Nye County Nuclear Waste Repository Project Office
Licensing Support Network Implementation Plan

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ACRONYMS AND ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
DOE	U.S. Department of Energy
FTP	File Transfer Protocol
HLRW	high-level radioactive waste
HTML	Hypertext Markup Language
HTTP	hypertext transfer protocol
IP	Internet Protocol
LSN	Licensing Support Network
LSNA	Licensing Support Network administrator
MB	megabyte
NRC	U.S. Nuclear Regulatory Commission
NWRPO	Nuclear Waste Repository Project Office
PDF	Portable Document Format
QA	quality assurance
QARC	Quality Assurance Records Center
RAM	Random Access Memory
RID	record identification number
XML	extensible markup language

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GLOSSARY

bibliographic header–The minimum series of descriptive fields that a party, potential party, or interested governmental participant must submit with a document or other material.

document–Any written, printed, recorded, magnetic, graphic matter, or other documentary material, regardless of form or characteristic.

documentary material–Any information upon which a party, potential party, or interested governmental participant intends to rely and/or to cite in support of its position in the proceeding for a license to receive and possess high-level radioactive waste at a geologic repository operations area; any information that is known to, and in the possession of, or developed by the party that is relevant to, but does not support, that information or that party's position; and all reports and studies, prepared by or on behalf of the party, potential party, or interested governmental participant, including all related "circulated drafts," relevant to both the license application and the issues set forth in the topical guidelines in Regulatory Guide 3.69 (NRC, 2002a), regardless of whether they will be relied upon and/or cited by a party. The scope of documentary material shall be guided by the topical guidelines in the applicable U.S. Nuclear Regulatory Commission Regulatory Guide.

electronic hearing docket–The U.S. Nuclear Regulatory Commission information system that receives, distributes, stores, and retrieves the Commission's adjudicatory docket materials.

image–A visual likeness of a document, presented on a paper copy, microform, or a bit-map on optical or magnetic media.

party–The U.S. Department of Energy, the U.S. Nuclear Regulatory Commission staff, the host State, any affected unit of local government, any affected Indian Tribe as defined in Section 2 of the Nuclear Waste Policy Act of 1982, as amended (42 U.S.C. 10101), admitted to the proceeding on an application for a license to receive and possess high-level radioactive waste at a geologic repository operations area, provided that a host State, affected unit of government, or affected Indian Tribe shall file a list of contentions in accordance with the provisions of 10 CFR Part 2.1014(a)(2)(ii) and (iii).

searchable full text–The electronic indexed entry of a document that allows the identification of specific words or groups of words within a text file.

topical guidelines–The set of topics set forth in Regulatory Guide 3.69 (NRC, 2002a), which are intended to serve as guidance on the scope of "documentary material."

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1.0 INTRODUCTION

The Licensing Support Network (LSN) and its predecessor, the Licensing Support System, have been under discussion and development since 1987. During the past decade, the LSN has progressed through a significant evolution process, and it has only been within the last year that the functional requirements and technical guidance for the LSN have been finalized. With the presidential approval of the U.S. Department of Energy (DOE) Site Recommendation for the Yucca Mountain High-Level Radioactive Waste Repository (Bush, 2002), the path is clear for the DOE to submit a license application to the U.S. Nuclear Regulatory Commission (NRC). In order for Nye County to participate in the license application process, it must make available all of its documents that are relevant to licensing on a distributed electronic database—the LSN.

The purpose of this document is to describe the Nye County Nuclear Waste Repository Project Office (NWRPO) process for planning, developing, implementing, and maintaining the NWRPO LSN system. This implementation plan is organized into the following sections: Section 1.0 includes a brief background and description of the requirements and responsibilities for the LSN, Section 2.0 outlines the NWRPO process for identifying the documents that need to be included on the LSN and how NWRPO will address the functional requirements for the LSN, Section 3.0 identifies the steps for developing the pilot NWRPO LSN website. Section 4 summarizes in bullet format the major processes and steps described in Sections and 2 and 3 that are necessary to implement the NWRPO LSN. Section 4.0 covers the estimated schedule, Section 5.0 provides estimated costs for the remainder of FY2002 and for FY2003, and Section 6.0 lists references.

1.1 BACKGROUND

Spent nuclear fuel and high-level radioactive waste (HLRW) have been produced since the 1940s, mainly as a result of commercial power production and defense activities. Since then, the proper disposal of these wastes has been the responsibility of the federal government.

In 1982, Congress established a national policy to solve the problem of nuclear waste disposal. The Nuclear Waste Policy Act of 1982 established the framework for the nation's HLRW program. The Nuclear Waste Policy Act of 1982 made the DOE responsible for finding a site, and building and operating an underground disposal facility called a geologic repository.

In 1983, the DOE selected nine locations in six states for consideration as potential repository sites. The nine sites were studied, and results of these preliminary studies were reported in 1985. Based on these reports, the President of the United States approved three sites for intensive scientific study, or site characterization. The three sites were Hanford, Washington; Deaf Smith County, Texas; and Yucca Mountain, Nevada.

Congress amended the Nuclear Waste Policy Act of 1982 under the Nuclear Waste Policy Amendments Act of 1987, which among other actions selected Yucca Mountain, Nevada, as the only potential site that DOE could characterize for a long-term geologic repository. Over the past 15 years, the DOE has been conducting site characterization studies to determine whether the Yucca Mountain site was a suitable location for the proposed HLRW repository. In February

2002, the DOE submitted the site recommendation to the President. On February 15, 2002, the President notified the Congress that he considers Yucca Mountain qualified for a construction permit application. Congress approved the recommendation. DOE is now required under the law to prepare a license application seeking NRC authorization to construct a repository at Yucca Mountain. The current plan calls for DOE to submit this application in December 2004.

