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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

**Title:** LSNARP MEETING

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1 UNITED STATES OF AMERICA  
2 NUCLEAR REGULATORY COMMISSION

3 \*\*\*

4 LSNARP MEETING

5  
6  
7 Alexis Park Resort  
8 375 E. Harmon Avenue  
9 Las Vegas, Nevada 89109

10  
11 Wednesday, February 23, 2000

12  
13 The above-entitled meeting commenced, pursuant to  
14 notice, at 8:45 a.m.

15  
16 PARTICIPANTS:

17 JOHN C. HOYLE, NRC

18 DANIEL GRASER, NRC

19 GLEN FOSTER

20 CHIP CAMERON - NRC

21 ABIGAIL JOHNSON, Colorado

22 JUDY TREICHEL, Nevada

23 STEVE FRISHMAN, Nevada

24 ENGELBRECHT VON TIESENHAUSEN, Clark County

25 MALACHY MURPHY, Nye County

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1 PARTICIPANTS: [Continued]

2 CLAUDIA NEWBURY, DOE

3 DENNIS BECHTEL, Clark County

4 JASON PITTS, Lincoln County

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## P R O C E E D I N G S

[8:45 a.m.]

1  
2  
3 MR. HOYLE: We'll try to get started. This is the  
4 second meeting of the Licensing Support Network Advisory  
5 Review Panel. As you know -- most of you know, this is  
6 really the continuation of a former advisory panel which  
7 gives advice to the Nuclear Regulatory Commission under the  
8 rules of the Federal Advisory Committee Act, and we're  
9 operating under those rules today. This is an open meeting  
10 and it was prenoticed more than 30 days ago.

11 My name is John Hoyle. I'm chairman of this  
12 panel, a part-time NRC employee. And with me at the head  
13 table here or the front of the head table are two other  
14 members of the Nuclear Regulator Commission, and I'll let  
15 them introduce themselves and we'll go around the table and  
16 introduce yourself please. Let me start with Dan.

17 MR. GRASER: I'm Dan Graser from the Nuclear  
18 Regulatory Commission. I'm a Licensing Support Network  
19 administrator.

20 MR. HOYLE: Mal.

21 MR. MURPHY: Mal Murphy. I'm the Nye County  
22 regulatory and licensing advisor.

23 MS. NEWBURY: Claudia Newbury, Department of  
24 Energy.

25 MR. BECHTEL: Dennis Bechtel, planning manger for

1 Clark County.

2 MR. FRISHMAN: Steve Frishman, the State of  
3 Nevada.

4 MS. TREICHEL: Judy Treichel, Nevada Nuclear Waste  
5 Task Force.

6 MR. CAMERON: Chip Cameron, Office of General  
7 Counsel, NRC.

8 MR. HOYLE: Thank you very much. And thank you  
9 all for coming, members certainly, those in the audience as  
10 well. I want to emphasize the importance of the  
11 participation on this panel and the advice that this panel  
12 is going to be giving the Nuclear Regulatory Commission. The  
13 Commission, of course, has had the potential of licensing  
14 proceeding on the front of its plate for sometime and, as we  
15 get closer and closer to that point, the Commission is going  
16 to listen closely to what this panel has to say about the  
17 licensing support network. So I consider your advice.  
18 Hopefully we will conclude today by determining what  
19 alternative system we would like to recommend to the  
20 Commission. It's going to be very important. Dan Graser  
21 has put together an agenda which I think you all have. It  
22 should keep us pretty busy for the rest of the day it looks  
23 like to me. I think, Claudia, if you're ready to start,  
24 we'll hear from you first.

25 MS. NEWBURY: This is going to be pretty short.

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1 MR. FRISHMAN: Claudia, before you do, do the rest  
2 of us get some opening remarks, Mr. Chairman?

3 MR. HOYLE: Certainly, and I think maybe Steve was  
4 going to say that as well, so, yes, let me open it up for  
5 opening remarks.

6 MR. FRISHMAN: Well, I guess there's something  
7 that's been wearing on me for a long time and I've -- I'll  
8 say it as clean and blunt as I can, and that's that I don't  
9 like calling this whole operation the Licensing Support  
10 Network because we do not support licensing. I think we  
11 need to call it a comprehensive database and I think we  
12 ought to keep it really simple and have DOE put their data  
13 out, we'll put our data out and we'll just go from there.  
14 We're not in the system of supporting licensing. And it's  
15 become -- it's gotten to be, you know, just from my having  
16 been gone for the last two weeks on business having to do  
17 with this program, I get back and find my e-mail loaded with  
18 paper that is almost incomprehensible anyway for something  
19 that is as simple as somebody putting their data out on the  
20 net and letting it be and we all use it. If you remember in  
21 the last meeting, I said that the reason that we're even in  
22 this business at all is so the NRC can make its three-year  
23 licensing deadline, and from that, the purpose was to speed  
24 up discovery. Well, discovery can be speeded up with what  
25 exists in the electronic world right now without a whole

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1 bunch of paper on top of it. If DOE would just put their  
2 data out there, that would be wonderful, and we'll be glad  
3 to put our data out there. But to build a bureaucracy  
4 around a database to me just seems to be an enormous waste  
5 of time, money, and energy.

6 MR. HOYLE: All right, Steve. Thank you.

7 MR. FRISHMAN: And that's my opinion for today.

8 MR. HOYLE: All right. Thank you.

9 MR. MURPHY: Yeah, just very briefly. I've got  
10 some of the same sort of concerns that State just expressed.  
11 In going over the documents that Dan submitted and in some  
12 of the -- I must, you know, confess that I didn't keep up  
13 with the technical working group meetings minutes as quickly  
14 as I should have, but in going over them just in the last  
15 couple of days, it's occurred to me that we -- that with  
16 some of these alternatives, three and four particularly, we  
17 are in grave danger of losing entirely the benefit of the  
18 LSN rule and going back to the old LSS, and that is  
19 certainly not what I thought we were doing when we amended  
20 the rule to take advantage of the worldwide web. I don't  
21 remember now, but I -- why we did it, but I'm wondering why  
22 we so cavalierly discarded alternatives one and two. It  
23 seems to me alternative one and perhaps -- and maybe  
24 alternative two were more clearly reflective of the intent  
25 at least of this body and hopefully of the NRC when it

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1 adopted the LSN rule and made the strategic decision to move  
2 from a centralized licensing support system to a worldwide  
3 web-based licensing support network. So like Steve, I'm  
4 very disturbed at the seemingly layer and layer -- layers  
5 and layers and layers of the nonessential requirements that  
6 we're now discussing, and it seems to me that they don't  
7 provide any real critical process or assistance to potential  
8 participants in the licensing process, so I think we need to  
9 seriously consider going back to something akin to  
10 alternatives one and two or at least -- at the very least  
11 focus on alternative five rather than three and four.

12 Also, and it's -- we can discuss it when we get to  
13 it, it seems to me, as I read both the rule and draft  
14 functional requirements, Dan, there are proposed functional  
15 requirements which go well beyond the requirements of the  
16 rule itself that I think, in my personal opinion, have no  
17 basis in law whatsoever.

18 And finally, I am going to have to leave at 3:30  
19 to go to another meeting with my client, the project manager  
20 for Nye County. I think we -- you know, that's not going to  
21 be a problem but I may want to get my two bits' worth in  
22 early at 3:00 agenda item when we get done talking about  
23 recommendations. Thanks.

24 MR. HOYLE: Thank you, Mal. Further comments  
25 from --

1 MS. TREICHEL: Yeah, I would just like to also I  
2 guess echo the call for -- just an integrated database  
3 rather than something that supports licensing. We've just  
4 come out of all of the hearings on the EIS and one of the  
5 big problems was the lack of current data that was included  
6 in that analysis, and people had submitted stuff and it  
7 didn't get there or it wasn't considered. And so the bottom  
8 line for me and I think for anyone that's a public advocate  
9 or a public representative is just going to be that a lot of  
10 stuff gets in, that everything gets in actually from all  
11 different directions and that you can get to it and it does  
12 get very difficult when you start layering on stuff that --  
13 because people are at so many various levels of expertise  
14 and equipment and money and all of that sort of thing. So  
15 that's it.

16 MR. HOYLE: Dennis?

17 MR. BECHTEL: Maybe just a brief comment that,  
18 having gone through the review of the viability assessment  
19 and more recently the DEIS, I also am hopeful that the  
20 information is available in a timely way, and I look at this  
21 potentially this group as being, as kind of serving an audit  
22 function to ensure that that happens. I don't have time  
23 to -- for the complexity sake, I rely on, say, the NRC to  
24 ensure that whatever system is -- that we select is -- we're  
25 able to do that. But I don't want to go through the recent

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1 experience of getting into a review period and not having  
2 documents to be able to review, so hopefully, if we're able  
3 to do that, I think we'll accomplish something.

4 MR. HOYLE: Okay. Thank you. You want to comment  
5 on these comments or --

6 MS. NEWBURY: Do a little comment on it then I'll  
7 just go through my action item, if you will.

8 MALE VOICE: Well, I'd like to comment after your  
9 comment anyway.

10 MS. NEWBURY: Okay. Bearing in mind that this is  
11 set up as a discovery tool for licensing and that is the  
12 only reason the NRC is sponsoring this, I'm not totally in  
13 concurrence with what Steve had to say, but I do support a  
14 lot of what Mal says. I think that the system has gotten  
15 more complex than it was intended to be and goes beyond --

16 MR. HOYLE: Pull your mike up just a little  
17 closer.

18 MS. NEWBURY: And goes beyond what we expected the  
19 rule to accomplish when we changed it from a licensing  
20 support system to a network, so I agree with Mal.

21 MR. HOYLE: Okay. Thanks. I guess I just wanted  
22 to comment that one of the purposes for us today is to hear  
23 what the technical working group did in the meetings since  
24 the last meeting of this panel, and hopefully they will go  
25 through alternatives one and two again for us, and if -- it

1 was the technical working group that suggested that we might  
2 not want to look much closer at those two, but this panel  
3 has not taken any action in that regard. So let's hear the  
4 presentations and decide, you know, as a group what advice  
5 we would like to give the Nuclear Regulatory Commission.

6 MR. GRASER: Yes.

7 MR. HOYLE: Dan? It's hard to hear in the back so  
8 we're going to have to speak closely into the microphones  
9 please.

10 MR. GRASER: I would just like to echo what John  
11 just brought up is that the technical working groups did  
12 examine alternatives one and alternatives two and we have  
13 included analyses of those options again and we can  
14 certainly go into those in more detail than what we had  
15 planned on the agenda so that the AR -- the full ARP has the  
16 benefit of going through those options and alternatives. So  
17 we can certainly do that. We brought the materials along to  
18 support such a presentation and such a discussion. The  
19 other thing that I would like to mention is that the rule --  
20 I view the rule -- the way I look at the rule is that it  
21 establishes an overall framework within which we have a  
22 fairly wide latitude for how we implement the system. And  
23 the rule does -- the revised rule does not specifically call  
24 out a technological solution and, in fact, it was left  
25 deliberately fairly wide open so that you could have a wide

1 range of technical solutions. And if the opinion of the  
2 advisory review panel is to go for less rather than more and  
3 to simplify rather than make it complex and to strip out  
4 layers of bureaucracy rather than to have those mechanisms  
5 in there, the opportunity toward the end of the day will be  
6 for the advisory review panel to determine how it's going to  
7 present its recommendations back to the Nuclear Regulatory  
8 Commission. And so, in that context, I think what John will  
9 probably be asking for at the end of the day is for the ARP  
10 to sit down and figure out, well, okay, exactly what do we  
11 want to say to the Nuclear Regulatory Commission and who  
12 will lead the effort in crafting exactly how the advisory  
13 panel expresses its desires and to get that documented and  
14 to submit that back as an ARP statement back to the Nuclear  
15 Regulatory Commission. And the object of having the ARP  
16 meetings is exactly to elicit that sort of input, so I'm  
17 really looking forward to hearing what the best guidance is.  
18 And if a simplified system is the system that the  
19 participants and the potential participants feel will be  
20 adequate toward meeting their discovery ends, then that's  
21 fine with me. I don't have any vested interest in building  
22 an empire. I do have a vested interest in making sure we  
23 accomplish the mission, and that's what I'm looking for is  
24 guidance in how far we have to go to accomplish that  
25 mission. So thank you all very much for your comments.

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1 MR. FRISHMAN: Let me just ask one thing. Can you  
2 define the mission?

3 MR. GRASER: I would harken back to a letter that  
4 Loretta Metoxen submitted to the Nuclear Regulatory  
5 Commission back in the old LSS rule days, back in I think it  
6 was about December of 1988 where Loretta made an excellent  
7 plea that the playing field be leveled so that everybody had  
8 equal access and equal opportunity to look at everybody  
9 else's documents without the system introducing a  
10 technological leverage that favored one of the participants  
11 versus others. And so my view of the mission is to make a  
12 system available to all of the potential parties with low  
13 enough thresholds of participation and low enough levels of  
14 technical complexity that it can be used by everybody who's  
15 going to be a potential participant to fulfill their needs  
16 in finding documents that they perceive they want to use  
17 during the licensing proceedings.

18 MR. FRISHMAN: That sounds good. Let's keep it in  
19 mind.

20 MR. HOYLE: Chip?

21 MR. CAMERON: Just to provide a little bit of  
22 perspective in terms of the possible intent of this new rule  
23 for purposes of our discussion today. One thing that was  
24 clear from the final rule on the LSN is that the commission  
25 wanted to do away with the centralized system that would

1 have been created under the licensing support system. And  
2 although there are a lot of references in the supplementary  
3 information of the rule to websites, the supplementary  
4 information also speaks to the fact that the mechanism to  
5 implement this requirement, in other words, the electronic  
6 availability of documents, the mechanism is not stated in  
7 the rule that the availability of the Internet to link  
8 geographically-disbursed sites appears to have the potential  
9 to satisfy the rules, so I think if you start out with a  
10 simple concept of individual websites and you go on a  
11 spectrum along the spectrum to this centralized system that  
12 we moved away from, there is a lot of latitude about how you  
13 accomplish this and I think that the interests of the  
14 individual participants on the panel in terms of how that is  
15 accomplished is the most important element.

16 MR. HOYLE: All right. Any further comment? I  
17 apologize for seeming to invite you not to make comments, so  
18 thank you for all that. All right, Claudia.

19 MS. NEWBURY: Okay. I had an action item from the  
20 last meeting. Dennis had asked a question on whether or not  
21 money that has been appropriated from the Energy Water  
22 Development Preparations Act by Congress could be used to  
23 fund the LSNARP activities and the LSN activities. And I  
24 said I would check with my lawyers and get back to you. And  
25 I checked with my lawyers and what they said was they think



1 an expression of science and if the state was to study how  
2 it's to implement the requirements of licensing support  
3 rule, I would certainly interpret that as a scientific  
4 study, but --

5 MR. CAMERON: Perhaps to take another look at  
6 that, if this system is supposed to provide for the  
7 communication of data, it would seem that that would be a  
8 direct output of the conducting of scientific studies. I  
9 mean, what is the sense of conducting scientific studies if  
10 you can't communicate that data to people? And I guess,  
11 Claudia, you haven't expressly stated that the conduct of  
12 scientific studies is the limiting factor, but I guess we're  
13 all going to put our two cents in on this.

14 MR. MURPHY: Well, we may have to hire this panel  
15 to be our advocate.

16 MR. CAMERON: The point is that the state. for  
17 whatever reasons, and Steve is absolutely correct, this  
18 panel can do absolutely nothing whatsoever about the -- but  
19 for whatever reasons, congress has seen fit to impose  
20 restrictions on the state's expenditure of funds which is  
21 hasn't imposed on any other parties. Whether or not those  
22 restrictions will be -- will continue or be loosened or  
23 removed in the future is anybody's guess, but right now they  
24 have problems that the rest of us don't have.

25 MR. BECHTEL: So, Claudia, the review of deal your

1 lawyers undertook included the review of our annual  
2 appropriations restrictions, that's part of the --

3 MS. NEWBURY: Yes.

4 MR. BECHTEL: Yeah.

5 MR. FRISHMAN: So the bottom line on the whole  
6 thing is, at some point we will decide how we participate  
7 but we also know that we are a party.

8 MS. TREICHEL: Well, there's also difficulties  
9 with public advocacy groups who depend upon either donations  
10 or grant funding in that that money is very often, you know,  
11 comes with the wishes of the funder as to how it's used and  
12 I haven't sought money -- I haven't looked for foundation  
13 money for this only because I know that it's not what they  
14 call a sexy issue and probably would be very difficult. So  
15 there are some of us that, you know, just keep up as we can.

16 MR. CAMERON: Yeah, I guess the bottom line is is  
17 that it's within DOE's purview to make this call.

18 MS. NEWBURY: I'm sorry, I was talking to Dennis.  
19 I'm sorry, I didn't hear. I was talking to Dennis.

20 MR. CAMERON: this is DOE's interpretation at this  
21 moment on how those funds can be expended relative to the  
22 state and the LSN? I'm just trying to get a sense for how  
23 firm it is.

24 MS. NEWBURY: It's DOE's interpretation of the  
25 language that's in the appropriations bill from congress.

1 MR. CAMERON: Okay. All right. Thank you.

2 MR. MURPHY: It's not, you know, I ought to send  
3 you a bill for this, Claudia. It's not DOE's call in this  
4 sense. DOE has consistently recommended to congress that  
5 the state be, you know, fully funded and operate under the  
6 same restrictions and -- as all of the other oversight  
7 entities, so, you know, it seems to me if it were up to DOE  
8 Steve would not have the problem in spending his oversight  
9 appropriation as he has.

10 MR. FRISHMAN: It's DOE bowing to one  
11 congressman's interpretation.

12 MR. MURPHY: Well, it's not DOE bowing to anybody.  
13 I mean, it's one congressman imposing his will on the rest  
14 of the congress, you might say.

15 MR. FRISHMAN: Which DOE may or may not deal with.

16 MR. MURPHY: That's true. But they have bigger  
17 fish to fry.

18 MR. HOYLE: Okay. Thank you, Claudia. Any  
19 further comment on that? Thanks. The next item on the  
20 agenda we're going to call upon Mr. Cameron to discuss  
21 2.1004 of the rule, qualification on making available in  
22 index of documents not placed on participant external  
23 collection. Chip?

24 MR. CAMERON: Thanks, John. I don't -- I'm hoping  
25 this is not going to be a long complicated discussion

1 because if it is I really missed the boat somewhere on this  
2 provision. But basically going back to the beginning of the  
3 original LSS rule, there was a concern that there might be  
4 documents that are discovered, so to speak, that were not  
5 put on the LSN or the LSS electronically and that when those  
6 documents were found that they should be made available to  
7 the parties as soon as possible. And this provision deals  
8 with a five-day time frame now for those documents to be  
9 made available. And it doesn't have anything to do, as far  
10 as I can see, with parties making lists of documents  
11 available to others lists of documents that were found not  
12 to be relevant. It's simply if a document's identified  
13 that's not on the system, let's get it on the system, let's  
14 make it available within a certain amount of time. And  
15 there is another provision back in 2.1019 I believe that  
16 deals with depositions and a person who's going to be  
17 deposed providing electronic index of documents that are  
18 relevant to that deposition and indicating which ones of  
19 those are already on the system and which ones aren't on the  
20 system, perhaps because it's a document that that person  
21 annotated in handwriting with marginalia. And I guess I  
22 would look to -- I guess I would ask now whether he has any  
23 other view on this 2.1004 and also Dan, who I think knows  
24 more of what the background is on this.

25 MR. MURPHY: Right.

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1 MR. CAMERON: Maybe less. Go ahead.

2 MR. MURPHY: I think I agree with what you said,  
3 Chip, if I understand your point. I don't see this as a  
4 huge issue personally. Claudia perhaps does because --  
5 documents is, by comparison to Nye's, enormous. But as I  
6 read the rule, I see no requirement in there for us to list  
7 or provide an index electronically of the documents that we  
8 have through our own internal processes consistent with the  
9 requirements of the rule concluded are not or and not likely  
10 to become relevant to the licensing process. But in Nye  
11 County's case, and I'm assuming the other smaller local  
12 governments' case, that's not a huge burden if you want us  
13 to put an index of the documents in our Purim (phonetic)  
14 office and in our contractors' offices on the worldwide web  
15 I guess we can do that. I don't see any necessity for doing  
16 so. I mean, the documents that are not under any  
17 circumstances going to become part of the licensing process.  
18 You know, we can do that. That's not a big deal. I'm not  
19 going to lose any sleep over that but Claudia might because  
20 that list indeed -- and I would if I were running the NRC's  
21 documents, it seems to me. But in Claudia's case, that's a  
22 gigantic list of documents, but I agree with your  
23 interpretation that it's not necessary under the rule.

24 MR. GRASER: I was just going to add that I seem  
25 to recall that one of the discussions that went on when the

1 revised rule was being developed was the whole question of  
2 well how do you know what you don't know, how do you know  
3 which documents haven't been placed -- haven't been  
4 determined to be -- by the participant to be relevant and  
5 have not been placed out on the web. Then how do you know  
6 which documents have not been placed on the web unless you  
7 have some mechanism to look at other potentially relevant  
8 materials and then come forward to the presiding officer and  
9 make a case that some documents that, in your own  
10 determination, may be potentially relevant you found on this  
11 index of materials and would now like to come before the  
12 presiding officer and make a case that those documents be  
13 placed by the other party out on their site in full text  
14 with a bibliographic header. So I do recall some of those  
15 discussions going on during the time of the process of  
16 revising the rule. But again, that's -- it's more along the  
17 lines of a question for the lawyers rather than for the  
18 techies. Our only concern was to make sure we got a  
19 clarification of that because it did come up during the  
20 course of technical working group discussions.

21 MR. MURPHY: I think the question is, you know,  
22 who's got the burden to do a little work in preparation for  
23 their own licensing case? We have to keep in mind and, you  
24 know, this discussion came up even back in '86/'87 when we  
25 were negotiating the original LSS rule, but all of these

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1 documents and all of these indexes, well, with the exception  
2 of Judy and similar organizations, are public records. I  
3 mean, anybody who wants to can today walk into our office in  
4 Purim and follow the processes established under Nevada law  
5 and ask to look at our records or an index of our records.  
6 So the only question is do we make that index available in  
7 the first instance on the first page of our website and does  
8 DOE, or is that list made available to the world including  
9 the attorneys on the other side of the licensing process in  
10 some other fashion. It's not a question of are they going  
11 to be able to find out what documents we have which  
12 aren't -- which we don't consider relevant or are they not  
13 going to be able to find that out. The only question is how  
14 and how quickly I suppose is a necessary subset of that  
15 first question.

16 MR. CAMERON: And I -- there's two issues here and  
17 one is perhaps legitimate issue of whether there should be  
18 such an index provided and how. The second issue is whether  
19 to -- whether there's any reflection of this in a rule at  
20 this point. And I can't find any reflection of it in the  
21 rule, particularly in 2.1004, the Pedroter (phonetic) issue  
22 of whether from a policy matter we need to have this list of  
23 documents that were found to not be relevant would be an  
24 issue for the panel and also if the panel found that that  
25 would be a requirement, would the rule need to be amended to

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1 provide for it.

2 MR. HOYLE: In hopes of clarification and this  
3 might be the cart behind the horse here, I'd like to read  
4 into the record the section we're talking about. Section  
5 2.1003 is entitled availability of material and that talks  
6 about the material that you should -- that a party or a  
7 potential party should be putting into the system. And it  
8 lays out in some detail what that types of material should  
9 be. And then 2.1004 is entitled Amendments and Additions,  
10 and it reads, "Any document that has not been provided to  
11 other parties in electronic form must be identified in an  
12 electronic notice and made available for inspection and  
13 copying by the potential party, interested government  
14 participant, or party responsible for the submission of the  
15 document within five days after it has been requested." And  
16 it goes on and lists other times been allowed by the  
17 prelicense application presiding officer. So it doesn't  
18 talk about a list. It talks about the possibility that  
19 another participant or potential participant knows of a  
20 document that's not on a party's list and says, "Hey, how  
21 about this document?" And once that is identified, then the  
22 party that owns that document needs to follow 1004 and get  
23 it up electronically.

24 Now, that's a very simple reading of that rule,  
25 but I just wanted to put it in context here for those

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1 particularly who do not have a copy of the rule before you.  
2 Any other comment then? Claudia?

3 MS. NEWBURY: Yeah. That section follows right  
4 after the availability of materials section where it  
5 discussed documentary material that is not provided in  
6 electronic format.

7 MR. HOYLE: Uh-huh.

8 MS. NEWBURY: There's a section there. And I --  
9 doesn't this follow from that that if you have information  
10 that you have provided a header for that not an electronic  
11 format; isn't that what they're requesting? This is not  
12 documents that we've decided are irrelevant. I agree with  
13 Chip. This is stuff that's already listed in our  
14 bibliographic headers that we did not provide the electronic  
15 information for.

16 MALE VOICE: Well, that's --

17 MR. HOYLE: You talking about raw data?

18 MS. NEWBURY: There's a whole list of things here  
19 that are not provided in electronic format.

20 MR. MURPHY: Uh-huh. But I think it also refers  
21 to documents that people run into. I don't want to use the  
22 word discover because that's a term of art in the law. It  
23 refers to, as I recall the negotiations and the discussions  
24 of this language, refers to documents that people might run  
25 into in the course of their own preparation for the

1 licensing process, particularly including taking depositions  
2 of potential expert witnesses. If you're talking to some  
3 scientist and he says, "Well, I remember I made some notes  
4 about work I did out on such and such a field trip, but, you  
5 know, they're in my office somewhere," you can request them  
6 and you need to have them delivered within five days. I've  
7 never interpreted that as meaning that we had to put our  
8 entire index or that anybody had to put its entire index on  
9 the web. But again, I mean, so I agree entirely with Chip  
10 that that -- that the rule doesn't require that. It -- but,  
11 you know, for the smaller participants like Nye, it's not an  
12 enormous burden for us to do that. But, you know, it's a --

13 MS. NEWBURY: It would be burdensome for use.

14 MR. CAMERON: Dan, is this clarified for your  
15 need?

16 MR. GRASER: Absolutely. I -- you know, as long  
17 as everybody has that what seems to me a fairly shared  
18 understanding. I think that answers the question as far as  
19 I'm concerned.

20 MR. MURPHY: I don't think there's ever been any  
21 question of our need to list electronically with a header or  
22 with some other descriptive for the documents that we  
23 identify as potentially relevant but which were, for some  
24 reason or other, we're not putting on the website because  
25 they're raw data, because they're attorney/client privilege,

1 or whatever. I mean, clearly we need to identify them and  
2 list them like that.

3 MR. GRASER: And then that's where 2.1004 would  
4 kick in and say, if you have a document that was not  
5 previously made available in text --

6 MS. NEWBURY: Correct.

7 MR. GRASER: -- then --

8 MR. MURPHY: Plus this other class of documents  
9 that people stumble across in the course of --

10 MR. CAMERON: And keep in mind that 2.1003 already  
11 takes into account documents for which there might be a  
12 claim of privilege. 2.1004 could apply to documents where  
13 there would -- that no privilege would attach to. It's just  
14 a case of it was missed somehow. And if a party wants to --  
15 who owns that wants to challenge whether that indeed is  
16 relevant, a relevant document or is privileged, then that  
17 can all be processed before the presiding officer. So it's  
18 broader than just documents for which a claim of privilege  
19 exists or for so-called graphic-oriented material that  
20 aren't subject to capture in electronic form.

21 MR. FRISHMAN: Okay. Thank you. To close that  
22 off, I agree with the outcome of this.

23 MR. HOYLE: We have a new member of the panel  
24 joining us. Please introduce yourself.

25 MR. PITTS: Jason Pitts, Lincoln County.

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1 MR. HOYLE: Okay. Jason, it's hard for people to  
2 hear us without the mike, so why don't you pull that one up  
3 close for any comments you would like to make. Thank you.  
4 All right. Moving along. Unless there's any further  
5 discussion of that item. Dan, do you wish to summarize the  
6 October and December technical working group meetings,  
7 please?

8 MR. GRASER: Okay. Thank you very much, John.  
9 The technical working group, for those of you who may not  
10 have been at any of the previous licensing support system or  
11 licensing support network meetings including the meeting  
12 last October, I'm just going to walk through very quickly  
13 what the role and function of the technical working groups  
14 for this advisory panel has been laid out. The technical  
15 working group objectives is essentially to perform  
16 investigative or research or analytical sorts of activities,  
17 and because this rule deals with a computer system, this is  
18 focusing on computer technology specifically design  
19 alternatives for implementing licensing support networks.  
20 So the technical working group that met after the October  
21 advisory review panel and later again in December was  
22 focused specifically on going off and exploring technical  
23 options and alternatives. The technical working group then  
24 returns back to the advisory review panel with the results  
25 of their findings and it's up to the voting members of the

1 advisory review panel to then determine what do we do with  
2 this information. And so that's the charter of the  
3 technical working group. And as I mentioned, we had  
4 meetings in October and December. The -- I apologize for  
5 swamping people with e-mail but I've always been of the  
6 opinion that more information is better than none, so I did  
7 send out copies of the technical working group meetings and  
8 I believe I sent them out as the technical working group  
9 meeting minutes became available, and then I also sent a  
10 copy of them out as part of the background package for this  
11 meeting.

12           The technical working group participants -- and  
13 this is a compiled list from the entire October and December  
14 sets of meetings. We had some individuals who attended all  
15 of the meetings. We had other individuals who sat in on  
16 perhaps one of the sessions but not all of them. And I just  
17 wanted to list the individuals who participated in some or  
18 all of the technical working group meetings, and I wanted to  
19 thank them very specifically for their participation, for  
20 the time and effort that everybody put in. You can see we  
21 had some cross representation from various different  
22 participants and potential participants. Okay. That list  
23 of the TWG participants is included in the handout set of  
24 the overheads that have been provided to everybody.

25           The first meeting we had actually commenced the

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1 day before the October advisory review panel meeting and  
2 then subsequently met for the two days following the ARP  
3 meeting. As described in much more detail in the working  
4 group meeting minutes that were sent out, the technical  
5 working group reviewed the initial three alternative  
6 solutions that were presented at the October advisory review  
7 panel meeting. And as was already mentioned this morning,  
8 although the technical working group found them wanting in  
9 certain respects, according to our understanding and so  
10 forth, we did as a group give those two alternatives a  
11 fairly thorough walk-through and scrubbing, so we do have  
12 presentation materials as a result of all of those  
13 discussions. And, as I said, we've included them in the  
14 package so that they are available later today for us to  
15 walk through in more detail. And if, in fact, the advisory  
16 panel feels that the technical working group probably should  
17 not have thrown those options out, that's fine. We can  
18 resurrect them without any great degree of difficulty and  
19 certainly have a spirited discussion on the merits of those  
20 technical solutions.

21 But during the process of the October meetings, as  
22 I said, the technical working group essentially looked at  
23 the first two of the alternatives and found from our  
24 perspective at that time what we felt were made them  
25 non-starter issues. They had certain aspects of the

1 implementation that would not have made them especially user  
2 friendly or have made them more difficult to get an under --  
3 full understanding of which responsive documents all of the  
4 parties had available out on the web. We can go through  
5 those in more detail in the later presentations today. For  
6 each of the alternatives that we reviewed, we walked through  
7 technical description of each of those and looked at a  
8 number of different attributes or aspects of those technical  
9 implementations and I've listed them down at the bottom of  
10 this particular slide. For each of the alternatives that we  
11 explored, we looked specifically at issues such as how the  
12 system would be integrated, server performance, what would  
13 be the impact of clean text versus dirty text, search engine  
14 performance, web security which is certainly in everybody's  
15 consciousness after the events of the last few weeks. We  
16 looked at aspects that dealt with how you would be able to  
17 determine if the system is adequately performing for the  
18 users, training, data, maintenance, and so forth. So it was  
19 a fairly exhaustive list of salient features for each of the  
20 systems and the technical working groups had some very  
21 animated and lively discussions about all of those. There  
22 was very active exchange of thoughts and ideas about all of  
23 the systems.

24           During the course of that October meeting, in  
25 addition to looking at the initial three design approaches,

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1 representatives from the Department of Energy proposed  
2 another technical solution. It was a variant of one of the  
3 solutions that was originally presented in the October ARP  
4 meeting. That variant became our alternative number four.  
5 So when we left the October meeting, we had one of the  
6 original three that we considered still to be viable and, in  
7 addition to that, we had a variation of that. So we had two  
8 viable alternatives at that point in time.

9           The October meeting also generated within the  
10 technical working group a list of action items that various  
11 of the technical working group members went off and did some  
12 additional research. One of the things we recognized was  
13 that the original old LSS functional requirements that  
14 described the mainframe-type system with lots of  
15 functionality, being able to deliver print documents on  
16 request and those sorts of things, did not apply to  
17 web-based approach to accessing everybody's information.  
18 So -- I'm sorry. So we identified a task that somebody  
19 needed to take an initial cut at developing a set of  
20 functional requirements that would reflect the attributes of  
21 a web-based system. We looked at the bibliographic headers  
22 and tried to identify whether the old LSS bibliographic  
23 header structure would require any changes and as a result  
24 of using a web-based technology. And generally speaking,  
25 the structure data in the index as originally outlined by

1 the licensing support system, technical working groups with  
2 Field and Dickerson and a number of other participants from  
3 DOE, we found that the bibliographic headers were still  
4 generally good in terms of creating a format for structured  
5 data. One of the observations we had was that there were  
6 housekeeping fields of information back in the old LSS  
7 design that probably were no longer operative. Those  
8 housekeeping fields identified who originally indexed the  
9 document and when the document was placed on the  
10 participant's site or submitted by the participant to the  
11 LSS administrator. And some of those housekeeping fields of  
12 information we felt could be dispensed with. We also  
13 identified that we needed to come up with at least some  
14 ballpark pricing for the viable alternatives, and we  
15 recognized at that point in time that what we were trying to  
16 do was to characterize the general costs associated with the  
17 alternatives. And my interest was to look at that  
18 specifically and make sure that there was nothing in the  
19 profile of any of those solutions that would make it become  
20 cost prohibitive to the Nuclear Regulatory Commission  
21 because that would certainly be an issue that needs to be  
22 raised to people's attention. It's a perfectly good  
23 technical solution but it may not get funded. And if that  
24 was going to be the case, we wanted to know. So we did what  
25 we called a general cost characterization for each of the

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1 systems.

2 We also looked at portal software to determine  
3 whether or not these could be the hardware -- whether they  
4 could be operating in multiple different operating systems  
5 and that assignment was tasked off to Nuclear Regulatory  
6 Commission. We also explored the applicability of data  
7 mining tools and went also back to look at implementations  
8 of other portal sites that looked like good candidate, best  
9 practices sorts of sites that we could look at and we did go  
10 back and talk with the folks from DOE's Environmental Safety  
11 and Office of Environmental Safety and Health and got a lot  
12 of good information about their experience with developing  
13 their portal site for the Department of Energy. And finally  
14 we also recognized that we needed to continue doing some  
15 work on the issue of records packages and other issues that  
16 were associated with that. So the October meeting was  
17 pretty busy. We had a lot of these action items and a lot  
18 of the results of that are going -- are included in the  
19 packets that have been provided for you.

20 The technical working group convened again in  
21 December on December 5<sup>th</sup>. And, at that point in time, we  
22 worked toward trying to develop a better definition of the  
23 mission of the system and, Steve, again -- I think -- no  
24 that's the right chart. Again, this kind of goes back to  
25 Steve's question this morning, exactly how do you view the

1 mission of what the system is supposed to accomplish. And,  
2 in essence, we honed it down to ensuring that there was a  
3 web-based system that would provide all of the documents  
4 uniformly to all of the potential parties. The rule still  
5 requires a certain amount of independent validation that the  
6 participants are adhering to the rule and, in terms of  
7 making sure that the system is available to assist in  
8 meeting the three-year license proceeding, there's also the  
9 aspect that the system -- we need to ensure that the system  
10 is up and operational and available for the parties when it  
11 needs to be there.

12           At the December meeting, we also defined the key  
13 attributes of the system, including elements dealing with  
14 how controllable the system would be and control from this  
15 perspective means can we ensure that when users come to that  
16 site, the users can get into the website, that there's  
17 enough band width to the site and enough licenses for  
18 concurrent users coming into the site so that we would not  
19 have people being blocked out of having access simply  
20 because there were not enough resources made available. And  
21 part of the LSN administrator's responsibility is to ensure  
22 that the system is available when it needs to be available.

23           We also identified that the key attribute of the  
24 system would be to try to ensure the highest degree of  
25 performance and the highest amount of availability at the

1 most reasonable cost. And again, that's why we went into  
2 the drill of doing cost characterizations on the various  
3 scenarios. During the December meeting, a fifth solution  
4 was proposed. Again, the technical folks from the  
5 Department of Energy were particularly helpful in  
6 brainstorming sessions that we had. The fifth solution that  
7 was proposed was again another architectural variation of  
8 alternative three. So we ended up at the end of the  
9 December meeting with now five technical solutions or  
10 architectures and the three that we considered still to be  
11 viable all really had very similar aspects because they were  
12 all just variations of that original alternative number  
13 three. They add some architectural features intended to  
14 deal with issues that we identified, performance issues,  
15 that all related to band width and access and the ability to  
16 download fairly large documents. So that is one of the  
17 issues also that really developed out of the December  
18 meeting was to focus on the issue of band width and that  
19 being the -- one of the primary technical challenges to  
20 making -- to establishing the system and making it  
21 operational and reliable.

22 I have some additional things to report on. One  
23 of the assignments that we had from the last advisory panel  
24 meeting was to go out and establish some dialog with library  
25 organizations within the state of Nevada. This all came up

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1 on the context of the discussion I believe about the Nuclear  
2 Regulatory Commission was just in the process of  
3 disestablishing its local public document rooms. And Judy  
4 did I believe at the last ARP meeting raise the issue of --  
5 I'm not sure if -- I can't remember -- in any event,  
6 somebody at the last ARP meeting raised the issue of --

7 MR. HOYLE: Abbie I think.

8 MR. GRASER: Was it Abbie? Okay.

9 MR. HOYLE: Abbie Johnson.

10 MR. GRASER: Okay. Somebody raised the issue of  
11 whether or not the public that was located in some of the  
12 areas outside of the metropolitan areas, for example, would  
13 have adequate and sufficient computer resources to be able  
14 to access the system. And so one of the tasks that I took  
15 on was to go out and make contact with the state of Nevada  
16 Library and Archives Organization and I'm sharing with you  
17 here on this slide a communication from Bonnie Buckley.  
18 Basically she indicates that all of the public library  
19 systems in the state right down to the smallest local  
20 branches in all of the out county areas do currently have  
21 Internet access, and the Internet access is one of the big  
22 initiatives within their organization to make sure that that  
23 Internet access is available through the library  
24 organization. So I think the short answer on all this is  
25 that if there is a library close by, members of the public

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1 will have a mechanism to get into the document collections  
2 and I -- at their website, they have also included a list of  
3 those libraries and the various branch offices of them. So  
4 if anybody is interested in pursuing that, I'd be glad to  
5 share with you the website for their organization. And just  
6 like to go on record as thanking Ms. Buckley for her prompt  
7 response to that inquiry that I sent out to her.

8 MR. MURPHY: That's pretty much true around the  
9 country today, isn't it, Dan? I know we have in our local  
10 library back home, and I think throughout the state of  
11 Washington, they all have Internet access. There's a  
12 question of, you know, how many counsels are available, et  
13 cetera, but --

14 MR. GRASER: I believe that's a fair  
15 characterization of it. It's just not the sort of thing  
16 that I would like to shrug off and leave to a presumption it  
17 was an easy thing to check out and easy thing to document  
18 that yes indeed the availability is there. There was some  
19 concern I believe that Abbie raised regarding the  
20 availability, for example, of fast telecommunication lines,  
21 dedicated telecommunication lines which could also affect  
22 performance. So it's just as easy to ask those questions  
23 and to find out and to get it onto the record that yes  
24 indeed those resources are available.

25 MR. MURPHY: Well, you know, the reason I raised

1 the point is that there are people elsewhere in the country  
2 who are going to be just as interested in this process as --  
3 it's not just the folks in Nevada or in Nye County who might  
4 want to access those sites and participate.

5 MR. GRASER: Oh, absolutely. And I think you  
6 could probably make the case that if an individual has a  
7 local community college, library, or university library, or  
8 some other place where they can get access without having to  
9 have a computer terminal of their own at home, that  
10 information is going to be generally available, and I agree  
11 with you, Mal, that when you look at it from the scientific  
12 point of view, for example, there are lots of people who are  
13 very much interested in the science that's going on.  
14 Geologist who are interested in the geology aspect simply  
15 because this is the most geologically studied site, so you  
16 may have academic organizations who are going to be  
17 following what's going on here simply because their  
18 discipline is getting a much more intensive body of  
19 knowledge made available to them. So, yeah, I think the  
20 general public and some academic disciplines will be  
21 following this with great interest.

22 MR. HOYLE: Jason?

23 MR. PITTS: Yeah, Dan. The only thing I'm  
24 concerned about is that the public libraries in the north  
25 that I'm aware of have dial-up access.

1 MR. GRASER: Okay.

2 MR. PITTS: I think there could be some concerns  
3 about speed and feasibility of the system, you know, with  
4 large documents and stuff like that.

5 MR. GRASER: Yes.

6 MR. PITTS: We've had some issues with the -- some  
7 of the things we had to deal with -- a lot of it and it  
8 takes some time with dial-up speeds.

9 MR. GRASER: That's an excellent point, and I  
10 think if you go to the web page that they have listed here,  
11 the dmla.clan.live.nv.us website, if I recall, there was a  
12 section in there on dealing with their overall policy and  
13 their overall initiatives for fiscal year 2000 and 2001 and  
14 they do mention, if I recall correctly, they do mention the  
15 fact that they want to increase the capability to get people  
16 beyond the dial-up mode. So that is on their horizon as  
17 some of the things that they're looking toward.

18 MR. PITTS: I think one of the things that the  
19 portal site might be able to do is -- and I've seen it in  
20 some of the other government sites, is displaying times --  
21 look at these documents, expect these documents -- idea of  
22 what they're dealing with when they're going in to research  
23 these topics.

24 MR. GRASER: Yes.

25 MR. HOYLE: Chip?

1 MR. CAMERON: Dan, one of the things that I hope  
2 that you could address when we go through the alternatives  
3 is what are the implications of the different alternatives  
4 for the public access functionality? In other words, are --  
5 do some of them make public access easier or are they all  
6 neutral? This sort of follows on Jason's comment and on  
7 something that John reminded me of which was when we were  
8 going to have the centralized system, we were going to do  
9 training for people in terms of using the system and I would  
10 hope that under this new configuration that it would be as  
11 user friendly as possible. And that's something that I  
12 guess you guys were considering when you looked at the  
13 alternatives.

14 MR. GRASER: Yes. I think for all five of the  
15 alternatives we did the -- we did a fairly thorough job of  
16 trying to characterize how a user would connect to that  
17 system and what the user interface would look like. And, in  
18 fact, the two of the early alternatives that the technical  
19 working group looked at and we were not particularly  
20 enamored with, but the characterization of them was, in the  
21 first case, going to a site like Yahoo and being able to  
22 simply enter a search term and have the world disgorged in  
23 front of you where the use interface is a lot like what  
24 everybody's little sixth grader at home is currently able to  
25 use. And, you know, I don't mean that in a negative way. I

1 mean, it's really the current state of technology.

2           The second user interface that we looked at again  
3 had a relatively simplistic user interface where you type in  
4 key words or terms that you're searching for, and  
5 essentially what that one did was launch against multiple  
6 collections and did a better job of interleaving the results  
7 that you would get back from the search. So instead of  
8 having them all displayed in one huge page such as you would  
9 with Yahoo, if there were 10 different participant  
10 databases, you would get 10 sets of results brought back and  
11 interleaved or perhaps aggregated into here's the DOE  
12 collection or the NRC collection. But when we go through  
13 the discussion this afternoon we will get into that in more  
14 detail because we did do those characterizations.

15           But in general, the user interface for all of the  
16 scenarios that we examined, you know, one of the primary  
17 things that we were looking at was how can we keep it simple  
18 yet powerful enough to find specific materials in a fairly  
19 large collection. And that's where the Yahoo approach could  
20 fall apart. If you have only one or two search terms, you  
21 will consistently get back the entire collection on every  
22 search.

23           MR. HOYLE: Dan, let me stop you there for a  
24 second. We have another panel member who has joined us.  
25 Abbie, would you introduce yourself please.

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1 MS. JOHNSON: My name is Abbie Johnson and I  
2 represent Eureka County, Nevada.

3 MR. HOYLE: All right. Thank you. You came in at  
4 a good time. Dan was just talking about the information he  
5 had gotten about libraries. And I was thinking about people  
6 that -- of the type that you talked about who don't perhaps  
7 have telephones at this point who do have a library to go  
8 to, but new users of new technology like computers are very,  
9 very tentative users, and seems to me, if they are  
10 interested in these collections, they are going to need some  
11 help from the librarians and hopefully they themselves are  
12 well trained on how to assist a new user on the machine.

13 Dan, are you going to continue on your -- some  
14 other charts?

15 MR. GRASER: Yes, I had --

16 MR. BECHTEL: Just one other --

17 MR. GRASER: Okay, go ahead, Dennis.

18 MR. BECHTEL: See the public access, I would echo  
19 Chip's request to maybe dig into a little more detail on the  
20 practicality of public access because I know -- I mean,  
21 Internet is available on most libraries, but libraries have  
22 different types of computers. Sometimes they put time  
23 restrictions on the availability of use. You have to sign  
24 up for it. One of the libraries even in Clark County, there  
25 are 386s that, you know, you put the request in and go have

1 lunch and then come back and, you know, you may get a  
2 response. But there's a lot of other, you know, practical  
3 things that need to be considered about, you know, the  
4 public, you know, access even something that's available,  
5 so --

6 MR. HOYLE: Okay. I'm trying to put that in the  
7 context of some of the comments that were -- the  
8 introductory comments that were made this morning. And  
9 trying to frame that for myself a little bit better. If  
10 you're suggesting that we go out and try to do a little more  
11 background investigation on the capabilities that are  
12 currently out there, whether the libraries have relatively,  
13 as you say, relatively slow machines with dial-up access and  
14 so forth, if I find out that the answer is yes indeed in  
15 some of the outlying counties that, in fact, is the case,  
16 then the follow-on question becomes now what do we do about  
17 it and what would the strategy be and is that something that  
18 the advisory panel would like the LSN administrator to  
19 pursue or is that something where again we go back to  
20 perhaps the Nevada State Library and Archives people and  
21 engage in a deeper dialog with them. So my -- the thing I'm  
22 looking for, Dennis, is to try to characterize, if we find  
23 out that that -- that the public still have adequate but not  
24 really outstanding access, then what do we do about it, and  
25 that's what I would need to know, what direction should I go

1 in with that.

2 MR. BECHTEL: I think prior to the finalization of  
3 rule, I think we agreed it should be an open system. And  
4 merely I'm pointing out is that, you know, in order to --  
5 it's an item we need to discuss but there are practical  
6 things that may make that difficult for the public to  
7 participate.

8 MR. HOYLE: Uh-huh.

9 MR. BECHTEL: It's an issue that needs to be --

10 MS. NEWBURY: It's Claudia. I wonder where the  
11 line is drawn between making things accessible and going  
12 beyond the concept of what an LSN is. Is this -- is your  
13 response time so critical for the general public that you  
14 need to consider that in how it is you're developing your  
15 system. Because I can see you ending up with the -- back  
16 where we were with an LSS and you provide a terminal and a  
17 high-speed line, and I don't know that that's where you want  
18 to go.

19 MR. HOYLE: Uh-huh.

20 MS. NEWBURY: So you as the NRC need to decide  
21 where you want your system to be and how it is you want it  
22 to act.

23 MR. PITTS: And the question has to be is it  
24 adequate? I mean, that's what I'm saying -- is it going to  
25 take 30 minutes to download -- you know, is that too long to

1 wait to do real research? I don't know. That's really the  
2 question.

3 MR. HOYLE: Jason, for a member of the public as  
4 opposed to a participant?

5 MR. PITTS: Yeah.

6 MR. HOYLE: Okay. I think that's a good point  
7 and, you know, we're moving here from a paper system where  
8 members of the public would have to, you know, take large  
9 documents and physically off a shelf and page through them  
10 and read them and find what they want versus trying to do  
11 that very tentatively perhaps at first on a computer. I  
12 think the Nuclear Regulatory Commission would be interested  
13 in your comments, your thoughts on this subject. I don't  
14 think that we as a panel need to develop a position to  
15 advise the LSS administrator on how he should go about  
16 handling this matter. But as far as an item of interest to  
17 the commission, I think this is clearly one of those items.  
18 Is there any other comment? All right, Dan.

19 MR. GRASER: Okay. I would like to finish off  
20 this last topic here before we take a break, and that is to  
21 report back on the functional requirements and the work  
22 that's being done in that regard. Mentioned earlier that  
23 the technical working group looked at the original licensing  
24 support system level one and level two functional  
25 requirements that had been developed, oh, I think back in

1 the 1996 time frame. And those, in fact, were iterations on  
2 a set of functional requirements that were developed even  
3 earlier back in the 1990 through 1992 time frame. And I  
4 mentioned that the functional requirements for the old  
5 licensing support system had everybody's wish list included  
6 in them. And those wish list items included calling out  
7 functionality for being able to submit a request to the  
8 licensing support system administrator for print jobs to be  
9 run on very large paper -- very large numbers of documents,  
10 very large number of pages where an individual would be able  
11 to submit a request and a high-speed printer would duplicate  
12 the documents and ship them out to the requesting party.  
13 And it had other aspects of mainframe-type functionality,  
14 mainframe administrative aspects to the system. And all  
15 those functional requirements when we looked at them we  
16 realized, well, this has certainly a different flavor when  
17 you look at the -- at making this a web of underlying  
18 collections of other people's materials that they are still  
19 maintaining under their own systems, under their own  
20 possession. So the functional requirements, we took it upon  
21 an NRC task to go back and we -- instead of trying to resort  
22 all of those old functional requirements which we tried to  
23 do initially and it turned out to be very cumbersome, we  
24 just went back to the drawing board and tried to  
25 characterize a core group of functional requirements for the

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1 system. Those 48 functional requirements were then  
2 augmented by all sorts of discussion factors and attributes  
3 that had been verbally expressed or expressed in some of the  
4 earlier LSS functional requirements. And we put all of that  
5 commentary with the functional requirement that described a  
6 web-based system.

7 The function requirements went out to the  
8 technical working group for their review rather late in my  
9 calendar here and we did have some opportunity for feedback  
10 and some opportunity for comment. Those have been  
11 incorporated in a version of the functional requirements  
12 that are included with your handout packets here. I want to  
13 be clear that the technical working group has not sat down  
14 and expressed any sort of consensus opinion that these are  
15 the functional requirements or should be the functional  
16 requirements or that they cannot be improved upon or that  
17 they should not be worked on additionally to include things  
18 like performance characteristics of the system, how quickly  
19 does it need to respond to user requests and how quickly  
20 should it be capable of being recovered and so forth. So I  
21 want to make sure you all understand that this is still a  
22 work in process -- in progress and does not represent any  
23 sort of a consensus recommendation of the technical working  
24 groups, but we did want to bring it forward at this meeting  
25 in order to let the ARP know that there's still a fair

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1 amount of work that would need to be done on the functional  
2 requirements in order to correctly characterize what the  
3 web-based solution is intended to do. And if, in fact, we  
4 go back and look at alternatives one and alternatives two  
5 and say maybe we should be going back to having a simpler  
6 world and a simpler system, those functional requirements  
7 may get scrubbed back down to a much shorter list because  
8 those two alternatives that the technical working group did  
9 not pursue would result in a simpler system, okay. So all  
10 I'm saying is if the ARP does come back and say, "Well, we  
11 like scenario two, alternative two much better," the  
12 functional requirements may contract even further to reflect  
13 what the ARP opinion is, okay.

14 But we did want to show that some progress had  
15 been made on the functional requirements and we did want to  
16 represent to you that, when the ARP comes back and gives NRC  
17 its sense of direction, that the functional requirements  
18 will probably need to be revisited again. The technical  
19 working group may not need to meet face to face on these but  
20 we would certainly, at a minimum, be doing a lot more e-mail  
21 exchanging back and forth to get closure on the functional  
22 requirements. But I think, as I said, I did want to report  
23 on the status of that to the ARP and just let you know we  
24 had been working on it.

25 At this point, John, unless anybody has any

1 additional questions on any of the activities of the  
2 technical working group or also if any of the members of the  
3 technical working group who are sitting in the audience  
4 right now, if any of you would like to add anything to my  
5 report on the October or December minutes, feel free to come  
6 up and grab a microphone and make any clarifications or  
7 expansions or corrections. But if nobody has any additional  
8 comments at this point, we can go ahead and move toward  
9 taking a break.

10 MS. NEWBURY: Dan, I've got a couple question on  
11 one of your slides.

12 MR. GRASER: Okay. Go ahead, Claudia.

13 MS. NEWBURY: On your slide seven.

14 MR. GRASER: Okay.

15 MS. NEWBURY: What do you mean by providing all  
16 documents uniformly, what does uniformly mean?

17 MR. GRASER: Well, providing documents in a  
18 uniform way implies that the significant attribute of the  
19 licensing support network software portal interface would be  
20 that any user can come to one site and use one interface,  
21 learn one set of commands, follow one set of instructions to  
22 run a query against any participant's database without  
23 having to learn the underlying search and retrieval software  
24 or the underlying organization of a document that may vary  
25 from one participant's site to another participant's site to

1 another participant's site. So the aspect of providing the  
2 documents in a uniform manner is that there's one search  
3 interface where you enter your search and there's one  
4 display interface where the documents come back and are  
5 presented to the user, okay. So that's what we were talking  
6 about there.

7 MS. NEWBURY: So it's -- basically you've already  
8 decided that you want a portal-type single --

9 MR. GRASER: It doesn't -- it does not necessarily  
10 need to be portal. The concept was that there would be a  
11 single place to go to be able to execute your searches.

12 MS. NEWBURY: I just wanted to clarify -- so this  
13 is what your perception is, that -- it's kind of in contrast  
14 with our discussions earlier that said that all five options  
15 were open for discussion because it presupposes that you're  
16 going to use not one or two but three, four, or five.

17 MR. GRASER: No, you --

18 MS. NEWBURY: Actually that wasn't my original  
19 question. My original question was leading to do you expect  
20 all of the documents to look the same? And I guess the  
21 answer to that part is no.

22 MR. GRASER: No, no, no. Well, only insofar as if  
23 we have all already agreed that we're going to use, you  
24 know, TIFF image or PDF image as a standard. But in terms  
25 of the documents looking the same, the answer is no.

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1 MS. NEWBURY: So you are telling us what kind of  
2 formats we're going to have to use?

3 MR. GRASER: Yeah.

4 MS. NEWBURY: You said TIFF or PDF?

5 MR. GRASER: Yes.

6 MS. NEWBURY: Okay. I'm not sure that I'm -- I  
7 have to talk to my technical people and see what that's  
8 going to cost us.

9 Also, you said focus on bandwidth as an important  
10 consideration. We had that conversation before. It's on  
11 the same slide. Bandwidth on your end, or bandwidth on  
12 the --

13 MR. GRASER: Well, okay, before you move to  
14 bandwidth, I just -- I lost my train of thought.

15 MS. NEWBURY: TIFF and PDF.

16 MR. GRASER: It'll come back to me.

17 MS. NEWBURY: We were on TIFF and PDF.

18 MR. GRASER: No, no, no. It'll come back to me.  
19 I'm sorry, go ahead, move forward.

20 MS. NEWBURY: Okay. The bandwidth.

21 MR. GRASER: -- on the bandwidth issue.

22 MS. NEWBURY: Is the bandwidth your concern on the  
23 user side or on the provider side, on your end?

24 MR. GRASER: The bandwidth issue that we are  
25 looking at is essentially the bandwidth as it would be

1 viewed by a user coming into a central location. Ah, that  
2 was my point. I remembered it now. Actually, all five of  
3 the scenarios, even the first two that we looked at, all  
4 five of those scenarios provide what you could characterize  
5 as a uniform interface.

6 The distinction simply being that you don't have  
7 to learn a search and retrieval software package at the DOE  
8 site and then learn a separate search and retrieval package  
9 at the NRC site, and then another one at somebody else's  
10 site, and another one at another participant's site. So all  
11 five of those alternatives meet that requirement that would  
12 allow the user to come to a single place, execute a search,  
13 and have it go out to collections and returning results.

14 In terms of the bandwidth, getting back to the  
15 second question. The focus I think that we were all looking  
16 at is how do -- how does bandwidth affect the user. So it  
17 is really not so much a question of bandwidth from a site to  
18 the portal. It deals much more with bandwidth from where  
19 the document text or image file is stored back to the user.

20 Because in the portal solutions, the underlying  
21 store, for example, in alternative four, if everybody had a  
22 collection of their materials in a local area network  
23 environment and a user came in to the portal site, it really  
24 is an issue of bandwidth from the portal site back to the  
25 user. Because it's in a local area network, fetching the

1 underlying files is not a band -- not necessarily a  
2 bandwidth issue.

3 In alternative three, for example, bandwidth from  
4 a user to the portal is relatively low. But because the  
5 underlying documents are still reposing on a participant's  
6 machine, when the portal sends a request out to deliver that  
7 file back to the requester, that's when the size of the  
8 bandwidth from a participant site back out through the  
9 Internet. That's where that could become a significant  
10 issue in terms of the ability to deliver out a large number  
11 of files, very large file and image files.

12 So depending on the architecture, where the  
13 bandwidth becomes an issue is different in each of the  
14 scenarios. And I think when Glen gives the technical  
15 presentations later today he'll get into that in much more  
16 detail.

17 MS. NEWBURY: Okay. Thanks.

18 MR. HOYLE: Jason.

19 MR. PITTS: Is your -- are your graphics stored in  
20 TIFF format?

21 MR. MURPHY: I can't hear you again.

22 MR. PITTS: Are your graphics stored in TIFF  
23 format?

24 MR. GRASER: Are DOE's graphics?

25 MR. PITTS: Yeah.

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1 MR. GRASER: Yeah.

2 MS. NEWBURY: It depends on the graphic, yes.  
3 Some of them are in TIFF format.

4 MR. PITTS: Right. But are any of them that are  
5 available on the web, are any --

6 MS. NEWBURY: Yes.

7 MR. PITTS: -- of those?

8 MS. NEWBURY: Yes.

9 MR. PITTS: Really.

10 MS. NEWBURY: Yes.

11 MR. PITTS: And so the user has to have another  
12 software package to look at them; is that correct? I mean  
13 my understanding is that Netscape and Internet Explorer can  
14 display JPEG's or GIF's, couple other formats, PDF being one  
15 of them.

16 MS. NEWBURY: I can look at my TIFF images at home  
17 and it's because I installed the free shareware --

18 MR. PITTS: Okay.

19 MS. NEWBURY: -- thing called ACDC.

20 MR. PITTS: Okay. So just my ignorance, did the  
21 technical working group look at the other formats, like GIF  
22 and JPEG versus TIFF for graphic display?

23 MR. GRASER: Yes. And as a matter of fact, the  
24 whole issue of standards did come up during the course of  
25 the discussions on the functional requirements. And I'm

1 drawing a blank right now. My mind is focusing on a break,  
2 but --

3 MR. PITTS: Okay. I can wait till later on.

4 MR. GRASER: We did address that issue, especially  
5 in terms of trying to be a little forward looking and  
6 anticipate what would be happening if participants had full  
7 motion video files, for example, or audio type files, and  
8 the potential for having to deal with them in the system.  
9 And from the portal's point of view, those are just object  
10 files that are sitting out there. They can be delivered  
11 back to a user's desktop.

12 Now if you send a file back out through the  
13 Internet and it comes to my desktop and I pull the file up,  
14 I may not have a sound card. And that's my own shortcoming.  
15 I can't listen to the sounds associated with that file. And  
16 so that's where it comes back to the issue of depends on the  
17 participant, depends on what kind of computer they have.

