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**Civilian Radioactive Waste Management System  
Management and Operating Contractor**

**Licensing Support System (LSS)  
Phase 2 Functional Requirements**

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Revision 0

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## **EXECUTIVE SUMMARY**

**The LSS rule in 10 CFR 2 Subpart J mandates the Licensing Support System as an electronic information system to facilitate the discovery process and the motions process of the license proceedings under the Civilian Radioactive Waste Management Program. It gives the U.S. Department of Energy the responsibility to design and develop the LSS, and the Nuclear Regulatory Commission the responsibility to operate the system.**

**This document specifies the functional, performance, availability and security requirements of the Licensing Support System (LSS). It embodies the higher level requirements of the Phase 1 LSS Requirements Document, and is intended to stand alone as a description of LSS capabilities which DOE will implement.**

**The LSS will provide automated search of document headers and full text, and retrieval of document headers, text and electronic images in support of the discovery process. Access will be provided at multiple locations (listed in Section 9), including public reading rooms. In addition dial-in access will be provided. The LSS will also facilitate the proceedings by providing electronic messaging for the rapid delivery of filings (motions, service, etc.). The official record material in the LSS will provide an electronic docket of the proceedings, including the daily transcripts generated during the hearings.**

**Most of the documentary material in the LSS will be submitted by LSS parties in electronic format and imported into the LSS. In addition, the LSS will provide scanning and image-to-text conversion capability to allow the capture of material in paper format.**

## Table of Contents

<b>1.0</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	Purpose of Document: Clarify, Scope, and Bound Requirements	1
1.2	Document Organization	2
1.3	Relationship Between Requirements and System Design	3
1.4	Requirements Statement Format	3
<b>2.0</b>	<b>LSS CONCEPT OF OPERATIONS</b>	<b>5</b>
2.1	Introduction	5
2.1.1	The LSS Mission	5
2.1.2	Summary of LSS Functionality	5
2.1.3	LSS Users	6
2.2	LSS Completion and Turn-over to the NRC	8
2.3	LSS In Operation	9
3.1	Document Capture	14
3.2	Document Storage	18
3.3	Document Search and Retrieval	19
3.4	Electronic Message Transfer	22
3.5	Official Record Material	24
<b>4.0</b>	<b>SYSTEM ADMINISTRATION REQUIREMENTS</b>	<b>26</b>
4.1	System Administration	26
4.2	End-User System Access	27
<b>5.0</b>	<b>SECURITY AND DATA INTEGRITY REQUIREMENTS</b>	<b>29</b>
5.1	System Security Administration	29
5.2	System Security Enforcement	31
<b>6.0</b>	<b>LSS DATA REQUIREMENTS</b>	<b>32</b>
6.1	Key Data Elements	32
6.1.1	Documentary Material	32
6.1.2	Electronic Messages	32
6.1.3	Authority Tables	32
6.2	Data Formats	32
6.2.1	Header Fields for Documentary Material	32
6.2.2	Header Fields for Official Record Material	40
6.2.3	Text Format	40
6.2.4	Image Formats	40
6.2.5	Import Formats	41

<b>7.0</b>	<b>LSS PERFORMANCE AND CAPACITY REQUIREMENTS</b>	<b>42</b>
<b>8.0</b>	<b>LSS RELIABILITY, AVAILABILITY AND MAINTAINABILITY REQUIREMENTS</b>	<b>47</b>
<b>9.0</b>	<b>LSS FACILITIES, EQUIPMENT AND COMMUNICATIONS</b>	<b>50</b>
<b>9.1</b>	<b>LSS Sites and Their Respective Functions</b>	<b>50</b>
<b>9.2</b>	<b>LSS Retrieval Equipment</b>	<b>50</b>
<b>9.3</b>	<b>Communications</b>	<b>50</b>
<b>10.0</b>	<b>SYSTEM ARCHITECTURE AND DESIGN</b>	<b>59</b>
	<b>GLOSSARY</b>	<b>61</b>
	<b>Appendix A: Phase 1 LSS Requirements</b>	<b>63</b>
	<b>Appendix B: Estimated LSS Data Volumes</b>	<b>67</b>
	<b>Appendix C: LSS Field Descriptions</b>	<b>68</b>

## **LIST OF TABLES**

<b>Table 6-1</b>	<b>Documentary Material Data Elements .....</b>	<b>32</b>
<b>Table 6-2</b>	<b>Minimum Header Fields for LSS Documentary Material .....</b>	<b>33</b>
<b>Table 7-1</b>	<b>Response Time Requirements .....</b>	<b>42</b>
<b>Table 9-2</b>	<b>Allocation of Functions to User Types .....</b>	<b>50</b>
<b>Table 9-3</b>	<b>Allocation of Hardware to Locations .....</b>	<b>56</b>

## **LIST OF FIGURES**

<b>Figure 1</b>	<b>LSS Locations .....</b>	<b>49</b>
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## 1.0 INTRODUCTION

The Civilian Radioactive Waste Management Program is based upon a strategy of emplacing high level radioactive waste in a permanent underground geologic disposal facility. The license to construct this facility must be issued by the Nuclear Regulatory Commission (NRC) in a process described in 10 CFR 2 and related regulations. Subpart J of 10 CFR 2 mandates the Licensing Support System (LSS) as an electronic information system to facilitate the discovery process and the motions process of the license hearings. It gives the U.S. Department of Energy the responsibility to design and develop the LSS, and the Nuclear Regulatory Commission the responsibility to operate the system.

As part of their responsibility, DOE is issuing this system requirements document to identify, scope and bound the requirements of the LSS, allowing the design and development process to proceed. Accordingly, this document will serve as a vehicle to communicate the planned functions and capabilities of the LSS to interested parties, including the LSS Advisory Review Panel (LSSARP), the NRC LSS Administrator and his staff, and the public. The LSSARP and a Technical Working Group appointed by the panel have been involved in the creation of this document, providing review and comments.

### 1.1 Purpose of Document: Clarify, Scope, and Bound Requirements

This document addresses the following issues:

- The LSS Rule (10 CFR 2 Subpart J) describes several key system requirements at a high level, but does not sufficiently scope and bound LSS requirements to allow system development and implementation to proceed. The Licensing Support System Phase I Functional Requirements document<sup>1</sup> captures the system-relevant requirements at a high level, but not the detailed computer system requirements needed for system design.
- LSS system descriptions represented in DOE requirements documents in the 1990 time frame<sup>2</sup> have been overcome by technology, and are not considered appropriate as the current system requirements specifications.<sup>3</sup> In addition, these documents were never formally accepted by the LSSARP as representing the system requirements.

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<sup>1</sup>Licensing Support System Phase I Functional Requirements, Draft, February 28, 1995, TRW Environmental Safety Systems Inc.

<sup>2</sup>Licensing Support System System-Level Requirements Document, November 20, 1990, SAIC.

<sup>3</sup>Evaluation of Licensing Support System Options, January 16, 1996, TRW Environmental Safety Systems Inc., Section 3.4.

- Numerous discussions and briefings related to LSS capabilities have taken place over the past several years, including those at LSSARP meetings, briefings to the LSS Administrator's staff, and less formal occasions. As a result, persons with an interest in the LSS have formed concepts and opinions about what the system will or will not do which may be undocumented and inconsistent with the views of others.
- The need to make rapid forward progress on the implementation and development of the LSS cannot be met without rapid closure on a succinct list of system requirements. This document will serve as the vehicle to achieve closure on the system requirements and enable development to proceed.

By succinctly describing all aspects of the Licensing Support System in a single document, the DOE hopes to clarify the exact functions which the LSS will perform, reducing the possibility that the delivered system will not meet the expectations of the user community. It is important to recognize that this document, which embodies the higher level requirements of the Phase 1 LSS Requirements Document, is intended to stand alone as a description of LSS capabilities which DOE will implement. In short, if a capability is not described in this document, it is not planned for LSS implementation. If it is described as a requirement in this document, it is planned for implementation as part of the LSS.

## **1.2 Document Organization**

This document begins with a concept of operations (Section 2), setting the context for the formal requirements which follow. Requirements are then presented in the following categories:

- Primary functional requirements (document capture, query and retrieval, electronic messaging, and official records material functions). (Section 3)
- System Administration requirements. (Section 4)
- Functions necessary to assure security and data integrity (access control, data quality protection.) (Section 5)
- Key LSS data elements (the format of the LSS header, for example). (Section 6)
- Performance and capacity requirements (response time, storage capacity.) (Section 7)
- Reliability, Availability, and Maintainability Requirements (assuring system functions are available when needed.) (Section 8)
- LSS site requirements (where the system will be located, and what capabilities will be available at each site.). (Section 9)

Finally, this document provides guidelines for system design (Section 10) which are intended to ensure that the system is designed with flexibility to accommodate growth and technology insertion.

### **1.3 Relationship Between Requirements and System Design**

An important goal of this document is to present LSS requirements at a sufficient level of detail to clarify the essential capabilities of the LSS without overly constraining design. By not overly constraining the design, this document encourages the integration of various Commercial Off The Shelf (COTS) software and hardware components to provide the required capabilities. Over-specification of requirements, especially the details of the user interface (screen layout and displays) can severely limit the use of COTS products, and is therefore avoided.

### **1.4 Requirements Statement Format**

The LSS Phase 2 requirements are written to stand alone as testable requirements, independent of the explanatory text of this document. Requirements are presented in the following format:

**LSS2-nnn            Short Title. The LSS shall ...(Requirements statement). [LSS1-nnn]**

**Comment:** Text of the comment.

Each Phase 2 requirement is identified by a unique alphanumeric sequence: LSS2-nnn, where LSS2- indicates a Phase 2 LSS requirement, and "n" is a digit from 0 to 9, providing unique identification.

The bracketed requirement identifier at the end of the statement, [LSS1-nnn], references the parent requirement in the LSS Phase 1 requirements, which can be found in Appendix A.

The Short title is a meaningful title which can be used in tables and summaries to refer to a requirement without repeating the entire requirement statement.

The requirement statement ("The LSS shall...") specifies the Phase 2 requirement.

The comment, which is optional, is used to clarify some requirements, sometimes giving examples of designs which would fulfill the requirement. The comment is not a testable requirement, but is intended to help the reader in correctly interpreting the requirement.

In some cases a requirement is further broken down into sub-requirements, identified as follows:

**LSS2-nnn            Summary Requirement. Summary requirement statement. [LSS1-nnn]**

**LSS2-nnn-01**      **First Subrequirement.** Statement for first subrequirement. [LSS1-nnn]

**LSS2-nnn-02**      **Second Subrequirement.** Statement for second subrequirement. [LSS1-nnn]

During system testing, the parent requirement will not be satisfied unless all the subrequirements are satisfied.

## **2.0 LSS CONCEPT OF OPERATIONS**

The LSS Concept of Operations describes what functionality the LSS is to provide, who the users will be, when and where the LSS will be available, and how the LSS will be used. The Concept of Operations does not specify system requirements nor dictate procedural requirements. Its purpose is to provide a conceptual understanding of the anticipated use of the LSS, as a basis for understanding the requirements defined in Sections 3 through 10.

### **2.1 Introduction**

#### **2.1.1 The LSS Mission**

The Nuclear Waste Policy Act (NWPA), as amended, requires NRC to review, and issue a final decision approving or disapproving, DOE's license application for construction authorization of a geologic repository within three years of the date that the license application is submitted. In order to help NRC and the involved participants complete the licensing proceedings within the allotted three year time frame, the LSS electronic information management system is to:

- Expedite the document discovery process by replacing time-consuming manual searches of the documentary materials, expected to be on the order of tens of millions of pages, with computerized full text searches, and
- Expedite filings, services, rulings, etc., by replacing long postal mailing times with electronic messaging.

#### **2.1.2 Summary of LSS Functionality**

The LSS is to provide hardware and software for:

- The capture of documentary materials<sup>4</sup> submitted in electronic form by the participants<sup>5</sup>
- The capture of the official docket in electronic form, consisting of the official record materials of the Licensing Proceedings, e.g., daily transcripts, list of exhibits, motions filed, depositions, etc.
- The electronic filing, service, and proof of service for motions, rulings, etc.,
- The retrieval, display and print, of the headers, page images, and text of the documentary materials (for document discovery), using field-oriented and full text searches
- The retrieval, display and print, of the headers, page images, and text of the official record

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<sup>4</sup>Documentary materials refer to more than just documents. A bibliographic header must be submitted for each document, item of graphic-oriented material, and other items. An image must be submitted only when the material is suitable for imaging. ASCII text must be submitted only when the material is suitable for conversion to text.

<sup>5</sup>"Participants" is meant to be all-encompassing and includes any party, potential party, etc., which is granted LSS access other than "public".

materials, using field-oriented and full text searches

- The requesting of printed copies of headers, page images, and text of the documentary materials, and the official record materials.

### **2.1.3 LSS Users**

The users of the LSS fall basically into 4 categories:

- The Participants,
- The Presiding Officers and NRC Secretary,
- The LSSA, System Administration and Capture personnel, and
- The Public.

All users will access the LSS via controlled accounts, established by the LSSA's System Administration personnel, where each account has its own unique user\_id and password.

#### **2.1.3.1 Participants**

The "participants" to the Licensing Proceedings will include the DOE, the NRC, the State of Nevada, and others, e.g., the affected units of local government and industry. All participants will be provided equivalent access to the LSS. The LSSA will establish one or more controlled accounts per participant. If a participant organization has more than one account, then one or more account(s) will be considered the "account(s) of the attorney(s) of record" to which all services should be sent.