1.2 LICENSING PROCESS

The Nuclear Waste Policy Act of 1982 specifies that licensing of a geologic repository will occur in three phases: (1) authorization to construct a geologic repository; (2) license to receive HLRW; and (3) license amendment to decommission and permanently close the disposal facility.

In the first phase, the DOE will apply to the NRC for authorization to construct a geologic repository. The NRC process for licensing a HLRW repository includes an initial review of the license application to determine whether it is complete. If the application is deemed incomplete, it will be returned to the DOE. If the application is deemed complete, it will be docketed, and a public notice will be published. The public notice will provide information on how the license application can be accessed by the public, and it will offer the opportunity for public intervention in a public hearing on the application. After the NRC reviews the application and completes a public hearing, it will make a decision on whether to authorize construction of a HLRW repository by the DOE. Once a construction authorization request is submitted, by law, the NRC will have three years to perform its review, conduct a public hearing, and reach a construction authorization decision by an independent licensing board. If the NRC is unable to reach a decision within the prescribed three-year time frame, it will have an additional year to develop a report to provide an explanation to Congress.

The LSN is one of the principal tools the NRC will use to meet this congressional time line, because the LSN replaces the classic hard-copy discovery exchanges among parties with electronic access to discovery materials prior to the docketing of a license application.

1.3 LICENSING SUPPORT NETWORK

10 CFR Part 2, *Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders*, Subpart J, "Procedures Applicable to Proceedings for the Issuance of Licenses for the Receipt of High-Level Radioactive Waste at a Geologic Repository" (10 CFR Part 2.1000 to 2.1027), governs the procedure for applying for a license to receive and possess HLRW at a geologic repository under 10 CFR Part 60, *Disposal of High-Level Radioactive Wastes in Geologic Repositories*, or 10 CFR Part 63, *Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada*.

Since the original rule (10 CFR Part 2, Subpart J) establishing a centralized dial-up Licensing Support System was published in 1989, there has been extensive interaction with the parties and potential parties to the HLRW repository licensing process. 10 CFR Part 2, Subpart J, was revised in late 1998 to adopt the LSN, a World Wide Web approach. An LSN advisory review panel was established, which is a federal advisory committee chartered to provide advice and guidance on the design and operation of the LSN.

On July 2, 2001, the NRC amended its rules of practice applicable to the use of the LSN for the licensing proceeding on the disposal of HLRW at a geologic repository. The amendments established the basic data structure and transfer standards ("design standards") that participant LSN websites must use to make documentary material available. The design standards were defined to ensure the exchange of data between the LSN central website (NRC LSN) and the participant document collections.

The LSN is designed to provide information through the Internet to the entire community of parties, potential parties, and interested governmental participants to the HLRW repository proceedings. The NRC LSN website will provide a central point of access to all LSN information. The LSN website is not a central repository, but the central source for discovery information for the HLRW repository licensing proceeding. Documents will be stored on the NWRPO LSN site, and the content and context will be searchable via the NRC LSN search engine. When a user finds and requests a document through the NRC LSN search engine, that document will be provided from the NWRPO LSN web server to the requestor.

1.4 NUCLEAR WASTE REPOSITORY PROJECT OFFICE LICENSING SUPPORT NETWORK ROLES AND RESPONSIBILITIES

The LSN is administered by the NRC under Subpart J of 10 CFR Part 2. The LSN Administrator (LSNA) is the NRC officer responsible for doing so. The LSNA will coordinate access to and the integrity of the documents and data made available by the parties on the LSN. Disputes arising over the availability of documents during the pre-license application phase will be resolved by a Pre-License Application Presiding Officer appointed by the NRC. After the DOE License Application has been docketed by the NRC and the license hearing phase begins, such disputes will be resolved by the Atomic Safety and Licensing Board Panel hearing the licensing case.

The Nye County NWRPO must carry out the following tasks to ensure the availability and integrity of data and documents in the LSN:

- Designate an official who will be responsible for administering LSN activities.
- Designate technical points of contact for various functions, including a webmaster for the NWRPO LSN site.
- Obtain the computer system necessary to comply with the requirements for electronic document production and service.
- Make all documentary material available in electronic format in accordance with 10 CFR Part 2.1003.
- Make available (for inspection and copying) any document that is not provided in electronic form within five days after directed by the Pre-licensing Application Presiding Officer.
- Comply with all standards for presentation of documentary materials established by the LSNA.

- Comply with all operational and functional standards regarding the NWRPO LSN website operation and maintenance, as established by the LSNA and the LSN advisory review panel technical working group.
- Maintain and publish LSN-required data regarding NWRPO LSN website operation and functionality (log files).
- Cooperate in LSNA review of corrected, changed, or deleted documents on the NWRPO LSN website.
- Cooperate in the NRC-established advisory review process under 10 CFR Part 2.1011(d).
- Demonstrate substantial and timely compliance with participation in the HLRW repository licensing proceeding in accordance with the requirements of 10 CFR Part 2.1003.
- Transmit all filings in the HLRW repository licensing adjudicatory proceeding electronically, according to established requirements.
- Designate a certifying official who will certify to the Pre-licensing Application Presiding Officer that the procedures specified in 10 CFR Part 2 have been implemented and that, to the best of his/her knowledge, the documentary material specified in 10 CFR Part 2.1009 has been identified and made electronically available. An initial certification must be made at the time the participant is required to comply with 10 CFR Part 2.1003.

2.0 NUCLEAR WASTE REPOSITORY PROJECT OFFICE LICENSING SUPPORT NETWORK IMPLEMENTATION PLAN

2.1 LICENSING SUPPORT DOCUMENTS

Under 10 CFR Part 2.1003, "Availability of Material," each LSN participant will make available any (1) electronic text files, (2) graphic-oriented documents, and (3) bibliographic headers for all documentary material generated by or for the party.