18 And in terms of identifying the standard formats,  
19 NRC's internal document management system, again, will  
20 accept just about any sort of object file, and has viewers  
21 and plug-ins that will allow its internal system to pull up  
22 all sorts of files. Even though NRC says well, we would  
23 prefer PDF file, we would also take a TIFF image, because we  
24 have plug-ins and viewers that can view a TIFF image right  
25 now.

1           TIFF images happen to cause a little bit of a  
2 different problem in bibliographic cataloging because of the  
3 way the NRC document system treats them right now, is it  
4 TIFF single or TIFF multi. There are some issues associated  
5 with that that they're trying to work out right now. But  
6 generally, I mean back, even back since the early days of  
7 the LSS, people have been saying TIFF is a format that you  
8 can be reasonably sure that systems in the future will be  
9 able to use that. And, you know, a lot of people already  
10 have their documents in TIFF image.

11           MR. HOYLE: All right. Unless there's further  
12 comment, I will call for a break. But before I do that, I  
13 would like to thank the 20 or so representatives who  
14 participated and assisted the technical working group in its  
15 activities. I know many of you are in the audience, and I  
16 just wanted to thank you for myself and for the members of  
17 the panel. So let's take a 15 minute break.

18           [Recess.]

19           MR. HOYLE: Okay. We're back in session.

20           Dan, how about you picking up where you left off  
21 please.

22           MR. GRASER: Okay. I had just a couple of things  
23 that we should have dealt with in housekeeping when we  
24 started the meeting this morning.

25           For the panel members, we handed out three-ring

1 binders at the last ARP meeting. And you're probably  
2 wondering about the tabbing that was used on the current set  
3 of handouts. The current set of handouts are tabbed such  
4 that you can take the materials from today's meeting and add  
5 them right into the three-ring binder behind the materials  
6 for the previous meeting. And you'll notice that the cover  
7 pages, we've provided a new cover page for the three-ring  
8 binders, a nice piece of cardboard that indicates that the  
9 binder now contains materials from both the October and the  
10 February ARP meetings.

11 We also have, for the ARP members who may not have  
12 been at the previous meetings, we have still five or six of  
13 the three-ring binders from the previous meeting. So that  
14 if you would like to have a bindered set, we still have some  
15 additional copies available.

16 The -- before we move into the next session on the  
17 discussion of the alternatives, I'd just like to bring in to  
18 your attention that the overheads that we prepared really  
19 focused on alternatives three, four, and five, and reflect  
20 that we were going to focus on that. We did a little bit of  
21 re-coordination during the break. And Glen Foster, who's  
22 our contractor, is prepared to address alternatives one and  
23 two as well in the context.

24 So there will be some overheads that used to be an  
25 appendix to the overheads that are now going to move up in

1 the presentation, and we will walk through the alternative  
2 one, two, three, four, and five in sequence. We did not  
3 prepare schematics for what alternatives one and two look  
4 like, but all of the other write-ups on the attributes of  
5 those systems is going to be presented.

6 So before we move into that, I just wanted to open  
7 one more time if there were any questions that anybody had  
8 that came up during the break that somebody would like to  
9 raise right now. We could entertain additional questions  
10 before we move into presenting the technical scenarios.

11 MS. NEWBURY: Dan, I told you I was going to ask  
12 the question, and I think it kind a is helpful before we get  
13 into these particular scenarios, and that is the options all  
14 focus on the discovery part of the LSN rule. And I  
15 understand you're planning to use ADAMS for the actual  
16 docketing and licensing process, and I wondered how these  
17 fit together and how ADAMS would be used.

18 MR. GRASER: Okay. Yes. Let me explain to  
19 everybody who may not be familiar. The Nuclear Regulatory  
20 Commission is in the throes or in the process right now of  
21 deploying an internal document and records management  
22 system, and the acronym for that is ADAMS, A-D-A-M-S.  
23 Stands for Automated Document and Access Management System.  
24 It's an initiative that NRC's been working on for the last  
25 three or four years. And essentially what it does is it

1 moves NRC off of some old Oracle and Data General  
2 technologies that could never be made year 2K compliant.

3 In the process of introducing these new tools to  
4 the Nuclear Regulatory Commission, various offices at NRC  
5 are charged with the responsibility of using that new  
6 technology to do their business. Some of the business that  
7 gets normally done within NRC is the process of establishing  
8 docket files for the various licensing activities that are  
9 before the organizations within NRC.

10 The SECCY organization is responsible for being  
11 the gatekeepers of docketing materials that come into the  
12 Nuclear Regulatory Commission. And in that capacity, they  
13 maintain docket files of materials associated with various  
14 cases, various docket numbers. And SECCY is in the process  
15 of establishing docket files in the ADAMS environment.

16 So in that regard, the docket for the proceeding  
17 for licensing a high level waste repository or hearing a  
18 license application for a repository, that docket would  
19 normally be established by SECCY. And it would be set up  
20 and established just as any other case docket file would be  
21 set up within the Nuclear Regulatory Commission.

22 ADAMS is structured so that there's an internal  
23 component of the system. And for any of the documents that  
24 are residing in the internal component of the system that  
25 are also identified as publicly available records, those

1 materials get replicated and placed on an external server  
2 outside the NRC firewall which is web accessible to the  
3 public.

4           Currently, that external collection requires  
5 potential users to download an additional piece of software  
6 called CITRIC, which is turning out to be somewhat  
7 problematic for lots of users. And NRC's office of the  
8 chief information officer is in the process right now of  
9 re-examining the use of that CITRIC software. So I think in  
10 the long term, we can anticipate that there will be some  
11 other sort of software environment to enable the public to  
12 more easily access the public collections.

13           Now for the, you know, for this particular  
14 licensing action again, the docket will be established  
15 internally within ADAMS. And so in that regard, any of the  
16 documents that are going to be submitted to the docket will  
17 need to come into the Nuclear Regulatory Commission and be  
18 added to that ADAMS internal docket. As I mentioned  
19 earlier, ADAMS can store all sorts of different file  
20 formats. It can store Microsoft Word, it can store  
21 WordPerfect, TIFF, GIF, and any sort of file.

22           The ADAMS docket -- and how that will be  
23 populated, okay, is essentially a procedural process, the  
24 way I'm viewing it right now, in that the -- anybody who  
25 wants to submit materials can use a component of the ADAMS

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1 system to electronically or digitally sign a document and  
2 place it on an NRC external server. And somebody from the  
3 SECCY organization will then reach into that server, grab  
4 the file, and say aha, this belongs in the Yucca Mountain  
5 docket. And they will enter that file into the ADAMS  
6 system, and they will assign the docket case number or  
7 docket number and the rest of the identifying information  
8 with the document that's being submitted into the docket.

9 And as I said, that's essentially procedural. The  
10 ADAMS database is there, and the capability to do electronic  
11 exchange of electronically signed documents is operational.  
12 And it's working now for one or two different document  
13 types, and we are gradually expanding the number of document  
14 type or file types that can be transported through that  
15 mechanism. But that capability is currently being piloted  
16 within ASLBP on a current case right now, and Paul Bollwerk  
17 is using that process in one of the licensing actions before  
18 the ASLBP.

19 So we anticipate that by the time the LSN is ready  
20 to become operational, the -- we will be able to utilize the  
21 ADAMS docket. We hope to have a better interface for the  
22 public getting into that docket; and we expect to have a  
23 fully functional electronic information exchange capability,  
24 that if you just follow step-by-step directions you can take  
25 documents, plant them on the server, and somebody from NRC

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1 will come get them and the process essentially works in  
2 reverse.

3           That process would be used for motions practice.  
4 Somebody submits a request, presiding officer gives an  
5 answer back, and you could use that process similarly to  
6 take internal NRC materials, put them on that server, and  
7 then participants can come to the server and pull down  
8 versions of those materials as well coming from the other  
9 direction. The electronic signaturing software and  
10 capability is available at no cost. It's a downloadable set  
11 of software that can be found right at the NRC home page.

12           In terms of how all of the system would hang  
13 together from a visibility point of view, from the user's  
14 point of view, is if we established a portal page, in  
15 addition to having a search and retrieval screen you could  
16 also have hot links right on the LSN portal page. Click on  
17 a hot link and it will take you to the ADAMS docket. Okay?  
18 Click on the -- another icon on that page and it will take  
19 you to the page where you get the instructions how to use  
20 the EIE, electronic information exchange process to get  
21 documents into or back from the Nuclear Regulatory  
22 Commission.

23           So that portal page could have icons or hot links  
24 pointing you directly to other resources that a user, any  
25 class of user, might want to invoke as part of the total

1 process. So that's how it would all hang together. It  
2 isn't as if we would be doing any additional level of  
3 software customization. What we would be attempting to do  
4 is in one place, one stop, the portal site, is give people  
5 the links directly to already existing capabilities. That's  
6 the short answer.

7 MS. NEWBURY: Okay. So you see -- for you, that  
8 is kind a short actually. Sorry.

9 So you see ADAMS as fulfilling the requirements in  
10 Section 2.1013, use of the electronic docket during  
11 proceedings?

12 MR. GRASER: Yes.

13 MS. NEWBURY: Okay.

14 MR. GRASER: Now --

15 MS. NEWBURY: Are you going to designate ADAMS as  
16 that part of this rule, or something?

17 MR. GRASER: I don't think I'm in a position to  
18 designate anything as part of the rule. I'm just saying  
19 there's an existing resource out there that theoretically  
20 does not need to be reinvented.

21 Now let's say we get to the time frame 2001, 2002  
22 and people are actually using the system. And let's say for  
23 the sake of argument that NRC still has not been able to  
24 establish a smoother, cooler, quieter, longer type of user  
25 interface. Okay? And they're still experiencing problems

1 with users being able to access the ADAMS docket. In some  
2 of the scenarios, alternatives three, four, and five, for  
3 example, the portal software, in addition to targeting  
4 evidentiary document collections, could be told that we also  
5 want you to go into the docket file that's in ADAMS and  
6 build an index to that, and pull down the text documents  
7 that you find in that directory area, and pull down the  
8 images you find in that directory area, and put them in a  
9 cache storage area right on the ADAMS -- on the LSN portal  
10 site.

11 And in that regard, then it becomes just another  
12 target collection, but instead of living in ADAMS it's also  
13 resident on the LSN portal machine. And it could be  
14 routinely web crawled and the indexes updated, just as all  
15 of the target evidentiary collections are. So it would, in  
16 essence, be a mirror image of the docket file that was found  
17 in ADAMS.

18 And if ADAMS, as I said, if the interface proves  
19 to continue to be problematic, then there is a fallback  
20 position that shouldn't be all that costly to be able to  
21 make it part of the portal page as well. So as quickly as  
22 you can get into the portal page, you can pop open files and  
23 those files are sitting right in the memory, right on the  
24 portal server. Okay?

25 That's only a fallback position. That is not

1 reflected in any of the technical working group discussions  
2 and it was not reflected in any of the pricing that we did,  
3 but I'm just trying to think ahead and anticipate, and I had  
4 that little ace card in my hip pocket, so thought I'd throw  
5 it out.

6 Are there any other questions?

7 No. Okay. Going to spend the next few minutes  
8 giving you a very quick overview of the alternatives. And  
9 this is where I'm going to change a little -- start changing  
10 here a little bit our intended sequence of presentation. In  
11 the overview of alternatives we, as I said earlier today  
12 couple a times, we had three initial strategies that were  
13 presented at the October meeting. And we characterized them  
14 during the October meeting as a simplified, a moderate, and  
15 a portal strategy.

16 Simplified strategy was really just that. It was  
17 just a question of establishing a web page someplace on the  
18 Internet. And at that web page, all you would have would be  
19 a series of hot links into everybody else's external web  
20 collections. And from that page, you would click the link  
21 and go directly to the DOE site, or the NRC site, or the  
22 State of Nevada site. When the user got to that site, the  
23 user would then have to negotiate or navigate with the  
24 software that was being used at that site. And there's no  
25 effort made to try to weave together any of the sites.

1           So if a user came to the LSN home page in this  
2 scenario and wanted to search across all of the participant  
3 collections to find any document mentioning a certain  
4 aspect, hydrology, for example, the user would then have to  
5 follow each link out to each participant's site collection  
6 and to interact with whatever software was available on that  
7 site and run that search. If there are 10 participants, 10  
8 sites, 10 searches, 10, potentially 10 different sets of  
9 software and 10 different user interfaces that you would  
10 have to negotiate if you wanted to search across everybody's  
11 collection.

12           So it really is a very simplified method of simply  
13 pointing you to where the collections are located and saying  
14 hasta la vista, you're on your own. When you go to the  
15 participant's site you have to negotiate and interact with  
16 whatever software you find on that site. Okay?

17           That was -- when we looked at that we said for the  
18 general user, the general public coming in, that approach,  
19 requiring a user to negotiate successfully with that  
20 potentially large number of different software packages,  
21 that really made that a very non-user friendly type  
22 environment. Especially when you're in the process of  
23 trying to prepare your case, trying to prepare your  
24 materials, trying to pull together exhibit materials and so  
25 forth. You would have to negotiate those separately.

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1           And it also meant that you're starting to raise  
2 the level of technical experience that would be necessary if  
3 you had paralegals or some other sort of administrative  
4 assistant that was going out there to try to pull together  
5 information. You're starting to place an additional skill  
6 level upon the people who would be doing that sort of  
7 searching, because they need to be fairly knowledgeable with  
8 a wider range of tools that everybody's using. And so  
9 that's when the technical working group looked at that and  
10 said that that's not particularly friendly to the general  
11 public type of user.

12           MR. MURPHY: Dan, let me interrupt you right now.  
13 If you recall back to the October meeting, I had the -- I  
14 was bouncing back and forth between an ACNW meeting in which  
15 I was a panel participant and this meeting. And so I missed  
16 a lot of the October ARP meeting, and the December technical  
17 working group meeting I didn't participate in at all, but I  
18 don't understand why that's such a problem to any  
19 participant. And it seems to me that is precisely, what you  
20 just described is precisely what we envisioned in our  
21 discussions prior to our recommendation to the NRC about,  
22 you know, rewriting the LSS rule and turning it into a  
23 web-based LS, licensing support network.

24           And secondly, I guess I just don't see the problem  
25 associated with participants having to go through the steps

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1 that you just explained. That is the worldwide web. If you  
2 want to buy a Dodge on the worldwide web right now you have  
3 to navigate with certain, you know, various kinds of  
4 software. And people are doing it. And lots of people are  
5 getting extraordinarily rich in making that kind of software  
6 and process available to the public. I mean what is the  
7 problem in requiring that to be done?

8 The other point I think we have to keep in mind is  
9 that the non-federal participants in this process, and I  
10 include even the State and Nye County in that, are going to  
11 have comparatively very small number of documents that  
12 people are going to need to take a look at in this process,  
13 people who have not been involved in the process prior to  
14 now. I mean most of the searching is going to be done on  
15 DOE's web site. Ninety-five percent of the searching is  
16 going to be done on DOE's web site. Maybe a little less  
17 than that. You know, the NRC also. And why we ought to --  
18 why the smaller participants ought to go -- be required to  
19 go through the same, you know, to have the same sort of  
20 complicated or more complicated system as the DOE is -- I  
21 just don't understand.

22 And as far as those of us who have been in this  
23 process for some considerable number of years, I mean good  
24 gosh, we're going to know how to do this in any case. I  
25 mean it seems to me that you're discarding that so quickly

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1 has the potential at least of placing unnecessary burdens on  
2 the smaller governmental participants, and on Judy  
3 Treichel's people and similar organizations who are going to  
4 come later into this process for what I can't figure out is  
5 any good reason.

6 And I guess my final point is so some expertise is  
7 going to be required. Tough. People are going to have to  
8 learn how to use the system. In the case of Claudia's  
9 lawyers, she's going to be paying those suckers 400 bucks an  
10 hour. I'm not going to lose any sleep if they're required  
11 to do some work for that money, just a little.

12 MS. NEWBURY: It's good to hear.

13 MR. FRISHMAN: And I'll follow with that, because  
14 you say, you know, 10 potential. Well, in reality, we're  
15 only talking maybe 3 or 4.

16 MR. MURPHY: Right. Exactly. Good point.

17 MR. FRISHMAN: And the only place where I can see  
18 that it would be useful to have some integration is to make  
19 sure that on Claudia's site everything that she's got is at  
20 one site, rather than spread over a bunch of labs. And, you  
21 know, pull it all into one place and then we do it today,  
22 we'll know how to do it tomorrow too.

23 MR. GRASER: I'll characterize this from the LSN  
24 administrator's point of view. This certainly makes my life  
25 a whole lot easier.

1 MR. MURPHY: It does.

2 MR. GRASER: Okay?

3 MR. FRISHMAN: Good.

4 MS. TREICHEL: Well, if it makes your life easier,  
5 it probably makes people in general, the general public  
6 easier as well. And I guess that's part of, and it may seem  
7 like nitpicking when we talked earlier about changing the  
8 name of this thing, but in fact a lot of the people, the  
9 public in Nevada and a lot of others don't support licensing  
10 this thing. So they're going to be looking for a Yucca  
11 Mountain integrated information or integrated database, or  
12 comprehensive database, or any of the things that Steve was  
13 talking about. And that you should be able to get through,  
14 I would suppose, Web Crawler, Momma, any of those things  
15 that the people who really use the web know about and can  
16 get to.

17 But, you know, it's just misleading for people who  
18 don't live the same incredibly wonderful life that we do,  
19 when you look at our stuff there isn't one mention of Yucca  
20 Mountain on here. And that's what people are going to be  
21 looking for, and not an attempt to support the licensing of  
22 a repository. So --

23 MR. CAMERON: We can get into the semantics, or  
24 not the -- I don't want to minimize it, but we can get into  
25 what this should be called at some point. And I don't want

1 to waste everybody's time by going through all of these  
2 alternatives, but I don't think that -- I don't think we're  
3 going to understand what the pros and cons and tradeoffs are  
4 until we go through all of the alternatives. And I'm not  
5 suggesting in excruciating detail, but the one thing that  
6 the -- that Dan particularly, and NRC, has to keep their eye  
7 on is that if this is going to be the discovery system for  
8 this very important proceeding, we have to have assurance  
9 that the thing is going to work so that later on the whole  
10 thing doesn't fall apart because this system is screwed up  
11 somehow. And I think that that's what Dan's concern is.

12 MS. TREICHEL: Well --

13 MR. FRISHMAN: Isn't it the applicant's  
14 responsibility to make sure the system doesn't crater?

15 MR. GRASER: I'm sorry?

16 MR. FRISHMAN: It's the applicant's information  
17 that is the most important part of the proceeding. And  
18 isn't it the applicant's responsibility to make sure that  
19 that information is available to those who are parties and  
20 those who are interested? And I don't believe that the NRC  
21 really has an obligation to assure that the applicant has  
22 the easiest way through life.

23 MR. CAMERON: Well, no. And I don't think that  
24 that's what we're suggesting. Because if you look at the  
25 compliance requirements in the rule, DOE, the applicant, may

1 fall short of -- on two points, one, being in substantial  
2 compliance with the document identification and submission  
3 of requests; and two, having a site that is electronically  
4 accessible.

5 But I don't think that trying to have a system  
6 that's going to work is carrying -- necessarily carrying  
7 DOE's water for them, but you may find that, I suppose, in  
8 some of the alternatives. And I'm just suggesting that  
9 maybe we find out.

10 MR. MURPHY: Well, is it --

11 MS. NEWBURY: Yeah.

12 MR. MURPHY: Couple of --

13 MS. NEWBURY: We should hear.

14 MR. MURPHY: Okay. Sorry.

15 MR. FRISHMAN: I want to hear what Claudia has to  
16 say.

17 MS. NEWBURY: One way or another, all of our  
18 documents will be available for discovery, you can be  
19 assured of that. The options, as I look at them, are, if I  
20 let Dan continue and go through some of these, I don't have  
21 to pay much of anything and he has to pay it all. And the  
22 other end of the spectrum, I have to set up the whole thing  
23 and pay for it, well, DOE has to pay for it.

24 So I'd like to look at the options and see what  
25 they are in terms of sharing the burden of making the

1 information available, and where it is and who's paying.  
2 But believe me, any way that we cut this, that all of our  
3 stuff will be out there.

4 MR. FRISHMAN: And I can assure you that we're not  
5 going to pay for anything to help the system, because  
6 nobody's paying us to do it as it stands right now. And I  
7 appreciate your position, that if NRC wants to spend all its  
8 money making your life easier, that sure, take it, but I'm  
9 not going to pay.

10 MR. MURPHY: Yeah, I -- you know, I still think we  
11 have to keep a, you know, a couple of points in mind.  
12 First, that I think maybe Judy had mentioned it, that if  
13 it's easiest -- the system that's easiest for the NRC and  
14 easiest for the DOE is likely -- and I don't know, you know,  
15 we need to talk about it, but to just sort of frame the  
16 discussion, that system may very well also be the easiest  
17 and simplest for the general public, for everybody. Whether  
18 that's true or not, I don't know, but let's, you know, let's  
19 keep that in mind.

20 Secondly, I don't -- it seems to me that there's a  
21 danger here of us discounting the sophistication and  
22 intelligence of the public in this country. I don't think  
23 we should discount the public, I don't care where they are,  
24 whether they're out in rural Nye County, or in Esmerelda  
25 County, or back in Nebraska, being able to figure out how to

1 use this system. I think they're far more sophisticated  
2 than --

3 MS. TREICHEL: OH, yeah. I'm sure that's true. I  
4 get some pretty incredible e-mails.

5 MR. MURPHY: Sure, sure.

6 MS. TREICHEL: Have you seen this, have you found  
7 this, and -- yeah, yeah.

8 MR. MURPHY: Yeah. And they're going to be able  
9 to figure out how to -- if I can figure out how to use the  
10 NRC's docket system, if I'm going to be able to do that, and  
11 you -- then believe me, everybody is going to be able to do  
12 it. Trust me, we're going to have eight year old kids in  
13 this system doing it quicker and more efficiently than some  
14 of us who are paid to do it.

15 MR. CAMERON: I --

16 MR. MURPHY: And one last point, and Steve alluded  
17 to it. But I think we also have to keep in mind that in  
18 this entire process the Department of Energy is charged with  
19 carrying out a fundamental important national policy. The  
20 NRC -- and so if they have to spend a little extra money,  
21 say la vie, from my point of view. The NRC is charged with  
22 licensing nuclear facilities. That's the reason for their  
23 existence, for your existence. If you have to spend a  
24 little extra money, say la vie.

25 Everyone else in this process, well, with the

1 exception of the utilities and NEI, everyone else in this  
2 process is not here as a volunteer. Whether we're staunch  
3 opponents of the repository as in -- is the case of the  
4 State of Nevada; whether we're neutral substantively, as is  
5 the case of Nye County; or whether we lie somewhere in  
6 between, as is the case with some other participants; none  
7 of us wrote to Washington, D.C. and asked for this process  
8 to come here.

9 And so it seems to me that there's almost an  
10 obligation of fairness to make sure that everyone else who  
11 has been forced somehow to this table not be burdened  
12 with -- administratively and monetarily be burdened beyond  
13 that which is necessary in order to meet the fundamental  
14 goals of the licensing support network. And those are the  
15 goals that Steve outlined earlier, and you did Dan, I think  
16 accurately, and that is everybody has access to everybody  
17 else's documents on a timely basis.

18 MR. GRASER: Right.

19 MR. MURPHY: Somehow.

20 MR. GRASER: Right.

21 MR. CAMERON: Okay.

22 MR. FRISHMAN: Let me just follow very quickly  
23 with a question. Of all of what we're going through here  
24 and the alternatives that get piled on, piled on, who is the  
25 beneficiary? What does it do for all of us?

1 MR. CAMERON: Well, that's --

2 MR. FRISHMAN: Or for anybody.

3 MR. CAMERON: That's a good question. Going back  
4 to your comment from before, Steve, I was going to ask Dan  
5 if Steve's characterization that these alternatives are  
6 really -- the major beneficiary of these alternatives as you  
7 go from -- move from one to five is DOE. I mean is that a  
8 true statement? I mean I didn't think that it was  
9 necessarily true, but I think it needs to --

10 MR. GRASER: Well --

11 MR. CAMERON: -- to be answered.

12 MR. GRASER: It was originally a negotiated rule  
13 making. And so I think everybody that was willing to sit in  
14 in the process of doing the original negotiating on the LSS  
15 rule back in the late 80's is a beneficiary, or at least was  
16 perceived as a beneficiary of the system. Otherwise people  
17 wouldn't have sat down and participated in negotiating the  
18 rule that was going to govern the proceedings. So, you  
19 know, I mean I think that's my short answer.

20 MR. FRISHMAN: Well --

21 MR. GRASER: The beneficiaries are the people who  
22 perceive themselves as benefitting from being involved in  
23 the process, and being able to be involved in the process.  
24 And there are some people who will say I don't choose to be  
25 involved that deeply, but I still want to be involved. And

1 that's really what we're talking about here, is what's the  
2 appropriate level of involvement. And it's something that  
3 the participants decide, really.

4 Like I said, there's no -- you need to understand  
5 that if, for example, alternative five was selected, the  
6 only person's hide that it comes out of is mine, because I'm  
7 the one who has to do all of the going before the commission  
8 and making the appeal for the funds to support that level of  
9 involvement. Nobody else is going to be there at my side  
10 making the push to fund that alternative; and nobody else is  
11 going to be putting in the amount of time and dollars and  
12 effort, you know, that me and my staff would be required to  
13 do. So like I said, I don't have any particular vested  
14 interest in one solution over the other.

15 The thing that I was going to comment when all  
16 these comments were going back and forth is really if this  
17 simplified approach is going to meet your requirements and  
18 your expectations, the only thing that I would note from a  
19 technical point of view is tell me now and then don't change  
20 your mind three years from now, because it will be too late  
21 for me to recover. It will be too late for me, three years  
22 from now, to turn around and respond to somebody who then  
23 says the system is inadequate for support. And I think  
24 that's why we're going through this drill now.

25 And it goes back to what I alluded to this

1 morning. It will be the sense of the advisory review panel  
2 in terms of how they communicate their feeling back, you  
3 know, to the chairman of the ARP as what they want NRC to  
4 do. And that really is almost like saying if you guys want  
5 to pursue the simplified strategy, I think it needs to be  
6 communicated back to the chairman of the advisory panel that  
7 this is the position you're taking. And you understand the  
8 downstream ramifications of that and you're prepared to live  
9 with that approach, then I don't have any problem at all  
10 implementing that. Okay?

11 So that's, from the technical point of view, if  
12 this is the way we go, then this is what I implement, this  
13 is what gets put in place, this is what'll be there in the  
14 summer of 2001. And if it is inadequate, then we won't have  
15 any time to recover from that.

16 So you need to go in eyes open and aware; that's  
17 the bargain you make and that will be the commitment that,  
18 you know, we will -- that is what the system will be. And  
19 if that's what people want to live with, that's fine, but  
20 you need to understand it'll be much too late downstream to  
21 do anything else over and above that, at least from a  
22 technical perspective.

23 MR. FRISHMAN: Well, in all of this is there an  
24 element of the commission staff wanting to have the most  
25 expensive help it can get, in reviewing the application?

1 Does that factor into this, because it's never been  
2 mentioned before?

3 MR. GRASER: No, that doesn't factor into this at  
4 all. The -- that hasn't been factored into this at all.  
5 That's never been raised as an issue to me, Steve.

6 Okay. If we can just move along here and let me  
7 just characterize the, what we called the moderate strategy.  
8 To refresh your memories, for those of you who were here in  
9 October, the moderate strategy tried to overcome some of the  
10 perceived problems with having to go to individual web sites  
11 and learn different software packages, and different  
12 commands, and so forth.

13 And it tried to overcome that by establishing a  
14 single page where anybody coming into the licensing support  
15 network would structure the request for information, and  
16 that request for information then goes out to the  
17 participant systems so that the user doesn't have to visit  
18 however many sites are out there. The software visits those  
19 sites, the software grabs the result sets, and the software  
20 presents it back at the central search interface.

21 And when we talked about this in October, we  
22 characterized this as something like the meta search engines  
23 that you can find on the Internet, such as Momma or Dog  
24 Pile, or, you know, some of the packages that will run out  
25 and query multiple different engines, or multiple different

1 sites, and bring back the results and stack them together  
2 for you, and allow you to use one search interface and have  
3 all of the results report back to you.

4 But other than that, it doesn't do any additional  
5 level of software integration. It just prevents you from  
6 having to visit 11 different sites, or 5 different sites, or  
7 3 different sites, however many the number is. It doesn't  
8 add any value over and above what you get out of the box.

9 Another example of that is Search Spaniel, or --  
10 yeah, Search Spaniel, which is another software package that  
11 does essentially the same thing.

12 MR. CAMERON: Is it Search Spaniel?

13 MR. GRASER: Spaniel, as in arf, arf.

14 MR. CAMERON: It's not related to the Dog Pile?

15 MR. GRASER: Well, there's a recurring them here,  
16 go fetch, boy, fetch.

17 MR. MURPHY: A Spaniel, you know, a bird dog  
18 sniffing through the bushes --

19 MR. GRASER: Right.

20 MR. MURPHY: -- looking for pheasants.

21 MR. HOYLE: Dan, how would you characterize the  
22 simplified? Is that the Yahoo approach?

23 MR. GRASER: No. Moderate is much more like  
24 Yahoo. The simplified is really just like going to an  
25 existing web page, like I believe the State of Nevada's web

1 page has URL links to another -- other sources of  
2 information. You click on that link and you go off to  
3 somebody else's site. And it's really that simple, next to  
4 no integration.

5 Okay. Alternatives three, four, and five, those  
6 are the alternatives that are all essentially based on web  
7 portal software technology, which allows more than just a  
8 single central search interface. It does a lot of data  
9 normalization.

10 By "data normalization" we mean if you enter the  
11 document date field in one database, and you do it year,  
12 year, year, year, slash month, month, slash date, date, and  
13 somebody else enters it in a different format, the portal  
14 software normalizes all of that header record information.  
15 If your title field is 200 characters long maximum but DOE's  
16 is 250, it will normalize the structured data to allow for  
17 the longest text field. It will normalize the dates so that  
18 you can search on one date format and not have to worry  
19 about translating it between all the different collections.

20 So those are common attributes of all of these  
21 alternatives three, four, and five, is that for the user, a  
22 lot of the structured data gets normalized. And that is  
23 what allows you to have a single search user interface  
24 screen, single search screen, and that's what allows you to  
25 use a standard set of search tools, the Boolean operators,

1 or proximity searching capabilities that allow you to refine  
2 your search in greater detail within a collection.

3 I think alternative two would probably provide you  
4 with a core set of those tools, whatever came with the  
5 particular search engine that you used to implement  
6 alternative number two, but alternatives three, four, and  
7 five give you a more robust, more powerful set of tools.

8 And again, this is the sort of situation that if  
9 you're thinking of yourself as a user, you ask what if I  
10 keyed in a term, Yucca Mountain hydrology, and suddenly find  
11 yourself, in alternative one or alternative two, getting  
12 back a very large number of hits, large number of web sites.  
13 And you don't know necessarily which is more relevant than  
14 the other, and you have a stack of 43,000 documents and  
15 about 400,000 pages.

16 MR. FRISHMAN: But you wouldn't do that in the  
17 first place.

18 MR. GRASER: Okay.

19 MR. FRISHMAN: I was, at the same time you were  
20 sort of developing that thought, I was thinking of, you  
21 know, how I might use it. And I came up with just one term,  
22 and thinking how far it might reach out. And just take  
23 something that probably means nothing to most people here,  
24 just take the term matrix permeability. That would be  
25 something I would search.

1 MR. GRASER: Right.

2 MR. FRISHMAN: And it would almost entirely be  
3 housed in DOE's stuff. There might be one or two other  
4 hits. And so what do I get out of three, four, and five  
5 that I don't already have in one or two?

6 MR. GRASER: Your characterization is correct.  
7 And you are, you know, one of the fortunate 500. You're one  
8 of the power users who understands that terminology. If  
9 this application happens to be living in web space, you will  
10 have perhaps thousands of users hitting the web sites with a  
11 term, Yucca Mountain hydrology, the day that an article  
12 appears in the New York Times or on MSNBC. So for every  
13 focused user such as yourself, there is potentially much  
14 larger universe of general public who say gee, this came up  
15 in my MSNBC screen today. I'm going to search Yucca  
16 Mountain hydrology.

17 And that's when you start swamping the system with  
18 a fairly large number of requests which would be satisfied  
19 by a large number of documents. And that walks you right  
20 into the sort of scenario that causes these denial of  
21 service type problems, you getting a lot of people hitting  
22 the same server with a request that's very resource  
23 intensive over and over and over again.

24 So yes, for every user like you, there's also the  
25 potential for other external users who don't have that level

1 of precision that you already know what you're looking for.

2 MR. FRISHMAN: Who are you trying to serve? I'm  
3 back to it again.

4 MR. GRASER: Okay. Exactly, who are we trying to  
5 serve? The individuals, the organizations, the  
6 constituencies who have essentially already identified  
7 themselves as stakeholders in the process.

8 MR. FRISHMAN: Right. And there's lots of other  
9 stuff out there that serves somebody who wants to know  
10 something about Yucca Mountain hydrology.

11 MR. GRASER: I know. But computer software  
12 doesn't distinguish between them and you, and that's the  
13 problem. Unless you can, again, put a frame -- a fence  
14 around the user constituency hitting against the system, I  
15 cannot -- the software cannot distinguish between you versus  
16 them.

17 MR. FRISHMAN: Well --

18 MR. HOYLE: Dan, I think it's --

19 MR. FRISHMAN: -- in our current experience --

20 MR. GRASER: As long as it's going to live in the  
21 web environment you have to cohabit with a lot of other  
22 people who are not as --

23 MR. FRISHMAN: Well, in --

24 MR. GRASER: -- focused as you are.

25 MR. FRISHMAN: -- our current experience, Claudia,

1 do you get so many hits that you just get choked up every  
2 day?

3 MS. NEWBURY: No.

4 MR. FRISHMAN: You know, I get to your site pretty  
5 easy.

6 MR. GRASER: Okay.

7 MR. FRISHMAN: And, you know --

8 MR. GRASER: I understand that.

9 MR. FRISHMAN: I don't have to --

10 MR. GRASER: All I'm asking --

11 MR. FRISHMAN: I don't have to compete with an  
12 awful lot of people to find something that I want on your  
13 site, I don't think.

14 MR. GRASER: And all I'm suggesting is that you  
15 look ahead to the day when there is --

16 MR. FRISHMAN: This program will never be that  
17 popular.

18 MS. NEWBURY: I've actually looked at statistics  
19 on our hits on our home page. And when major documents go  
20 out such as the EIS or the viability assessment, we do get  
21 thousands of hits per day and it does not choke the system.  
22 It may slow use a little bit, but that would be about it.

23 MR. GRASER: It's thousands of individuals all  
24 asking for the same document. It's not thousands of  
25 individuals asking for thousands of documents.

1 MR. FRISHMAN: Well, in the licensing proceeding  
2 you're not going to have thousands of people asking for the  
3 same thing. You might have three or four people asking for  
4 the same thing, like matrix permeability, because that's  
5 what is current in the proceeding. You're not going to have  
6 thousands of people.

7 MR. GRASER: Okay. Well --

8 MR. FRISHMAN: And getting in the door is not the  
9 problem.

10 MR. GRASER: Okay. The -- you know, we're  
11 actually starting to get down into the technical aspects of  
12 the discussion that we were really going to talk more detail  
13 as Glen Foster goes through and talks about each of them. I  
14 mean there -- yes, there are obviously aspects, as you say,  
15 that you will have a perspective on that is not necessarily  
16 the same perspective as DOE.

17 MR. MURPHY: Well, I think Steve's got a good  
18 point. And Glen should probably address it, but -- and, you  
19 know, speaking as a complete novice almost in this area, it  
20 seems to me for the denial of service sort of a problem,  
21 first of all, we can't build a perfect system.

22 MR. GRASER: That's correct.

23 MR. MURPHY: We don't have -- nobody -- congress  
24 is never going to give anybody enough money --

25 MR. GRASER: Right.

1 MR. MURPHY: -- to build a perfect system. But  
2 wasn't the denial of service because -- not because  
3 amazon.com received thousands of hits, but because it  
4 received millions of hits? Am I misunderstanding? I mean  
5 they just got swamped by an just absolutely extraordinary  
6 number of hits. And we're --

7 MR. GRASER: There's a distinction in the type of  
8 traffic that Amazon deals with versus the type of traffic  
9 that the LSN is going to deal with. Amazon can get millions  
10 of requests for relatively short packets of information.  
11 And because they're short, and the answer goes back and  
12 forth and back and forth and back and forth very quick  
13 because they're short packets of information.

14 We won't get, hopefully, millions of requests, but  
15 we may get substantial thousands of requests. And the  
16 response coming back from our servers won't be 200 bytes of  
17 data, it will be humongous files. And that's the point  
18 where the distinction between millions of hits versus  
19 thousands of hits seems to be, you know, it doesn't seem  
20 like having thousands of hits should be as big a problem as  
21 having millions of hits.

22 MR. MURPHY: I agree with Steve. I -- Dan, I  
23 think that is so unlikely to be a problem that --

24 MR. GRASER: Okay.

25 MR. MURPHY: -- I don't think we ought to spend an

1 awful lot of time and money designing a system to avoid  
2 that. Now the deliberate intrusion, you know, the sabotage  
3 to the system is something that needs to be considered, you  
4 know, either the denial of service sabotage or the getting  
5 in and manipulating the system and dropping bogus documents  
6 in there kind of sabotage needs to be considered.

7 But I just don't think we're going to have, you  
8 know, one Sunday after, you know, reading your New York  
9 Times in the morning we're going to have 450,000 people in  
10 the United States say geez, I really want to read that  
11 document, you know, even though it's going to take me 4  
12 hours and 20 minutes to download it. By God, I'm going to  
13 give up my Sunday to do it, because that matrix permeability  
14 thing really looks interesting to me. That's not going to  
15 happen.

16 MR. FRISHMAN: And didn't I see in the requirement  
17 thing, unless I misread it, that you're sort of taking a  
18 minimalist approach while you're making the same discussion  
19 in the other direction? Didn't -- isn't there somewhere in  
20 there that a requirement for a capability to handle 150  
21 simultaneous hits?

22 MR. GRASER: Yes.

23 MR. FRISHMAN: Okay. So what are we talking about  
24 here?

25 MR. BECHTEL: I think --

1 FEMALE VOICE: Go ahead.

2 MR. BECHTEL: Well, no. I think -- I was somewhat  
3 confused in going through the materials, you know, the  
4 complexity of the, you know, the alternatives and try to  
5 understand which is best. But I think in going through your  
6 review of the alternatives, what would be helpful to me is  
7 to understand, you know, the, say the down sides of using  
8 one and two.

9 MR. GRASER: Yeah.

10 MR. BECHTEL: Or three, four, and five, all of  
11 those.

12 MR. GRASER: Okay. And Glen will be covering  
13 that --

14 MR. BECHTEL: Yeah.

15 MR. GRASER: -- in just a couple minutes. If we  
16 can --

17 MR. BECHTEL: Because I know I've kind a -- we've  
18 all gone through, you know, a search of the material that I  
19 thought I knew and I had difficulty really finding it or end  
20 up 10 million hits, and how do I synthesize that. And I  
21 don't want to go through that on this. So if there's a  
22 simpler way, and if it's alternative five, I don't care.  
23 You know, I -- we're not going to be able to --

24 MR. GRASER: Okay.

25 MR. BECHTEL: -- add a whole lot resources to the

1 program either, but I, you know.

2 MR. CAMERON: I think it's important for people  
3 also to understand that, Dan, you weren't really pointing  
4 out a down side of one and two here in terms of the  
5 unfocused user, the general public. You were pointing out a  
6 down side for the focused user, because if you don't have  
7 the right type of software then all these general public  
8 requests could bring the system down; right?

9 MR. GRASER: Yeah. Yes, I -- yes, that's correct.

10 MR. CAMERON: And that there may be more examples  
11 of that along the way as we go through what Dennis is  
12 suggesting we do.

13 MR. GRASER: There are definitely down sides  
14 attributes of all five of the alternatives. And, you know,  
15 I think from the technical working group's point of view, we  
16 tried not to overly emphasize what the negatives were of any  
17 of the alternatives simply because the technical working  
18 group didn't vote in favor of any one as being the best.  
19 Our, you know, we were chartered to explore the  
20 alternatives. The ARP can make up its own mind.

21 And we tried not to, you know, identify the  
22 weaknesses of one versus the other. In fact, I think we  
23 deliberately tried to identify the benefits of one of the  
24 alternatives versus the other; to focus on this one gives  
25 you this much more, this one gives you that much more, this

1 one compensates for a problem, perceived problem here or a  
2 perceived problem there. But as I said, Glen is really  
3 going to walk through in that much more detail on all of  
4 those.

5 The -- in order for me to wrap this up here so we  
6 can continue to move along, the only other comment I'd like  
7 to make on alternatives three, four, and five is just to  
8 leave you again with an understanding that the way they  
9 differ, they have common elements, common attributes in the  
10 single user interface that's presented to everybody, but the  
11 way differ in their architecture is simply by who owns the  
12 device and where the device is located that will store all  
13 of the associated text and image files. That's really the  
14 \$64,000 distinction between these there alternatives.  
15 Architecturally, they help compensate for bandwidth  
16 problems, for performance type problems.

17 And again, Steve, this is where we would say if  
18 you don't perceive that to be a particular problem, then you  
19 wouldn't see any distinguisher between any of these three  
20 alternatives, because you're really looking at it and saying  
21 all three of those are at a plateau above where we think we  
22 need to go. Okay?

23 So basically at, you know, at this point, I had a  
24 couple of other very quick observations to make. In  
25 implementing these sorts of solutions, when we put together

1 our request to the commission for funding and authorization,  
2 some of the alternatives that I'm going to have to present  
3 to the commission is whether or not NRC decides to operate  
4 the system internally, i.e. put the server in the NRC  
5 computer room for the portal site or for the web page,  
6 versus the possibility of taking the entire application and  
7 placing the hardware and the software and everything else  
8 out at an application service provider organization who  
9 would be responsible for providing power, backup, security,  
10 Internet, bandwidth access, and so forth. So all of these  
11 have a sensitivity analysis that could be made from a  
12 financial point of view that says do you want to build it  
13 and maintain it and operate it internally, or do you want to  
14 build it and then deliver it and let somebody else run the  
15 computer for you.

16 And the other --

17 MR. FRISHMAN: If you ever went to NRC/DOE video  
18 conference you'd know the answer to that.

19 MR. GRASER: Yes, I've been to them. They always  
20 worked fine for me.

21 MR. FRISHMAN: Are they totally satisfying?

22 MS. NEWBURY: Depends on where they are in the  
23 NRC.

24 MR. GRASER: Other aspects in terms of  
25 implementing the alternatives we looked at is the concept of

1 campus and co-location. These are just terms of trade  
2 within the computer industry. What we were talking about,  
3 campus is a location where each participant server is housed  
4 in relatively close proximity. Participants cooperate on  
5 shared resources. So if we were going to connect everybody  
6 in alternative four, for example, in a campus type  
7 environment, the -- we would have to identify a site where  
8 we were going to do that. And that introduces a level of  
9 administrative complexity, and everybody would have to be  
10 willing to co-locate their storage devices in the same  
11 place, or in the same campus.

12 In terms of co-location, you could also outsource  
13 that and just everybody identify -- we would all place our  
14 servers out at a commercial full-service computer  
15 installation. This where we're going to house it.  
16 Everybody send a storage device with your data out there.  
17 So those are some of the technical terminology that is going  
18 to be introduced a little bit later.

19 And finally, before I turn things over to Glen,  
20 this chart just indicates very relatively simply that for  
21 any of the alternatives three, four, and five, and this is  
22 probably somewhat also true for alternatives -- alternative  
23 two anyhow, that when you look at things like co-locating or  
24 outsourcing, any of those alternatives could have a  
25 different physical installation associated with it. And

1 that would then somewhat color what activities go on if  
2 you're doing it in-house versus outsourcing the thing and  
3 what would be required to implement that system.

4 So if you focused on alternative three, for  
5 example, if NRC were to design, implement, and operate the  
6 system, the participants would still maintain their  
7 collections on their machines at their sites, and the LSN  
8 administrator would establish a portal and it would be  
9 installed inside at the NRC, versus you -- if you said well,  
10 let's outsource that. What would that look like?

11 Then NR -- the LSN administrator would design and  
12 build the portal, and we would operate it at a co-location  
13 facility. And there are companies that do this, application  
14 service providers. And the participants would still, under  
15 that alternative or that scenario, would still maintain  
16 their own servers with their own documents on their own  
17 machines operated by their own people.

18 So this is just to point out that for any of the  
19 alternatives, when I go before the commission I'm going to  
20 be having to do sensitivity analysis that reflects whether  
21 or not people are even willing in the first place to  
22 consider co-locating. And if people say no, that's not a  
23 good alternative, we don't want to entertain that, then  
24 that's one last sensitivity analysis that I would need to  
25 do. Okay?

1           At this point, Glen is going to come up and he's  
2 going to start talking now. This is Glen Foster from Labat  
3 Anderson. He's the contractor for the license support  
4 network administrator. Glen has participated in all of the  
5 technical working group meetings, and he's going to be  
6 trying to focus on the technical aspects of it. So if you  
7 have questions about the technical aspects as opposed to  
8 comments about the relative merits of one versus the other,  
9 Glen can certainly address the issues of the technical  
10 aspects of each of the three options and alternatives.

11           On the presentation materials that Glen has we  
12 have included what the technical working group identified as  
13 the significant technical aspects or attributes of the  
14 system, and, for example, what that means to the user, what  
15 does that mean to the participant. So we've tried to  
16 condense that all down into just a few slides for each of  
17 the alternatives.

18           And instead of going alternatives three, four, and  
19 five, Glen is going to start right off at alternative one.  
20 Okay?

21           MR. HOYLE: Before you begin, Glen, I think what  
22 I'm hearing is that we're going to want to hear about pros  
23 and cons of each. There are primary users and secondary  
24 users.

25           Primary users are those of you who will be in the

1 proceeding itself, the judges, the participants, the parties  
2 to the proceeding. And you're getting ready for the  
3 proceeding, should there be one. And therefore, you know,  
4 sort of the discovery phase we're starting you're starting  
5 to think about.

6 The second users are the member of the public.  
7 And I think we are, being a federal agency as we are, NRC  
8 has tried to put all of its material out in the public  
9 domain from the start. We're very conscious of the  
10 secondary users and how easy it might be for them to use the  
11 system.

12 I certainly agree with Mal that we shouldn't sell  
13 that segment short. They're smart people. They're using  
14 the web more and more every day, and so forth. So I think  
15 we need to hear, and I don't know whether we need it --  
16 we'll hear it in the technical discussion or not, the pros  
17 and cons of each of these to the primary users and to the  
18 secondary users; and what do the participants, the people  
19 with the documents, what do they need to do differently in  
20 one versus two versus three versus four and five.

21 MR. MURPHY: And how much it's likely to cost the  
22 participants.

23 MR. HOYLE: And certainly cost.

24 MR. MURPHY: What's the financial impact on Nye  
25 County of the various alternatives. I don't care what the

1 financial impact on NRC is. I sympathize with Dan. I'll go  
2 to the -- I'll go sit with you at the commission meeting to  
3 defend your choice if that's, you know, if that's -- if  
4 you're doing it because of a recommendation made by the ARP.  
5 But I don't have any institutional obligation to sweat how  
6 much it's going to cost you.

7 MR. GRASER: Right.

8 MR. MURPHY: But I do have a mission for my client  
9 to keep it simple and in -- and, you know, and as  
10 inexpensive as possible so that Nye County can participate  
11 effectively in the licensing process without having to shut  
12 down every other function we're performing for the -- for  
13 our citizens in order to meet the cost obligations of the  
14 licensing support network.

15 And Steve's sitting over there without any money  
16 to spend it on.

17 MR. BECHTEL: I like the way you --

18 MR. FRISHMAN: And I have even less obligation.

19 MR. BECHTEL: -- characterized the, you know, the  
20 portrayal of the alternatives. I think that's a good pros,  
21 cons, you know.

22 MR. GRASER: There is a little bit later in the  
23 day a couple a charts prepared that try to characterize the  
24 cost of a participant with a relatively small site versus a  
25 medium size site versus a larger site. And we've tried to

1 characterize the amount of hardware, software, and ongoing  
2 commitment for each of those classes of users or classes of  
3 participants in the system. And that chart is back -- it's  
4 included in the handout package. It's in the back, and we  
5 tried to do that.

6 And I think even though it's not laid out in that  
7 handout for alternatives one and two, I think it would be  
8 safe to say that the participants, if they're a relatively  
9 small participant, the amount that it would take for them to  
10 place their documents and make them publicly accessible on  
11 the web is going to be relatively consistent from  
12 alternative one through alternative five. It's relatively  
13 same magnitude of cost. You're talking, you know, in the  
14 class of a relatively small machine and small number of  
15 documents. It would cost essentially the same for all five  
16 of the alternatives.

17 But we can pursue that a little bit further. I --  
18 we -- I need to stop interrupting here so Glen can get  
19 started.

20 MR. CAMERON: Can I interrupt one more time? I'm  
21 sorry to do this, but if you could also, during this  
22 presentation and during this discussion, point out what  
23 might be likely causes of what I'll call failure in terms of  
24 the LSN that might -- there might be a higher risk of  
25 failure with one alternative than the other because of the

1 fact that one would be harder to build; would you have it  
2 completed in time for the licensing proceeding; besides the  
3 cost angle.

4 Or another cause of failure might be that the  
5 participants, the primary users that John mentioned are not  
6 going to be able to use the system to get to the documents  
7 that they want. If there are things like that that might --  
8 then I think it would be useful for people to hear that, to  
9 the extent you know it.

10 MR. GRASER: All right.

11 Glen, you want to go ahead and --

12 MR. FOSTER: Yeah. Thank you, Dan. Thank you,  
13 John, and thank you Chip.

14 I'm going to try and speak to a particular aspect  
15 of how we got from one alternative to another, which is  
16 something I really haven't heard a whole lot of discussion  
17 about in this.

18 I mean alternate one is pretty obvious. It's a  
19 very simple strategy and it pretty much flows from very  
20 early web technology. And I think the idea of what the web  
21 came from in the first place, that if you have information  
22 of interest you put it on the web, and if you know of other  
23 information of interest, you put a pointer to that  
24 information. And somehow or another it all comes together  
25 in a way that is usable to people. And as you can see from

1 the slide, that has a few implications in terms of what  
2 people would be expected to do.

3 I'm going to try really hard to overcome my  
4 tendency to read these darn things as I go down them,  
5 because I know everybody here can read as well.

6 The follow-on to some of these things is probably  
7 not as obvious as what was shown in the slide. I think --  
8 go to the next.

9 Next slide. And that is that those people who  
10 have to interact with these different systems also have to  
11 beef up their efforts. Specifically, the LSNA administrator  
12 has got an audit requirement in addition to what we've been  
13 talking about here so far of making sure that people are  
14 playing by the rules. And in a distributed, linked  
15 scenario, the administrator has to do an awful lot more work  
16 to ascertain that the participant sites are maintaining the  
17 information that they need to maintain; that they're not,  
18 for example, silently retracting a document and substituting  
19 another document in its place after perhaps a document has  
20 been entered into the docket, and perhaps another party's  
21 going to want to enter the same document into the docket,  
22 and well, it turns out they're not the same.

23 How do we, you know, how does that scenario get  
24 addressed? Those are the kinds of things we were thinking  
25 about in this whole effort. That would require constantly

1 going to these sites, basically retrieving all the  
2 information at these sites and comparing it with a known  
3 good copy.

4 MS. NEWBURY: Can you tell me --

5 MR. MURPHY: Let me just stop you there. Why?

6 MS. NEWBURY: Where is that in the rule?

7 MR. MURPHY: Yeah.

8 MS. NEWBURY: I'm looking desperately for anything  
9 on certification --

10 MR. FOSTER: I can't speak --

11 MS. NEWBURY: -- in all of these and I don't find  
12 it.

13 MR. FOSTER: I can't speak to the rule. I'm only  
14 speaking to some of the design initiatives that we were  
15 looking at early on.

16 MR. MURPHY: And that was my first question. My  
17 second question is so what? That's what lawyers get paid to  
18 do is to protect their client's interest. You know, I mean  
19 if a lawyer sits in the middle of a trial or an NRC  
20 licensing proceeding and doesn't look at the bloody exhibit  
21 that's being offered by his opponent, we call that  
22 malpractice. That's what our job is.

23 MR. FOSTER: The -- one of the reasons that we  
24 felt that that was important, thinking back, is that helping  
25 the lawyers do their jobs was of paramount importance to us;

1 that shortening the amount of time available or needed to do  
2 the discovery process was one of the key objectives that we  
3 had considered in looking at the tools that we could make  
4 available for them to do that. And we felt that alternative  
5 one would be much more challenging for an individual  
6 attempting to do discovery to correlate the various  
7 different aspects.

8 So, you know, your point's well taken, where is it  
9 in the rule. I don't think you're disputing the point that  
10 it may need to be done perhaps manually, perhaps by visual  
11 comparison of two documents that don't match. But if the  
12 software did it for you, it would save you a tremendous  
13 amount of effort and time to accomplish that same objective.

14 MS. NEWBURY: I think you missed my point. The  
15 LSN rule has no role for the LSN administrator in certifying  
16 integrity and auditing the system. That's gone. That was  
17 the case in the earlier rule. It's not there now.

18 MR. MURPHY: Well, and the second point is that  
19 this is, as you pointed out, Glen, this was originally  
20 conceived in 1986 as a discovery tool. Comparing the  
21 document that was given to you by your opponent in trial  
22 with another document that appears to be the same document  
23 that was given to you from some other source, you know, the  
24 tobacco company whistle blower, that's not discovery.  
25 That's just basic trial preparation. That goes well beyond

1 facilitating the production of documents.

2 MR. FRISHMAN: The whole point of this originally,  
3 and I think still should be, it makes the transfer of  
4 information faster. And that's the bottom line. Helping  
5 the lawyers do their job is not it. It's just taking  
6 advantage of whatever we have in modern technology that  
7 makes information move faster. And, you know, helping the  
8 lawyers do their job is an entirely different question.  
9 You're helping the transfer work, you're not helping the  
10 lawyer do his job.

11 MR. MURPHY: That's right. And just if I could  
12 just follow that up, because I think this is really of  
13 critical importance.

14 And, you know, Chip, jump in here if you feel like  
15 you should. And gosh, you know, there's a lot more reasons  
16 why I miss my old friend Bill Holmsted, but I sure wish he  
17 were -- maybe he could come up out of the -- and talk to us  
18 here.

19 MR. FRISHMAN: This all started in a room just  
20 past that wall over there.

21 MR. CAMERON: Well, if he does, we won't need a  
22 repository.

23 MR. MURPHY: Remember, the reason for the LSS, the  
24 original LSS, was, to, you know, go back and talk very, very  
25 briefly about history again. The NRC has a requirement

1 imposed upon them by congress to conduct this licensing  
2 proceeding within three years, or four years if they certify  
3 something that says they can't make it in three.

4 Looking at the history of licensing proceedings  
5 within the NRC, it became clear that the one stumbling block  
6 to the NRC's ability to reach a decision within three years,  
7 or four, was the time built into the rules of practice  
8 themselves, the original 10 CFR Part 2, the time necessary  
9 to trade hard copy documents in the discovery process. So,  
10 you know, an intervener or a government participant, or  
11 whoever in a reactor licensing proceeding involving Duke  
12 Power files a request for production of documents. Duke  
13 Power, under the rules, then has X number of days to  
14 respond, or the staff has X number of days, et cetera.

15 So you start adding those time lines within 10 CFR  
16 2 together, and it became very obvious to people familiar  
17 with the system that under the most perfect scenario, the  
18 NRC could not make a three year deadline. They just  
19 couldn't get the hearing and complete a hearing process and  
20 reach a decision within three years.

21 So in order to facilitate the NRC's ability to do  
22 that, you know, we negotiated this system that would speed  
23 up the transfer, the physical to -- to replace the physical  
24 transfer of hard copy documents with an electronic way to do  
25 that, to speed up that transfer of documents, to avoid that

1 15 days to turn over this document, 30 days to turn over  
2 that document, and then you got X number of days to file a  
3 motion to compel to production to the hearing board, et  
4 cetera, et cetera. That's the only thing we were trying to  
5 avoid.

6 There's noting in the LSS rule; there's nothing in  
7 the negotiations that we began in 1986; there's nothing in  
8 the LSN rule that says lawyers don't have to work evenings  
9 and weekends to compare the buddy documents that they have  
10 got to make sure their client's interest are protected. The  
11 only thing, the only reason that people made compromises and  
12 gave up certain rights in the original negotiation was to  
13 make -- was to facilitate the physical transfer of documents  
14 from one party to another; electronically you do it  
15 instantly, at the speed of light, some other way it takes  
16 you 47 days to get, you know, whatever it is.

17 That's all we were attempting to do, to use this  
18 rule to -- and I'm sorry if I'm getting excited about this,  
19 but to use this rule and to impose administrative burdens  
20 and costs on woefully underfunded and in some case  
21 non-funded participants in order to make life easier for we  
22 lawyers is beyond the scope of the rule and it's beyond the  
23 scope of the original negotiation that we engaged in and in  
24 which every participant, actually, you know, made  
25 compromises.

1           We all gave up certain rights that we possessed  
2 under hard copy discovery, under the subpart G or whatever  
3 it is to 10 CFR 2. We all gave up certain rights. The  
4 State of Nevada gave up the right to delay this process for  
5 years; you know, the utilities gave up other rights; the DOE  
6 gave up certain other rights. And the only reason we did  
7 that was to facilitate the transfer of documents. It wasn't  
8 to make life easier for lawyers. It was to compress this  
9 process down to within three years.

10           And to go beyond that, it seems to me is a  
11 complete alteration of the original purpose for the LSS and  
12 the LSN.

13           MR. CAMERON: Well, now you know there's always  
14 been a concern, going back to the beginning of the  
15 negotiations, with the integrity of the database. And the  
16 rule still cites one of the responsibilities of the LSS  
17 administrator as coordinating problems concerning the  
18 integrity of the database. And at one time, and there was  
19 not a whole lot of objections to it when we still had the  
20 LSS, there was a huge, huge auditing program that was going  
21 to be set up under that.

22           And in fact, people on the advisory review panel  
23 asked if there was some way that they could participate in  
24 these QA checks on, you know, individual participants'  
25 databases, their compliance with the rule. And I think that

1 again, whether this is needed or not needed, okay, I think  
2 that what this auditing capability flows out of the  
3 provision in the rule that talks about the concerns about  
4 the integrity of the database. And I'm not sure I'd want to  
5 characterize that as making lawyers' jobs easier.

6 MR. MURPHY: Well, no, I -- you misunderstand me.  
7 I don't have any problem with auditing whatsoever. None  
8 whatsoever. I've always assumed that under whatever system  
9 we had, an LSS or LSN administrator was going to be able to  
10 knock on your door some day and come in and say I need to  
11 audit your -- the compliance with -- your compliance with  
12 the requirements of the rule. I have absolutely no problem  
13 whatsoever with that.

14 My problem is in with coming up, you know, in the  
15 first instance, with us having to go out and buy and pay for  
16 and maintain and pay the staff or contractors within Nye  
17 County to maintain a system. Which goes beyond the  
18 requirements of delivering documents, making our documents  
19 electronically available to DOE and the NRC and State of  
20 Nevada and everybody else who wants to look at them. And  
21 doing so within -- with some integrity. I mean I don't have  
22 any problem with that.

23 MR. CAMERON: So the point is is that you don't  
24 really have any problem with the need for auditing, or where  
25 that comes from in the rule, but you don't think that that

1 should be a critical component of the choice of the design  
2 of the system?