Participants will access the LSS via dedicated interactive retrieval stations at the locations defined in Section 9.0, Table 9-1, and remotely using their own computers, to:

- Perform document discovery via field-oriented and full text searches against the headers and/or text of the LSS documentary materials holdings,
- Perform field-oriented and full text searches against the headers and/or text of the official docket,
- Display or print the headers, page image(s), and page text(s), of the documentary materials or official record materials identified by searches,
- Request paper copies of the headers, page image(s), and page text(s) of documentary materials or official record materials, and
- File motions, serve other participants, etc., via electronic messages.

The participants will also have access to "candidate" official record materials.

### **2.1.3.2 Presiding Officers and NRC Secretary**

The Pre-Licensing Application Presiding Officer (PLAPO) and the Presiding Officer (PO) are responsible for overseeing the licensing proceedings prior to and after docketing of the License Application (LA), respectively. The Secretary of the NRC is responsible for establishing and maintaining the official docket of the Licensing Proceedings in electronic form, and will designate to the LSSA, which and when, any "candidate" official record materials are to be added to the official docket. As users, the Presiding Officers and Secretary will have access equivalent to that of a participant, i.e., no special access/functionality is envisioned.

### **2.1.3.3 The LSSA, System Administration and Capture Personnel**

The LSS Administrator (LSSA) is responsible for the certification of the LSS's contents, for ensuring the administration, operations, and maintenance of the LSS, and for ensuring the LSS is available for access, as required. As a user, the LSSA will have access which includes access equivalent to that of a participant; the LSSA will have additional access to functionality available to the LSS System Administration and Capture personnel, who will be authorized by the LSSA to perform certain LSSA functions.

LSS System Administration personnel will be responsible for establishing and maintaining accounts for all users, and for maintaining system availability, and data integrity. These responsibilities include:

- Ensuring the LSS is on-line available as required,
- Creating and maintaining all user accounts, including:
  - user\_id's and passwords,
  - functional and data access definitions, and
  - suspending<sup>6</sup>/terminating accounts,
  
- Servicing print requests,
- Maintaining authority tables used in the validation of header field values,
- Maintaining protected header field designations which prevent the editing of selected header fields,
- Maintaining the address book used in electronic messaging,
- Reconfiguring capture stations,
- Performing routine system maintenance of hardware,
- Performing corrective system maintenance of hardware,
- Performing data backups and recovery, as required,
- Performing installation of hardware, as required, and
- Performing installation of software upgrades, as required.

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<sup>6</sup>Sec 10CFR2 Subpart J Sec.2.1012.

LSS Capture personnel will be responsible for capturing the documentary materials submitted to the LSSA, and capturing the "candidate" and "approved" official record materials. These responsibilities include:

- Importing documentary material submitted by the participants in electronic format, i.e., bibliographic headers, page images, and page texts,
- Validating submitted bibliographic header data against LSS header valid-values lists, known as authority tables
- Creating headers for the documentary materials submitted,
- Updating headers to correct errors, as appropriate,
- Scanning to image, hard-copies which are to become part of the official docket,
- Quality checking scanned page images,
- Re-scanning and inserting page images which fail quality checks,
- Converting images of pages to text,
- Quality checking page texts which were converted from images,
- Correcting and replacing page texts which fail quality checks,
- Identifying documentary materials which are duplicates of existing LSS holdings,
- Deleting documents which are duplicates, or not relevant.

#### **2.1.3.4 The Public**

The public will be provided access to the LSS via controlled public accounts, whose user\_ids and passwords will be controlled by the LSSA's System Administration personnel. Public access to the LSS will only be via dedicated interactive retrieval stations at designated public access locations, as defined in Section 9.0, Table 9-1. The public will access the LSS to:

- Perform field-oriented and full text searches against the headers and/or text of the LSS documentary materials holdings,
- Perform field-oriented and full text searches against the headers and/or text of the official docket,
- Display or print the headers, page image(s), and page text(s), of the documentary materials or official record materials identified by searches, and
- Request paper copies of the headers, page image(s), and page text(s) of documentary materials or official record materials.

The public will not have access to the LSS electronic messaging facilities. The public will not have access to "candidate" official record materials.

## **2.2 LSS Completion and Turn-over to the NRC**

DOE is responsible for the design and development of the LSS. After completion of LSS development and subsequent acceptance testing, DOE will turn the system over to the NRC,

which will be responsible for its administration, operation, and maintenance.

The process and schedule by which the LSS will be developed, acceptance tested, deployed to the sites, populated with data, and "handed off" from the DOE to the NRC will be addressed by MOU's and other agreements between those agencies.

### **2.3 LSS In Operation**

Since the LSS will be delivered with all required functionality, and since the LSSA, System Administration and Capture personnel will have familiarity with the system as a result of acceptance testing, the LSS is expected to go operational soon after the system is turned-over to the NRC.

**Certification:** The LSSA must complete loading of all participants' submitted documentary materials, and certify DOE's substantial compliance in submitting all of their existing relevant documentary materials at least six months prior to DOE's submission of the License Application.

**Docketing of the License Application:** After the LSSA has certified the LSS and DOE has submitted the License Application, the NRC will docket DOE's License Application. The NRC will establish a docket number, and publish a hearing notice in the Federal Register.

**Availability of Functionality:** As previously indicated, the LSS will be delivered with all required functionality. However, the public may not be given access to the images and searchable text of the documentary materials holdings prior to docketing of the License Application, and the official docket will not be initiated until docketing of the License Application. Once the official docket is initiated for that docket number, field-oriented and full text search of the electronic docket's official record materials will be available.

**The LSS Database:** The LSS database will consist of the documentary materials, the official docket, and the "candidate" official record materials, i.e., electronic filings, services, and proofs of service which have been transmitted by the participants and captured by the LSSA, but not yet "approved" by the Secretary. The documentary materials will consist of any documentary materials pre-loaded by the DOE, and all participants' documentary materials loaded by NRC Capture personnel. The official docket will consist of the "approved" electronic filings, services, and proofs of service, and all other official record materials provided by the Secretary and loaded by Capture personnel, e.g., transcripts, depositions, etc.

**User Access:** Each user will be able to access the LSS via their own personal account, using a user\_id and password combination. Each account, will have access to only that functionality and data defined for that account by the LSSA, and established by System Administration personnel.

**Loading of Submitted Documents:** LSS Capture personnel will load participant submissions,

which must comply with LSS import format criteria. The bibliographic header, page images, and text for each item of documentary material will be imported from electronic media.

Bibliographic header fields will be imported into the LSS header, and field values will be validated against authority tables. LSS-specific header fields, such as the document indexer's id will be entered by the Capture personnel; other fields, such as "Date/Time Loaded into LSS" should be automatically entered by the system. Page images and texts will be imported, when provided. The LSS header, page images, and text will be quality checked. Text and header fields which are to be full-text searchable will be spell-checked, corrected, and searchable text created. Each item will then be checked to determine if it is a duplicate, and if not will be committed to the LSS database. The item will then be available for search and retrieval by all users.

Items which cannot be properly indexed, fail quality checking, or are otherwise unacceptable will be included in a Rejection List to be provided to each participant.

**Unique ID on Each Item of Documentary Materials:** Each item of documentary materials submitted by a participant must have an item\_id in the bibliographic header, which is unique to that item from that participant; DOE's unique id is the "accession number". This item\_id will not be unique across more than one participants' submissions. Capture personnel will make each item submitted unique across all participants' submissions within the LSS by creating an LSS-unique "accession number" in the LSS header.

**Verification of Documentary Materials:** Participants are responsible for verifying that all copies of their documentary materials were loaded into the LSS accurately and correctly, and will use the search and retrieval techniques available for document discovery to accomplish this. Participants have a set number of days from their date of submission to verify their data, as-loaded, and notify the LSSA if any errors are detected. Within this timeframe, Capture personnel may edit unprotected LSS header fields to correct errors. If edited, a date of last modification will be automatically entered in the LSS header by the system.

If the LSSA is notified of errors beyond the established timeframe, the participant will have to re-submit the item as a new, separate item. The bibliographic header submitted with the new item will identify all bibliographic header fields which have been revised, within a comments field in the new bibliographic header. The capture personnel will load the new item, and will not delete the original item, but will update it's LSS header to indicate a corrected version exists.

**Searching the Documentary Materials:** Each user will be able to perform field-oriented and full text searches against the documentary materials holdings of the LSS; however, public accounts are not required to have access to images and full text for searches, until docketing of the License Application<sup>7</sup>. The LSSA may authorize access to images and the full text of the documentary materials holdings of the LSS for public accounts prior to docketing.

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<sup>7</sup> See 10CFR2 Subpart J Sec. 2.1007.

The search results will first be displayed as a summary list, e.g., a one-line subset of header fields per item identified using the query criteria. The components of any item in the summary list will then be displayable or printable by selecting the associated summary line and the component to be displayed or printed, i.e., the header, page images, or page texts.

In addition, users may submit a request to print an item's header and images. In that event, System Administration personnel will service the request and mail the printed hard-copies to the requester, as soon as possible.

**Access to Privileged Documentary Materials:** For privileged documentary materials, only bibliographic headers will be submitted. The LSS header will still be accessible to all users.

If a participant's claim of privilege is denied, the participant will re-submit the item as a new item with bibliographic header, page images, and page texts. The capture personnel will load the new item, and will not delete the original header denoting the item as privileged, but will update it to indicate a corrected version exists.

If a participant's claim of privilege is recognized, but the PO orders the item's submission, the LSSA will place the item in a Protective Order File, such as a secure, controlled file cabinet, or a designated stand-alone computer. The capture personnel will create a new LSS header for the submitted item, load the bibliographic header fields submitted for that item, and complete the entry of the LSS header fields, including an indication that it has been placed in such a Protective Order File. The capture personnel will not delete the original LSS header, but will update it to indicate a corrected version exists. The new item's images and/or text will not be accessible on-line via an LSS user's account, but may be accessible on-line via a stand-alone computer.

**Electronic Messaging:** All Participants, the LSSA, the Presiding Officers, and the Secretary will have access to electronic messaging to transmit and receive filings, services, etc., electronically. Proofs of service will be provided for all such servings. All such filings, services, and proofs of service will be marked "candidate" official record materials, until "approved" and designated as "official" by the Secretary. The LSSA will be copied on all such items, and will provide these to Capture personnel for loading as "candidate" official record materials. Capture personnel will create the LSS header for each item. When the Secretary approves "candidate" official record material, and so designates to the LSSA, Capture personnel will update the corresponding LSS header to reflect it as "approved".

Participants may also use the electronic messaging facilities for messages which are not destined to become part of the official docket.

**The Official Docket:** The official docket for the Licensing Proceedings, i.e., the legal record, will be maintained in electronic form in the LSS. The NRC Secretary will ensure that the electronic docket contains all the official record materials of the licensing proceedings. The official record materials will include the electronic filings, services, and proofs of service

"approved" by the Secretary and all other official record materials provided by the Secretary and loaded by Capture personnel, e.g., transcripts, depositions, etc.

**Support for Multiple Dockets:** If the NRC determines that the issues are too complex/lengthy to be decided by a single licensing board within the allotted time frame, then a second board may be established to hear a subset of the issues, concurrent with the first board. This would be known as a bifurcated hearing. Official record materials will have to be identifiable as to which hearing they are associated, to provide retrievability specific to each hearing, or from both.

In addition, any proceedings resulting from appeals, hearings for licenses subsequent to the construction authorization such as the license to receive and possess waste, etc., will have new, separate and distinct, docket numbers.

**Searching the Official Docket:** Once the electronic docket has been established, each user will be able to perform field-oriented and full text searches against it. Though not yet part of the official docket, the "candidate" official record materials will also be searchable.

The functionality for displaying and printing the results of queries against the official docket will be the same as for displaying and printing the results of queries against the documentary materials, and the same will be true of print requests.

**Remote Access:** Users, particularly participants, will want to access the LSS from non-dedicated interactive retrieval stations, such as by dialing-in from computers in their offices, their hotel rooms during the licensing hearing(s), etc., for

- Document discovery,
- Generation, transmission, and reception of electronic messages,
- Review of "candidate" filings, services, and
- Review of the electronic docket.

The LSS will provide dial-in facilities, such as modem pools, for such remote access. For remote access, the LSS will support the full range of capabilities which would otherwise be available to users at LSSA-provided dedicated interactive retrieval stations. However, if large volumes of text, or images in any volume are transferred to these remote locations, performance will be inhibited by the bandwidth utilized, i.e., a 28.8 baud modem may increase performance two-fold over a 14.4 baud modem, but will be extremely slow compared to the dedicated links to the LSSA-provided dedicated interactive retrieval stations. To provide the best possible performance for remote access, any user will be able to "turn-off" and "turn-on" image retrieval and display for their account at any time, regardless of their access location.

**LSS Access from the Hearing Room:** During the Licensing Hearing itself (projected to last 90 days, and starting some 24 months after docketing of the License Application), on-line access to the LSS is to be provided in the hearing room to the Presiding Officer, all participants, and to witnesses while testifying. In addition, capture stations will also have to be provided at the

hearing site to capture hard-copies designated to become official record materials, such as depositions, document exhibits not in the LSS documentary materials holdings, and the electronic files of the daily transcripts.