Graphic-oriented documents may include the following:

- Calibration procedures, logs, guidelines, data, and data 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 listed above.

In the case that material is not suitable for imaging or becoming searchable full text, or is considered privileged, an appropriate bibliographic header must still be made available.

2.1.1 Sanctions for Non-Compliance

Under 10 CFR Part 2.1004, a participant can request a copy of any other participant's document that it maintains has not been made available in electronic form. Access to that document must be provided within five calendar days. Under 10 CFR Part 2.1012, a participant who does not comply with these requirements could face adjudicatory sanctions up to and including denial of party status.

10 CFR Part 2.1012(b)(1) states that a potential party to the licensing proceeding who cannot demonstrate substantial and timely compliance with the requirements of 10 CFR Part 2.1003 relating to the availability of its documentary materials at the time that it requests participation in the HLRW licensing proceeding will not be granted party status. The party may request party status upon a showing of subsequent compliance with the requirements of 10 CFR Part 2.1003.

Additionally, a party may be denied permission to use specific documentary materials in the hearing if that material was not previously made available through the NRC LSN site to the other parties.

2.1.2 Treatment of Changed Documents

Because there is no way of knowing who has viewed or used a document and intends to rely on it or proffer it as an exhibit, there must be a means to determine if a corrected version of the document has subsequently been made available by the originator. In addition, the LSNA must be notified of changed documents in order for the revision to be posted to the LSN.

NWRPO will be allowed to correct or revise documents already made available on the NWRPO LSN website as long as:

- A corrected or updated document is noted as superseding a previously provided document.
- The previous version of the document is not removed.
- Other parties are notified of the change.

2.1.3 Guidance on Nuclear Waste Repository Project Office Records for Inclusion to Licensing Support Network

During a teleconference on October 17, 2002, the following guidance was provided regarding the categories of NWRPO records that will be posted to the LSN:

- All reports, professional papers, and data packages that have been posted to the "download data" pages of the Nye County website (www.nyecounty.com) will be processed and posted on the NWRPO LSN.
- All future reports, professional papers, and data packages that are processed and posted to the "download data" pages of the Nye County website will be processed and posted on the NWRPO LSN.
- Data previously posted to the Nye County website that were not processed or posted to the "download data" page will be processed and posted on the NWRPO LSN.
  - UE-25 ONC#1 data will be posted to the LSN as a single data set. Metadata will be developed with appropriate descriptions on limitations of use.
  - USW NRG-4 data will be posted to the LSN as a single data set. Metadata will be developed with appropriate descriptions on limitations of use.
  - Tunnel data will be posted as a single data set. Metadata will be developed with appropriate descriptions on limitations of use.
  - The quality assurance (QA) procedures and work plans (latest versions) will be posted to the NWRPO LSN. The header files will reference previous versions and state that they are available at the NWRPO Quality Assurance Records Center (QARC).

The following documents will not be posted to the NWRPO LSN:

- Materials that are identified under 10 CFR Part 2.1005 as "Exclusions." These generally include administrative records, readily available references, journal articles and textbook citations, press clippings and press releases, junk mail, and classified materials.

- Materials that are identified under 10 CFR Part 2.1006 as "Privilege."
- Supporting documentation (e.g., calibration logs, scientific notebooks, cuttings and core sample logs, and geophysical logs). A single header file for each drilling site will be generated that identifies the QA records and states that the records are available for review at the NWRPO QARC.
- The annual reports generated for 1997-1998, 1999, 2000, and 2001. A header file will be developed for each annual report which states that the records are available for review at the NWRPO QARC. These reports are superseded by *Nye County Nuclear Waste Repository Project Office Independent Scientific Investigations Program Final Report, Fiscal Years 1996—2001* (NWRPO, 2001). NWRPO (2001) will be revised to remove references to the subject annual reports.
- Pump spinner test data, because the data format is only useable with specific software. A header file will be generated to state that the data are available for review at the NWRPO QARC.
- Socioeconomic, transportation, and other related white papers. Bibliographic headers will not be developed for these materials.

2.1.4 Nuclear Waste Repository Project Office Quality Assurance and Inventory of Other Documents

The NWRPO QARC is the capture point for all project records. In June 2001, the NWRPO began to evaluate and identify NWRPO records for inclusion to the NWRPO LSN. This section describes the evaluation process.

2.1.4.1 Nuclear Waste Repository Project Office Matrix

A QA requirements matrix was developed by reviewing each of the NWRPO QA plans, technical procedures, and work plans. Every instance of required documentation was entered on the matrix. The matrix identified the following:

- Type of record
- Description of information included in the record
- The individual responsible for generating the record
- Whether the record should be included in the LSN
- If included in the LSN, whether to post the document or only a header
- Comments.

Once records to be included in the NWRPO LSN were identified, NWRPO personnel identified the documents that should be posted in full and the documents that should only have the header posted. From this matrix, the NWRPO staff developed a spreadsheet that identified for each borehole (1) the record type, (2) the status of the LSN record identification number (RID) package, and (3) the status of the metadata.

It is recommended that the matrix be reevaluated and updated to reflect: (1) the guidance provided under 10 CFR Part 2.1.3, "Guidance on NWRPO Records for Inclusion to LSN";

(2) updates, revisions, and new NWRPO technical procedures and work plans; and (3) new data collection activities.

2.1.4.2 Nuclear Waste Repository Project Office Administrative Files

On May 21, 2002, NWRPO personnel conducted an inventory of the Nye County administrative files to identify LSN candidate documents. The evaluation criteria included:

- Nye County-generated documents only
- Documents that could be used to support Nye County licensing issues.

Of the several thousand administrative files reviewed, only 13 titles required a review of the document (Index numbers 410, 411, 445, 771, 797, 1170, 1310, 1363, 1715, 2171, 4043, 4074, and 5905). Of the 13 documents reviewed, only four were considered appropriate for inclusion to the LSN. Subsequently, these four documents were also found in the NWRPO QARC and had been assigned RIDs.