3 MR. MURPHY: Exactly, exactly. That may be Dan's  
4 burden. And that may place a greater burden on Dan.  
5 That's -- and that, you know, that's --

6 MR. CAMERON: Okay.

7 MR. MURPHY: That's true. I have no problem with  
8 that. We've always assumed that at some point in time,  
9 either at initial -- for an initial compliance check, for  
10 some sort of a certificate or whatever you want to call it,  
11 or at some point in time in the process the LSSA or the LSNA  
12 was going to be able to get into our shorts and figure out  
13 whether or not we were complying with the rule. That's, you  
14 know, I have no sweat, no problem with that.

15 My problem with -- is with -- is in the first  
16 instance, with us having to construct and operate and  
17 maintain a system which, you know, does that sort of a  
18 cross-check. And in a manner which, to me at least, looks  
19 like facilitating trial preparation, not document discovery.  
20 Even under, you know, since the invention of the quill pen  
21 lawyers have been required to compare something that was  
22 given to them by one whistle blower to something they found  
23 in the files of the tobacco company they're suing.

24 MS. NEWBURY: Auditing. As I read, the only  
25 certification that's required in this rule is for someone

1 from the organization that is putting information into the  
2 LSN to certify they have followed all the procedures, that  
3 their information is there.

4 If there's an implied audit process after that  
5 where the NRC checks to make sure that we have done that, I  
6 don't know why it requires heavy auditing, and I don't know  
7 why there have to be highly structured guidelines and  
8 procedures to do it. Someone, hopefully not me and the DOE,  
9 will have already -- higher than me, will have put their  
10 name to the fact that they have already complied with all  
11 this and put together their own procedures. So I take  
12 exception with certification of integrity requires those  
13 things to occur.

14 MR. HOYLE: If I can comment on that. I think  
15 that's a very good point. And I apologize for having missed  
16 part of this conversation, but I certainly have been put  
17 back in memory on the things that Mal was talking about that  
18 we went through, you went through laboriously some years  
19 back.

20 But I also want to remind us that when we were  
21 changing the rule last year or so, I think NRC was prepared  
22 to go with a new rule, Internet based changes in the rule,  
23 without an LSN administrator. And it was your emphasis on  
24 the need for the administrator to be there, to help out, to  
25 keep the playing field fair and level that the commission

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1 said okay, we will have an administrator.

2 So I think part of this is okay, what is the  
3 administrator going to do in alternative one? And that's  
4 probably how we got down into the -- into what kind of  
5 auditing would we do. Because it says, you know, LSNA has  
6 no systematic control over the site. LSNA is unable to  
7 respond quickly to performance problems. So, you know,  
8 what's left? So just for a comment.

9 MR. CAMERON: And I think Claudia and Mal are  
10 basically saying the same thing, is that it's one thing to  
11 have an audit capability, but don't build that on the backs  
12 of the participants in terms of the choice of the design  
13 alternative.

14 MR. MURPHY: Right, exactly.

15 MS. NEWBURY: If I may add, the agreement to -- or  
16 the wish to continue having an administrator did not mean we  
17 wanted to give control to that administrator to run our  
18 systems.

19 MR. GRASER: Did not mean? So it did mean that  
20 you wanted to give control?

21 MS. NEWBURY: It did not mean we wanted to give  
22 control.

23 MR. GRASER: Okay.

24 MR. FOSTER: Actually, I'd kind of like to depart  
25 from this slide just a little bit right now and just, and

1 dispel what is being brought up over and over again. I --  
2 that being that the role of -- okay. Let me back up a  
3 little bit before what I was just going to say.

4 Participants obviously have two roles, one as a  
5 information provider and one as an information consumer.  
6 And the amount of rolling, role playing or role exercise  
7 each participant will do in each of those two roles will be  
8 different. Some have a lot more documents to provide than  
9 to look at, others are in the reverse position.

10 With regard only to that aspect of being an  
11 information provider, the responsibilities are not going to  
12 change, no matter which of these alternatives is recommended  
13 or considered today. The basic responsibilities, that of  
14 putting up your documents on a web server, are pretty much  
15 the same across the alternatives, and the differences are  
16 only in the details. The --

17 MR. MURPHY: I beg to differ with that. If you  
18 have a central campus, for example, or a co-location  
19 facility, Nye County or State of Nevada, or Esmerelda  
20 County, Clark County, the NEI, whoever, has to then make a  
21 choice about whether or not they're going to rely on Dan  
22 Graser's folks to administer, to, you know, to physically be  
23 there and take care of that system and do whatever it is  
24 that people do to maintain those servers and do all that  
25 kind a stuff. Or is Nye County going to have to hire a

1 staff member or pay a contractor to be there at that campus  
2 at all times --

3 MR. FOSTER: With the exception of alternative  
4 four. I -- you're correct about that, but I -- and I was  
5 just going to get to that. And even then, I think the  
6 additional costs under alternative four are yes,  
7 significant, but not in an order of magnitude way.

8 As far as alternatives one and two and three and  
9 five go, pretty much the same system is going to suffice for  
10 all. There are going to be differences in the amount of  
11 communications capability you might have to install, but --  
12 and that of course costs money. It costs complexity, it  
13 costs issues. But really, from a technical -- from a  
14 systems point of view, it's pretty much the same kind a  
15 system. And if people understand that, I think we can avoid  
16 a lot of discussion on that base.

17 With regard to alternative one though, in terms of  
18 costs, since it is the simplest system and really the one  
19 out of which the other designs grew, it's going to be the  
20 cheapest by far for the LSNA point of view, but also for the  
21 participants as well.

22 This is why the technical working group felt that  
23 alternative one was less than desirable. With some of the  
24 concerns that were raised here today, you know, it may be  
25 wise to revisit some of these things. Everybody's going to

1 have a different understanding of what -- which of these  
2 points are important or not. But for the record, these are  
3 why we felt that alternative one was, as Dan said earlier, a  
4 non-starter. And I think the main area in which this fell  
5 was the difficulty of use issue was the main issue that kept  
6 us from feeling that this was a good way to go.

7 MR. FRISHMAN: You say it's too complex for users,  
8 but it's exactly what everybody does today.

9 MR. FOSTER: You know, the web is one of those  
10 things that's changing fast. The whole Internet is changing  
11 very, very quickly. And I think a year ago, that statement  
12 would have been doubted by a lot of people in this room.

13 And when we concentrate on ease of use, I'm not so  
14 sure that we were thinking about absolute raw ease of use,  
15 but predictability of ease of use; whether or not we could  
16 actually say -- you know, what's useful for me and what's  
17 useful for you are two different things. And I think you  
18 could say that about each individual in this room. And I  
19 can't predict to a fairly high level of confidence that the  
20 person -- the third person in the fourth row can use this  
21 system unless I have a fair amount of control over how that  
22 system's designed.

23 So I can't say that, you know, Joe Blow from  
24 Montana can use Nye County's system, or predict that they'll  
25 able to use Nye County's system without having a fairly high

1 level of confidence what they're going to see when they go  
2 to their -- go to that system.

3 MR. FRISHMAN: But if Joe Blow from Montana finds  
4 it important enough to do that, he'll figure it out.

5 MR. FOSTER: Well, that may be. I think that a  
6 year ago we may not have had that same understanding, and  
7 even six months ago we may not have had that same  
8 understanding. And this is basically reporting on things  
9 that we were talking about last October. There was a fairly  
10 strong feeling within all the members of the technical  
11 working group from some of the counties, the DOE and the NRC  
12 that alternative one was too complicated for your average,  
13 unskilled Internet user to figure out.

14 MS. TREICHEL: One of the characteristics of this  
15 entire thing, it hasn't changed and has only increased, has  
16 been the way technology has changed and gotten ahead of what  
17 anybody thought. And I can't imagine that if you say last  
18 October, gee, that was way back then and now it's very  
19 different --

20 MALE VOICE: Only four months later.

21 MS. TREICHEL: Yeah. If this thing isn't expected  
22 to -- well, I don't ever expect it to kick in, so I have to  
23 always use that disclaimer. But if it isn't expected by the  
24 optimists to kick in for a year or two, I can only think  
25 that it would be easier. And if it's not easy to get DOE

1 documents, then I guess there's going to be a lot of real  
2 serious screaming going on when you can get anything else in  
3 the world but you can't get DOE documents.

4 So it's DOE's responsibility to make those  
5 accessible. And it's easier and easier and easier to have  
6 things accessible. And it's going to become easier.  
7 That -- people have a huge self-interest in making the web  
8 work. It's the marketplace, it's the information center,  
9 it's everything. So there -- just look at the NASDAQ. You  
10 know, this is -- this thing is going.

11 And I -- these conversations are quite interesting  
12 when you compare them with when we're discussing a  
13 repository, but that's just an aside. It just strikes me  
14 that the future seems so difficult to predict in this room,  
15 but in other rooms it's not.

16 MR. HOYLE: No, I think those are, comments from  
17 both of you, very well taken. And I think we have perhaps  
18 in our discussions in prior meetings of this panel, perhaps  
19 in the technical working group meetings which unfortunately  
20 I did not attend, where a lot of emphasis was put on public  
21 users. And maybe we've looked harder at that than what I  
22 call the primary users, who will be those who are the  
23 parties to the case and the judges.

24 And I don't want to dwell too long unnecessarily  
25 on alternative one, except that I know several of you think

1 this is a pretty good one and we need to spend the amount of  
2 time on it that's appropriate. But just going down through  
3 the chart that you had on there why alternative one does not  
4 meet requirements -- and I know, Glen, you suggested that  
5 maybe looking at it today you might say it a little  
6 differently. Let's go through those saying it's too complex  
7 for users, but how would you have put it if you were going  
8 to make a comment about the primary users? Is it too  
9 complex for them?

10 MR. FOSTER: Well, actually, John, let me explain  
11 to you why the emphasis was on the ordinary users. I think  
12 that we felt that if an ordinary user, if we made -- if we  
13 designed the system to be accessible to what we're calling  
14 the ordinary user, the rank and file, that there would be no  
15 question that it would be also appropriate for somebody who  
16 was a little bit more skilled in the discovery process.

17 So I think that perhaps we were lazy, perhaps we  
18 just wanted to cover all the bases, but that we didn't  
19 really look at the distinguishing factors between those  
20 highly skilled users and the ones who were not.

21 MR. HOYLE: They're highly motivated anyway.

22 MR. FOSTER: And highly motivated, sure. I'm not  
23 sure that I'm really in a position where I can say whether  
24 or not it's, without talking to those users and without  
25 interviewing them in some depth, I'm not sure whether I can

1 say whether or not it would be appropriate. However, since  
2 some of those users are here today, they're probably -- and  
3 they've already spoken to this issue, perhaps it is.

4 MR. HOYLE: Okay.

5 MR. FRISHMAN: You know, there's an old principle  
6 in the Navy that every convoy moves at the speed of the  
7 slowest ship. I don't think that applies here. I really  
8 don't. We can't design this system for the most  
9 unsophisticated or least sophisticated potential member of  
10 the general public who might want to get access to it.

11 MR. FOSTER: Well, but that issue keeps coming up.  
12 You know, I mean we had a -- we've had a fairly long  
13 discussion about the public document rooms, library access,  
14 people with slow Internet connections, people with limited  
15 capability browsers. The topic keeps coming up, so there's  
16 obviously some constituency here that is very concerned  
17 with --

18 MALE VOICE: But those aren't the people who need  
19 speedy discovery.

20 MR. FOSTER: We're building one system. We're not  
21 building two systems.

22 MR. MURPHY: No, DOE's already got a system. And  
23 that sort of leads in, I'm going to follow your naval  
24 analogy here. If it's too difficult to navigate, that's the  
25 participant's problem. And if other people can't navigate

1 on somebody else's information, then that becomes part of  
2 the proceedings. That's an issue in availability of  
3 information for the proceeding. It has nothing to do with  
4 expediting discovery.

5 MR. FOSTER: One of the things that we discussed  
6 early on in a fairly abstract way I hope is that the  
7 possibility was raised that it -- some participants may feel  
8 that it was in their best interest to hinder easy discovery.  
9 And how would we allow for that being the case, if in fact  
10 it were the case? How could we help overcome that sort of  
11 point of view?

12 MR. MURPHY: If a participant was hindering  
13 discovery?

14 MR. FOSTER: Well, or perhaps a participant was  
15 interested in hindering discovery on somebody else's  
16 document collection.

17 MR. MURPHY: Right.

18 MR. FOSTER: I mean these are -- these really fall  
19 under the security category. And, you know, are --

20 MR. MURPHY: They also --

21 MR. FOSTER: -- probably discussed there.

22 MR. MURPHY: They also fall under the category of  
23 what we pay judges to do.

24 MR. FRISHMAN: Yeah, that's what I mean. It's  
25 part --

1 MR. FOSTER: Well, see --

2 MR. FRISHMAN: -- of the proceeding. It hasn't  
3 got anything to do with the system.

4 MR. FOSTER: But if the judges are asked to make a  
5 decision, they have to have information on which to base  
6 that decision.

7 MR. MURPHY: Right.

8 MR. FOSTER: And it comes back to, you know, how  
9 far can we go, or what can we do to make that information  
10 available to them.

11 MR. MURPHY: Well, but if someone feels that their  
12 right to discovery is being hindered, they go to the judge.  
13 They go to the ASLB and they say party X is hindering my  
14 right to discovery. And the judge says prove it. Show me.

15 MR. FOSTER: And all the burden of discovering  
16 whether or not your discovery is being hindered is up to  
17 you?

18 MR. MURPHY: You bet. Absolutely.

19 MR. FRISHMAN: Yeah, the question came to my mind  
20 during the break, you know. How does the Justice Department  
21 continue to even survive in its never-ending lawsuit against  
22 Microsoft without all of this help?

23 MR. FOSTER: Well, it's because they subpoena  
24 Microsoft's --

25 MR. FRISHMAN: Right.

1 MR. FOSTER: -- disks.

2 MR. FRISHMAN: Right. And the judge allows --  
3 orders a subpoena.

4 MR. MURPHY: Right. And the other thing we have  
5 to keep in mind is that remember we are replacing a hard  
6 copy discovery system in order to facilitate the NRC's  
7 ability to meet its statutory obligation to reach a decision  
8 within three years.

9 For the non -- for the potential public, you know,  
10 person who wants to have access to this system, what right  
11 did that -- did those members of the public have to get  
12 access to? And let's forget about the fact that Claudia's  
13 records are all public documents, et cetera like that.  
14 We're replacing a system which existed in -- under which  
15 primarily applicants were non-governmental agencies at the  
16 time. What right did Joe Blow from Montana have to demand  
17 access to the records of the Montana power company in an NRC  
18 licensing proceeding in which Joe Blow was not an  
19 intervener? Zero, none, bingo.

20 So why should we place additional costs and  
21 additional administrative burdens on the participants in  
22 this process when what we're trying to do is replace a  
23 system with one that would make it easier for the NRC to get  
24 to a three year decision? But why should we at that same  
25 time create rights and facilitate access which didn't even

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1 exist in the system that we're trying to protect, trying to  
2 replace?

3 MR. CAMERON: Yeah. I guess I would have to agree  
4 with the fact that the purpose of this system is to expedite  
5 discovery so that we don't have to do it hard copy after the  
6 application comes in. Under the LSS, there wasn't any  
7 public access at all.

8 MR. GRASER: Yeah, there was.

9 MR. CAMERON: Okay? No, not in the pre-license  
10 application phase. Only the headers. Okay?

11 We, when we got together at the ARP meeting where  
12 we discussed the proposed rule, we said well, why shouldn't  
13 there be public access to this system? Saying that there  
14 should be public access to the system does not necessarily  
15 mean that the system design is driven by the public access.  
16 I don't think it needs to be driven by the public access.

17 You guys have brought up two things related to  
18 public access though that could have implications for the  
19 participants, the primary users using the system. One is is  
20 that if it's not an easy to search system and so many hits  
21 come in, Dan, you were saying that the system would be  
22 harder for the participants to get into. Glen raised a  
23 possible security issue, perhaps if you were saying that the  
24 simpler the design the more someone could try to bring the  
25 system down in terms of availability.

1 I don't know anything about that. But I guess  
2 that I think that we really should try to keep in mind the  
3 primary user here rather than designing it at lowest common  
4 denominator, unless that has some impact for the primary  
5 user.

6 MR. MURPHY: Right. And remember how we got to  
7 that discussion, Chip. You're absolutely right, but  
8 remember how we got to that discussion about public  
9 participation when we started talking about an LSN, a  
10 web-based LSN. And that is that we all recognized pretty  
11 early on in the discussions that if we were going to base  
12 this network on the world wide web; that public  
13 participation already existed in that network.

14 And as I recall at least, the discussion was do we  
15 exclude the public; do we fence this network to keep the  
16 public out, not do we design a system to facilitate public  
17 access.

18 MR. FOSTER: Well, that's very applicable to  
19 alternative one, because if you implement alternative one  
20 there's no way to distinguish a public random user from  
21 somebody who's in the in crowd. And so there's no way to  
22 build a fence around it.

23 MS. NEWBURY: But we discussed that at that  
24 meeting as well when we talked about perhaps having  
25 different levels of users, and passwords for people who were

1 particularly interested, or who were interveners or part of  
2 this process.

3 MR. FOSTER: But that's what I'm talking about is  
4 though when the TWG discussed alternative one they felt that  
5 alternative one would not meet that requirement to  
6 differentiate.

7 MR. FRISHMAN: But why do we have that  
8 requirement?

9 MS. NEWBURY: Why not?

10 MR. MURPHY: Why do we need to differentiate?

11 FEMALE VOICE: So you can make sure --

12 MR. FOSTER: Yeah. To be able to provide  
13 predictable levels of service.

14 MR. FRISHMAN: I think we've been through this  
15 before, and I don't think that's an issue. And I don't  
16 think Claudia thinks it's an issue either

17 MS. TREICHEL: Well, it becomes an issue if you  
18 block access. Then it really does become an issue.

19 MR. FRISHMAN: But level of service, I can't quite  
20 imagine that the Yucca Mountain page is ever going to get  
21 hit so hard that there is denial of service. I just can't  
22 believe there are that many people who give anything.

23 MR. FOSTER: Well, actually --

24 MS. TREICHEL: If there is, I get a bonus.

25 MR. FOSTER: With the tools available on the

1 Internet right now, only takes one person to shut a site  
2 down.

3 MR. FRISHMAN: Right. We found that out last  
4 week.

5 MR. FOSTER: For two or three days. And then  
6 maybe another person for another two or three days.

7 MS. NEWBURY: Yeah, but those same people, if  
8 you're talking the real highly talented ones, have shut down  
9 the Pentagon, the State Department, and some of the most  
10 protected --

11 MR. FOSTER: But I'm not talking about talented  
12 ones. I'm talking about, you know, a 14 year old in  
13 Rumania.

14 MR. FRISHMAN: Well, maybe -- yeah.

15 MS. NEWBURY: Yeah. Well --

16 MR. FRISHMAN: Maybe the FBI's good services would  
17 go towards that, if anybody thought it was --

18 MR. FOSTER: Sure.

19 MR. FRISHMAN: -- important enough to screw up the  
20 Yucca Mountain page.

21 MS. TREICHEL: This has got to be --

22 MR. FOSTER: I agree with you. Yucca --

23 MS. TREICHEL: -- a real lame --

24 MR. FOSTER: The Yucca Mountain page is probably  
25 not an attractive target.

1 MS. TREICHEL: Yeah.

2 MR. FOSTER: And really if you get back to looking  
3 at the differences between alternatives, alternative one is  
4 probably superior in that regard because they'd have to shut  
5 down a whole bunch a sites, not just one.

6 MR. GRASER: Actually, the Yucca Mountain site was  
7 effectively hacked into and the mountains were replaced with  
8 a silhouette of a reclining female. And --

9 MS. NEWBURY: That was several years ago. And I  
10 think we've --

11 MR. GRASER: Right.

12 MS. NEWBURY: -- increased our security.

13 MR. GRASER: Well, I'm just saying in terms of  
14 characterizing it as not a probable target, there -- the --  
15 back in the 1995 time frame the entire Department of Energy  
16 complex was wanked by the worms against nuclear killers,  
17 which came in through one of the laboratories.

18 MR. FRISHMAN: Well, in this instance, what's the  
19 consequence? What, we lose three days in a three year  
20 licensing process? And we don't even lose those three days  
21 anyway.

22 MR. GRASER: Right.

23 MR. FRISHMAN: So what's the deal?

24 MR. FOSTER: Well, we're talking about one  
25 particular type of security complex. Now one particular

1 type of -- service attack. There's dozens. There's  
2 hundreds of different things that can happen to a web site.  
3 And, you know, going through all those things is way beyond  
4 the scope of our discussion today.

5 MS. TREICHEL: Can you guarantee that it wouldn't  
6 happen to three, four, and five?

7 MR. FOSTER: No, course not.

8 MR. GRASER: In fact, I think he just said that --

9 MR. FOSTER: You can't guarantee anything is  
10 secure.

11 MR. CAMERON: Well, but again --

12 MR. GRASER: It's less plausible with option one.

13 MR. MURPHY: But again, keep in mind the  
14 participant in this process who wants to -- or the two  
15 participants in this process who want to guarantee that we  
16 get from point A to point B in three years are the  
17 Department of Energy and the Nuclear Regulatory Commission,  
18 and perhaps the utilities, I -- you know. But DOE will do  
19 what is necessary, and spend whatever money is necessary  
20 consistent with, you know, their appropriations from  
21 congress to protect their site from those kind of intrusions  
22 so that they can acquire or obtain their construction  
23 authorization within three years.

24 It's not Nye County's -- but why should Nye County  
25 and Esmerelda County and Clark County be required to

1 maintain our web sites in the same fashion when it is highly  
2 unlikely that someone is going to attack the licensing  
3 process by intruding into Nye County's web site? Those  
4 sites they're going to intrude into, if anybody even, you  
5 know, I mean and I agree with Steve. The sites that they're  
6 going to -- that are likely to be attacked are the NRC site  
7 and the D, you know, DOE site, number one. And Claudia, as  
8 a part of her basic job description, is going to do what she  
9 can to protect her web site. Why should Abby's client have  
10 to do the same thing? Nobody's going to shut down the NRC  
11 licensing process by attacking Esmerelda County's --

12 FEMALE VOICE: Eureka.

13 MR. MURPHY: Or Eureka. I'm sorry, Eureka  
14 County's web site, or Nye County's web site.

15 FEMALE VOICE: See, it's starting already.

16 MR. MURPHY: I mean that's the part that, you  
17 know, that's disturbing me in it. But, you know,  
18 fundamentally, I agree with Steve, that, you know, the  
19 chances of that many people really caring are fairly remote.

20 MR. FOSTER: Well, okay. What if the consequence  
21 of somebody attacking your web site was that you lost  
22 status?

23 MALE VOICE: Somebody has to make hate decision.

24 MR. MURPHY: I will --

25 MR. FOSTER: Well, no, I'm just saying --

1 MR. MURPHY: No, no, no. I will take my chances.  
2 I guarantee, I think we ought to go to lunch right now and  
3 not anybody worry about that. I will take my chances before  
4 the judge. The judge is not going -- the ASLB is not going  
5 to kick Nye County out because some hacker attacked us and  
6 shut down our web site. The ASLB is not going to deny DOE  
7 its construction authorization because some hacker attacked  
8 its web site and intruded on its data. You know, that's  
9 just not going to happen. I'll take our chances.

10 MR. FOSTER: We're dealing with very simplistic  
11 scenarios here, and the real world I think is much more  
12 complex. And I think that this is probably way off the  
13 topic, but I'm just throwing our for consideration what if  
14 somebody got into your web site and used it to shut down  
15 DOE's web site, and made it appear as if it were coming from  
16 your web site? That's the kind of level of things that we  
17 have to think about in terms of looking at these --

18 MR. GRASER: Again, it's a take your chances  
19 type --

20 MR. FOSTER: -- looking at these designs.

21 MR. FRISHMAN: So?

22 MR. FOSTER: Well, and you couldn't prove that it  
23 wasn't one of your guys.

24 MR. FRISHMAN: Somebody's got to prove that it  
25 was. And that's what courts are for.

1 MR. FOSTER: Well --

2 MS. TREICHEL: Presumed innocent.

3 MR. FRISHMAN: The NRC is particularly not good at  
4 doing things like that.

5 MR. FOSTER: It happens, you know, six times in  
6 the first six months of the LSN, somebody might start  
7 thinking well --

8 MS. TREICHEL: There's a lot of people that  
9 already think --

10 MR. FRISHMAN: I'll take my chances with the court  
11 before I will with the NRC for, you know, for security  
12 purposes.

13 MS. TREICHEL: I don't know, I think we're all  
14 over the board here. This is just --

15 MR. HOYLE: I think so too a little bit, Judy.  
16 Mal, are you maybe going down a path that would  
17 say there's still another alternative out there; that we do  
18 something differently with the NRC and the DOE material,  
19 and -- from your material, Clark County's, you know, the  
20 others? Are you saying that perhaps yours could reside in  
21 an alternative one environment and maybe that we should be  
22 thinking of something else for the other two?

23 MR. MURPHY: I hadn't thought of that, but I don't  
24 see any reason -- I mean sure. That's -- there may be an  
25 alternative six. That hadn't occurred to me. Maybe there's

1 some hybrid that would satisfy everybody's --

2 MR. FRISHMAN: No. I think, Mal, in keeping with  
3 what you were saying before, and I think sort of in line  
4 with what I've been saying, is it's DOE's decision what they  
5 want. And it's the commission's decision what they want for  
6 how they handle their particular pages. They have a big  
7 vested interest. And we have a big vested interest too.  
8 And I think we may all see different ways to do what we need  
9 to do. DOE is the most vulnerable because it has the most  
10 to lose. And if they don't take care of their property,  
11 then shame on them.

12 MR. MURPHY: They're not going to do it anyway.

13 MR. HOYLE: Mal says that --

14 MR. MURPHY: Doesn't make any difference what rule  
15 we write.

16 MR. HOYLE: -- Claudia's going to do everything  
17 possible to keep it up.

18 MR. MURPHY: Yeah, they're going to do it anyway.  
19 And remember, I'm looking at the rule again. And Claudia,  
20 you know, reminded us to let's go back to the source every  
21 now and then. The rule says 2.1001 -- 1011 says:

22 "Among the other powers and  
23 responsibilities of the LSNA is to  
24 coordinate the resolution of problems  
25 regarding the integrity of the

1 documentary materials certified in  
2 accordance with, you know, 1009 by the  
3 participants to be in the LSN."

4 Coordinate the resolution of problems concerning  
5 the integrity.

6 MS. NEWBURY: Not identify them.

7 MR. MURPHY: Not identify them and design the  
8 system in the first place to avoid any conceivable integrity  
9 problem. I mean we just can't do that. There's not enough  
10 money in the system to do that.

11 MR. CAMERON: But it certainly doesn't exclude  
12 that from a legal point of view, I don't think, but I think  
13 you're raising good policy arguments why -- I mean both the  
14 case with the audit and the case with the security  
15 considerations. You're saying why should a burden,  
16 additional burden from one of these design alternatives be  
17 placed on all the other participants besides DOE and NRC  
18 because of some concerns.

19 MR. MURPHY: Right.

20 MR. FRISHMAN: No, I think we're saying beyond  
21 that. Why on anybody, because each is responsible for his  
22 own?

23 MS. NEWBURY: Why is NRC asking to assume this  
24 burden? It's not in the rule.

25 MR. HOYLE: Well, I think that is the basic

1 question. And I think the LSNA is trying to determine all  
2 right, you wanted him in the act. Now what should he be  
3 doing? What is the breadth of his act to help Mal and Steve  
4 and the others get a good, warm feeling that Claudia's  
5 material is proper? And it continues to be proper --

6 MR. FRISHMAN: It's not a matter of proper. It's  
7 a matter of whether it is properly available. It isn't a  
8 question of proper material. It's a question of did you  
9 follow the procedure that made it available to everybody who  
10 wanted it at the same time.

11 MR. HOYLE: I stand corrected. I meant properly  
12 available.

13 MR. CAMERON: But as Dan and the working group --  
14 as Dan said at the beginning of the morning is that he  
15 wasn't pushing one of these alternatives over another. What  
16 they did is they went in and they looked at each of these  
17 alternatives from a number of different perspectives and  
18 presented that to the ARP for discussion. And that's what  
19 they're getting at.

20 MR. FRISHMAN: I think we're probably just so used  
21 to rejection that we see that word and we immediately  
22 respond.

23 MR. HOYLE: It could be. Poor strategy.

24 Let me ask the members. It's 12:30. I think I  
25 would like to hear two, short description of alternative

1 two, and then break for lunch. Two might result in the same  
2 kind of discussion we just had, and if we could avoid  
3 getting into repeating ourselves, I think we could hear a  
4 little bit about two and then decide where we want to go  
5 from there. Is that agreeable?

6 MS. NEWBURY: Sure.

7 MR. HOYLE: Okay.

8 MR. FOSTER: After considering the simple strategy  
9 of one, which we spent -- we look at what we could add to  
10 one to perhaps make it a more useable system. And a fairly  
11 obvious aspect, capability, came out too, that being a  
12 search capability across participant sites. And so  
13 basically two is one with an added centralized search  
14 interface to the portal.

15 Participants still have the, pretty much the same  
16 sort of system in their -- under their purview. The -- but  
17 the user, instead of going to each individual site and  
18 searching on each individual site for the information of  
19 relevance, has the ability to look at it in one spot and get  
20 returned to them all information that matches whatever  
21 search that they attempted.

22 MR. GRASER: And the risks?

23 MR. FOSTER: This basically added a little bit of  
24 complexity to the design, but at the -- but a very small  
25 one, using off-the-shelf products and a fair amount of

1 additional capability. The -- we didn't feel that this  
2 would affect the schedule at all; that it was something that  
3 was doable and that additional integration was not -- it was  
4 not a big factor. The -- it's still a very low cost,  
5 relatively low cost to the final three alternatives to the  
6 NRC.

7           Each of the participants would have a small  
8 additional administrative cost to alternative one; that  
9 being that there would have to be some sort of interface  
10 between the central search engine and their site. Not a  
11 database type of interface, but some sort of regular  
12 presentation of the data on the site so that the search  
13 engine could interpret what it found.

14           MR. HOYLE: Would that be a one-time cost, or a  
15 continuing?

16           MR. FOSTER: It would depend on how they populated  
17 their site. It would be something that they would have to,  
18 first of all, not -- I don't want to use the term develop,  
19 because that implies too -- more work than it is. They  
20 had -- but they'd have to architecture it in some way and  
21 then they would have to follow those rules while they put  
22 their documents up.

23           So for a participant with a few documents, put it  
24 all up at once, then yes, it would be a one-time costs. For  
25 participants who had a larger document collection that may

1 put it up in pieces, it would have to adhere to those  
2 standards at each instance of putting up their information.

3           What are the consequences of this? And I think  
4 people who have actually done a lot of searching on the  
5 world wide web using similar products to what this would be  
6 sees this all the time, in that when you get a large or even  
7 sometimes a small response from a search engine, it's  
8 difficult to ascertain the relevance of one document against  
9 another document. The -- you may get four documents that  
10 you're not looking for as well as the document you're  
11 getting (sic) for. You may not get the document you're  
12 looking for for some quirk of the search engine. They don't  
13 rank them generally in a way that is -- that corresponds  
14 well to what people expect. And by that, we feel that that  
15 makes things difficult to use.

16           We felt that there may be some difficulty with  
17 participants maintaining some of these interfaces. We felt  
18 that issues with regard to data presentation, what Daniel  
19 was talking about earlier with regard to data normalization  
20 may be hard for users to deal with.

21           For example, he used the -- the example of dates I  
22 think is a very easy one to understand. And especially when  
23 sorting, you may want to look at versions of documents. And  
24 if the dates used between these different versions are not  
25 consistently presented, then you can't sort them by date.

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1 So we felt that that would add to difficulty to use and  
2 complexity of the system.

3 And finally, there's no way to search within a  
4 subset. That if you get 100 documents or 1,000 documents as  
5 a return to a query, how do you specify that you only want  
6 to search within those 1,000 documents for another term of  
7 interest? We did not try to predict all the ways in which  
8 people can search or the specific search terms for which  
9 they would be looking. Our assumption was because of the  
10 great number of documents within the system as a whole, the  
11 similarity between those documents, that trying to do sample  
12 searching and such like was beyond what we could do without  
13 a -- without putting up a system as a prototype.

14 There are other technical issues with regard to  
15 this with the strategy, and Dr. Nartker of UNLV was very  
16 helpful in having us understand some of the consequences of  
17 the strategy in terms of usability to the average user, and  
18 even the more capable user. So we felt that alternative two  
19 did not materially improve upon alternative one in terms of  
20 a system that would give us what we wanted in terms of  
21 usability, in terms of maintainability, in terms of  
22 administrability (phonetic), if that's a word.

23 MR. GRASER: Is alternative two worse than  
24 alternative one in any way?

25 MR. FOSTER: We felt that it was less predictable.

1 That we may go through the additional integration, the  
2 additional feature adding without getting much more useful  
3 in terms of usability, and that it could be confusing. And  
4 it was unpredictable what we would get for our money,  
5 basically.

6 MR. CAMERON: Glen, when you say that the -- it  
7 may actually increase cost, and then down I guess in the  
8 third bullet, it would exceed the cost of simply purchasing  
9 the portal. The cost to who, to the NRC or to all the  
10 participants?

11 MR. FOSTER: I think that that is one of the areas  
12 of unpredictability that I'm talking about here. One of our  
13 biggest efforts in this whole technical working group was to  
14 reduce the unpredictability of certain aspects of it. We  
15 have unpredictability in what tools we need to implement the  
16 strategy; we have unpredictability in the area of band  
17 width; we have unpredictability in what user base we -- what  
18 level of expertise we needed to satisfy in the user base,  
19 and many other areas.

20 So I think that you see that as the alternatives  
21 one, two, three, four, and five progress, the various  
22 aspects of the designs are all intended to increase what we  
23 can predict, how much we can control, and how assuredly we  
24 can provide a system to do what we felt the system needed to  
25 do.

1 MR. HOYLE: Dan, anything else?

2 MR. GRASER: That -- I think that's essentially it  
3 on the alternatives one and two, John.

4 MR. HOYLE: Okay. Any comment on two?

5 MR. GRASER: No.

6 MR. HOYLE: All right. I suggest we take an hour  
7 break. So let's be back at 1:35. 1:35.

8 [Whereupon, at 12:35 p.m., the meeting was  
9 recessed, to reconvene at 1:35 p.m., this same day.]  
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## A F T E R N O O N   S E S S I O N

[1:35 p.m.]

1  
2  
3           MR. HOYLE: I apologize for my own late return,  
4 but we got a late start.

5           Mal has to leave this afternoon earlyish, and so  
6 does Judy. I think we're going to have to really speed  
7 along if we're going to try to bring a vote or look for  
8 consensus by about 3:00. It's now 5 of 2.

9           So before we begin the afternoon review of three,  
10 four, and five alternatives, we did cover one and two this  
11 morning. I just wanted to ask if there's anyone that wanted  
12 to comment further on one and two?

13           MR. GRASER: Okay. I had a couple a housekeeping  
14 points that I just wanted to get back on the record very  
15 quickly.

16           The first, in response to Claudia in terms of  
17 where in the rule is the licensing support network  
18 administrator shouldering any responsibility. And it goes  
19 right back to 2.1001 in the definitions of the license  
20 support network administrator. And at that section of the  
21 rule it indicates that, "The LSNA is responsible for  
22 coordinating access to and the integrity of the data  
23 available on the LSN."

24           So if you hang it on the words "responsible for  
25 the integrity of the data on the network," that's

1 essentially where you -- that's the foundation for why it is  
2 the LSN administrator wants to be looking into the  
3 participant collections.

4           There was another point that I just wanted to  
5 make. There was quite a bit of discussion in terms of the  
6 various alternatives levying additional burdens or  
7 additional requirements on the participants. And one of the  
8 things I did want to clarify is that in terms of the audit  
9 capability that I would certainly be looking at  
10 implementing, everything that I have been considering was to  
11 use automated tools to do that. And that would require no  
12 investment of any resource on any of the participants over  
13 and above putting their documents out on a server somewhere  
14 and making them available.

15           So in that regard, it's an automated function.  
16 Software goes in, takes a snapshot, and comes back and  
17 submits that information to a statistical type process. So  
18 there's really no additional burden that should be levied  
19 against any of the participants in terms of helping to  
20 support that sort of activity.

21           Okay. And also, this morning when I was doing the  
22 brief overview I did touch on the costs of the system to the  
23 participants. And I just did want to reiterate that  
24 although there was a lot of active debate back and forth  
25 within the technical working group, I thought that it was a

1 fair characterization to say that especially for the small  
2 participants, there is not much difference between what it  
3 would cost for you to meet the obligations of the rule for  
4 alternatives four -- three and alternatives five.

5 That was represented in the table. That's  
6 included later on the presentation. And I just wanted to  
7 again reiterate that in my opinion, I don't think  
8 alternatives one and two deviated too much from that model,  
9 except insofar as alternative one and alternative two would  
10 require that the participants provide their own site  
11 searching software, their own site engine, their own site  
12 database software system to maintain and organize the files.  
13 So in that regard, vis-a-vis alternative three, four, and  
14 five, where the portal software can do those functions, in  
15 fact, alternatives one and two may represent somewhat higher  
16 cost than alternatives three and four and five.

17 So those were just some of the technical aspects  
18 that I wanted to add to the discussion. Or at least, you  
19 know, make my point. Put it on the record, so to speak.

20 MR. HOYLE: Okay. Any other comment?

21 I think I would like to ask the Engelbrecht --

22 MR. VON TIESENHAUSEN: Can I ask a quick question,  
23 Dan? I'm not quite sure exactly how long does the system  
24 have to be up?

25 MR. GRASER: Well, I think that probably depends

1 upon the hearing process. As you know, there is I guess  
2 what you would call an optional fourth year to the licensing  
3 process. So theoretically, that could -- a three year  
4 hearing and licensing process could be four years.

5 And then I guess it depends on the disposition of  
6 the database after the licensing activity whether that needs  
7 to be available or simply archived. But when you tally the  
8 whole thing up, I think we're probably talking probably six  
9 years of operation, five to six years of operation grand  
10 total.

11 MR. MURPHY: It could be longer than that too.

12 MR. GRASER: Could be.

13 MR. MURPHY: Depending on whether -- on, you know,  
14 within five to six years theoretically the NRC will issue a  
15 construction authorization. We then go into constructing  
16 the repository. Then DOE comes back for a license to  
17 receive and possess. If we consider that all one licensing  
18 proceeding, we could --

19 MR. GRASER: Then you're probably talking --

20 MR. MURPHY: -- theoretically we could maintain  
21 these -- have to maintain these sites for 20 years.

22 MR. GRASER: Right.

23 MR. HOYLE: Okay. Let's press on.

24 MR. MURPHY: And one other thing, John --

25 MR. HOYLE: Yes.

1 MR. MURPHY: -- before we get started. It  
2 occurred to me, you know, I didn't mean my criticism this  
3 morning -- and I hope I speak for everybody else around  
4 here. I didn't mean my criticism this morning to -- or I  
5 didn't mean by that that I don't appreciate and acknowledge  
6 the hard work that the technical working group has gone  
7 through in coming up with these alternatives. I don't agree  
8 with some of them, but I certainly acknowledge and  
9 appreciate the work that they've done.

10 MR. HOYLE: Thank you, Mal. I appreciate you  
11 putting that comment in.

12 What I'm going to suggest is that we let Dan and  
13 Glen run through alternatives three, four, and five. I'll  
14 say quickly, we'll see how that works out. But why don't we  
15 hold our questions until the end of description of five, so  
16 that I think we'll gain some time by doing it this way. So  
17 go ahead.

18 MR. FOSTER: After looking at the deficiencies,  
19 perceived deficiencies of alternatives one and two, we  
20 will -- we -- after looking at the deficiencies we perceive  
21 to exist in alternatives one and two, we tried to identify  
22 how best we could technologically address those  
23 deficiencies. And we looked at a particular piece of  
24 software called a portal, which does a number of different  
25 things, but the main objective of a portal is to provide a

1 single point of access to multiple data sources for  
2 individuals. And so you'll find that three, four, and five  
3 all have this portal aspect in common. And it is actually  
4 the distinguishing factor between alternative one and  
5 alternative three.

6 Alternative three grew out of alternative one with  
7 the addition of the portal software and various other  
8 aspects, because portal software doesn't stand alone, it  
9 requires a data base and various other aspects. And then  
10 alternatives four and five grew out of the alternative three  
11 idea. So three, four, and five have quite a lot of  
12 commonality, quite a bit more commonality than they have  
13 differences.

14 In your, I believe it's tabs L, K, or L, M, and N.  
15 I may be wrong on those references, but in the tabs that  
16 describe the plans for alternatives three, four, and five  
17 you'll see that there's this notion of a component. And  
18 each of three, four, and five have different -- three  
19 different components that address various requirements that  
20 the system is intended to address, one being the audit, one  
21 being user access, and one being the data storage and  
22 retrieval aspects.

23 Alternatives three, four, and five differ only in  
24 that final component. The portal and the audit aspects of  
25 it are the same. So we're going to focus on the differences

1 rather than the similarities.

2 And this slide actually talks about similarities,  
3 so we're going to pretty much get through that. They're  
4 all -- they all look to the user the same way. They all  
5 pretty much deliver the same data to a particular query.  
6 They all have a fair amount of customability to particular  
7 users. They can differentiate one user from another with  
8 ease. They can give users different levels of access to the  
9 system, blocking some out when -- while granting others in  
10 on a fairly easy to manage basis. They all pretty much  
11 require the same things of the participants, with the  
12 differences that we're going to address in a moment.

13 I'm going to -- we're going to show you three  
14 conceptual schematics of the alternatives. The schematics  
15 are necessarily simplified. And this is always something  
16 that -- there's lots of ways to show computer schematics.  
17 I'm sure everybody in this room has seen dozens of computer  
18 schematics that attempt to display graphically a fairly  
19 complex connection of computers, but these schematics are  
20 intended to focus on the differences between the systems.

21 You see alternative three we have distributed web  
22 servers connected somehow. The line between the web servers  
23 and the LSN index and centralized portal is intended to be  
24 the Internet. The line to the user is also intended the  
25 Internet -- is also the Internet, but there is a distinction

1 in how -- in the type of data that moves over those lines.

2 One more thing, Dan. There's a -- one of the  
3 things that's distinguishing of alternative three that,  
4 opposed to four and five is that the user sort of has a back  
5 channel to the participant web sites in three which does not  
6 exist in four and five. That should the centralized portal  
7 be down, for example, the user could always go directly to  
8 the participant web sites. Okay. Thanks.

9 Alternative four differs from alternative three in  
10 that the participant web servers have been moved close to  
11 the participant -- I mean to the portal site. "Close"  
12 meaning a situation where a high band width between the  
13 sites can be attained at a fairly cheap cost. And we were  
14 thinking local area network for that. I should point out  
15 that proximity is spelled incorrectly. I apologize for  
16 that.

17 The issue that this was intended to address was  
18 the fact that connections over the Internet are uncertain.  
19 Whether or not you can make the connection at all and the  
20 amount of band width of performance of that connection can  
21 not always be guaranteed. This allows the portal to have  
22 good access to the collections.

23 Now one of the things that this implies is that  
24 the participants have to update their web servers in a  
25 location that may be tough -- may be geographically distant

1 from where files, the original documents reside, and  
2 administer servers in those -- in that location. And that  
3 can be -- that adds some complexity and some challenge to  
4 this alternative.

5           Alternative five was intended to address the band  
6 width issue and also the issue of remote administration. In  
7 alternative five, the web servers are moved back out to  
8 sites as chosen by the participants and the portal site was  
9 enhanced with a, basically a big disk that contains all the  
10 information on all the web servers as a copy. The portal  
11 will go out and query the web servers to update its own  
12 cache, but for delivery to the user, the documents will be  
13 delivered from the cache.

14           The advantage of this is that the band width  
15 between the web servers and the cache can be uncertain.  
16 That can be a slow trickle of data and still satisfy the  
17 needs of a user for rapid access to the documents.

18           Under alternative three, participants have a  
19 responsibility to put up a web server, to make it available,  
20 make adequate band width available to the web server. Now  
21 we haven't exactly determined what that adequate -- word  
22 adequate means for every participant, but for larger  
23 participants that could be a significant capacity. The  
24 portal software gives the users quite a bit of capabilities,  
25 some of which I've already talked about. It's very

1 flexible. It can pretty much be whatever the user wants it  
2 to be.

3 One of the examples that we've used in talking  
4 about this in the past is something that came out of the LSS  
5 document, and that is the ability to save queries. At one  
6 point, I guess that was felt to be a very important tool for  
7 checking to see what new information is available in a --  
8 with regard to a particular subject; that you could run the  
9 same query a week later or a month later that you -- and see  
10 what has changed from the previous time you ran it. That's  
11 the sort of capability that, you know, that's just an  
12 example. That's the sort of capability that the portal  
13 would provide.

14 Disadvantages are, with this, is of course access  
15 to the participant sites from the portal in that it's an  
16 uncertain connection, and that can unpredictably affect  
17 performance.

18 Here you see what we felt about the decision  
19 factors, which will be summarized in a later slide. One  
20 thing I should have stated at the beginning of this segment  
21 is that all of alternatives three, four, and five were felt  
22 by the technical working group to be acceptable; that we  
23 recognize that tradeoffs would have to be made between them  
24 in terms of costs, in terms of what the ARP felt was  
25 important and where you wanted to put your most about

1 predictability. Where one is better in terms of  
2 predictability of response, another one is better in terms  
3 of predictability of results.

4 MR. GRASER: If I could just add a quick comment  
5 on that one. I think a more precise way to characterize the  
6 technical working group was to say that we all recognized  
7 that alternatives three, four, and five were all technically  
8 viable.

9 MR. FOSTER: I think that's --

10 MR. HOYLE: Did you finish that one?

11 MR. FOSTER: Yeah, I think that's enough on that.

12 Okay. As I said, alternative four differs from  
13 alternative three in that the participants' servers are  
14 moved in close proximity to the portal site. There are four  
15 disadvantages that come to the advantages of this proximity,  
16 and one is that with modern networking technology, it may  
17 not be easy to keep one's participant's malfunctioning  
18 system from interfering with another participant's properly  
19 functioning system. It may be difficult to ascertain who is  
20 responsible for that situation.

21 It may be difficult for participants to administer  
22 a system that is difficult, or I'm sorry, is distant from  
23 their main operations. It may require staffing changes, it  
24 may require technology changes, it really reduces a lot of  
25 options in that area. However, response is very predictable

1 and the total amount of band width available is certainly  
2 much easier to achieve at a reasonable cost.

3 How this impacts the decision factors are shown  
4 here. Really again, it's a viable solution. It's really  
5 more of a tradeoff. You -- this particular slide, decision  
6 factors three, four, and five all should be considered  
7 together. It's not going to flip through it on a single  
8 overhead though.

9 I will point out though that alternative four,  
10 because of the uncertainties with regard to administration  
11 of the participant sites, will probably pose the highest  
12 cost and highest burden on the participants of all the  
13 alternatives we talk about today, at least -- certainly all  
14 the alternatives that we've analyzed in depth, which is  
15 three, four, and five.

16 Alternative five introduces what I like to call a  
17 honking big disk to pretty much as the water tank does for a  
18 town. You can pump the water into it slowly and you can  
19 draw the water at your leisure, sometimes rapidly when you  
20 have a fire or sometimes at a slow amount of time. And  
21 that's really what this disk does for you. You know,  
22 thinking of it as a single disk of course is inaccurate,  
23 but -- technically inaccurate, but essentially that's what  
24 it does.

25 Really, when it comes right down to it, one of the

1 things it means is that participants won't have their --  
2 have to have their sites up 24 hours a day. They might be  
3 able to have their sites up 2 hours a week, depending on the  
4 amount of data that they have available. It really doesn't  
5 matter for them to -- they don't have to exhibit the same  
6 amount of rigor and control of the administration of their  
7 site. It gives them a lot more freedom to perform system  
8 operations like backup, things like that.

9 At one point we talked about the idea of loading  
10 this disk, this centralized storage disk through some other  
11 method besides the web. However, I believe that we felt  
12 that having a web server, a distinguished point of  
13 distribution for each participant, was an important part of  
14 the rule. And now I didn't make that decision, I just seem  
15 to remember it. But this -- that's pretty much the  
16 distinguishing characteristics of this design.

17 This design pretty much gives an awful lot of what  
18 we thought the system should have. The real big negative  
19 here is, when it comes right down to it, is cost. It's, as  
20 you'll see later, it's almost double the cost of  
21 alternatives three and four, which are pretty close in cost.  
22 And the reason there is because of -- excuse me, because of  
23 this disk. And there is a certain aspect of that with  
24 regard to the current state-of-the-art with disk storage and  
25 the amount of data that we estimate to be in the LSN, they

1 don't really fit together particularly well at this time.  
2 And that kind a is what makes this high bump happen.

3 MR. MURPHY: That's the highest cost to the NRC,  
4 not to the other participants?

5 MR. FOSTER: Yes, that's -- well, overall cost.  
6 We looked at --

7 MR. MURPHY: I don't care about the overall cost.  
8 I care about how much of a check Nye County has to write.

9 MR. FOSTER: Actually, when it comes down to the  
10 cost to the participant, this is probably the lowest cost to  
11 the participant.

12 MR. MURPHY: That's what I want to hear.

13 MR. FOSTER: Again though, we're talking -- we're  
14 not talking hundreds of thousands of dollars. We're talking  
15 tens of dollars or thousands of dollars. That's pretty much  
16 the descriptions of three, four, and five.

17 MR. GRASER: Right. Before --

18 MR. MURPHY: Can I ask one --

19 MR. GRASER: Okay.

20 MR. MURPHY: You didn't get to your slide, I guess  
21 26, the cost to establish web presence.

22 MR. GRASER: That's coming up next. That's me.

23 MR. MURPHY: Oh, okay.

24 MR. GRASER: I'm going to step right into that one  
25 before we open up the questions.

1 All right. The technical working group had quite  
2 a bit of give and take and back and forth on this in terms  
3 of trying to characterize costs for the participant  
4 organizations to establish a web presence. And I'll be the  
5 first to admit that we still internally amongst ourselves  
6 are arguing and quibbling over exactly how big is big, and  
7 how big does the server need to be for a big installation.

8 But generally, what we tried to do was to  
9 characterize, oh, three central cost characterizations  
10 that -- or cost factors that a participant could expect, and  
11 then to represent those for the participants who may have  
12 fewer than 1,000 pages versus those who may have anywhere  
13 between 1,000 and 10,000 pages, versus those who have in  
14 excess of 10,000. And of course the more in excess of  
15 10,000 pages you have, the bigger the numbers can get.  
16 That's why there's a little plus sign at the end of that  
17 column over on the right-hand side of this chart.

18 Generally, what we tried to do is to identify the  
19 cost of a server machine that a participant would need to  
20 support. That would be the server that the participant  
21 would put up on their external web site to house their  
22 collection.

23 Second cost, maintenance and administration. This  
24 is an annual, recurring type cost. And this represents, I  
25 would say for the most part, the investment in bodies and

1 labor hours in order to do the care and feeding of your web  
2 page presence. And again, this is fairly hard to  
3 characterize not knowing what people pay for database  
4 administrators or web administrators and so forth, but we at  
5 least took a crack to try to give you a frame of reference  
6 to say are we talking tens of thousands or are we talking  
7 hundreds of thousands here. So we tried to characterize  
8 that cost of human involvement in keeping the site  
9 operational on an annual type basis.

10 And then the third cost factor is looking at the  
11 cost of the band width and communications back and forth  
12 between the various alternatives and the size of your  
13 collections and the numbers of documents that you have out  
14 there. And again, we tried to characterize this, and this  
15 number could again fluctuate by quite a bit depending on who  
16 you are using as your carrier and what sort of purchasing  
17 volumes you may have, and so forth. So this number has a  
18 certain degree of variability to it as well, but that's  
19 essentially what we tried to do.

20 And the footnotes on this table are fairly  
21 important. These represent what we considered to be a  
22 reasonable cost range. It certainly can vary from party to  
23 party to party. And for collections with larger number of  
24 pages, the high end cost can keep going up as the collection  
25 size goes up.

1           The other -- the second footnote down here also  
2 worthy of note is that the document conversion costs can be  
3 significant. And again, they are predicated on the size of  
4 your own particular collection and how much conversion you  
5 need to do, and what you may already have the documents in,  
6 what formats and so forth.

7           And the bottom footnote down there again is just  
8 to indicate that in terms of the maintenance and  
9 administration, you're really talking partial FTE's. And it  
10 depends on how much you pay for full-time equivalent body or  
11 part of a body to perform routine database administration.

12           Okay.

13           MR. MURPHY: Okay. Dan, just for -- and I'm sure  
14 you anticipated this coming. Just for comparatively at  
15 least, because I suspect that you don't have figures, but  
16 how does -- how do alternatives one and two compare to the  
17 ones we have set out here, three, four, and five?

18           MR. GRASER: Well, as I said, I think for the  
19 small participants, alternative one and two are probably  
20 going to be somewhat higher given the fact that instead of  
21 relying on the indexes that the portal software delivers and  
22 gives, the participant would then have to provide some  
23 mechanism to do file management. And in computer talk, that  
24 means some kind of a database management system. And that  
25 under alternatives one and two, if you are pointed towards a

1 site, then the site needs to provide the search tools,  
2 whatever tools are there.

3 And now there's some degree of variability in  
4 there. If you want to take the minimalist approach  
5 across-the-board, someone would be able to set up an HTML  
6 environment and simply provide browse navigation tools with  
7 very simple or rudimentary term searching capabilities  
8 without having an underlying text engine with all of the  
9 boolean operators. So it kind of depends on what the  
10 participant chooses to establish as the tools at their site.

11 So whatever you would get with alternative one and  
12 two in terms of your retrieval capability is what the site  
13 can give to you, because there's no master engine, so to  
14 speak. So I think when you add in whatever the cost of the  
15 software and database management type software you would  
16 need to provide additional search and retrieval and file  
17 organization tools, you would add to the cost of what you  
18 would normally be seeing under alternatives three and four  
19 and five.

20 MR. MURPHY: Well, three and five?

21 MR. GRASER: Three and five, yeah.

22 MS. NEWBURY: Dan, is this based on the fact of  
23 just a cold startup? You don't have a web page at all and  
24 this is what it would cost you to get in? Because as you  
25 know, Nye County has a web page already. The State has a

1 web page already, we certainly have one, Nye -- Clark County  
2 as well. So is this additional costs on what we already  
3 have up and running, or is this pretending we didn't have  
4 anything?

5 MR. FOSTER: Let me address that, because I'm the  
6 one who came up with these. This assumes a cold start  
7 essentially, as far as the hardware and software goes.  
8 However, it assumes some level of expertise. Not a specific  
9 level of expertise, which accounts for the wide range in the  
10 costs, but that people are generally familiar with what the  
11 web is; and if not how to start a web server, where to go to  
12 find somebody who can start a web server.

13 There's more information on that in the  
14 descriptions in the management plans on the alternatives.  
15 There's some information in there about the origin of -- the  
16 beginnings of these figures. But yeah, they pretty much  
17 start by buying a box, or taking a box out of the closet  
18 that is no longer suitable for desktop because the desktop  
19 software has outgrown -- everybody's got a Pentium in the  
20 closet, and that Pentium will run open source operating  
21 systems just fine. And your cost for that is zero.

22 MR. MURPHY: What about leasing? What if we --

23 MR. FOSTER: There's --

24 MR. MURPHY: I mean we --

25 MR. FOSTER: I didn't --

1 MR. MURPHY: Nye County right now has --

2 MR. FOSTER: I did not attempt to address every  
3 single different procurement method. One of the things you  
4 can do though, you can buy a web page for \$30 a month from  
5 almost any ISP in the country and store a significant amount  
6 of data on it --

7 MR. MURPHY: Well, yeah, that's what Nye County  
8 does now.

9 MR. FOSTER: -- on that web page.

10 MR. MURPHY: We have a -- I don't know, I think  
11 our --

12 MR. FOSTER: So I think there's an awful lot --

13 MR. MURPHY: I haven't the slightest idea what it  
14 costs us.

15 MR. FOSTER: -- of different --

16 MR. GRASER: That goes back to the Boy Scout  
17 analogy that I used at the October meeting, basically what  
18 would it take for a Boy Scout troop to set up a web page and  
19 still -- they could still meet the rule, and they, you know,  
20 they could piggyback on other resources in other places and  
21 essentially do it for next to no cost.

22 MR. MURPHY: Right.

23 MR. GRASER: So it could be very low.

24 MR. MURPHY: Yeah, because -- right. There's  
25 nothing in the rule which requires us to own our server.

1 MR. GRASER: That's correct.

2 MR. MURPHY: We just have to make the documents  
3 available.

4 MR. GRASER: I need to be able to have a URL  
5 location to be able to point to.

6 MR. PITTS: So these numbers here, the maintenance  
7 and administration, those are for actually locating the  
8 server at the participant's site, a physical piece of  
9 machinery?

10 MR. GRASER: Some part of that might be the cost  
11 of paying to, yes.

12 MR. PITTS: Okay. Because, yeah, the difficulty  
13 we have in northern Nevada is the communication cost. It's  
14 still regulated like per mile, T-1's a per mile cost for  
15 Nevada.

16 MR. FOSTER: Well, again, this chart here is not  
17 necessarily addressing the specific needs of a particular  
18 participant.

19 MR. PITTS: Oh, I under --

20 MR. FOSTER: It's simply here to characterize  
21 costs at certain levels of -- you probably have better  
22 information than I do already.

23 MR. PITTS: Well, actually it was just -- my only  
24 point was just trying to find out if this 30 to 60 or 5 to  
25 10 was to -- was actually for a physical box located at the

1 participant's site. You answered that, and so that's really  
2 all I have.

3 MR. GRASER: If you can find ways to do it  
4 cheaper, God bless you.

5 MR. PITTS: Right. Well, I think for a lot of  
6 participants it's probably going to be considerably cheaper  
7 if they can get the -- enough band width, depending on how  
8 big their files are, to locate them in Reno or Las Vegas, or  
9 some other web site.

10 MR. GRASER: Right.

11 MR. PITTS: Much as you've suggested.

12 MR. GRASER: Right.

13 MR. PITTS: Just because the communication costs  
14 are so high.

15 MR. VON TIESENHAUSEN: And part of the cost you  
16 said in alternatives one and two was a function of the  
17 searching tools that you have. Is there anything in the  
18 rule that addresses anything about the granularity or  
19 efficiency of those tools?

20 MR. MURPHY: That's going to be addressed by the  
21 functional requirements, isn't it?

22 MR. GRASER: No. There's in the rule that tells  
23 you what's the test of being efficient or effective, or  
24 anything else. The rule is kind of an empty box in that  
25 regard. Okay.

1 MS. NEWBURY: Dan, I've got one too. In your  
2 definition of campus, for operating at a campus location, it  
3 says that the participants would cooperate on shared  
4 resources?

5 MR. GRASER: Right.

6 MS. NEWBURY: Since we represent a huge portion of  
7 the size of this thing, does that mean the DOE is in effect  
8 paying for the LSN?

9 MR. GRASER: No.

10 MS. NEWBURY: I'm just asking.

11 MR. GRASER: I think what we have in mind there is  
12 if you were, for example, to connect storage devices, that  
13 the various participants all deliver a storage device to the  
14 central location and there would be some shared services;  
15 for example, the local area network to connect those devices  
16 together, or the wiring to connect those devices together.

17 Well, if there are six devices there and it costs  
18 \$6,000 to connect six devices, then it's not a question of  
19 on a per document basis. It's really a question of how many  
20 servers are sitting there in that shared resource  
21 environment. Unless you want to work out some other cost  
22 algorithm that would share it based on the size of the  
23 collection or the size of the documents, but I'm not sure we  
24 could achieve consensus on that.

25 MALE VOICE: We'll go for number of words.

1 MR. MURPHY: I'm confident that aren't going to go  
2 with alternative number four, so I --

3 MR. GRASER: It's like saying what are the  
4 overhead costs of setting up a computer center. And what is  
5 the cost that gets allocated to the next guy who brings a  
6 server into that site, and how do you allocate those shared  
7 costs, utilities and power and, you know, phone lines, and  
8 whatever else.