**Procedural Clocks:** The LSS is not required to provide any mechanism(s) for setting the expiration date for, or for automatically determining the expiration of any timeframe, e.g., number days to respond to a motion filed, number of days to verify submitted materials, etc. All such "clocks" may be procedurally implemented.

### **3.0 PRIMARY LSS FUNCTIONAL REQUIREMENTS**

The primary LSS functional requirements are those directly associated with the purpose of the system: document capture, storage, search and retrieval, electronic message transfer, and official record material functions. Secondary functions, which include system administration and security functions, are described in Sections 4 and 5.

#### **3.1 Document Capture [LSS1-004,LSS1-012,LSS1-013, LSS1-014]**

The document capture functions allow the LSSA to import electronic data and capture paper documents to make them part of the documentary or official record file material within the LSS.

**LSS2-001**            Scan Paper to Image. The LSS shall provide the capability to scan paper documents to create an electronic bit-mapped image, including 8-1/2 x 11 inch single and double-sided pages, and single-sided pages up to E sized. [LSS1-006]

Comment: The image formats supported by the LSS are defined in Section 6.2.4 of this document.

**LSS2-001-1** Partial Document Scanning. The LSS shall provide the capability to scan single pages and portions of documents to allow page-level insertion of pages failing quality check without re-scanning the entire document.[LSS1-006]

**LSS2-002**            Import Electronic Document. The LSS shall provide the capability to import electronic documents which comply with LSS import format and media requirements into the system. Imported documents will be available for quality check as described in LSS2-008. [LSS1-004]

Comment: LSS import format and media requirements are specified in Section 6.2.5 of this document.

**LSS2-002-1** Import Image. The LSS shall provide the capability to import electronic images which comply with LSS import format and media requirements into the system. [LSS1-004]

Comment: LSS import format and media requirements are specified in Section 6.2.5 of this document.

**LSS2-002-2** Import Text. The LSS shall provide the capability to import electronic text which

complies with LSS import format and media requirements into the system. [LSS1-004]

Comment: LSS import format and media requirements are specified in Section 6.2.5 of this document.

**LSS2-002-3 Import Electronic Message.** The LSS shall provide the capability to import the text of an LSS electronic message into the system. [LSS1-004]

Comment: LSS electronic messages, which include electronic filings of various types, will need to become part of the documentary material and to be searchable like other LSS documents. This requirement assures that the electronic text of the messages can be "captured" as documentary material without printing, scanning and reconvertng the material to text. It is not anticipated that this electronic message will be converted to image, since it is fully and accurately represented in electronic text form.

**LSS2-002-4 Import Header.** The LSS shall provide the capability to import electronic bibliographic headers which comply with LSS import format and media requirements into the system. [LSS1-004]

Comment: LSS import format and media requirements are specified in Section 6.2.1, 6.2.2 and 6.2.5 of this document.

**LSS2-003 Create Electronic Header.** The LSS shall provide the capability to create an electronic LSS header. [LSS1-012, LSS1-021]

**LSS2-003-1 Enter Header Data.** The LSS shall provide the capability to create an LSS header. [LSS1-012]

**LSS2-003-2 Authority Table Checking.** The LSS shall use authority table lists of valid fields to validate data entered by the user into LSS header fields and as a mechanism to allow the user to select valid values for entering data into LSS header fields. [LSS1-021]

**LSS2-004 Convert Image to Text.** The LSS shall provide the capability to convert a bit-mapped image which is compliant with LSS data format requirements to computer-readable text. The LSS shall achieve text conversion accuracies that are achievable with the best commercial products available at the time of the LSS system design. [LSS1-005]

Comment: The text conversion accuracies may be achieved using combinations of technologies comparable to the best available commercially. LSS data format requirements are specified in Section 6.2 of this document.

**LSS2-005**

**Prepare Text for Search.** The LSS shall provide the capability to automatically prepare text and header data for full text search. [LSS1-011]

**Comment:** This does not refer to the correction of text errors. This is the process that the software uses to prepare corrected text for the search engine. For most full text search applications, which rely on inverted indices for full text search, this requirement refers to building and updating the full text index. It is stated generically so as not to presume the method of search.

**LSS2-006**

**Check for Duplicate Documents.** The LSS shall provide the capability to automatically identify apparent duplicate documents in the system or in the document capture pipeline. [LSS1-023]

**Comment:** The method of duplicate checking might compare LSS header fields (or a subset thereof), full text, or a combination. The requirement refers to "apparent duplicate documents" because it does not assume that the system can guarantee that a document is a duplicate. Rather, the system must provide a tool for identifying likely duplicates. The goal of duplicate checking is to reduce the possibility of duplicate documents in the system and to minimize the cost of processing documents. This requirement does not imply the automatic deletion of apparent duplicates.

**LSS2-007**

**Mark Document as Superseded.** The LSS shall provide the capability to mark a document as superseded by another document and identify the successor document. [LSS1-009]

**Comment:** A document may be superseded by a corrected version of the document. This function allows a document in the LSS to be marked in the document header as having been superseded. This "marking" is used by the Identify Document as Superseded function during retrieval.

**LSS2-008**

**Assure Document Capture Quality.** The LSS shall provide the capability to check the quality of a document during the capture process, and to correct errors in the document. [LSS1-06, LSS1-012, LSS1-013, LSS1-021, LSS1-022]

**Comment:** The capture process ends when the document is available for retrieval by general LSS users. This function and associated subfunctions must be allowed to operate on a separate station from other capture functions so that a separate person can perform the quality checking steps.

**LSS2-008-1**      **Pre-Store Quality Check - Header.** The LSS shall provide the capability during the capture process to visually check the completeness and accuracy of the LSS header and to automatically check header fields for valid entries as defined in LSS header authority tables, whether the header was imported or created within the LSS. The LSS shall allow this function to be performed at a separate station from the non-quality check capture functions. [LSS1-012, LSS1-021]

**LSS2-008-2**      **Pre-Store Quality Check - Image.** The LSS shall provide the capability to visually check images for clarity, completeness and skew, whether the images are imported or created within the LSS. The LSS shall allow this function to be performed at a separate station from the non-quality check capture functions. [LSS1-006, LSS1-021]

**LSS2-008-3**      **Pre-Store Quality Check - Text.** The LSS shall provide the capability to visually check document text for accuracy by comparing it with the document image, whether the text was imported or created within the LSS. The LSS shall allow this function to be performed at a separate station from the non-quality check capture functions. [LSS1-013, LSS1-021]

**LSS2-008-4**      **Text Spell Check.** The LSS shall provide the capability to create and maintain multiple custom dictionaries and to electronically check the spelling of document text against a standard and custom dictionary and to correct misspellings during the capture process. The LSS shall allow this function to be performed at a separate station from the non-quality check capture functions. [LSS1-013, LSS1-021]

**Comment:** Spelling errors will be corrected in the text but not in the image as the image is the exact representation of the document.

**LSS2-008-5**      **Rejected Document List.** The LSS shall provide the capability to generate a list of documents which have failed any pre-store quality check identifying the reason or reasons for failure. [LSS1-021]

**Comment:** This function will be used to inform submitters of documents that documents must be resubmitted.

**LSS2-008-6**      **Correct Header Errors (Pre-Store).** The LSS shall provide the capability to edit header fields which are not protected, during the capture process, whether the header was imported or created within the LSS. [LSS1-012]

**Comment:** Some header fields may be protected from update through the Protect Header Field function (Section 5).

**LSS2-008-7**      **Replace Image Pages.** The LSS shall provide the capability to replace, insert and delete individual image pages during the capture process, whether the original or replacement images were imported or created within the LSS. [LSS1-006]

**LSS2-008-8**      **Interactive Text Correction.** The LSS shall provide the capability to correct errors in document text during the capture process, whether the text was imported or created within the LSS. [LSS1-021, LSS1-022]

### **3.2 Document Storage**

**LSS2-009**      **Store Document (Link Text, Image, Header).** The LSS shall provide the capability to store documentary material, whether imported, captured or created within the LSS, linking the document components (header, text and/or image) for subsequent retrieval. [LSS1-012, LSS1-013, LSS1-014]

**Comment:** The various forms of documentary material are described in Section 6.

**LSS2-009-1**      **Store Document Header.** The LSS shall provide the capability to store an LSS header for subsequent retrieval. [LSS1-012]

**LSS2-009-2**      **Store Document Text.** The LSS shall provide the capability to store document text for subsequent retrieval. [LSS1-013]

**LSS2-009-3**      **Store Document Image.** The LSS shall provide the capability to store document images for subsequent retrieval. [LSS1-06, LSS1-014]

**LSS2-009-4**      **Link Document Components.** The LSS shall provide the capability to logically link the header, text and image of a document, where available, for subsequent retrieval, whether these document components are stored at the same time or at different times. [LSS1-006, LSS1-012, LSS1-013, LSS1-014]

**Comment:** The system must allow the storage of a complete header/text/image document all at once, as well as the initial storage of a header, with later storage of the text and/or image. The linkage allows subsequent retrieval of one or more document components (header, text, image) from a list of documents satisfying a query.

**LSS2-009-5**      **Preclude Orphan Image/Text.** The LSS shall prevent the storage (for retrieval) of document images or text which are not associated with an LSS header. [LSS1-012, LSS1-013, LSS1-014]

**Comments:** Documentary material in the LSS must have a header to assure retrievability and data base integrity. "Storage (for retrieval)" means storage in the documentary data base for purposes of retrieval. Temporary storage of text or image during the capture process, outside of the retrieval data base is not prohibited by this requirement.

**LSS2-010**      **Define Information Package.** The LSS shall provide the capability to define an information package which includes a listing of all documents in the package. [LSS-004]

### **3.3 Document Search and Retrieval [LSS1-008, LSS1-011, LSS1-012, LSS1-013]**

**LSS2-011**      **Query for Document.** The LSS shall provide the capability to query the system for a list of all documents which meet the query criteria and sort the displayed list on the basis of selected displayed fields, or the basis of relevancy to the query. [LSS1-012, LSS1-008]

**LSS2-011-1**      **Query Header.** The LSS shall provide the capability to query the system by specifying the content of one or more header fields to obtain a list of all documents which satisfy the query. [LSS1-012, LSS1-008]

**LSS2-011-2**      **Query Text.** The LSS shall provide the capability to query the system by specifying one or more character strings in the full text of the document to obtain a list of all documents which satisfy the query. [LSS1-013]

**LSS2-011-3**      **Text Query Parameters.** The LSS shall provide the capability to specify single and multiple character wild cards, to utilize proximity searching, and root searching as part of a full text query and to combine multiple query statements using boolean expressions (e.g., AND, OR, NOT). [LSS1-013]

**Comment:** Only very fundamental full text options which are available through a wide variety of commercial products have been specified here, in order not to preclude the use of most Commercial Off The Shelf (COTS) products.

**LSS2-011-4**      **Query Header and Text.** The LSS shall provide the capability to query the system by specifying a combination of header field values and the text query parameters from LSS2-011-3 in the full text of the document to obtain a list of all documents which satisfy the query. [LSS1-012, LSS1-013]

**LSS2-011-5**      **Save/Reuse Query.** The LSS shall provide the capability to save, retrieve,

edit and/or re-execute a previously constructed query, and to perform a query against the results set of the previous query during a single session. [LSS1-012, LSS1-013]

**LSS2-011-6** Provide Query Status. The LSS shall provide the user an indication of the query status during a full text query and allow the user to terminate queries in process without terminating the session or losing previous result sets. [LSS1-012, LSS1-013]

**Comment:** It is always possible to construct a query which is so broad that it results in an unmanageable results list. Users should be able to determine that an ongoing query is too broad and terminate the query in process. Typically, status would be provided by a running total or list of documents found which satisfy the query. Typically, a user would terminate a query if the running total becomes large, and enter a more specific query to reduce the results list size.

**LSS2-011-7** Query Assistance. The LSS shall provide interactive capabilities to assist the user in retrieving documents when the field values that uniquely define the documents are not known to the user. [LSS1-020]

**Comment.** Examples might include synonym processing, thesaurus, natural language queries, or other search aids. Because a variety of approaches are used in the commercial market, no one approach is specified.

**LSS2-011-8** Save Query Result Set. The LSS shall provide the capability to save, retrieve, and search on a previous query result within a session. [LSS1-012, LSS1-013]

**LSS2-012** Display Document. The LSS shall provide the capability to display a document. [LSS1-012, LSS1-013, LSS1-014, LSS1-016]

**LSS2-012-1** Display Header. The LSS shall provide the capability to display the LSS header of a document. [LSS1-012]

**LSS2-012-2** Display Text. The LSS shall provide the capability to display one or more pages of the text of a document. [LSS1-013]

**LSS2-012-3** Locate Search Terms in Document. The LSS shall provide the capability to locate the terms in the document which satisfy a full text query and to move the term indicator from one term to the next or previous term without displaying intermediate text. [LSS1-013]

**Comment:** This function is performed as the user is viewing the document. It is typically implemented by highlighting the search terms in the document and providing a "go to next term" function which places a cursor at the line or word of the search term.