Since the Nye County QA program documents, including Quality Assurance Procedures, technical QA procedures, and Work Plans have been identified for the LSN, they should be transmitted to the QARC and assigned RIDs.

2.1.4.3 Contractor Records

Several contractors have provided technical support to the Independent Scientific Investigations Program and Early Warning Drilling Program over the past several years. There may be some records from the early drilling programs that are required for the LSN but were not submitted to the NWRPO QARC. As the QA matrix is completed, any missing records will need to be requested from the responsible contractors, and provided in a format that is suitable for inclusion to the LSN (including metadata with all information required to complete the bibliographic header).

2.1.4.4 Nuclear Waste Repository Project Office Quality Assurance Database

After the QA matrix for drilling-related records has been completed, it is recommended that any RIDs that are not included in the matrix be evaluated for inclusion to the LSN. There may be documents in the QA database (e.g., correspondence or technical reviews) that are not included in the QA matrix but may be appropriate for inclusion to the LSN.

2.1.5 Documentary Material Formats

To provide full text search capability for relevant documents, 10 CFR Part 2.1003(a)(1) requires LSN participants to provide an electronic file for all documentary material. For graphic-oriented documentary material, an electronic image must be provided in lieu of the text file (10 CFR Part 2.1003(a)(2)). A bibliographic header is required for both types of documentary material.

2.1.5.1 Text Files

Textual material must be formatted to comply with the ISO/IEC 8859-1 character set and be in one of the following formats: ASCII, native word processing (Microsoft Word, WordPerfect), PDF normal, or HTML (10 CFR Part 2.1011(b)(2)(iii)).

2.1.5.2 Electronic Hearing Docket Files

The electronic hearing docket is subject to National Archives and Records Administration electronic records regulations for materials that will eventually be retired to a Federal Records Center or the National Archives. Therefore, documents intended for introduction into the electronic hearing docket must be in an image format, rather than text (although a text version will still be required to support text search and retrieval). NRC's target standard for image storage is PDF image and embedded text.

In anticipation of the electronic hearing docket requirement for PDF versions of electronic records, the primary format for the NWRPO LSN will be PDF for both text and image documents.

2.1.5.3 Graphic-Oriented Files

Graphic-oriented documentary material consists of items such as raw data, field notes, maps, and photographs. Any text embedded within graphic-oriented documentary material does not need to be in searchable full text, because the files will have searchable bibliographic headers. Image formats that are supported by the LSN include: GIF, JPG, PNG, PDF, and TIFF.

Graphic-oriented materials generated in presentation software such as Microsoft PowerPoint or spreadsheets must be submitted as one of the following alternatives:

- TIFF single-page format
- TIFF multi-page format (if the file does not exceed 1.5MB)
- Windows metafile (.wmf) format as single image per page
- PNG or PDF image.

In general, graphic-oriented documentary material for the NWRPO LSN will be posted as PDF files (Section 2.1.5.2).

2.1.6 Licensing Support Network Submittal Strategy

Upon approval of this implementation plan, it is recommended that the documents that have been loaded on the "download data" pages of the Nye County website be processed. Processing will involve generating extensible markup language (XML) bibliographic header files, converting the documents to PDF format (as required), performing quality control checks, and posting the documents to the NWRPO LSN. The 243 RIDs in the "download data" pages of the Nye County website are listed in Appendix A. The RIDs have been posted in a variety of formats and, in many cases, there are several files associated with a single RID. The file formats and numbers of files currently available for download on the Nye County website are summarized in Table 1.

Table 1
Summary of Files Available on Nye County Website

File Format	Reformatting Required	Number of Files
Adobe Acrobat (.pdf)	No	100
Microsoft Excel (.xls)	Yes	110
ACSII Text (.txt)	Yes	244
Microsoft PowerPoint (.ppt)	Yes	3
Microsoft Word (.doc)	Yes	1
	TOTAL FILES	**458**

It is recommended that in the future LSN documents be processed at the same time they are posted to the Nye County website. It is expected that the data will continue to be posted to the Nye County website in a format that can be imported to databases and spreadsheets, and the NWRPO LSN documents will be posted in a PDF format that is compatible with records archive requirements.

2.2 BIBLIOGRAPHIC HEADERS

A bibliographic header will be created for each document posted to the NWRPO LSN. The recommended structure for a bibliographic header is found in NRC (2001, Table A). The NWRPO will use the header generator tool developed by NRC LSN staff to ensure that the NWRPO LSN bibliographic headers are compliant.

2.3 HARDWARE / SOFTWARE SYSTEM REQUIREMENTS

The system must provide the function of hypertext transfer protocol (HTTP) service. HTTP service may be provided by a dedicated computer, a virtual server, or a commercial web hosting service that can comply with the requirements (NRC, 2001, D-1.1).

The system must be configured with hardware sufficient to store and serve all information (e.g., sufficient disk space, RAM, processing power, network interface, etc.) at estimated usage levels, and be easily upgradeable (NRC, 2001, D-1.2). The system shall be configured with software, licensed at sufficient levels, to store and serve all documentary and associated materials (e.g., networking-capable operating system, web server software, HTML authoring, etc.) at anticipated usage levels (NRC, 2001, D-1.3).

To facilitate data exchange, the NWRPO LSN system shall adhere to established hardware and software standards appropriate to meet the intent of 10 CFR Part 2 (NRC, 2001, D-3).

2.3.1 Network Access

The standard for network access shall be HTTP/1.1 over Transmission Control Protocol over Internet Protocol (IP) (NRC, 2001, D-3.1).

2.3.2 Server Names

The standard for associating server names with IP addresses shall be the Domain Name System (NRC, 2001, D-3.2).