9 MR. MURPHY: What's the hookup charge?

10 MR. GRASER: What is the hookup charge, exactly.

11 MR. VON TIESENHAUSEN: I have one other question  
12 on alternative five. Basically what you plan to do there is  
13 mirror participant sites. And so we're dependent on funding  
14 from DOE. So say our funding disappears in two years and  
15 you have mirrored our site just prior to that. We could  
16 basically discontinue our site and you'd still be happy?

17 MR. GRASER: Well, I think what you're asking is  
18 if you came to the licensing proceeding and you only had 10  
19 documents, and you made the 10 documents available, and the  
20 portal came in and mirrored and copied down those 10  
21 documents, would you be expected to maintain those 10  
22 documents for the next 6 years, because you're not adding  
23 any new documents, you don't want to modify any documents,  
24 and so forth.

25 And I think at that point, if we looked at that,

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1 that would be a procedural and guidance sort of issue that  
2 we would deal with, because the rule doesn't seem to be  
3 totally clear on that. I would probably look at that and  
4 say if the document haven't changed, and there's no activity  
5 and you're not adding more documents, and they're on the  
6 portal site and the portal is backed up and its stable,  
7 you've made your documents available.

8 In a way, you could carry that logic the next step  
9 further and say well, I'm the Department of Energy. I have  
10 1,000 pages of material every week coming out. How about if  
11 I just put the 1,000 pages out, you sweep it into the portal  
12 and you copy those documents onto the portal site. Could I  
13 then sweep the 1,000 documents off and then fill that site  
14 back up with next week's next 1,000 documents? And then  
15 after the portal successful sweeps it, you clean them off  
16 and load the next 1,000 documents on. In other words, you  
17 use your external site as a staging area to load the  
18 documents, any new documents, any changed documents.

19 And I say if you follow that logic, that same  
20 logic would seem to apply; that yes, a participant could do  
21 that and meet the -- what the rule says, is you've made your  
22 documents available for the web. And the portal is taking  
23 over the responsibility for providing continued search and  
24 retrieval capability, but the documents have been made  
25 available to the web, and they are continuing to be made

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1 available to the web.

2 MR. VON TIESENHAUSEN: There is one major  
3 difference. DOE would still be getting money and we  
4 wouldn't?

5 MR. GRASER: Well, I was just trying to, you know,  
6 sketch it out. Course that all presumes that the LSN  
7 administrator continues to be funded as well. And the LSN  
8 administrator takes a draw against the high level waste  
9 funds from nuclear material safety and safeguards. So I  
10 have to negotiate on an annual basis as well. And we all  
11 know what happens when computer technology gets down in  
12 budget space vis-a-vis engineers and scientists. So that  
13 might be pegging your hopes on a -- betting it on the comb  
14 as well.

15 Okay. If we can move on here. I had one more  
16 financially oriented chart I wanted to present to you. This  
17 does not represent participant costs. This represents only  
18 the LSN administrator pieces of cost components, and these  
19 are the cost components that I would essentially have to go  
20 to the commission and say to the commission, this is the  
21 type of funding that I need to have.

22 So in addition to the previous chart which  
23 outlined for the participants generally what their  
24 involvement is, this is the dollar number that the  
25 commission looks at and looks at as part of their decision

1 process in terms of saying what are we willing to fund; how  
2 much of the nuclear waste fund allocation do you want out of  
3 the pot of money that's currently available in any given  
4 fiscal year. And so this is a characterization of the  
5 one-time cost to design and implement a system and then a  
6 characterization of one year's worth of annual recurring  
7 costs. And this would carry us up, for example, through I  
8 believe December 2001.

9           The costs here are not identical to the costs if  
10 you just went through other materials that we had and  
11 tallied them all up. The technical working group came up  
12 with these cost characterizations. The numbers you're  
13 seeing here reflect additional overhead costs within the  
14 Nuclear Regulatory Commission for things like developing  
15 training programs; establishing a help desk, a help line;  
16 travel, coordination with the integration and so forth.

17           So it includes a lot of additional one-time and  
18 recurring costs that I have to consider when I'm putting  
19 together my authorization list to the commission, so it just  
20 has a little bit more of a robust flavor to it. And the one  
21 thing that I would say here is these numbers again are  
22 relatively soft. They need to be scrubbed in much greater  
23 detail, and that will be the next step in the process.  
24 These numbers could vary substantially, six digits give or  
25 take, probably.

1 Go right ahead.

2 MR. PITTS: I was just going to, I was going to  
3 say what's the -- what's your feeling on the likelihood of  
4 the NRC funding these levels of expenditures? What's your  
5 feeling on that?

6 MR. GRASER: I don't really want to speculate  
7 on --

8 MR. PITTS: Oh, come on.

9 MR. GRASER: -- right now, on the probability of  
10 what the commission is going to do. They'll be reading the  
11 transcript, and I don't want to be prejudging any of their  
12 deliberative processes. I --

13 MR. PITTS: Could we just have a thumbs up or  
14 thumbs down?

15 MR. GRASER: Well, I'll --

16 MR. PITTS: Say a number and --

17 MR. GRASER: I can, for example, I can say that  
18 the commission has already earmarked funds for fiscal year  
19 2001 and fiscal year 2002, which in their aggregate, get us  
20 very close to being able to support the sorts of numbers we  
21 have here. Unfortunately, they're split out over fiscal  
22 years in such a way that half of the money comes to me too  
23 late to meet my delivery requirement. So there's going to  
24 be some internal -- there are active internal discussions  
25 going on in that regard.

1 But I'm saying in terms of looking at things and  
2 saying \$2 million, are we in the right ball park? I think  
3 we're in the right ball park in terms of the funding that  
4 the commission anticipated. It's just we still need to do a  
5 little work back at the shop in terms of getting the money  
6 in the right fiscal year.

7 MR. MURPHY: Does that -- have they put aside  
8 enough costs for alternative three or five?

9 MR. GRASER: Well, I'm saying right now three and  
10 four do not look to be problematic, in terms of the  
11 commission's expectation from last year's budget cycle.

12 MR. MURPHY: What does that mean? They don't --

13 MR. PITTS: It means that five would be; right?

14 MR. GRASER: Three -- no, I didn't say that. I'm  
15 just saying three and four are in the right ball park range  
16 for what the commission last year anticipated in terms of a  
17 reasonable cost for the system based on placeholder numbers  
18 that had been placed in the budget beforehand. So a \$2  
19 million number would not be a surprise to them. Doubling  
20 that --

21 MR. MURPHY: But a \$4 million number would?

22 MR. GRASER: That would be 100 percent higher than  
23 the numbers that they've been seeing in the past. And that  
24 would require some explanation, some justification, some  
25 rationales for why it is we're pursuing that strategy. But

1 again, if you look at it and you say it's not \$40 million  
2 and certainly not \$200 million, which are numbers that had  
3 been thrown around in the past. So we're down in at least  
4 the right number of digits, and the commas are all in the  
5 right places.

6 MR. PITTS: Claudia, can you tell me what your  
7 budget is for support, approximately?

8 MS. NEWBURY: No, I can't. But it's -- Lou, do  
9 you know what --

10 MALE VOICE: What was the question?

11 MS. NEWBURY: Budget.

12 MR. PITTS: About how much is the DOE's budget?  
13 Because they're doing, you know, they're doing the work  
14 right now. They have web site, they're scanning documents,  
15 and they're storing massive amounts of documents and stuff  
16 like that, so --

17 MS. NEWBURY: I don't know the budget numbers  
18 offhand, to be honest. My concern was that I didn't want  
19 additional costs on top of those unless I needed them for  
20 some reason.

21 MR. PITTS: Oh, I -- yeah, I understand that. I  
22 was just curious.

23 MS. NEWBURY: But no. I can get you them.

24 MR. HOYLE: Dan, given your responsibility as the  
25 licensing support network administrator, and given the

1 discussion you've heard this morning and this review now of  
2 three, four, and five, what would you be most comfortable  
3 with? I'm not looking for a recommendation. I'm just  
4 asking what would you be most comfortable with, given your  
5 responsibilities?

6 MR. GRASER: In budget space, or in technical  
7 space, or --

8 MR. HOYLE: In the alternatives we've been looking  
9 at.

10 MR. GRASER: Well, in terms of the case that's  
11 easiest to present to the commission, I think alternative  
12 three or four are -- represent the most straightforward of  
13 the portal type solutions; that still assign to the  
14 participants meeting their obligations of making documents  
15 available, being responsible for the integrity of the  
16 documents that they place out on their web sites and so  
17 forth. And in terms of the financial aspects of it, they  
18 represent a reasonable cost for value.

19 And having been involved in some major litigation  
20 support cases in the past, and document volumes and page  
21 volumes, I, as I said, I think that those represent  
22 reasonable costs for the value. So that's my opinion. I  
23 think if -- those would be the easiest to represent to the  
24 commission from an approval point of view.

25 MR. HOYLE: And for small entities, the cost to

1 them doesn't change much over the range of alternatives?

2 MR. GRASER: Over alternatives three -- let's see,  
3 alternatives three and four, the cost to the participants  
4 are -- well --

5 MR. HOYLE: Three and five.

6 MR. GRASER: Three and five, the cost to the  
7 participants are relatively consistent. Alternatives one  
8 and two could represent some add cost in terms of the  
9 hardware and software up front. Alternative four,  
10 alternative four increases some of the ongoing labor and  
11 database administration in an awkward administrative  
12 environment, so that could raise some costs. That's  
13 generally the way I would summarize it.

14 I think even within the technical working group  
15 the representatives all had their own view of whether or not  
16 that's 100 percent true. You know, that may be my view, and  
17 I think if you ask the guys from the Department of Energy  
18 they would say well, yeah, you know, maybe you could  
19 characterize this as being a little bit lower rather than  
20 being a little bit higher. We, even up until Thursday  
21 afternoon of last week, we continued to have those dialogues  
22 back and forth.

23 And that's the sort of thing that there will  
24 always be professional differences of opinion as to how much  
25 it's really going to cost. And you won't really know until

1 you sit down and sharpen the pencil and start to put  
2 together an exact configuration. And at that point, then we  
3 could quibble as to -- for example, I think there was a  
4 reasonable dialogue that was held as to whether or not  
5 alternative five really needed to be a Sun Unix machine, or  
6 could possibly an NT server do the job. And that debate was  
7 going on even during the break.

8 So -- and those are the sorts of things that we  
9 didn't try to nail down a specific cost. We simply tried to  
10 characterize it in terms of the magnitude of dollars that  
11 might be involved in it to give people a better feel.

12 MR. MURPHY: There's one other factor here that we  
13 haven't discussed yet, just to -- I think, and that is  
14 with -- if I understand this correctly, the only  
15 alternatives that give the participant, the small  
16 participant, Nye County, complete control over the -- its  
17 site, including when the documents become available in  
18 searchable, you know, form, are one and two. Is that not  
19 true?

20 MR. GRASER: No. I think in all five of the  
21 scenarios all of the participants have control over when  
22 they make their documents available.

23 MR. MURPHY: No, no. I mean when Joe Blow from  
24 Montana can find documents on the Nye County web site. I  
25 mean under alternatives three, four, and five we get our web

1 site up; we load our documents; we get all the document --  
2 all the relevant documents in the Nye County files, Nye  
3 County contractors files are loaded. Can Joe Blow from  
4 Montana then search those documents and find the matrix  
5 porosity document that he's looking for, or does he have to  
6 wait for Dan Graser to get his act together?

7 MR. GRASER: Under -- let's see here. Under  
8 alternatives -- actually, under all five of the alternatives  
9 the participants may choose to allow access to the URL  
10 location either through the portal or directly from the  
11 Internet.

12 MR. MURPHY: But in order to do that we then,  
13 under alternative five, for example, we then also have to  
14 purchase that file management search and retrieval software.  
15 Which you said we were going to save by allowing you to  
16 purchase it rather than we purchasing it ourselves.

17 MR. GRASER: Under -- okay. That was a complex  
18 series of if statements.

19 MR. MURPHY: Well, just if we go with alternative  
20 one, simple thing.

21 MR. GRASER: Right.

22 MR. MURPHY: Nye County's got a web site already.

23 MR. GRASER: Right.

24 MR. MURPHY: We enhance our web site, we dump our  
25 documents on there.

1 MR. GRASER: It's there right now.

2 MR. MURPHY: We've got search and retrieval  
3 software and all that kind a stuff. Joe Blow click -- opens  
4 our web site, says, oh, matrix porosity, searches for it.

5 MR. GRASER: Got the document.

6 MR. MURPHY: Search for it, dot, dot, dot, bang.

7 MR. GRASER: Yeah.

8 MR. MURPHY: He downloads our matrix porosity  
9 documents.

10 MR. GRASER: Right, right.

11 MR. MURPHY: If we go with alternative five, we  
12 don't buy search software.

13 MR. GRASER: You don't necessarily have to.

14 MR. MURPHY: We don't have -- we decide. We  
15 don't. We decide not to buy the search software.

16 MR. GRASER: Okay.

17 MR. MURPHY: Good old Dan Graser's offered to do  
18 that for us. We're going to let him do it. We get our web  
19 site up, we dump -- we load our documents, everything's  
20 ready to go. Joe Blow from Montana opens our web site, asks  
21 to do a search on matrix porosity, and he gets a little  
22 window pop up saying you can't have it yet, Dan Graser's not  
23 ready. Wait till next year. Is that -- I mean is that  
24 fair?

25 MR. GRASER: I --

1 MR. FOSTER: Yeah, that's fair. However --

2 MR. GRASER: It's essentially fair, yeah.

3 MR. FOSTER: -- three would retain that -- well,  
4 really to meet what we see as the design criteria for these  
5 particular design plans, I think only one would -- only  
6 alternative one would retain that capability.

7 MR. MURPHY: Full flexibility.

8 MR. FOSTER: In full, yeah.

9 MR. CAMERON: Why couldn't that Nye County site  
10 operate independently of the -- continue to operate  
11 independently of the --

12 MR. FOSTER: There's no reason why --

13 MR. MURPHY: It could. I mean it could even under  
14 alternative five, but only if we buy that additional search  
15 software.

16 MR. FOSTER: Right. You put the documents on your  
17 web site, you still have to have -- a user have some way of  
18 identifying what's inside the file. You probably in your  
19 experience have stumbled across web site directories where  
20 you see files, long lists of named files with a dot TXT or  
21 something else behind them. And multiply that by let's say  
22 600,000, where the file name is simply a numeric sequence,  
23 or an accession number, or an ID number for a file.

24 You have no other way of knowing what's in the  
25 file until you click on it and pull it out. So until you

1 have some kind of search mechanism in there, just putting  
2 out the raw files and the poor user, whoever got to that  
3 index, would probably have no way of knowing which documents  
4 were which.

5 Okay. Where we are right now is an area that we  
6 could just flash this one up here. And then instead of me  
7 talking about next steps, we could move right into whatever  
8 additional discussion John wants to entertain to start to  
9 gain the feelings of the group.

10 These are the decision factors that the technical  
11 working group came up with. And again, there was a lot of  
12 active discussion as of Friday morning at 11, or 1:00 in the  
13 afternoon on Friday afternoon regarding how the technical  
14 working group was going to present this information.

15 Essentially what we tried to do was focus on the  
16 distinguishing factors between alternatives three, four, and  
17 five. And all of this is with the foundation that you  
18 understand that alternatives three, four, and five all  
19 shared those common aspects. They would all be technically  
20 feasible.

21 So then it comes down to well, what is it that  
22 makes these things different. And we came up with some  
23 general characterizations, and in fact the technical working  
24 group may, you know, may still not be in 100 percent  
25 agreement on the way these things were characterized. This

1 is a negotiated document here in front of you. Okay?

2 The performance and band width, I think it's a  
3 fair characterization to say that alternatives four and five  
4 provided a better means to control band width access to  
5 large data stores and data files. So that if band width  
6 were a problem, one party could be responsible for ordering  
7 up more band width. Okay? So it's alternatives four and  
8 five that provided that.

9 The design simplicity, what is simple to me as the  
10 LSN administrator is alternative three. What is simple to  
11 the participants potentially, at least out of three, four,  
12 and five, was alternative five, because it offered a lot of  
13 flexibility in terms of putting the files out there and then  
14 relying on the portal software to do the indexing. So the  
15 design complexity there from the participants is we can put  
16 the files out there and somebody else would be responsible  
17 for doing the indexing and the search interface, and so  
18 forth.

19 The alternative four did have an aspect to it that  
20 should be drawn to everybody's attention in that it is  
21 location constraining. Alternative four would require us to  
22 all sit down and have more meetings and try to identify  
23 well, exactly where is it we would all agree to identify as  
24 the portal location. So if you think today has been fun,  
25 wait until you get into that dialogue.

1           The completion schedule risk to the LSN  
2 administrator, and again, this is where I feel closely about  
3 something whereas other participants may not, if I need to  
4 have the system available in July 2001, alternative four  
5 requires me to engage and identify and locate a central  
6 site. Alternative five requires me to go out and purchase  
7 more hardware, more equipment, and integrate that additional  
8 hardware and equipment. So from my perspective, there's a  
9 little more complexity to alternative four and five that  
10 adds a degree of additional risk to me meeting a fully  
11 integrated system by July 2001.

12           Document integrity and availability. Under  
13 alternatives three and four, the parties still have the  
14 documents on their machines. They're responsible for  
15 keeping their machines up, operational, backed up, and so  
16 forth. Under alternative five, if in fact the portal  
17 software came in and swept the documents out and replicated  
18 them and so forth, suddenly the LSN administrator and the  
19 portal site and the big cache device, LSN administrator  
20 would become the custodian of other people's evidentiary  
21 materials.

22           From a financial administration point of view,  
23 alternative four requires some kind of a cost allocation  
24 structure for the allocation of these overhead costs, the  
25 shared costs. In terms of the cost to the participant,

1 alternative five is potentially the lowest cost to the  
2 participants. And the lowest cost to the LSN administrator,  
3 conversely, would be alternative three.

4 So that was generally the way we characterized the  
5 decision factors here. It comes down to risk factors in  
6 terms of meeting your deliverable date; comes down to  
7 manageability of the system, and do you want to introduce  
8 more complexity and more layers of bureaucracy and  
9 administration in terms of sharing sites; and in terms of  
10 the financial cost to the participants, which ones represent  
11 the least amount of investment to the participants.

12 So those were the discriminating factors that if  
13 you looked at these -- and there are others. I don't want  
14 to mislead you into believing that there were not other  
15 aspects that members of the technical working group made  
16 some very earnest and well made points about other  
17 distinguishing factors. But in terms of the decision  
18 factors, these were the key elements that we were looking  
19 at.

20 And at this point, instead of moving into the next  
21 steps, I'm going to turn it back over to John at this point  
22 so that we have adequate time to hear input from members of  
23 the ARP and for John to point us in a direction towards  
24 getting some closure on today's discussions.

25 MR. HOYLE: Thank you, Dan.

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1           The floor is open for discussion. Not only on  
2 three, four, five, but any further comment on one and two.  
3 If now having heard about the other three anyone wants to  
4 comment on that.

5           MR. MURPHY: Let me just try to reach to suggest a  
6 consensus, just to get things started. My guess is, at  
7 least in my own mind, I think the discussion is going to --  
8 is probably going to be between alternatives one and five.  
9 So I would suggest, I don't know if we -- takes a formal  
10 motion here or not, John; as the chairman you can advise us.  
11 But I would suggest that we just reject, as a starter, we  
12 just reject alternative number four.

13           MS. NEWBURY: I agree.

14           MR. HOYLE: Yeah. I would -- yes, I would take  
15 that as a suggestion and as a motion. Do I hear consensus  
16 on rejecting just the one alternative four?

17           MR. FRISHMAN: I think it should be.

18           MR. HOYLE: Okay. You're in the lead over there.

19           MR. MURPHY: I am?

20           MR. HOYLE: You've got the ivories.

21           MR. GRASER: So basically everybody agreed --

22           MR. HOYLE: Everybody agreed.

23           MR. GRASER: -- four is --

24           MR. MURPHY: We didn't hear from you. You were  
25 silent.

1 MS. NEWBURY: And you have to put your stuff on  
2 too.

3 MR. HOYLE: You're absolutely right. Dan has the  
4 NRC vote.

5 MR. GRASER: Yes. I agree that four is probably  
6 not worth pursuing.

7 MR. HOYLE: In a letter to the commission where  
8 I'll report on this meeting and our decisions, do you want  
9 me to give a reason why we rejected four? And if so, what  
10 would the reason be, or reasons.

11 MR. MURPHY: The reason in my mind is -- and let  
12 me see if I can put these in order of significance. I guess  
13 the -- well, they're too intertwined. It's cost and loss of  
14 control, control of the system and the documents. I  
15 would -- I don't want -- I don't like alternative four  
16 because it would be excessively costly from Nye County's  
17 point of view, not only for hardware, et cetera, but it  
18 would require us to have a physical presence at this remote  
19 location, whether that location was in Las Vegas, or  
20 Rockville, or wherever.

21 MR. GRASER: And that may in fact replicate  
22 something that you may already have available.

23 MR. MURPHY: Absolutely, absolutely. And  
24 secondly, I don't -- I'm pretty sure that remote location  
25 would not be in Pahrump, or at least not in the Nye County

1 office of Pahrump. And so wherever that campus is located,  
2 it requires Nye County to surrender some aspect of the  
3 control of its documents to someone else, and that causes me  
4 some heartburn.

5 MR. VON TIESENHAUSEN: I'd just like to add one  
6 comment to that. It basically would force us to make a  
7 long-term commitment for up to 20 years.

8 MR. MURPHY: Sure.

9 MR. VON TIESENHAUSEN: And there's no way that I  
10 can ever do that. And I will sit back in the back and let  
11 Dennis take over.

12 MR. MURPHY: I think there are -- I see advantages  
13 and disad- -- I see advantages to both alternatives one and  
14 five. The obvious, taking, you know, just assuming that  
15 Dan's description of the relative costs of the various  
16 alternatives is accurate, and I think I'm sure it is,  
17 there's obviously a cost advantage to Nye County and the  
18 other participants, the smaller participants at least, to  
19 going with alternative five and letting the LSNA purchase  
20 the software, et cetera.

21 The disadvantage of that is that we can  
22 essentially do everything we need to do to fully comply with  
23 the LSN rule and have a web site that is loaded and ready to  
24 go and still not have access, still not have total control  
25 over that web site. And thus -- and not have our documents

1 accessible to the public and other participants. And let  
2 me -- to the participants and other public in that order of  
3 priority, because the NRC is not ready to go with its  
4 software, for example.

5 And I don't think that's a remote possibility. I  
6 mean, you know, I can certainly see the commission  
7 stretching out the budgeting on this, you know, et cetera.

8 MR. GRASER: I think I can -- I pledged my first  
9 born on that at the October meeting, if I recall correctly.

10 MR. MURPHY: Yeah. I think you're right, yeah, as  
11 I recall. So -- and I'm guessing, and I wish -- Chris  
12 Berline (phonetic) is not here, and I wish he -- I guess he  
13 had a conflict or something this afternoon and -- but I'm  
14 guessing that the additional cost to us to purchase that  
15 software, the search software or whatever it's called, is  
16 not that significant.

17 MALE VOICE: It's not --

18 MR. MURPHY: Right, yeah. So, you know, with  
19 those considerations in mind, I think my preferred  
20 alternative and the consensus I propose is alternative  
21 number one. It's the simplest, it's the most flexible, the  
22 easiest for us to do. We can all get there the quickest, it  
23 seems to me.

24 And the problems associated with alternative  
25 number one which were displayed for us on the screen, I did

1 not see any problems in that list that are insurmountable,  
2 number one. Or number two, which would detract from our  
3 ability to achieve the original goals of moving toward an  
4 electronic form of discovery, which I think is we have to  
5 keep in mind what we're all about here, why we're doing --  
6 why we started doing this in 1986 in the first place. I  
7 don't see any of the drawbacks associated with alternative  
8 number one which would unreasonably interfere with our  
9 ability to achieve the original goal of the LSS or the LSN.

10 MR. GRASER: Well, and if I could, I would just  
11 like to throw in two cents worth on that issue.

12 You know, there's really probably a grand total of  
13 about a nine month window where, from the point in time  
14 where DOE and NRC's collections are required to be made  
15 available. Then subsequent to that, for a period of I guess  
16 about nine months is really the period of time where the  
17 system is either going to make it or not make it, because  
18 that's when the other participants' collections come on  
19 board. And that's when people are starting to prepare and  
20 starting to prepare and starting to prepare for all the  
21 subsequent activities.

22 And in terms of looking at alternate one, that's  
23 where you have to ask yourself, is that going to be a make  
24 or break software solution during that vulnerable window of  
25 nine months when everybody is -- the documents are all going

1 to be coming out available, people will be using the system.  
2 And you have to ask yourself the question, is the iterative  
3 nature of having to visit multiple sites going to be in any  
4 way detrimental to the ability to adequately perform your  
5 discovery. It's not just the speed of delivering the  
6 documents, it's the power of finding what you need when you  
7 need to find it.

8 So that's just my perspective on alternate one,  
9 but that's my point of view as a techie.

10 MR. MURPHY: That's right. And I just don't think  
11 that's going to be that great a burden. I --

12 MR. GRASER: Okay.

13 MS. NEWBURY: I tend to agree with Mal again. DOE  
14 already has a web site. It already has its collection, it  
15 already has a search engine. And alternative one, it merely  
16 means we move all that out onto the web. We intend to do  
17 that in one way or another whether you layer on alternative  
18 five or alternative three on top of that, but we do have to  
19 provide access and we already are providing access.

20 So I don't know what it buys us, I guess. If it  
21 buys the NRC a lot in that you're happy to search two sites  
22 at once in the first nine months, spend the money, but I  
23 don't know what it truly gets you.

24 MR. HOYLE: Claudia, at the October meeting you  
25 described how your database was working and how people were

1 searching it, and you were describing some difficulties that  
2 people were having searching your database at that time.  
3 And your bottom line was over the next months, years, you  
4 were going to make it more user friendly. Is that the  
5 direction you're moving in now? I mean I hear you say  
6 yes --

7 MS. NEWBURY: Yeah.

8 MR. HOYLE: -- you do have a web page; yes, you do  
9 have documents, but I haven't heard yet how easy they are to  
10 find. Though Steve has used your system and he's found it  
11 okay.

12 MS. NEWBURY: Yeah. What is out there does not  
13 have the search engine that it would have if we moved our  
14 equivalent to our records system, or the information from  
15 the records system out. There are better ways to search  
16 than what is on that, our home page, at the moment that we  
17 would be able to make available. So again, I don't see a  
18 huge advantage to us in moving to a portal type system.

19 MR. HOYLE: Okay.

20 MS. NEWBURY: And we are the other group that  
21 needs to have everything out August of next year.

22 MR. MURPHY: I guess the other point, to address  
23 the concern, Dan, that you and Glen raised, is that I don't  
24 see the participants here in this room -- well, I shouldn't  
25 say ever, but I think it would be extremely rare for us to

1 search all sites. You know, just do sort of a broad search;  
2 I want to see all the documents in all sites associated with  
3 matrix porosity; and thus have to search six sites seriatim,  
4 et cetera, and take that time.

5 In -- it's much more likely that in preparing for  
6 the licensing proceeding we will be searching for particular  
7 documents that we are generally aware of that we know should  
8 be found on the DOE web site. Or DOE will be say, you know,  
9 saying well, you know, Nye County had the EWDP and I can't  
10 find, you know, I thought I had it in my file, the backup,  
11 you know, or some field notes associated with the drilling  
12 in EWDP 19-D, and I can't find it anywhere, so I'm going to  
13 go into the Nye County web site and get it.

14 You know, that kind of stuff is going to go on  
15 much more frequently, it seems to me, than going in and  
16 saying well, you know, I need to look at all the geochemical  
17 documents on everybody's web site, so I have to take Monday  
18 through Wednesday and search everybody's web site in  
19 preparation.

20 Now the potential future participants who aren't  
21 in the room now, you know, they could experience that  
22 problem, but I, you know, it's not our responsibility to  
23 design the system for those folks in the first instance. We  
24 have to make it usable for them, but not go overboard and  
25 spend money unnecessarily to do so, I don't think.

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1 MR. HOYLE: Dan, the nine month window you were  
2 speaking of, when everybody's documents are coming on-line  
3 and there might be an urge at that point for various  
4 participants to look into it, is that because at the end of  
5 nine months the proceeding is about to begin and they're  
6 going to need to have contentions developed, or relatively  
7 soon after that nine months?

8 MR. GRASER: Yeah. I believe that's the number  
9 that sticks in my mind, is when --

10 MR. HOYLE: Okay.

11 MR. GRASER: When you need to start having the  
12 contentions developed, yeah.

13 MR. HOYLE: Okay.

14 MR. MURPHY: But, you know, we know some  
15 contentions we've got already.

16 MR. GRASER: Well, this is true.

17 MR. FRISHMAN: I think that I'm generally agreeing  
18 with the corner over there, which is very embarrassing,  
19 but -- I think that Dan, for your purposes, if you feel like  
20 you have to do something, then three would probably be the  
21 one that meets all the needs, because it's number one with  
22 the redundancy.

23 MR. GRASER: Yes. In essence, well, it's probably  
24 closer to number two with redundancy.

25 MR. FRISHMAN: But it functions as number one.

1 And it functions, you know, in --

2 MR. GRASER: It functions --

3 MR. FRISHMAN: -- through your shop as well.

4 MR. GRASER: It functions better than number one  
5 or number two, because it takes out all of the variability  
6 that's involved in the different result sets and the  
7 different relevancy rankings that users would be getting  
8 from one location to another location. And in terms of  
9 again going back to that section of the rule that says that  
10 I'm the guy who's responsible for insuring the integrity of  
11 the data --

12 MR. FRISHMAN: That's what I mean. If you, you  
13 know, if you can't -- if you think number one doesn't allow  
14 you to meet the rule, then number three is the minimalist  
15 way of doing it and still allowing the function of number  
16 one if anybody -- if someone wants to use it that way.

17 MR. GRASER: I wouldn't characterize number one as  
18 not meeting the rule.

19 MR. FRISHMAN: Okay.

20 MR. GRASER: I would characterize number one as  
21 perhaps providing an inadequate degree of flexibility and  
22 power and simplicity in its fundamental design, so that at  
23 any later time if we needed more flexibility, more power, or  
24 more of anything else, we would not have any -- enough time  
25 to recover from that. So from a conservative design point

1 of view, you over engineer it trying to anticipate what's  
2 going to hit, because world can never guarantee to you that  
3 somebody won't come back at a later time and say well, gee,  
4 now we need more; we need more, we need quicker, we need  
5 faster.

6 So it's just from the designer's point of view, I,  
7 you know, I look at that and I say well, it gives me better  
8 search and retrieval tools than alternate one or two, and  
9 gives me more flexibility. And yes, it does provide its own  
10 backup, so to speak, because the public can still go to the  
11 participant's location or come through the portal site.

12 And one of the advantages of the portal site is  
13 that it also allows us to instill a uniform LSN numbering  
14 sequence on any of the documents, so that for later  
15 reference during the hearing process -- each participant  
16 assigns their own accession number to their own document  
17 collection. And when you get to the hearing process and you  
18 start trying to designate documents as exhibits and  
19 attachments and so forth, you want to be able to make sure  
20 you have a uniform numbering system.

21 There's nothing worse in the world than being  
22 involved in a licensing or litigation action where you've  
23 got six different sets of numbers floating around. It makes  
24 it very difficult to keep track of which end is up.

25 So just from those points of view, I'm more in

1 favor of three. I think they add some value over one. But  
2 I didn't mean to imply that alternate one or two wouldn't  
3 meet the rule.

4 MR. PITTS: So, Dan, under alternate number three,  
5 how long would a participant have to keep their documents  
6 alive?

7 MR. GRASER: You'd have to keep your documents  
8 alive under alternative three, you'd have to keep the  
9 documents out there for the duration.

10 MR. PITTS: So that could be as long as --

11 MR. GRASER: Well, the duration of the license  
12 proceeding, I believe.

13 MR. PITTS: Four years max then?

14 MR. GRASER: Well, four, five, six, or 20. Pick a  
15 number, yeah. Four, five, six, or 20.

16 FEMALE VOICE: Three hundred over here.

17 MR. GRASER: Three hundred.

18 MR. MURPHY: That's another, I mean that --

19 MR. GRASER: Well, sure.

20 MR. MURPHY: That's really stretching it, but if  
21 you wanted to take --

22 MR. GRASER: Carry it out to closure. There's  
23 another license.

24 MR. MURPHY: That's right.

25 MR. GRASER: That's 100 and some years.

1 MR. MURPHY: -- look at construction  
2 authorization, license to even possess, and then closure as  
3 all one process, yeah, we --

4 MR. GRASER: That's 100.

5 MR. MURPHY: We all, you know, there are going to  
6 be a lot of Geritol vodkas. All of us are going to be  
7 meeting in --

8 MR. FRISHMAN: My office will still have the same  
9 server.

10 MR. GRASER: You'll still have the same server,  
11 good.

12 MR. HOYLE: Were you going to --

13 MR. GRASER: So, Steve, I'm trying to take notes  
14 here in terms of identifying who's speaking up on behalf of  
15 which of the alternatives.

16 MR. FRISHMAN: Okay. Well, I'd prefer one, and I  
17 only brought up three in the sense that if you felt you had  
18 to spend the money.

19 MS. TREICHEL: Can be a real burden, you know.

20 MR. GRASER: As long as I spend my money and not  
21 somebody else's money.

22 MR. FRISHMAN: Right.

23 MR. PITTS: The length of time that you would have  
24 to keep your documents is the same for other alternatives as  
25 well.

1 MR. FRISHMAN: Oh, right.

2 MR. HOYLE: Except for under five.

3 MR. FRISHMAN: Yeah. Under five it's --

4 MR. GRASER: Under five they're on the cache.

5 MR. HOYLE: Right.

6 MS. NEWBURY: Do they then become your documents?

7 MR. CAMERON: Some of those documents. I mean we  
8 never --

9 MR. GRASER: The only -- the documents that go  
10 into the NRC records system, they -- into the docket system,  
11 they would become NRC records and they'll fall under NRC  
12 disposition schedules. I don't believe we have a  
13 disposition schedule established for something like  
14 alternative number five. So until I consulted with my  
15 techies back at NRC, I can't say for how long those would  
16 have to be retained. But if they follow suit on most normal  
17 installations, it's probably the life of the facility plus  
18 10 years; right? So that's --

19 MR. CAMERON: The license --

20 MR. GRASER: -- 110 years.

21 MR. MURPHY: What's -- yeah, I've got a question  
22 that just occurred to me. How would, under alternatives  
23 three or five, portals, how would the graphically oriented  
24 material be handled?

25 MR. GRASER: Well, the graphically oriented

1 materials could be stored. It's just what happens to them  
2 when they hit the users desktop.

3 MR. MURPHY: But where are they stored, and whose  
4 responsibility?

5 MR. GRASER: Under alternative five, you could  
6 store those on the portal server.

7 MR. MURPHY: No, no, no. We -- this is the stuff  
8 that can't be stored. This is the -- these are the cores.  
9 This is the cuttings from our drill holes. This -- these  
10 are --

11 MR. GRASER: Oh, you mean physical objects?

12 MR. MURPHY: Yeah.

13 FEMALE VOICE: Just scan them.

14 MR. GRASER: Physical objects --

15 MR. MURPHY: Or not -- yeah. I said graphically,  
16 but yeah.

17 MR. GRASER: Yeah, okay.

18 MALE VOICE: You need a digital camera.

19 MR. MURPHY: The non-electronic.

20 MR. GRASER: I cannot --

21 MR. MURPHY: The stuff we have to put a header on  
22 and say come and ask us for it.

23 MR. GRASER: I couldn't put those on the portal  
24 system any easier than you could put them on your machine.

25 MR. MURPHY: But we -- but under none of the

1 alternatives are we required to physically deliver them to  
2 you?

3 MR. CAMERON: They're supposed to be, if they're  
4 kept by the --

5 MR. GRASER: Made available --

6 MR. CAMERON: -- creator, so to speak, of that  
7 core or whatever it is, then they have to be accessible for  
8 other parties to examine them. So that wouldn't change  
9 under any of these alternatives. That custodian requirement  
10 would still remain.

11 MS. NEWBURY: But that's not true with documents?  
12 If they deliver their documents to the cache, now it's  
13 yours?

14 MR. CAMERON: You mean under alternative five?

15 MS. NEWBURY: Under alternative five.

16 MR. GRASER: It's on an NRC resource machine. I  
17 have to account for it some way. I'm just not able to say  
18 right now what the disposition schedule that would be  
19 assigned to that machine is. But it's just like DOE. If  
20 it's on a DOE machine, it's under my control and I've got to  
21 disposition it somehow.

22 MR. MURPHY: But the document is still physically  
23 located at 1210 East Basin Road in Pahrump, Nevada.

24 MR. GRASER: Yeah.

25 MR. MURPHY: The hard copy of that document is

1 located in Pahrump.

2 MR. GRASER: A version of it is.

3 MR. MURPHY: Are you saying that -- are you saying  
4 then that becomes -- you become sort of the owner of that  
5 document?

6 MR. GRASER: No.

7 MR. MURPHY: And that the ultimate control --

8 MR. GRASER: No.

9 MR. MURPHY: -- over its disposition --

10 MR. GRASER: No.

11 MR. MURPHY: -- because we've dumped it in this  
12 case?

13 MR. GRASER: No. All I'm saying is that before I  
14 can dump it out of the NRC cache I'm going to have to go  
15 back and talk to our records people and see where --

16 MR. MURPHY: Oh, all right.

17 MR. GRASER: -- that stands in terms of being  
18 record material, because I can't take it off of the NRC  
19 resource without it being on a disposition schedule.

20 MR. MURPHY: What if we take it out behind the  
21 building and burn it though under Nevada law?

22 MR. GRASER: Well, then we got the backup machine  
23 to worry about. So you're going to have to destroy two  
24 machines at once.

25 MR. MURPHY: But because it's in your cache

1 doesn't mean it's not subject to Nevada retention of  
2 documents requirements?

3 MR. GRASER: No, because that's only --

4 MR. MURPHY: We can send it to the incinerator  
5 whenever.

6 MR. GRASER: That's only a version that's in my  
7 control. It's still your agency record. You can deal with  
8 that. I mean if you destroyed it --

9 MR. MURPHY: More and more I like number one.

10 MS. JOHNSON: This is Abby Johnson, Eureka County.  
11 I have to leave to catch a plane. I'm okay with one. The  
12 thing I like about five, for those of us that never know  
13 when our funding is going to go away, is despite the  
14 perpetual care cache disposition stuff that was just talked  
15 about, there is some assurance that once we turned it over  
16 to the NRC that it would be maintained, at least as long as  
17 it needed to be maintained. And so that is the -- that is  
18 an attractive feature of five, plus the costs of five.

19 I have a question on five, which is on three, you  
20 talked about the user going to the index and portal, but  
21 there was sort of a back door to each individual site. Now  
22 that's not shown under five. You just have the user with  
23 the one line going to this and this. Is it not also  
24 possible to go like this, or is it --

25 MR. GRASER: That's --

1 MS. JOHNSON: Are these not the same servers?

2 MR. GRASER: That's the discussion we were having  
3 a few minutes back in terms of saying if you put no search  
4 engine --

5 MS. JOHNSON: Yes.

6 MR. GRASER: -- on your machine, even if you  
7 opened up that URL location and somebody came to it, they  
8 would have no mechanism except going through a raw directory  
9 of files. And if those are numbered files that have no  
10 intuitive knowledge, you would have no idea what's inside  
11 those files. It's just like stumbling across an index page  
12 when you're surfing the web right now.

13 MS. JOHNSON: But that would also be true of  
14 three?

15 MR. GRASER: No. In alternative three you would  
16 be able to go into, because in alternative three, the, you  
17 know, well, no. In alternative three you wouldn't  
18 necessarily have to have a search engine. Participant  
19 wouldn't necessarily have to have a search engine in  
20 alternative three; right? We're rebuilding an index.

21 MR. FOSTER: Abby, you're correct.

22 MR. GRASER: You're correct, yeah.

23 MS. JOHNSON: Oh, thank you. Okay.

24 MR. FOSTER: I actually, let me just say that that  
25 is true -- well, I'm not going to speak of four since it's

1 been discarded, but three and five, the -- what users see if  
2 they go around the portal is up to the web -- up to the  
3 participant site itself.

4 MS. JOHNSON: Okay.

5 MR. GRASER: Judy. We're going to hear from Judy.

6 MS. TREICHEL: I would stick with the simplest  
7 one.

8 MR. GRASER: And in your view, the simplest one  
9 is?

10 MS. TREICHEL: One.

11 MR. GRASER: One, okay.

12 MR. HOYLE: Abby and Jason and Dennis, you have  
13 one vote amongst you. You're part of a coalition of local  
14 governments that surround Nye Count.

15 MR. BECHTEL: In the interests of the voting go on  
16 this week, do you want a caucus or --

17 MS. JOHNSON: So does Nye get a separate opinion,  
18 but we don't?

19 MR. BECHTEL: We have the --

20 MS. JOHNSON: Or are we with Nye?

21 MR. HOYLE: Nye County --

22 MR. MURPHY: Yeah, we're the site is county, so we  
23 have special status here, Abby.

24 MR. BECHTEL: Maybe I'll just express my view on  
25 it. I was initially enthralled with five because of the

1 ability, it appears to be able to access information maybe  
2 more readily than say one, now as I understand one, and had  
3 fairly low costs to the participant. But in thinking about  
4 the -- and I think Engelbrecht expressed this about the  
5 commitment that I would be able to make as a county, I -- we  
6 have a system that's analogous to one right now.

7 And I, in thinking about how we would use this,  
8 anything I believe that we might litigate, I mean we're very  
9 interested in being able to access information as readily as  
10 possible, but any item that we would want to litigate I  
11 don't think would be on the system anyway, because a lot of  
12 our issues are not recognized by DOE's issues. So I think  
13 we would be getting information from an independent source  
14 anyway.

15 So in light of that, I would opt for Clark County,  
16 as one of three counties I guess here, opt for one as being  
17 one that I think is probably the most realistic for us to  
18 use.

19 MR. HOYLE: Jason.

20 MR. PITTS: Oh, my gosh. I would say just because  
21 of my work with the northern counties, I think it's going to  
22 be tough for them to commit to having a system, you know, up  
23 for that amount of time. And also, anything that makes  
24 searching easier is going to be beneficial to them as well,  
25 because I'm sure some of them will have part-time attorneys

1 and district attorneys doing the research for any litigation  
2 that they might pursue, which I don't know if they will or  
3 not. And I think five helps out to do that.

4 And I also believe that under five a county like  
5 Nye or Clark could still maintain their independent web site  
6 and choose which documents they preferred to upload to the  
7 NRC site or not. You know, they could keep that on their  
8 site and have a different search algorithm.

9 So I would say in the interest of -- I think  
10 Lincoln County would be fine. We have a web site, we have  
11 our documents on there right now. So I mean I don't think  
12 there's going to be any problem stretching it out for -- I  
13 don't know about 20, but, you know, 3 years certainly.  
14 So -- but I think for like White Pine and Lander and stuff  
15 like that, five's probably more attractive.

16 MS. JOHNSON: Well, is this a voting thing, or is  
17 this a -- what do you --

18 MR. HOYLE: Well --

19 MS. JOHNSON: I mean are you going to take this  
20 into consideration, or what?

21 MR. HOYLE: I would like to leave the meeting with  
22 the ability to go home and write a letter to the commission,  
23 send it to everyone in draft, see if you agree with it, that  
24 would have the position of the panel. It does not have to  
25 be a consensus opinion. I can include minority views, I can

1 include a breadth of information in this letter. But if  
2 there was, you know, one particular alternative that  
3 everyone was kind a focusing in on, that would be the main  
4 one that the letter would show. So that's where I'm coming  
5 from.

6 MR. GRASER: And just so there's no  
7 misunderstanding my position as representing the Nuclear  
8 Regulatory Commission, I think in terms of functional  
9 capabilities to do a potentially very difficult job ahead  
10 for the commission staff and afford them the tools that  
11 would be necessary to help them in doing their job in terms  
12 of reviewing the documents, I think alternative three or  
13 five, either one of those approaches using the portal  
14 software would beset meet the expectations of the NRC  
15 internal user constituency.

16 And then flipping back my other hat, in terms of  
17 being the LSN administrator, in terms of operability of the  
18 system, I'm inclined to favor alternative number three. And  
19 so that's just my straightforward call on those, if you  
20 wanted to know where I stand.

21 MR. HOYLE: Dennis, it seems to me that since  
22 there is a coalition involved, and there's been some slight  
23 difference in views, and there's some counties that aren't  
24 here, I think you should have time to get in touch with  
25 them. I don't want to give you very much time, but you need

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1 several days, I would think. Can you do it by phone?

2 MR. BECHTEL: Well, we have a phone call planned,  
3 a teleconference planned tomorrow on another issue, so we  
4 can probably get back to you, I would imagine, pretty  
5 quickly. I'm not assuring you we're going to reach a  
6 consensus, but we'll do --

7 MR. HOYLE: Well --

8 MR. BECHTEL: -- the best we can.

9 MR. HOYLE: -- whatever. And if you would give  
10 that information then to Dan back at the office.

11 MR. BECHTEL: Okay.

12 MR. HOYLE: Claudia.

13 MS. NEWBURY: The one thing I'd like Dan to get  
14 back with on us too is what is the NRC's position on that  
15 case? Jason alludes to the fact that he expects NRC to  
16 maintain his material out to 20 years, and Dan was not sure  
17 if that would be your material at that point or how it would  
18 be maintained, so you probably would like to check on that.

19 MR. GRASER: Oh, I can check on it, but generally  
20 speaking, I -- it takes the National Archives a couple of  
21 years to schedule something.

22 MS. NEWBURY: Yeah. But if this goes out to 100  
23 or 300 years or whatever it is.

24 MR. GRASER: We've got time; right? What's  
25 another two years here or there.

1 MR. HOYLE: Claudia, what's your concern about  
2 this that you're no longer going to have either any sort of  
3 a hard copy of electronic copy of the documents --

4 MS. NEWBURY: Oh, I will.

5 MR. HOYLE: -- under five?

6 MS. NEWBURY: Oh, I will. I mean DOE's going to  
7 be around forever.

8 MR. GRASER: It's the other parties who --

9 MS. NEWBURY: It's the other parties.

10 MR. GRASER: -- who don't have federal retention  
11 standards.

12 MS. NEWBURY: It's the other parties who are  
13 concerned that they will not be around after three to five  
14 years.

15 MR. GRASER: In other words, how long do they need  
16 to continue making it. If their normal -- in the normal  
17 course of business, if they were to only keep these  
18 materials for five years and all of a sudden there is a  
19 requirement to keep it longer because of something that I'm  
20 doing.

21 MR. CAMERON: Because there may be a different  
22 document universe depending -- of discoverable material for  
23 each license amendment that comes in.

24 MR. GRASER: I can certainly investigate it. And  
25 I think it's safe to say that I could at least get the lay

1 of the land from Brenda Shelton, who's NRC's records  
2 manager. She may be able to narrow things down for us and  
3 say well, in general, records disposition for non-docket  
4 materials that are submitted as -- in support of other  
5 licensing activities but are not included in the docket,  
6 normally NRC handles them this way in a record space, so  
7 they would either fall under this schedule or that schedule.  
8 And if it's this schedule, it's only, you know, the life of  
9 the facility plus 10 years, or if it falls under that  
10 schedule, it might be a different disposition.

11 But the bottom line is that it's materials that  
12 are in NRC's possession, but that are not part of a docket.  
13 And I know the disposition schedules on the docket material,  
14 but you threw me the curve ball on the non-docketed  
15 materials that are now on the machine that's under my  
16 control. I'll investigate that. That's an interesting  
17 question.

18 MS. TREICHEL: I guess I just have a question. If  
19 you go all the way through a licensing process and you  
20 either -- well, I guess it would be grant the license,  
21 wouldn't you keep a record, you, NRC, of everything that had  
22 gone into that decision for whatever time? And are we  
23 discussing items that counties and state and whoever use to  
24 oppose your position?

25 MR. GRASER: Well, again, I can speak to what I

1 know, is that if materials are entered into the docket, and  
2 the docket is the basis for the decision. Am I correct,  
3 Tom? I mean what is in the docket is what is the basis for  
4 any of the decision. Under NRC records retention schedules,  
5 anything that's in the docket has a defined retention  
6 period. So we're a-okay there.

7 The curve ball that came here is that if we are  
8 talking about alternative number five, and not only do I  
9 sweep in an index, but I also grab a copy of the document,  
10 then I grab a copy of the image and I place it on a machine  
11 that's an NRC resource, automated computer system. I can't  
12 take it off the machine until I get a disposition schedule.

13 MS. TREICHEL: Right.

14 MR. GRASER: And it's not docketed material, but  
15 it's not NRC record material, but it's on an NRC machine.  
16 So I'm going to have to get an interpretation on that. But  
17 normally, the things that get retired to the National  
18 Archives are the things that are in the docket. So those  
19 are the ones that would be normally retained.

20 And that's why I had reservations about taking  
21 custody, so to speak, under alternative number five. You  
22 know, I'm now responsible for the long-term disposition of  
23 whatever's going to happen to those documents. And as you  
24 say, they're other people's documents. And now they're  
25 suddenly, you know, I'm the godfather.

1 MR. CAMERON: Just because some of those  
2 documents -- some of those documents are going to make it  
3 into the docket.

4 MR. GRASER: Some will.

5 MR. CAMERON: That the decision is on, and some of  
6 them won't. The ones that don't make it in don't have any  
7 special cache just because of the fact that they were  
8 discoverable documents. They may have that for some other  
9 reason independent of that, because they were NRC memos or  
10 whatever on something else.

11 MR. GRASER: But for the most part, that's an  
12 administrative concern, an administrative issue. And as  
13 Claudia points out, hell, if you're talking in terms of 100  
14 years worth of retention, what's 2 or 3 years to find out  
15 from National Archives how long I need to keep them?

16 MS. TREICHEL: Well, as far as the affected units  
17 of government offices, they're mostly counties. And I would  
18 guess if the funding dried up and they went out of business  
19 most of them answer to their county commissions anyway, so  
20 it would just become county records.

21 MR. GRASER: Well, any records that you may have  
22 had on a computer, they're your own.

23 MS. TREICHEL: Yeah.

24 MR. GRASER: And if you chose to take that  
25 collection down and dispense with it any way that you

1 wanted, sure, that's -- but if those documents were -- if we  
2 were not under scenario five, if you took those documents  
3 down, then they would become unknown to the licensing  
4 support network.

5 MS. TREICHEL: Okay.

6 MR. GRASER: As soon as we went back and rebuilt  
7 the indexes and found that that location no longer had any  
8 documents, then the index at the portal site gets wiped out.  
9 And then the next backup tape, where there's still no  
10 documents at that site, then the backup tape gets wiped out.  
11 So after two cycles of sweeping that site, if those  
12 documents disappear, they are gone to the world.

13 MS. TREICHEL: Yeah.

14 MR. GRASER: But in alternative number five,  
15 that's at that point I can't get rid of things now unless I  
16 get everybody's blessing to get them off an NRC resource  
17 machine. At least that's my understanding. We got a couple  
18 records managers sitting in the back of the audience back  
19 there and they're nodding heads yes and no occasionally, so  
20 I think I'm fairly close to home on that.

21 MR. HOYLE: Steve, I haven't heard your bottom  
22 line. I think I know what it is.

23 MR. GRASER: I think we got your bottom line.

24 MR. FRISHMAN: What did you think it was?

25 MR. GRASER: Alternative one. And if I felt it

1 absolutely necessary three, then three, but --

2 MR. HOYLE: Oh, I just didn't mark --

3 MR. GRASER: But one is the one that you favor;  
4 right?

5 MR. FRISHMAN: Yeah.

6 MR. HOYLE: Sorry.

7 MR. FRISHMAN: What did you think it would be?

8 MR. HOYLE: One.

9 MR. FRISHMAN: Okay.

10 MR. GRASER: I guess you were successful in making  
11 your point, Steve.

12 MR. HOYLE: And DOE is going to let us know after  
13 Dan --

14 MS. NEWBURY: No, I already voted for one.

15 MR. HOYLE: You did vote for one?

16 MS. NEWBURY: Yeah.

17 MR. HOYLE: See how sharp I am.

18 MR. FRISHMAN: Actually, we're just getting an  
19 opportunity to change our votes.

20 MS. NEWBURY: It's so rarely I have an opportunity  
21 to agree with you that I --

22 MR. HOYLE: There are two members of the panel  
23 that aren't present. The nuclear industry has not a  
24 representative here, nor does the National Congress of  
25 American Indians. So I believe I will need to contact both

1 of them with the results that we have now and see if they  
2 wish to join in on this.

3 I've got no one saying okay to two, and three I  
4 have Dan and Steve, if Dan feels strongly.

5 All right. What else do you need from us, Dan?

6 MR. GRASER: Well, I just wanted to put this in a  
7 frame of reference for everybody in terms of walking through  
8 the next steps in the process here so you will understand --

9 MR. HOYLE: Did I get that right? FEMALE VOICE:  
10 Yeah. One and two rose from the ashes.

11 MR. GRASER: There you go. Isn't life strange.

12 MR. HOYLE: Start with bullet two.

13 MR. GRASER: Bullet two, we'll start with bullet  
14 two.

15 I just wanted to kind of fill you in on the next  
16 steps here, what's going to happen with this. As the rule  
17 indicates, I need to take into consideration the opinions  
18 expressed by the advisory review panel. And, you know,  
19 represent those non-consensus type opinions and take them  
20 into full consideration.

21 Now the way that's going to happen is that as I  
22 come back from here, I'm now going to be in a position to  
23 say to the commission of all of the alternatives, the  
24 strongest sentiment was in favor of number five and there  
25 was a secondary level of sentiment for alternative number

1 three. And I'm going to then go back and start to put  
2 together what NRC -- well, first of all, I need to make a  
3 presentation to the NRC's information technology business  
4 council. This is an internal organization that asks me all  
5 sorts of hard questions about did you consider this, did you  
6 consider that, have you coordinated this with other internal  
7 NRC offices, and so forth.

8 And I'll be making that presentation to them on  
9 March 5<sup>th</sup>. And I will be able to represent to them in -- or  
10 March 1<sup>st</sup>, in the March 1<sup>st</sup> meeting, that we have at least  
11 gotten a very good sounding back from the advisory review  
12 panel in terms of the alternatives that they feel we should  
13 be pursuing, the design alternatives.

14 Then we're going to take this information and  
15 we're going to prepare what's called a capital planning and  
16 investment control document. The capital planning and  
17 investment control document is something that's required by  
18 the Information Technology Management Reform Act, ITMRA,  
19 from a few years back. That capital planning and investment  
20 control document is in essence an analysis of benefits and  
21 costs, and also a project management plan.

22 So for people who've been involved in major  
23 projects, they take those two products and they mash them  
24 together. And it forces you to present the business case  
25 for whichever alternatives you're presenting to the

1 commission and examine all of the aspects; here are the  
2 funding aspects, here are the cost aspects of it, here are  
3 the risk factors associated, being able to meet your  
4 schedule, being able to do it within budget, is it going to  
5 fulfill the mission, have you involved stakeholders. You  
6 have to address all of these factors and then present all of  
7 this to NRC's executive council.

8           The executive council reads the document, we give  
9 presentations on it, and at the end of that process they say  
10 to me, okay, we will approve the project. We've looked at  
11 all of the analyses you've done, we've looked at the  
12 projected life cycle costs. We still have a couple of  
13 issues here that we need to work out in terms of your annual  
14 fiscal year budgeting and so forth, but generally you have  
15 the authorization to go ahead and proceed with alternative  
16 A, or alternative B. Or they may in fact come back and say  
17 to me, we, you know, we want you to further explore the  
18 possibility of outsourcing the placement of the server and  
19 so forth, and give us a cost benefit analysis of lease  
20 versus maintain and operate it yourself.

21           So I will do those, and then the commission or the  
22 executive council will come back and give me the  
23 authorization to commence the first phase of the project.  
24 And we have some fiscal year funds still available this  
25 fiscal year which can be used to start the process of

1 designing the system. And we would have to put together a  
2 project management plan, so forth and so on.

3 Now what this means to all of you is that the  
4 internal NRC process has its own set of pitfalls that could  
5 befall us as a project. They could come back and say well,  
6 thank you very much. We're glad you're making this  
7 recommendation, but this is the one we're going to fund.  
8 That can still happen.

9 And if that happens, my intention will be to  
10 communicate back to everybody in the advisory review panel  
11 through John what the results were of the meetings with the  
12 information technology business council, and also any  
13 feedback that we get from the commission in terms of the  
14 options and alternatives that they direct us to implement or  
15 which they say this is what we are willing to fund.

16 And if those differ significantly from the intent  
17 of the desires expressed by the advisory panel, I think you  
18 folks need to know how that decision came to be, you know,  
19 what -- where was it made; why was it made; why, if we  
20 wanted alternative one, how come they said let's do  
21 alternative five; or if we said let's do alternative five,  
22 why did they pick three.

23 And as a result of that process, I'm just giving  
24 you some advance understanding that the commission at the  
25 executive level can come back and give me back marching

1 orders that may not be completely harmonious with the  
2 expressed interests of the advisory review panel. And I  
3 will make every effort to keep you informed of how we get  
4 from point A to point B or point C. Whatever iterations  
5 happen along the way, I will endeavor to keep everybody  
6 informed so that there's no mystery as to understanding how  
7 any decision processes came out in the final end.

8 It may be that the executive council goes ahead  
9 and decides to fund alternative five in full funding and  
10 directs me to go ahead and implement that. And if that's  
11 the case, then I will come back and report to you that  
12 that's what they directed me to do.

13 So that's where all of this goes. The -- you all  
14 understand the next two or three months now is going to be  
15 an internal process where I'm going to be dealing at fairly  
16 high levels within the commission to go ahead and get the  
17 authorization on the project. That's essentially what I  
18 had.

19 The only other issue in terms of the functional  
20 requirements -- I've got functional requirements, bullet  
21 number two, that I was supposed to start off with. The  
22 functional requirements, obviously now if we're going to go  
23 back and either examine alternative one as the number that  
24 most people mention being in support of, or alternative  
25 number five as the second-most mentioned alternative, in

1 either one of those cases I think the functional  
2 requirements are going to need a further round of tailoring.  
3 Especially if you pursue alternative one, the functional  
4 requirements list is going to be cut down extensively.

5 And I would ask that we be allowed to have the  
6 technical working group continue to provide input and review  
7 and commentary on the functional requirements, so I'm asking  
8 the advisory panel to allow us to go ahead and continue  
9 using the technical working group to get the functional  
10 requirements honed in to whichever solution the final letter  
11 recommends back to the commission.

12 MR. HOYLE: Do I hear any objection?

13 MS. NEWBURY: I just have comment. I'd like to  
14 see a little bit different group of people looking at those  
15 functional requirements so we get the functional  
16 requirements that are reflected by the members of this  
17 group. For instance, the State was not a member of the  
18 technical working group, and I'd like to get a little bit  
19 different viewpoint on what the actual functional  
20 requirements are, I guess my point is. Not from a computer  
21 support point of view, but from a user point of view.

22 MR. HOYLE: Dan, you have a methodology for  
23 obtaining that?

24 MR. GRASER: The functional requirements could  
25 certainly be made available to any audience that the ARP

1 chooses to make them available to. Simply, disseminating  
2 them out and asking for the advisory review panel to give me  
3 their comments, given the relatively small number of ARP  
4 individuals, is probably workable. But sooner or later  
5 somebody is going to have to go through and look at  
6 conflicting interpretations of what the functional  
7 requirement is. DOE may have one aspect of a functional  
8 requirement and the State of Nevada may come in and have a  
9 totally different perspective on that, so sooner or later  
10 you're going to have to negotiate and arbitrate what is the  
11 functional requirement.

