

February 24, 1998

MEMORANDUM TO: Margaret V. Federline, Deputy Director
Division of Waste Management, NMSS

FROM: Michael J. Bell, Acting Chief [Original signed by:]
Performance Assessment and High-Level
Waste Integration Branch
Division of Waste Management, NMSS

SUBJECT: FUNCTIONAL NEEDS ANALYSIS FOR DOCUMENT MANAGEMENT
AND RECOMMENDATIONS RELATED TO THE CONSOLIDATED
DOCUMENT SYSTEM (CDOCS) AND THE AGENCY DOCUMENT
ACCESS AND MANAGEMENT SYSTEM (ADAMS)

The Division of Waste Management (DWM) response to the Management Control Review (MCR) of the Office of Nuclear Material Safety and Safeguards (NMSS) Advanced Computer System (ACS) identifies that DWM management is to make a decision on whether to continue its support of the Consolidated Document System (CDOCS). The attached functional needs analysis provides background on the identified needs of the Office for document management. These needs are then discussed in the context of the functionality present in CDOCS and that foreseen for the Agency Document Access and Management System (ADAMS).

The need for a decision on CDOCS is driven by several factors. First, the accelerated deployment of ADAMS provides NMSS with the opportunity to reduce its expenditures on document management without compromising its ability to complete activities. Second, budget pressures have reduced the available funding for CDOCS and have precipitated a reevaluation of the long-term viability of the application. Third, the interim ACS strategy and the MCR identified concerns with CDOCS. Also, the proposed amendments to 10 CFR Part 2, Subpart J (published on November 13, 1997) would change the requirements that led to the development of CDOCS.

The following recommendations are made, based on the attached functional needs analysis:

- CDOCS should be shut down at NRC.
- NMSS should pursue CNWRA connectivity to ADAMS without establishing a replicating site at CNWRA.
- NMSS need not request an earlier ADAMS installation date than is tentatively scheduled for NMSS.

Attachment: As stated
CONTACT: James R. Firth, DWM/PAHL
415-6628

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Functional Needs Analysis: Document Management

EXECUTIVE SUMMARY:

Conclusions:

- Consolidated Document System (CDOCS) is no longer needed to meet mission-critical activities.
- CDOCS should be shut down at NRC. The shutdown should salvage the CDOCS database, as appropriate, and complete any needed documentation.
- Decisions on how the CDOCS database might best be moved into the Agency Document Access and Management System (ADAMS) should be deferred until after the initial review of file conversion issues is completed in conjunction with OCIO staff.
- There is no compelling need for the Office of Nuclear Material Safety and Safeguards (NMSS) to have an earlier ADAMS installation date than is tentatively scheduled.
- NMSS should seek to have staff conducting high-level waste (HLW) work to be among the first NMSS staff to have ADAMS.
- NMSS should pursue CNWRA connectivity to ADAMS without establishing a replicating site at CNWRA.
- An inventory of HLW-related documents in NUDOCS should be taken to determine the extent that full text documents are available. The results of this survey should be considered in evaluating the transfer of the CDOCS document database.

Background

This functional needs analysis is driven by three considerations. First, NRC requirements under 10 CFR Part 2 for the Licensing Support System (LSS) are under revision. Second, NMSS has identified problems and potential problems with the CDOCS, a document management tool developed to support the LSS. Third, NRC has accelerated the deployment of the ADAMS to address problems with applications susceptible to the "year 2000 problem." These issues will be discussed in greater detail below. The objective of this analysis is to provide a basis for decisions related to CDOCS and ADAMS.

The revision of 10 CFR Part 2, Subpart J has implications for the NRC document management requirements. NRC is required to make certain documentary material available in a centralized repository -- the LSS -- under the current regulatory requirements or to place this documentary material in an electronic information system (EIS) that is accessible to other participants in the expected hearings, as would be required under the amended regulation. The proposed amendment recognizes the changes that have resulted in the nearly 10 years since the initial publication of the Subpart J requirements. The changes provide NRC with additional flexibility and reduce the scope of the documents that must be provided electronically. Subpart J was

intended to provide a central, shared, federally funded database of licensing information beginning in 1995; the amended Subpart J requires that the EIS be in place and the information be available at the time of the site recommendation (currently expected in 2001).

CDOCS was developed by the Center for Nuclear Waste Regulatory Analyses (CNWRA) beginning in the late 1980s with the Technical Document Index (TDI). TDI was incorporated into the Technical Document System (TDOCS), beginning in 1991. Later, the Open Item Tracking System and the Regulatory Program Database were added to TDOCS; this combined application is called CDOCS. Advances in document management software are believed to have introduced cost effective replacements to CDOCS. Also, it is expected that ADAMS will eventually replace CDOCS and the CDOCS database would be incorporated into ADAMS.