2.3.3 Web Page Construction

The standard for web page construction shall be HTML version 4.01 (NRC, 2001, D-3.3).

2.3.4 Electronic Mail

Electronic mail (e-mail) exchange between e-mail servers must be Simple Mail Transport Protocol (NRC, 2001, D-3.4). The standard for the format of an e-mail message must accommodate multipurpose e-mail (NRC, 2001, D-3.5).

The NWRPO LSN server has been set up with the following network, hardware, and software configuration:

- Network access
  - T3 line
- Hardware configuration
  - Server: Dell Pentium IV
  - NWRPO LSN domain name: www.nyelsn.org
- Software configuration
  - Operating system: Linux and Unix
  - Web server software: Apache
  - Web page construction: HTML.

2.4 WEBSITE REQUIREMENTS

2.4.1 Document Indexing

A bibliographic header must be provided for each document. This includes submissions for which no text or image is available (e.g., rock samples) and for materials that are privileged or confidential, safeguards, and other types of limited access documentary material as specifically identified in NRC (2001, E-5). Bibliographic headers shall contain all fields described in NRC (2001, Table A), per NRC (2001, E-5.2).

The NWRPO LSN will make bibliographic header data available in a standard database-readable (e.g., XML) format (NRC, 2001, E-5.1).

Headers for limited access documentary material will be the same as those for full access documentary material (NRC, 2001, E-5.3) and shall be logically organized on the NWRPO LSN website in a list, index, or table of contents separate from documentary material that is publicly accessible, with instructions for review (NRC, 2001, E-5.4).

Each document on the NWRPO LSN system must have a unique identifier (participant accession number) (NRC, 2001, E-3). Each representation of a document (text and/or image) must be index-accessible through its participant accession number (NRC, 2001, E-3.1).

2.4.2 Document Search

NWRPO shall make textual (or for non-text documents, image) versions of its discovery collection documents available on an Internet-accessible server that is able to be canvassed by web indexing software (i.e., a robot, spider, or crawler), and the system must make both data files and log files accessible to this software (NRC, 2001, D-1.9 and E-2).

Data format standards must be followed to facilitate electronic exchange and transfer (NRC, 2001, E-4). Acceptable text document formats include: ASCII, Microsoft Word, PDF normal, or HTML (NRC, 2001, E-4.1). Acceptable image formats are listed in Table 2 (NRC, 2001, E-4.2).

Table 2
Acceptable Licensing Support Network Image Formats

Image Format	Text	Grey Scale	Color
TIFF CCITT G4	300 DPI	150 DPI / 8 bit	150 DPI / 24 bit
Portable Network Graphics (PNG)	300 DPI	150 DPI / 8 bit	150 DPI / 24 bit
Portable Document Format (PDF)	300 DPI	150 DPI / 8 bit	150 DPI / 24 bit
Graphics Interchange Format (GIF)	300 DPI	150 DPI / 8 bit	150 DPI / 24 bit
Joint Photographic Experts Group (JPEG)	300 DPI	150 DPI / 8 bit	150 DPI / 24 bit

When possible, the NWRPO LSN text and images will be formatted as PDF image files (see Section 2.1.5.2).

NWRPO may correct or revise documents already made available on the NWRPO LSN website (NRC, 2001, E-6; see also Section 2.1.2). These changes must be identified by LSN accession number and include a description of and the need for the change. These changes will then be posted to the NRC LSN (see Section 2.4.3) and may be posted to the NWRPO LSN website (NRC, 2001, E-6.2).

2.4.3 Licensing Support Network Auditing

The NWRPO LSN shall allow monitoring of various parameters by a monitoring station established by the LSNA to track: changes, website responsiveness, and other performance characteristics. Access shall include: monitoring of network utilization, determination of certain performance characteristics, and access to the normal web distribution facility (NRC, 2001, D-1.5).

The NWRPO LSN shall allow the LSNA access to logs of electronic transactions in raw and summary formats to enable tracking of site usage (NRC, 2001, D-1.6). The NRC LSN crawler will scan the NWRPO LSN website and gather data about the website content and activity through the log files. The types of data the NRC LSN crawler will gather include:

- The number of records that have been added since the last monitoring crawl (e.g., bibliographic header records, text files, and images)
- Files that have been changed
- Files that have been removed

- Total number of documents to date
- Number of website visits recorded
- Website response time
- Amount of unscheduled downtime.

This information will be published routinely on the NRC LSN site. For example, if a document has been changed in some way, a notice of change will be posted on the NRC LSN website, identified by LSN accession number, with a description of the change and need for the change (NRC, 2001, C-1.4).

2.4.4 Document Retrieval Capacities

The NWRPO LSN must be connected to the Internet with the capability of being accessed by any Internet user to retrieve documentary material. This connection shall be sufficient to provide reasonable responsiveness during periods of normal usage (NRC, 2001, D-1.8).

The NWRPO LSN must be designed and implemented to ensure acceptable access and responsiveness consistent with performance specifications (NRC, 2001, D-2):

- Sites must be provisioned to be able to satisfy not less than 500 web page requests per minute (NRC, 2001, D-2.1).
- Sites must be provisioned to be able to deliver a web page or image page on average in not more than five seconds to a web browser (NRC, 2001, D-2.2).
- Communications between the server and the Internet must be provisioned to be able to deliver interactive response (NRC, 2001, D-2.3).

The NRC LSN system has been configured to support access by 150 concurrent users during peak periods (NRC, 2001, -B-1). It is not expected that the NWRPO LSN will have the same level of use; however, the NWRPO LSN server will run off a T3 line and will support access by more than 150 concurrent users.

The NWRPO LSN home page will be developed in compliance with the Web Content Accessibility Guidelines for access by individuals with disabilities (NRC, 2001, B-16).

