COMMISSION QUESTION 16 JUL 25 1991

MEMORANDUM FOR: Willard B. Brown, Acting Director
Program Management, Policy Development,
and Analysis Staff, NMSS

FROM: B. J. Youngblood, Director
Division of High-Level Waste Management, NMSS

SUBJECT: RESPONSE TO COMMISSION QUESTION 16
(9A1A, L20098)

Enclosed is the answer that has been prepared in response to Question 16 on the IRM portion of the FY93 budget items. This response has been coordinated by telephone with the License Support System Administrator. If you have any questions about the response, please contact D. L. Chery, Jr. at extension 23461.

/s/

B. J. Youngblood, Director
Division of High-Level Waste Management, NMSS

Enclosure:
As stated

cc: D. Loosley, PMDA/NMSS
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QUESTION 16. Pages VIII-116 and 147, Item 7. Explain what high-level waste management information system is and its relationship to the Licensing Support System.

ANSWER.

The Division of High-Level Waste Management proposed advanced computer analytical review system will consist of high-performance computer workstations integrated with the staff's personal computers and special peripheral equipment, with special software packages and access to the necessary external data bases, to support the technical review of DOE's license application. This system will be capable of accessing, for the life time of the project, the complete DOE data collections, technical and performance evaluations, and engineering designs for the high-level waste repository. This system will use advanced scientific visualization methods, geosciences information manipulation software, complex natural system modeling programs, and sophisticated engineering design calculations in the technical reviews of radioactive waste sites and facilities.

Such capabilities are needed to synthesize or organize many thousands of physical measurements made in time and space to represent the three-dimensional geometry of the repository site.

These analyses are necessary to evaluate the technical adequacy of DOE's license application. Computer programs can project these collections of points as a three dimensional image on a high-resolution monitor. Such images can be turned, tipped, sliced, stripped-away and colored in many ways to assist the NRC staff in understanding and assessing DOE's approaches to data analyses. Further, processes occurring in the natural system are also measured, or derived from extensive measurements of related parameters, in space and time. Examples of such processes are ground-water flow, and the locations and magnitudes of earthquakes. Review of such technical data is fundamental to a technical staff evaluation. The use of capabilities planned for the advanced computer review system will considerably enhance the efficiency, accuracy and results of the reviews. As an example, one staff member has spent weeks preparing one cross-section for a ground-water flow modeling analysis. With the planned capabilities, many such cross-sections could be prepared in minutes, and the staff would be able to view the problem from many perspectives. Similar evaluations can be made of the engineered structures and facilities. With such resources, the staff could develop better independent insight and direct more focused inquiries to the licensee.

The planned system will enhance staff capabilities to examine couplings between phenomena by providing a mechanism to analyze data within specific disciplines and then integrate between

disciplines. This will be particularly valuable in contributing to comprehensive assessments of the repository performance against the performance objectives of 10 CFR Part 60. Also, DOE is now developing advanced computer capabilities to facilitate and expedite its technical analyses and engineering designs. For NRC to be able to receive and review information prepared by such systems, it needs to plan and develop its own computer systems (hardware and software) capabilities accordingly.

The relationship of the DHLWM advanced computer review system to the Licensing Support System (LSS) is complementary. However, because of the different functions of the two systems, hardware and software requirements are substantially different. The LSS is a very large archival storage and retrieval system that stores the electronic version of documents (text and images), permits on-line searching of text, provides on-line retrieval of both text and images, and provides E-mail during the hearing. The LSS would provide efficient handling of very large quantities of documentary information for both discovery and technical review. The LSS system was never intended nor can it, in its current design, provide for the manipulation of or make calculations with technical data. Also, LSS will not provide the geosciences information data bases and other important technical data bases. The LSS, when implemented, would be the major source of reference documents for the technical review process (it may also contain pointers to some scientific and technical data). In the report, "DHLWM Computer

Hardware and Software Functional Needs and Some Proposed Specific Needs," one of the specified capabilities is that the DHLWM advanced computer technical review system have the capability to connect with the LSS, when it becomes available, to access and retrieve information from the documents stored there.

The staff suggests that item 7 on page VIII-147 of the IRM FY93 budget items be expressed as follows, which may avoid misinterpretation:

> "..., the Division of High-Level Waste Management ~~information~~ advanced computer analytical review system, ..."

NMSS
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