In addition to the opportunities that may be available with ADAMS, a number of vulnerabilities have been identified with CDOCS. CDOCS consists of a code written in the C programming language that integrates several commercial off-the-shelf (COTS) software applications. These COTS applications were acquired from different vendors and compatibility between the programs was established within CDOCS. Upgrades in the COTS software could require the C code to be rewritten to reestablish compatibility, before the new version of the COTS software could be used within CDOCS. Use of the TOPIC upgrade would require a complete rewrite of the CDOCS C code. Currently, CDOCS incorporates WordPerfect 5.1, which has been superseded by later versions in the NRC infrastructure, and Verity TOPIC version 4.0.0c, which is no longer supported by its developer. Also, the original developers of CDOCS have left CNWRA, so any future changes to CDOCS would be more difficult to implement. Further, there have been difficulties in getting CDOCS fully operational on personal computers. Finally, problems have been identified for moving CDOCS into a Windows NT operating environment; NMSS will migrate to Windows NT as part of the ADAMS deployment in the near future.

NRC accelerated the deployment of ADAMS in the spring of 1997. This action was driven by the agency's need to address problems with applications susceptible to the "year 2000 problem." This decision to accelerate the ADAMS deployment was made after NMSS had completed its budget planning for FY98-FY01. In December 1997, details about the proposed functionality emerged. The introduction of ADAMS provides NMSS with several opportunities, however, NMSS must determine if its document management needs can be met with ADAMS and within the constraints of the draft implementation schedule.

ADAMS is based on FileNET Panagon, a COTS software suite. Panagon provides integrated document management, records management, workflow, and imaging services. The functionality in this suite extends beyond that currently available in CDOCS. However, a number of design and implementation issues for ADAMS remain unresolved. Therefore, it will be necessary to make assumptions on the capability of ADAMS and its availability to NMSS.

NMSS Functional Needs

Licensing Support System/Electronic Docket

The requirements for NRC to provide electronic access to documentary material under 10 CFR Part 2, Subpart J are pending publication of the final rule. However, changes have been proposed to take advantage of changes in the high-level radioactive waste program and

advances in technology. The proposed amendments to Subpart J are the basis for the following assumptions:

- NRC will be required to provide access to documentary material -- as defined in the November 13, 1997, proposed rule -- at the time of the site recommendation.
- The site recommendation will occur no earlier than September 2001.
- The NRC EIS will need to be operational 15 months prior to the site recommendation or 6 months prior if the earlier information is stored electronically and capable of being ported to the EIS.
- The following formats must be handled by the EIS:
 - full text [searchable] of documentary material¹
 - graphic-oriented documentary material
 - bibliographic headers for documentary material not suitable for imaging or full text, and
 - bibliographic headers for documentary material where:
 - claim of privilege is asserted
 - it constitutes confidential financial or commercial information, or
 - it constitutes safeguards information.
- The NRC EIS must be able to accommodate electronic information provided by other parties.
- Pending legislation may precipitate a need to have an EIS by August 1999 (see discussion, below).

There is the potential that legislation could change the schedule currently established for the Yucca Mountain site recommendation and license application. Currently, there exists a Senate bill (S. 104) and a House resolution (H.R. 1020) that have been passed by the Senate and the House of Representatives, respectively. These will have to be reconciled through conference before becoming law. Of the two, S. 104 establishes the more aggressive schedule, requiring the Department of Energy to publish a Record of Decision by October 31, 2000, and to submit a license application by October 31, 2001. This schedule would create a need for the EIS to be available as early as August 1999, assuming that the EIS would need to be operational 15 months before the Record of Decision is published. The current schedule calls for ADAMS to be installed throughout NMSS by March 1999. It is assumed that the ADAMS installation will be complete by September 1999. However, the transfer of the Nuclear Documents System (NUDOCS) to ADAMS may not be completed before September 1999. The assumed 15-month operational period can be compressed, if needed. Compressing the operational period is expected to increase the costs associated with preparing the electronic docket. The increase in cost will be determined by the actual schedule and the number and type of documents that

¹ Embedded text need not be searchable.

must be entered into the EIS. In summary, there is the potential for NMSS requirements to be impacted by the pending legislation.

