POTENTIAL LICENSING SUPPORT NETWORK LIBRARY ENHANCEMENTS

During the Licensing Support Network Advisory Review Panel (LSNARP) meeting, a number of issues were raised, principally by the State of Nevada, regarding the performance of the Licensing Support Network (LSN) Library in the Agencywide Documents Access and Management System (ADAMS) subsequent to the LSN Library becoming publicly available in August 2016. Among these were concerns regarding system operations (e.g., speed/response time) and functionality (e.g., inability to print a list of search results, screen sizing).[1] Moreover, in utilizing the system during that period, the Atomic Safety and Licensing Board Panel (ASLBP)/Office of the Secretary (SECY)-led group working has identified some items that are less than optimal for system usability. These LSNARP- and ASLBP/SECY-led working group-identified items are discussed below, along with potential LSN Library enhancements (which are described in Table 1 in section C infra) that would address these matters.[2]

In suggesting these enhancements, we note that the current LSN Library meets the essential functional requirements of the original LSN that would be applicable if the LSN Library were to become the LSN replacement system.[3] However, both the concerns raised at the LSNARP meeting about the LSN Library and the items identified by the ASLBP/SECY-led working group are principally operability/usability matters that are not covered by the existing LSN functional requirements.[4] Nonetheless, if implemented, each of the recommended enhancements would

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[1] See Feb. 27, 2018 Transcript at 127–41 [hereinafter 2/27/18 Tr.] (https://www.nrc.gov/docs/ML1806/ML18067A312.pdf).

[2] Also outlined in Attachment 1 to this enclosure are the other Nevada concerns expressed during the LSNARP meeting and an indication of how they have been addressed by the agency.

[3] NRC, Reconstitution/Replacement Options for the [LSN] at 8–20 (rev. 4 Feb. 22, 2018) (Option 2) [hereinafter Options Paper] (https://www.nrc.gov/Seedocs/ML1734/ML17347B671.pdf).

[4] The [LSN] Project Definition and Analysis Document (rev. 3 Mar. 22, 2001) [hereinafter PDAD] (https://www.nrc.gov/docs/ML0108/ML010850295.pdf), contains 164 requirements that span the following seven functional areas:

- Functional Area 1: General Characteristics of Servers and System
- Functional Area 2: [LSN Administrator] Related Capabilities
- Functional Area 3: Participant General Capabilities
- Functional Area 4: Document Production and Service Capabilities
- Functional Area 5: Timeliness
- Functional Area 6: Docket Related Capabilities
- Functional Area 7: Electronic Information Exchange (EIE) Related Capabilities

The functional requirements defined in the PDAD applicable to providing search and retrieval of participant-submitted discovery information, which was the focus of concerns raised about the LSN Library during the February 2018 LSNARP meeting, as well as the ASLBP/SECY-led working group-identified enhancements discussed in this enclosure, are found in functional area 1. Functional area 1 contains 40 requirements. Nine of those requirements are not applicable to the LSN Library as a non-distributed database. Twenty-nine of the remaining 31 requirements would be met by the LSN Library, as augmented with updated references to information technology standards that were cited in the original PDAD. The two requirements that are not fully met include accessibility to the LSN by text-based browsers and priority user access. LSN Library testing using different text-based browsers yielded mixed results with some working better than others. The priority user access requirement, which would only be

increase the overall operability/usability of the LSN Library including, in several instances noted below, providing features that now are available in public ADAMS but do not exist in the LSN Library. At the same time, these enhancements will provide the Commission with the opportunity, based on additional user feedback, to become further informed about the LSN Library's effectiveness.

A. Enhancements to Address LSNARP-Identified Concerns

1. System Operations

Questions were raised at the LSNARP meeting about whether the LSN Library was too slow (e.g., 1 to 4 minutes to return or narrow search results).[5] An LSN Library improvement to address this problem also was highlighted at the February 2018 LSNARP meeting, i.e., increasing the computing power/speed of the LSN Library system.[6] Earlier this year, OCIO increased system processing power by adding more memory and computer cores to the system so as to optimize system performance for the number of currently anticipated system users. Thus, no further power upgrades are necessary at this time. Nonetheless, to accommodate any increase in LSN Library user traffic arising, for example, from the restart of the HLW adjudication, the computing power of the LSN Library could be increased again with an estimated implementation of approximately 3 weeks and an estimated cost of $25,000.

2. Functionality

Among the concerns identified at the LSNARP meeting relating to system functionality was the inability of the system to cancel a search in progress,[7] which item 1 in Table 1 below would rectify as well as add a system functionality that would parallel ADAMS. Users also were unable to preview a document by clicking on the title, a feature that was available in the original LSN.[8] This issue would be resolved by Table 1, item 2 and would add another ADAMS functionality to the LSN Library. Item 3 listed in Table 1 would address a request for one-click printing of search results that was available on the original LSN,[9] while likewise adding an

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applicable if and when the adjudication were to restart, is not anticipated to be necessary for any LSN replacement/reconstitution option given current technology. See Options Paper at 45.