12 So I could certainly send it out to all of the ARP  
13 members. And if everybody is in perfect harmony, that's  
14 fine. But we shouldn't do it without leaving -- without  
15 having some mechanism for resolving those.

16 MS. NEWBURY: I wasn't suggesting that you not  
17 meet. I was just suggesting that perhaps some additional  
18 people should be in the technical working group during those  
19 discussions.

20 MR. GRASER: Oh, that would be wonderful. That  
21 would be wonderful. Technical working group is open to  
22 anybody that wants to attend.

23 MR. BECHTEL: When do you see the next meeting of  
24 that?

25 MR. GRASER: Well, again, my inclination was that

1 if the functional requirements were going to be focused on a  
2 portal type solution, that we may be able to bring closure  
3 to the functional requirements through e-mail. Obviously if  
4 we're going to be looking at alternative number one, we're  
5 talking about a much scaled back characterization of a  
6 system functionality. And in that regard, then we probably  
7 would need an additional face-to-face meeting at that point  
8 to try to build from the ground up, rather than peel from  
9 the old LSS requirements down.

10 And, you know, if there's a consensus that you  
11 want to have another face-to-face technical working group  
12 meeting out here, I could certainly go back and work towards  
13 scheduling that. I'd be glad to do that, if that's  
14 everybody's opinion. And like I said, if anybody wants to  
15 be involved in that and have representation on it, that  
16 would be a wonderful thing.

17 So shall I take that as a marching order to go out  
18 and propose a calendar date for when we could sit back down  
19 and look at the functional requirements sometime after John  
20 crafts the ARP letter back to NRC in terms of expressing the  
21 intentions of the advisory panel? And then I'll go ahead  
22 and attempt to set up a date, and we'll attempt to do  
23 another round of face-to-face meetings out here with  
24 technical working group members focusing on the functional  
25 requirements for the candidate system.

1 MR. HOYLE: Okay. And, Steve, I do hear Claudia  
2 urging that the State see if they have someone that could  
3 attend?

4 MR. FRISHMAN: Yeah, I caught that.

5 MR. HOYLE: Take a look at the date and whatever  
6 resources.

7 MR. FRISHMAN: Yeah. The last one -- yeah, the  
8 last one I knew was a conflict for me and schedules.

9 MR. HOYLE: Thank you.

10 I'm going to then not suggest any next date for a  
11 ARP meeting until we march along a little further, but I'm  
12 open to suggestions. If you want a marker in the fall or  
13 something, we could do that.

14 MR. GRASER: Well, I think the way things are  
15 getting with the NRC budget as well, that it may be next  
16 fiscal year anyhow before we have enough travel budget to  
17 send out another contingent.

18 MR. HOYLE: Okay. Is there another business from  
19 the members?

20 MR. GRASER: I would just like to just generally  
21 thank everybody today for coming to the ARP meeting. I  
22 would like to thank everybody for your very sincere and  
23 thoughtful comments. I appreciate it very much. And I  
24 promise you I will give them very careful consideration.  
25 Thank you. Thank you very much.

1 MR. HOYLE: Dennis.

2 MR. BECHTEL: Like to just thank Dan and staff.  
3 You obviously, you know, you did a lot of hard work and, you  
4 know, distribute documents in a timely way, and having many  
5 hats, you know, I really appreciate that. So thanks.

6 MR. GRASER: One other note, John. A number of  
7 individuals have mentioned to me that the transcript of the  
8 last ARP meeting didn't make its way around. Some  
9 individuals did not receive copies of the transcript of the  
10 last ARP meeting. And I would just like to let everybody  
11 know that if you don't receive an electronic and/or paper  
12 version of the transcript of the proceedings in about a  
13 week's time or so --

14 MR. HOYLE: Ten days.

15 MR. GRASER: In a week's time or so, that please  
16 let me know. Just send me an e-mail back and say when's the  
17 transcript going to be available, and that will wake me up  
18 and I will make sure that we get the transcripts out to  
19 everybody.

20 MR. HOYLE: Okay. Is there anyone present not at  
21 this table who would like to make a statement?

22 Dr. Nartker.

23 DR. NARTKER: Is this on?

24 MR. GRASER: Absolutely.

25 MR. HOYLE: Yes, sir.

1 DR. NARTKER: I'm Tom Nartker. And I teach at  
2 UNLV, and I also serve on the technical working group a bit.  
3 But I've been sitting listening and I would like to say  
4 something, not as a member of the technical working group,  
5 but as a citizen of Clark County. I have two things to say  
6 and one request to make.

7 First, it seems to me that there -- the scientific  
8 issues involved in Yucca Mountain and in collecting the  
9 information the DOE and NRC and others have collected is  
10 enormous. The complexity is just fantastic. The number of  
11 issues involved and the interrelation of those issues is  
12 beyond any one human individual's capability to digest. And  
13 so we have millions, probably over 10 million pages of  
14 documents to make available, and that complexity is just  
15 enormous.

16 The second point I would make is that for us  
17 citizens of Clark County, important things are going on  
18 here. And this is, you know, the deliberations that are  
19 involved are going to mean things for a long number of years  
20 and are really, really important things.

21 And the third thing I would say is to request that  
22 in the light of this complexity and this importance, that it  
23 bothers me that this panel is so concerned about a few  
24 dollars. I have listened for several hours to people worry  
25 about a plus or minus a few dollars. And we're talking

1 about a very long number of years for us folks in Clark  
2 County and others in Nevada, and I personally don't care if  
3 it costs the Nuclear Regulatory Commission a million  
4 dollars. I don't care if it costs Clark County a million  
5 dollars or more. You can up my taxes. Okay?

6           These are important things, and I think that the  
7 dollars we're talking about are not important. What you  
8 should be talking about is what's the best technology that  
9 can be provided to make this information available. Thank  
10 you.

11           MR. HOYLE: Thank you very much, Dr. Nartker.

12           Any other comment?

13           All right. I'd say we're adjourned then. Thank  
14 you very, very much for your attendance.

15           [Whereupon, at 3:50 p.m., the meeting was  
16 concluded.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

NAME OF PROCEEDING:           LSNARP MEETING

CASE NO:

PLACE OF PROCEEDING:       Las Vegas, NV

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.



Harold Ferguson

Official Reporter

Ann Riley & Associates, Ltd.

**Licensing Support Network Advisory Review Panel  
Public Meeting  
February 23, 2000  
Las Vegas, Nevada**

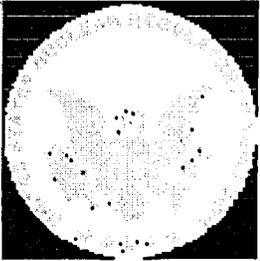
8:30 - 8:45 am	Opening Remarks	John Hoyle
8:45 - 9:00 am	DOE Report on Continuation of Funding For AULGs Through Licensing Process	Claudia Newbury
	Questions/Answers & Discussion	
9:00 - 9:25 am	§2.1004 Clarification on Making Available an Index of Documents Not Placed on Participant External Collection	Chip Cameron
	Questions/Answers & Discussion	
9:25 - 10:00 am	Summary of October & December TWG Meetings	Dan Graser
10:00 - 10:15	Break	
10:15 - 10:30	Overview of Alternatives	Dan Graser
10:30 - 12:00	Alternatives 3, 4 & 5 - Description, Implication And Decision Factors	Glen Foster
12:00 - 1:00	Lunch	
1:00 - 1:45	Questions/ Answers & Discussion on Alternatives 3, 4, & 5	Glen Foster
1:45 - 2:15	General Expenditures Assessment	Dan Graser
2:15 - 2:30	Break	
2:30 - 2:45	Summary & Next Steps Include Plan to Get Closure on Functional Rqmts.	Dan Graser
2:45 - 3:00	Alternatives 1 & 2: Non-Recommendation	Glen Foster
3:00 - 4:30	Panel Discussion and Action on Recommendations	John Hoyle
4:30 - 5:00	Planning, Other Business	John Hoyle

*Licensing Support Network  
Technical Working Group Report*

*Analysis of LSN Design Alternatives*



*February 23, 2000*



# *Technical Working Group Objectives*

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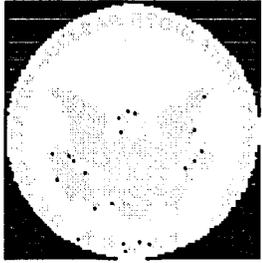
- *Performs any investigation, research, or analysis as is directed by the ARP*
  
- *Provides various products, analyses, presentations, etc., for the ARP for their consideration and possible action*



# *OUTLINE*

- **Summary of October and December Technical Work Group Meetings**
- **Overview of Alternatives**
- **Alternatives 3, 4, and 5 – Description, implications, and decision factors**
- **General Expenditures Assessment**
- **Summary and Next Steps**

*Questions will be entertained at the end of each section*

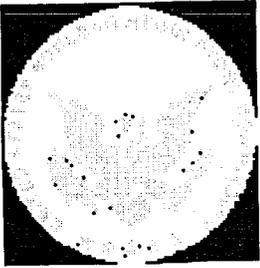


# *TWG Participants*

Dan Graser  
Glen Foster  
John Gandi  
E. v. Tiesenhausen  
Thomas Moore  
Paul Bollwerk  
Jack Whetstine  
Chris Berlien  
Elaine Ezra  
Tony Neville  
Joe Speicher  
Sam Hobbs  
Tom Nartker  
Harvey Spiro  
Harry Leake  
Kazem Taghva  
David Hunt  
Dennis Bechtel  
Jill M. Schrecongost

NRC/ASLBP (301)415-7401  
NRC/Labat (703)598-3759  
DOE/YMP (702)794-1313  
Clark Co (702)455-5184  
NRC/ASLBP (301)415-7465  
NRC/ASLBP (301)415-7454  
NRC/ASLBP (301)415-7391  
Nye Co (702)795-8254  
Nye Co (702)795-8254  
NRC/Labat (703)506-1400x506  
NRC/Labat (703)506-1400x835  
M&O/YMP (702)295-5472  
UNLV-ISRI (702)895-0848  
NRC/OCIO (301)415-5862  
M&O/YMP (702)295-5531  
UNLV-ISRI (702)895-0873  
MTS/YMP (702)794-5571  
Clark Co (702)455-5178  
DOE/YMP (702)794-5436

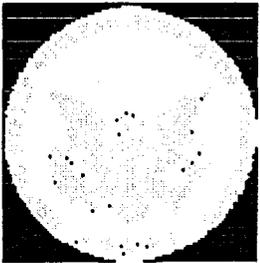
djg2@nrc.gov  
gfoster@gfoster.com  
john\_gandi@ymp.gov  
evt@co.clark.nv.us  
tsm2@nrc.gov  
gpb@nrc.gov  
jgw@nrc.gov  
chris.berlien@terraspectra.com  
elaine.ezra@terraspectra.com  
tony\_neville@labat.com  
joseph\_speicher@labat.com  
sam\_hobbs@ymp.gov  
tom@isri.unlv.edu  
hjs@nrc.gov  
harry\_leake@ymp.gov  
taghva@cs.unlv.edu  
david\_hunt@ymp.gov  
dax@co.clark.nv.us  
Jill\_Schrecongost@notes.ymp.gov



# *October Meeting Accomplishments*

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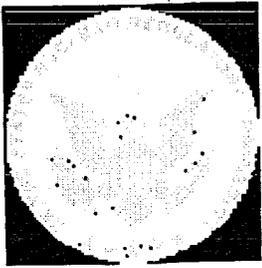
- **Reviewed three alternative LSN technical solutions**
- **Walked through technical description of each of the alternative solutions**
- **Proposed a fourth technical solution (*variant on technical solution 3*)**
- **Considered & Compared:**
  - Integration and Interaction
  - Server performance
  - Text accuracy standards
  - Documentation
  - Performance statistics and documentation
  - Acceptable formats
  - Document management and control
  - Software licensing
  - Search engine performance standards
  - Security
  - Data maintenance
  - Training



# *October Meeting Action Items*

## **LSN Functional Requirements – Items and assigned responsibilities:**

- Revised version of Functional Requirements (NRC)
- Recommendations for bibliographic headers (NRC)
- Detailed descriptions for the two (now three) viable alternatives (NRC-LABAT)
- Ballpark pricing estimates for the two (now three) viable alternatives (NRC- LABAT)
- Portal software vendors. Identify if any of them operate on non-NT systems (e.g, UNIX?) (NRC)
- Applicability of data mining tools (NRC)
- Experience of DOE/ES&H performance statistics from their portal site. (NRC)
- Records packages and issues to be addressed



# *December Meeting Accomplishments*

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## ■ **Defined Mission of System:**

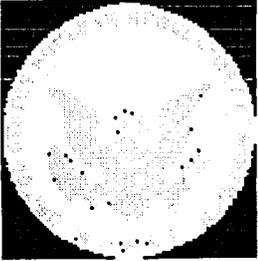
- Web-based system—providing all documents uniformly
- Independent compliance auditing
- Ensure system performance

## ■ **Defined Key Attributes of System:**

- LSNA control of system
- Timely availability of the system
- Highest performance at reasonable cost.

## ■ **A fifth solution proposed (portal with enhanced central storage)**

## ■ **Focus on bandwidth as an important and difficult issue**



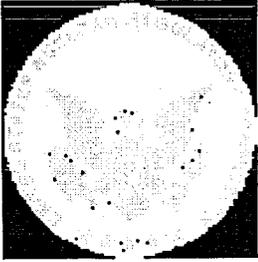
# *Additional Activities*

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## **Nevada Public Libraries -**

*“All public library systems in Nevada provide Internet access to the public, including library branches in outlying suburban areas as well as rural and remote libraries. So if your documents are available on the Internet, Nevadans will have access to them. Libraries in all of the areas you mentioned provide access to Internet. You'll find a directory listing of all Nevada libraries and the hours during which they are open on our Departmental website at [dmla.clan.lib.nv.us](http://dmla.clan.lib.nv.us) (click on Nevada State Library and Archives, then on Nevada Library Directory and Statistics).”*

**Bonnie Buckley,  
Library Planning and Development  
Nevada State Library & Archives**



# *Additional Activities*

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## ■ **LSN Functional Requirements**

- **48 Core Requirements Identified**

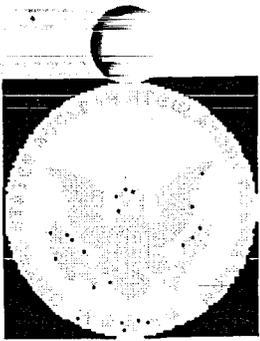
- **Attributes of Central Mainframe Scrubbed Out**

- **Reviewed by TWG**



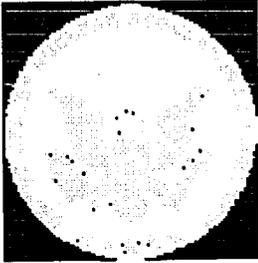
# ***OUTLINE***

- Summary of October and December Technical Work Group Meetings**
- Overview of Alternatives**
  - Alternatives 3, 4, and 5 – Description, implications, and decision factors**
  - General Expenditures Assessment**
  - Summary and Next Steps**



# *Overview of Alternatives*

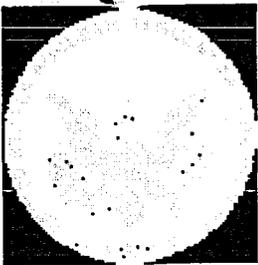
- ① **Simplified** - *Just Link Everyone's URL*
- ② **Moderate** - *Central Search Interface*
- ③ **Portal fed by distributed participant web sites** (*remote storage*)
- ④ **Portal fed by distributed participant web sites on campus** (*proximate storage*)
- ⑤ **Portal with enhanced central storage fed by distributed participant web sites**



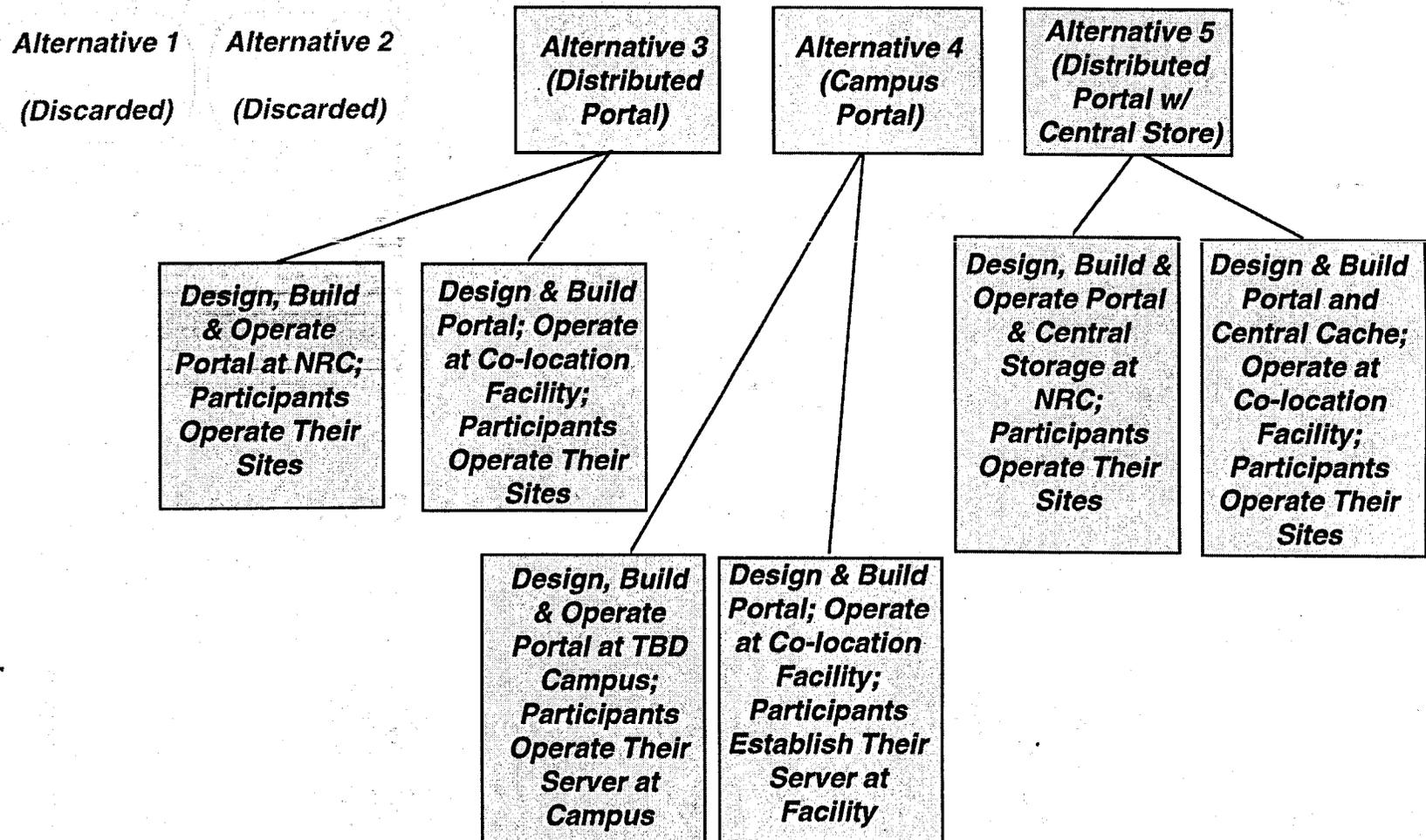
# *Options for Implementing Alternatives*

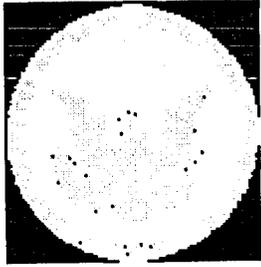
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- Operate ourselves vs. outsourcing
- **Campus** – a location where each participant's server is housed in close proximity. Participants cooperate on shared resources; servers/storage are connected via a LAN.
- **Co-location Facility** – buy standard equipment and install at a commercial, full service computer installation. They provide connectivity, security, backup, etc., for standard fee.



# Options for Implementing Alternatives





## *Common Aspects for Alternatives 3, 4, and 5*

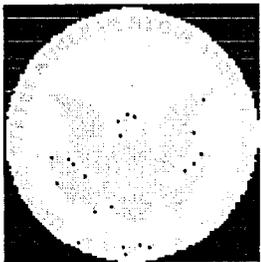
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- **Portal-based user interface**
- **Audit system for LSNA**
- **Use NRC EIE for motions practice and ADAMS for docket**
- **Web-based system**
- **Participant to establish web site presence**
- **Standard file formats**



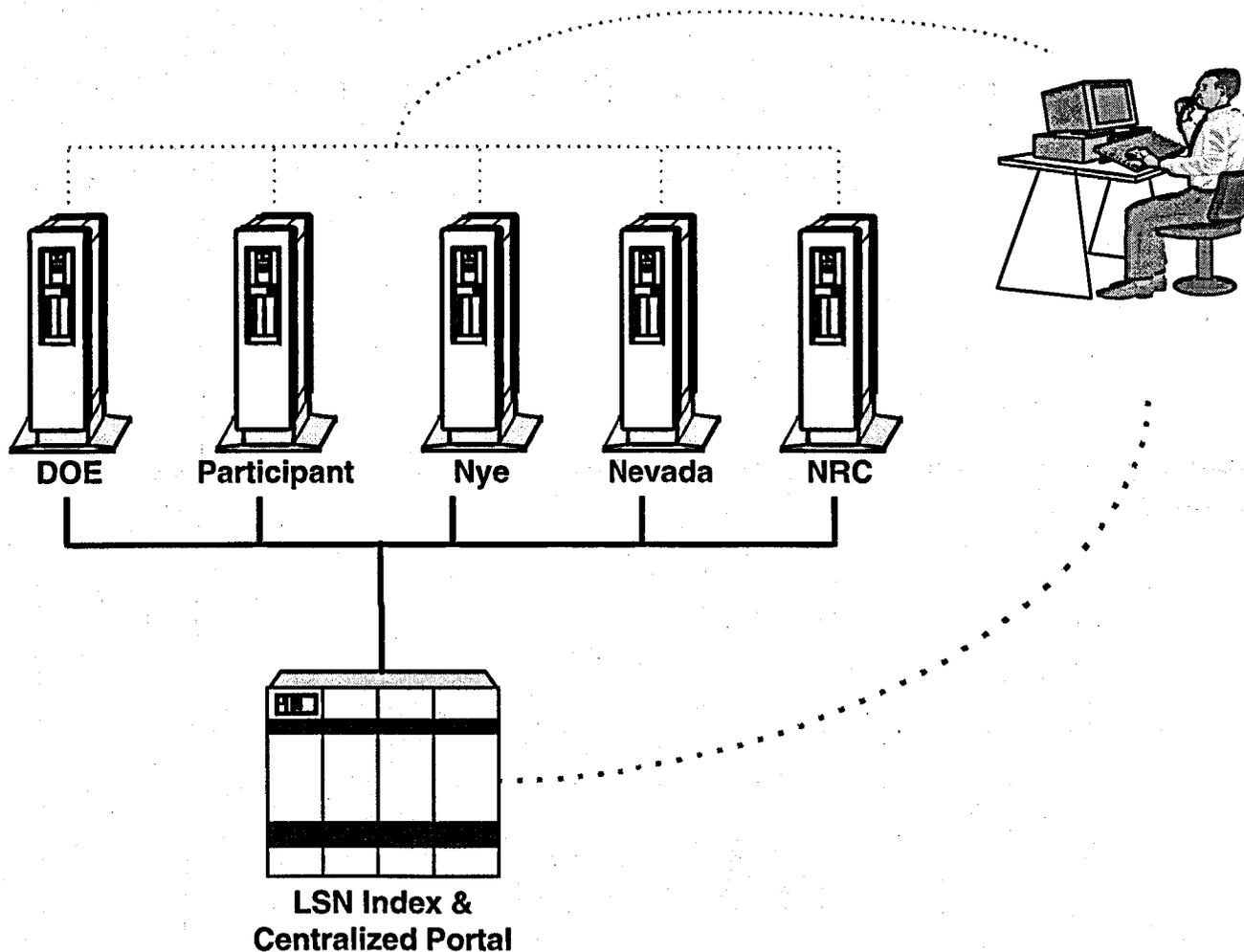
# *OUTLINE*

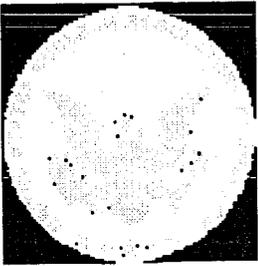
- Summary of October and December Technical Work Group Meetings**
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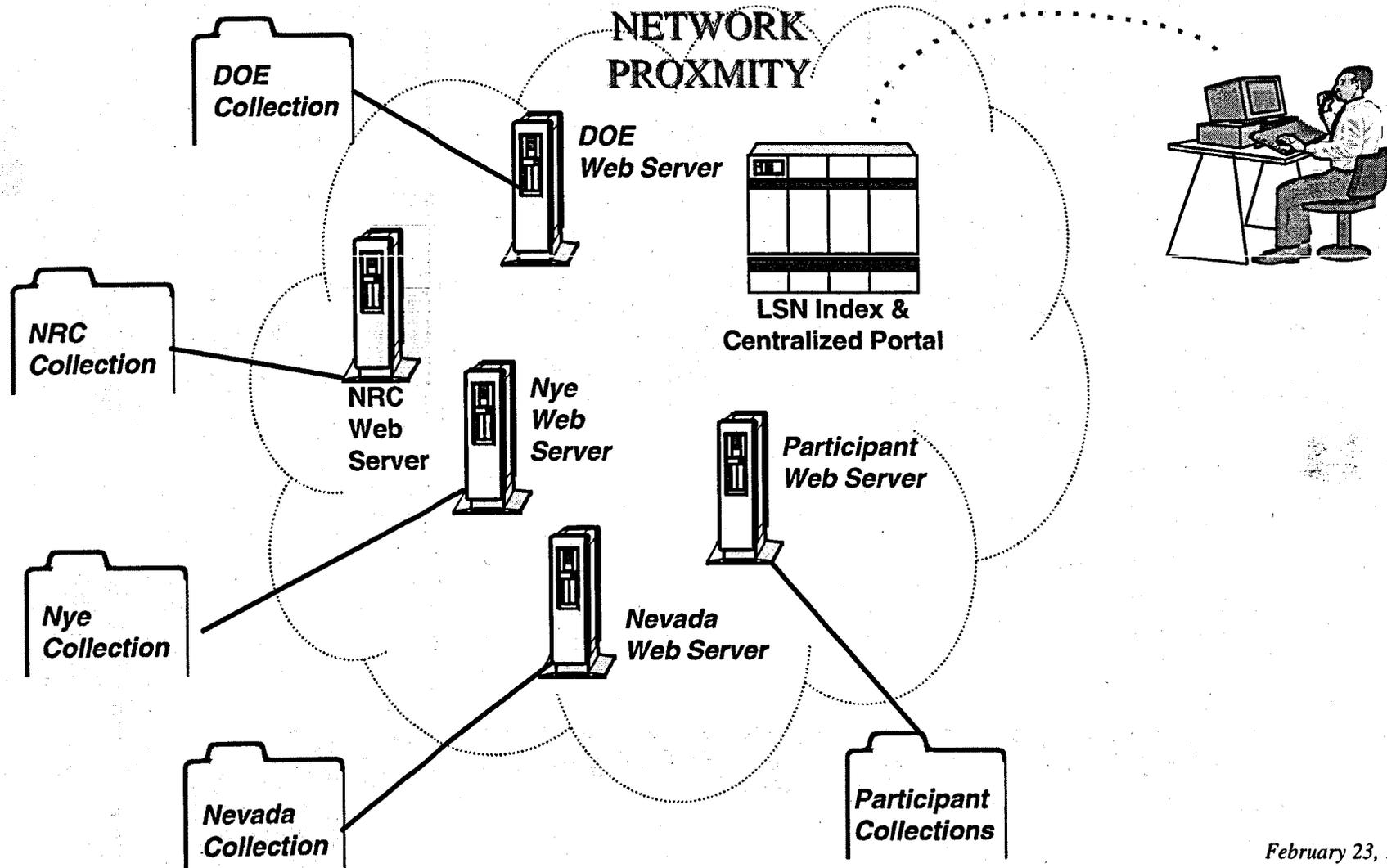
# Alternative 3 Schematic

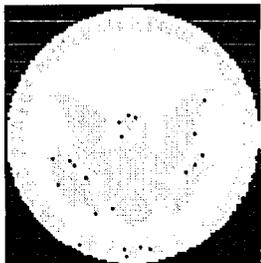
**WEB  
SERVERS**



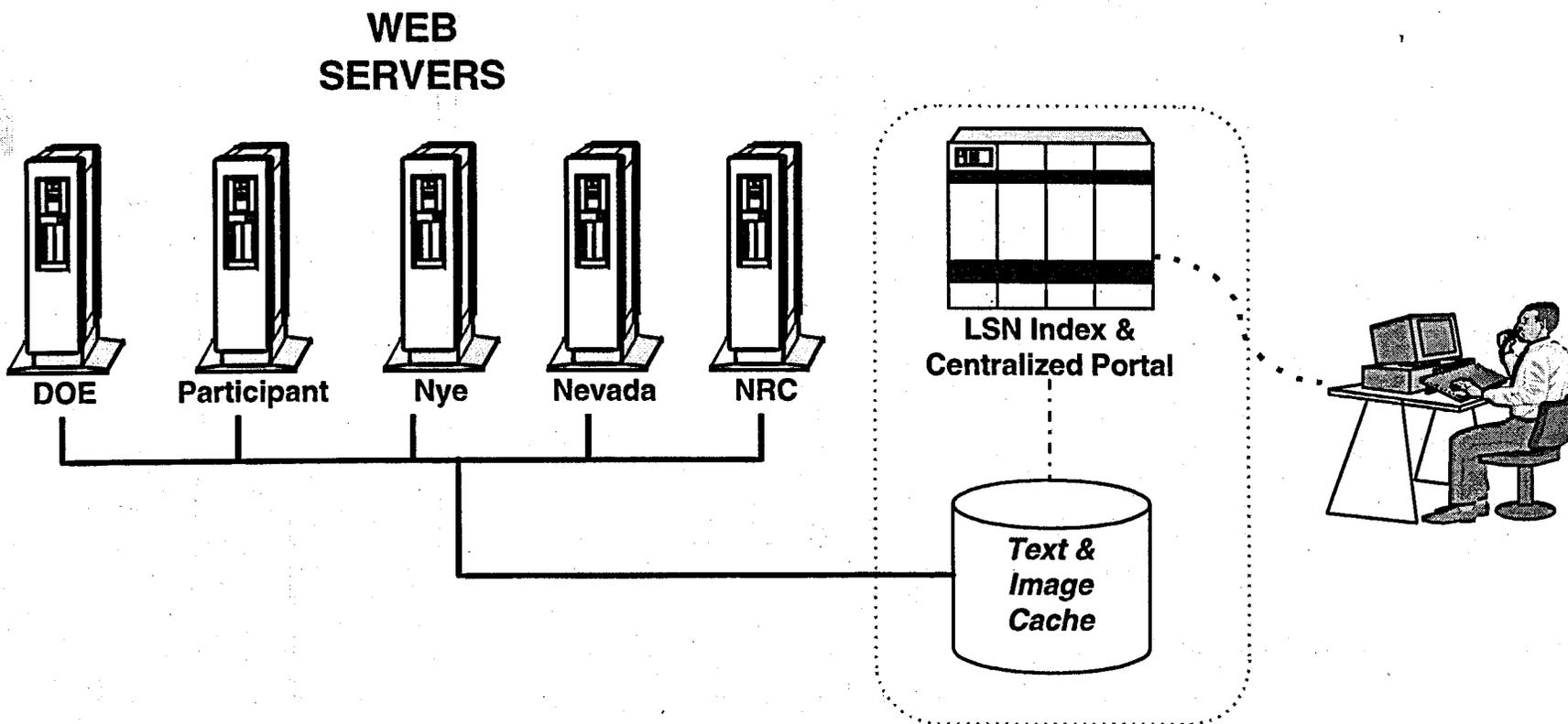


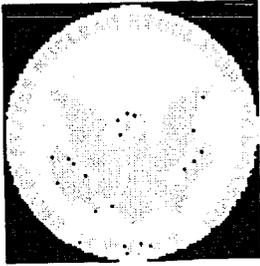
# Alternative 4 Schematic





# Alternative 5 Schematic



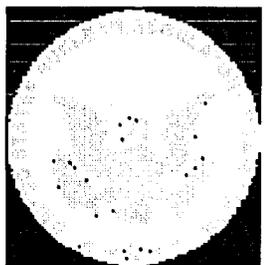


# *Alternative 3: Distributed Portal/ Remote Storage*

**DESCRIPTION:** *Remote portal software indexes files that are maintained by participants at their sites*

## **IMPLICATIONS:**

- **Participant roles**
  - Critical role for ensuring availability and performance
    - ✓ Portal provides some availability aspects
    - ✓ Participant ensures file delivery and bandwidth
- **Ease of use**
  - Very flexible: users may customize desktop/interface
  - Consistent query screen/results
  - Highest level of availability: portal & participant sites independently available
  - Response time performance can be variable
  - Image & text delivery depends on participant resources

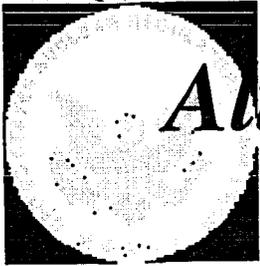


## *Alternative 3: Distributed Portal/ Remote Storage (continued)*

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### **DECISION FACTORS:**

- **LSNA administrative control**
  - LSNA controls search, interface, security, and access
  - Monitoring and tuning tools provided
  - Fetching text files and image files is constrained
- **Risks**
  - **Design complexity:** Moderate to higher schedule risk of participants being operational to support licensing and moderate schedule risk for LSNA to have operational for licensing
  - **Integration issues:** Moderate implementation complexity risk to participants and moderate complexity of integration risk for LSNA
- **Costs**
  - Lowest cost for the NRC
  - Variable cost burden to participants to do system administration and data management

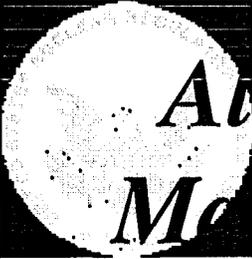


# *Alternative 4: Campus Portal/Participant Maintained Proximate Storage*

**DESCRIPTION:** *Portal software indexes files maintained by participant web servers located at central site*

**IMPLICATIONS:**

- **Participant roles**
  - Ensures file delivery, but not bandwidth
  - Remote administration required
  - Responsible for availability and performance
  - Responsible for a portion of the shared campus costs
  
- **Ease of use**
  - Very flexible: users may freely customize desktop/interface
  - Consistent query screen
  - Lower level of availability
  - Response characteristics are predictable
  - Image and text delivery depends on participant resources

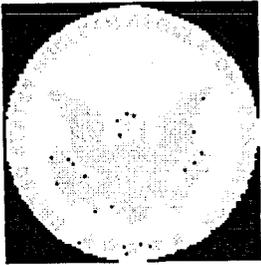


# *Alternative 4: Campus Portal/Participant Maintained Proximate Storage (continued)*

---

## **DECISION FACTORS:**

- **LSNA administrative control**
  - LSNA controls search, interface, security, and access
  - Monitoring and tuning tools provided
- **Risks**
  - **Design complexity:** Higher schedule risk of participants being operational to support licensing and moderate-to-high schedule risk for LSNA to have operational for licensing
  - **Integration issues:** Moderate-to-high implementation complexity risk to participants and LSNA
- **Costs**
  - Moderate cost to the NRC
  - Variable cost burden to participants to perform system administration and data management (*some presence at the central site is required*)



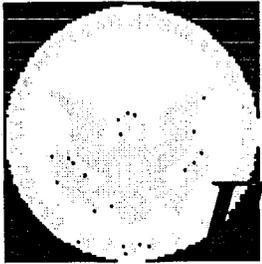
## *Alternative 5: Distributed Portal/ Enhanced Central Storage*

### **DESCRIPTION:**

*Remote portal software indexes files maintained by participants at their sites. Portal, with enhanced central storage, maintains copy of participant site. Local cache ensures timely delivery to user.*

### **IMPLICATIONS:**

- **Participant Roles**
  - Decreased requirement for system management
  - No 24 X 7 availability requirement
- **Ease of use**
  - Very flexible: users can tailor desktop/interface
  - Consistent query screen
  - Highest level of availability
  - Response characteristics are predictable



# *Alternative 5: Distributed Portal/ Enhanced Central Storage (continued)*

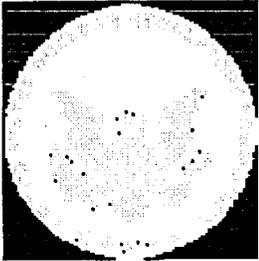
## **DECISION FACTORS:**

- **LSNA Administrative Control**
  - LSNA controls search, interface, security, and access
  - Enhanced monitoring and tuning tools provided
  - Assured interface performance and assured file delivery performance
- **Risks**
  - **Design complexity:** Higher schedule risk of participants being operational to support licensing, and moderate-to-high schedule risk for LSNA to have operational for licensing
  - **Integration issues:** Low implementation complexity risk to participants and moderate-to-high integration risk to LSNA
  - LSNA bears responsibility for accuracy/availability of participant documents
- **Costs**
  - Highest cost to the NRC
  - Lowest (operational) cost burden to participants



# *OUTLINE*

- ☑ **Summary of October and December Technical Work Group Meetings**
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# Cost to Establish Web Presence

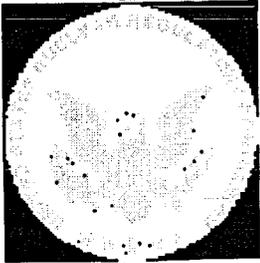
ALTERNATIVES
3
4
5

Cost Factor*	< 1,000 Pages	1,000 – 10,000 Pages	> 10,000 Pages
Web server implementation	500 – 5,000	1,000 – 50,000	20,000+
Maintenance and administration (annual)	5,000 – 10,000	5,000 – 15,000	10,000+
Communications (annual)	600 – 12,000	3,000 – 18,000	6,000+
Web server implementation	500 – 5,000	1,000 – 50,000	20,000+
Maintenance and administration (annual)**	30,000 – 60,000	30,000 – 90,000	60,000+
Communications (annual)	100 – 2,000	100 – 2,000	100 – 2,000
Web server implementation	500 – 5,000	1,000 – 50,000	20,000+
Maintenance and administration (annual)	5,000 – 10,000	5,000 – 15,000	10,000+
Communications (annual)	600 – 4,000	1,200 – 6,000	6,000+

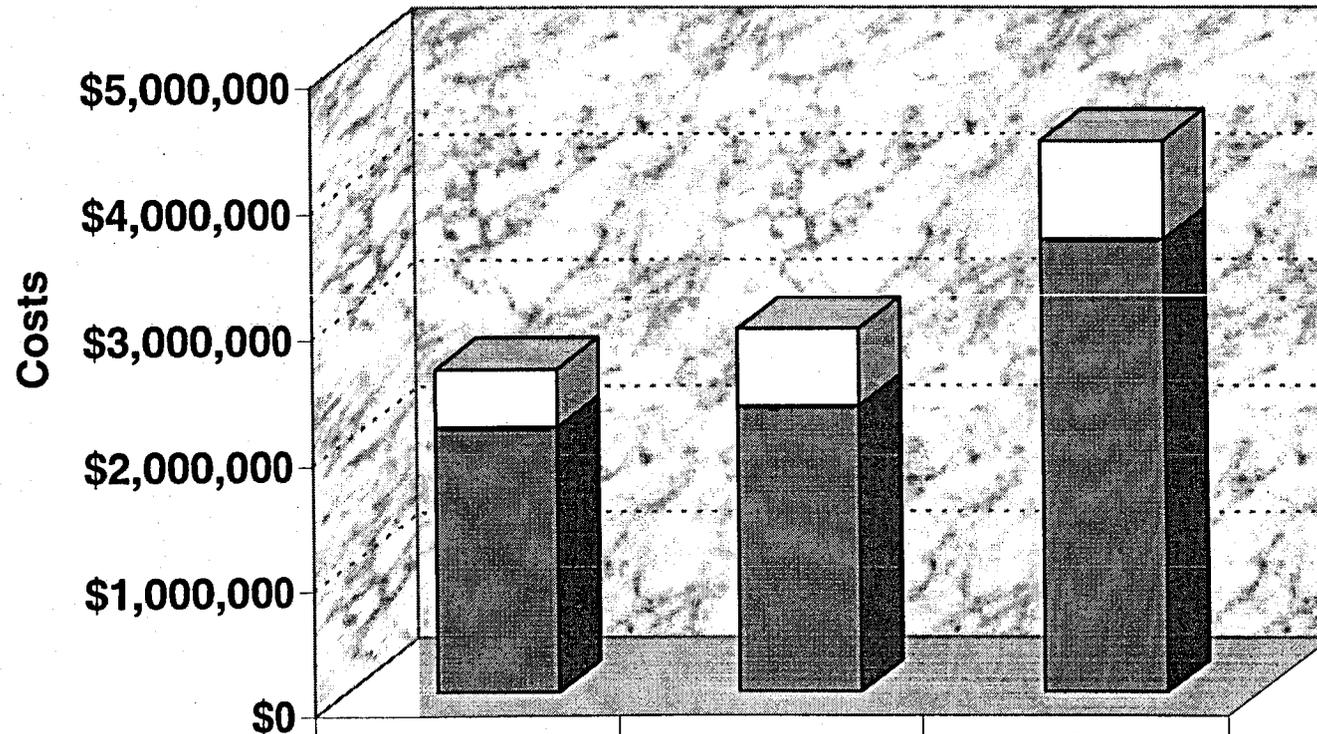
Table presents reasonable cost ranges only. Upper range of costs may be significantly higher.

\* Document conversion costs will be significant and are predicated on size and type of collection

\*\* Includes partial FTEs



# General Expenditures Assessment Among Alternatives 3, 4, and 5



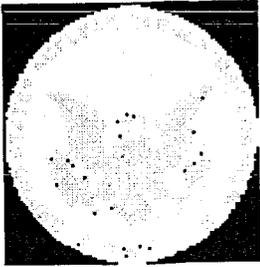
Alternative Number	3	4	5
□ Annual Recurring Costs*	\$459,000	\$611,000	\$784,000
■ One-time costs	\$2,115,000	\$2,280,000	\$3,601,000
<b>Total:</b>	<b>\$2,574,000</b>	<b>\$2,891,000</b>	<b>\$4,385,000</b>

Consists of LSNA portion only  
 Travel costs not included  
 NOT a quotation – for general use only  
 \* First year



# ***OUTLINE***

- Summary of October and December Technical Work Group Meetings**
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# *Decision Factors*

**Bandwidth /  
Performance**

**Alternatives 4 & 5 Provide Single  
Throttle Point for Better Control**

**Design Simplicity to LSNA:**

**Alternative 3 Least Complex**

**Design Simplicity to  
Participant:**

**Alternative 5 Least Complex**

**Location Constraining:**

**Alternative 4 Requires Parties to Agree  
on Single Facility to Place Their Equipment**

**Completion Schedule  
Risk to LSNA:**

**Alternative 3 Least Amount of Hardware &  
Software Acquisition and Integration**

**Document  
Integrity / Availability:**

**Alternatives 3 & 4 Parties Accountable;  
Alternative 5 LSNA Ultimately Accountable**

**Financial Administration:**

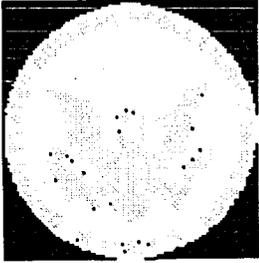
**Alternative 4 Requires Cost Allocation Structure**

**Cost to Participant:**

**Alternative 5 is Lowest**

**Cost to LSNA:**

**Alternative 3 is Lowest**



# *Next Steps*

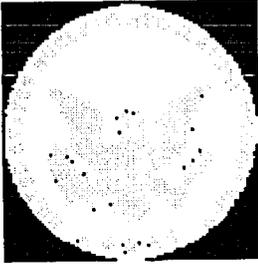
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- **Seek LSNARP Endorsement or Consensus Preference**
  - Discard of alternatives 1 and 2
  - Achieve consensus among alternatives 3, 4, and 5
- **Finalize Functional Requirements**
- **LSN Administrator Prepares Capital Planning and Investment Control (CPIC) Document**
- **Present CPIC with LSNARP's Advice to NRC's Executive Council**
- **Notify LSNARP of EC Approval or Decision**



# APPENDIX

## *Alternatives 1 and 2 – Strategies and Final Findings*



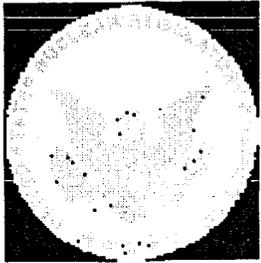
# *Alternative 1: Simplified Strategy*

---

**DESCRIPTION:** *Homepage with pointers to other home pages*

**IMPLICATIONS:**

- **Participant roles**
  - Each participant maintains fully capable storage, search, and retrieval capability
  - Participant is totally responsible for availability, performance, and bandwidth
  -
- **Ease of use**
  - Difficult for users to tailor desktop/interface
  - Difficult to use: multiple interfaces, one per collection/server
  - Alternative availability: if one participant is “down,” the rest are still available
  - Response time performance is variable
  - Overall performance is variable

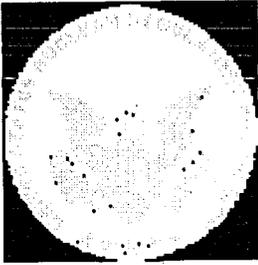


# *Alternative 1: Simplified Strategy (continued)*

---

## **DECISION FACTORS:**

- **LSNA administrative control**
  - Participant site variety means LSNA has no systematic control
  - LSNA unable to respond quickly to performance problems
  - Certification of integrity requires:
    - ✓ Heavy auditing
    - ✓ Highly structured guidelines and procedures
  
- **Risks**
  - **Design complexity:** Low schedule risk of having ready for licensing; moderate schedule risk of participants being operational to support licensing
  - **Integration issues:** Low implementation complexity risk to participants and low complexity of integration risk
  
- **Costs**
  - Lowest cost to NRC
  - Low cost burden to participants

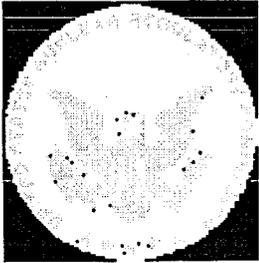


# *Alternative 1 Findings*

**DESCRIPTION:** *Homepage with pointers to other home pages*

- **Why alternative 1 does not meet requirements:**
  - Too complex for users
  - User interface not consistent
  - Too difficult to navigate
  - Not possible to aggregate information
  - Not versatile
  - Does not meet needs of large, complex discovery system
  - Potentially excludes some participants and "tilts the playing field" for others.

***ALTERNATIVE 1 is not  
recommended to the LSNARP***



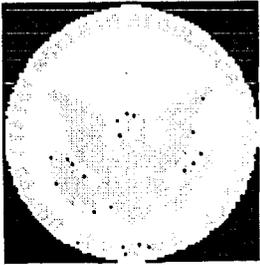
## *Alternative 2: Moderate Strategy*

---

**DESCRIPTION:** *Centralized search interface*

**IMPLICATIONS:**

- **Participant roles**
  - Each participant maintains fully capable storage, search, and retrieval capability
  - Participant is totally responsible for availability and performance, but relieved of search interface
- **Ease of use**
  - Relatively inflexible: difficult for users to tailor desktop/interface
  - Consistent query screen
  - Alternative availability: if one participant is “down,” the rest are still available
  - Response time performance is variable
  - Overall performance is variable

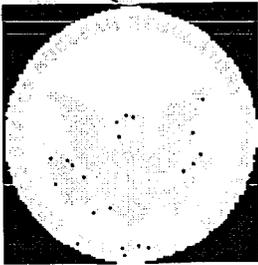


## *Alternative 2: Moderate Strategy (continued)*

---

### **DECISION FACTORS:**

- **LSNA administrative control**
  - Rudimentary LSNA control on interface and searching
  - LSNA unable to respond quickly to performance problems
  - Certification of integrity requires:
    - ✓ Heavy auditing
    - ✓ Highly structured guidelines and procedures
- **Risks**
  - **Design complexity:** Moderately low schedule risk of having ready for licensing; high schedule risk of participants being operational to support licensing
  - **Integration issues:** Low implementation complexity risk to participants and moderately low complexity of integration risk
- **Costs**
  - Low cost to NRC
  - Variable cost burden to participants to perform system administration

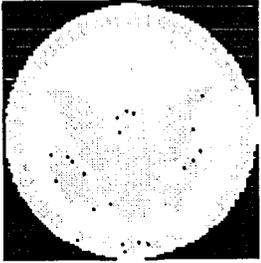


## *Alternative 2 Findings*

### **DESCRIPTION:** *Centralized search interface*

#### ■ **Why Alternative 2 does not meet requirements:**

- Interleaving result sets while preserving "relevancy" will not be easy
- HTML forms query must be supported by each of the underlying sites (and this could be problematic to those participants on a leased site)
- Use of multiple search engines detracts from the consistency of retrieval results
- Reduces the overall capability to a level on par with the least capable search software provided by any single participant
- Thesauri may not be supported
- Increasing the required level of sophistication to meet basic functions will levy requirements on participants to provide some search engine capabilities at their site.



## *Alternative 2 Findings (continued)*

---

- **Why Alternative 2 does not meet requirements (*continued*):**
  - "Lowest common denominator" effect may actually increase cost by requiring additional query tools and strategies, additional user assistance and documentation, increase the requirement for vocabulary management, and require significant customization.
  - Poses greatest risk (of obtaining inappropriate query results) to the least skilled users
  - While it appeared initially to be a less costly approach to implementing the LSN, by the time that the required additional features were added, it would approach or exceed the cost of simply purchasing the portal approach presented in technical solution 3.
  - Agreement was reached that Alternative 2 would not be recommended to the full LSNARP.

***ALTERNATIVE 2 is not  
recommended to the LSNARP***



Licensing Support Network  
Advisory Review Panel (LSNARP)

February 23, 2000

**Licensing Support Network  
Advisory Review Panel (LSNARP)  
February 23, 2000  
Index**

Agenda

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**Licensing Support Network Advisory Review Panel**  
**Technical Working Group Meetings**  
**October 12, 14, and 15**

**October 12, 1999**

Attending:

Dan Graser	NRC/ASLBP	(301)415-7401	<a href="mailto:dig2@nrc.gov">dig2@nrc.gov</a>
Glen Foster	NRC/Labat	(703)598-3759	<a href="mailto:gfooster@gfooster.com">gfooster@gfooster.com</a>
John Gandi	DOE/YMP	(702)794-1313	<a href="mailto:john_gandi@ymp.gov">john_gandi@ymp.gov</a>
E. v. Tiesenhausen	Clark Co	(702)455-5184	<a href="mailto:evt@co.clark.nv.us">evt@co.clark.nv.us</a>
Thomas Moore	NRC/ASLBP	(301)415-7465	<a href="mailto:tsm2@nrc.gov">tsm2@nrc.gov</a>
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Tom Nartker	UNLV-ISRI	(702)895-0848	<a href="mailto:tom@isri.unlv.edu">tom@isri.unlv.edu</a>
Harvey Spiro	NRC/OCIO	(301)415-5862	<a href="mailto:hjs@nrc.gov">hjs@nrc.gov</a>

At the kickoff meeting of the technical working group, each TWG attendee was provided a copy of the binder containing the handouts that would be used at the ARP meeting on 10/13/1999. Dan Graser of the NRC listed the following agenda:

- A. TWG Ground Rules, Charter & Objectives
- B. Survey Results
- C. LSN Project Schedule and Gantt Chart
- D. Three General Scenarios (correspond to level of integration)
- E. Plan for two working days after the ARP meeting

He noted that the TWG operated as an extension of the full LSNARP as per the charter included in the binder. (Binder Tab D) The TWG meetings are informal and anyone who has an interest in the technical aspects of the system is invited to attend or have a representative present. The TWG performs any investigation, research, or analysis as is directed by the full ARP, and provides various products, analyses, presentations, etc., back to the ARP for their consideration and possible action. He noted that additional TWG meetings will likely occur. These will be held in Las Vegas to minimize the scheduling requirements of the majority of the participants.

There was a brief overview of results received to date (Binder Tab E) to the LSNA's survey of the participant/potential participant/AULG's current Internet availability and future plans. Dan Graser noted that in general those responding seemed to demonstrate a high degree of sophistication and understanding of Internet technologies.

It was stated that the volume of documentary material does not seem to be as difficult to manage as before, partly because of advances in technology and partly because changes in the

rule affect the scope of the collections. Current projections of the amounts of documentary material to be handled in the LSN will probably have to be modified as the design progresses.

DOE noted that the overall licensing strategy that DOE intends to follow has not yet been determined. In light of this it was noted that the Topical Guidelines would likely be modified to more closely coincide with DOE's licensing approach.

There was a brief overview of the LSN Project Schedule based on the Gantt Chart (Binder Tab F). Dan Graser noted that this was a strawman and that many of the tasks and time frames following the recommendation of a solution to NRC's Executive Council were speculative, and would have to be revised in order to reflect any recommended/selected solution to meet LSN functionality. He explained the NRC Capital Planning and Investment Control (CPIC) process, and its impact on the preliminary project schedule. DOE offered to assist in the CPIC process with documentation, justification, or other assistance. Dan explained that the work of the TWG comprised much of the required CPIC documentation. He noted that the project timeline demonstrated that work needs to begin now if there is any hope of meeting a July 2001 readiness date. He also noted that the schedule indicated the need for access to some participant collection materials in order to test the system connectivity and performance and that those documents would need to be available before the actual date of availability required in the rule.

DOE indicated that they were exploring the possibility of significant modifications to their DBMS that housed their bibliographic headers. This was discussed with the ramifications of changes in "mid-stream" being pointed out. Dan Graser stated that he was receptive to necessary changes but that the schedule should be considered in making them.

There was a high level characterization of three scenarios that would be briefed to the ARP in full session and NRC indicated that the task of the TWG was to explore the technical feasibility of those approaches and additionally to iterate those solutions or propose other approaches that would then be fleshed out, priced out, and presented in an analysis to the full ARP.

There was a general discussion about how to go about reviewing the three strawman solutions when the TWG began its meetings on Thursday. Additional background materials were handed out to the TWG members, including:

- Screen shots of a DOE/ES&H portal site at <http://www.tis.eh.doe.gov/portal>
- Graphic showing participant commitment/expanding functionality of 3 systems
- Matrix of 3 systems (coverage, website functionality, software functionality, hardware functionality, and communications functionality of each approach)
- LSN Standards of Performance Issues
- Compilation of 1995 LSS functional requirements (Level 1 & 2) with preliminary commentary

The electronic information exchange (EIE) submission process was explained with a discussion of the issues surrounding secure document transfer. It was noted that the docket submission would use NRC EIE standard practices. It was also noted that EIE scheduling considerations were not specifically addressed in the project schedule.

Several additional areas that the TWG will address were outlined:

- Functional Requirements
  - How they will change

- How they will apply - must support mission
- Who is responsible for determining them - LSNA; but presiding officer can adjust if necessary
- Necessity of functional requirements being in place before LSN design goes forward
- Bibliographic Headers
- Document Packages solution

**October 14, 1999**

Attending:

Dan Graser	NRC/ASLBP	(301)415-7401	<a href="mailto:dig2@nrc.gov">dig2@nrc.gov</a>
Glen Foster	NRC/Labat	(703)598-3759	<a href="mailto:gfooster@gfoster.com">gfooster@gfoster.com</a>
Lew Robertson	MTS/YMP	(702)794-5077	<a href="mailto:lew_robertson@ymp.gov">lew_robertson@ymp.gov</a>
Tom Nartker	UNLV-ISRI	(702)895-0848	<a href="mailto:tom@isri.unlv.edu">tom@isri.unlv.edu</a>
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Kazem Taghva	UNLV-ISRI	(702)895-0873	<a href="mailto:taghva@cs.unlv.edu">taghva@cs.unlv.edu</a>
Harvey Spiro	NRC/OCIO	(301)415-5862	<a href="mailto:hjs@nrc.gov">hjs@nrc.gov</a>
Thomas Moore	NRC/ASLBP	(301)415-7465	<a href="mailto:tsm2@nrc.gov">tsm2@nrc.gov</a>
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Sam Hobbs	M&O/YMP	(702)295-5472	<a href="mailto:sam_hobbs@ymp.gov">sam_hobbs@ymp.gov</a>
David Hunt	MTS/YMP	(702)794-5571	<a href="mailto:david_hunt@ymp.gov">david_hunt@ymp.gov</a>
John Gandi	DOE/YMP	(702)794-1313	<a href="mailto:john_gandi@ymp.gov">john_gandi@ymp.gov</a>
Dennis Bechtel	Clark Co	(702)455-5178	<a href="mailto:dax@co.clark.nv.us">dax@co.clark.nv.us</a>

Glen Foster of Labat-Anderson (supporting the LSN Administrator) began the session with a walk through technical description of each of the alternative scenarios and emphasized that all the approaches considered will have to be able to be "plugged into" by NRC software used to audit the content and performance of individual participant sites.

The group generally discussed scenario A, which was characterized as a relatively non-complex development of a web page that provides links to the various sites. In this scenario, questions were raised about the possible need for participants to enhance their sites by the addition of a navigational tool that would return the user back to the portal location in order to move to other collections for searching. Additionally, this approach provided no backup capability for the various participant sites other than what they would provide themselves. The TWG felt that this approach left too many of the perceived functional requirements not addressed. It was also noted that for the typical user, and especially for members of the general public, that the burden of having to learn perhaps 6 or 8 different search engines would become onerous. A final observation is that scenario A gives indirect benefit to some participants, but not to others in that it can only be optimized by those who can afford to pay for intermediaries.

A general consensus was reached that scenario A did not meet requirements for the following reasons:

- Too complex for users
- Too difficult to navigate
- Not possible to aggregate information

- User interface not consistent
- Not versatile
- Does not meet needs of large, complex discovery system
- Potentially excludes some participants and "tilts the playing field" for others.

Agreement was reached that scenario A would not be recommended to the full LSNARP.

The group discussed scenario B, a medium complexity effort which was characterized as being similar to a central portal page where queries may be launched against individual participant sites, and where the result sets from the individual sites are subsequently merged back together for presentation to the user. It was noted that the distinguishing characteristic of scenario B's front end is a "meta search" capability. This is similar to multi-engine or multi-site searches such as are found at <http://www.allonsearch.com/> or <http://www.dogpile.com/custom/index.html>.

It was noted that this scenario may have difficulty in maintaining any relevancy ranking as the portal site attempted to merge results sets back because each participant's site may use different software and rely on different methodologies to determine relevance. Not merging the result sets may lead to multiple partitions of returns, one for each participant site. It was also noted that having multiple underlying data files, some being structured headers while others were unstructured text searches, could result in a user having to launch separate searches against all headers, and then another against all text, and that customization may be needed to allow searchers the ability to use both header and text attributes in a single search. Without this integration, it was noted that searches against these different types of source collections (header or text) could result in different and perhaps inconsistent results being generated. Dr. Nartker expressed the opinion that the sheer volume of documentary material would make a meta search difficult and discussed information retrieval techniques to aid in searching such as thesaurus expansion. He then pointed out that thesaurus expansion would not aid a meta search capability because it increases the size of the result set. He expressed the opinion that query refinement and customization was a necessary tool for accurate searching.