2.4.5 Search and Retrieval Availability

The NWRPO LSN server must be available 24 hours per day, 7 days per week, 365 days per year. The NWRPO LSN site must be available for document search and retrieval between the hours of 6:00 a.m. and midnight Eastern Standard Time. The NRC LSN crawls will be conducted nightly between midnight and 6:00 a.m. Eastern Standard Time, unless previous arrangements have been made with the LSNA. Crawls can be scheduled on an intermittent basis (e.g., weekly rather than daily) by prior coordination with the LSNA.

The NWRPO LSN server will be monitored 24 hours per day, 7 days per week, and 365 days per year, and will have automated battery backups, redundant emergency power supplies, and gas-powered generators.

2.4.6 Storage Capacity

The web server must be provisioned with enough storage to accommodate all headers plus text and/or images of the NWRPO's entire collection of relevant documents, as specified in 10 CFR Part 2 (NRC, 2001, E-2.1).

The current document collection on the "download data" pages of the Nye County website requires approximately 85MB of storage space. Some of the files have been compressed and, in many cases, the conversion to PDF format will increase the file size. Initially, the NWRPO LSN has been configured with 100MB of storage capacity. As the NWRPO LSN document collection increases, the storage capacity of the server will be increased in 50MB increments (at an additional monthly cost of $5.00 per 50MB).

2.4.7 Security

The system must be designed to maintain the security of the NWRPO discovery collection documentary material and the system itself, including the ability to deny unauthorized access or update privileges, detect and defeat compromise attempts, and defend against denial of service attempts (NRC, 2001, D-1.7).

The NWRPO LSN server operates behind a firewall and is frequently updated with the latest virus and access protections. The server will only be accessible with validated passwords.

2.4.8 Backup

The system must be designed to maintain the integrity of the collection and provide for timely recovery in the event of a hardware or software failure, with complete restoration of the NWRPO LSN site within three working days (NRC, 2001, D-1.4).

The NWRPO LSN system will allow concurrent backups and user access; backups will be performed without user interruption. The server will run a Redundant Array of Independent Disks 5 driver configuration. Daily planned Level 1 backups will be performed between 4:00 a.m. and 7:00 a.m. Eastern Standard Time. Weekly Level 0 backups will also be performed, as well as weekly CD-R/DVD backups for off-site storage.

3.0 PILOT WEBSITE DEVELOPMENT

This section describes the steps necessary to develop a pilot NWRPO LSN website (NRC, 2002b).

3.1 NUCLEAR WASTE REPOSITORY PROJECT OFFICE LICENSING SUPPORT NETWORK WEBSITE SET-UP

The following activities are necessary to set up the pilot website:

- Obtain a domain name (www.nyelsn.org).
- Set up the website and server on which the NWRPO LSN documents and associated headers will be loaded, using an application such as Microsoft's IIS or Apache. The server should be running HTTP and FTP (or FTP Secure using the Secure Sockets Layer protocol for encryption and security).
- Develop a www.nyelsn.org home page. The home page will include simple search and navigation options. Administrative information about the NWRPO LSN website (e.g., hours of availability, scheduled outages, etc.) will be posted and also provided to the NRC LSN site (NRC, 2001, D-8).
- Determine the amount of disk space needed for the document collection.

3.1.1 Server Directories Set-Up

Three directories (headers, documents, and common log files) will be created on the server:

- Create headers (e.g., ftp://ServerName/Headers) in XML format.
- Create documents and images (e.g., ftp://ServerName/documents) in TIFF, PDF, Microsoft Word, HTML, etc. (NOTE: Verify that the HTTP root points directly to the FTP document directory; the HTTP home directory is the same directory as the FTP document directory).
- Create the common log file (e.g., ftp://serverName/Logs) in National Center for Supercomputing Applications Common Log Format. The purpose of the common log directory is to hold the web log. The format of the common log file is shown in Appendix B. Note that an IP address instead of a URL is also acceptable (e.g., ftp://123.45.67.89/Headers).
- Turn on logging.

It is recommended that the three directories be at the root level.

3.1.2 Firewall Configuration

The firewall will be configured so the NRC LSN is allowed access. An FTP user name and password will be provided to the NRC. Use of a nonstandard FTP port is also acceptable.

3.1.3 Access to Website

Access to the web server (Port 80) will be restricted to allow users read-only access to the document collection.

The NRC LSN will crawl the website nightly, or on a mutually acceptable schedule coordinated in advance, to check for changes. These changes will be used to update the index used for document searches. The NRC LSN will also pick up the common log file to create audit reports for use by the LSNA (see Section 2.4.3).

The NWRPO will send a sample of documents and bibliographic headers to the NRC LSN development team for review prior to publishing its entire participant document collection.

3.1.4 Nuclear Waste Repository Project Office Licensing Support Network Procedure Development

Each LSN participant must establish its own procedures to make its own documentary material available (NRC, 2001, D-4). Procedures shall cover all aspects of the production and web publication process, including authorship, content guidelines, stylistic guidelines, distribution guidelines, maintenance and revision guidelines, format conversion, QA, uploading to the web server, accessing documentary material, and removal from the web server (NRC, 2001, D-4).

A technical procedure will be developed to document the process for adding documents to the NWRPO LSN. The procedure may include the following information:

- Purpose and scope
- Applicability
- Training requirements
- Definitions
- Responsibilities
- Procedure
  - NWRPO LSN website design and development (including content, style, and distribution)
  - Transfer of documents and metadata for inclusion to the NWRPO LSN website
  - Conversion of documents to LSN-acceptable format
  - Document scanning and optical character recognition
  - Optical character recognition accuracy requirements and quality checks
  - Image file formats (requirements and conversion techniques)

  - Generation of .xml bibliographic headers
  - Header generator tool (.xml format)
  - Mixed case tags
  - Special characters
  - Cross-referencing documents in bibliographic headers (attachments, documents that are divided into parts due to large size, corrections, supplements, and superseded documents)
  - Review and approval of documents and bibliographic headers prior to posting
  - Posting documents and bibliographic headers to NWRPO LSN website
  - Process for changing or removing documents on the NWRPO LSN website and notifying the LSNA
  - Certification of NWRPO LSN website with NRC
- References
- Records
- Attachments.