[5] See 2/27/18 Tr. at 130–31. While an LSN functional requirement, LSN DR D-2.2, is cited in support of this concern, see id. (referencing PDAD at 3-8), that requirement, as well as LSN DR D-2.1, also cited as supporting an LSN Library performance concern, see id. at 128–29 (referencing PDAD at 3-8), relate to the timing of web page production by participant LSN site systems, not LSN response time to search queries.

[6] See id. at 142.

[7] See id. at 132.

[8] See id. at 133.

[9] See id. at 131. Item 4 of Table 1 also provides the possibility of addressing another identified concern, i.e., that some documents have downloaded accession numbers that are not the LSN or participant accession numbers, see id. at 130, by implementing a consistent naming convention (e.g., naming each downloaded document with the LSN Accession Number) for downloaded documents.

We note also that, if implemented, item 10 in Table 1 has the possibility of addressing this naming inconsistency in the same manner. This enhancement builds upon Table 1, item 3, by making it simpler

ADAMS-available functionality to the LSN Library. An expressed concern about the inability to jump through search results by typing a desired page number would be resolved with Table 1, item 4,[10] while also making the LSN Library parallel the ADAMS system's capability in this regard. There was also a concern that the advanced search feature takes up most of the screen and does not retreat once a user hits "enter" as in most search software, requiring that users manually click on "hide advanced" after every search or search modification to view more than one line of search results. In addition, it was suggested that when changing the field query property, the previous search term should disappear.[11] Item 5 in Table 1 deals with these issues. Finally, item 6 of Table 1 would address a concern about how the facet tree lists LSN and participant accession numbers in an order different from how they are displayed by default in the search results page.[12]

B. Usability Enhancements Identified by ASLBP/SECY-Led Working Group

In addition to the enhancement items intended to address particular concerns expressed at the LSNARP meeting, ASLBP and SECY also recommend funding for several additional items that the ASLBP/SECY-led working group believe would materially enhance LSN Library usability. These include Table 1, items 7, 8, and 9. Item 7 would increase the size of the text box that displays selected search criteria and in which users can enter free form text for content searches beyond the current 54-character display, which has proven too small to provide an adequate view of the search parameters. Item 8 makes the commonly used and powerful proximity search feature more easily accessible by including it among the "Advanced Search" options in a very simple and intuitive format. The proximity search feature now is only available when using the "query builder" feature, which is another very powerful but advanced utility for creating complex searches. By adding the proximity search on the same screen as other common search features (i.e., "all of these words," "any of these words," "exact phrase," etc.) the user's ability to more easily craft complex searches is enhanced. Finally, item 9 would provide a streamlined approach to conducting a search using multiple properties as criteria. Currently, a user wishing to run a multiple property search can only do such a search one property at a time. With this enhancement, a single screen would be provided that would allow the user to add search criteria for multiple properties and execute a single search with the selected properties.

C. Description of LSN Library Enhancements

Table 1 below provides a description, along with a summary of costs and implementation time, of each enhancement referenced above.

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to print, export, or download an executed search with a large number of results, which would be a useful feature for parties as they prepare for the evidentiary hearing portion of the adjudication. Nonetheless, given the cost of this enhancement, the limited remaining Nuclear Waste Fund monies, and the usefulness of this enhancement at this juncture, we do not recommend its implementation at this time.

[10] See id. at 133.

[11] See id. at 135.

[12] See id.

TABLE 1: Enhancements		Weeks to Implement	Cost
1.	Provide the ability to cancel a search	1	$9,000
	Currently a user cannot cancel a running search and must wait for a search to complete before making changes. This enhancement would provide the user the ability to cancel a search before it has completed. **This capability is available in public ADAMS.**		
2.	Provide a PDF preview option	2	$18,000
	For a user to view a document associated with a query result, the document must either be downloaded to the user's computer or opened using Adobe Reader/Acrobat. The process by which a document is opened is dependent on the browser being used and generally involves at least two steps. This enhancement would provide an option to open the document in another browser tab using the PDF web browser viewer. **This capability is available in public ADAMS.**		
3.	Provide the ability to print, export, or download the results of an executed search	4	$33,000
	This enhancement would give the user the ability to print or export the properties associated with each item returned from a query to a text file or download the associated documents. The user would have the ability to either (1) select the current displayed page of results; (2) select a range of results; or (3) select individual results. This enhancement is limited to the "Results per page" setting. If a user has the "Results per page" set to 10 results, the maximum number of results that could be selected for print, export, or download would be limited to 10. If a query resulted in 100 results, the user would either need to change the "Results per page" setting to 100 or navigate through each set of results and print, export, or download each page of results. **This capability is available in public ADAMS.**		
4.	Provide a "Go To" result page number capability	2	$18,000
	Currently, when the result set spans five or more pages, the user must click on one of the displayed page numbers (only five are displayed) or click on the "next page" arrow to advance to the next page of results. This enhancement would permit the user to "Go To" the page entered into a page number box. **This capability is available in public ADAMS.**		
5.	Minimize the "Advanced Search" options frame when a search is executed and provide a mechanism to clear the field query property search term text box	1	$10,000
	The advanced search options frame provides the user an intuitive way to add filtering criteria to a search. The advanced search options frame opens in a space below the search parameter text box and above the results window. To increase the area that displays the query results, this enhancement would automatically close the advanced search options frame when a search is executed.		
6.	Removal of LSN Accession Number and Participant Accession Number Lists from the Facet Tree	1	$6,000

