CRANFORD

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MEMORANDUM FOR: Gerald F. Cranford, Director
Office of Information Resources Management

FROM: Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

SUBJECT: TECHNOLOGY ADVANCEMENT INITIATIVE

I have reviewed your proposed memorandum from Hugh L. Thompson to James M. Taylor regarding the work of the Technology Advancement Board (TAB), and TAB plans for assisting the Office of Information Resources Management (IRM) in presenting a Technology Advancement Workshop this spring. Overall, I strongly support the TAB, the TAB charter, and the continued participation of Donald L. Chery as the representative on the TAB for the Office of Nuclear Material Safety and Safeguards. Further, I support the Technology Advancement Workshop objective and program description, and consider that the plan to hold the workshop in the Washington metropolitan area is an ideal way to ensure NRC staff and management participation and attendance. However, considering the amount of time required to plan and coordinate such a workshop, it may not be feasible to hold it this spring.

In addition, I think you should be aware that members of the Division of High-Level Waste Management (DHLWM) staff recently met with Commissioner Rogers where he asked about the status of the Division's computer capabilities. As a follow-up to that meeting, the EDO provided to Commissioner Rogers a memorandum that responded to his questions and described the pilot program being developed by DHLWM in coordination with IRM (Enclosure 1). Because of the importance of high performance technical computing in supporting the development of our review capability in NMSS programmatic areas, such as high-level and low-level waste, I recommend that the charter be modified to emphasize the development of NRC technical computing technologies in addition to "...information technologies..." that are already mentioned in the charter. The focus of the charter should also be broadened to include potential non-industry licensees such as the Department of Energy (see mark-up, Enclosure 2).

If you have any questions please contact me (504-3352) or Dr. Chery (504-3461).

(Original signed by: Robert M. Bernero)
Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosures:
As stated

DISTRIBUTION (NMSS-9200204)

Central Files	HLHP r/f	NMSS r/f
PDR & LPDR	CNWRA	ACNW
BJYoungblood, HLWM	JJLinehan, HLWM	RBallard, HLGE
MFederline, HLHP	JHolonich, HLPD	DChery, HLHP
DBrooks, HLHP	TLSS	CJenkins, PMDA

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bcc: S.Cornell & G.Beveridge, PMDA

OFC :	HLHP	: HLHP	: HLWM	: HLWM	: NMSS	: NMSS
NAME:	DBrooks/cj	: FVFederline	: JLinehan	: BJYoungblood	: GArlotto	: RMBernero
Date:	4/16/92	: 4/16/92	: 4/ /92	: 4/16/92	: 4/17/92	: 4/21/92

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PDR WASTE PDR
WM-1

MEMORANDUM FOR: Commissioner Rogers

FROM: James M. Taylor
Executive Director
for Operations

SUBJECT: PRESENT HIGH-LEVEL WASTE PROGRAM COMPUTER SUPPORT CAPABILITY

On January 27 and 28, 1992, you visited the Center for Nuclear Waste Regulatory Analyses (CNWRA). When you returned and met with the staff on March 4, you expressed a desire to know the present status of the computer capability for the High-Level Waste Program. This Program involves the Division of High-Level Waste Management (DHLWM), the Waste Management Branch in the NRC Office of Research (RES), and the Center for Nuclear Waste Regulatory Analyses (CNWRA). As you are aware from your visit, the Center is now in the process of designing an advanced computer system for the DHLWM as one of the advanced computer pilot projects recommended by the Commission. The first subtask of this task is updating the determination of the Division's computer functional needs and the inventory of existing computer capability in preparation for developing an advanced computer system design. As soon as this subtask is completed, we can provide you with a comprehensive status of the Division's computer capability; however, in the interim, the enclosed brief status of the present computer capability for the Program is provided for your information.

The design of the DHLWM advanced computer review system, the procurement of specified hardware and software, and the implementation of these components through coordination with IRM, along with development and training of staff will serve as a prototype demonstration of the utility of such capabilities. It is anticipated that the Research high-level waste management program and possibly other offices in NRC can benefit from the computer capabilities and experience gained in this prototype endeavor.