It is recommended that QAP-17.1, *Quality Assurance Records Management Procedures,* be reviewed and modified to include LSN requirements. Additional steps to be considered for this procedure include: (1) criteria for identifying records for inclusion to the NWRPO LSN, (2) metadata development, and (3) entry to the NWRPO QA database.

4.0 SCHEDULE

10 CFR Part 2.1003(a) has established the following documentary submission deadlines:

- The DOE shall make its documentary material electronically available no later than 6 months in advance of submitting its license application to receive and possess HLRW at a geologic repository operations area.
- The NRC shall make its documentary material electronically available no later than 30 days after the DOE certification of compliance.
- Any other party (e.g., Nye County), shall make its documentary material electronically available no later than 90 days after the DOE certification of compliance.

The DOE has set a December 2004 deadline for submitting the license application to the NRC. This would mean the DOE's LSN would have to be certified by June 2004. NWRPO would then have 90 days after DOE's LSN certification to make its documentary materials electronically available. The NWRPO LSN deadline would then be September 2004.

It is recommended that upon approval of this implementation plan, the NWRPO LSN should be loaded with the documents that are resident on the "download data" pages of the Nye County website. This effort will provide a benchmark for the amount of time required to process RID packages into the NWRPO LSN. After the QA matrix has been updated and completed, it will be possible to develop a schedule and estimate staff needed to process the RID packages for the Early Warning Drilling Program Phases III and IV and out-year drilling program.

5.0 ESTIMATED COSTS

Tables 3 and 4 contain cost estimates for setting up and maintaining the NWRPO LSN server for the remainder of FY2002 and for FY2003.

Table 3
Estimated Costs for Fiscal Year 2002

Task	Cost
NWRPO server set-up	$75.00
Monthly server service (2 months @ $40.00 per month)	$80.00
LSN processing and project manager (0.25 FTE for 1 month)	$2,500.00
TOTAL COST	$2,655.00

Table 4
Estimated Costs for Fiscal Year 2003

Task	Cost
Monthly server service (12 months @ $60.00 per month–assuming 250MB server storage)	$720.00
LSN processing (0.25 FTE for 12 months)	$23,500.00
Project manager (80 hours)	$6,000.00
TOTAL COST	$30,220.00

6.0 REFERENCES

10 CFR (Code of Federal Regulations) Part 2. *Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders*. Subpart J – Procedures Applicable to Proceedings for the Issuance of Licenses for the Receipt of High-Level Radioactive Waste at a Geologic Repository. Washington, D.C.: U.S. Government Printing Office.

10 CFR Part 60. *Disposal of High-Level Radioactive Wastes in Geologic Repositories.* Washington, D.C.: U.S. Government Printing Office.

10 CFR Part 63. *Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada*. Washington, D.C.: U.S. Government Printing Office.

White House. 2002. "Letter from the President to the Speaker of the House of Representatives and the President of the Senate, dated February 15, 2002 approving the Secretary of Energy's recommended approval of the Yucca Mountain site for the development of a geologic repository for spent nuclear fuel and high level nuclear waste." Accessed December 26, 2002. http://www.whitehouse.gov/news/releases/2002/02/20020215-11.html

International Organization for Standardization and International Electrotechnical Commission, "Information Technology--8-bit Single-Byte Coded Graphic Character Sets--Part 1: Latin Alphabet No. 1", IS 8859-1, 1998.

Nuclear Waste Policy Act of 1982. Public Law 97-425 (96 Stat. 2201) enacted on January 7, 1983.

Nuclear Waste Policy Amendments Act of 1987. Public Law 100-203 (101 Stat. 1330-243) enacted on December 22, 1987.

NRC. 2001. *Draft Licensing Support Network Baselined Design Requirements*, Release 1.0, Draft June 5, 2001.

NRC. 2002a. *Draft Regulatory Guide DG-3022 (proposed Revision 1 of Regulatory Guide 3.69), Topical Guidelines for the Licensing Support Network*, June 2002.

NRC. 2002b. *Licensing Support Network Guidelines*, April 26, 2002.

NWRPO. 2001. *Nye County Nuclear Waste Repository Project Office Independent Scientific Investigations Program Final Report, Fiscal Years 1996—2001*. NWRPO-2001-04. Pahrump, Nevada: Nye County Department of Natural Resources.

QAP-17.1, Rev. 01, *Quality Assurance Records Management Procedures*. Pahrump, Nevada: Nuclear Waste Repository Project Office.