TABLE 1: Enhancements		Weeks to Implement	Cost
	The LSN Library "Facet Tree" is a tool that is meant to help further refine a user's executed search. This is done by displaying a list of values and the number of results that contain those values under each searchable property. Because the LSN Accession Number and the Participant Accession number properties are unique values for each LSN Library entry, the "Facet Tree" display for LSN Accession Number and the Participant Accession number in the result set will indicate there is one entry found for each result. Thus, using the LSN Accession Number or the Participant Accession number property to further refine an executed search would yield a result of one record, as opposed to a group of records that contain the same value for a given property, rendering these lists essentially valueless as search results.		
7.	Increase the size of the search parameter text box	1	$6,000
	The text box where users enter in free form text for content searches only displays 54 characters. This text box is also populated when additional property or Boolean searches are added, typically resulting in more than 54 characters. To see the full text of the search parameters, a user would need to use the arrow keys to view the entire set of search parameters. Increasing the text box size would provide a better view of the entered search parameters.		
8.	Add "proximity" query as an option under "Advanced Search"	3	$22,000
	The proximity search functionality is available in the LSN Library using a feature called "Query Builder." The query builder feature is robust and offers many additional options to build complex queries. Some of the query builder options are available under the "Advanced Search" options making those powerful query builder functions available in a very simple and intuitive format. Adding the proximity search functionality to the "Advanced Search" page as well would make a common and powerful search feature more easily accessible.		
9.	Add a "Search Properties" entry page	3	$22,000
	The current process for searching on multiple properties requires the user to select a single property from a dropdown list of properties, enter in the search criteria, add the filtering criteria to the search, and then execute the search. Subsequent properties cannot be added to the search until after the initial search is complete. This enhancement would provide a single screen that would allow the user to add search criteria for multiple properties and execute a single search with the selected properties.		

TABLE 1: Enhancements		Weeks to Implement	Cost
10.	Provide the ability to print, export, or download the entire result set of an executed search	9	$80,000
	This enhancement provides the user the ability to print or export the entire results set and thus removes the limitation of Item 3, "Provide the ability to print, export, or download the results of an executed search." Although this enhancement would not provide the ability to select a range of results or allow the selection of individual results (as those features cannot be implemented across multiple pages of results), it would have a significant impact on system performance. This enhancement, if implemented without a set upper limit for the number of search results that could be printed, exported, or downloaded, creates the possibility that a user could have a result set that includes every entry in the LSN library, thus generating a report with 3.69 million results. The generation of this size report would put a significant drain on system resources. Adding an upper limit would minimize the risk to system resources, but may impact a user's ability to generate a desired report. The recommended upper limit is 50,000. **Note: Public ADAMS searches only return a maximum of 1,000 results.**		

Tables 2 and 3 provide a summary of the total costs and time associated with implementing the nine ASLBP/SECY recommended enhancements and all ten identified enhancements, respectively.

TABLE 2: ASLBP/SECY Recommended Enhancements		Weeks to Implement	Cost
1.	Provide the ability to cancel a search	1	$9,000
2.	Provide a PDF preview option	2	$18,000
3.	Provide the ability to print, export, or download the results of an executed search	4	$33,000
4.	Provide a "Go To" result page number capability	2	$18,000
5.	Minimize the "Advanced Search" options frame when a search is executed and provide a mechanism to clear the field query property search term text box	1	$10,000
6.	Removal of LSN Accession Number and Participant Accession Number Lists from the Facet Tree	1	$6,000
7.	Increase the size of the search parameter text box	1	$6,000
8.	Add "proximity" query as an option under "Advanced Search"	3	$22,000
9.	Add a "Search Properties" entry page	3	$22,000

TABLE 2: ASLBP/SECY Recommended Enhancements	Weeks to Implement	Cost
Enhancement Development Total	18	$144,000
Project management, requirement analysis, and cybersecurity	9	$68,000
Total Implementation	27	$212,000

TABLE 3: All Identified Enhancements		Weeks to Implement	Cost
1.	Provide the ability to cancel a search	1	$9,000
2.	Provide a PDF preview option	2	$18,000
3.	Provide the ability to print, export, or download the results of an executed search	4	$33,000
4.	Provide a “Go To” result page number capability	2	$18,000
5.	Minimize the “Advanced Search” options frame when a search is executed and provide a mechanism to clear the field query property search term text box	1	$10,000
6.	Removal of LSN Accession Number and Participant Accession Number Lists from the Facet Tree	1	$6,000
7.	Increase the size of the search parameter text box	1	$6,000
8.	Add “proximity” query as an option under “Advanced Search”	3	$22,000
9.	Add a “Search Properties” entry page	3	$22,000
10.	Provide the ability to print, export, or download the entire result set of an executed search	9	$80,000
Enhancement Development Total		27	$224,000
Project management, requirement analysis, and cybersecurity		13	$102,000
Total Implementation		40	$326,000