**LSS2-012-4** Display Image. The LSS shall provide the capability to display the images of a document, page by page, including full page views of the images of 8-1/2 by 11 inch pages up to E size pages. [LSS1-014, LSS1-016]

**Comment:** The image formats supported by the LSS are defined in Section 6.2.4 of this document.

**LSS2-012-5** Image Viewing. The LSS shall provide image viewing capabilities for image enlargement, reduction, scrolling and rotation. [LSS1-014, LSS1-016]

**LSS2-012-6** Display Image and Text. The LSS shall provide the capability to concurrently display a page image of a document and its associated text. [LSS1-013, LSS1-029]

**LSS2-012-7** Viewing Options. The LSS shall allow the user to view the following combinations: 1) header; 2) image; 3) text; 4) header and text; 5) header and image; and, 6) text and image. [LSS1-012, LSS1-013]

**Comment:** This requirement is primarily to support dial-in users who may wish to limit the retrieval of images over lower-bandwidth communications lines. The user must be able to look at text and headers without looking at images.

**LSS2-012-8** Identify Document as Superseded. The LSS shall provide the capability to identify a document which has been marked as a superseded version. [LSS1-009]

**Comment:** The Mark document as superseded requirement allows documents to be marked as superseded, meaning that a subsequent version of the document has been put into the LSS. The Identify Document as Superseded function enables users performing document retrieval to see that a document has been marked.

**LSS2-013** Print Document. The LSS shall provide the capability to print a document at a local printer. [LSS1-012, LSS1-013, LSS1-014]

**LSS2-013-1** Print Header. The LSS shall provide the capability to print a document header at a local printer. [LSS1-012]

**LSS2-013-2**      **Print Text.** The LSS shall provide a user selectable capability to print from one page to all of the text of a document, and any selected ranges of pages, at a local printer. [LSS1-013]

**LSS2-013-3**      **Print Standard Image.** The LSS shall provide a user selectable capability to print from one to all images, and any selected ranges of images, of 8-1/2 by 11 inch (or smaller) pages of a document, at a local printer, on 8-1/2 by 11 inch paper. [LSS1-014]

**LSS2-013-4**      **Print Oversized Image.** The LSS shall provide the capability to print an oversized page image, up to E sized, on a single sheet of paper at 100% of the size of the original image. [LSS1-014]

**LSS2-013-5**      **Print Results List.** The LSS shall provide the capability to print some or all of the summary lines of a results list. [LSS1-012, LSS1-013, LSS1-014]

**LSS2-013-6**      **Print Screen.** The LSS shall provide the capability of printing the screen display. [LSS1-012, LSS1-013, LSS1-014]

**LSS2-014**      **Request Paper Copy.** The LSS shall provide the capability to submit an electronic request for a paper copy of the header, images or text of a document or of an entire results set, including oversized and color images. [LSS1-017]

**Comment:** This function is primarily for dial-in users.

**LSS2-015**      **Process Paper Copy Request.** The LSS shall provide the capability to receive and read an electronic request for a paper copy of a document and print the requested copy. [LSS1-017]

**Comment:** This is not anticipated to be a highly automated function. Automatic address label generation for example is not expected. The LSSA will need to be able to receive requests, and print out the requested document. The rest of this function may be procedurally implemented.

### **3.4 Electronic Message Transfer [LSS1-003]**

**LSS2-016**      **Create Electronic Message.** The LSS shall provide the capability to create an electronic message. [LSS1-003]

**Comment.** The format of LSS electronic messages is described in Section 6.

**LSS2-016-1**      **Delete Electronic Message.** The LSS shall provide the capability for an authorized user to delete an electronic message. [LSS1-003]

**LSS2-017**      **Store Electronic Message.** The LSS shall provide the capability to store an electronic message including messages which have been created or edited but not sent, sent messages, and received messages. [LSS1-003]

**LSS2-018**      **Edit Electronic Message.** The LSS shall provide the capability to edit an electronic message which has been previously stored, prior to sending. [LSS1-003]

**LSS2-019**      **Electronic Message Import/Export.** The LSS shall provide the capability to import ASCII text into an electronic message during editing, and export ASCII text from an electronic message. [LSS1-003]

**Comments:** This requirement allows users to use most commercial word processors for text generation and to transfer text to and from the LSS electronic message environment. Translation of specific vendor formats (non-ASCII) is not specified since these formats change over time.

**LSS2-020**      **Address Electronic Message.** The LSS shall provide the capability to address an electronic message to one or more authorized LSS users by creating an address list of individual user and/or user group names. The LSS shall provide a list of valid address names for the user to select from in order to address an electronic message. [LSS1-003]

**LSS2-021**      **Send Electronic Message.** The LSS shall provide the capability to electronically transmit an electronic message to users in the address list. [LSS1-003]

**LSS2-022**      **Display Electronic Message.** The LSS shall provide the capability to receive and display an electronic message which was sent to the user's electronic message address. [LSS1-003]

**LSS2-023**      **Acknowledge Message Delivery.** The LSS shall provide electronic acknowledgement of message delivery which identifies the recipients electronic message name/address, and the date and time of delivery. [LSS1-024]

**Comment:** Message delivery means that the message is available for the recipient to read.

**LSS2-024**      **Report Message Delivery Failure.** The LSS shall provide a notice to the

sender of an electronic message indicating when the system has failed to deliver the message, which identifies the intended recipient's electronic message name/address, and the date and time that the message was sent or the failure detected. [LSS1-003]

- **LSS2-025**      **Print Electronic Message.** The LSS shall provide the capability to print an electronic message, including messages which have been created or edited but not sent, sent messages, and received messages. [LSS1-003]

### **3.5 Official Record Material**

The following requirements pertain to the "Official Record File" which is discussed in 10 CFR 2.1013(a)(2). This is effectively an electronic docket containing the official record of the proceedings. The official record file will be maintained by the NRC Secretary's organization (SECY); the LSS will contain a copy of the official record file. The phrase "official record material" (not "file") is used in this document in order to avoid the implication of a design. It is likely that the official record material will be cataloged stored and viewed just like documentary material, but with special header flags to indicate that it is either candidate or approved official record material.

- **LSS2-026**      **Designate Official Record Material.** The LSS shall provide the capability to designate material in the LSS as being Official Record Material. [LSS1-004]

**Comment:** As interpreted, this requirement does not mean that the official record material must be located in a physical file, but must be logically identified as being in the official record. This requirement assumes that information designated as official record material can be represented in the same text and image formats as documentary material. The identification of material as official record material is a system function, however, the determination of material as official record material is made by the NRC Secretary's organization (SECY).

- **LSS2-027**      **Retrieve Official Record Material.** The LSS shall provide the capability to retrieve, view and print official record material in the same manner as documentary material. [LSS1-004]

- **LSS2-028**      **Import Transcripts.** The LSS shall provide the capability to import transcripts which are compliant with LSS import and media format requirements directly into the LSS, via a capture station, for inclusion in the official record material. [LSS1-026]

**Comment:** LSS import format and media requirements are specified in Section 6 of this document.

## 4.0 SYSTEM ADMINISTRATION REQUIREMENTS

### 4.1 System Administration

- LSS2-029**      **Start Up System.** The LSS shall provide the capability to initialize the software and hardware necessary to operate the LSS. [LSS1-018]
- LSS2-030**      **Shut Down System.** The LSS shall provide the capability for the orderly shut down of the software and hardware components of the LSS. [LSS1-018]
- Comment. This function would be used, for example, for preventative maintenance.
- LSS2-031**      **Backup Data.** The LSS shall provide the capability to create incremental and full backup copies of all data on the system. [LSS1-018]
- Incremental backups mean partial data base backups based on a time span, usually daily. Full backups mean backups of the entire data base.
- LSS2-032**      **Restore Data.** The LSS shall provide the capability to restore data created by the backup function to the operational system, including partial and full data recovery. [LSS1-018]
- LSS2-033**      **Monitor System Status.** The LSS shall provide authorized users the capability to monitor the status of system hardware, software, and communication components and to interrupt, restrict or disable system capabilities in order to optimize use of system resources. [LSS1-018]
- LSS2-033-1**      **Monitor Session Activity.** The LSS shall provide a capability for an authorized user to monitor user session activity levels and to identify and cancel queries or other system activities. [LSS1-018]
- LSS2-034**      **Data Base Administration Tools.** The LSS shall provide authorized users the capability to assess the availability, integrity and performance of the data bases associated with the LSS, including those pertaining to the storage of document headers, text and image data and adjust data base performance parameters or to restrict or disable database features in order to optimize system performance. The LSS shall provide mechanisms to aggregate, compile, and submit data to analysis, and then generate the outcome of a statistical analysis [LSS1-018]
- LSS2-035**      **Store Non-Document-Related Items.** The LSS shall provide the capability

to store non-document-related items, files, or tables that are related to system administration and database administration activities. [LSS1-018]

Comment: This requirement is likely to be met by providing the Administrator access to the operating system and underlying DBMS of the LSS.

LSS2-036 Retrieve Non-Document-Related Items. The LSS shall provide the capability to search and retrieve non-document-related items, files, or tables that are related to system administration and database administration activities. [LSS1-018]

LSS2-037 Delete Non-Document-Related Items. The LSS shall provide the capability to delete non-document-related items, files, and tables that may have been collected during the course of database and system administration activities. [LSS1-018]

LSS2-038 Administer Address Book. The LSS shall provide the capability to add, delete and edit addresses used for sending electronic messages, including the user names and user group names. [LSS1-003]

LSS2-039 System Logins. The LSS shall have the capability to account for user activity. [LSS1-018]

#### 4.2 End-User System Access

LSS2-040 Log-On LSS. The LSS shall provide the capability to initiate a user session and gain access to the LSS system by providing an authorized user account name and associated authorized password. The LSS shall not allow access to system functions without the initial entry of an authorized account name and associated authorized password. [LSS1-019]

LSS2-041 Log-Off LSS. The LSS shall provide the capability to terminate a working session on the LSS, leaving the station in a state where a new system logon is required to gain access to LSS functions. [LSS1-019]

LSS2-042 Change Personal Password. The LSS shall provide a non-public user the capability to change the user's authorized password provided that the user has logged onto the system with an authorized password. [LSS1-019]

Comment: This requirement means that non-public LSS users can change their password, but that users accessing the system through a public reading room will not be allowed to change the password of the account they are using.

## 5.0 SECURITY AND DATA INTEGRITY REQUIREMENTS

### 5.1 System Security Administration

**LSS2-043**      Create/Modify User Account The LSS shall provide the capability to create new user accounts, modify user accounts, and delete user accounts, including the establishment of the account names and initialization of the account password. [LSS1-019]

**LSS2-044**      Set Functional Access Authorizations. The LSS shall provide the capability to establish and modify user access authorizations to system functions. At a minimum, the LSS shall provide discreet function-to-user access controls sufficient to enforce the allocations shown in Table 9-2. [LSS1-019]

**Comment:** Not all LSS users can have access to all LSS functions. The referenced table defines categories of users and identifies the functions needed by each category.

**LSS2-045**      Set Data Access Authorizations. The LSS shall provide the capability to establish and deny read, write and delete privileges for each of the following types of information on a per-user account basis:

- Documentary material
  - Official record material (approved)
  - Official record material (candidate)
  - Header data
  - Text data
  - Password
  - Image data
- [LSS1-019]

**LSS2-046**      Set Header Field Protection. The LSS shall provide the capability to designate specified fields in the LSS header as protected from or available for update. [LSS1-019]

**Comment:** This function would allow the LSSA to prevent update of specific fields in the LSS header. This restriction would apply to all headers stored in the system as well as headers which have been imported and are being processed by the capture functions. It is anticipated that certain fields, such as the unique identifier of the document (e.g. accession number) will be considered unalterable. Electronically submitted documents which have these fields in error would be rejected rather than corrected within the LSS.

< LSS2-047

**Edit Documents.** The LSS shall provide the capability to edit previously stored documents. [LSS1-021]

**Comment:** Previously stored means that the document is stored in the LSS and is available for retrieval. This function will be available only to the system administration personnel for purposes of maintaining data base integrity and accuracy. It is anticipated that edits of documents will be noted in a header field such that users will be alerted.

( LSS2-047-1

**Edit Header Fields (Post-Store).** The LSS shall provide the capability to edit header fields of previously stored documents provided that the fields are not protected. [LSS1-021]

**Comment:** Some header fields may be protected from update through the Protect Header Field function.

( LSS2-047-2

**Replace Image Pages - Post-Store.** The LSS shall provide the capability to replace individual images and insert individual missing images in documents which have been previously stored. [LSS1-006]

( LSS2-047-3

**Interactive Text Correction - Post-Store.** The LSS shall provide the capability to correct errors in document text which has been previously stored. [LSS1-021]

( LSS2-047-4

**Document Deletion.** The LSS shall provide the capability to logically delete documents (header, text and/or image) such that they will not be available to LSS users. This function shall require confirmation prior to execution. The LSS shall prevent the deletion of a header before the associated text or image have been deleted. [LSS1-018]

**Comment:** This function will be available only to the system administration personnel for purposes of maintaining data base integrity and accuracy. Deletion means that the document is no longer available for retrieval and viewing using normal system functions. This requirement does not preclude the use of Write Once Read Many (WORM) media. It is anticipated that logs will be maintained of all documents that have been deleted.