/S/
James M. Taylor
Executive Director
for Operations

Enclosure:
Status of the HLW
Program Computer
Capability

cc: The Chairman
Commissioner Curtiss
Commissioner Remick
Commissioner de Planque
SECY
OGC

9104150911

*See previous concurrences

OFC :	D/HLWM*	:D/DNMSS*	:D/NMSS*	:EDO
NAME:	BJYoungblood	:GArlotto	:RMBernero	:JMTaylor
Date:	3/27/92	: / /92	:3/31 /92	: 4/ /92

OFC :	HLHP*	:HLHP*	:HLHP*	:RES*	:CNWRA*	:D/DHLWM*
NAME:	DChery/ga	:DBrooks	:MVFederline	:MSilberberg	:RJohnson	:JJLinehan
Date:	3/26/92	:3/27/92	:3/27/92	:3/27/92	:3/27/92	:3/27/92

STATUS OF THE HIGH-LEVEL WASTE PROGRAM COMPUTER CAPABILITY

March 23, 1992

Introduction

The Nuclear Regulatory Commission is responsible for licensing a geologic repository for the disposal of commercial high-level radioactive waste. To accomplish this responsibility, it is necessary to develop the staff capability as well as the methodology to independently review the technical evaluations and findings about the natural system and the repository design submitted in DOE's license application. In addition, NRC will comment on and provide guidance to DOE on the completeness and adequacy of the site characterization program and engineering design. Because of the complex technical issues of a multi-disciplinary nature involved in assessing the future performance of the repository over the long period of regulatory interest, advanced computing capability will be required.

Division of High-Level Waste Management

The Division of High-Level Waste Management (DHLWM) has the responsibility for developing the regulatory framework, including the technical basis, for licensing a high-level waste repository, as well as providing prelicensing consultation and guidance to DOE.

Presently, the DHLWM has three (3) dual floppy 8088 IBM Personal Computers (PCs), forty (40) 286 PCs with, in general, 20 megabyte (MB) hard-disks, nine (9) 386/20 PCs with, in general, 100+ MB hard-disk and math coprocessors, and one 486/33 EISA PC with a 200 MB hard disk. Basically only the nine 386 and one 486 PCs are useful for the technical analytical work and can support some of the graphics requirements. The staff has access to the mainframe computer at the National Institutes of Health (NIH) and the supercomputer (Cray) at Idaho Nuclear Engineering Laboratory (INEL).

The DHLWM now has 20 of the PCs "3270 channel" (directly) connected to the NRC 9370 computer system which provides direct use of the "PROFS" system and limited access to some networks. Nineteen (19) other PCs have ANS connections or modems and can connect with the PROF's system with communications software. The ANS connections would have functions similar to the "channel" connections and those with modems could make any modem to modem connection. For 3 PCs with ANS/modem and another 3 PCs without any connection, plans are underway for "3270 channel" connections. With the completion of the planned 6 connections, 45 of the Division's 53 computers will have some type of communications capability, but mostly of the type

not well suited for modeling activities (exchange of large data bases) and have limited graphics capability. There is no direct connection with RES. There is limited communications capability with the Center for Nuclear Waste Regulatory Analyses (CNWRA). There is no local area networking of the PCs in the Division which is a constraint on the collaborative development of complex analytical methods and common use of large files of data and information.

Office of Research, Waste Management Branch

The Waste Management Branch (WMB) of the Office of Research is responsible for initiating and managing research programs with respect to the design, qualification, construction, inspection, testing, operation, and closure of waste disposal and uranium recovery facilities. It also responds to specific research needs requests from the licensing office and participates in developing staff capability in certain modeling and analytical activities.

For these responsibilities, WMB has four 286 PCs, five 386 PCs (all with math coprocessors) and one 486 PC. RES has modem connections for five of its ten PCs. Through these modem connections, RES staff uses the mainframe computers at NIH and INEL's Cray computer. WMB has no channel connections to the NRC 9370 computer and has no direct communications link with the DHLWM or the CNWRA.

WMB has attempted for the past three years to obtain a computer work station (SUN type computer) on which to do the advanced natural systems (flow and transport) modeling that they have been pursuing as part of the iterative performance assessment activity. In general, WMB computer/communications capabilities are limited for the necessary applications.

CNWRA

The mission of the Center for Regulatory Analyses (CNWRA) is to independently support the NRC in fulfilling its responsibilities of licensing a high-level nuclear waste repository with "high-quality research and technical assistance." To support these activities, the Center has an office automation local area network (LAN) consisting of IBM PS/2 Models 50, 70, P75, 80, 90 with 30MB, 120MB, 400MB, 325MB and 400MB hard disks respectively. In addition to the PCs, the Center has a Silicon Graphics IRIS 210vgx workstation, a SUN Sparc-2 workstation and eleven SUN IPC and IPX workstations, a Compaq 386, a Macintosh and 3 portable PCs to support its technical activities and research. For data digitation, the Center has a Summa Graphics 48"x60" graphics/digitization table. The Center staff use the Cray computers at INEL and Los Alamos National Laboratory (LANL).

