

OPTIONS FOR INVOLVEMENT IN PHASE I AND LICENSING OF PHASE II

On December 4, 1995, the Department of Energy (DOE) briefed the staff on plans to privatize two future Hanford tank waste remediation systems (TWRS), possibly using different technologies. The purpose of the TWRS is to immobilize highly radioactive tank waste from the Hanford site in a safe, environmentally sound, and cost-effective manner. These TWRS will be designed, constructed on the Hanford reservation, owned, and run by government contractors in two phases: Phase I, pilot-scale facilities and Phase II, full commercial operations. DOE has proposed that the Nuclear Regulatory Commission license Phase II and has requested NRC to determine the appropriate level of NRC involvement in Phase I before its issuance of a request for proposal on February 15, 1996.

The objective of Phase I will be to demonstrate the "proof-of-concept" and commercial viability of the contractor proposals. During Phase I, two pilot-scale plants will be designed and constructed by separate competing contractors to demonstrate separation of "low-activity" waste (LAW) from high-level waste (HLW) sludge and to immobilize the LAW. DOE's current schedule requires: (1) selection of two contractors in December 1997, (2) construction of facilities beginning in December 1999, and (3) hot operations starting in June 2002 and ending in 2012. DOE proposes to undertake Phase I with a level of involvement from NRC that NRC determines is appropriate.

Phase II will involve the construction and operation of two full-scale commercial HLW immobilization facilities by separate competing contractors. These facilities will be owned and operated by the contractors. DOE proposes that NRC license the Phase II facilities. Procurement for these new facilities is not expected to begin until 2002, with hot operations starting in December 2009.

Based on DOE's request, the staff has evaluated various strategies in which to involve itself in the Phase I activities and determined a proposed strategy. A description of the proposed strategy and its alternatives, as well as resource commitments, is shown below. Figure 1 is a summary of the resource commitments.

Proposed Strategy

The staff does not propose to license Phase I; however, much of staff's involvement would be similar to preparing an actual license. NRC and DOE would enter into a procedural agreement to establish arrangements for review and consultation by NRC with respect to Phase I activities. This agreement would provide minimally for the following: (1) a description of the responsibilities of both parties; (2) submission of documents, or other information, for review that would be expected to be provided in a normal licensing process; (3) arrangements for meetings under NRC's policy for "open

meetings"; (4) access and space at the site as necessary to monitor project activities for onsite NRC observers; and (5) guidelines for issue resolution. This agreement would likely be in the form of a Memorandum of Understanding (MOU) similar to those MOUs previously arranged with DOE for oversight of the West Valley Demonstration Project and the High-Level Waste Repository Program (HWRP).

During DOE's procurement process, the staff would begin development of an overall review strategy, similar to that presented in NUREG-1495, "Overall Review Strategy for the NRC HWRP," which would be available as guidance for DOE's contractors in December 1997. This document would be developed in relation to the staff's expectations of future licensing and may require multiple revisions throughout Phase I as the staff becomes more experienced with the technologies selected for solidification. Throughout Phase I, the staff would be expected to perform reviews (similar to safety evaluation reports) in response to DOE submittals. These documents would be expected to be referenced during licensing activities for Phase II.

Before completion of DOE's procurement process for Phase II (not expected to begin before 2002), the staff would expect to have gained enough experience in the pilot projects to expedite review of Phase II. This experience would be used to develop regulatory guides during Phase II that would be provided to DOE contractors and to implement any necessary changes to current NRC regulations.

Under the proposed strategy, the staff will expend only minimal resources, expected not to exceed 1 full-time equivalent (FTE), unless specific resources are appropriated for further action during FY 1996. These resources will be used to monitor the DOE procurement process. During FY 1997, the staff will require approximately 13 FTE and 2,000,000 dollars contract support for the development of generic information, including a review plan. After selection of DOE contractors in December 1997, the staff is expected to commit, on average, approximately 15 FTE and 2 million dollars contract support per year in total funds. After the onset of Phase I hot operation in the year 2002, the resource requirements dedicated for Phase I would be reduced to approximately 6 FTE per year to continue onsite monitoring of the facilities and to facilitate review of any changes resulting from operating experience.