Observations included: 1) that interleaving result sets while preserving the relative position of each document's "relevance" will not be easy; 2) that HTML forms query must be supported by each of the underlying sites (and this could be problematic to those participants on a leased site); 3) that the use of multiple search engines detracts from the consistency of retrieval results; 4) that it reduces the overall capability to a level on par with the least capable software searching provided by any single participant (e.g., some of the sites may not support phrase searches, proximity searching, or combinations of boolean, making the whole system rely on just keywords and resulting in the same 100,000 DOE records showing up on every hit list); 5) that thesauri may not be supported; and, 6) that increasing the required level of sophistication to meet basic functions will levy requirements on participants to provide some search engine capabilities at their site. In this discussion it was noted that the "lowest common denominator" effect may actually increase cost by requiring additional query tools and strategies, additional user assistance and documentation, increase the requirement for vocabulary management, and require significant customization. It was noted that the greatest risk (of obtaining inappropriate query results) was going to be to the less skilled users. In a brief analysis of the cost implications of this strategy, it was noted that while it appeared initially to be a less costly approach to implementing the LSN, that by the time that the required additional features were added, it would approach or exceed the cost of simply purchasing the portal approach presented in scenario C. It was noted that this may be a "good enough" approach to supporting

some of the core requirements of the LSN if the implementation becomes cost constrained. It was also noted that the adoption of scenario B would almost certainly extend the implementation schedule to address the issue of inter-operation and integration of participant search engines with the web site.

Prior to the next discussion, Dan Graser provided a description of one (of many) portal software products he had the opportunity to study prior to the ARP meeting. In that software product, the portal has its own underlying SQL database and full text indexes built from data extracted from target sites. The software he saw had an additional feature of building in a "data dictionary" that kept track of the different field naming conventions encountered in each target collection. This approach allows the portal site to present a single user interface to do search and retrievals. It also allows the participants' sites to act as a backup should the portal site become inoperative (by a user going directly to the participant's homepage), and, allows the portal to continue to identify (but not retrieve) the existence of a document even if the participant's site is temporarily inaccessible. He noted that he attended a Delphi Consulting Group seminar on portals and the business is dominated by perhaps only 4-6 companies with current, deployed, and competitive software.

The concept of a portal was discussed and the roles of its different elements outlined. Its utility as a central caching and replication mechanism was covered. "Gadgets" and "connectors" as middle-ware were defined and their role in a portal's operation explained.

Note to TWG members: Here are two sources mentioning alternative products:

"... most corporate portal vendors we've talked to mention that one of their primary competitors is Plumtree. This means that Plumtree right now is the company to beat in this space. Vendors who offer similar types of content management capabilities are startups Glyphica, KnowledgeTrack, and 2Bridge. . . Viador. . . Sequoia and DataChannel. . . SAP, PeopleSoft, Lawson. . . Netscape and Yahoo! . . ."<sup>1</sup>

"... Pointcast. . . Dataware. . . OpenText Livelink. . . Viador. . . Verity's Search97 / Agent Server / Knowledge Organizer. . ."<sup>2</sup>

The group discussed scenario C, a significant complexity effort which is represented by a home page supported by its own databases and indexes compiled as a result of software "crawling" each of the participants' sites. In this approach, typified by <http://www.tis.eh.doe.gov/portal/> each participant's web-accessible (outside the firewall) collection may use any number of software management systems for structured data (bibliographic) and unstructured data (text and images) under the operational control of the participant. The LSN portal software scans through these collections and builds its own index to structured data or its own index to text terms found at one of the target sites. Options within this scenario include making decisions about the level to which the system is developed. With more memory, the system can cache the most frequently used files (text or image) right on the portal machine in order to speed response time, but this increases the amount of memory that needs to be stored. The portal could be used to store other media types, such as full motion video or audio files. A decision is

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<sup>1</sup>Patricia Seybold Group. "Plumtree Blossoms: New Version Fulfills Enterprise Portal Requirements", in Information Assets: Transforming Information into Profits, June 23, 1999. P.9.

<sup>2</sup>Molly Lyman of Project Performance Corporation.

required about how much replication would be needed (how much is enough) and what type of replication would be best if the participant sites are not relied upon as the equivalent of "hot site" backup. It was noted that the integration of so much functionality within a single entity would significantly increase its importance and would require a higher standard for availability and reliability.

The issue of priority access led to a discussion of whether the participants' servers' URLs could be hidden so that all users went through the LSN portal in order to access the collections. This would be the only way that service could be prioritized to the participants during the hearing process. DOE indicated that they would support that, but it was unknown as to whether the smaller parties could or would be willing/able to support that approach, especially if they used commercial services. However, with URLs hidden, if any participant's site goes down, then there is no alternative to the portal. This may or may not be a problem, since the LSNA has identified that it is the portal availability and the docket machine host availability that are counted towards "system availability" for meeting a 3 year hearing process. Conversely, if the portal site is not available, then none of the other systems are available, again, because their URLs are hidden. NRC noted that priority access was not supported in the one brand of portal software they looked at.

In this approach, it was noted that the portal software gives insight into the IP address of the other sites it is targeting. The group explored the concept of using a VPN (Virtual Private Network) approach in order to establish dedicated bandwidth between participant locations and the portal. In this approach, security access policies between the participant are established to allow a communications tunnel between sites to be established by use of a second firewall "outside" each site and then using that firewall's software to control the communication channels. The ability of participant using third-party commercial suppliers to implement this is problematic. Much discussion focused on the issue of bandwidth that must be provided between the LSN portal site and each of the participant sites. In addition to bandwidth being an issue (especially during the process of the participant site being "webcrawled"), a sensitivity analysis on the size of the collections, the server platform being used (or, their ISP's capability), might be a worthwhile activity.

Dr. Nartker of UNLV made note of the capabilities of some of the software products they have been evaluating for DOE/YMP, with special emphasis on the Excalibur™ software package. Excalibur provides a capability to establish a uniform software base across multiple sites and it then handles the process of running a distributed query against each site in the enterprise network. It was noted, however, that this would require that all participants license the same software - which would require the LSNA to issue mandates for use well beyond what the LSNA is currently prepared to propose or request. Additionally, this would require all participants to purchase, install, and populate within about a 20 month window and this was deemed non-viable.

Given the variability between participant managed sites and participants who are hosted at an ISP or IVP, it was noted that the LSNA should consider developing classes of standards and guidelines, especially in the areas of security, backup, and recovery. This discussion led to a request that perhaps there should also be classes of standards applied to the other areas of the standards of performance.

DOE representatives proposed a variant on scenario C, in which participants would send their documents to the portal site and allow the portal site to act as the LSN host machine for those

are known as peering agreements. There are several very comprehensive lists of ISPs world-wide available on the Web.

An ISP is also sometimes referred to as an IAP (Internet access provider). ISP is sometimes used as an abbreviation for independent service provider to distinguish a service provider that is an independent, separate company from a telephone company.

**URL** A URL (Uniform Resource Locator) (pronounced YU-AHR-EHL or, in some quarters, UHRL) is the address of a file (resource) accessible on the Internet. The type of resource depends on the Internet application protocol. Using the World Wide Web's protocol, the Hypertext Transfer Protocol (HTTP), the resource can be an HTML page (like the one you're reading), an image file, a program such as a CGI application or Java applet, or any other file supported by HTTP. The URL contains the name of the protocol required to access the resource, a domain name that identifies a specific computer on the Internet, and a hierarchical description of a file location on the computer.

On the Web (which uses the Hypertext Transfer Protocol), an example of a URL is:

<http://www.mhrcc.org/kingston>

which describes a Web page to be accessed with an HTTP (Web browser) application that is located on a computer named `www.mhrcc.org`. The specific file is in the directory named `/kingston` and is the default page in that directory (which, on this computer, happens to be named `index.html`).

An HTTP URL can be for any Web page, not just a home page, or any individual file. For example, this URL would bring you the `whatis.com` logo image:

<http://whatis.com/whatisAnim2.gif>

A URL for a program such as a forms-handling CGI script written in Perl might look like this:

<http://whatis.com/cgi-bin/comments.pl>

A URL for a file meant to be downloaded would require that the "ftp" protocol be specified like this one:

<ftp://www.somecompany.com/whitepapers/widgets.ps>

A URL is a type of URI (Uniform Resource Identifier).

**VPN** A virtual private network (VPN) is a private data network that makes use of the public telecommunication infrastructure, maintaining privacy through the use of a tunneling protocol and security procedures. A virtual private network can be contrasted with a system of owned or leased lines that can only be used by one company. The idea of the VPN is to give the company the same capabilities at much lower cost by using the shared public infrastructure rather than a private one. Phone companies have provided secure shared resources for voice messages. A virtual private network makes it possible

to have the same secure sharing of public resources for data. Companies today are looking at using a private virtual network for both extranets and wide-area intranets.

Using a virtual private network involves encrypting data before sending it through the public network and decrypting it at the receiving end. An additional level of security involves encrypting not only the data but also the originating and receiving network addresses. Microsoft, 3Com, and several other companies have proposed a standard protocol, the Point-to-Point Tunneling Protocol (PPTP) and Microsoft has built the protocol into its Windows NT server. VPN software such as Microsoft's PPTP support as well as security software would usually be installed on a company's firewall server.

## GLOSSARY

**ASP** An application service provider (ASP) is a company that offers individuals or enterprises access over the Internet to application programs and related services that would otherwise have to be located in their own personal or enterprise computers. Sometimes referred to as "apps-on-tap," ASP services are expected to become an important alternative, especially for smaller companies with low budgets for information technology. Early applications tend to be generalized and include:

- Remote access serving for the users of an enterprise
- An off-premises local area network (LAN) to which mobile users can be connected, with a common file server
- Specialized applications that would be expensive to install and maintain within your own company or on your own computer

Hewlett-Packard, SAP, and Qwest have formed one of the first major alliances for providing ASP services. They plan to make SAP's popular R/3 applications available at "cybercenters" that will serve the applications to other companies. Microsoft is allowing some companies to offer its BackOffice products, including SQL Server, Exchange and Windows NT Server on a rental, pay-as-you-use basis.

While ASPs are forecast to provide applications and services to small enterprises and individuals on a pay-per-use or yearly license basis, larger corporations are essentially providing their own ASP service in-house, moving applications off personal computers (referred to as thin clients) and putting them on a special kind of application server that is designed to handle the stripped-down kind of thin client workstation. This allows an enterprise to reassert the central control over application cost and usage that corporations formerly had in the period prior to the advent of the PC. Microsoft's Terminal Server and Citrix's WinFrame products are leading thin-client application server products.

**DVD** DVD (digital versatile disk) is an optical disk technology that is expected to rapidly replace the CD-ROM disk (as well as the audio compact disc) over the next few years. The digital versatile disk (DVD) holds 4.7 gigabytes of information on one of its two sides, or enough for a 133-minute movie. With two layers on each of its two sides, it will hold up to 17 gigabytes of video, audio, or other information. (Compare this to the current CD-ROM disk of the same physical size, holding 600 megabytes. The DVD can hold more than 28 times as much information!)

DVD-Video is the usual name for the DVD format designed for full-length movies and is a box that will work with your television set. DVD-ROM is the name of the player that will (sooner or later) replace your computer's CD-ROM. It will play regular CD-ROM disks as well as DVD-ROM disks. DVD-RAM is the writeable version. DVD-Audio is a player designed to replace your compact disc player.

DVD uses the MPEG-2 file and compression standard. MPEG-2 images have four times the resolution of MPEG-1 images and can be delivered at 60 interlaced fields per second where two fields constitute one image frame. (MPEG-1 can deliver 30

noninterlaced frames per second.) Audio quality on DVD is comparable to that of current audio compact disks.

**HTML** HTML (Hypertext Markup Language) is the set of "markup" symbols or codes inserted in a file intended for display on a World Wide Web browser. The markup tells the Web browser how to display a Web page's words and images for the user. The individual markup codes are referred to as elements (but many people also refer to them as tags).

HTML is a standard recommended by the World Wide Web Consortium (W3C) and adhered to by the major browsers, Microsoft's Internet Explorer and Netscape's Navigator, which also provide some additional non-standard codes. The current version of HTML is HTML 4. However, both Internet Explorer and Netscape implement some features differently and provide non-standard extensions. Web developers using the more advanced features of HTML 4 may have to design pages for both browsers and send out the appropriate version to a user. Significant features in HTML 4 are sometimes described in general as dynamic HTML. What is sometimes referred to as HTML 5 is an extensible form of HTML called XHTML.

**HTML Forms** Web forms let a reader return information to a Web server for some action. For example, suppose you collect names and email addresses so you can email some information to people who request it. For each person who enters his or her name and address, you need some information to be sent and the respondent's particulars added to a data base.

This processing of incoming data is usually handled by a script or program written in Perl or another language that manipulates text, files, and information. If you cannot write a program or script for your incoming information, you need to find someone who can do this for you.

The forms themselves are not hard to code. They follow the same constructs as other HTML tags. What could be difficult is the program or script that takes the information submitted in a form and processes it. Because of the need for specialized scripts to handle the incoming form information, fill-out forms are not discussed in this primer.

**ISP** An ISP (Internet service provider) is a company that provides individuals and other companies access to the Internet and other related services such as Web site building and hosting. An ISP has the equipment and the telecommunication line access required to have points-of-presence on the Internet for the geographic area served. The larger ISPs have their own high-speed leased lines so that they are less dependent on the telecommunication providers and can provide better service to their customers. Among the largest national and regional ISPs are AT&T WorldNet, IBM Global Network, MCI, Netcom, UUNet, and PSINet.

They also include thousands of local providers. In addition, Internet users can also get access through online service providers (OSPs) such as America Online and CompuServe.

The larger ISPs interconnect with each other through MAEs (ISP switching centers run by MCI WorldCom) or similar centers. The arrangements they make to exchange traffic

either precision or recall. It was noted that dirty data can generate text file index clutter up to five times greater than with relatively clean data; dirty indexes could affect the user's confidence in the retrievability of a document and it could affect relevancy ranking if the term occurrence is the methodology used to generate a relevancy ranking on short documents. It was also noted that in later tests, it was demonstrated that text accuracy did not significantly affect precision or recall in the retrieval of documents under 10 pages in length, either. Scanning from film is not as good as scanning from paper. Xerox™ OCR is best at decolumnizing scanned tables.

The group agreed that all participants would need to adhere to standards (to be developed) for data representation, packaging, and indexing. The LSNA noted that the 1992 bibliographic header list has to be examined and revised with an eye to adjusting to the web environment and possible simplification.

**Documentation** - In both scenarios C and D, documentation burdens are similar, focusing mostly on configuration management and exchange standards, although configuration management documentation on ISP or ASP hosts will not be a realistic expectation.

**Performance statistics and documentation** - In both scenarios C and D, participant server and portal server statistics would represent the same level of complexity to an audit server and its software. It was noted that in a clustered configuration (scenario D) that the performance statistics may be difficult to segregate because the servers are coupled.

**Acceptable formats** - There was discussion as to the acceptable formats versus what some participants were already using. NRC's docket environment will require TIFF or PDF submissions. DOE is using TIFF, JPG encoded TIFF, ascii, PDF, and HTML.

**Document management and control** - It was recognized that both scenarios C and D will require the TWG to devise a solution to participant number and records packaging. The issue of NRC/Portal accession numbers and participant accession numbers and how to link them on a unified site was discussed. It was noted that this may require custom code.

**Software licensing** - Option C will impose licensing requirements (to varying degrees) on all participants who host their own sites, or, the cost of hosting on an ISP or ASP host machine. Option D focuses the cost of licenses almost exclusively on the portal location and would therefore require a cost accounting/billing system to be put in place by the LSNA in order to ensure that each participant pays their share-cost. It is problematic to get these proceeds back into the NWF since the only mechanism that the NWPA-AA provides is the 1 mil per kilowatt hour levy against consumers of reactor generated power. Scenario C adds license costs over those incurred in scenario D because of the added costs that would be needed to secure the VPN channels.

**Search engine performance standards** - Under both scenarios, the portal software should react with similar performance based on the platform horsepower. However, it was noted that under scenario C, individual retrievals of text and image files from the participants' file servers might be slower because of the number of calls being made back and forth between the portal and the sites. In either case, a realistic performance metric needs to be developed that considers the impact of the search engines hitting against some collections with only scores of pages while other collections could have well in excess of a million pages of material. Under scenario C, the performance standards of the participant servers must be viewed in the context of those machines possibly being the backup resource should the portal site not be operational.

**Security** - in both scenarios, physical security will have to be levied on the participants to ensure that "write-protection" is available to the server on which their collection resides. It was evident that the consensus was that no reduction of standards in this area should be considered. Digital signature certificates need to be secured for all electronic document submittal transactions to the docket (this will be provided by NRC LRAA).

**Data maintenance** - in scenario C, this is clearly provided by the participants on their own collections and by the LSNA on the portal indexes. In scenario D, the entire burden falls upon the LSNA.

**Training** - The issue of training was discussed with the consensus being that there is little difference between scenario C and scenario D as far as training was concerned.

### **ACTION ITEMS**

Action items and assigned responsibilities are as follows:

1. Develop a strawman revised version of Functional and Performance Requirements (including scenario C & D server performance specifications) for a Web-based LSN system (NRC).
2. Develop recommendations on changes to bibliographic headers (NRC)
3. Develop more detailed descriptions for the two viable alternatives (NRC-Labat)
4. Develop ballpark pricing estimates for the two viable alternatives (NRC-Labat)
5. Identify portal software vendors. Identify if any of them operate on non-NT systems (e.g. UNIX?) (NRC)
6. Explore tools used for corporate data mining and find out if any of them have multi-repository and web-based products. (NRC)
7. Contact DOE/ES&H to determine if performance statistics are kept on their portal site. (NRC)
8. TWG needs to address records packages and participant document numbering strategies.

The following items will be prepared for the ARP some time after the TWG reviews the above material and provides additional input.

- A technical alternative decision tree
- A chart showing salient factors of and differences between the alternatives
- Cost profiles for each alternative

It was agreed that NRC would take the lead in drafting meeting minutes, that the draft would be circulated to all TWG members for additional comments or input, NRC would finalize the minutes and then distribute the minutes to the entire TWG and ARP mailing lists.

collections since the portal software was going to build indexes to structured and unstructured text anyhow. Transmission of data could be accomplished by high density transfer media such as DVDs. They stated that their total collection for this purpose would be about 200GB in size and consist of approximately 200,000 documents. It was noted that configuration management with the DOE scenario could be an issue, and that the DOE scenario moves responsibility for ultimate provision of DOE materials from the DOE to the NRC. However, the DOE proposal would not affect the "front end" aspects of the system.

DOE representatives were asked to develop a writeup of a fourth proposed alternative - scenario D.

**October 15, 1999**

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DOE representatives delivered a summary writeup of a fourth proposed alternative - scenario D. In this alternative, a tightly controlled site holding both NRC and DOE licensing documents is established at the NRC. It expands the capabilities of the other proposed solutions in that both DOE and NRC licensing documents would be held in local storage and the remaining participants documents would be replicated and cached as needed. DOE's documents and changes to them would be submitted via a certified transmittal on a preset media and format such as DVD, DLT tape, etc. This approach provides for tightly controlled access. It requires increasing the hardware required to support Scenario C. Configuration management issues would need to be resolved before implementation. The policies for and method of certified document transmittal would have to be worked out and tested. In this approach, the primary responsibility for document availability to the public would be shifted to the LSNA.

In the discussion of this approach, it was noted that it is essentially the same architecture as in scenario C and had the benefit of providing a single unified search screen, etc. However, it differs from scenario C in that participant sites may be crawled, or, optionally, that participants such as DOE and NRC could deliver load tapes/CDs to the portal from the participant's internal collections. This idea was iterated and it was noted that those two large collections could be located on the same platform (or, in a cluster configuration) as the portal machine in order to maximize performance. Following that logic, it was noted that a three platform cluster could link a platform with DOE materials, a platform with NRC materials, and, the platform with the portal and also the permanently cached collections of smaller participants. NRC observed that this is not much different than the old LSS except that it is "web-ified". NRC also noted that this may be perceived as NRC providing a capability that is required of the participants by the Rule, which they could do themselves, and therefore has the same effect as providing intervenor funding. A fine point of distinction between scenario C and scenario D is that while a portal may add value to participant sites in scenario C, it should not replace what a party is obligated to do

as could be the case in scenario D. However, it was agreed that the technical merits of this alternative should continue to be explored by the TWG.

Clustering platforms in close proximity to enhance performance raised questions of system administration. It was noted that depending on where the cluster was located, participants may need to make staff available to support operations at the cluster location rather than try to perform system administration locally. If this is the case, the portal platform and an NRC collection server should be located in LV in order to be closer to the DOE collection, or, the DOE server should be established near NRC and operated out of DOE HQ.

For both scenarios C & D, there was a following discussion on software that participants may be using that might require the portal site to have additional interfaces developed. A cost sensitivity analysis during the authorization phase of the project would identify the cost of developing interfaces not supported by a portal.

There was also a discussion related to participants having the option in both scenarios C and D to either build their own systems or to utilize an ASP (Application Service Provider).

It was agreed that the DOE proposal would have little effect on the audit compliance aspects of the LSN, or no user access to the LSN. It was agreed that the central LSN site was composed of separate functional parts:

1. The baseline audit compliance function - this subsystem is considered to be the responsibility of the LSNA to design since it has no requirement for participant input.
2. The front end with which users interact - this subsystem was discussed in depth the previous day with agreement that a portal provided an acceptable level of functionality.
3. The back end document storage subsystems - this subsystem still has alternatives under consideration. The original alternatives assumed separate sites for participants each publishing their own documentary collections with, perhaps, some participants sharing resources. The DOE proposed an alternative that assembles all or the bulk of the document collection in a single repository with the portal providing access to it.

The group then went through the remaining standards of performance topics/issues to compare and contrast scenario C and scenario D.

**Integration and Interaction** - With regard to integration and interaction between the portal site and the participants' external collections, there seems to be little distinction between the two scenarios. It was felt that it may be a little easier under scenario D to integrate communications because

**Server performance** - It was noted that server performance specifications need to be developed.

**Text accuracy standards** - Dr. Nartker was asked to describe most recent findings. In general, the re-key threshold has for a long time been held as  $\leq 95\%$  accuracy (Bradford & Dickey). The best three OCR products on the market, presuming that you are doing manual zoning, now all are capable of  $\geq 98\%$  accuracy on office-quality paper source documents. Tests on documents over 10 pages in length indicate that there is not any significant impact effect on

**LSNARP Technical Working Group Meeting  
December 6, 1999  
Las Vegas, NV**

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In opening remarks, Dan Graser discussed the two documents provided to the TWG prior to the meeting. The first document discussed was the fleshed-out description of the third and fourth scenarios developed at the previous TWG meeting. The second document was a "strawman" discussion version of revised functional requirements. Additionally, reprints of an InfoWorld™ article (also found at <http://archive.infoworld.com/cgi-bin/displayTC.pl?/991122comp.htm>) comparing portal software products was made available. He noted that the purpose of this meeting was to use these documents to help formulate the materials to be used to present technical alternatives to the full Advisory Review Panel. He noted that an action item from the previous TWG meeting was as yet not addressed: discussions with DOE's ES&H organization about their experiences with developing a portal site and promised to do that quickly. It was noted that the strawman functional requirements still needed some work in the area of developing performance metrics, and it was suggested that perhaps the ES&H portal at DOE could be characterized as a best practices case against which to develop baseline performance expectations.

General discussion of the two scenarios developed at the last TWG meeting focused on the fact that in any system that will link existing repositories, bandwidth will be the over-arching issue and that any implementation strategy will need to address this. In the two viable scenarios, it was noted that servers can be scaled to size and enhanced to address performance issues. Additionally, it was noted that bandwidth sizing is optimized at a point just above the usage spikes. In the discussion, it was also noted that the bandwidth issue was most likely to be impacted in trying to deal with image handling.

These observations led into a general discussion of the system's architecture attributes that would most directly bear on its performance in handling requests for large files. Having large text and image files reside on participant maintained storage devices provides a "multi-pathway" capability, thereby spreading out bandwidth impacts to some degree although with 85% of the documents being at the DOE site the impacts may still be felt, thus placing a larger burden on DOE's bandwidth capacity. Multi-pathway is a predominant feature of the original scenarios #1 & #2 which were, for the most part, discounted at the previous TWG meetings.

Conversely, developing the system in a central campus means that only one feed will need the higher bandwidth, minimizing the set of connections needed, localizing the area, and requiring dedicated lines. The campus approach is simpler to design in a way that will ensure

performance, has bounded costs, and is more manageable for backup, recovery, load-balancing, etc. It was noted that caching is what creates a localized effect, and enhanced performance is not based on where documents are located. This led to the proposition that another architecture could be considered, a distributed portal approach which retains a complete cache of each participant's holdings. In that approach, the cache needs to be at a high-speed location, right at the entrance to "big bandwidth". Approaches that do not heavily utilize a cache require proxies over to a participant operated storage device and then use the multi-path approach to directly delivering files to the requestor.

The general distinctions were then categorized as being:

- **A Comprehensive Distributed Portal with Participant Remote Storage** typified by a remote portal with software that only maintains indexes, and by participant sites in which the participants each maintain their collection. Their several collections represent the single source of document, header, and image files (except for backup).
- **A Comprehensive Campus Portal** typified by a centralized portal with software that only maintains indexes, and by participant maintained file storage and backup devices that are proximate to the portal device. <sup>1</sup> Participants provide for and maintain their collection, and their several collections represent the single source of document, header, and image files (except for backup).
- **A Comprehensive Distributed Portal with Enhanced Central Storage** typified by a remote portal with software that maintains indexes and a cached copy of all document, header, and image files. Participant collections are downloaded and the portal caches a copy of the participants' files and thereafter uses the cached items exclusively for general search and retrieval.

DOE representatives then introduced a discussion in which the essential technical attributes of the LSN system were identified. These included the ability to 1) provide a high degree of control that can be exercised by the LSNA; 2) ensure timely availability of the system to support the licensing process; and 3) deliver the highest performance at the least cost. NRC noted that these technical attributes reflect the basic mission of the LSNA: 1) to deliver a web-based system that makes all documents equally available in a uniform way, 2) do so in an environment

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<sup>1</sup> "Close" does not mean geography. Close is defined by the nature of the communications between the machines, specifically that it is quick (high bandwidth and low latency), predictable, and private. For our purposes high bandwidth is somewhere over 25Mbps and low latency is less than 5 ms average with less than .5 ms std. deviation.

It is certainly possible to achieve these performance figures with geographically dispersed systems through the use of appropriate technologies (e.g. 100baseF, a FDDI ring, or DS3 telco circuit) but the latency requirement limits the total distance that can be spanned (to about 100 miles) and the type of circuits that can be used (e.g. no satellite circuits need apply).

In the specific instance of Summerlin to UNLV, this could pretty easily be accomplished with a DS3 or ATM circuit leased from SW Bell (or whoever). This is not cheap, a SWAG is \$10-20K per month plus \$150K-\$300K equipment at each end.

If line-of-sight can be established, it would be possible to use microwave or laser equipment at each end with no recurring costs (uwave = \$50K-100K, laser = \$15K-\$50K). Of course, LOS technologies are subject to weather disruptions but that is probably not too much of a problem in LV. Air rights may have to be secured to avoid disruptions from construction.

It is not realistic to expect to be able to pull a single fiber cable between the sites. Any other hard-wire approach depends on the nature of the rights of way that can be secured and the specific physical topology of interconnections that would result. You would need repeater equipment at each interconnection.

Traditionally, use of the term "campus" has indicated that a single entity controls the physical plant that the gear and interconnections occupy. This includes the ability to trench and install cable. What you are describing is a "multi-campus" situation.

that can be independently audited for compliance, and 3) which provides the tools for ensuring that the system overall performs with acceptable responsiveness.

The group discussed backup/redundancy and noted that the presence of an enhanced central storage facility would lessen the participants' requirement to implement rigorous backup and disaster-recovery procedures (since the central storage facility would be an implicit backup). However, this does not alleviate them of their responsibility to provide and preserve the "true copy" of a document.

The group discussed performance enhancement and noted that this is easier to accomplish via a campus approach, especially if the portal server is modular and multi-processor based.

The group noted that centralized cache storage in a campus location provides the best control, the cheapest overall storage-per-document, and was more predictable.

The group noted that the scenario where the portal is remote and the participants maintain their own collection storage servers will cost more to fix if there are performance problems which should be anticipated especially in large text file and image file transfers to users.

The group then discussed the issue of caching: the distinction between what it will take for the LSNA to ensure system performance and responsiveness viz NRC providing a capability which the participants are required to deliver. There is still also an open issue of certification of records for use in hearing and other legal proceedings which must be done by the submitter - and the fact that the chain of custody goes through the portal site (and the LSNA) in any option where the portal caches everything and that is the file being relied upon. It was decided this is an issue for the full LSNARP to consider.

The group finally discussed overall cost elements in the life cycle and noted that while it may be cheaper to ease in the door with the scenarios that do not rely on centralized cache/memory, that in the long term the solutions where participants maintain decentralized data stores may prove much more labor intensive on an ongoing basis to ensure system control and performance. DOE representatives noted that the cost of memory in the terabyte range has gotten down to the \$300-400K range. NRC noted that a recent RAID implementation in that class cost in the \$700-800K range; but all agreed that memory/storage costs were declining and could be expected to continue doing so when equipment purchases occur next year. Dr. Nartker observed that delivering and sustaining performance will be the biggest technical problem confronting the operational phase of the LSN. DOE noted that it was easier to initially over-engineer the system rather than to try to remediate performance on a system that is architecturally constrained.

At this point the group decided to start developing a presentation chart which could be used in presenting the issues and recommendations to the full LSNARP. It was decided that the two scenarios discarded at the initial TWG meetings should be included in this chart so that the TWG's evaluations could be documented with the same detail as those options still in consideration. See the charts on the pages following.

Discussion closed on the issue of functional requirements and the difficulties that were being encountered. It was noted that something would have to be done because they will be needed for procurement and also for acceptance testing. DOE representatives made an observation that detailed capability requirements such as print, deliver paper, storing canned queries, etc.,

were, of course, causing problems because the nature of the system is now connecting diverse collections and we are looking at the technologies to do that which are commercial-off-the-shelf (COTS). [E.g., we're purchasing a method to connect existing collections so the FR's need to reflect that as opposed to reflecting the attributes of a licensing methodology management system. The one could be COTS but the other is definitely custom. If we have FR's for a licensing software environment, when we try to do test and acceptance against the COTS portal, we will have disconnects and failed requirements, or, we will walk into a commitment for high degrees of customization that may preclude any COTS portals. So, the revelation was that NRC will have to spec to meeting a different mission and will rework the FR's.] NRC will rework the functional requirements to reflect the mission of providing connectivity and performance in a web environment, rather than focusing on the attributes of a legal support environment.

## GENERAL ATTRIBUTES OF ALTERNATIVES

	I Simplified Strategy	II Moderate Strategy	III Comprehensive Distributed Portal with Participant Maintained Remote Storage	IV Comprehensive Campus Portal with Participant Maintained Proximate Storage	V Comprehensive Distributed Portal with Enhanced Central Storage
Description	Homepage with Pointers to Other Homepages.	Centralized Search Interface.	Remote Portal Software Indexes.	Proximate Portal Software Indexes and Data Stores.	Remote Portal Software Indexes.
Criteria	Each Participant Maintains Fully Capable Storage, Search, Retrieval Capability.	Each Participant Maintains Fully Capable Storage, Search, Retrieval Capability.	Participants Maintain Single Set of Files.	Participants Maintain Single Set of Files.	Portal Downloads and Caches a Copy of Participants' Files and Uses Cached Items Exclusively.
Ability for LSNA to Exercise High Level of Control	No Systematic Controls Each site Varies	Rudimentary Controls on Interface and Search "Passing"	Search, Interface, Security & Access, and Monitoring & Tuning Tools Provided	Search, Interface, Security & Access  Enhanced Monitoring & Tuning Capability	Search and Interface  Enhanced Security & Access  Enhanced Monitoring & Tuning Capability
Ability for LSNA to Ensure Overall Configuration Performance	Performance is Highly Variable  LSNA Unable to Respond Quickly to Performance Problems	Performance is Highly Variable  Normalized Search "Passing" Still Does Not Guarantee Performance	Performance of Interface Dialogs are Less Variable  Fetching Text & Image Files are Constrained	Assured Interface Performance  Assured File Delivery Performance	Assured Interface Performance  Assured File Delivery Performance
Schedule Risk to LSNA Having Operational to Support Licensing	Low Risk	Moderately Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
Implementation Complexity Risk to LSNA	Low Risk	Moderately Low Risk	High Risk	Moderately High Risk	Moderate Risk
Overall Cost for NRC to Develop	Very Inexpensive	Inexpensive	Expensive	Highest Expense	Very Expensive
Participant Burden to Exercise Controls	Participant Implements within Highly Structured Guidelines and Procedures and is Heavily Audited	Participant Implements within Highly Structured Guidelines (esp. Tech Guidelines for Query Processing) and Procedures (esp. For Change Notification) and is Heavily Audited	More Coordination and Integration Required (ex. When Site Gets Crawled) but More Flexibility is Allowable	Campus Administration Imposes More Restrictions in Format Standards, Population of Collections, Security Access than a Distributed Portal	No Responsibility for Controls Except Change Notification within 5 Day Window

	<b>I Simplified Strategy</b>	<b>II Moderate Strategy</b>	<b>III Comprehensive Distributed Portal with Participant Maintained Remote Storage</b>	<b>IV Comprehensive Campus Portal with Participant Maintained Proximate Storage</b>	<b>V Comprehensive Distributed Portal with Enhanced Central Storage</b>
<b>Participant Burden to Ensure Performance</b>	Totally Responsible for Availability, Performance and Bandwidth	Totally Responsible for Availability and Performance  Relieved of Search Interface	Highly Responsible.  Portal Provides Some Availability Features.  Participant Ensures File Delivery and Bandwidth	Highly Responsible.  Portal Provides Some Availability Features.  Participant Ensures File Delivery  Relieved of Bandwidth	No Responsibility Except for During Initial "Crawling" or Loading
<b>Schedule Risk of Participants' Having Operational to Support Licensing</b>	Moderate	High	Higher	Highest	Moderate to High (Affected by Transmission Security)
<b>Implementation Complexity Risk to Participants</b>	Low	Moderately Low	Moderate	Moderate to High	Low
<b>Cost Burden to Participants</b>	Minimal  A portion of a body or outsourced	Variable  Requires Comprehensive System Administration, Depending on Participant System.  A portion of a body or outsourced	Variable  Requires Comprehensive System Administration, Depending on Participant System; More Difficult to Outsource, More Data Management.  A portion of a body or outsourced	Variable  Requires Comprehensive System Administration, Depending on Participant System; More Difficult to Outsource, More Data Management. Requires Some Personnel Resource at the Campus Location.  A portion of a body or outsourced	Minimal  A portion of a body or outsourced
<b>User Flexibility to Tailor Desktop/Interface</b>	Relatively Inflexible	Relatively Inflexible	Very Flexible	Very Flexible	Very Flexible
<b>Ease of Use</b>	Hard  Variable Interfaces, per Each Collection/Server	Relatively Easy  Query Screen is Consistent	Easy	Easy	Easy
<b>Availability to Users</b>	Acceptable  One or Two Participants Down Leaves the Rest Still Available	Acceptable  One or Two Participants Down Leaves the Rest Still Available	Most Available	High Availability	High Availability

	<b>I Simplified Strategy</b>	<b>II Moderate Strategy</b>	<b>III Comprehensive Distributed Portal with Participant Maintained Remote Storage</b>	<b>IV Comprehensive Campus Portal with Participant Maintained Proximate Storage</b>	<b>V Comprehensive Distributed Portal with Enhanced Central Storage</b>
<b>Response Time Performance</b>	Variable  Depends on Participant Resources	Variable  Depends on Participant Resources	Somewhat Variable  Image & Text Delivery Depends on Participant Resources	Very Timely	Very Timely

**From:** Bonnie Buckley <bjbuckle@clan.lib.nv.us>  
**To:** "Dan Graser" <DJG2@nrc.gov>  
**Date:** Mon, Jan 3, 2000 5:46 PM  
**Subject:** RE: Internet Availability

Dear Dan,

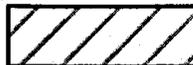
In response to your question: All public library systems in Nevada provide Internet access to the public, including library branches in outlying suburban areas as well as rural and remote libraries. So if your documents are available on the Internet, Nevadans will have access to them. Libraries in all of the areas you mentioned provide access to Internet.

You'll find a directory listing of all Nevada libraries and the hours during which they are open on our Departmental website at <http://www.dmla.clan.lib.nv.us> (click on Nevada State Library and Archives, then on Nevada Library Directory and Statistics).

Bonnie Buckley  
Library Planning and Development  
Nevada State Library & Archives

## GENERAL ATTRIBUTES OF ALTERNATIVES

Alternative	I Simplified Strategy	II Moderate Strategy	III Comprehensive Distributed Portal with Participant Maintained Remote Storage	IV Comprehensive Campus Portal with Participant Maintained Proximate Storage	V Comprehensive Distributed Portal with Enhanced Central Storage
Description	Homepage with Pointers to Other Homepages	Centralized Search Interface.	Remote Portal Software Indexes.	Proximate Portal Software Indexes and Data Stores.	Remote Portal Software Indexes.
Criteria	Each Participant Maintains Fully Capable Storage, Search, Retrieval Capability.	Each Participant Maintains Fully Capable Storage, Search, Retrieval Capability.	Participants Maintain Single Set of Files.	Participants Maintain Single Set of Files.	Portal Downloads and Caches a Copy of Participants' Files and Uses Cached Items Exclusively.
Ability for LSNA to Exercise High Level of Control	No Systematic Controls Each site Varies	Rudimentary Controls on Interface and Search "Passing"	Search, Interface, Security & Access, and Monitoring & Tuning Tools Provided	Search, Interface, Security & Access  Enhanced Monitoring & Tuning Capability	Search and Interface  Enhanced Security & Access  Enhanced Monitoring & Tuning Capability
Ability for LSNA to Ensure Overall Configuration Performance	Performance is Highly Variable  LSNA Unable to Respond Quickly to Performance Problems	Performance is Highly Variable  Normalized Search "Passing" Still Does Not Guarantee Performance	Performance of Interface Dialogs are Less Variable  Fetching Text & Image Files are Constrained	Assured Interface Performance  Assured File Delivery Performance	Assured Interface Performance  Assured File Delivery Performance
Schedule Risk to LSNA Having Operational to Support Licensing	Low Risk	Moderately Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
Implementation Complexity Risk to LSNA	Low Risk	Moderately Low Risk	High Risk	Moderately High Risk	Moderate Risk



= Alternative no longer being considered

## GENERAL ATTRIBUTES OF ALTERNATIVES

Alternative	I Simplified Strategy	II Moderate Strategy	III Comprehensive Distributed Portal with Participant Maintained Remote Storage	IV Comprehensive Campus Portal with Participant Maintained Proximate Storage	V Comprehensive Distributed Portal with Enhanced Central Storage
<b>Overall Cost for NRC to Develop</b>	Very Inexpensive	Inexpensive	Expensive	Highest Expense	Very Expensive
<b>Participant Burden to Exercise Controls</b>	Participant Implements within Highly Structured Guidelines and Procedures and is Heavily Audited	Participant Implements within Highly Structured Guidelines (esp. Tech Guidelines for Query Processing) and Procedures (esp. For Change Notification) and is Heavily Audited	More Coordination and Integration Required (ex. When Site Gets Crawled) but More Flexibility is Allowable	Campus Administration Imposes More Restrictions in Format Standards, Population of Collections, Security Access than a Distributed Portal	No Responsibility for Controls Except Change Notification within 5 Day Window
<b>Participant Burden to Ensure Performance</b>	Totally Responsible for Availability, Performance and Bandwidth	Totally Responsible for Availability and Performance Relieved of Search Interface	Highly Responsible. Portal Provides Some Availability Features. Participant Ensures File Delivery and Bandwidth	Highly Responsible. Portal Provides Some Availability Features. Participant Ensures File Delivery Relieved of Bandwidth	No Responsibility Except for During Initial "Crawling" or Loading
<b>Schedule Risk of Participants' Having Operational to Support Licensing</b>	Moderate	High	Higher	Highest	Moderate to High (Affected by Transmission Security)
<b>Implementation Complexity Risk to Participants</b>	Low	Moderately Low	Moderate	Moderate to High	Low



= Alternative no longer being considered

## GENERAL ATTRIBUTES OF ALTERNATIVES

Alternative	I Simplified Strategy	II Moderate Strategy	III Comprehensive Distributed Portal with Participant Maintained Remote Storage	IV Comprehensive Campus Portal with Participant Maintained Proximate Storage	V Comprehensive Distributed Portal with Enhanced Central Storage
<b>Cost Burden to Participants</b>	Minimal A portion of a body or outsourced	Variable Requires Comprehensive System Administration, Depending on Participant System. A portion of a body or outsourced	Variable Requires Comprehensive System Administration, Depending on Participant System; More Difficult to Outsource, More Data Management. A portion of a body or outsourced	Variable Requires Comprehensive System Administration, Depending on Participant System; More Difficult to Outsource, More Data Management. Requires Some Personnel Resource at the Campus Location. A portion of a body or outsourced	Minimal A portion of a body or outsourced
<b>User Flexibility to Tailor Desktop/Interface</b>	Relatively inflexible	Relatively inflexible	Very Flexible	Very Flexible	Very Flexible
<b>Ease of Use</b>	Hard Variable Interfaces, per Each Collection/Server	Relatively Easy Query Screen is Consistent	Easy	Easy	Easy
<b>Availability to Users</b>	Acceptable One or Two Participants Down Leaves the Rest Still Available	Acceptable One or Two Participants Down Leaves the Rest Still Available	Most Available	High Availability	High Availability
<b>Response Time Performance</b>	Variable Depends on Participant Resources	Variable Depends on Participant Resources	Somewhat Variable Image & Text Delivery Depends on Participant Resources	Very Timely	Very Timely



= Alternative no longer being considered

**LSN DESIGN MANAGEMENT PLAN  
FOR ALTERNATIVE THREE**

December 28, 1999

Prepared for the Nuclear Regulatory Commission by:

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# LSN Design Management Plan for Alternative Three

## 1.0 Introduction

This document presents a description of Alternative Three for the potential design of the Licensing Support Network (LSN) home site and participant sites. It is based on work done by the LSN Advisory Review Panel (LSNARP) Technical Working Group (TWG) during the months of October through December 1999. A total of five potential LSN designs were evaluated. Of these, two (Alternatives One and Two) were discarded. The other two designs, Alternative Four, the "LSN campus," and Alternative Five, the "consolidated storage" approach, are discussed in separate documents.

The three final design alternatives share many characteristics but differ in important ways, most significantly in the areas of the ability of the LSN Administrator (LSNA) to exert management control over the overall LSN, the burden placed on participants to fund, create, and manage their sites, and the overall cost to the NRC for the "home site." How Alternative Three impacts these factors is discussed below.

The LSN can be regarded as consisting of three functional components. Specifically, these are:

- A component that aids the LSNA in auditing participant compliance with the LSN Rule.
- A component that presents LSN information to participants, other interested parties, and the general public.
- A component that stores LSN documentary information for the use of components one and two.

The alternative designs validated by the TWG differ primarily in the details of the third component; specifically, in how and where LSN materials are stored. The design of the first and second components will not be materially affected by the alternative selected for the third component, although there are differences in the details of implementation and operation.

The following sections will describe Alternative Three, the "distributed storage" alternative, the details of its components, how they "fit" together, the hardware and software used in the design, and an approximation of the component life-cycle costs.

## **2.0 Description of Alternative Three**

Alternative Three has been named the "distributed alternative" by the members of the TWG. This terminology focuses on a key characteristic of the design - that each participant, assemble, prepare, and publish their own collections of documents on a WWW server that they control at a site of their choosing. This approach is essentially identical to the design as originally conceived in the early conceptual development of the LSN. It is an analogue of many other WWW systems extant on the Internet, such as Yahoo or Lycos, and contains many of the same components as these analogous (but much larger) systems.

### **2.1 Compliance Component**

This component is a "front-end" component (one with which end-users interact) with a small set of users who require specific information at specific times. It is intended to address the in-house needs of the LSNA.

#### **2.1.1 Intended functionality**

The purpose of this component is two-fold. First, this component ensures that the LSN is functioning as intended and assures this functioning to the intended user base. Second, it provides the necessary reports on LSN functionality that enable the LSNA to ascertain participant compliance with the LSN Rule and that aid in determining whether remedial action is required.

The primary method of following the operation and evolution of the LSN is through a reporting mechanism. Reports will be generated automatically by the system on a periodic basis, when exceptional conditions arise, and on-demand.

##### **2.1.1.1 Periodic reports**

The full array of required reports is yet to be determined. However, the following types of reports have been identified at this time:

- A listing of changes in participant document collections, i.e. additions, deletions, and modifications.
- A report on the "health" of the LSN, component and sub-component uptime and performance data (e.g. web server hits, average response times, number of users, etc.)

### **2.1.1.2 Exception reports**

Exception reports will be generated when anomalous conditions are noted. Candidates for this type of report include:

- When auditing software detects a possible compliance problem with a participant collection.
- When a component of the LSN itself is determined to be malfunctioning, e.g. due to a computer or network error.
- When a security exception is noted.

### **2.1.1.3 On-demand reports**

It is anticipated that reports may need to be generated from time-to-time to respond to an exception or to "drill down" to garner additional information on a perceived compliance problem. A facility will be provided to perform this process. It is anticipated that HTML forms will be designed to allow individuals to design and generate most reports on demand. However, it is likely that some reports may need to be developed by systems personnel from time-to-time.

### **2.1.2 Intended user base**

The intended user base for the compliance component is the LSNA, his designees and the ASLBP (Atomic Safety and Licensing Board Panel).

### **2.1.3 Access to functionality/information delivery**

#### **2.1.3.1 Web browser**

Certain functions of the system are best accessed through a WWW browser (e.g. Netscape, Internet Explorer, etc.) through the standard HTTP/HTML mechanism bolstered by CGI programs that interact with the data stores. Most commercial and open source network management software currently employ a web-based interface. Specifically, those aspects of the monitoring function that change rapidly can best be monitored through a browser. Examples of these are troubleshooting on-going problems and ascertaining the status of a particular sub-component at a particular time. Historical trends will be maintained both in HTML tables and graphically.

A web browser is also anticipated as the normal interface to generate reports on demand, with an HTML forms interface providing the report and data selection, as well as the formatting function.

### **2.1.3.2 Hard-copy delivery**

It is anticipated that certain reports, especially periodic reports "for the record," will be automatically printed and physically delivered to their intended recipient(s).

### **2.1.3.3 E-mail delivery**

E-mail is an alternative method of delivery most appropriate for exception reports, but is useful for all report types.

### **2.1.3.4 Interactive login**

Interactive access to the system will be required to produce on-demand reports that have not been anticipated in the design of the web-based, on-demand facility described above.

### **2.1.3.5 File system access**

File system access is required for ready availability of system logs and other source data for off-line processing and archival.

### **2.1.3.6 Pager notification**

Certain types of exception reports, e.g. notifications of system unavailability, mandate a more aggressive notification. In these instances, the system administrator will be paged automatically with a description of the exception in order to expedite repair.

## **2.1.4 Component elements and their functionality**

### **2.1.4.1 Data retrieval element**

This element will consist of one or more programs which will routinely "rove" participant sites, fetching participant data (documents, statistics, and other) and storing this data pending processing. The exact nature of the data retrieval element will depend on the details of the alternative selected for the storage component, but it is analogous to a "web spider." A web spider, when presented with a starting URL, will traverse all hyperlinks within the body of documents "under" the URL. Through this methodology, it is possible to retrieve and replicate the entire static structure of a web site for further processing.

#### **2.1.4.2 Data storage**

This element is responsible for storing both data to be processed and the results of that processing. Both file system storage and database storage will be accommodated. The database will be a network-capable SQL relational database that will provide structured data to both front ends, i.e. the compliance and presentation components.

#### **2.1.4.3 Data processing**

This element will process the data retrieved, store the results of the processing, and generate the required reports.

#### **2.1.4.4 Data presentation and reporting tool**

This element consists of several programs that process report outputs into formats appropriate for the delivery mechanisms described above, and assist a user in specification of on-demand reports.

#### **2.1.4.5 System assuredness with further sub-elements**

This element provides a level of assuredness that the systems the LSN is housed on are functioning as required. There are several main sub-elements:

- **Security mechanisms.** Security sub-elements include a firewall or firewall software, secure remote administration software, and intrusion detection software.
- **Network monitoring and management.** This sub-element monitors hardware and software and reports outages or sub-optimal operation. It also gathers low-level statistics on network operation for trend and throughput analysis.
- **Physical plant and reliability mechanisms.** This sub-element provides appropriate environmental and power conditioning and implements disaster recovery mechanisms, e.g. a backup/restore capability.

#### **2.1.5 Hardware and software required**

No attempt is made to specify make and model of hardware and software at this time. Where appropriate, examples of products will be provided, but these are not intended to represent a comprehensive list of alternatives or preferred selections. Since there is a competitive market for these products, they will be used to develop ballpark pricing estimates, but this should not be construed as an attempt to preselect a vendor or product.

### **2.1.5.1 Computer system hardware**

A single computer system of the workstation class is adequate for this functionality. The security sub-element mandates that the system be separate from and more restricted than the computer system (described below) that provides general access. The system should be equipped with the standard components, a graphical display, and a device appropriate for backup. Examples of this type of system include an i386-architecture workstation (e.g. Pentium III "PC") running open-source Unix (e.g. FreeBSD or Linux), or Microsoft NT, a Sun workstation running Solaris, or a Compaq/DEC Alpha running VMS. The primary selection criteria for the specific hardware and operating system should be based on security objectives, with specific functionality a secondary (but important) consideration.

### **2.1.5.2 Computer system software**

The following software components will be required: a web server (e.g. Apache, Netscape Enterprise, MS IIS), a database with accompanying report generation software (e.g. PostgreSQL, Oracle, MS SQL Server), firewall software (e.g. IPFW, ipfilter, Firewall-1), network monitoring and management software (e.g. Big Brother, SunNet Manager, HP OpenView), and a web spider (e.g. MoMspider, BRS/Search, Fulcrum Search Server). Note that the web server, database, and web spider are also part of the presentation component described in Section 2.2, below). The same software can be used for both purposes. In addition, it is anticipated that this component will require some custom software, scripts and CGI's rather than full-blown applications.

## **2.2 Presentation Component**

This component is a "front-end" with a large set of users who require access to a wide range of information at arbitrary times. It is intended to fulfill the requirement to provide information to interested parties through WWW technology.

### **2.2.1 Intended functionality**

It will be a WWW presentation interface with additional sub-components that consist of:

- **Introductory and overview documentation.**
- **Training / tutorial materials on how to use the site to obtain LSN-related information, and the other aspects of the site, and how to submit to the docket.**
- **Portal software that allows user customization of user interfaces and user document search and access strategies.**

- A search facility that allows LSN-wide searching of participant materials, including individual user custom searching strategies.
- Publication of statistical information on LSN participant sites, including site content and performance.
- Aggregation and publication of overall LSN access and usage statistics, e.g., number of hits.
- A web-based interactive forum in which interested parties can discuss or exchange information regarding LSN matters.
- Help-desk assistance (with escalation) for participants and public users.
- A LISTSERV (e-mail list manager) to allow participants to easily send electronic mail to all interested parties. A number of mailing lists will be created as needed for discussion of specific subjects, including a list with the e-mail addresses of all participants for notification purposes. The LISTSERV software will allow each participant to manage their own subscriptions to interest lists and archive messages to the lists. The LSN is not intended to provide a public LISTSERV function.

### **2.2.2 Intended user base**

The intended user base includes all participants and potential participants, the LSNA and his designees, the press, and the general public.

### **2.2.3 Access to functionality/information delivery**

#### **2.2.3.1 Web browser**

Web browsers will be the predominant access method to this component. It is anticipated that this will be the sole access method for the majority of users. Browsers will be used to gain access to general information, participant documentary collections, and to discussion forums.

#### **2.2.3.2 E-mail**

E-mail will be used for notification to participants by the LSNA or designee, and interaction with the LISTSERV described above.

## **2.2.4 Hardware and software required**

No attempt is made to specify make and model of hardware and software at this time. Where appropriate, examples of products will be provided but these are not intended to represent a comprehensive list of alternatives or preferred selections. Since there is a competitive market for these products, they will be used to develop ballpark pricing estimates but this should not be construed as an attempt to preselect a vendor or product.

### **2.2.4.1 Computer system hardware**

A single computer system of the server class will be required for this functionality. Examples are as in Section 2.1.5.1, but this component will require more processing power and capacity, i.e. a faster CPU or multi-CPU machine, more RAM, bigger disk storage, etc. The primary selection criteria for the hardware is that it should be supported by the portal software selected (the most critical software component).

### **2.2.4.2 Computer system software**

The following software components will be required: a web server (e.g. Apache, Netscape Enterprise, MS IIS), a database with accompanying report generation software (e.g. PostgreSQL, Oracle, MS SQL Server), firewall software (e.g. IPFW, ipfilter, Firewall-1), a web forum (e.g. UltimateBulletinBoard, WWWboard), and a LISTSERV (e.g. MailMan, majordomo, LISTPROC), and portal software (e.g. Plumtree, Excalibur, Knowledge Center). Note that the web server, database, and web spider are also part of the compliance component described in Section 2.1. The same software can be used for both purposes.

## **2.2.5 Participant activities and responsibilities**

None except as end-users. This component is the responsibility of the LSNA.

## **2.3 Storage Component**

The storage component represents the "back-end" functionality serving the needs of the front-end components rather than the end-users directly. The data it contains consists of the documents required to be published by participants in accordance with the LSN Rule, and accompanying required information.

### **2.3.1 Participant systems**

Each participant will assemble, prepare, and publish their own collections of documents on a WWW server. The compliance component and the presentation component will access these collections as WWW clients and perform the necessary operations routinely through participant sites.

### **2.3.2 Intended functionality**

This component is the "back-end" that will provide data to the front-end components described above in Sections 2.1 and 2.2. Participants will make their documentary collections available on a web server located at a site of their choosing and attached to the Internet. Participants are free to establish their own web server, collaborate on a community web server, procure commercial web service, or employ any other provisioning method they choose.

### **2.3.3 Intended user base**

The intended user base is primarily the LSN front-end software described above. It is anticipated that participants may choose to make their document collections (and ancillary information) generally accessible on the Internet, (i.e., other than through the LSN portal site). However, any documents intended to be filed in the licensing process will have to be obtained or cross-referenced through the LSN portal site to ensure the uniqueness, consistency, and traceability of document identification (accession) numbers..

### **2.3.4 Access to functionality/information delivery**

#### **2.3.4.1 Web access**

This will be the primary method by which participant materials are accessed. Access will be interactive (e.g. when a home site front-end user requests a particular document, the home site front end will fetch it from the participant's repository). Access will also be by batch (e.g. the portal will fetch all materials on the web site, index them, and retain only the references to the documents for subsequent presentation in response to end-user queries).

#### **2.3.4.2 SNMP access**

For obtaining network usage statistics and performing monitoring activities, the compliance component will also require SNMP (Simple Network Management Protocol) access to participant web servers and network interface equipment.

### **2.3.5 Participant activities and responsibilities**

Participants are required to make available all documents subject to discovery in standard, LSNA-approved formats on a web site. This consists of the following activities.

#### **2.3.5.1 Document identification and assembly**

This is simply identifying and assembling the documents. This function will provide a reasonably accurate estimate of the storage space and preparation effort required.

### **2.3.5.2 Document preparation**

Documents are to be converted to a format that includes an image representation (TIFF/CCITT or TIFF/JPEG), a searchable text file, and a bibliographic header containing metadata about the document. In many cases, this will require scanning and OCR conversion of a paper document. However, if a document exists in electronic format, it may be preferred to perform a more accurate conversion with appropriate software.

The LSNA may allow participants to provide their documentary collections in alternative page-representation formats such as PDF and proprietary word processor formats like Microsoft Word. This will depend on whether the data retrieval software selected for the front-end components is capable of indexing, searching, and otherwise processing these formats. The requirement to provide a bibliographic header for each document will remain regardless of the documents' formats. The bibliographic header is subject to the same retrieval requirements as the source document, e.g. provided as a searchable text file by the web server, as HTTP headers, or from within a database.

Document preparation is potentially the most labor-intensive and costly aspect of building the LSN, due to the large number of documents included. Therefore, the burden on a participant is more closely correlated to the number of documents they must prepare than any other factor.

### **2.3.5.3 Document publication**

Under this alternative, participants will place their documents on the web server of their choice through whatever file transfer mechanism is supported by the web server. This web server must be connected full-time to the Internet through a communications circuit of adequate speed (to be determined by the LSNA) and have a unique IP address and domain name. The domain name and root URL for the documentary collection, and a list of documents, must be provided to the LSNA.

For consistency in retrieval by the front-end components described above in Sections 2.1 and 2.2, participants may be required to follow a standard format in layout of the web pages that provide access to the documents themselves and accompanying bibliographic header information. Note that many web servers provide a standard way to publish meta information on web-served documents (e.g. by including this information in a file of the same name as the source document in a meta sub-directory). Use of this function may be required by the data retrieval elements of the front-end components.

### **2.3.5.4 Coordination/Integration**

Access from the portal/presentation site to the participant sites must be performed by software with fixed expectations of participant site structure and content. This will require that participants coordinate their site design and operations with the LSNA, which is expected to be a

significant on-going operational requirement.

### **2.3.6 Hardware and software required**

It is difficult to determine the exact hardware and software components due to the possibility of collaboration and the differences in the size of the documentary collections of the participants. Foreseeable alternatives for setting up a web server include a dedicated resource at the participant's site, sharing a server with other participants or non-LSN-related web sites, "co-location" of a participant-owned machine at an IPP (Internet Presence Provider) or outsourcing the entire site to an IPP. Each of these alternatives have a wide range of cost, convenience, assuredness, and administrative issues associated with them.

If a participant adopts a strategy of implementing a dedicated web server, the size of this machine will, again, depend on the size of the document collection the participant is required to make available.

Participants with an extremely small document collection will probably choose to lease web space on an IPP machine or "piggy-back" on another participant's site rather than implement their own web server. The cost of this facility depends on the amount of data published, the bandwidth the site requires, and other metrics. Typical costs for web sites that are appropriate for small participants range from free (of incremental cost over maintaining a basic Internet-access capability) to several hundreds of dollars per month.

For those who choose to implement their own dedicated resource, a fairly modest machine may be fully satisfactory. An example of this would be an i386 architecture "PC" (e.g. 166MHz Pentium, 128MB RAM, 4GB disk) running an open-source Unix-like operating system (FreeBSD or Linux) and the open-source Apache web server. The total cost (hardware and software) of such a machine at current (4<sup>th</sup> quarter 1999) market prices is under \$1,000, and it would accommodate as many as 10,000 documents (at an estimated 250KB per document). Note that operational costs may not be so trivial, especially the disaster recovery aspects (regular backups with off-site storage), and data communications costs. However, resources for these requirements may already exist, and participants who choose to share a web server may be able to equitably spread these costs among themselves.

Participants with larger document collections will, naturally, require a more powerful computer system, and operational costs will scale as well. Due to the considerable resources of these participants and the likelihood of their already possessing significant computer system infrastructure, no attempt has been made to develop a cost for these facilities.

### **3.0 Implications of this Design Alternative**

Selection of this alternative for the final design of the LSN will have implications in several key areas. These represent tradeoffs of functionality and/or cost factors compared to the other remaining alternative designs. Appendix 1, *General Attributes of Alternatives*, presents a tabular comparison of each Alternative considered by the TWG, highlighting these tradeoffs. Note that Alternatives One and Two were considered not viable technical solutions by the TWG, and were discarded.

#### **3.1 Administrator management control**

Compared to Alternatives Four and Five, this design allows the LSNA less control over the ultimate presentation of LSN materials. Because the participants are in control of the design and management of their individual web sites, and because those sites are not topologically close together, the LSNA can only influence the content and management of those sites indirectly through the establishment of requirements.

#### **3.2 Participant responsibilities**

Participants are responsible for publication of their documentary collections under all alternative designs, including creating and operating a web site. Participants will have more freedom to select the technologies for site implementation but will have a greater burden for maintaining its operation at a high level of availability and performance. This will increase the participant's operational cost and require a higher level of computer operations expertise compared to Alternatives Four and Five.