Contract Management

Discussions were held with staff in Program Management and Policy Development and Analysis (PMDA) that manage the CNWRA contract. These discussions identified the current approach to maintaining working records and records disposition. There has been an effort within PMDA to move towards a "paperless office." Achieving this goal is still highly desirable. However, the contract can be adequately managed if the goal is not met or if an improved electronic filing system is deferred. The following assumptions are derived from the review of current PMDA activities and the identified needs:

- Current PMDA approach to managing documents will be adequate to manage the CNWRA contract over the next 2-4 years.
- Documents currently distributed to central file will be introduced into the Nuclear Documents System (NUDOCS) and available for searches and manual retrieval (microfiche).
- PMDA has a need to establish a historical repository of contract related documents that is searchable and electronic.
 - Repository need not capture all legacy documents.
 - Documents transferred with an established disposition of February 2000 could be added to the electronic repository, if needed.
- PMDA will gradually reduce its dependence on hard copy files.

Document Management at CNWRA

Any analysis of the functional needs for document management must include consideration of the needs of CNWRA. There are two aspects of CNWRA operations that must be considered. First, the document management infrastructure must support internal operations to allow CNWRA to perform its mission and to meet its obligations. Second, CNWRA activities include a close working relationship with NRC staff and the infrastructure must support the coordination necessary to allow CNWRA to support NRC in the fulfillment of the NRC mission.

CNWRA has provided NRC with information regarding its document management needs. The following assumptions are derived from the CNWRA input:

- CNWRA has proprietary and confidential information that:
 - cannot be shared with NRC
 - relates to the CNWRA work for others
 - cannot leave direct CNWRA (or Southwest Research Institute) control, and
 - is restricted from unauthorized users.

- Deltek's Costpoint project accounting software will be used by CNWRA to manage and maintain CNWRA financial data and records.
- Quality assurance requirements necessitate that CNWRA be able to search against the header information.
- CNWRA must retain access to the NUDOCS database.
- CNWRA must retain access to Regulatory Information Distribution System (RIDS) documents and continue to get documents distributed through RIDS.
- CDOCS is used as the CNWRA library catalogue system.

Document Management at NRC/NMSS

The document management needs within the Division of Waste Management (DWM) have been reviewed. These needs can be characterized as current needs and future needs. Future needs arise from the statutory requirement -- established in the Nuclear Waste Policy Act -- for the timely review of a license application for a geologic repository for HLW disposal. The evaluation of these future needs is necessarily speculative. However, the requirements for the electronic docketing will provide an infrastructure that will support some (or all) of the additional staff requirements for document management during licensing. The following assumptions are made about document management needs in NMSS:

- Current NMSS document management practices are adequate (excluding LSS/electronic docketing demands) for current activities.
- Document management needs in DWM are greater than for other divisions within NMSS; the needs for HLW licensing are greater than the other needs within DWM. Unique needs for specific divisions are adequately served using current systems that are actively used by that division.
- The Viability Assessment review can be accomplished using current document management practices.
- DWM technical staff will not require enhanced document availability (i.e., searchable access and retrieval to electronic reports) before the site recommendation.
- The EIS established under 10 CFR Part 2 Subpart J will be available for staff use and will be adequate to meet staff needs for efficient electronic access to information during the license application review.

Description of CDOCS Functionality and Current Use

CDOCS provides full-text search and retrieval capability for documents stored as full text. Searches can also be conducted against header files. CDOCS provides a mechanism for synchronizing document databases at CNWRA and NRC.

CDOCS is used at CNWRA. CNWRA relies upon CDOCS to provide a searchable file of headers as established by quality assurance requirements. CDOCS is also used as a cataloguing system for reference material. However, the full-text search and retrieval capabilities of CDOCS has only limited use at CNWRA; this functionality has been identified as desirable, but not required by CNWRA. CNWRA has indicated that cost effective alternatives to CDOCS may be available, provided that the requirements imposed by synchronization are removed; that is, the quality assurance requirements and the cataloguing requirements can be replaced.