( LSS2-047-5

**Undelete.** The LSS shall provide the capability to make a list of documents that have been logically deleted; to restore a document that has been logically deleted and to make it available to users. [LSS1-018]

## 5.2 System Security Enforcement

- ✓ **LSS2-048**      **Enforce Functional Access Authorizations.** The LSS shall prohibit user access to functions which the user has not been authorized to use through the "Set Functional Access Authorizations" function. [LSS1-019]
- ✓ **LSS2-049**      **Enforce Data Access Authorizations.** The LSS shall prohibit user access to data which the user has not been authorized to access through the "Set Data Access Authorizations" function. [LSS1-019]
- ✓ **LSS2-050**      **Enforce Header Field Protections.** The LSS shall prohibit the editing of header fields designated as protected by the Protect Header Field function, except for headers which are being created for the first time within the LSS. [LSS1-018, LSS1-019]

## 6.0 LSS DATA REQUIREMENTS

In order to provide the functions described in Sections 3, 4 and 5, the LSS must support certain key data elements. These elements are described in Section 6.1. Specific data element formats are defined in Section 6.2.

### 6.1 Key Data Elements

#### 6.1.1 Documentary Material

**LSS2-051**            Documentary Material. The LSS shall be capable of receiving, processing and storing documentary material of the types described in Table 6-1. [LSS1-007, LSS1-012, LSS1-013, LSS1-014, LSS1-028]

#### 6.1.2 Electronic Messages

**LSS2-052**            Electronic Messages. LSS electronic messages shall be free text format. [LSS1-003]

Comment: The free text format requirement is meant to clarify that the electronic messages, which might include such types as orders, decisions, motions, issuances, and miscellaneous filings, do not require unique message formats by message type. This does not preclude the LSSA from procedurally establishing message format conventions.

#### 6.1.3 Authority Tables

**LSS2-053**            Authority Tables. The LSS shall have an editable table or tables of valid field values for the LSS Header and any other header information in the system beyond that specified in this document. [LSS1-019]

## 6.2 Data Formats

### 6.2.1 Header Fields for Documentary Material

**LSS2-054**            Documentary Header Fields. The LSS header shall, at a minimum, include the fields and formats defined in Table 6-2. [LSS1-012, LSS1-027]

Comment: The LSS header was defined by a working group under the LSSARP and is designed to allow users to identify and track evidentiary materials in the documentary database which may be used multiple times as exhibits in depositions and which are introduced as hearing exhibits.

Users must be able to view the images of documents, which have been referenced as exhibits, while in a deposition or hearing transcript text file. Users must be able to identify, while viewing header records, which deposition or hearing transcripts have referenced the document being viewed.

Table 6-1. Documentary Material Data Elements

Requirement Identifier	Data Name	Description	Req. Ref.
LSS2-051-1	Document (Type A)	Documents represented as text, image, LSS header	LSS1-012 LSS1-013 LSS1-014
LSS2-051-2	Document (Type B)	Documents for which text is not provided. These documents will be converted to text using LSS functions unless they are graphic-oriented documents.	LSS1-012 LSS1-014
LSS2-051-3	Document (Type C)	Graphic-oriented documents stored only as image, LSS header. These are documents which are not suitable for conversion to text due to their graphic nature or the lack of data having significant retrieval value (such as columns of numbers).*	LSS1-012 LSS1-014
LSS2-051-4	Document (Type D)	Non-image/text material represented only as LSS header, with item location described.	LSS1-007 LSS1-012
LSS2-051-5	Document (Type E)	LSS header for privileged, confidential or safeguards information. Points to physical location of these documents outside of the LSS. In the case of privileged information, the data is located in a protective order file, which is not part of the LSS.	LSS1-012 LSS1-028

\*As defined in 10 CFR 2, graphic oriented material includes: "raw data, computer runs, computer programs and codes, field notes, laboratory notes, maps, diagrams and photographs which have been printed, scripted, hand written or otherwise displayed in any hard copy form. They may include: Calibration procedures, logs, guidelines, data and discrepancies; Gauge, meter and computer settings; Probe locations; Logging intervals and rates; Data logs in whatever form captured; Text data sheets; Equations and sampling rates; Sensor data and procedures; Data Descriptions; Field and laboratory notebooks; Analog computer, meter or other device print-outs; Digital computer print-outs; Photographs; Graphs, plots, strip charts, sketches; Descriptive material related to the information above."

**Table 6-2. Minimum Header Fields for LSS Documentary Material**  
(Legend follows table.)

<b>LSS Field</b>	<b>Mandatory or Req'd by Participant</b>	<b>Mandatory or Req'd by LSSA</b>	<b>Multivalued (max # of entries)</b>	<b>Max Field Length</b>	<b>Authority Table</b>	<b>Required Format</b>
<b>LSS Accession Number</b>	N	M	N	13	N	Must be a unique number 3 digit alpha code w/ submitting organization, 7 numerics and check digit
<b>Participant Accession Number</b>	M	N	Y (50)	25	N	Alpha numeric, no required format
<b>Title</b>	M	N	N	1000	N	N
<b>Author Name</b>	M	Y	Y (200)	50	Y	Last Name, First Initial, Middle Initial
<b>Author Organization</b>	M	N	Y (200)	65	Y	
<b>Document Date</b>	M	N	N	8	N	YYYYMMDD
<b>Document Number</b>	R	N	Y (5)	30	N	N
<b>Version</b>	R	N	Y (5)	50	N	N

<b>LSS Field</b>	<b>Mandatory or Req'd by Participant</b>	<b>Mandatory or Req'd by LSSA</b>	<b>Multivalued (max # of entries)</b>	<b>Max Field Length</b>	<b>Authority Table</b>	<b>Required Format</b>
<b>Access Control Information</b>	R	N	Y (10)	3	Y	N
<b>Related Records Number</b>	R	Y	Y (500)	25	Y	Alpha numeric
<b>Related Record Code</b>	R	Y	Y (500)	7	Y	N
<b>Special Class</b>	R	N	Y (10)	50	Y	N
<b>Abstract (Field under consideration to be deleted)</b>	N	N	N	5000	N	N
<b>Package Identifier</b>	R	Y	Y (500)	50	N	N
<b>Document Type (Includes package types)</b>	M	N	Y (3)	40	Y	N
<b>Identifiers</b>	N	N	Y (100)	80	N	N
<b>Comments</b>	N	N	N	1000	N	N
<b>Media</b>	R	N	Y (5)	7	Y	N
<b>QA Record</b>	M	N	N	1	Y	N
<b>Traceability Number</b>	R	R	Y (10)	50	N	N
<b>Traceability Code</b>	R	R	Y (10)	5	Y	N

<b>LSS Field</b>	<b>Mandatory or Req'd by Participant</b>	<b>Mandatory or Req'd by LSSA</b>	<b>Multivalued (max # of entries)</b>	<b>Max Field Length</b>	<b>Authority Table</b>	<b>Required Format</b>
<b>Keywords</b>	N	N	N	5000	N	Y Separate terms and phrases by punctuation
<b>Number of Images</b>	N	M	N	6	N	N
<b>Physical Location Reference Information</b>	R	R	N	1000	N	N
<b>Addressee Name</b>	R	N	Y (500)	50	Y	Last Name, FI MI
<b>Addressee Organization</b>	R	N	Y (500)	65	Y	

<b>LSS Field</b>	<b>Mandatory or Req'd by Participant</b>	<b>Mandatory or Req'd by LSSA</b>	<b>Multivalued (max # of entries)</b>	<b>Max Field Length</b>	<b>Authority Table</b>	<b>Required Format</b>
<b>LSS Record Housekeeping Info:</b> Date Received at LSS Date Available in LSS Date/Time Loaded into LSS Date/Time of Last Modification LSS Indexer ID Station ID QC ID Subject and Abstract Cataloger ID Cataloging QC ID Processing Stage Status Verification ID Change Tracking Log Electronic Signature Verification Electronic Image Location Searchable Text Reference Info	N	Y	TBD	TBD	TBD	TBD
<b>LSS Audit Info</b>	N	R	TBD	TBD	TBD	TBD

See Legend, next page.

**Table 6-2 Legend:**

**Symbols:** Y = Yes; N = No; R = Required; M = Mandatory; TBD = To Be Determined

For date fields, Y = year, M = month, D = day

**Table definitions:**

**Data submitted by participant:** This field will be submitted by the participant (Mandatory = must be provided for each unit [record]; Required = must be provided if applicable; Optional = provided at discretion of participant.)

**Provided by LSS System or LSSA:** This field will be provided by LSS. (Mandatory = must be provided for each unit [record]; Required = must be provided if applicable)

**Multi-valued:** Multiple entries allowed in a field.

**Controlled Authority List:** List of accepted entries to be used by all participants, such as document types or specific forms of an organization name.

**Text searchable:** The ability to perform phrase or single-word searches of the field entries.

**Comments/Issues:** Any additional comments or outstanding issues.

**Note:** Detailed definitions of header fields are provided in Appendix C.

## 6.2.2 Header Fields for Official Record Material

- LSS2-055 Official Record Material Header Fields. The Official Record Material shall, at a minimum, be described using applicable LSS documentary material header fields (Table 6-2) plus the following descriptors:
- Docket number
  - Record material type
  - Status ("candidate" or "approved" official record material)
- [LSS1-004]

Comment: This requirement is not intended to dictate the exact name of these descriptors, nor to mandate that they be physically distinct from the documentary material header fields. Docket number is necessary because the LSS may support multiple dockets. Record material types include (for example) transcripts, exhibits, and motions. Status is required because material may be entered into the system prior to formal approval as official record material.

## 6.2.3 Text Format

- LSS2-056 Text Format. The text representation of material in the LSS shall be page delimited ASCII text. [LSS1-013]

## 6.2.4 Image Formats

- LSS2-057 Image format. The electronic image of documentary material in the LSS shall use TIFF Group 4 format for bitonal images and JPEG format for color and grey scale images. These formats are part of the Aldus Tagged Image File Format (TIFF) version 6.0 representation. [LSS1-006, LSS1-014]

Comment: The Aldus Tagged Image File Format is an industry standard developed and put into the public domain by Aldus.

- LSS2-058 Image types. The LSS shall capture, import, process and display bilevel (bitonal), grey-level, and color images of documentary material. The grey-level representation shall allow up to 256 shades of grey. [LSS1-014]

- LSS2-059 Image resolution. The electronic image representation of documentary material in the LSS shall be stored at the following minimum resolutions:

Bilevel (bitonal) images	300 DPI (1 bit representation)
Grey-level images	150 DPI (8 bit representation)
Color	150 DPI (24 bit representation)
[LSS1-006, LSS1-014]	

- LSS2-060** **Image compression.** Compression of electronic images shall use CCITT Group 4 compression for bilevel images, and JPEG for grey-scale images. The JPEG compression ratio shall be selected such that an image can be printed at the original size without any degradation detectable by the unaided eye. [LSS1-014]

### 6.2.5 Import Formats

- LSS2-061** **Import Formats.** The LSS shall be designed to accept data for import on MPC-2 compliant CD-R and through electronic transfer. The physical recording format on the CD-R medium shall adhere to industry standards, including:

  - ISO10149 - "Information Data Interchange on Read-Only 120 mm Optical Data Disk" (1989),
  - ISO 9960 - "Information Processing - Volume and File Structure of CD-ROM for Information Exchange" (1990),
  - ECMA 168 - "Volume and File Structure for Read-Only and Write Once Optical Disk Media for Information Exchange" (1992).

[LSS1-004]

**Comment:** The logical format of the data on the CD-R medium or electronic transfer package will be defined by DOE during the LSS design. Additional formats should be anticipated.

## 7.0 LSS PERFORMANCE AND CAPACITY REQUIREMENTS

**LSS2-062** Storage and Retrieval Capacity. The LSS shall provide an expandable storage capacity capable of storing for retrieval document volumes identified in Appendix B. The storage media shall be capable of supporting access times specified in Table 7-1 for the volumes specified in Appendix B. [LSS1-003, LSS1-012, LSS1-013, LSS1-014, LSS1-015]

Comment:

This volume requirement is based on the following assumptions:

The anticipated maximum documentary material page count is approximately 30 million, of which:

28.4 million are letter size pages (captured as bilevel)

1.5 million are E-size pages (captured as bilevel)

0.1 million are E-size pages (captured as grey-scale)

Each letter size page is assumed to contain 2500 characters.

Each Header Record consist of 2000 characters and one is created for every 13 pages (the presumed average document size) entered into the system.

It is not anticipated that the full storage capacity of the LSS will be procured at one time. However for the system to meet this requirement, the design must demonstrate that storage and access components sufficient to accommodate this capacity can be incrementally added without system redesign. Ability to satisfy this requirement should be demonstrated though some combination of engineering analysis, demonstrated expansion capability, and/or comparison with existing systems of like design.

**LSS2-063** Backup Storage Capacity. The LSS shall provide the capability of storing and maintaining backups consistent with requirements LSS2-031 and LSS2-032. [LSS1-018]

**LSS2-064** Concurrent Users. The LSS shall support up to 150 concurrent users. [LSS1-012, LSS1-013, LSS1-014, LSS1-015]

Comment: Concurrent users means users who are exercising normal

system functions during the same time period. Testing would normally be done by having testers implement testing scenarios defining normal system use.

**LSS2-065**

**Timing Strings.** The LSS shall meet the average response times shown in Table 7-1. The performance shall be achieved with 15 concurrent search and retrieval users active on the system. [LSS1-018]

**Comment:** Performance measurements shall measure the time from the "execute command" key stroke (following any required data entry), to the time that the requested data or system response first appears on the screen. Time required for the end user to place removable media into the system, if required, will not be counted in retrieval times.