In the year 2002, resources dedicated for Phase II review are expected to increase to levels similar to those used in Phase I. Despite the larger scope of the project, experience gained from Phase I interaction should help reduce overall resource needs. The largest commitment of these resources would be for the development of National Environmental Policy Acts (NEPA) documents and hearing preparation (if necessary). However, DOE has suggested that they may not limit Phase II technologies to those used in Phase I. This may require a larger outlay of resources for Phase II review beginning sometime after 2002.

Alternatives to the Proposed Strategy

Licensing Phase I

Based on the staff's evaluation, if licensing were required during Phase I the staff would not consider the licensing of the Phase I effort to be viable on the schedule proposed by DOE. NRC regulations would require adherence to certain prescribed processes, including compliance with NEPA requirements and

public involvement, which would effectively preclude the staff from licensing Phase I on a time schedule consistent with DOE's planned schedule.

The licensing of Phase I would require as much as an additional 5 FTE and 1 million dollars per year above the commitments in the proposed strategy, primarily for NEPA activities and public interaction. Such activities would likely also extend the need for the resources for a longer period than the proposed strategy as it is unlikely that the staff could meet the current DOE schedule. Resources for Phase II would likely be slightly reduced from those used in the proposed strategy because much of the NEPA information prepared in Phase I could be used.

Monitoring Approach

The staff would commit resources necessary to review documentation and progress of the Phase I activities. The staff would not be committed to make any formal reviews or document the results of such reviews. The staff does not consider this the optimal approach because it allows minimally committed resources to be easily sidetracked and does not permit the staff to gain the expertise and experience which greater interaction would allow. This approach could cause delays in licensing Phase II because much of the guidance, information, and staff experience would need to be developed in the early stages, thus extending the overall review period.

Phase I would require as little as 3 FTE per year to keep pertinent staff aware of the developments during Phase I. However, resources for Phase II could increase by as much as 6 FTE and 2 million dollars per year over those resources used in the proposed strategy for the development of guidance and staff experience. Furthermore, it is expected that the required resources would be necessary over a longer time than that in the proposed strategy because of the delays from lack of appropriate guidance for DOE's contractors.

No Interaction Approach

The staff would not become involved in the review of Phase I activities. DOE would be expected to submit an application for Phase II in the future, at which point the staff would become involved. At that point, the staff would begin developing guidance and become familiar with the technologies used. The impact from this approach could be greater delays to licensing of Phase II activities than would result from the monitoring approach because the staff would not be cognizant of DOE's plans.

No resources would be required for this project through FY 2002. In the year 2002, an additional 12 FTE and 4 million dollars per year over the resources used in the proposed strategy would be expected to be necessary for the development of guidance and staff expertise. The requirement for these resources would likely be longer than that for monitoring.

	PH. I	PH. I	START	PH. II	PH. II	START	END	END
	PROCURE. (02/96)	CONTRACT AWARDED (12/97)	PH. I HOT OPS (06/2002)	PROCURE. (09/2002)	DESIGN (2004-8)	PH. II HOT OPS (2008)	PH. I OPS (2011)	PH. II OPS (2028)
	FY 1996	1997	1998	2002	2004	2008		2028
1) PROPOSED STRATEGY								
PHASE I FTE	*	13	15/yr					>6/yr
PHASE II FTE	0	0	0	0		12/yr		>20/yr
CONTRACT SUPPORT								>6/yr
								[\$2,000,000.00/yr]
2) LICENSING								
PHASE I								
PHASE I FTE	*		20/yr					>6/yr
								>5**/yr
PHASE II FTE	0	0	0	0		12/yr		>18/yr
CONTRACT SUPPORT								>6/yr
								[\$3,000,000.00/yr]
								[\$2,000,000.00/yr]
3) MONITORING								
PHASE I FTE			3/yr					
PHASE II FTE	0	0	0	0		26/yr		>6/yr
CONTRACT SUPPORT								>6/yr
								[\$4,000,000.00/yr]
4) NO INTERACTION								
PHASE I FTE	0							
PHASE II FTE	0	0	0	0		32/yr		>6/yr
CONTRACT SUPPORT								>6/yr
								[\$6,000,000.00/yr]

* Resource expenditure depends upon allocation of additional resources from OMB, otherwise only minimal resources (expected not to exceed 1 FTE) will be expended.

**Decommissioning Reviews

FIGURE 1. RESOURCE COMMITMENTS FOR VARIOUS LEVELS OF INVOLVEMENT