APPENDIX A
RECORD IDENTIFICATION NUMBERS POSTED TO WEBSITE

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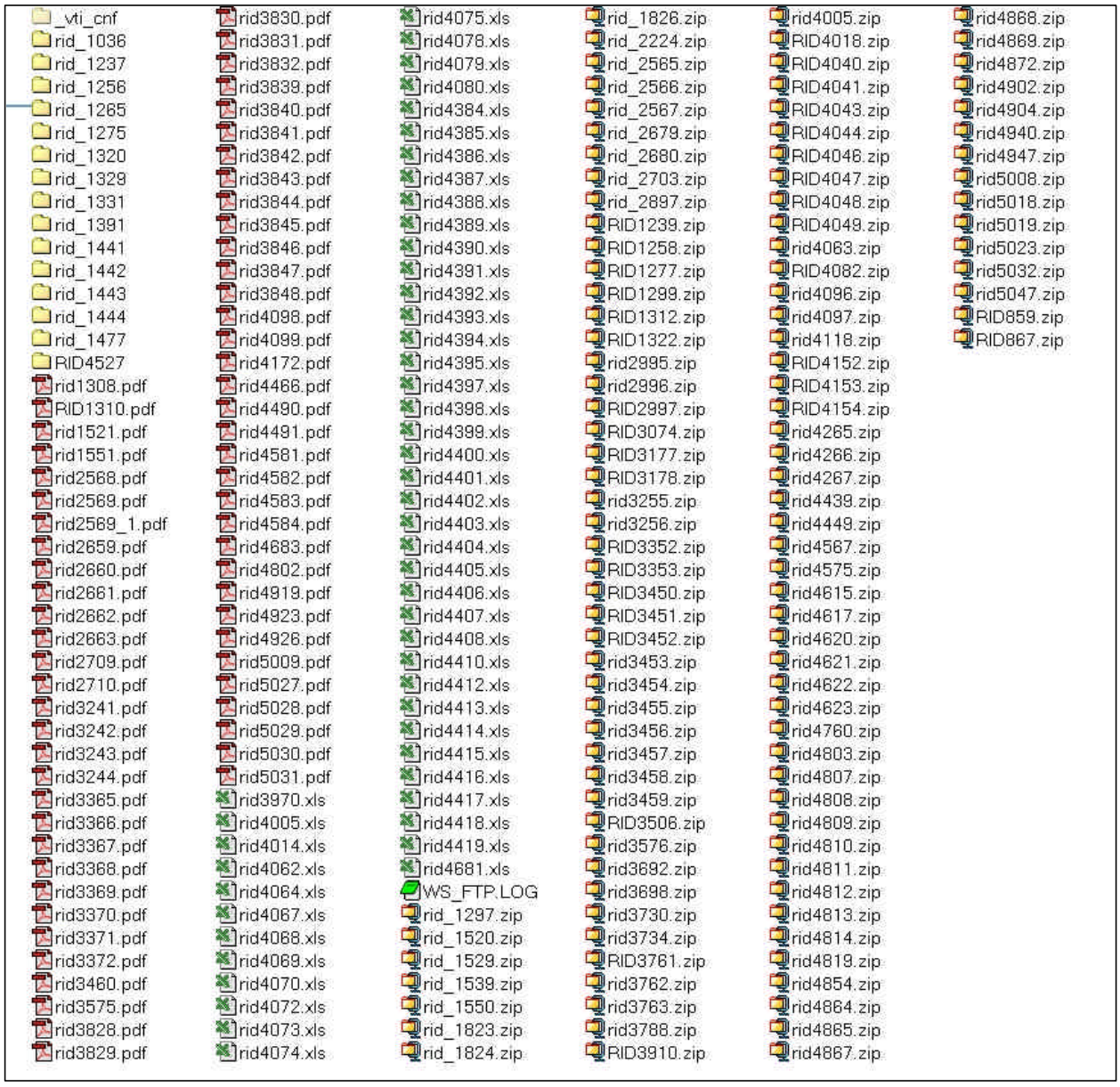
RECORD IDENTIFICATION NUMBERS POSTED TO WEBSITE



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APPENDIX B
COMMON LOG FORMAT

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COMMON LOG FORMAT

The format of the common log file should be composed of the following space-delimited fields, with a single dash placeholder for each absent value: Host Ident Authuser Date Request Status Bytes.

Table B1
Description of Space Delimited Fields in Common Log Files

Space Delimited Field	Description of Field
Host	Domain name of the client or its IP number if the name is not available. For example, the domain name might be www.nyelsn.org or, as in the sample log file example provided, the IP number (198.22.152.217) in lieu of a domain name.
Ident	If the identity check is enabled and the client machine runs "Ident", then the identity information (the user's name) is reported. In the sample log file example, the client has not turned on Ident so there is no value, and Ident is represented by a hyphen (-).
Authuser	If the request is for a password-protected document, this is the user ID used in the request. In the sample log file example, the client has not turned Authuser on so there is no value, and Authuser is represented by a hyphen (-).
Date	[day/month/year:hour:minute:second zone] The day field is two digits (e.g., 26). The month field is three letters (e.g., Apr). The year field is four digits (e.g., 2001). The hour field is two digits (e.g., 13). The minute field is two digits (e.g., 59). The second field is two digits (e.g., 42). The zone is ('+'| '-') four digits (e.g., -0500).
Request	The request identifies and captures, in double quotes, the command requested from the client and the file name that is being requested. Examples of some of the various GETs (requests) are seen in the sample log file example.
Status	Status is a three-digit code returned to the client. The status codes have universal meaning. For example, status code 200 means that the file was successfully retrieved.
Bytes	Bytes is the number of bytes in the object returned to the client, not including any headers. In the first line of the sample log file example below, the home.asp returned 0 bytes, and in the second line, the logoGIF returned 140 bytes.

Sample log file example:

198.22.152.217 - - [26/Apr/2001:13:59:42 -0500] "GET /home.asp HTTP/1.1" 200 0
198.22.152.217 - - [26/Apr/2001:13:59:42 -0500] "GET /images/logo.gif HTTP/1.1" 304 140
198.22.152.217 - - [26/Apr/2001:13:59:44 -0500] "GET /Docket.asp HTTP/1.1" 200 0
198.22.152.217 - - [26/Apr/2001:13:59:45 -0500] "GET /Home/Hearings.asp HTTP/1.1" 200 0
198.22.152.217 - - [26/Apr/2001:13:59:45 -0500] "GET /Home/Participants.asp HTTP/1.1" 200 0
198.22.152.217 - - [26/Apr/2001:13:59:46 -0500] "GET /Home/Operations.asp HTTP/1.1" 200 0
198.22.152.217 - - [26/Apr/2001:13:59:47 -0500] "GET /Motions.asp HTTP/1.1" 200 0

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