The performance indicated will be achievable at the Main Facility and at the Supported Sites as indicated. These requirements apply only to components under the control of the LSSA. They do not apply to dial-in users or any sites not listed in Table 9-1.

**LSS2-065-1**

**Performance Monitoring.** The LSS shall provide performance monitoring software needed to verify compliance with response times shown in Table 7-1. [LSS1-018]

**Table 7-1. Response Time Requirements**

Requirement Identifier	Function/ Event	Conditions	Response Time 15/50 concurrent users
LSS2-065-2	Retrieval of query results list	UNLV test query INJD-T3-Q1 or TEJA-T#-Q2. <sup>8</sup> Database contains headers for at least 5 million pages of documents. A total of 10 documents found.	90 seconds/140 seconds
LSS2-065-3	Retrieval of header data for document identified in query results list.	Database contains headers for at least 5 million pages of documents.	10 seconds/15 seconds
LSS2-065-4	Retrieval of text data for document identified in query results list.	Database contains at least 5 million pages of documents.	First page: 10 seconds/15 seconds Each subsequent page: 3 seconds at the Main Facility, 6 seconds at the Supported Sites

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<sup>8</sup>These queries were selected as representative of typical user queries which are not overly simple or complex. INFD-T3-Q1: Find documents where text includes phrase like 'repository' & 'seal' or text includes phrase like 'shaft' & 'seal' or text includes phrase like 'borehole' and 'seal', order by document id. TEJA-T3-Q2: Find documents where text includes phrase like 'faults' & 'Basin and Range Province' or text includes phrase like 'faults' & 'Nevada' or text includes phrase like 'faults' & 'Yucca Mountain' order by document id.

Requirement Identifier	Function/ Event	Conditions	Response Time 15/50 concurrent users
LSS2-065-5	Retrieval of image data for document identified in query results list.	Database contains at least 5 million pages of documents.	First page: 30 seconds/45 seconds Each subsequent page: 6 seconds at the Main Facility 9 seconds at the Supported Sites
LSS2-065-6	Document bilevel scanning	8-1/2x11 inch paper. All prior data entry needed for document scanning complete prior to initiation, paper loaded on scanner.	30 pages per minute for single sided, 15 pages per minute for double sided (30 bilevel images created)
LSS2-065-7	New Document Access	Measured from the time a new document (header, text and image) has been captured and stored in the LSS until it is available for retrieval and viewing at the supported sites.	24 hours. Comment: This means that any method of dissemination from the capture site(s) to the retrieval sites must support access to newly entered documents within 24 hours, on an ongoing basis. Weekly or monthly updates to the reading rooms, for example, would not be acceptable.
LSS2-065-8	New Transcripts	Measured from the time that daily transcripts are imported into the LSS until the time they are available for viewing as text.	1 hour.
LSS2-065-9	Prepare Searchable Text	Time to perform <u>Prepare Text for Search</u> function. (See Section 3.1)	Less than 20 seconds, on average, to add a document consisting of 10 full text pages, to an existing text base of 5 million pages.

Requirement Identifier	Function/ Event	Conditions	Response Time 15/50 concurrent users
LSS2-065-10	Backup Data	Time to backup system data of any type. Incremental or full backup.	2 Gigabytes per hour
LSS2-065-11	Restore Data	Time to restore system data of any type.	1.5 Gigabytes per hour

## **8.0 LSS RELIABILITY, AVAILABILITY AND MAINTAINABILITY REQUIREMENTS**

LSS users will access the system from the Eastern to the Pacific time zones during normal working hours, with some after hours usage. During the hearing phase there is expected to be an increase in after-hours usage, especially in electronic messaging and importing of official record materials.

One of the key benefits of the LSS is that it reduces the time allotted for transmission of materials:

"Whenever a party, potential party, or interested governmental participant, has the right or is required to do some act within a prescribed period after the service of a notice or other document upon it, one day shall be added to the prescribed period. If the Licensing Support System is unavailable for more than four access hours of any day that would be counted in the computation of time, that day will not be counted in the computation of time." [10CFR2.1017]

In order to avoid delays in the licensing process the LSS must be reliable and available for users who access it for message transmission and document discovery. Since reliability and availability necessarily require planned preventative maintenance and quick-response for unplanned maintenance, the LSS also must also be designed to be maintainable. The following requirements address these goals:

- LSS2-066            **Reconfigurable Capture Stations.** The LSS shall provide reconfigurable hardware and software allocation for stations used in the capture process. Movement of functions from one station to another shall be achievable in 30 minutes or less. [LSS1-018]

Comment: This requirement means that capture functions can be moved from one station to another should a hardware failure occur on the first station. It is not required that all hardware be redundant in the system provided that the availability requirements are met.

- LSS2-067            **Maintainability.** All LSS workstations, servers, storage devices, on-site communications, power and environmental control equipment shall be serviceable on-site within four hours of parts availability for component-level failures. [LSS1-018]

Comment: This document does not address the contractual mechanisms or requirements on service contractors such as parts availability and service personnel response time. This requirement pertains to the system design, and means that no components should be used in the system which cannot be serviced on-site during a four hour period when parts and service personnel are available. The intent of this requirement is that, given a

normal service contract, any component level failures of the LSS can be readily repaired on-site. "Component-level failures" mean failures that require the replacement of one or a few components of hardware, as opposed to the catastrophic failure of all components (due to fire, for example.)

**LSS2-068**

**Equipment Access.** All stationary hardware shall have a minimum of three feet of free access space for all equipment access panels, or more space if required to open the panels completely. [LSS1-018]

**Comment:** Stationary hardware refers to large processors, storage devices, air conditioning units, etc. which are not normally moved or cannot be easily moved by one person to provide access. Desktop PC's, monitors and equipment of similar size are not considered stationary hardware.

**LSS2-069**

**Availability.** The functions of the LSS, other than those which require hardware outside of the LSS (e.g. dial-in access) shall meet minimum specified availability requirements using the following definitions:

**Availability:** Refers to availability of all sites listed in Table 9-1.

**Normal Enterprise Hours:** The time span which includes 8 a.m. to 5 p.m. Eastern time, and 8 a.m. to 5 p.m. Pacific time, in other words, 8 a.m. - 8 p.m. Eastern time, 5 a.m. - 5 p.m. Pacific time, seven days a week.

**Normal Site Hours:** The time span which includes 8 a.m. to 5 p.m. at a given site, seven days a week.

**Extended hours:** Normal hours plus three hours prior and three hours after normal hours. Extended Enterprise Hours include 5 a.m. to 11 p.m. Eastern time, and 2 a.m. to 8 p.m. Pacific time. Extended Site Hours include 5 a.m. to 8 p.m. at a given site, seven days a week.

**Sustained operations:** continuous operations for days specified. For example, sustained operations five days a week would imply continual operation five days a week, 52 weeks a year. For acceptance test purposes, sustained operations would imply continual operations throughout the specified test period.

**Comment:** This document does not address the actual operational hours of the LSS which will be determined by the LSSA and the operations contracts let for the system. It pertains only to the capability of the system, as designed and implemented, to support these minimum availability requirements. Presumably, these system availability

requirements will be demonstrated during system acceptance over a defined period of time. The actual system availability during operations is a function of operational hours set by the LSSA, the performance of the operating contractors, as well as the system design and implementation.

*Planned maintenance/backup time.* A time period during which nightly backups and planned maintenance can be performed.

[LSS1-018, LSS1-025]

\ LSS2-069-1

Electronic Message Availability. The Electronic Message Transfer functions shall be capable of sustained operation at 90% availability during Extended Enterprise Hours. [LSS1-018]

Comment: This requirement accommodates a six hour planned maintenance/backup time to assure long term system availability and data protection, while supporting extended hours of user access. Electronic Message Transfer is expected to be heavily used during extended hours during the hearing phase.

^ LSS2-069-2

Capture/Storage Availability. The Document capture and storage functions shall be capable of sustained operation at 90% availability during Extended Site Hours. [LSS1-018]

\ LSS2-069-3

Search/Retrieval Availability. The Document Search and Retrieval functions shall be capable of sustained operation at 90% availability during Extended Site Hours. [LSS1-018]

## **9.0 LSS FACILITIES, EQUIPMENT AND COMMUNICATIONS**

### **9.1 LSS Sites and Their Respective Functions**

**LSS2-070**            **LSS Locations.** The LSS functions shall be available at multiple locations in accordance with Tables 9-1 and 9-2. [LSS1-010]

**Comment:** Table 9-1 maps LSS user types to LSS locations. Table 9-2 shows which LSS functions are allocated to each user type. Note that some individuals will be assigned the functions of multiple user types.

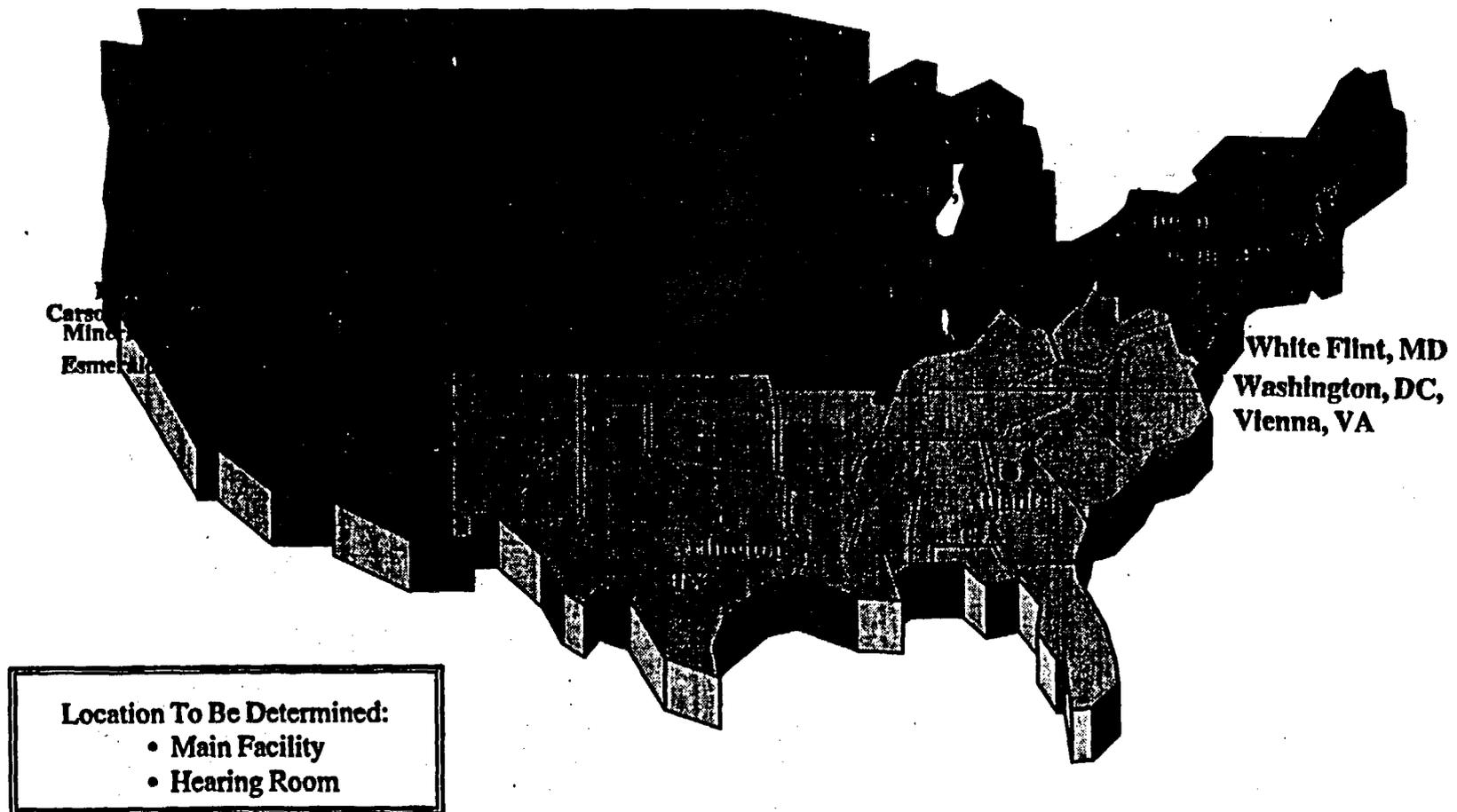
Figure 9-1 shows the location of the LSS facilities.

### **9.2 LSS Retrieval Equipment**

**LSS2-071**            **Retrieval Equipment.** The LSS shall allow the addition of equipment to accommodate increased numbers of query and retrieval users up to the maximums shown in Table 9-3. [LSS1-018]

### **9.3 Communications**

The communications connectivity between the LSS sites is not specified in this document. It is assumed that communications lines between the main facility and the sites listed in Table 9-1 will be sized to meet the functional and performance requirements of the LSS. All communications equipment and lines necessary to meet the functional and performance requirements of this specification are considered part of the LSS system. Communication lines used by dial-in users are not considered part of the LSS system.