The CDOCS database includes documents related to HLW, uranium recovery (UR), and tank waste remediation systems (TWRS); the database is partitioned so that documents can be withheld from CNWRA (by NRC) or from NRC (by CNWRA). The majority of documents available to NRC in the CDOCS database are pertinent to HLW work. A small number of UR documents have also been added to CDOCS. A very limited number of TWRS documents are resident in the CDOCS database. Documents from the Fuel Cycle Safety and Safeguards, Industrial and Medical Nuclear Safety, PMDA, and Spent Fuel Project Office (SFPO) divisions have not been regularly placed into CDOCS. These divisions have not substantially relied upon CDOCS in the conduct of their work. Therefore, CDOCS is not required for these divisions to continue to satisfy their mission. In contrast, DWM has added documents to the CDOCS database. However, problems associated with the use of CDOCS have been identified. A number of these problems relate to loading documents into the CDOCS database. Document loading problems include: (1) the quantity of documents being loaded into the database has been lower than anticipated, (2) the cost of adding documents to the database has been greater than anticipated; and, (3) contrary to expectations, recent products have not been routinely added to the database. Other problems relate to the use of CDOCS, specifically, that staff use of CDOCS has been very slight and the technical staff has not had the need or the inclination to rely on CDOCS to perform their work. CDOCS has not been found to satisfy any critical need within NMSS that could not be met through other means without hardship. Also, NMSS does not need to maintain continuous access to the CDOCS database and would be able to meet its needs even if the CDOCS database were unavailable for an extended period of time. It is prudent and desirable to minimize any period of unavailability.

CDOCS does provide a repository of electronic documents and technical reports that is accessible to NMSS staff. Hard copies of the reports in general use are maintained by the appropriate staff. It is possible that reports may become less accessible over time. However, the full text reports in CDOCS are expected to remain accessible (in hard copy) over the next two years, which would be sufficient time for the important elements of the CDOCS database to be moved to ADAMS and to become accessible to NMSS staff through ADAMS.

The discussion above does not include the role of CDOCS as it relates to the requirements under 10 CFR Part 2, Subpart J. The LSS was envisioned to become operational in 1995. This

has not occurred. Also, the proposed changes in Subpart J would give NRC additional time to develop an operational system and would increase the flexibility that can be exercised in establishing an EIS. Technology and the functionality of software applications are both expected to continue their advance. COTS software developments have already advanced to provide an adequate approach to meeting the Subpart J requirements. In the absence of HLW legislation, ADAMS is expected to have the necessary functionality and to be operational in sufficient time for NRC to establish an EIS to meet its requirements under Subpart J. ADAMS will establish a docket for the HLW licensing through its electronic hearing functionality. This "HLW library" will be within the NRC firewall. A copy of the library will also be placed outside the firewall, making its contents accessible to the public for search and retrieval. Therefore, the need for CDOCS to support the LSS (or EIS) will be removed by the revision of Subpart J, and there is not a strong need to retain CDOCS to act as a foundation for the EIS.

Ancillary to the discussion of CDOCS functionality is the availability of document capture (scanning). CNWRA and NMSS staff have used the capability to scan documents, which was established as part of the CDOCS infrastructure. In some instances, optical character recognition (OCR) was performed on images to create a working document. This capability does not require the existence of CDOCS and could be retained. Document capture and OCR will be available under ADAMS in some form (see below). OCR has not been identified as a critical need for NMSS or CNWRA.

Conclusions:

- CDOCS is no longer needed to meet mission critical activities.
- Decisions on how the CDOCS database might best be moved into ADAMS should be deferred until after the initial review of file conversion issues is completed in conjunction with OCIO staff.
- CDOCS should be shut down at NRC. The shutdown should salvage the CDOCS database, as appropriate, and complete any needed documentation.

Description of ADAMS Functionality

ADAMS is built around FileNET Panagon (COTS software). Panagon includes document management, records management, workflow, and imaging services.

The document management component will provide the following capabilities: search and retrieval, version control, archive and reclaim, security services and intranet/internet search and retrieval access.

The records management component will: maintain National Archives and Records Administration retention/disposition schedules, review active records for disposition, review locally retired records for disposition, manage an index of locally retired records, and create document profiles.

The workflow component will allow: work to be assigned to a person or a group, documents or images to be attached, instructions and responses to be defined, workflow actions to be tracked. It will also allow workflows to be saved and reused. These capabilities are not currently available. They do not represent critical needs for DWM. However, the review of the license application for Yucca Mountain could be expedited through the functionality provided by the workflow component. Although it is likely that the license review can be accomplished without workflow management, the current statutory requirement for the length of time available for NRC's review makes it extremely important that this functionality is available during the license application review.

The imaging component of ADAMS will provide: batch scanning, document/image annotation, image manipulation, and [on-the-fly] optical character recognition. This functionality is expected to allow, if necessary, PMDA to move documents with a disposition schedule to ADAMS before the documents are destroyed. The two-year disposition schedule for documents establishes February 2000 as the date by which PMDA would need to have the capability to transfer hard copies of records into ADAMS. The ADAMS schedule indicates that the functionality should be available well before the February 2000 deadline.