Within the Southwest Research Institute (SwRI), PCs and workstations are linked via a fiber optic network; external linkage is provided by a leased line from San Antonio, Texas to White Flint for accessing the Program Architecture Support System and Program Architecture Data Base for the Systematic Regulatory Analysis and PROFS as well as for project management. The SwRI network is linked to Internet. An Ethernet LAN is operational at the Center. Most of the PCs and workstations are directly connected or have modems that permit dial-up communications with other computer systems across the country.

In general, the Center has designed and procured appropriate hardware and software to support its analytical work and to provide communications within their offices for the PCs and workstations.

ENCLOSURE-2

CHARTER FOR THE TECHNOLOGY ADVANCEMENT BOARD OF THE UNITED STATES NUCLEAR REGULATORY COMMISSION

A. MISSION

The mission of the Technology Advancement Board (TAB) is to assist the Nuclear Regulatory Commission (NRC) in the coordination and implementation of computing technologies as they evolve and information exchange that support the agency's objectives. The TAB will advise the Office of Information Resources Management and the program offices in the development and deployment of new technology services, including intra-agency uses and the use of technology to facilitate the sharing and exchange of information with licensees, the nuclear industry, the States, Federal agencies, and the public. The TAB will also assist in the development of strategic plans for mission-related computing and electronic media support and in the coordination and integration of agencywide program needs for mission-related information technologies.

technical computing and

The TAB will be composed of representatives from the Offices of Information Resources Management (IRM), Analysis and Evaluation of Operational Data (AEOD), Nuclear Materials Safety and Safeguards (NMSS), Nuclear Reactor Regulation (NRR), and Nuclear Regulatory Research (RES). The representatives will be drawn from the technical staff and will have proficient knowledge of the information technology industry and regulatory applications that support program requirements. Members of the TAB will be appointed by their office directors and will serve on the TAB until replaced by the director of the office that appointed them. An alternate TAB member will also be designated by the office director. Other NRC offices that have active programs may, at the discretion of the office director, appoint ex-officio members to advise the TAB on the activities of their offices.

B. OPERATION

The TAB is organized and its activities are bound by this Charter, adopted by a majority of its members, and approved by the directors of the member offices.

TAB meetings will be held upon request by the Director IRM, generally quarterly. Meetings are generally open only to NRC personnel. To the extent practical, IRM provides the TAB such clerical and administrative support as is necessary and appropriate to discharge the Board's responsibilities. Minutes of the meetings shall be maintained to capture the consensus of the board. These minutes shall be sent to the Director IRM and copies to the member offices.

The TAB provides recommendations to enhance intra-agency coordination and integration of needs for mission-related information technology and facilitates intra-agency sharing of technology, data, and expertise to assist the program offices and IRM in conducting their responsibilities. The TAB also provides annual recommendations for mission-related information technology initiatives to the Director, IRM.

The TAB will utilize documents and reports relating to the NRC's information technology programs and policies. These include, but are not necessarily limited to, the NRC Five Year Plan, the NRC long range computer plan, the IRM planning call for information and advanced technology computing needs, and plans formulated by NRC offices.

C. OBJECTIVES

To better understand the direction nuclear industry and other potential licensees is taking in the use of ~~information~~ technology, the TAB will participate in industry programs that foster the advancement of information and technology exchange. Under the guidance of the Director, IRM, the TAB will serve as the NRC's central point of contact for technology exchange programs and will interact directly with industry. These exchanges will be coordinated with the program office areas of responsibility to insure unanimity. Strategies used by the TAB to foster information technology exchange will include:

(1) encouraging industry initiatives in the use of computer-related technologies and supporting program office activities that support the licensing and safe operation of nuclear facilities;

(2) fostering the use of computer technology by NRC staff to develop and maintain in-house knowledge of computer codes and techniques used by the nuclear industry in the design and operation of advanced reactors and other nuclear facilities;

(3) identifying appropriate means to obtain access to licensee databases for regulatory and NRC training needs, and addressing policy issues relating to electronic data exchange between NRC, licensees, and vendors;

(4) participating in industry's programs for developing information management systems requirements, and participating with industry, government agencies, and academic institutions in developing standards; and

(5) encouraging the development of methods for electronic submittal of new license renewal applications.

D. AMENDMENTS TO THE CHARTER

Amendments to this Charter may be initiated by any regular member of the TAB. Following the favorable votes of at least two-thirds of the current members, and subject to the approval of the directors of all the member offices, the amended Charter shall become effective.

Gerald F. Cranford
Date 4/7/92

Gerald F. Cranford, Director
Office of Information Resources Management

Date

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Date

Robert M. Bernero, Director
Office of Nuclear Materials Safety and Safeguards

Date

Edward L. Jordan, Director
Office for Analysis and Evaluation of Operational Data

Date

Eric S. Beckjord, Director
Office of Nuclear Regulatory Research