**Figure 9-1 LSS Locations**

**TABLE 9-1  
ALLOCATION OF USER TYPES TO ACCESS LOCATIONS**

Access Locations	User Types				
	Public Document Room Users	LSS Participants	System Administrator/Staff	Capture Personnel	LSSA Quality Checking Authority
DOE Headquarters, Washington, D.C.	●	●			
DOE Project Office, Las Vegas, NV	●	●			
NRC Reading Room, Washington D.C.	●	●			
NRC Region 1 Office, King of Prussia, PA	●				
NRC Region 2 Office, Atlanta, GA	●				
NRC Region 3 Office, Glenn Ellyn, IL	●				
NRC Region 4 Office, Arlington, TX	●				
Las Vegas, NV	●	●			
Reno, NV	●	●			
Carson City, NV	●	●			
Churchill County, NV	●				
Clark County, NV	●	●			
Esmeraldo County, NV	●	●			
Eureka County, NV	●				
Inyo County, NV	●	●			
Lander County, NV	●				
Lincoln County, NV	●	●			
Mineral County, NV	●				
Nye County, NV	●	●			
White Pine County, NV	●				
National Cong. of American Indians, Onida, WI		●			
Main Facility (Location TBD)			●	●	●
Hearing Room (Location TBD)		●		●	
Remote	●	●			
M&O Las Vegas		●			
M&O Virginia		●			

**TABLE 9-2**  
**ALLOCATION OF FUNCTIONS TO USER TYPES**

Functions	User Types						
	Public Document Room Users	LSS Participants*	System Administrator/Staff	Capture Personnel	LSSA Quality Checking Authority	Dial-In User**	System
Scan Paper to Image				●			
Partial Document Scanning				●			
Import Electronic Document				●			
Import Image				●			
Import Text				●			
Import Electronic Message				●			
Import Header				●			
Create Electronic Header				●			
Enter Header Data				●			
Authority Table Checking				●			
Convert Image to Text				●			
Prepare Text for Search				●			
Check for Duplicate Documents				●	●		
Mark Document as Superseded			●				
Assure Document Capture Quality				●			
Pre-Store Quality Check - Header				●			
Pre-Store Quality Check - Image				●			
Pre-Store Quality Check - Text				●			
Text Spell Check				●			
Rejected Document List				●			
Correct Header Errors (Pre-Store)				●			
Replace Image Pages				●			
Interactive Text Correction				●			

\* Includes parties and potential parties.

\*\* Functions only available if user provides necessary retrieval hardware and communications. Electronic message functions will only be available to parties.

**TABLE 9-2**

**ALLOCATION OF FUNCTIONS TO USER TYPES (Cont'd)**

Functions	User Types						
	Public Document Room Users	LSS Participants*	System Administrator/Staff	Capture Personnel	LSSA Quality Checking Authority	Dial-In User**	System
Store Document (Link Text, Image, Header)				●			
Store Document Header				●			
Store Document Text				●			
Store Document Image				●			
Link Document Components				●			
Preclude Orphan Image/Text							●
Define Information Package				●			
Query for Document	●	●			●	●	
Query Header	●	●			●	●	
Query Text	●	●			●	●	
Text Query Parameters	●	●			●	●	
Query Header and Text	●	●			●	●	
Save/Reuse Query	●	●			●	●	
Provide Query Status	●	●			●	●	
Query Assistance	●	●			●	●	
Save Query Result Set	●	●			●	●	
Display Document	●	●			●	●	
Display Header	●	●			●	●	
Display Text	●	●			●	●	
Locate Search Terms in Document	●	●			●	●	
Display Image	●	●			●	●	
Image Viewing	●	●			●	●	
Display Image and Text	●	●			●	●	
Viewing Options	●	●			●	●	

\* Includes parties and potential parties.

\*\* Functions only available if user provides necessary retrieval hardware and communications. Electronic message functions will only be available to parties.

**TABLE 9-2**

**ALLOCATION OF FUNCTIONS TO USER TYPES (Cont'd)**

Functions	User Types						
	Public Document Room Users	LSS Participants*	System Administrator/Staff	Capture Personnel	LSSA Quality Checking Authority	Dial-In User**	System
Import Transcripts				●			
Start Up System			●				
Shut Down System			●				
Backup Data			●				
Restore Data			●				
Monitor System Status			●				
Monitor Session Activity			●				
Data Base Administration Tools			●				
Store Non-Document-Related Items			●		●		
Retrieve Non-Document-Related Items			●		●		
Delete Non-Document-Related Items			●		●		
Administer Address Book			●				
System Logins			●				
Log-On LSS	●	●	●	●	●	●	
Log-Off LSS	●	●	●	●	●	●	
Change Personal Password		●	●	●	●	●	
Create/Modify User Account			●				
Set Functional Access Authorizations			●				
Set Data Access Authorizations			●				
Set Header Field Protection			●				
Edit Documents			●				
Edit Header Fields (Post-Store)					●		
Replace Image Pages - Post-Store					●		
Interactive Text Correction - Post-Store					●		
Document Deletion			●		●		
Undelete			●				

\* Includes parties and potential parties.

\*\* Functions only available if user provides necessary retrieval hardware and communications. Electronic message functions will only be available to parties.

**TABLE 9-2**  
**ALLOCATION OF FUNCTIONS TO USER TYPES (Cont'd)**

Functions	User Types						
	Public Document Room Users	LSS Participants*	System Administrator/Staff	Capture Personnel	LSSA Quality Checking Authority	Dial-In User**	System
Identify Document as Superseded	●	●			●	●	
Print Document	●	●			●	●	
Print Header	●	●			●	●	
Print Text	●	●			●	●	
Print Standard Image	●	●		●	●	●	
Print Oversized Image		●	●	●	●		
Print Results List	●	●					
Print Screen	●	●		●	●		
Request Paper Copy	●	●			●	●	
Process Paper Copy Request			●				
Create Electronic Message		●				●	
Delete Electronic Message		●				●	
Store Electronic Message		●				●	
Edit Electronic Message		●				●	
Electronic Message Import/Export		●				●	
Address Electronic Message		●				●	
Send Electronic Message		●				●	
Display Electronic Message		●				●	
Acknowledge Message Delivery							●
Report Message Delivery Failure							●
Print Electronic Message		●				●	
Designate Official Record Material			●				
Retrieve Official Record Material	●	●			●	●	

\* Includes parties and potential parties.

\*\* Functions only available if user provides necessary retrieval hardware and communications. Electronic message functions will only be available to parties.

**TABLE 9-2**

**ALLOCATION OF FUNCTIONS TO USER TYPES (Concluded)**

Functions	User Types						
	Public Document Room Users	LSS Participants*	System Administrator/Staff	Capture Personnel	LSSA Quality Checking Authority	Dial-In User**	System
Enforce Functional Access Authorizations							●
Enforce Data Access Authorizations							●
Enforce Header Field Protections							●

\* Includes parties and potential parties.

\*\* Functions only available if user provides necessary retrieval hardware and communications. Electronic message functions will only be available to parties.

**TABLE 9-3  
RETRIEVAL HARDWARE LOCATIONS**

Access Locations	LSS Parties					Public Reading Room				
	Retrieval Station	Printer (Slow)	Printer (Fast)	Oversize Printer (Slow)	Oversize Printer (Fast)	Retrieval Station	Printer (Slow)	Printer (Fast)	Oversize Printer (Slow)	Oversize Printer (Fast)
DOE Headquarters, Washington, D.C.	3	1	1	1		3	2			
DOE Project Office, Las Vegas, NV	5	1	1	1		3	2			
NRC Reading Room, Washington D.C.	5	2	1	1		3	2			
NRC Region 1 Office, King of Prussia, PA						3	2			
NRC Region 2 Office, Atlanta, GA						3	2			
NRC Region 3 Office, Glenn Ellyn, IL						3	2			
NRC Region 4 Office, Arlington, TX						3	2			
Las Vegas, NV	3	1	1	1		3	2			
Reno, NV	3	1	1	1		3	2			
Carson City, NV	3	1	1	1		3	2			
Churchill County, NV						3	2			
Clark County, NV	3	1	1	1		3	2			
Esmeraldo County, NV	3	1	1	1		3	2			
Eureka County, NV						3	2			
Inyo County, NV	3	1	1	1		3	2			
Lander County, NV						3	2			
Lincoln County, NV	3	1	1	1		3	2			
Mineral County, NV						3	2			
Nye County, NV	3	1	1	1		3	2			
White Pine County, NV						3	2			
National Cong. of American Indians, Oneida, WI	3	1	1	1						
Main Facility (Location TBD)	5	5	2	2	2					
Hearing Room (Location TBD)	5	3	1		1					
M&O Las Vegas	5	2	1	1	1					
M&O Virginia	5	2	1	1						

## 10.0 SYSTEM ARCHITECTURE AND DESIGN

The following paragraphs describe additional desired characteristics of the LSS design. Evaluation of compliance may require subjective judgement or involve cost/benefit tradeoffs. However solutions with a high degree of compliance with these requirements would be considered technically superior to other potential LSS solutions.

**LSS2-072**            Modular Design. The LSS shall be designed using modular design techniques and well documented software interfaces. As a goal, it will allow new software components to be integrated into the system without seriously impacting other software components. In particular the LSS software for conversion of image to text will be replaceable without redesign of the other system components. [LSS1-001]

Comment: The LSS may exist for tens of years. The system will have to be modified as necessary to reflect changing technology and requirements over that time period.

**LSS2-073**            Government/Industry Standards. The LSS shall use established government and/or industry hardware and software standards where practical. [LSS1-002]

**LSS2-074**            User Interface. The LSS user interface shall employ graphical user interface techniques which are commonly used in modern commercial software. All user interface screens within major user functions, (such as capture, retrieval, and system administration) will provide consistent presentations of user selectable functions, system messages, menus, on-line help and data presentation. [LSS1-022]

**LSS2-075**            Move Hardware/Software. The LSS shall provide the capability to reconfigure software functions to similar hardware components within the system to provide flexibility in work flow and maximize system availability. [LSS1-018]

**LSS2-076**            Modifiable User Interface. The LSS shall be designed to allow rapid changes in user interface to accommodate user preferences discovered during system pre-operational testing and during system operation. [LSS-001, LSS-022]

**LSS2-077**            Modifiable Header Definition. The LSS shall be designed to allow the addition and augmentation of documentary and official record fields and the linking of header fields with external data bases. [LSS1-018]

Comment: The LSSA may need to augment header information with

additional field information to characterize, identify, or track materials.  
The definition of these augmentation fields is not currently known.

**LSS2-078**

The LSS shall provide capabilities which support on-line documentation as part of an on-line help capability. [LSS1-018]

## GLOSSARY

### **Bibliographic Header**

Subset of the LSS header which is submitted by parties with their documentary material.

### **Bit-Mapped Image**

Electronic representation of an image by individual pixels, or points of light, dark or color, arranged in row and column order.

### **Character String**

One or more sequential alphanumeric characters or spaces.

### **Custom Dictionary**

Specially constructed dictionary capturing technical and other specialized terms.

### **CCITT**

Comite Consultatif Internationale de Telegraphique et Telephonique.

### **Document**

Any unit of documentary material. Document boundaries (the beginning and end of a document, when part of a larger body of material) are defined by the submitter.

### **Duplicate Document**

A document which is duplicative with another document in the LSS in that the two documents were captured or copied from the same original document, and do not differ in terms of the document contents or marginalia. Note that the capture or import of a duplicate document may not result in identical electronic files due to slight differences in the scanning or text conversion process.

### **E Sized**

34 by 44 inches

### **JPEG**

Joint Photographic Experts Group

### **LSS Header**

As used in this document, LSS header refers to the fields which profile the documentary material in the LSS as well as any fields used to profile the official record materials.

### **Official Record**

Equivalent to the official docket. Referred to in the LSS rule, 10CFR (2.1013), as the "official record file."

**Official Record Materials**

Materials designated as part of the official docket of the license proceedings and placed in the LSS as such. They include all documents which are considered by the Presiding Officer and, if there is an appeal or request for discretionary review, by the Commission.

**Page**

A physical single-sided page of a document, or the image or text resulting from the capture of a physical page.

**Proximity Search**

A text search where an occurrence of one string must occur within a specified proximity to an occurrence of another string.

**Results List**

A list of documents which satisfy a query. The documents are typically identified by one or more fields from the header, such as title, date and version number.

**Root Search**

A text search which looks for matches with the specified text string as well as matches with the root word of the text string.

**Session**

The period from the time a user logs onto the system to the time the user logs off the system.

**Standard Dictionary**

Commonly used authority on spelling.

**Superseded Document**

A document which no longer represents the latest official version of a document in that it has been formally superseded by a subsequent version, or rendered invalid due to the introduction of other documents into the data base.

**TIFF**

Tagged Image File Format

**Wildcard Search**

Text search in which a special character in the search criteria represents any single or multiple ASCII character. Usually, one special character is used to represent a single character wildcard, and a separate character is used to represent 1 to many letter wildcards.