Conclusions:

- There is no compelling need for NMSS to have an earlier ADAMS installation date than is tentatively scheduled.
- NMSS should seek to have its staff conducting HLW work to be among the first NMSS staff to have ADAMS.
- There are no identified needs requiring NMSS/DWM to maintain a separate system to obtain critical functionality not offered by ADAMS.

CNWRA and ADAMS

It is clear from the identified needs of CNWRA, that some access will be required through ADAMS. The best approach to meet the CNWRA needs has to be ascertained. This is evaluated on the following criteria: What are the CNWRA functional needs particular to ADAMS? What are the costs associated with meeting those costs? Are there legal or other issues that make one approach preferred over another?

ADAMS is still in development and several technical issues remain to be resolved. Therefore, it is necessary to make several assumptions:

- Panagon will allow multiple distinct libraries to be established. Four libraries can be established on a single Windows NT server. Additional servers at NRC headquarters can be established to increase the number of available libraries. Currently, OCIO plans to establish one server.
 - NMSS will be able to acquire the use of one library for LSS-related documents,
 - CNWRA would have access to this library, and

- CNWRA access to the library can be limited through the available security in the Panagon environment, if a full library is not available.
- Panagon will allow some outside users (e.g., CNWRA, on-site representatives) to have access to additional functionality, specifically check-in and check-out procedures.
- The important documents within the CDOCS database can be incorporated into ADAMS through file conversion or reentry.
- A central document processing capability will be established by OCIO.
- RIDS will be terminated; the functionality will be retained in the workflow portion of Panagon.
- CNWRA could access ADAMS through a dedicated line or through replicating servers located at CNWRA.
 - The workflow portion of ADAMS (including RIDS) will not be available to users across a direct line; and
 - Documents can be distributed to CNWRA through ADAMS, as is now accomplished through RIDS.
- CNWRA will have continued access to documents distributed to CNWRA through RIDS.
- Adequate bandwidth can be established to allow CNWRA sufficient access to ADAMS.
- A replicating site at CNWRA would require CNWRA to retain the services of a system administrator for ADAMS; this administrator would have duties similar to that of a database administrator.
- ADAMS installations will be complete by September 1999.

Two considerations might require a replicating site at CNWRA. One, CNWRA may require access to the workflow portion of ADAMS. Two, the available bandwidth required to provide CNWRA access to ADAMS makes the replicating site more cost competitive. CNWRA has identified that it does not require the workflow portion of ADAMS. However, CNWRA stated that it requires continued access to RIDS. RIDS may only be available through the ADAMS workflow, which may require a replicating site. This will be discussed below. A review of the current load on the dedicated line used for communication between NRC and CNWRA was performed. The use of this dedicated line peaks at about 6% of the current capacity. The assumption that sufficient bandwidth can be retained to allow CNWRA to access ADAMS through a dedicated line appears reasonable. Costs associated with increasing the bandwidth in this dedicated line are expected to be lower than that required to maintain a replicating site at CNWRA for moderate increases. RIDS provides an automated distribution system that routes documents to CNWRA. The documents received at CNWRA are then routed to appropriate CNWRA staff. The routing within CNWRA is determined exclusive of RIDS. CNWRA maintains

hard copies of the documents distributed by RIDS, until microfiche copies are available. Documents routed to CNWRA through the ADAMS workflow will continue to be available to CNWRA through the check-in and check-out procedures that will be accessible to CNWRA.

The workflow portion of ADAMS will recreate the logic underlying RIDS. Documents will be automatically distributed as if they were submitted to RIDS. Therefore, CNWRA will continue to receive copies of appropriate documents. CNWRA does not, however, require the ability to submit documents under RIDS (i.e., the functionality that will be provided through the ADAMS workflow logic). CNWRA does not require the workflow portion of ADAMS and does not require a replicating site.

Although establishing a replicating site is not the preferred option, it was considered. It is not believed to be the most cost effective approach to meet the needs of NRC or CNWRA. The overhead costs will be greater and there are no identified benefits that would outweigh these costs. Also, the replicating site raises potential legal concerns, depending on its implementation. For example, CNWRA has an identified need for managing its work for others and its internal proprietary information; it may not be possible for CNWRA to maintain or store this information on the ADAMS servers. Establishing the replicating site at CNWRA would establish a burden for CNWRA that can be avoided at lower cost to NRC.

Conclusions:

- NMSS should pursue CNWRA connectivity to ADAMS without establishing a replicating site at CNWRA.
- An inventory of HLW-related documents in NUDOCS should be taken to determine the extent that full text documents are available. The results of this survey should be considered in evaluating the transfer of the CDOCS document database.