#### **3.3 Cost**

The aggregate cost (to both the LSNA and the participants) of this design is lower than Alternatives Four and Five. It has the additional characteristic that each participant's implementation costs are a function of the size of their documentary collections. Because participants are free to select technologies of their choice with their own cost factors included in the selection process, this will probably result in cost savings to them. Due to the increased demand on the participant sites for operational readiness and performance, it is likely that some of the life-cycle cost components will be higher, specifically, maintenance and communications. However, it is estimated that the overall cost to the participants (excluding their individual document preparation costs) will vary by about ten percent (10%) among the three alternatives.

The cost to the NRC to build and maintain the compliance and presentation component is lower than under Alternative Four and significantly lower than under Alternative Five. Appendix 2, *LSN Costs for Alternative Three*, outlines a rough estimate of the cost to the NRC, based on currently available information.

### **3.4 Implementation Schedule**

The preliminary LSN implementation schedule represented by the Gantt chart (Appendix 3) does not appear to be materially affected by the Alternative selected. This is somewhat due to the lack of detail in the schedule appropriate to this stage of the planning process. It will be useful to expand the level of detail in the areas of procurement, design, and implementation of each component for planning purposes but it doesn't appear to be a useful way to differentiate among alternatives.

Lack of schedule differentiation between alternatives arises from the fact that the differences between alternatives are only in one of the three major components, i.e. the storage component, and that implementation of this component will take comparatively little time. The more time-intensive aspects of overall LSN implementation, specifically document conversion and site integration, are, essentially, identical across alternatives. The other activities common to all three alternatives, specifically, the development and implementation of the compliance and presentation components, have potentially more impact on the schedule and staffing than the development and implementation of the storage component.

One area of potentially significant impact on how selection of a particular alternative will affect the schedule is in the procurement of the storage server for Alternative Five. This is the one component among all the alternatives that cannot be considered an "off-the-shelf" item and timely delivery after ordering cannot be assured. Generally, systems of this nature are built to customer specification and delivery schedules can vary significantly depending on what item is ordered and when the item is ordered. Delays of three to six months are not uncommon. Efforts should be made to eliminate procurement delays associated with this item from the critical path of the project plan, if at all possible.

**LSN DESIGN MANAGEMENT PLAN  
FOR ALTERNATIVE FOUR**

December 28, 1999

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# LSN Design Management Plan for Alternative Four

## 1.0 Introduction

This document presents a description of Alternative Four for the potential design of the Licensing Support Network (LSN) home site and participant sites. It is based on work done by the LSN Advisory Review Panel (LSNARP) Technical Working Group (TWG) during the months of October through December 1999. A total of five potential LSN designs were evaluated. Of these, two (Alternatives One and Two) were discarded. The other two designs, Alternative Three, the "distributed storage," and Alternative Five, the "consolidated storage" approaches are discussed in separate documents.

The three final design alternatives share many characteristics but differ in important ways, most significantly in the areas of the ability of the LSN Administrator (LSNA) to exert management control over the overall LSN, the burden placed on participants to fund, create, and manage their sites, and the overall cost to the NRC for the "home site." How alternative Four impacts these factors is discussed below.

The LSN can be regarded as consisting of three functional components. Specifically, these are:

- A component that aids the LSNA in auditing participant compliance with the LSN Rule.
- A component that presents LSN information to participants, other interested parties, and the general public.
- A component that stores LSN documentary information for the use of components one and two.

The alternative designs validated by the TWG differ primarily in the details of the third component; specifically, in how and where LSN materials are stored. The design of the first and second components will not be materially affected by the alternative selected for the third component, although there are differences in the details of implementation and operation. The following sections will describe the fourth design, the "LSN campus" alternative, the details of its components, how they "fit" together, the hardware and software used in the design, and an approximation of the component life-cycle costs.

## **2.0 Description of Alternative Four**

Alternative Four has been named the "LSN campus" by the members of the TWG. This terminology focuses on a key characteristic of the design - that each participant, assemble, prepare, and publish their own collections of documents on a WWW server that is located at an NRC-managed campus, local area network (LAN). This approach combines the distributed server/storage systems discussed in Alternative Three with the approach of not allowing development options to be unduly restricted due to communications limitations.

No location for the campus has as yet been determined. The locations that have been discussed within the TWG are at NRC Headquarters in Washington, DC and at the University of Nevada - Las Vegas (UNLV) or another site in Las Vegas.

### **2.1 Compliance Component**

This component is a "front-end" component (one with which end-users interact) with a small set of users who require specific information at specific times. It is intended to address the in-house needs of the LSNA.

#### **2.1.1 Intended functionality**

The purpose of this component is two-fold. First, this component ensures that the LSN is functioning as intended and assures this functioning to the intended user base. Second, it provides the necessary reports on LSN functionality that enable the LSNA to ascertain participant compliance with the LSN Rule and that aid in determining whether remedial action is required. The primary method of following the operation and evolution of the LSN is through a reporting mechanism. Reports will be generated automatically by the system on a periodic basis, when exceptional conditions arise, and on-demand.

##### **2.1.1.1 Periodic reports**

The full array of required reports is yet to be determined. However, the following types of reports have been identified at this time:

- A listing of changes in participant document collections, i.e. additions, deletions, and modifications.
- A report on the "health" of the LSN, component and sub-component uptime and performance data (e.g. web server hits, average response times, number of users, etc.)

### **2.1.1.2 Exception reports**

Exception reports will be generated when anomalous conditions are noted. Candidates for this type of report include:

- When auditing software detects a possible compliance problem with a participant collection.
- When a component of the LSN itself is determined to be malfunctioning, e.g. due to a computer or network error.
- When a security exception is noted.

### **2.1.1.3 On-demand reports**

It is anticipated that reports may need to be generated from time-to-time to respond to an exception or to "drill down" to garner additional information on a perceived compliance problem. A facility will be provided to perform this process. It is anticipated that HTML forms will be designed to allow individuals to design and generate most reports on demand. However, it is likely that some reports may need to be developed by systems personnel from time-to-time.

### **2.1.2 Intended user base**

The intended user base for the compliance component is the LSNA, his designees and the ASLBP (Atomic Safety and Licensing Board Panel).

### **2.1.3 Access to functionality/information delivery**

#### **2.1.3.1 Web browser**

Certain functions of the system are best accessed through a WWW browser (e.g. Netscape, Internet Explorer, etc.) through the standard HTTP/HTML mechanism bolstered by CGI programs that interact with the data stores. Most commercial and open source network management software currently employ a web-based interface. Specifically, those aspects of the monitoring function that change rapidly can best be monitored through a browser. Examples of these are troubleshooting on-going problems and ascertaining the status of a particular sub-component at a particular time. Historical trends will be maintained both in HTML tables and graphically.

A web browser is also anticipated as the normal interface to generate reports on demand, with an HTML forms interface providing the report and data selection, as well as the formatting function.

### **2.1.3.2 Hard-copy delivery**

It is anticipated that certain reports, especially periodic reports "for the record," will be automatically printed and physically delivered to their intended recipient(s).

### **2.1.3.3 E-mail delivery**

E-mail is an alternative method of delivery most appropriate for exception reports, but is useful for all report types.

### **2.1.3.4 Interactive login**

Interactive access to the system will be required to produce on-demand reports that have not been anticipated in the design of the web-based, on-demand facility described above.

### **2.1.3.5 File system access**

File system access is required for ready availability of system logs and other source data for off-line processing and archival.

### **2.1.3.6 Pager notification**

Certain types of exception reports, e.g. notifications of system unavailability, mandate a more aggressive notification. In these instances, the system administrator will be paged automatically with a description of the exception in order to expedite repair.

## **2.1.4 Component elements and their functionality**

### **2.1.4.1 Data retrieval element**

This element will consist of one or more programs which will routinely "rove" participant sites, fetching participant data (documents, statistics, and other) and storing this data pending processing. The exact nature of the data retrieval element will depend on the details of the alternative selected for the storage component, but it is analogous to a "web spider." A web spider, when presented with a starting URL, will traverse all hyperlinks within the body of documents "under" the URL. Through this methodology, it is possible to retrieve and replicate the entire static structure of a web site for further processing.

### **2.1.4.2 Data storage**

This element is responsible for storing both data to be processed and the results of that processing. Both file system storage and database storage will be accommodated. The database will be a network-capable SQL relational database that will provide structured data to both front ends, i.e. the compliance and presentation components.

#### **2.1.4.3 Data processing**

This element will process the data retrieved, store the results of the processing, and generate the required reports.

#### **2.1.4.4 Data presentation and reporting tool**

This element consists of several programs that process report outputs into formats appropriate for the delivery mechanisms described above, and assist a user in specification of on-demand reports.

#### **2.1.4.5 System assuredness with further sub-elements**

This element provides a level of assuredness that the systems the LSN is housed on are functioning as required. There are several main sub-elements:

- **Security mechanisms.** Security sub-elements include a firewall or firewall software, secure remote administration software, and intrusion detection software.
- **Network monitoring and management.** This sub-element monitors hardware and software and reports outages or sub-optimal operation. It also gathers low-level statistics on network operation for trend and throughput analysis.
- **Physical plant and reliability mechanisms.** This sub-element provides appropriate environmental and power conditioning and implements disaster recovery mechanisms, e.g. a backup/restore capability.

#### **2.1.5 Hardware and software required**

No attempt is made to specify make and model of hardware and software at this time. Where appropriate, examples of products will be provided, but these are not intended to represent a comprehensive list of alternatives or preferred selections. Since there is a competitive market for these products, they will be used to develop ballpark pricing estimates, but this should not be construed as an attempt to preselect a vendor or product.

##### **2.1.5.1 Computer system hardware**

A single computer system of the workstation class is adequate for this functionality. The security sub-element mandates that the system be separate from and more restricted than the computer system (described below) that provides general access. The system should be equipped with the standard components, a graphical display, and a device appropriate for backup. Examples of this

type of system include an i386-architecture workstation (e.g. Pentium III "PC") running open-source Unix (e.g. FreeBSD or Linux), or Microsoft NT, a Sun workstation running Solaris, or a Compaq/DEC Alpha running VMS. The primary selection criteria for the specific hardware and operating system should be based on security objectives, with specific functionality a secondary (but important) consideration.

### **2.1.5.2 Computer system software**

The following software components will be required: a web server (e.g. Apache, Netscape Enterprise, MS IIS), a database with accompanying report generation software (e.g. PostgreSQL, Oracle, MS SQL Server), firewall software (e.g. IPFW, ipfilter, Firewall-1), network monitoring and management software (e.g. Big Brother, SunNet Manager, HP OpenView), and a web spider (e.g. MoMspider, BRS/Search, Fulcrum Search Server). Note that the web server, database, and web spider are also part of the presentation component described in Section 2.2, below. The same software can be used for both purposes. In addition, it is anticipated that this component will require some custom software, scripts and CGI's rather than full-blown applications.

## **2.2 Presentation Component**

This component is a "front-end" with a large set of users who require access to a wide range of information at arbitrary times. It is intended to fulfill the requirement to provide information to interested parties through WWW technology.

### **2.2.1 Intended functionality**

It will be a WWW presentation interface with additional sub-components that consist of:

- **Introductory and overview documentation.**
- **Training / tutorial materials on how to use the site to obtain LSN-related information, and the other aspects of the site, and how to submit to the docket.**
- **Portal software that allows user customization of user interfaces and user document search and access strategies.**
- **A search facility that allows LSN-wide searching of participant materials, including individual user custom searching strategies.**
- **Publication of statistical information on LSN participant sites, including site content and performance.**

- Aggregation and publication of overall LSN access and usage statistics, e.g., number of hits.
- A web-based interactive forum in which interested parties can discuss or exchange information regarding LSN matters.
- Help-desk assistance (with escalation) for participants and public users.
- A LISTSERV (e-mail list manager) to allow participants to easily send electronic mail to all interested parties. A number of mailing lists will be created as needed for discussion of specific subjects, including a list with the e-mail addresses of all participants for notification purposes. The LISTSERV software will allow each participant to manage their own subscriptions to interest lists and archive messages to the lists. The LSN is not intended to provide a public LISTSERV function.

### **2.2.2 Intended user base**

The intended user base includes all participants and potential participants, the LSNA and his designees, the press, and the general public.

### **2.2.3 Access to functionality/information delivery**

#### **2.2.3.1 Web browser**

Web browsers will be the predominant access method to this component. It is anticipated that this will be the sole access method for the majority of users. Browsers will be used to gain access to general information, participant documentary collections, and to discussion forums.

#### **2.2.3.2 E-mail**

E-mail will be used for notification to participants by the LSNA or designee, and interaction with the LISTSERV described above.

### **2.2.4 Hardware and software required**

No attempt is made to specify make and model of hardware and software at this time. Where appropriate, examples of products will be provided but these are not intended to represent a comprehensive list of alternatives or preferred selections. Since there is a competitive market for these products, they will be used to develop ballpark pricing estimates but this should not be construed as an attempt to preselect a vendor or product.

#### **2.2.4.1 Computer system hardware**

A single computer system of the server class will be required for this functionality. Examples are as in Section 2.1.5.1, but this component will require more processing power and capacity, i.e. a faster CPU or multi-CPU machine, more RAM, bigger disk storage, etc. The primary selection criteria for the hardware is that it should be supported by the portal software selected (the most critical software component).

#### **2.2.4.2 Computer system software**

The following software components will be required: a web server (e.g. Apache, Netscape Enterprise, MS IIS), a database with accompanying report generation software (e.g. PostgreSQL, Oracle, MS SQL Server), firewall software (e.g. IPFW, ipfilter, Firewall-1), a web forum (e.g. UltimateBulletinBoard, WWWboard), and a LISTSERV (e.g. MailMan, majordomo, LISTPROC), and portal software (e.g. Plumtree, Excalibur, Knowledge Center). Note that the web server, database, and web spider are also part of the compliance component described in Section 2.1. The same software can be used for both purposes.

#### **2.2.5 Participant activities and responsibilities**

Primarily as end-users. This component is the responsibility of the LSNA. However, since participant computers will be located within the same security zone as the other components (and other participant sites), participants will be required to follow comparable security guidelines on their servers as on the presentation site.

### **2.3 Storage Component**

The storage component represents the "back-end" functionality serving the needs of the front-end components rather than the end-users directly. The data it contains consists of the documents required to be published by participants in accordance with the LSN Rule and accompanying required information.

#### **2.3.1 Participant systems**

Each participant will assemble, prepare, and publish their own collections of documents on a WWW server located at an NRC-managed campus. The compliance component and the presentation component will access these collections as WWW clients and perform the necessary operations routinely through participant servers.

#### **2.3.2 Intended functionality**

This component is the "back-end" that will provide data to the front-end components described above. Participants will make their documentary collections available on a web server owned

and managed by them, located in close network proximity to the compliance and presentation components, most likely on a single LAN site established by the LSNA. Participants are free to establish their own web server, collaborate on a community web server, procure commercial web service, or employ any other provisioning method they choose as long as it can accommodate the campus concept and remain in compliance with necessary security and administrative requirement. Note that this will probably not allow certain extremely low-cost provisioning options, e.g. commercial "shared server" web service.

### **2.3.3 Intended user base**

The intended user base is solely the LSN front-end software described above. Participants will not be able to make their document collections (and ancillary information) generally accessible on the Internet directly from their web servers, (i.e., other than through the LSN portal site).

### **2.3.4 Access to functionality/information delivery**

#### **2.3.4.1 Web access**

This may not be the primary method by which participant materials are accessed (see below). If supported, access will be interactive (e.g. when a home site front-end user requests a particular document, the home site front end will fetch it from the participant's repository). Access will also be by batch (e.g. the portal will fetch all materials on the participant sites, index them, and retain only the references to the documents for subsequent presentation in response to end-user queries).

#### **2.3.4.2 Network file system access**

For the purposes of efficient access to participant collections, it is anticipated that participants will share their collections through a network file system facility in addition to, or instead of an HTTP server. Note that this cannot be allowed in the distributed alternative for security and performance reasons.

#### **2.3.4.3 SNMP access**

For obtaining network usage statistics and performing monitoring activities, the compliance component will also require SNMP (Simple Network Management Protocol) access to participant web servers and network interface equipment.

#### **2.3.4.4 Administrative access**

To ensure that participant sites are complying with required security practices, and for backup administration (since the participants' servers are located at a site other than their offices), participants may be required to provide the LSNA with administrative access to their systems.

### **2.3.5 Participant activities and responsibilities**

Participants are required to make available all documents subject to discovery in standard, LSNA-approved formats on a web site. This consists of the following activities.

#### **2.3.5.1 Document identification and assembly**

This is simply identifying and assembling the documents. This function will provide a reasonably accurate estimate of the storage space and preparation effort required.

#### **2.3.5.2 Document preparation**

Documents are to be converted to a format that includes an image representation (TIFF/CCITT or TIFF/JPEG), a searchable text file, and a bibliographic header containing metadata about the document. In many cases, this will require scanning and OCR conversion of a paper document. However, if a document exists in electronic format, it may be preferred to perform a more accurate conversion with appropriate software.

The LSNA may allow participants to provide their documentary collections in alternative page-representation formats such as PDF and proprietary word processor formats like Microsoft Word. This will depend on whether the data retrieval software selected for the front-end components is capable of indexing, searching, and otherwise processing these formats. The requirement to provide a bibliographic header for each document will remain regardless of the documents' formats. The bibliographic header is subject to the same retrieval requirements as the source document, e.g. provided as a searchable text file by the web server, as HTTP headers, or from within a database.

Document preparation is potentially the most labor-intensive and costly aspect of building the LSN due to the large number of documents included. Therefore, the burden on a participant is more closely correlated to the number of documents they must prepare than any other factor.

#### **2.3.5.3 Document publication**

Under this alternative, participants will place their documents on their web server located within the LSN campus through an LSNA-approved file transfer mechanism. It is anticipated that this file transfer mechanism will be designed to ensure data integrity, privacy, and non-repudiation during the transfer process.

For consistency in retrieval by the front-end components described above in Sections 2.1 and 2.2, participants may be required to follow a standard format in layout of the web pages, or file system structure that provide access to the documents themselves and accompanying bibliographic header information. Note that many web servers provide a standard way to publish meta information on web-served documents (e.g. by including this information in a file of the

same name as the source document in a meta sub-directory). Use of this function may be required by the data retrieval elements of the front-end components.

#### **2.3.5.4 Coordination/Integration**

Access from the portal/presentation site to the participant sites must be performed by software with fixed expectations of participant site structure and content. This will require that participants coordinate their site design and operations with the LSNA, which is expected to be a significant on-going operational requirement. Note that because participants may have to administer their web servers in a location distant from their offices, this may require remote administration capability or on-site staffing at the campus location.

#### **2.3.6 Hardware and software required**

It is difficult to determine the exact hardware and software components due to the possibility of collaboration and the differences in the size of the documentary collections of the participants. Even though the design of this alternative mandates an LSN campus, options still exist for server setup. Foreseeable alternatives for setting up a web server include a dedicated resource at the LSN campus, or sharing a server with other participants. If a participant adopts a strategy of implementing a dedicated web server or collaborating with other participants, the size of the required computer will depend on the aggregate size of the document collection the server is intended to manage.

For those who choose to implement their own dedicated resource, a fairly modest machine may be fully satisfactory. An example of this would be an i386 architecture "PC" (e.g. 166MHz Pentium, 128MB RAM, 4GB disk) running an open-source Unix-like operating system (FreeBSD or Linux) and the open-source Apache web server. The total cost (hardware and software) of such a machine at current (4<sup>th</sup> quarter 1999) market prices is under \$1,000, and it would accommodate as many as 10,000 documents (at an estimated 250KB per document). Many operational costs, including maintenance of site environmental controls and aspects of disaster recovery, can logically be expected to be shared among all participant members in the LSN campus.

Larger document collections will, naturally, require more powerful computer systems, and operational costs will scale as well. Due to the considerable resources of large participants and the likelihood of their already possessing significant computer system infrastructure, no attempt has been made to develop a cost for these facilities.

### **3.0 Implications of this Design Alternative**

Selection of this alternative for the final design of the LSN will have implications in several key areas. These represent tradeoffs of functionality and/or cost factors compared to the other remaining alternative designs. Appendix 1, *General Attributes of Alternatives*, presents a tabular comparison of each Alternative considered by the TWG, highlighting these tradeoffs. Note that Alternatives One and Two were considered not viable technical solutions by the TWG, and were discarded.

#### **3.1 Administrator management control**

Compared to Alternative Three, this design allows the LSNA more control over the ultimate presentation of LSN materials. Because the participants' web servers are located within a facility that is under the administrative control of the LSNA, the LSNA can directly control the content and management of those sites. The degree of control afforded by this Alternative and that of Alternative Five are comparable.

#### **3.2 Participant responsibilities**

Participants are responsible for publication of their documentary collections under all alternative designs, including creating and operating a web site. Compared to Alternatives Three and Five, participants will be less free to select the technologies for site implementation, but will have a lessened burden for maintaining its operation at a high level of availability and performance. This will decrease the participant's operational cost and require a higher level of computer operations expertise compared to Alternative Three and, to a lesser extent, Alternative Five.

#### **3.3 Cost Factors**

The aggregate cost (to both the LSNA and the participants) of this design is higher than Alternative Three and lower than Alternative Five. Participants have less freedom to select technologies that are applicable to site development, primarily low-cost, easy-entry technologies. The entry cost for LSN participation is likely to be higher and less equitably distributed, i.e. use of the shared campus facility will impose a certain fixed cost on a participant irrespective of their collection size. Due to the decreased demand on individual participant sites for operational readiness and performance (because these are provided under the umbrella of the campus), it is likely that some of the life-cycle cost components will be lower, specifically, maintenance and, especially, network communications. However, it is estimated that the overall cost to the participants (excluding their individual document preparation costs) will only vary by about ten percent (10%) among the three alternatives.

The estimated cost to the NRC to build and maintain the compliance and presentation component is significantly lower than Alternative Five and slightly higher than Alternative Three due to the need to maintain a shared infrastructure. Appendix 2, *LSN Costs for Alternative Four*, outlines a

rough estimate of the cost to the NRC, based on currently available information. Note that it is not clear how a campus LSN will be funded. Aggregating the servers for the collections may make appropriate allocation of costs difficult. The usual issues in any compensation situation arise, e.g., what happens when a participant disputes what it owes or when a participant loses standing but still owes a contribution? The risk of unanticipated expenditures is shifted from one participant for their own requirements to all participants and the LSN campus host.

### **3.4 Implementation Schedule**

The preliminary LSN implementation schedule represented by the Gantt chart (Appendix 3) does not appear to be materially affected by the Alternative selected. This is somewhat due to the lack of detail in the schedule appropriate to this stage of the planning process. It will be useful to expand the level of detail in the areas of procurement, design, and implementation of each component for planning purposes but it doesn't appear to be a useful way to differentiate among alternatives.

Lack of schedule differentiation between alternatives arises from the fact that the differences between alternatives are only in one of the three major components, i.e. the storage component, and that implementation of this component will take comparatively little time. The more time-intensive aspects of overall LSN implementation, specifically document conversion and site integration, are, essentially, identical across alternatives. The other activities common to all three alternatives, specifically, the development and implementation of the compliance and presentation components, have potentially more impact on the schedule and staffing than the development and implementation of the storage component.

One area of potentially significant impact on how selection of a particular alternative will affect the schedule is in the procurement of the storage server for Alternative Five. This is the one component among all the alternatives that cannot be considered an "off-the-shelf" item and timely delivery after ordering cannot be assumed. Generally, systems of this nature are built to customer specification and delivery schedules can vary significantly depending on what item is ordered and when the item is ordered. Delays of three to six months are not uncommon. Efforts should be made to eliminate procurement delays associated with this item from the critical path of the project plan, if at all possible.

**LSN DESIGN MANAGEMENT PLAN  
FOR ALTERNATIVE FIVE**

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# LSN Design Management Plan for Alternative Five

## 1.0 Introduction

This document presents a description of Alternative Five for the potential design of the Licensing Support Network (LSN) home site and participant sites. It is based on work done by the LSN Advisory Review Panel (LSNARP) Technical Working Group (TWG) during the months of October through December 1999. A total of five potential LSN designs were evaluated. Of these, two (Alternatives One and Two) were discarded. The other two designs, Alternative Three, the "distributed storage," and Alternative Four, the "LSN campus" approaches are discussed in separate documents.

The three final design alternatives share many characteristics but differ in important ways, most significantly in the areas of the ability of the LSN Administrator (LSNA) to exert management control over the overall LSN, the burden placed on participants to fund, create, and manage their sites, and the overall cost to the NRC for the "home site." How Alternative Five impacts these factors is discussed below.

The LSN can be regarded as consisting of three functional components. Specifically, these are:

- A component that aids the LSNA in auditing participant compliance with the LSN Rule.
- A component that presents LSN information to participants, other interested parties, and the general public.
- A component that stores LSN documentary information for the use of components one and two.

The alternative designs validated by the TWG differ primarily in the details of the third component; specifically, in how and where LSN materials are stored. The design of the first and second component will not be materially affected by the alternative selected for the third component, although there are differences in the details of implementation and operation.

The following sections will describe the Alternative Five, the "consolidated storage" alternative, the details of its components, how they "fit" together, the hardware and software used in the design, and an approximation of the component life-cycle costs.

## **2.0 Description of Alternative Five**

Alternative Five has been named the "consolidated storage" alternative by the members of the TWG. This terminology focuses on a key characteristic of the design - that each participant, assemble, prepare, and publish their own collections of documents on a WWW server that they control and place at a site of their choosing, and that their information is replicated at a single central storage facility maintained by the LSNA. This approach is essentially identical to the design originally conceived in the early conceptual development of the LSN, with additional storage capability included, effectively used as a 100% cache of participant documentary materials. This functionality allows improved performance, reliability, ease of implementation, and lessens the operational burden on participants.

### **2.1 Compliance Component**

This component is a "front-end" component (one with which end-users interact) with a small set of users who require specific information at specific times. It is intended to address the in-house needs of the LSNA.

#### **2.1.1 Intended functionality**

The purpose of this component is two-fold. First, this component ensures that the LSN is functioning as intended and assures this functioning to the intended user base. Second, it provides the necessary reports on LSN functionality that enable the LSNA to ascertain participant compliance with the LSN Rule and that aid in determining whether remedial action is required.

The primary method of following the operation and evolution of the LSN is through a reporting mechanism. Reports will be generated automatically by the system on a periodic basis, when exceptional conditions arise, and on-demand.

##### **2.1.1.1 Periodic reports**

The full array of required reports is yet to be determined. However, the following types of reports have been identified at this time:

- A listing of changes in participant document collections, i.e. additions, deletions, and modifications.
- A report on the "health" of the LSN, component and sub-component uptime and performance data (e.g. web server hits, average response times, number of users, etc.)

### **2.1.1.2 Exception reports**

Exception reports will be generated when anomalous conditions are noted. Candidates for this type of report include:

- When auditing software detects a possible compliance problem with a participant collection.
- When a component of the LSN itself is determined to be malfunctioning, e.g. due to a computer or network error.
- When a security exception is noted.

### **2.1.1.3 On-demand reports**

It is anticipated that reports may need to be generated from time-to-time to respond to an exception or to "drill down" to garner additional information on a perceived compliance problem. A facility will be provided to expedite this process. It is anticipated that HTML forms will be designed to allow individuals to design and generate most reports on demand. However, it is likely that some reports may need to be developed by systems personnel from time-to-time.

### **2.1.2 Intended user base**

The intended user base for the compliance component is the LSNA, his designees and the ASLBP (Atomic Safety and Licensing Board Panel).

### **2.1.3 Access to functionality/information delivery**

#### **2.1.3.1 Web browser**

Certain functions of the system are best accessed through a WWW browser (e.g. Netscape, Internet Explorer, etc.) through the standard HTTP/HTML mechanism bolstered by CGI programs that interact with the data stores. Most commercial and open source network management software currently employ a web-based interface. Specifically, those aspects of the monitoring function that change rapidly can best be monitored through a browser. Examples of these are troubleshooting on-going problems and ascertaining the status of a particular sub-component at a particular time. Historical trends will be maintained both in HTML tables and graphically.

A web browser is also anticipated as the normal interface to generate reports on demand, with an HTML forms interface providing the report and data selection, as well as the formatting function.

### **2.1.3.2 Hard-copy delivery**

It is anticipated that certain reports, especially periodic reports "for the record," will be automatically printed and physically delivered to their intended recipient(s).

### **2.1.3.3 E-mail delivery**

E-mail is an alternative method of delivery most appropriate for exception reports, but is useful for all report types.

### **2.1.3.4 Interactive login**

Interactive access to the system will be required to produce on-demand reports that have not been anticipated in the design of the web-based, on-demand facility described above.

### **2.1.3.5 File system access**

File system access is required for ready availability of system logs and other source data for off-line processing and archival.

### **2.1.3.6 Pager notification**

Certain types of exception reports, e.g. notifications of system unavailability, mandate a more aggressive notification. In these instances, the system administrator will be paged automatically with a description of the exception in order to expedite repair.

## **2.1.4 Component elements and their functionality**

### **2.1.4.1 Data retrieval element**

This element will consist of one or more programs which will routinely "rove" participant sites, fetching participant data (documents, statistics, and other) and storing this data pending processing. The exact nature of the data retrieval element will depend on the details of the alternative selected for the storage component, but it is analogous to a "web spider." A web spider, when presented with a starting URL, will traverse all hyperlinks within the body of documents "under" the URL. Through this methodology, it is possible to retrieve and replicate the entire static structure of a web site for further processing.

### **2.1.4.2 Data storage**

This element is responsible for storing both data to be processed and the results of that processing. Both file system storage and database storage will be accommodated. The database will be a network-capable SQL relational database that will provide structured data to both front ends, i.e. the

compliance and presentation components.

#### **2.1.4.3 Data processing**

This element will process the data retrieved, store the results of the processing, and generate the required reports.

#### **2.1.4.4 Data presentation and reporting tool**

This element consists of several programs that process report outputs into formats appropriate for the delivery mechanisms described above, and assist a user in specification of on-demand reports.

#### **2.1.4.5 System assuredness with further sub-elements**

This element provides a level of assuredness that the systems the LSN is housed on are functioning as required. There are several main sub-elements:

- **Security mechanisms.** Security sub-elements include a firewall or firewall software, secure remote administration software, and intrusion detection software.
- **Network monitoring and management.** This sub-element monitors hardware and software and reports outages or sub-optimal operation. It also gathers low-level statistics on network operation for trend and throughput analysis.
- **Physical plant and reliability mechanisms.** This sub-element provides appropriate environmental and power conditioning and implements disaster recovery mechanisms, e.g. a backup/restore capability.

#### **2.1.5 Hardware and software required**

No attempt is made to specify make and model of hardware and software at this time. Where appropriate, examples of products will be provided, but these are not intended to represent a comprehensive list of alternatives or preferred selections. Since there is a competitive market for these products, they will be used to develop ballpark pricing estimates, but this should not be construed as an attempt to preselect a vendor or product.

### **2.1.5.1 Computer system hardware**

A single computer system of the workstation class is adequate for this functionality. The security sub-element mandates that the system be separate from and more restricted than the computer system (described below) that provides general access. The system should be equipped with the standard components, a graphical display, and a device appropriate for backup. Examples of this type of system include an i386-architecture workstation (e.g. Pentium III "PC") running open-source Unix (e.g. FreeBSD or Linux), or Microsoft NT, a Sun workstation running Solaris, or a Compaq/DEC Alpha running VMS. The primary selection criteria for the specific hardware and operating system should be based on security objectives, with specific functionality a secondary (but important) consideration.

### **2.1.5.2 Computer system software**

The following software components will be required: a web server (e.g. Apache, Netscape Enterprise, MS IIS), a database with accompanying report generation software (e.g. PostgreSQL, Oracle, MS SQL Server), firewall software (e.g. IPFW, ipfilter, Firewall-1), network monitoring and management software (e.g. Big Brother, SunNet Manager, HP OpenView), and a web spider (e.g. MoMspider, BRS/Search, Fulcrum Search Server). Note that the web server, database, and web spider are also part of the presentation component (described in Section 2.2, below). The same software can be used for both purposes. In addition, it is anticipated that this component will require some custom software, scripts and CGI's rather than full-blown applications.

## **2.2 Presentation Component**

This component is a "front-end" with a large set of users who require access to a wide range of information at arbitrary times. It is intended to fulfill the requirement to provide information to interested parties through WWW technology.

### **2.2.1 Intended functionality**

It will be a WWW presentation interface with additional sub-components that consist of:

- **Introductory and overview documentation.**
- **Training / tutorial materials on how to use the site to obtain LSN-related information, and the other aspects of the site, and how to submit to the docket.**
- **Portal software that allows user customization of user interfaces and user document search and access strategies.**

- A search facility that allows LSN-wide searching of participant materials, including individual user custom searching strategies.
- Publication of statistical information on LSN participant sites, including site content and performance.
- Aggregation and publication of overall LSN access and usage statistics, e.g., number of hits.
- A web-based interactive forum in which interested parties can discuss or exchange information regarding LSN matters.
- Help-desk assistance (with escalation) for participants and public users.
- A LISTSERV (e-mail list manager) to allow participants to easily send electronic mail to all interested parties. A number of mailing lists will be created as needed for discussion of specific subjects, including a list with the e-mail addresses of all participants for notification purposes. The LISTSERV software will allow each participant to manage their own subscriptions to interest lists and archive messages to the lists. The LSN is not intended to provide a public LISTSERV function.

## **2.2.2 Intended user base**

The intended user base includes all participants and potential participants, the LSNA and his designees, the press, and the general public.

## **2.2.3 Access to functionality/information delivery**

### **2.2.3.1 Web browser**

Web browsers will be the predominant access method to this component. It is anticipated that this will be the sole access method for the majority of users. Browsers will be used to gain access to general information, participant documentary collections, and to discussion forums.

### **2.2.3.2 E-mail**

E-mail will be used for notification to participants by the LSNA or designee, and interaction with the LISTSERV described above.

## **2.2.4 Hardware and software required**

No attempt is made to specify make and model of hardware and software at this time. Where appropriate, examples of products will be provided but these are not intended to represent a comprehensive list of alternatives or preferred selections. Since there is a competitive market for these products, they will be used to develop ballpark pricing estimates, but this should not be construed as an attempt to preselect a vendor or product.

### **2.2.4.1 Computer system hardware**

A single computer system of the server class will be required for this functionality. Examples are as in Section 2.1.5.1, but this component will require more processing power and capacity, i.e. a faster CPU or multi-CPU machine, more RAM, bigger disk storage, etc. The primary selection criteria for the hardware is that it should be supported by the portal software selected (the most critical software component).

### **2.2.4.2 Computer system software**

The following software components will be required: a web server (e.g. Apache, Netscape Enterprise, MS IIS), a database with accompanying report generation software (e.g. PostgreSQL, Oracle, MS SQL Server), firewall software (e.g. IPFW, ipfilter, Firewall-1), a web forum (e.g. UltimateBulletinBoard, WWWboard), and a LISTSERV (e.g. MailMan, majordomo, LISTPROC), and portal software (e.g. Plumtree, Excalibur, Knowledge Center). Note that the web server, database, and web spider are also part of the compliance component described in Section 2.1. The same software can be used for both purposes.

## **2.2.5 Participant activities and responsibilities**

None except as end-users. This component is the responsibility of the LSNA.

## **2.3 Storage Component**

The storage component represents the "back-end" functionality serving the needs of the front-end components rather than the end-users directly. The data it contains consists of documents required to be published by participants in accordance with the LSN Rule, and accompanying required information.

### **2.3.1 Participant systems**

Each participant will assemble, prepare, and publish their own collections of documents on a WWW server. The compliance component and the presentation component will access these collections as WWW clients and perform the necessary operations routinely through participant sites.

### **2.3.2 Consolidated storage server**

A server intended to aggregate all LSN data will be implemented in close network proximity to the compliance and presentation components. It will act as a 100% cache for participant sites, loading itself from their sites and then supplying the front-end components with data. This will allow a less rigorous design in participant sites, because they will not be required to provide high levels of performance and operational characteristics. The consolidated server can access participant sites at a slow rate of speed and at convenient times (for the participants), and then provide this data at high rates of speed and at all times to the presentation and compliance components.

### **2.3.3 Intended functionality**

Participants will make their documentary collections available on a web server located at the site of their choosing and attached to the Internet. Participants are free to establish their own web server, collaborate on a community web server, procure commercial web service, or employ any other provisioning method they choose. The storage server will load itself from the participant web sites and subsequently be accessed by the compliance and presentation components.

### **2.3.4 Intended user base**

The intended user base of participant sites is primarily the LSN consolidated storage server described above. The user base of the storage server are the compliance and presentation front-ends components.

It is anticipated that participants may choose to make their document collections (and ancillary information) generally accessible on the Internet, (i.e., other than through the LSN portal site). However, any documents intended to be filed in the licensing process will have to be obtained or cross-referenced through the LSN portal site to ensure the uniqueness, consistency, and traceability of document identification (accession) numbers.

### **2.3.5 Access to functionality/information delivery**

#### **2.3.5.1 Web access**

This will be the primary method by which participant materials are accessed. Access will be by batch (e.g. the storage server will fetch all materials from the web site, the portal will index them, and retain references to their location on the storage server for subsequent presentation in response to end-user queries).

#### **2.3.5.2 File system access**

It is expected that the presentation component will access the consolidated storage component directly through a file system rather than through a web server for greater efficiency in data transfer.

### **2.3.5.3 SNMP access**

For obtaining network usage statistics and performing monitoring activities, the compliance component will also require SNMP (Simple Network Management Protocol) access to participant web servers and network interface equipment.

### **2.3.5.4 Interactive login**

The consolidated storage server will support interactive login for administration.

## **2.3.6 Participant activities and responsibilities**

Participants are required to make available all documents subject to discovery in standard, LSNA-approved formats on a web site. This consists of the following activities.

### **2.3.6.1 Document identification and assembly**

This is simply identifying and assembling the documents. This function will provide a reasonably accurate estimate of the storage space and preparation effort required.

### **2.3.6.2 Document preparation**

Documents are to be converted to a format that includes an image representation (TIFF/CCITT or TIFF/JPEG), a searchable text file, and a bibliographic header containing metadata about the document. In many cases, this will require scanning and OCR conversion of a paper document. However, if a document exists in electronic format, it may be preferred to perform a more accurate conversion with appropriate software.

The LSNA may allow participants to provide their documentary collections in alternative page-representation formats such as PDF and proprietary word processor formats like Microsoft Word. This will depend on whether the data retrieval software selected for the front-end components is capable of indexing, searching, and otherwise processing these formats. The requirement to provide a bibliographic header for each document will remain regardless of the documents' formats. The bibliographic header is subject to the same retrieval requirements as the source document, e.g. provided as a searchable text file by the web server, as HTTP headers, or from within a database. Document preparation is potentially the most labor-intensive and costly aspect of building the LSN, due to the large number of documents included. Therefore, the burden on a participant is more closely correlated to the number of documents they must prepare than any other factor.

### **2.3.6.3 Document publication**

Under this alternative, participants will place their documents on the web server of their choice through whatever file transfer mechanism is supported by the web server. This web server must be connected full-time to the Internet through a communications circuit of adequate speed (to be determined by the LSNA) and have a unique IP address and domain name. The domain name and root URL for the documentary collection, and a list of documents, must be provided to the LSNA. For consistency in retrieval by the storage server described above, participants may be required to follow a standard format in layout of the web pages that provide access to the documents themselves and accompanying bibliographic header information. Note that many web servers provide a standard way to publish meta information on web-served documents (e.g. by including this information in a file of the same name as the source document in a meta sub-directory). Use of this function may be required by the data retrieval elements of the front-end components.

### **2.3.6.4 Coordination/Integration**

Access from the storage server site to the participant sites will be performed by software with fixed expectations of participant site structure and content. This will require that participants coordinate their site design and operations with the LSNA, which is expected to be a significant on-going operational requirement.

### **2.3.7 Hardware and software required**

It is difficult to determine the exact hardware and software components due to the possibility of collaboration and the differences in the size of the documentary collections of the participants. Foreseeable alternatives for setting up a web server include a dedicated resource at the participant's site, sharing a server with other participants or non-LSN-related web sites, "co-location" of a participant-owned machine at an IPP (Internet Presence Provider) or outsourcing the entire site to an IPP. Each of these alternatives have a wide range of cost, convenience, assuredness, and administrative issues associated with them.

If a participant adopts a strategy of provisioning a dedicated web server, the size of this machine will, again, depend on the size of the document collection the participant is required to make available. Participants with an extremely small document collection will probably choose to lease web space on an IPP machine or "piggy-back" on another participant's site rather than implement their own web server. The cost of this facility depends on the amount of data published, the bandwidth the site requires, and other metrics. Typical costs for web sites that are appropriate for small participants range from free (of incremental cost over maintaining a basic Internet-access capability) to several hundreds of dollars per month.

For those who choose to implement their own dedicated resource, a fairly modest machine may be fully satisfactory. An example of this would be an i386 architecture "PC" (e.g. 166MHz Pentium, 128MB RAM, 4GB disk) running an open-source Unix-like operating system (FreeBSD or Linux)

and the open-source Apache web server. The total cost (hardware and software) of such a machine at current (4<sup>th</sup> quarter 1999) market prices is under \$1,000, and it would accommodate as many as 10,000 documents (at an estimated 250KB per document). Note that operational requirements, especially the disaster recovery aspects (regular backups with off-site storage), and data communications costs are far less critical under this alternative due to the intercession of the storage server.

Participants with larger document collections will, naturally, require a more powerful computer system, and operational costs will scale as well. Due to the considerable resources of these participants and the likelihood of their already possessing significant computer system infrastructure, no attempt has been made to develop a cost for these facilities.

The storage server will be a high-capacity, high-performance computer capable of housing a fairly large amount of data (approximately double the size of the entire documentary collections of all the participants), estimated to be in the four terabyte range. An example of a system in this class is a Sun Microsystems model 10000 in an appropriate configuration. The software to provide the file sharing capability is generally included with the base system and the software mentioned in the description of the portal system above will be used to populate the storage server so there is no additional software component.

### **3.0 Implications of this Design Alternative**

Selection of this alternative for the final design of the LSN will have implications in several key areas. These represent tradeoffs of functionality and/or cost factors compared to the other remaining alternative designs. Appendix 1, *General Attributes of Alternatives*, presents a tabular comparison of each Alternative considered by the TWG, highlighting these tradeoffs. Note that Alternatives One and Two were considered not viable technical solutions by the TWG, and were discarded.

#### **3.1 Administrator management control**

Compared to Alternative Three, this design allows the LSNA more control over the ultimate presentation of LSN materials. Compared to Alternative Four, this design allows the LSNA slightly less control. Because the participants are in control of the design and management of their individual web sites, and because those sites are not topologically close together, the LSNA can only influence the content and management of those sites indirectly through established requirements. However, the LSNA controls a resource, the storage server, that will preclude untoward events at participant sites from affecting the ability of the LSN to provide information to end-users.

#### **3.2 Participant responsibilities**

Participants are responsible for publication of their documentary collections under all alternative designs, including creating and operating a web site. Participants will have more freedom to select the technologies for site implementation and will have a decreased burden for maintaining its

operation at a high level of availability and performance. This will decrease the participant's operational cost and lower the requirement to acquire and maintain high levels of computer expertise compared to Alternatives Three and Four.

### 3.3 Cost

The aggregate cost (to both the LSNA and the participants) of this design is significantly higher than Alternatives Three and Four. This design has the characteristic that each participant's implementation costs are a function of the size of their documentary collections. Because participants are free to select technologies of their choice with their own cost factors included in the selection process, this will probably result in cost savings on their behalf. Due to the decreased demand on the participant sites for operational readiness and performance, it is likely that the overall life-cycle cost components will be lower, specifically in site maintenance and communications costs. However, it is estimated that the overall cost to the participants (excluding their individual document preparation costs) will only vary by about ten percent (10%) among the three alternatives.

The cost to the NRC to build and maintain its portion of the LSN is estimated to be significantly higher than under Alternatives Three and Four due to the need to acquire and maintain the storage server. Such systems are well within the capabilities of modern computing systems but the raw storage needed, and the processing power to manage that much data can be costly. Appendix 2, *LSN Costs for Alternative Five*, outlines a rough estimate of the cost to the NRC, based on currently available information.

### 3.4 Implementation Schedule

The preliminary LSN implementation schedule represented by the Gantt chart (Appendix 3) does not appear to be materially affected by the Alternative selected. This is somewhat due to the lack of detail in the schedule appropriate to this stage of the planning process. It will be useful to expand the level of detail in the areas of procurement, design, and implementation of each component for planning purposes but it doesn't appear to be a useful way to differentiate among alternatives.

Lack of schedule differentiation between alternatives arises from the fact that the differences between alternatives are only in one of the three major components, i.e. the storage component, and that implementation of this component will take comparatively little time. The more time-intensive aspects of overall LSN implementation, specifically document conversion and site integration, are, essentially, identical across alternatives. The other activities common to all three alternatives, specifically, the development and implementation of the compliance and presentation components, have potentially more impact on the schedule and staffing than the development and implementation of the storage component.

One area of potentially significant impact on how selection of a particular alternative will affect the schedule is in the procurement of the storage server for Alternative Five. This is the one component among all the alternatives that cannot be considered an "off-the-shelf" item and timely delivery after

ordering cannot be assumed. Generally, systems of this nature are built to customer specification and delivery schedules can vary significantly depending on what item is ordered and when the item is ordered. Delays of three to six months are not uncommon. Efforts should be made to eliminate procurement delays associated with this item from the critical path of the project plan, if at all possible.

# Explanation of Costing Tables for LSN Alternatives 3, 4, and 5

January 6, 2000

## Overall Assumptions:

- 1) Compliance and presentation components do not differ across alternatives.
- 2) Pricing presented to TWG at December 6, 1999 meeting (TWG document) is in the ballpark for the components listed. Note that the system described in the TWG document was intended to represent Alternative 5.
- 3) Level-of-effort for design and implementation will be approximately the same across alternatives using the same assumptions previously stated in developing TWG document.

## Common (and unchanged) Items:

Items common to Alternatives 3, 4, and 5, and unchanged from TWG document (item numbers as in that document):

1, 2, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 26.

## Changed items:

### Alternative 3 (distributed storage):

- 3) Significant reduction in required capability from TWG document, respecify as 2 Dell PowerEdge 8450, 4CPU, 2MB cache, 4GB RAM @ \$56,645 ea., plus 4 Dell PowerVault 650F RAID storage with 10x18GB drives @ \$41,368 ea., total = \$278,762.
- 4) Specify two units rather than one, 2@\$9,000 = \$18,000.
- 12) Toolkits for web page modification - the TWG document lists this at \$500, but it should be \$500 per computer at which a developer will sit, i.e. 5@\$500, total = \$2,500.
- 23) Scaled appropriately to decreased hardware costs, total = \$40,000.
- 25) No change from TWG document.

*Additional line item: Utility and general-purpose office software for each staffer (word*

*processor, spreadsheet, e-mail, anti-virus, etc.), 5@\$1,500 = \$7,500.*

**Alternative 4 (LSN campus):**

- 3) Significant reduction in required capability from TWG document, respecify as 2 Dell PowerEdge 8450, 4CPU, 2MB cache, 4GB RAM @ \$56,645 ea., plus 8 Dell PowerVault 650F RAID storage with 10x18GB drives @ \$41,368 ea., total = \$444,234.
- 4) Specify two units rather than one, 2@\$9,000 = \$18,000.
- 12) Toolkits for web page modification - the TWG document lists this at \$500, but it should be \$500 per computer at which a developer will sit, i.e. 5@\$500, total = \$2,500.
- 23) Scaled appropriately to decreased hardware costs, total = \$60,000.
- 25) No change from TWG document (assuming participants are responsible for own backup).

*Additional line item: Utility and general-purpose office software for each staffer (word processor, spreadsheet, e-mail, anti-virus, etc.), 5@\$1,500 = \$7,500.*

**Alternative 5 (consolidated storage):-**

- 3) Same unit (Sun 10000) plus additional 2TB disk storage, add \$431,000 for total = \$1,765,176.
- 4) Specify two units rather than one, 2@\$9,000 = \$18,000.
- 12) Toolkits for web page modification - the TWG document lists this at \$500, but it should be \$500 per computer at which a developer will sit, i.e. 5@\$500, total = \$2,500.
- 23) Scaled appropriately to increased hardware costs, total = \$378,000.
- 25) Doubled from TWG document, 2@\$28,000 for total = \$56,000.

*Additional line item: Utility and general-purpose office software for each staffer (word processor, spreadsheet, e-mail, anti-virus, etc.), 5@\$1,500 = \$7,500.*

**LSNA COSTS FOR ALTERNATIVE #3**

Item Number	DESCRIPTION (Comments and Details for Alternative #3)	Gross Estimated Cost*
<b>Non Recurring Costs...</b>		
01	<b>PORTAL SERVER</b> Dell PowerEdge 8450, Dual-CPU Pentium III, 600 MHz, 512MB Ram, 36GB SCSI3 Disk (4x9GB), CD-ROM Drive – Includes 3 years of maintenance	\$32,000.00
02	<b>AUDIT SERVER</b> Dell PowerEdge 6350, Single-CPU Pentium III, 600 MHz, 512 Ram, 18GB SCSI3 Disk (2x9 GB), re-writeable SCSI CD-ROM	\$15,000.00
03	<b>PORTAL MEMORY/STORAGE</b> 2 Dell PowerEdge 8450, 4CPU, 2MB cache, 4GB RAM@56,645 each 4 Dell PowerVault 650F RAID storage with 10x18GB drives @ \$41,368 each	\$278,762.00
04	<b>BACKUP/RECOVERY HARDWARE</b> 2 Multi-cartridge tape drives capable of backing up 70GB to a tape x 7 tapes, wide SCSI, e.g., Quantum DLT7000QDX (attached to the audit server) @ \$9,000 each	\$18,000.00
05	<b>COM DEVICES TO CONNECT BOTH TO NETWORK</b> 12 port 100baseT switch (\$1500), Cisco 2501 router (\$2,000) Note: All computer systems have incorporated 100baseT NICs	\$3,500.00
06	<b>AUXILIARY DEVICES</b> (Scanners, printers, CD writer, etc.)	\$5,000.00

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #3)	Gross Estimated Cost*
07	<b>WORKSTATION/CONSOLE FOR PORTAL ADMINISTRATOR</b> Dell Precision 420, Intel Pentium III 600MHz, 9GB disk, 256 RAM – Includes maintenance agreement for onsite service	\$5,000.00
08	<b>WORKSTATION/CONSOLE FOR AUDIT SYSTEM ADMINISTRATOR</b> Dell Precision 420, Intel Pentium III, 600MHz, 9GB disk, 256 RAM – Includes maintenance agreement for onsite service	\$5,000.00
09	<b>OPERATING SYSTEMS SOFTWARE AND OTHER SERVICES</b> Win2000 (portal and portal administrator workstation), FreeBSD 3.4 (audit server), RedHat Linux 6.2 (audit administrator workstation), Solaris 7.0 (Storage server)	N/A – Included in the hardware price
<b>Per each device as needed...</b>		
10	<b>UNDERLYING DATABASE SOFTWARE</b> 1 x Oracle (for Sun 10000), 150 concurrent user licence – \$1500/user	\$225,000.00
11	<b>PORTAL APPLICATION PACKAGES:</b> Plumtree (for portal software) – Unlimited user licences	\$100,000.00
12	<b>TOOLKITS FOR WEB PAGE MODIFICATION</b> (if over and above gadgets) \$500 per computer at which a developer would sit. Five (5) kits = \$2,500	\$2,500.00
13	<b>AUDIT SYSTEM MONITORING TOOLS</b> Various open source software packages	N/A Included in the price of the portal software

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #3)	Gross Estimated Cost*
14	<b>SOFTWARE PACKAGES FOR ANALYSIS</b> Data mining – Cognos (1 free year maintenance)	\$2,600.00
15	<b>SOFTWARE PACKAGES FOR REPORTING</b> An Oracle report writer – SQL*Plus (one copy for admin)	\$500.00
16	<b>DESIGN AND DEVELOPMENT</b> 2 x FTE programmers for a year (Oracle)	<i>See Labor Costs</i>
17	<b>INSTALLATION AND IMPLEMENTATION</b> (for portal server and workstations only)	\$2,500.00
18	<b>INTEGRATION COORDINATION WITH PARTICIPANTS</b> 1 x FTE Systems analyst	<i>See Labor Costs</i>
19	<b>TRAINING MATERIALS DEVELOPMENT</b> On-line, CBT training for portal use--specifically for the searching of documents. Price should include developing the dictionary/thesaurus requirements. Assume 2 personnel (one senior and another mid-level) for 8-10 weeks of effort.	\$30,000 to 50,000
20	<b>TRAINING FOR NRC's DBA's</b> Training would be from portal supplier for the Administrator and the Auditor Costs for training two people for one week	\$6000.00
<b>Recurring cost...</b>		
21	<b>APPLICATIONS MAINTENANCE</b> for custom coding. Assume 20% of the cost of developing custom code.	\$18,900.00

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #3)	Gross Estimated Cost*
22	<b>SOFTWARE MAINTENANCE AGREEMENTS</b> (for Plumtree software 22.5K for 18 months, and \$900 year for Cognos after the first year of purchase)	\$23,400.00
23	<b>HARDWARE MAINTENANCE AGREEMENTS</b> Approximate estimate based on 20% of purchase price. Total cost for 18 month period.	\$60,000.00
24	<b>FACILITY AND ODC's</b> 2 racks, \$1000/month for a total of 18 months (no facility management labor included)	\$18,000.00
25	<b>DISPOSABLES</b> CD-ROMs, tapes, etc. for backup and storage  400 DLT4 tapes @ \$70	\$28,000.00
26	<b>UTILITY AND GENERAL-PURPOSE OFFICE SOFTWARE</b> Word processing, spreadsheet, e-mail, anti-virus, etc. \$1,500 for each staffer X 5 staffers = \$7,500	\$7,500.00
27	<b>ADDITIONAL TRAINING</b> Procedures, user guides, SDL	<i>See Labor Costs</i>
<b>SUB-TOTAL GROSS ESTIMATED COSTS WITHOUT LABOR*</b>		<b>\$887,162.00 to \$907,162.00</b>

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #3)	Gross Estimated Cost*
<b>GRAND TOTAL GROSS ESTIMATED COSTS WITH LABOR (see below for labor breakdown costs)*</b>		<b>\$2,268,898.00 to \$2,288,898.00</b>

<b>Labor Costs</b>	
Phase/Description	Gross Estimated Cost*
Phase I – Design, implementation, integration, and training materials	\$1,059,216.00
Phase II – Implementation for 6 months to January 1, 2001	\$322,520.00
<b>TOTAL</b>	<b>\$1,381,736.00</b>

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\*Not a quotation – for general reference only. Travel costs NOT included.

**LSNA COSTS FOR ALTERNATIVE #4**

Item Number	DESCRIPTION (Comments and Details for Alternative #4)	Gross Estimated Cost*
<b>Non Recurring Costs...</b>		
01	<b>PORTAL SERVER</b> Dell PowerEdge 8450, Dual-CPU Pentium III, 600 MHz, 512MB Ram, 36GB SCSI3 Disk (4x9GB), CD-ROM Drive – Includes 3 years of maintenance	\$32,000.00
02	<b>AUDIT SERVER</b> Dell PowerEdge 6350, Single-CPU Pentium III, 600 MHz, 512 Ram, 18GB SCSI3 Disk (2x9 GB), re-writeable SCSI CD-ROM	\$15,000.00
03	<b>PORTAL MEMORY/STORAGE</b> 2 Dell PowerEdge 8450, 4CPU, 2MB cache, 4GB RAM@56,645 each 8 Dell PowerVault 650F RAID storage with 10x18GB drives @ \$41,368 each	\$444,234.00
04	<b>BACKUP/RECOVERY HARDWARE</b> 2 Multi-cartridge tape drives capable of backing up 70GB to a tape x 7 tapes, wide SCSI, e.g., Quantum DLT7000QDX (attached to the audit server) @ \$9,000 each	\$18,000.00
05	<b>COM DEVICES TO CONNECT BOTH TO NETWORK</b> 12 port 100baseT switch (\$1500), Cisco 2501 router (\$2,000) Note: All computer systems have incorporated 100baseT NICs	\$3,500.00
06	<b>AUXILIARY DEVICES</b> (Scanners, printers, CD writer, etc.)	\$5,000.00

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #4)	Gross Estimated Cost*
07	<b>WORKSTATION/CONSOLE FOR PORTAL ADMINISTRATOR</b> Dell Precision 420, Intel Pentium III 600MHz, 9GB disk, 256 RAM – Includes maintenance agreement for onsite service	\$5,000.00
08	<b>WORKSTATION/CONSOLE FOR AUDIT SYSTEM ADMINISTRATOR</b> Dell Precision 420, Intel Pentium III, 600MHz, 9GB disk, 256 RAM – Includes maintenance agreement for onsite service	\$5,000.00
09	<b>OPERATING SYSTEMS SOFTWARE AND OTHER SERVICES</b> Win2000 (portal and portal administrator workstation), FreeBSD 3.4 (audit server), RedHat Linux 6.2 (audit administrator workstation), Solaris 7.0 (Storage server)	N/A – Included in the hardware price
<b>Per each device as needed...</b>		
10	<b>UNDERLYING DATABASE SOFTWARE</b> 1 x Oracle (for Sun 10000), 150 concurrent user licence – \$1500/user	\$225,000.00
11	<b>PORTAL APPLICATION PACKAGES:</b> Plumtree (for portal software) – Unlimited user licences	\$100,000.00
12	<b>TOOLKITS FOR WEB PAGE MODIFICATION</b> (if over and above gadgets) \$500 per computer at which a developer would sit. Five (5) kits = \$2,500	\$2,500.00
13	<b>AUDIT SYSTEM MONITORING TOOLS</b> Various open source software packages	N/A Included in the price of the portal software

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #4)	Gross Estimated Cost*
14	<b>SOFTWARE PACKAGES FOR ANALYSIS</b> Data mining – Cognos (1 free year maintenance)	\$2,600.00
15	<b>SOFTWARE PACKAGES FOR REPORTING</b> An Oracle report writer – SQL*Plus (one copy for admin)	\$500.00
16	<b>DESIGN AND DEVELOPMENT</b> 2 x FTE programmers for a year (Oracle)	<i>See Labor Costs</i>
17	<b>INSTALLATION AND IMPLEMENTATION</b> (for portal server and workstations only)	\$2,500.00
18	<b>INTEGRATION COORDINATION WITH PARTICIPANTS</b> 1 x FTE Systems analyst	<i>See Labor Costs</i>
19	<b>TRAINING MATERIALS DEVELOPMENT</b> On-line, CBT training for portal use--specifically for the searching of documents. Price should include developing the dictionary/thesaurus requirements. Assume 2 personnel (one senior and another mid-level) for 8-10 weeks of effort.	\$30,000 to 50,000
20	<b>TRAINING FOR NRC's DBA's</b> Training would be from portal supplier for the Administrator and the Auditor Costs for training two people for one week	\$6000.00
<b>Recurring cost...</b>		
21	<b>APPLICATIONS MAINTENANCE</b> for custom coding. Assume 20% of the cost of developing custom code.	\$18,900.00

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #4)	Gross Estimated Cost*
22	<b>SOFTWARE MAINTENANCE AGREEMENTS</b> (for Plumtree software 22.5K for 18 months, and \$900 year for Cognos after the first year of purchase)	\$23,400.00
23	<b>HARDWARE MAINTENANCE AGREEMENTS</b> Approximate estimate based on 20% of purchase price. Total cost for 18 month period.	\$90,000.00
24	<b>FACILITY AND ODC's</b> 2 racks, \$1000/month for a total of 18 months (no facility management labor included)	\$18,000.00
25	<b>DISPOSABLES</b> CD-ROMs, tapes, etc. for backup and storage  400 DLT4 tapes @ \$70	\$28,000.00
26	<b>UTILITY AND GENERAL-PURPOSE OFFICE SOFTWARE</b> Word processing, spreadsheet, e-mail, anti-virus, etc. \$1,500 for each staffer X 5 staffers = \$7,500	\$7,500.00
27	<b>ADDITIONAL TRAINING</b> Procedures, user guides, SDL	<i>See Labor Costs</i>
<b>SUB-TOTAL GROSS ESTIMATED COSTS WITHOUT LABOR*</b>		<b>\$1,082,634.00 to \$1,102,634.00</b>

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #4)	Gross Estimated Cost*
<b>GRAND TOTAL GROSS ESTIMATED COSTS WITH LABOR (see below for labor breakdown costs)*</b>		<b>\$2,464,370.00 to \$2,484,370.00</b>

<b>Labor Costs</b>	
Phase/Description	Gross Estimated Cost*
Phase I – Design, implementation, integration, and training materials	\$1,059,216.00
Phase II – Implementation for 6 months to January 1, 2001	\$322,520.00
<b>TOTAL</b>	<b>\$1,381,736.00</b>

\*Not a quotation – for general reference only. Travel costs NOT included.

