Albuquerque office (DOE/AL). Since its inception, the TTC has supported DOE nuclear waste management programs including development of environmental assessments and environmental impact statements.

The development of generic documents to assess transportation impacts supports the TTC's mission. One goal was to produce a complete, stand-alone document that could be referenced extensively when project-specific assessments were required. The National Environmental Policy Act (NEPA) of 1969, the basic national charter for protecting the environment, mandated the preparation of environmental documents that frequently required generic information about radioactive materials (RAM) transportation. Much of the TTC's early environmental assessment effort involved producing technical documents to assist federal agencies in meeting NEPA regulations and guidelines. The need for a generic transportation document was originally identified with NEPA compliance in mind.

In 1984, the author developed such a generic report (SAND84-0062).[1] Although the original goal in writing this report was to satisfy a need of the DOE's Defense Programs, the passage of the Nuclear Waste Policy Act (NWPA) of 1982, which charts the national course for developing repositories for disposing of high-level radioactive waste and spent nuclear fuel, requires preparing several environmental assessments. Consequently, an opportunity also existed to assist the DOE's Civilian Waste Program by providing a document that could be extracted from or referenced in the assessments required by the NWPA. The completed document is meant to serve both DOE Civilian and Defense Waste Management Programs. These programs are similar in that both involve the siting and construction of repositories and the eventual transportation of RAM to such facilities for disposal. Thus, information and analysis produced by one program are useful to the other.

DISCUSSION

A generic approach that involves developing compendia of transportation information and factors for use in site-specific or project-specific assessments is beneficial for several reasons:

- o System-wide issues can be addressed to meet legal requirements.
- o Expenses incurred by redundant efforts at project or program levels can be minimized.
- o Document preparation time can be reduced.
- o Accurate, concise, and consistent information can be provided.
- o Environmental documents can be "tiered" (a procedure to avoid duplication through incorporation by reference) to generic documents.
- o Credibility can be enhanced by consistent approaches and methods.

This generic approach is based on two premises: 1) an assessment of the impacts of transporting RAM can be separated from other specific aspects of a particular project; 2) generic documents can cover the entire range of nuclear materials to be transported.

In developing the generic transportation report, the author wrote 14 chapters to provide basic information about transportation of RAM. The completed document included discussions of 1) organizations responsible for transporting nuclear materials, 2) federal requirements and regulations, 3) RAM incident experience, 4) waste packaging systems, 5) radiological and nonradiological impacts of transporting RAM under incident-free and accident conditions, 6) emergency response, and 7) financial responsibility for transportation incidents. Whenever possible, primary sources of information were cited.

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In late 1984, DOE's Office of Civilian Radioactive Waste Management (OCRWM) issued nine draft environmental assessments (EAs) of potentially acceptable repository sites for spent nuclear fuel and high-level radioactive waste.[2] These assessments were prepared as required by Section 112 of the NWPA. In these draft EAs, RAM transportation impacts are discussed in the main body of the documents. The basic factors used in the specific assessments, and other generic information, were provided in a transportation appendix (Appendix A) common to all nine draft EAs. Supplemental references to more detailed sources of information including SAND84-0062 were provided and the generic document was excerpted.

In August 1985, the DOE Defense Transuranic (TRU) Waste Program issued a "Transuranic Waste Transportation Assessment and Guidance Report" (TAGR)[3] to address system-wide issues involving the shipment of TRU waste to the WIPP.[b] As one of the TAGR's authors, I extracted, referenced, expanded, and tailored information contained in SAND84-0062 to the TRU document. The resulting TAGR was released in late 1985 and provides a reference document to assist TRU-waste-generating and -storage sites in their NEPA documentation by providing a reference source in preparing site-specific documents.

To date, this generic approach has proved useful in developing

- spent-fuel and high-level waste documents,
- generic documents dealing with institutional issues,
- an approved and consistent set of information and data for use in preparing and presenting reports, and
- discussions with public officials and others.

Currently, the author is using this approach to compile a handy reference containing a compendium of facts and summaries of facts about transporting TRU waste for use as a resource manual by the DOE/AL Joint Integration Office.

GENERIC DOCUMENTS DEALING WITH INSTITUTIONAL ISSUES

Since 1978, Sandia's TTC has identified, defined, documented, and analyzed institutional issues affecting transport of nuclear materials. This work is now being accomplished under DOE/AL sponsorship.

Within the last 12 months, a series of generic documents dealing with institutional issues has been prepared and published under Sandia's direction. These documents provide information on specific institutional issue areas and serve as sources that can be referenced or quoted in site-specific or project-specific assessments. Much of this published institutional issues work can be divided into four categories:

1. Nuclear Transportation and Federal Preemption

   In the United States, the doctrine of federal preemption grows out of the Supremacy Clause of the United States Constitution. State or local transportation restrictions can also be found in violation of the Commerce Clause of the United States Constitution. This power of the Federal Government to eliminate or supersede state or local laws is usually referred to as "preemption". Sandia's contractor-assisted work has included research and analysis of issues involving nuclear transportation and federal preemption.[4, 5]

2. State and Local Notification Requirements for Transporting RAM

   In the United States, most state and local regulations requiring notification of shipments of RAM are of recent origin. Several such requirements have been reviewed and found to be inconsistent with federal laws. Sandia and the US Department of Transportation have jointly supported a contractor-produced assessment of notification requirements.[6] The US Nuclear Regulatory Commission's state prenotification requirements and US DOT postnotification requirements are also included in contractor reports.[7, 8]

3. Insurance-Indemnity Coverage for Nuclear Transportation

   Recently much interest has been expressed by state officials and public interest groups regarding the complex system of insurance-indemnity coverage for transporting nuclear material. This interest has largely been generated by the hearings before the US Congress to consider extending the Price-Anderson Act (the unique system of private insurance or Federal Government indemnity for public liability associated with nuclear material) beyond its expiration of August 1, 1987. Sandia has also supported research and analysis of indemnity-liability issues.[9]

4. Emergency Response to Accidents Involving RAM

   Emergency response to a transportation accident involving RAM concerns state and local officials. Of particular interest are the response capabilities needed by state and local communities and, in particular, the level of readiness required along routes of RAM shipments. Sandia has participated in emergency response research efforts in this area and has supported activities of contractors.[10]

The above institutional issues present potential barriers to the transport of nuclear materials in the United States, particularly in nuclear waste management programs.

While there is still much specific investigation that needs to be completed regarding how a particular site or project is affected by a given issue, generic treatment of such issues provides a starting point for pursuing a more detailed analysis. For example, a generic document can discuss the federal, state, and local organizations involved in the safe transport of RAM, but specific

[b] According to the authorizing legislation (PL 96-164), WIPP is for the express purpose of providing a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from the defense activities and programs of the US. The project is located at the Los Medanos Site in the Delaware Basin of southeast New Mexico near Carlsbad.

state or local requirements could not reasonably be included.

CONCLUSION

Generic transportation documents will need periodic revision for the following reasons:

- o Applicable laws and regulations may change.
- o Assessment methodology may evolve and provide more precise estimates of impacts.
- o Input data necessary for calculating transportation impacts may be refined.

Since transportation analyses can be largely self-contained and independent of projects, a generic transportation approach could be used to develop compendia of information for

- o packages (strong, tight, Type A or Type B),
- o alternative transport modes such as truck, rail, water, or air,
- o institutional-issue categories including
  - emergency response to RAM transportation accidents,
  - training needed to support activities related to nuclear materials transportation, and
  - state, tribal, and local transportation regulations.

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