## **APPENDIX A: PHASE 1 LSS REQUIREMENTS**

- LSS1-001** LSS components shall be integrated using modular design techniques and well-documented interfaces which allow new components to be integrated into the system without seriously impacting other components.
- LSS1-002** The LSS shall adhere to established government and/or industry hardware and software standards to the extent feasible.
- LSS1-003** The LSS shall provide an electronic information exchange function to facilitate communications between authorized users. This function shall allow users to transmit and receive electronic documents (e.g. motions, filings, orders, decisions, etc.). Each user shall have a corresponding electronic message center to receiver and store electronic correspondences.
- LSS1-004** The LSS shall be capable of accepting electronically formatted documentary materials. Within the LSS there must be a concept of a records package and the records package grouping must be logically accessible.
- LSS1-005** The LSS shall provide the capability to recognize characters from the digital image of a document and convert these characters into a standard text representation of the document. This optical character recognition function shall achieve character recognition accuracies that are achievable with the best commercial products available at the time of the LSS system design.
- LSS1-006** The LSS shall have the capability to create a digital image of each page of a document.
- LSS1-007** Documentary material not suitable for imaging and conversion to a standard text file shall be identified with a header that includes a reference to the storage location of the material. This reference shall be descriptive enough for users to identify the location of the material and how to access the material.

**LSS1-008** The LSS shall include a function that allows document submitters to verify that document information entered into the LSS data base is identical to the document information submitted to the LSS Administrator.

**LSS1-009** The LSS shall provide a function to allow all users to detect that subsequent revisions to a document exist.

**LSS1-010** The LSS shall be accessible from the following locations as a *minimum*:

- DOE Headquarters, Washington DC
- DOE Project Office, Las Vegas NV
- NRC Headquarters, White Flint, MD
- NRC Region 1 Office, King of Prussia, PA
- NRC Region 2 Office, Atlanta, GA
- NRC Region 3 Office, Glenn Ellyn, IL
- NRC Region 4 Office, Arlington, TX
- Las Vegas, NV
- Reno, NV
- Carson City, NV
- Nye County, NV
- Lincoln County, NV
- Esmeraldo Count, NV
- Clarke County, NV
- White Pine County, NV
- Eureka County, NV
- Mineral County, NV
- Churchill County, NV
- Lander County, NV
- Inyo County, CA
- National Congress of American Indians, Oneida, WI

**LSS1-011** The LSS shall provide one of two search and retrieval modes for public access depending upon whether a notice of hearing on the high-level waste license application has been issued:

*Prior to Notice* - Full-text search of each field in the bibliographic headers and retrieval of the header and associated image.

*After Notice is Issued* - same as above plus full-text search of the standard text files.

Given concurrence of the LSS Advisory Review Panel, the latter search mode can be provided prior to the hearing notice.

- LSS1-012** The LSS shall be capable of electronically storing and retrieving the bibliographic headers in the system.
- LSS1-013** The LSS shall be capable of electronically storing and retrieving document text.
- LSS1-014** The LSS shall be capable of electronically storing and retrieving the digital image associated with each page in a document.
- LSS1-015** Potential parties, interested governmental parties, and parties who access the LSS from locations other than those listed in requirement [LSS1-010] and those specified by the Administrator shall be provided full text search capability through dial-up access at the requester's expense.
- LSS1-016** Potential parties, interested governmental parties, and parties who access the LSS from locations other than those listed in requirement [LSS1-010] and those specified by the Administrator shall be provided access to images at the requester's expense.
- LSS1-017** Potential parties, interested governmental parties, and parties who access the LSS from locations in addition to those listed in requirement [LSS1-010] shall be capable of electronically requesting a paper copy of a document at the time of search.
- LSS1-018** The system shall provide the LSS Administrator with the necessary tools to ensure LSS availability and the integrity of the LSS data base.
- LSS1-019** The system shall provide the LSS Administrator with the necessary tools to ensure the security of the LSS. The electronic information exchange function shall provide password protection for all documents transmitted electronically.
- LSS1-020** The LSS shall provide tools to assist the user in retrieving documents when the unique identifiers for the documents are not known to the users. Examples might include synonym processing, thesaurus, natural language queries, or other search aids.
- LSS1-021** The LSS must have capture functionality and the capability to validate material submitted in required electronic form.

- LSS1-022** The LSS shall provide a user interface that is consistent with the acceptable user interfaces available at the time of the LSS design.
- LSS1-023** The LSS shall have a function that assists the LSS Administrator in identifying duplicate documents.
- LSS1-024** The electronic information exchange function shall provide for an electronic acknowledgement that mail has been delivered to the recipient's electronic message center. The acknowledgement shall include as a minimum, the name and address of the recipient and the date the electronic mail was delivered.
- LSS1-025** System Definition - - The totality of hardware, software, communications, data processes and procedures dedicated to providing document intake, storage, searching, retrieving, and delivery to the users of the headers, text and images as detailed in the mission statements found in 10 CFR 2, Subpart J.
- LSS1-026** The system shall be able to load transcripts from proceedings and transcripts from depositions.
- LSS1-027** The LSS will include the capability to catalog records packages and link the bibliographic headers for the records package and the bibliographic headers for the components of the package.
- LSS1-028** The LSS must accommodate a protective order file, the access to which is provided only under authorization by the presiding officer.
- LSS1-029** The LSS must be able to provide a mechanism that will allow retrieval and display of pages of text with the associated images.

**APPENDIX B: ESTIMATED LSS DATA VOLUMES**

<b>Year</b>	<b>OCRWM Pages/Year</b>	<b>OCRWM Cumulative</b>	<b>NRC Pages/Year</b>	<b>NRC Cumulative</b>	<b>Others Pages/Year</b>	<b>Others Cumulative</b>	<b>Total Pages Added Yearly</b>	<b>90% Relevant Cumulative</b>	<b>50% Relevant Cumulative</b>
1994	580 k	6,905 k	59 k	550 k	18 k	18 k	657 k	6,782 k	4,020 k
1995	750 k	7,655 k	59 k	654 k	23 k	41 k	832 k	7,584 k	4,522 k
1996	1,351 k	9,005 k	65 k	760 k	42 k	82 k	1,457 k	8,947 k	5,345 k
1997	1,682 k	10,687 k	71 k	891 k	52 k	134 k	1,804 k	10,644 k	6,369 k
1998	1,970 k	12,657 k	78 k	1,046 k	61 k	195 k	2,109 k	12,632 k	7,569 k
1999	2,013 k	14,670 k	86 k	1,203 k	62 k	257 k	2,161 k	14,663 k	8,795 k
2000	2,276 k	16,946 k	95 k	1,381 k	70 k	327 k	2,440 k	16,959 k	10,181 k
2001	2,371 k	19,317 k	104 k	1,567 k	73 k	400 k	2,548 k	19,351 k	11,625 k
2002	1,628 k	20,945 k	114 k	1,694 k	50 k	450 k	1,793 k	20,994 k	12,616 k
2003	1,584 k	22,529 k	126 k	1,818 k	49 k	498 k	1,759 k	22,593 k	13,581 k
2004	1,756 k	24,285 k	139 k	1,956 k	54 k	552 k	1,949 k	24,365 k	14,651 k
2005	1,708 k	25,993 k	152 k	2,089 k	53 k	605 k	1,913 k	26,088 k	15,691 k
2006	1,514 k	27,506 k	168 k	2,208 k	47 k	652 k	1,728 k	27,615 k	16,613 k
2007	1,674 k	29,181 k	184 k	2,339 k	52 k	703 k	1,910 k	29,305 k	17,632 k
2008	1,756 k	30,937 k	203 k	2,476 k	54 k	757 k	2,013 k	31,077 k	18,702 k
2009	1,247 k	32,184 k	223 k	2,574 k	38 k	795 k	1,509 k	32,335 k	19,461 k
2010	1,124 k	33,308 k	245 k	2,662 k	35 k	830 k	1,404 k	33,469 k	20,146 k

## **APPENDIX C: LSS FIELD DESCRIPTIONS**

### **Abstract**

A brief narrative description of the subject content of the document, or a full description of the contents of a document that cannot be imaged and converted to searchable text. The abstract is generally written by the author.

### **Access Control Information**

A code indicating that access to a document is restricted. Access is restricted if the document is privileged, proprietary, or copyrighted.

### **Addressee Name**

The names of all the persons to whom a document is addressed. Each entry in this field is linked to a corresponding entry in the Addressee Organization field.

### **Addressee Organization**

The affiliation of each receiver or the organization to whom the correspondence is addressed if there is no personal receiver. Each entry in this field is linked to a corresponding entry in the Addressee Name field.

### **Author Name**

The name of each person listed on the document as responsible for all or part of its creation. Only personal authors are entered in this field. Corporations as authors are captured in the Author Organization field. Each entry in this field is linked to a corresponding entry in the Author Organization field.

### **Author Organization**

The name of the organization (i.e., company, corporation or group) with which the author is affiliated at the time the document was created, or the name of the organization responsible for creating or originating the document when there is no personal author. If an author works for one organization and is representing another, both affiliations should be captured. Each entry in this field is linked to a corresponding entry in the Author Name field.

### **Comments**

Any information not covered in other fields which the submitter or indexer believes would be of help to identify or retrieve the document, or to further explain any field entry for the document. This field can be used for entries such as the language of the document (if it is not English) or the page numbers that are missing in an incomplete document.

### **Document Date**

The date on which the document was completed, issued, effective or published. If the date is unknown, information in the document will be used to estimate a date.

**Document Number**

The identifying number(s) assigned to a document that distinguishes it from other documents (e.g., DOE Order No., Public Law number, report number). Document numbers appear (typed or handwritten) on the document itself and are considered to be control numbers. The Document Number is generally assigned by the issuing agency. Examples are report numbers, or public law numbers such as SAND86-1023, PL95-16, or H101-364.

**Document Type**

The general format or physical presentation of the document. Examples include correspondence, report or procedure.

**Identifiers**

Words or phrases that the submitter or indexer believes represent the subject content of the document and will assist users in retrieval. These may be acronyms or informal terms or cross-references to alternate nomenclature. The terms in this field may be included in a controlled vocabulary/LSS Thesaurus.

**Keywords**

Words or phrases that the submitter provides with the document to represent the subject content of the document and to assist the user in retrieval. Keywords are not necessarily contained in the LSS Thesaurus.

**LSS Accession Number**

A unique identifier assigned to each document entering the system. The capture station at which the document enters the LSS is also identified as part of this number. The LSS Accession Number will also be used as a Related Record Number pointer for documents which have relationships to other documents in the LSS.

**Media**

The physical material upon which a document is stored.

**Number of Images**

The number of images of a document that was imaged from a hard-copy.

**Package Identifier**

An identifier assigned to all components of a group of documents submitted as a single entity. This field enables a package containing many documents which may or may not have relationships among them to be reassembled quickly and easily.

**Participant Accession Number**

A unique identification number assigned by the participant organization to each document submitted for entry into the LSS. This number assists the organization in locating documents it has submitted. This field should contain a specific alpha code identifying the participant organization, e.g., DOE, NRC, NEV, and any other alphanumeric scheme which the submitting organization might use in accessioning their own documents. The number used may be the accession number used in the submitting organization's records system.

**Physical Location Reference Information**

Information on the storage location of an item submitted to the LSS as header only because its form does not permit imaging.

**QA Record**

An indicator of whether the document is a quality assurance record. Quality assurance records are those whose contents have been determined to furnish evidence of the quality and completeness of data, items, and activities related to the safety of the repository program.

**Related Record Code**

The code that represents the type of relationship between the document being entered and a document to which it is related. Each code in the authority list will have a reciprocal code; for example, the reciprocal of a document (A) that is attached to another document (B) is document (B) has attachments (A). Examples of Related Record Codes include: REV (revises or is a later version of), COR (corrects) or SUPR (supersedes). Each entry in this field is linked to a corresponding entry in the Related Record Number field.

**Related Record Number**

This field contains the LSS Accession Number(s) of a document that has a particular relationship to the document being entered. There are several types of relationships, such as: parent/child (a document and its attachments); original/subsequent (a document and a later version, comments, corrections, or errata); and whole/part (a book and its chapters, a journal and its articles); and an information package and the cataloging units it contains. The type of relationship is captured in the Related Record Code field. Each entry in this field will be linked to a corresponding entry in the Related Record Code field.

**Special Class**

This field identifies documents with special characteristics that are not captured in other fields; for example, a document in a foreign language.

**Title**

An identifying sentence or phrase given to the document that appears on the document, i.e., the actual title. If the actual title is not present for a document, a title must be created.

**Traceability Code**

A code that indicates the type of traceability number. Examples of this code include: DTN (technical data link), DI (Document Identifier), and WBS (Work Breakdown Structure). Each entry in this field is linked to a corresponding entry in the Traceability Number field.

**Traceability Number**

An identifier that has been assigned to a document in order to link it to a specific activity. These identifiers will enable searchers to easily retrieve all documents associated with any given activity by providing a special linkage not available through other fields. Examples of traceability numbers include WBS numbers, Data Tracking Number, and configuration item identifiers. Each entry in this

field is linked to a corresponding entry in the Traceability Code field.

#### **Version**

The version, revision number, or status of a document that has or will have multiple iterations. It will correspond to information contained on the document, e.g., Revision 2, Version 1. Final, or Draft.

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#### **LSS Record Housekeeping and Audit Fields** (Field definitions to be provided by the NRC)

- Date Received at LSS
- Date Available in LSS
- Date/Time Loaded into LSS
- Date/Time of Last Modification
- LSS Indexer ID
- Station ID
- QC ID
- Subject and Abstract Cataloger ID
- Cataloging QC ID
- Processing Stage Status
- Verification ID
- Change Tracking Log
- Electronic Signature Verification
- Electronic Image Location
- Searchable Text Reference Info
- LSS Audit Info