## LSNA COSTS FOR ALTERNATIVE #5

Item Number	DESCRIPTION (Comments and Details for Alternative #5)	Gross Estimated Cost*
<b>Non Recurring Costs...</b>		
01	<b>PORTAL SERVER</b> Dell PowerEdge 8450, Dual-CPU Pentium III, 600 MHz, 512MB Ram, 36GB SCSI3 Disk (4x9GB), CD-ROM Drive – Includes 3 years of maintenance	\$32,000.00
02	<b>AUDIT SERVER</b> Dell PowerEdge 6350, Single-CPU Pentium III, 600 MHz, 512 Ram, 18GB SCSI3 Disk (2x9 GB), re-writeable SCSI CD-ROM	\$15,000.00
03	<b>PORTAL MEMORY/STORAGE</b> Sun Enterprise 10000, 8 processor @ 400MHz, 4GB Ram, 4TB SCSI3 disk (Includes installation and 1 year of on-site support). Service includes project planning and management, hardware installation, system software installation and configuration, unbundled software installation, system administration tutorial, and base system.	\$1,765,176.00
04	<b>BACKUP/RECOVERY HARDWARE</b> 2 Multi-cartridge tape drives capable of backing up 70GB to a tape x 7 tapes, wide SCSI, e.g., Quantum DLT7000QDX (attached to the audit server) @ \$9,000 each	\$18,000.00
05	<b>COM DEVICES TO CONNECT BOTH TO NETWORK</b> 12 port 100baseT switch (\$1500), Cisco 2501 router (\$2,000) Note: All computer systems have incorporated 100baseT NICs	\$3,500.00

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #5)	Gross Estimated Cost*
06	<b>AUXILIARY DEVICES</b> (Scanners, printers, CD writer, etc.)	\$5,000.00
07	<b>WORKSTATION/CONSOLE FOR PORTAL ADMINISTRATOR</b> Dell Precision 420, Intel Pentium III 600MHz, 9GB disk, 256 RAM – Includes maintenance agreement for onsite service	\$5,000.00
08	<b>WORKSTATION/CONSOLE FOR AUDIT SYSTEM ADMINISTRATOR</b> Dell Precision 420, Intel Pentium III, 600MHz, 9GB disk, 256 RAM – Includes maintenance agreement for onsite service	\$5,000.00
09	<b>OPERATING SYSTEMS SOFTWARE AND OTHER SERVICES</b> Win2000 (portal and portal administrator workstation), FreeBSD 3.4 (audit server), RedHat Linux 6.2 (audit administrator workstation), Solaris 7.0 (Storage server)	N/A – Included in the hardware price
<b>Per each device as needed...</b>		
10	<b>UNDERLYING DATABASE SOFTWARE</b> 1 x Oracle (for Sun 10000), 150 concurrent user licence – \$1500/user	\$225,000.00
11	<b>PORTAL APPLICATION PACKAGES:</b> Plumtree (for portal software) – Unlimited user licences	\$100,000.00
12	<b>TOOLKITS FOR WEB PAGE MODIFICATION</b> (if over and above gadgets) \$500 per computer at which a developer would sit. Five (5) kits = \$2,500	\$2,500.00

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #5)	Gross Estimated Cost*
13	<b>AUDIT SYSTEM MONITORING TOOLS</b> Various open source software packages	N/A Included in the price of the portal software
14	<b>SOFTWARE PACKAGES FOR ANALYSIS</b> Data mining – Cognos (1 free year maintenance)	\$2,600.00
15	<b>SOFTWARE PACKAGES FOR REPORTING</b> An Oracle report writer – SQL*Plus (one copy for admin)	\$500.00
16	<b>DESIGN AND DEVELOPMENT</b> 2 x FTE programmers for a year (Oracle)	<i>See Labor Costs</i>
17	<b>INSTALLATION AND IMPLEMENTATION</b> (for portal server and workstations only)	\$2,500.00
18	<b>INTEGRATION COORDINATION WITH PARTICIPANTS</b> 1 x FTE Systems analyst	<i>See Labor Costs</i>
19	<b>TRAINING MATERIALS DEVELOPMENT</b> On-line, CBT training for portal use--specifically for the searching of documents. Price should include developing the dictionary/thesaurus requirements. Assume 2 personnel (one senior and another mid-level) for 8-10 weeks of effort.	\$30,000 to 50,000
20	<b>TRAINING FOR NRC's DBA's</b> Training would be from portal supplier for the Administrator and the Auditor Costs for training two people for one week	\$6000.00
<b>Recurring cost...</b>		

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #5)	Gross Estimated Cost*
21	<b>APPLICATIONS MAINTENANCE</b> for custom coding. Assume 20% of the cost of developing custom code.	\$18,900.00
22	<b>SOFTWARE MAINTENANCE AGREEMENTS</b> (for Plumtree software 22.5K for 18 months, and \$900 year for Cognos after the first year of purchase)	\$23,400.00
23	<b>HARDWARE MAINTENANCE AGREEMENTS</b> For 18 months at \$21,000 per month	\$378,000.00
24	<b>FACILITY AND ODC's</b> 2 racks, \$1000/month for a total of 18 months (no facility management labor included)	\$18,000.00
25	<b>DISPOSABLES</b> CD-ROMs, tapes, etc. for backup and storage  800 DLT4 tapes @ \$70	\$56,000.00
26	<b>UTILITY AND GENERAL-PURPOSE OFFICE SOFTWARE</b> Word processing, spreadsheet, e-mail, anti-virus, etc. \$1,500 for each staffer X 5 staffers = \$7,500	\$7,500.00
27	<b>ADDITIONAL TRAINING</b> Procedures, user guides, SDL	<i>See Labor Costs</i>

\*Not a quotation – for general reference only. Travel costs NOT included.

Item Number	DESCRIPTION (Comments and Details for Alternative #5)	Gross Estimated Cost*
<b>SUB-TOTAL GROSS ESTIMATED COSTS WITHOUT LABOR*</b>		<b>\$2,719,576.00 to \$2,739,576.00</b>
<b>GRAND TOTAL GROSS ESTIMATED COSTS WITH LABOR (see below for labor breakdown costs)*</b>		<b>\$4,101,312.00 to \$4,121,312.00</b>

<b>Labor Costs</b>	
Phase/Description	Gross Estimated Cost*
Phase I – Design, implementation, integration, and training materials	\$1,059,216.00
Phase II – Implementation for 6 months to January 1, 2001	\$322,520.00
<b>TOTAL</b>	<b>\$1,381,736.00</b>

\*Not a quotation – for general reference only. Travel costs NOT included.

**Licensing Support Network Functional Requirements  
Revised Draft for TWG Consideration**

**February 17, 2000**

The Licensing Support Network (LSN) functional requirements are derived from a series of statements that are found in 10 CFR 2, Subpart J (the LSN Rule). **Section references found within this document that are not otherwise identified are references to applicable sections of the LSN Rule.** Capabilities addressed in the LSN Rule include:

- (1) Internet-based search and retrieval capability;
- (2) functionality to be provided by the participants' systems independent of capabilities of the LSN;
- (3) adjunct capabilities of the **Nuclear Regulatory Commission's (NRC)** separate electronic docket;
- (4) adjunct capabilities of the NRC's separate electronic information exchange system; and,
- (5) procedural direction external to the LSN that **facilitates** its uniform operation.

The **functional** requirements described in the LSN Rule may be subject to subsequent guidance or clarification insofar as they are only broad directives on what the system is intended to do. Additionally, these statements are strongly influenced by the technology solutions that are subsequently applied to the problems.

## **1.0 FUNCTIONALITIES STATED IN THE LSN RULE**

This section lists the functionalities that are directly identified in the LSN Rule and allocates them in one of the five categories noted above. **Subsequently, this document examines functionalities required for core search and retrieval, the NRC Docket system, and the LSN Administrator (LSNA) Audit System.**

### **1.1 CORE SEARCH AND RETRIEVAL CAPABILITY**

The term "Licensing Support Network" means the combined system that makes documentary material available **electronically** to parties, potential parties, and interested governmental participants to the proceeding for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to **10 CFR, Part 60**, as part of the electronic docket or electronic access to documentary material, beginning in the pre-license application phase. The specific method of providing electronic access to documentary material is not specified in the LSN Rule in order to allow flexibility in accommodating current and future technology advances. [63 FR 71735, SUPPLEMENTARY INFORMATION].

The system must be available in time to allow the Department of Energy (DOE) and NRC to meet their obligations to make documents available 30 days after the submission of the site recommendation to the President (all other participants must make documents available 30 days after the selection decision becomes final after review by Congress) [§2.1003].

The NRC must provide electronic access to the LSN at the NRC Web site, [HTTP://www.nrc.gov](http://www.nrc.gov) and/or at the NRC Public Document Room (PDR) beginning in the pre-license application phase.

## 1.2 FUNCTIONALITIES TO BE PROVIDED BY THE PARTICIPANT SYSTEMS

Each participant must:

- obtain the computer system necessary to comply with the requirements for production and service [§2.1011(b)];
- provide a bibliographic header record with each document or other material submitted [§2.1003(a)(1)];
- make available an electronic file of the searchable text of its documents. In this context, a file is an entity of data available to system users that is capable of being manipulated as an entity [§2.1003(a)(1)];
- make text of documents available, including a bibliographic header with a statement of where an authenticated image copy of the document can be obtained [§2.1003(a)(1)];
- make images for non-textual, graphic-oriented documentary material available in lieu of text [§2.1003(a)(2)];
- make headers (only) available for items not suitable for image or text [§2.1003(a)(3)];
- make headers (only) available for privileged, confidential, safeguards and other types of limited access documentary material as specifically identified in [§2.1003(a)(4)(i) through §2.1003(a)(4)(iii)].

DOE must additionally:

- make documentary material available 30 days after the submission of the site recommendation to the President (all other participants must make documents available 30 days after the selection decision becomes final after review by Congress) [§2.1003(a)];
- provide electronic access to the LSN at DOE Headquarters and at all DOE Local Public Document Rooms (LPDRs) in the vicinity of the site, including Las Vegas, Reno, Carson City, Nye County and Lincoln County) [§2.1007(a)(1)].

**1.3 FUNCTIONALITIES ASSOCIATED WITH THE NRC'S DOCKET IN THE AGENCYWIDE DOCUMENTS ACCESS AND MANAGEMENT SYSTEM (ADAMS)**

The NRC, in its management of the official docket, must:

- provide a docket that receives, stores, distributes, and maintains docket material beginning 30 days after DOE submission of the site recommendation to the President [§2.1013(a)(2)];
- provide a Protective Order File [§2.1006(b)];
- deliver all answers, orders and decisions per **§2.1013(c)** (e.g., electronically, using secured process) [§2.1010(d)];
- provide the computer system necessary to comply with service requirements [§2.1011(b)];
- maintain the docket (NRC SECY) [§2.1013(a)(1)];
- provide an electronic docket that contains a list of all exhibits, **showing where in the transcript each was marked for identification and where it was received into evidence or rejected** [§2.1013(b)];
- enter **hearing transcripts** into the docket on a daily basis in order to provide next-day availability at the hearing [§2.1013(b)];
- establish a mechanism whereby all filings are able to be submitted/received electronically and to require that a password security code for transmission of these documents; [§2.1013(c)(1)];
- provide a mechanism by which **all Presiding Officer and Commission** issuances and orders are transmitted electronically [§2.1013(c)(5)];
- provide a mechanism by which the Presiding Officer and all counsel of all parties have access to the electronic docket (including Protective Order File) during the hearing [§2.1013(d)];
- identify a means by which the unavailability of the electronic docket for more than 4 hours in any day is communicated to the Presiding Officer so that the day is not counted in the computation of time (NRC SECY) [§2.1017];
- provide a mechanism to receive electronically transmitted depositions (**including questions, cross-questions, and answers**) and enter them into the docket file (NRC SECY) [§2.1019(d)&(e)]; and,
- identify a means by which only a part or parts of a deposition may be offered into evidence (NRC SECY) [§2.1019(f)].

#### **1.4 FUNCTIONALITIES ASSOCIATED WITH THE NRC'S ELECTRONIC INFORMATION EXCHANGE SYSTEM**

Each participant must:

- use electronic submissions (see §2.1013(c)) for all their motions practice [§2.1010(d)];
- submit all filings electronically using a password security code for transmission of these documents [§2.1013(c)(1)]; and,
- transmit depositions to SECY in electronic form for entry into the docket [§2.1019(d) and (e)].

#### **1.5 PROCEDURAL OR EXTERNAL SYSTEM CAPABILITIES**

Each participant must:

- identify all documents not made available in electronic form per §2.1003 in an electronic notice; and make them electronically available **within five days** after someone requests a document off that list [§2.1004];
- designate an official who is responsible for the administration of its **responsibility to make documentary material** available [§2.1009(a)(1)];
- establish its own procedures to make its own **documentary material** available [§2.1009(a)(2)];
- train its own staff on how to make its **documentary material** available [§2.1009(a)(3)];
- ensure each document has a unique ID [§2.1009(a)(4)];
- have the designated official certify that procedures have been implemented, that documentary material has been made electronically available, and, update these certifications at 12 month intervals [§2.1009(b)];
- follow format standards for providing electronic access [§2.1011(e)(2)(i)];
- follow procedures and standards for motions practice [§2.1011(e)(2)(ii)];
- demonstrate substantial and timely compliance in order to be granted party status [§2.1012(b)(1)];
- ensure that any document intended to be used as an exhibit is available before the commencement of that portion of the hearing where it will be offered [§2.1013(b)];

- capture the event of a document being placed in a recipient's mailbox (**delivery receipt**) in order to provide proof of the completion of service [§2.1013(c)(3)];
- provide and show a proof of service for each document filed into the docket [§2.1013(c)(4)];
- when being deposed, submit an electronic index of all documents in his/her possession relevant to the subject matter of the deposition to all parties, identifying which were already made available electronically [§2.1019(l)(1)]; and
- when being deposed, if requested bring along paper copy of all such documents and deliver paper copies with the certified deposition [§2.1019(l)(4)].

DOE must additionally submit the license application to the docket in electronic form 2.1013(a)(2).

## **2.0 FUNCTIONALITY FOR CORE SEARCH AND RETRIEVAL**

Anticipating that an Internet-based software solution will connect the individual participants' systems, there are forty eight (48) core functions that provide a framework for providing search and retrieval of evidentiary **documentary material** housed in the systems where the participants have made their evidentiary **documentary material** "web accessible". This section details each core function, with a narrative that explains the objectives it meets. Core **Functional Requirements** are as follows:

### **2.1 The system must provide the ability to access and retrieve documentary material from a variety of repository systems.**

This core capability of the LSN site provides general data availability. The LSN Rule requires that each participant make diverse types of documentary material available to other participants. The participants must make available an electronic file of the searchable text of relevant documents, **if available**. Each participant system must provide the capability to store components (header, text and/or image) for subsequent retrieval, but the LSN Rule does not prescribe a uniform hardware or software solution. Rather, it anticipates that participants will establish externally accessible collections on hardware and software of their own choosing. Within their own system, each participant system additionally provides a 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.

The LSN Rule allows for solutions that could provide users with individual access to each of these participant systems, but the problems of learning and working with multiple software packages, multiple databases, multiple sets of search results, etc., make a unified interface essential. Therefore, the LSN must provide the capability to read text and header data from participant collections and build indices for full text searching in a single, common user interface at a single location. To optimize this **approach**, the central search capability should be **designed to generate an index or similar mechanism compiled from information extracted from each of the participant sites**. Once this central index identifies participant files that **match** a user's request, a request is passed back to the participant system to deliver the original version of the files responding to the query. This implies that each participant **system must be capable of responding directly to the user for a request generated through the portal for the delivery of requested components (header, text and/or image); or, that each participant system must provide a capability to pass back, through the portal, object files (text, image, or header records) for an end-user to be able to load onto their workstation for further manipulation.**

### **2.2 The system must provide the ability to index, access and retrieve the full text of documents.**

This core capability of the LSN site provides text retrieval capability. The LSN site must provide users with the capability to **electronically search and retrieve document text, if available**. The LSN Rule allows for solutions that would parse a query from the LSN

user interface and pass it to the individual participant systems. **This introduces higher levels of complexity in normalizing the query logic and in aggregating result sets where different relevancy algorithms may be encountered in participant systems. To simplify these problems, the text made available at the participant collection must be capable of being read and indexed by LSN portal software, which acts as the single, uniform text engine for processing queries and returning relevant result sets.**

**2.3 The system must provide the ability to import/link-to documents in their native format.**

This core capability of the LSN site provides participants and users with the ability to retrieve and further manipulate documents in web-viewable formats while at the same time minimizing reprocessing costs. Each participant system is required to make image versions of textual documents accessible. In addition to image versions of text documents, each participant system must make available images, in lieu of text, for non-textual, graphic-oriented documentary material and provide a header record for those image files. This non-textual material may be generated by specialized systems for specialized needs; therefore, each participant collection may contain relevant documentary material in other file formats such as motion, video, sound. This may include vector representations as a document, graphics, mapping formats, and photographs.

The LSN site must provide users with the capability to electronically retrieve the digital image associated with each page in a document. Web browser software accommodates most standard image formats, with the added benefit of displaying textual files in their native word processing or authoring software formats. Therefore, the system should provide the ability to utilize text and image files in their native formats in order to maximize the benefits of standard browser capabilities and reduce reprocessing burdens on the participants. **The web browser software may not handle files in non-standard formats, such as Geographic Information Systems (GIS), and the user will need either the application software resident on their machine, or will need to be able to contact the originating party to make arrangements for viewing the document.**

For image files associated with text, it is desirable to identify standards that will be easiest for browsers to deal with. The electronic image of documentary material in the LSN should use compressed TIFF Group 4 or PDF for bitonal images and compressed JPEG format for color and grey scale images. Compression ratios for image files stored at participant systems should be selected such that an image can be printed at its original size without any degradation detectable by the unaided eye (e.g., **JPEG lossy at or above a quality level of 75 - on a 1 to 100 scale - for color images such as color keyed maps**). The electronic image representation of documentary material should 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)

**2.4 The system must provide the ability to index and recognize metadata from a variety of data formats.**

This core capability of the LSN site provides participants and users the ability to retrieve and further manipulate structured data found in bibliographic header records. Each participant collection is required to provide a header record with each document or other **documentary** material submitted. Although the LSN Rule allows for individual participants' systems to process queries, this would introduce similar query normalization and result set presentation problems to those noted for text searches. To simplify these problems, the bibliographic headers made available at the participant collection must be capable of being read and indexed by the LSN software that acts as the single, uniform structured data engine for processing queries and returning relevant result sets. To do this, the LSN must provide the ability to store indices **that it has built by reading** the contents of participant collections. This implies that the structured data in bibliographic headers made available at the participant collection must be capable of being read and indexed by LSN software.

**2.5 The system must provide the ability to map metadata across multiple repositories.**

This core capability of the LSN site provides a means to normalize structured data and allow for a single user interface. The LSN header will, at a minimum, include the fields and formats defined in TAB A. Because of variations that may be encountered in naming conventions and **database management systems (DBMSs)** used by the various participants, the LSN software should incorporate a mechanism such as an embedded data dictionary to make data structures and names transparent to the user at the LSN user interface.

**2.6 The system must provide the ability to map both standard and custom metadata properties from multiple repositories.**

This core capability of the LSN site provides a means to normalize structured data and allow for a single user interface to be used for unique data management implementations. The LSN must present bibliographic headers to users in a standard format regardless of the collection from which they originate. At the same time, the LSN must organize bibliographic headers by use of structured data that is compatible with existing, legacy relational database management systems (RDBMS) that are already being used (or plan to be used) by participants.

This core capability of the LSN site also provides the flexibility to incorporate custom fields used for packages and other referencing. Federal records are organized into packages of related material. This is especially the case with DOE's QA records packages. Therefore, participant systems must provide the ability for package-identifying information to be associated with each individual document. The LSN site and the docket files at the NRC must be capable of accepting packages that will be transferred via NRC's EIE capability into the Docket, even if only one component document of a participant's package is selected for inclusion into the docket. For search and retrieval purposes, these relationships must be presented to users by the LSN in a

simple, straight-forward way that can transfer from one database to another (when entered into the docket). This necessitates a bibliographic treatment.

Some of the participant legacy system implementations may have developed unique relationship structures to accommodate non-standardized processes such as unitization and aggregating into packages. The LSN system must provide for unique treatments that may be part of the participants' legacy collection architectures. Participants who have implemented package treatments must identify each document that is a component of a package. To ensure consistency within the LSN environment, packages made available in the participant collections should be defined based on uniform rules and should include a listing of all documents in the package. Those systems, additionally, must include the capability to link the bibliographic headers for the records package and the bibliographic headers for the components of the package within the legacy environment. Documents made available in the participant collections should have a uniform bibliographic treatment for identifying where they belong in a package of other documents (parent/child). For example: participant legacy systems should include the capability to identify where a component document begins and ends in relation to other component documents in a package, and, the capability to identify where within a package a document would be placed in a paper-reconstruction of the package's context.

**2.7 The system must provide a methodology or framework for supporting future and/or custom document types and repositories.**

This core capability ensures that the system can be adapted for collections offered by "late arriving" participants. The LSN must be designed to allow the addition and augmentation of documentary and official record fields.

**2.8 The system must provide users with the ability to define specified data sources as subclass collections (e.g., identify actions against a specified collection such as the DOE collection but not against all the other collections).**

This core capability allows users to focus on certain source collections in order to narrow the focus of their searching. A participant site may have categorized documents (e.g., DOE's LA itself) and this will facilitate locating information when you know the information "is in the License Application" etc.

**2.9 The system must support custom data sources that may have independent (and varied) administrative settings and security attributes.**

This core capability ensures that centralized search and retrieval can be performed without being disrupted by security settings allocated to the participants' underlying databases.

**2.10 The system must maintain a hierarchical directory to the location of content files in repository systems.**

This core capability ensures that the centralized search and retrieval capability knows where a file is supposed to be located in one of the participants' underlying databases.

This capability will be key for audit and compliance as well as for troubleshooting and for help desk/hotline support.

**2.11 The system must be able to aggregate the content of multiple document types from multiple repository systems.**

This core capability ensures that bibliographic, text, and image files can be browsed or searched by type (e.g., search all text -- including title -- for the term "perched"). This capability also implies that, to the LSN search software, the ASCII text file of one participant is comparable to the HTML document of another participant and to the native WordPerfect or Word file of yet another participant.

**2.12 The system must provide users with the ability to browse its directory via a web browser.**

This core capability allows users to browse collection content as an alternative to performing structured and unstructured searches.

**2.13 The system must provide selected users with the ability (using standard windows-based workstations and standard Internet browser technology) to create and maintain personalized, web-based homepages.**

The LSN has two classes of users: (1) those associated with the licensing proceedings, and (2), the general public. Each group has different needs and capabilities. This core capability allows selected users (e.g., licensing, legal, technical staff of the parties) to customize their interface to the system. This allows key users who are participating in the licensing process to optimize the system for their usage preferences. Conversely, members of the general public will have access to a standard, non-customizable user interface that can not be customized by a user. The general public LSN interface must provide consistent presentations of user-selectable functions, system messages, menus, on-line help and data presentation for all user interface screens within the major user functions (search, retrieval, navigation, and system administration).

Implementing a web-based solution for the LSN, and therefore a web-based user interface, encompasses a range of capabilities that are introduced by the use of browsers on windows-based user workstations. To effect the web-based presence, the LSN client software must be operational with Netscape 4.0 or higher, and Internet Explorer 2.0 or higher. **Additionally, to accommodate visually and otherwise handicapped individuals, the LSN site should be engineered to allow non-graphic, text-based browsers and allow non-GUI based web "spiders" or "robots" to programatically access and process the materials on behalf of the user.<sup>1</sup>** If any portion of the client-side application must reside on a user workstation, that portion of the code must be distributable (downloadable) via the Internet. The following are consequences of using this technology:

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<sup>1</sup> Meeting this requirement may constrain other web capabilities such as client-side programming (e.g., JAVA) and scripting (Javascript). Additionally, other aspects must be carefully implemented (e.g., making sure all inline images have ALT tags to provide a textual description of the image object).

- Using the browser interface, a participant-affiliated user will have the capability to change the user's authorized password provided that the user has logged onto the system with an authorized password.
- The client software based on Internet browser technologies should be relatively "thin". Because of the nature of thin clients, rapid changes can be made in the general layout of the user interface to accommodate user preferences discovered during system pre-operational testing and during system operation.
- The LSN user interface will employ graphical user interface techniques that are consistent with the acceptable user interfaces available at the time of the LSN design. This provides out-of-the-box user controls to perform display and object manipulation functions, including capability to:
  - move between and among full text, images, and bibliographic entries within the browser environment;
  - display the bibliographic data of a document within the browser environment;
  - show all fields for each record retrieved within the browser environment;
  - allow retrieval and display of pages of text with the associated images within the browser environment;
  - display one or more pages of the text of a document within the browser environment;
  - browse (scroll) up or down through result set of bibliographic records within the browser environment;
  - locate the terms in the document that satisfy a full text query and to move the term indicator from one term to the next or previous term without displaying intermediate text;
  - view selected text documents and to move to and display (highlight) references to the terms searched in the documents in the participant collections;
  - navigate (next/previous) between highlighted search terms in the document selected for viewing from a query results list;
  - use (or associate) a file with a viewer that can present object text files stored in their native formats;
  - perform image enlargement, reduction, scrolling and rotation;
  - perform point-and-click image display capability for call-up and image manipulation;

- display the images of a document, page by page, including full page views of the images of 8 ½ x 11 inch pages up to E size pages;
- display bilevel (bitonal), gray-level, and color images of documentary material. The gray-level representation should allow up to 25 shades of grey;
- view the following combinations: (1)header; (2) image; (3) text; (4) header and text; (5) header and image; and, (6) text and image;
- synchronously display a page image of a document and its associated text as supported by the LSN software;
- scroll up and down full-text displays of documents by the line, screen, page, or by entire document;
- move forward or backward "n" pages for images as supported by the LSN software;
- scroll up and down image displays by page;
- zoom-in, zoom-out when viewing an image; and,
- rotate an image when viewing an image.

The system should present these capabilities to a browser, whether or not the user's browser can perform the process.

**2.14 The system must provide key users with the ability to select content to appear on his or her personalized homepage without administrator intervention.**

This core capability will allow key users (e.g., licensing, legal, technical staff of the participants) to customize their interface to the system. This allows key users to optimize the desktop interface to reflect their areas of interest, query form preferences, additional desktop tools, etc. Members of the general public will have access to a standard interface that can not be customized. Participant users could, if they so choose, also use the general public user interface.

**2.15 The system must provide key users with the ability to organize the presentation of content on their personalized homepage without administrator intervention.**

This core capability allows key users (e.g., licensing, legal, technical staff of the participants) to customize their interface to the system. The LSN user interface should allow a variety of interfaces, their complexity/power reflecting the experience and

familiarity of the searcher with the data.<sup>2</sup> This allows key users to optimize the system for their usage preferences. Members of the general public will have access to a standard, non-customizable user interface; the non-customizable interface should present a form-based (fill in the blanks) query interface as its default.

**2.16 The system must provide authorized users with the ability to automatically publish updates via e-mail or other push technologies.**

This core capability allows system designers to develop innovative, non-labor-intensive processes to make the system updates more timely. It would allow selected users (system administrators, compliance certifying officials, and technical POCs of the participants) to more quickly and uniformly coordinate with the LSNA. The LSN, per 10 CFR 2, Subpart J, must provide a mechanism to post the occurrence of changes to items in participant collections. Procedurally, the participants will be required to notify the LSNA of changes to **documentary material** so that the change may be posted on the LSN site and be communicated to other users. Each participant system will be required to provide the capability to identify and mark a document as superseded by another document, and to identify the successor document using the unique LSN ID number. Additionally, the LSN must provide a mechanism to post listings of all the documents not made available in electronic form per 2.1003 in an electronic notice.

**2.17 The system must provide authorized users with the ability to publish or submit content to the portal.**

This core capability allows the LSNA staff to use the LSN site to post notifications, lists of recently superseded documents, updates to guidance documents and procedures.

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<sup>2</sup> Ad hoc query tools often fall short of satisfying user reporting requirements, which is why a form-based user interface (and, perhaps a half dozen "canned" queries) is the recommended default interface for non-participant users. Users need to have some understanding of the following factors in order to successfully utilize an ad hoc query tool:

**Boolean logic** - A computer's perception of "and/or" is fundamentally different from human perception. For the occasional database user, perhaps only one in nine can consistently use Boolean logic, and it often requires a time-consuming thought process.

**Knowledge of basic Structured Query Language (SQL) and relational theory** - With very few exceptions, query tools are front-ends with SQL. If users do not understand the concept of a table and a foreign key, they cannot be expected to intelligently use tools such as "group by" options on their main screen.

**Understanding the ad hoc query tool itself** - We have done a fairly good job of training users to push the right buttons but query tools are deserving of extended professional training.

**Understanding the structure and nuances of the database being queried** - For the occasional user in a large homogeneous collection, failure to filter using the structured data will be deadly.

**Understanding iterative querying** - Users don't do this naturally. They must be trained to think in those terms.

The world of ad hoc query tools is an order of magnitude more complex than is generally perceived. Not only are there many tools, but many types of tools identified in previous LSS requirements represent functionality approaching an OLAP (online analytical processing) implementation, which is multidimensional as opposed to RDBMS structures which are inherently two-dimensional.

**2.18 The system must provide some form of content control or content staging to prevent unauthorized users from submitting content to the portal.**

This core capability provides a mechanism to ensure that only licensing-related material is included in the LSN. To prevent inclusion of non-licensing-related material, the LSN must prevent the retrieval of document text or images that are not associated with an LSN header. The LSN must enforce strict header, document identification and numbering disciplines to prevent confusion in the identification and use of documents during the proceeding. This implies that the LSN site must minimally support a system-assigned unique LSN accession number and have DBMS software that supports the key field association with the participant's unique local accession number.

Each relevant document in a participant's collection must have a unique LSN ID, adhering to a uniform numbering system that includes a document source identifier, reflected in its header record. These numbers must be able to be reflected within the LSN information presentation schema. Similarly, no document should be available in a participant's collection of relevant documents that does not have a unique ID which is reflected in the associated header.

**2.19 The system must provide mechanisms to easily develop and add custom components to extend the system.**

This core capability allows modular, COTS products to be added to its core functionality to address deficiencies identified by the users during testing.

**2.20 The system must accommodate third-party component providers by adhering to open system standards.**

This core capability allows new software components to be integrated into the system without seriously impacting other hardware or software components. This implies that the LSN system should be comprised of products that are standards compliant.

Image Format Standards are TIFF Version 6.0 or PDF. Current industry standards for compression must be used.<sup>3</sup> For documents, Consultative Committee International Telephone and Telegraph (CCITT)<sup>4</sup> Group 3 and 4 compression must be supported. For pictures (color images), the Joint Photographics Expert Group (JPEG) must be supported at a JPEG lossy quality level at or above 75 on the scale of 1 to 100. For video, Moving Pictures Experts Group (MPEG) MPEG -1 and MPEG-2 must be supported.

Participants systems and the LSN should use **Transmission Control Protocol/ Internet Protocol (TCP/IP)** as communications protocol. TCP/IP is the basic packet protocol used to connect machines globally on the Internet and on most local area networks (LANs). The Transmission Control Protocol (TCP) interacts with the Internet

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<sup>3</sup> Some compression methods are "Lossy". This means that part of the detail is lost when the compression occurs. Lossy compression methods are unsuitable for line drawings or images which must be reproduced exactly, such as maps.

<sup>4</sup> CCITT is now named International Telecommunications Union - Technical (ITU-T).

Protocol (IP) to provide an application protocol interface. Software developers write their products to interface with or use TCP/IP. In doing so they ensure that their product will run on any network using TCP/IP and on different types of computers that are connected in TCP/IP networks.

Data Base Software should be ODBC (Open Data Base Connectivity) compliant. ODBC compliant applications can use products such as, but not limited to, ORACLE, SYBASE, INFORMIX, and SQL Server databases interchangeably. Database software must be SQL compliant.

Microsoft Windows has become the defacto standard desk top operating system for much of general business and government. Microsoft Windows is so widely used that almost all software developers are writing their applications to work in a Windows environment.

There are two presentation or user interfaces currently in use by Microsoft. Windows 3.1 and Windows NT use a Graphical User Interface ( GUI) and Windows 95 uses an Object Orient User Interface (OOUI). OOUI is also used by OS/2, NextStep and the Mac. The important fact here is that there is now an industry standard for the way applications are "launched" or started on a computer and a standard look and feel to "Windows" applications. All the applications that run on the Windows desk top can exchange data and utilize services provided by the operating system, such as printing or LAN access. The operating systems and the applications working with it have developed a consistent "look and feel". The consistency provided by these de facto standards enhances the user's ability to learn new systems quickly.

**2.21 The system must include authoring tools for developing custom components.**

This core capability allows server-resident application software customization after initial installation, by use of extensions (or other techniques) that do not invalidate core software licenses.

**2.22 The system must include a repository for content included in the portal which contains both physical (all content replicated in the system) and/or virtual (only links/metadata stored in the system database) storage capabilities.**

This core capability allows the LSN site to quickly identify documents responsive to queries, and, the flexibility/option to minimize storage requirements, yet consistently and quickly deliver associated image files. Response time is optimized when indices to documents are maintained on the search server; conversely, not all files need be stored at the LSN site and indeed may be optimally stored in their original participant repository. Therefore, the system must allow for using whatever referential schema is optimal for the particular file. In LSN operations, for each electronic file of searchable text made available in a participant collection, the bibliographic header must contain a statement of (or link to) where an authenticated image of the document may be obtained. The LSN must be able to operate with (or initiate) the schema and its operating software. Although participant collections need to make headers (only) available for items not suitable for image or text and for material that is privileged, confidential, safeguards or has otherwise limited access, this capability is crucial to

meeting the requirement that for each item of documentary material not suitable for imaging and conversion to a standard text file, the participant collection must make available a header that includes a reference to the storage location of the material. This reference must be descriptive enough for users (or software) to identify the location of the material and how to access the material.

**2.23 The system must host its database in an Open Database Connectivity (ODBC) compliant RDBMS.**

This core capability ensures a standard method for accessing relational (structured) data, which is how the bibliographic data (headers) is characterized. The LSN site must organize structured data using a relational database management system (RDBMS), and that RDBMS must be ODBC-compliant to provide a standard method of accessing relational data. See requirements 2.1, 2.4, 2.5, and 2.18 above.

A second core capability is implicit with the requirement for an ODBC-compliant RDBMS. ODBC is a standard or open application programming interface (API) for accessing a database. ODBC is based on and closely aligned with the standard SQL Call-Level Interface. It allows programs to use SQL requests that will access databases without having to know the proprietary interfaces to the databases. ODBC handles the SQL request and converts it into a request the individual database system understands. The LSN's database software must provide access to documentary material through SQL-based structured index searching (on bibliographic header record fields). This standardization provides users with uniformity of the language used in the database query processes even though there are multiple, diverse underlying databases.

Moreover, ODBC/SQL provides this standardization to text as well as structured databases. This will allow the LSN to provide full text, image and bibliographic search and retrieval capabilities in a single search interface screen (although there may be a "single screen" each for simple vs complex searches); to do so without requiring complex navigation or differing protocols; and to move between and among full text, images, and bibliographic entries without having to iteratively open and close different applications packages. These underlying standards are what will allow users to simultaneously search for key words and terms against both bibliographic databases and full text files.

**2.24 The system must be capable of adding additional nodes to address high user demand.**

This core capability is required to address scalability requirements. The LSN should be designed using modular design techniques for both its hardware and software, and have well documented software interfaces. To meet this requirement, the Operating System (OS) software should be a mature, robust operating system and be interoperable, capable of working on multiple platforms. (~~specifically, UNIX?~~)

Server platforms must also be scalable. Because of the number of documents related to the licensing, each component of the web-based system -- participant site, portal site, and docket site -- must be scalable. Server hardware must be high-speed, high-

performance and support or be upgradable to multi-processors (dual, quad, or eight-way, depending on application resident on the server.

The LSN central site shall be sized to support a maximum of 150 simultaneous users. The profile of users consists of approximately 500 routine users associated with the licensing itself, an additional 500 occasional users who may routinely monitor the site because of subject content interest, and an additional unknown number of users who may access the site because of web-generated "hits".

**2.25 The system must be capable of adding additional nodes to address increased numbers of documents.**

This core capability is required to address scalability requirements as noted in the previous section. The LSN should provide an expandable storage capacity capable of storing index files for retrieval of the volumes of documents identified in Appendix B.

**2.26 The system must isolate content collection and processing from user service (i.e., search service not interrupted if a scanning agent fails.).**

This core capability is required to ensure uninterrupted search and retrieval performance while database building is under way. This means that the server operating system software for the LSN servers must have the ability to perform multiple functions simultaneously while search queries are being processed, e.g., the Operating System Software for the LSN servers must be multi-tasking.

**2.27 The system must provide a mechanism for manually securing categories of content within the portal software directories for authorized individuals, groups, and repository collections.**

This core capability is essential to meet requirements for providing a Protective Order File. The LSN must provide a Protective Order File, which in all likelihood will reside within the NRC docket server. To provide this capability, the LSN site must provide login and access control tools to get access to the stored text and images in the underlying collection repository. Implicit in system operations, there may be other administrative files that are located on the LSN server to which general users (e.g., non-administrators) should not be allowed access.

Finally, there may be instances where parties to the proceeding must be given priority access to the system at the expense of wide-open public access.

These three factors mean that the LSN site must provide the capability to initiate a user session and allow access to the LSN system by providing an authorized user account name and associated authorized password. Non-participant users would be "guests" in database terminology. Similarly, even for administrators, the LSN site should not allow access to system functions without the initial entry of an authorized account name and associated authorized password. ~~Once the system is activated by a user, user sessions must be able to be closed out to conserve on user software licenses, etc., needed to support the LSN. Therefore, the LSN should provide the capability~~

~~to terminate a working session on the LSN, leaving the user in a state where a new system login is required to gain access to LSN functions.~~

- 2.28 The system must provide a mechanism for manually securing individual items within the portal software directories for authorized individuals, groups, and repository collections.**

This core capability is essential to meet requirements for providing a Protective Order File as detailed above and for restricting access to administrative files on the LSN server.

- 2.29 The system must provide multi-level access controls, or similar mechanisms, which allows users to see metadata information on documentary files for which they do not have appropriate security rights to view the underlying object.**

This core capability is essential to meet requirements for providing a Protective Order File. The LSN must provide a Protective Order File. If the LSN site is going to successfully prohibit user access to data which the user has not been authorized to access, then the LSN must provide multi-level access control.

- 2.30 The system must support multiple named administrators with different security profiles and different administrative domains.**

This core capability is essential to allow contractor and federal staff to perform administrative functions as required for operational, legal or security reasons. The LSN will have a search and retrieval component and also an audit component. The LSN design must provide a mechanism to control access to audit system functions even for those system staff who may be authorized to support the search and retrieval resources.

- 2.31 The system must support groups of administrators with the same security profiles for different administrative domains.**

This core capability is essential to allow contractor and federal staff to perform administrative functions as required for operational, legal, or security reasons. This allows for staff redundancy and backups for performing administrative functions.

- 2.32 The system must provide a mechanism to secure security profile information stored in the LSN server.**

This core capability provides the LSN Administrator with the necessary tools to ensure the security of the LSN. The LSN must be able to prohibit user access to functions which the user has not been authorized to use. ~~The LSN will rely on this to provide methods of connection throttling and prioritization based on user security profile information. It should utilize, at a minimum, techniques to secure its databases such as by providing operating system user authentication via ID and password; providing for the creation of Access Control Lists (ACL) at the file level, database management system (DBMS) user authentication that includes the ability to establish specific database grants and permissions, and other similar techniques.~~

**2.33 The system must provide a mechanism to generate results/reports.**

This core capability provides the ability to provide predefined and ad hoc reports that can be selected and run by the users.

**2.34 The system must provide a mechanism to schedule (automate) content collection, processing, and other system processes.**

This core capability provides a means to routinely and systematically canvass participant collections and to update the LSN indices in an automated fashion. Additionally, these capabilities are the basis of control mechanisms used to identify changes to underlying object files and databases. The LSN must provide a function to allow all users to detect that subsequent revisions to a document exist. For revised documents that were made available in their previous iteration for more than five days on a website, the participant is required to add the revised version as a separate document.

This capability, in conjunction with "create date" and "update date" attributes within the LSN RDBMS, would allow the LSNA to implement a capability wherein all LSN users can identify the initial date that a record is posted to a participant's system. Additionally, each document intended to be used as an exhibit must be made available before the commencement of that portion of the hearing where it will be offered, and this capability is used to identify that the condition has been met.

**2.35 The system must allow for individual administrative processes to be aggregated into jobs which may be scheduled as a unit and must preserve dependence within a job stream.**

This core capability provides a means to routinely and systematically canvass participant collections and to update the LSN indices in an automated fashion. It also provides the underlying capability to perform system backup and recovery processes that will be run on a routine basis. The LSN server must be capable of storing and maintaining backups consistent with requirements for data availability, especially during the hearing process. Backup capabilities must execute within a window that will not impact the general user population performing search and retrieval. ~~are 2 Gigabytes of data per hour.~~

Similarly, the LSN server must be capable of being recovered from backup media. Recovery capabilities must execute within a window that will not impact the general user population performing search and retrieval. ~~are 1.5 Gigabytes of data per hour.~~

**2.36 The system must allow for distributed administration.**

This core capability allows LSN staff and contractors to remotely perform system administration functions in a secure way over the Internet. This provides implementation and operations flexibility in locating the LSN system resource and also in quickly responding to service requests from either NRC headquarters or from the site of the hearings.

**2.37 The system must allow for performing routine administrative and maintenance activities from a remote console, workstation, or terminal.**

This core capability details the specific capabilities needed by LSN database administrators: the ability to perform database administration (start up, shut down, file maintenance, tuning, etc.), monitor session activity and system usage, administer user accounts, backup/restore, and otherwise monitor system performance. The LSN must provide access to the servers, and all of their services, via remote access for NRC staff who are authorized to perform various activities (e.g., search and retrieve, upload transcripts, and generate reports).

The LSN site must provide the LSN Administrator with the necessary tools to ensure LSN availability and the integrity of the LSN database. These capabilities include such basic functions as the capability to initialize the software and hardware necessary to operate the LSN, and the capability for the orderly shut down of the software and hardware components of the LSN. To accomplish file maintenance, the LSN site must provide authorized users with the capability to perform changes to the database structure (adding, deleting, modifying fields). This would include database administration features (which cannot all be predicted here) which include having an editable table of valid field values for the LSN Header and any other header information in the system. The LSN must provide authorized users the capability to adjust database performance parameters or to restrict or disable database features in order to optimize system performance.

**For the LSN audit site itself, the system administration staff will require network monitoring tools needed to aid in the discovery or diagnosis of network faults and suboptimal configurations.**

**System administration staff will require tools to monitor usage and access.**

**System administration staff will require tools to monitor and aid recovery from attempted or successful security incidents.**

The LSN design anticipates that participants will house their relevant documents on a computer hardware and software resource that they provide. However, the LSN design may include its own databases, files, indices, etc., in order to optimize performance or deliver functionality identified later in the design process. Server software (operating and applications) must provide network administrators with the services to monitor database information effectively. Therefore, the LSN will require comprehensive database administration tools regardless of the participant systems' requirements. The core database administration tools for the LSN site should include the capability to:

- edit previously stored documents;
- designate specified fields in the LSN header as protected from or available for update;

- prohibit the editing of header fields designated as protected, except for headers which are being created for the first time within the LSN;
- perform changes to data properties (field values) on an individual record basis;
- perform changes to data properties (field values) on a group of documents via global search and replace commands;
- identify validation checks that may optionally be applied against data properties (field values);
- logically delete documents (header, text and/or image) such that they will not be available to LSN users;
- remove, in real-time, document files and their indices from access to the public;
- prevent the deletion of a header before the associated text and/or image have been deleted;
- perform validation against an access control list to ensure that only authorized users may delete files;
- provide a confirmation dialog box for all destructive actions;
- remove document files and their indices from backup media;
- make a list of documents that have been logically deleted; restore a document that has been logically deleted; and make the document again available to users;
- store non-document-related items, files, or tables that are related to system administration and database administration activities;
- search and retrieve non-document-related items, files, or tables that are related to system administration and database administration activities; and,
- delete non-document-related items, files, and tables that may have been collected during the course of database and system administration activities.

Even though the database is properly tuned, it may be necessary to take other steps to ensure performance during critical periods. Therefore, the LSN must provide a capability, should it become necessary, for an authorized user to monitor user session activity levels and to identify and cancel queries or other system activities in order to ensure access and performance during the hearing.

The LSN must have the capability to account for user activity. It must provide the basic 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. In order to facilitate implementation of a Protective Order File capability, the

LSN must 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; header data; text data; password; and image data. Finally, the LSN must provide the capability to establish and modify user access authorizations to system functions unique to system administrators.

To ensure system and data availability without impacting the three year hearing schedule, the LSN must provide the capability to create incremental and full backup copies of all data on the system. This implies, depending on architecture, that the LSN will incorporate an archival store, either near-line or off-line, and provide the capability to copy files from its primary operating platform to an archival store. The LSN must support the complementary process - the capability to restore data created by the backup function to the operational system, including partial and full data recovery.

The LSN must provide authorized users (administrators) the capability to monitor the status of system hardware, software, and communications components and to interrupt, restrict or disable system capabilities in order to optimize use of system resources. The LSN must provide performance monitoring software needed to verify compliance with response times shown in TAB B.

Finally, the system must be inherently capable of performing in the time frame envisioned and furthermore to anticipate that some LSN data may be needed for subsequent licensing (emplacement, closure) actions. Therefore, the server hardware and software must be year 2000 compliant and must be capable of interacting with browser clients which themselves may, or, may not be year-2000 compliant. Specific attributes of this compliance include that:

- no value for a current date prior to the year value ~~2037~~ ~~2049~~ shall cause an error in calculations in any component of server software;
- it shall accurately represent and interpret dates in the range of January 1, 1900 to December 31, ~~2037~~ ~~2049~~, and that this date shall remain constant as time progresses;
- it shall accurately search and display dates without ambiguity;
- it shall accurately sort 19xx and 20xx dates in ascending/descending order;
- it shall not use a "00" or a "99" in 2-digit date fields to mean something other than date (i.e., estimated date, unknown date, does not expire, etc.);
- it shall provide unambiguous century designators, or, if a date is represented without a century designator, the century shall be unambiguous for all manipulations involving that element (different rules may be formulated for different elements);
- it shall not use a 2-digit data as part of an indexed key that depends on these records to be returned in chronological order;

- it shall accurately sort, search, and display **date-derived** identifiers without ambiguity and without jumbled sequences on reports or screens;
- it shall return accurate results for date calculations; and
- it shall return accurate results for leap year and Julian date calculations.

**2.38 The system must support full-text searching across all content in the directory, including titles, summaries and full text object files stored in their native format.**

This core capability of the LSN site specifies underlying formats (and data stores - text and header) against which text retrieval capabilities must operate. The LSN must 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. Specific text retrieval operations to be provided include the ability to: search for a phrase in the full text of documents; search for a phrase in selected bibliographic header fields (those containing text); and to exclude specific words from full-text indexing operations (stop words). Given that there will be a large volume of text data with content and terminology not intuitive to users, the LSN must provide **vocabulary tools, such as a dictionary dialog box, that allow users easy access to the words in the text database without having to conduct a full search to determine a word's presence or frequency of occurrence.**

**2.39 The system must support full text search capabilities using Boolean operators.**

This core capability of the LSN site specifies the search methodologies needed to operate against large and complex text files. The search engine(s) used to search the text and header indices in the LSN must provide the essential core Boolean operators "AND", "OR" and "NOT" in a query construct, **including nested queries.**

**2.40 The system must support full text search capabilities using Natural Language queries.**

This core capability of the text search component allows users, especially less advanced users, to enter a query in the form of a sentence or question.<sup>5</sup> The software will automatically identify the important words and phrases within the query and remove the "noise words". The text retrieval software that accommodates natural language query capabilities should not remove noise words from a phrase that is within its vocabulary. (Example: What is the state of the art in text retrieval? The software should search for: state of the art AND text AND retrieval ).

**2.41 The system must support Proximity Searching.**

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<sup>5</sup> There are at least three credible suppliers of natural language interface software for databases at this time: English Wizard from Linguistic Technology; a software component called English Query from Microsoft, which is now distributed as part of SQL Server 7.0; and Access ELF, which translates queries on-the-fly from English to SQL and doesn't store information in any form.

This core capability provides that the full text search engine(s) used to search the text indices (and text fields in structured data indices) shall provide proximity operators, "adjacent" and "near", to allow the searcher to find words that occur near each other, from a simple adjacency to a distance of nn intervening words.

**2.42 The system must support root searching in both structured and unstructured data.**

This core capability provides that users may conduct a search by using wildcards (e.g., "\*" or "?") in all query construction modes. (Where "\*" is used for multiple characters up to and including a complete word, and "?" is used for a single character). This basic capability ~~must~~ **should** have extensions, such as the capability to specify interspersed single and multiple character wild cards within a query argument, to utilize wildcards in conjunction with proximity searching, to use root searching as part of a full text query, and to combine multiple query statements using Boolean expressions (e.g., AND, OR, NOT).

**2.43 The system must support searching for specific metadata values in structured data via basic structured query tools.**

This core capability of the LSN site provides users the capability to electronically search and retrieve the bibliographic headers in the system. This means that the LSN must provide the capability to construct a query by using both document profile and full-text search capabilities for execution in a single query. This basic capability should have extensions, such as the capability to query the system by specifying the content of more than one header field to obtain a list of all documents which satisfy the query; the ability to search a single field, multiple fields, all fields, text, or text and any combination of record data, as specified by a user; and the capability to query the system by specifying a combination of header field values and the text query parameters in the full text of the document to obtain a list of all documents which satisfy the query.

Further, **this core capability** specifies the search methodologies and tools needed to operate against large and complex structured data (bibliographic) files. The LSN search engine(s) used to search the header indices must provide the essential core relational operators to aid in searching formatted fields **such as date, numeric, and text fields**. Because user sophistication varies, the software must provide the ability to search records by using data values that are either entered in a search window manually or are selected from a controlled vocabulary (via picklist). This implies that the software will provide the ability for a user to see a list of values that have been entered as a property into a field. (E.g., view the index values for the field). **Additionally**, because the content of the underlying documents is highly technical and scientific in nature, the LSN should provide a controlled vocabulary lookup feature for keywords in a structured bibliographic header field (select from list only, no ad hoc entry by end user). The LSN should provide tools to assist the user in retrieving documents when the unique data elements (identifiers) for the documents are not known to the users. Examples might include synonym processing, thesaurus, natural language queries, or other search aids. The LSN must contain a thesaural capability that provides recommended alternative terms to the user-supplied search words.

Original LSS functional requirements anticipated a closed system where additional query tool could be made available. These were often custom-developed functions based on features identified in DBMS technologies in use between 1988 and 1994, and are indicative of the types of functions that would be useful to trained information management intermediaries and paralegals who were conversant with discovery database search techniques. These tools included:

- the capability to save, retrieve, edit and/or re-execute a previously constructed query;
- the ability to tag a specific document in a search hit list for action, both as selected individual items, or, as part of a contiguous set of specified documents;
- the capability to save and retrieve a result set of a previously executed search;
- the capability to perform a query against the results set of the previous query during a single session;
- the capability to query the system for a list of all documents that meet the query criteria and perform ascending/descending sorts of the displayed list on the basis of selected display fields, or the basis of relevancy to the query;
- an indication of the query status during a full text query;
- the capability for a user to terminate queries in process without terminating the session or losing previous result sets; and,
- the capability to cancel a constructed query before execution (abandon).

It is reasonable to expect that some of these capabilities may be inherent in the LSN host software, but their implementation may be constrained by security concerns which restrict user ability to write data to the web server.

**2.44 The system must support searching using Boolean combinations of full-text and metadata values.**

This core capability allows users to conduct a search by combining structured and unstructured search techniques in all query construction modes. Because of the size of the database and the potential impact of issuing queries that do not attain a high degree of precision, the LSN must provide the ability to search for and retrieve both bibliographic header and full text documents.

**2.45 The system must rank results by relevance with respect to the search term, without regard to the type of the document returned or the repository the original document resided in.**

This core capability is essential given the size of the LSN collection and its homogeneity.

**2.46 The system must be capable of application upgrades.**

This core capability is required to address system currency, maintainability, and scalability requirements. This capability implies that the system to be developed will not rely on extensive customization which could prevent the system from being routinely upgraded with new vendor releases. Customization engenders extensive regression testing against new releases of software and if extensive, could be cost prohibitive. Therefore the client and server software should be a commercial off-the-shelf product that can be installed with only minimal customization (field definition, screen design, etc.).

**2.47 The system must provide on-line documentation.**

This core capability provides on-line documentation as part of an on-line help capability. This is a critical capability because of the diversity in the level of sophistication of the users. To support users, the LSN must provide help screens to assist user interaction with the (OS, RDBMS) system processes and to respond to system messages, and help screens to assist user interaction with the application software and to respond to application software messages. The online help features of the LSN Portal and Docket should be field-sensitive and should include narrative, not just a cryptic, system-jargon, numbered E-message. For example, the LSN should 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.

**2.48 The system must provide other (non-online) help documentation.**

This core capability provides paper or CD authored user documentation.

### 3.0 FUNCTIONALITY FOR DOCKET SYSTEM

The Licensing Support Network is intended to support the hearing process and the NRC resources established for maintaining licensing dockets. The LSN provides no resources to accomplish the docketing process within NRC, but still must integrate with the NRC docket. The following is a roster of functional capabilities associated with NRC's docket system which can be used as a frame of reference for the integration objectives to be considered in the LSN's detailed design phase.

#### 3.1 Docket

The docket system must, first and foremost, incorporate **all underlying system requirements found in NRC's docket and records management directives and the established procedures and standards for motions practice.** For the Yucca Mountain Repository licensing, the docket functionality begins 30 days after DOE submission of **the license application, in appropriate electronic format, to SECY.** The LSN utilizes NRC's existing docket structure to provide a docket which receives, stores, distributes, and maintains pre-license application docket materials. It is a fully featured capability, and allows for creating bibliographic headers for transcripts (and associated exhibit materials) submitted which were not previously made available in a participant collection. It also allows for creating a digital image of each page of electronically submitted text material (depositions, transcripts, and attached exhibits) that were not previously made available as an image in a participant collection. The software environment in which the docket resides preserves transcript formats including page and line numbers in the image format for uniformity in reference. It also provides the ability to link document records in the docket file with their **point-of-reference in the full text transcript.** Additionally, it already includes the ability to display limited access warnings.

For authorized individuals (SECY), NRC's Docket:

- provides a mechanism by which transcripts may be entered **into the docket on a daily basis in order to provide next-day availability at the hearing;**
- provides mechanisms for participants to transmit depositions to NRC (SECY) in electronic form for entry into the docket; it also provides a mechanism to authorized users (SECY) to identify only a part of a deposition that is offered into evidence;
- provides an electronic list of all exhibits with a way of indicating where they were introduced; and
- is the repository for the Protective Order File materials.

NRC's SECY organization is authorized to maintain the docket. The LSN site will contain a link directly into the existing NRC docket files and password access to the Protective Order File. **This is one of a number of mechanisms (such as direct access to**

**ADAMS external server) by which the Presiding Officer and counsel for all parties have access to the electronic docket (including Protective Order File) during the hearing.**

NRC resources are also used to support motions practice, i.e., the process of formally communicating, submitting and responding to legal matters, and which is conducted between the parties and the Board. This is the mechanism whereby all filings are able to be submitted/received electronically. The NRC provides this mechanism - Electronic Information Exchange (EIE) - for participant use in electronic submissions for all motions practice. The NRC will receive electronically transmitted depositions via EIE and enter them into the docket file. Similarly, the Presiding Officer and Commission issuances and orders are also transmitted electronically via EIE.

This core capability provides a means to authenticate transmitted files in support of motions practice. The NRC has established a separate, agency-wide EIE capability that ensures the integrity of files being transported across the internet. The LSN site must be able to utilize this existing NRC capability, which is based on UWI™ forms and Verisign™ digital signaturing software. The NRC procedure provides a mechanism whereby all filings can be submitted/received electronically. This procedure incorporates password security code techniques as part of the digital signature certificate issuance procedure, and applies digital signaturing technologies for transmission of documents. The NRC procedure also provides a mechanism to deliver all answers, orders and decisions per §2.1013(c) [e.g., electronically, using a secure process].

**Note: Procedurally, a participant's representative, when being deposed, is required to serve an electronic index of all documents in his/her possession relevant to the subject matter of the deposition on all parties. This index must identify which documents were already made available electronically and, by inference, all those not made available in the LSN. This functionality must be met by the participants' own resources.**

### **3.2 Docket Submission Controls.**

The docket must be governed by procedures and tracking mechanisms to allow document submitters to verify that document information entered into the NRC docket database is identical to the document information submitted to the LSN. Additionally, the docket environment must implement certain data management capabilities, including:

- a mechanism to preserve transcript formats including page and line numbers in the image format for uniformity in reference; and,
- the ability to link document records in the docket file with their reference in the full text transcript. *The implementation of this functionality should not use hyperlinks (records retirement issues) and should be accomplished in a single environment that is easily understandable and quick to learn.*

### **3.3 Docketing Process.**

Each participant is required to provide the computer system necessary to comply with service requirements ( §2.1011(b)). This includes providing an automated/procedural mechanism to show a proof of service for each document filed into the docket (§2.1013(c)(4)). This captures the event of a document being placed in a recipient's mailbox in order provide proof of the completion of service (§2.1013(c)(3)). This may be accomplished by procedurally requiring an echo response to incoming e-mail if received from a defined party to the licensing. The NRC docket must also implement procedures and tracking mechanisms to track documents submitted to NRC from receipt (date, time, accepted/rejected status) through disposition.

### **3.4 Docket Availability.**

The NRC docket environment must provide a mechanism that allows an authorized user (SECY) to identify the unavailability of the electronic docket for more than 4 hours in any day, and a means to communicate unavailability to the Presiding Officer, so that the day is not counted in the computation of time. (§2.1017)

## **4.0 AUDIT SYSTEM**

The Licensing Support Network Administrator (LSNA) is the individual within the NRC responsible for coordinating access to participant data via the LSN. The LSNA provides technical support to the Pre-License Application Presiding Officer in the matter of verifying substantial and timely compliance with the requirements in §2.1003 regarding availability of material in electronic form. Additionally, the LSNA is responsible for the ongoing integrity of the data that has been made available. To accomplish this mission, the LSN will have an audit and reporting capability to independently monitor system activities of the LSN site and the underlying participant collections.

### **4.1 Availability of electronic data**

To ensure the ongoing availability of data, component subsystems such as the participants' servers and the LSN server site itself must be made available to the LSN audit system for collection of server activity associated with posting, modification and deletion activities; and for server performance data in responding to requests for files. The audit system will provide authorized individuals the ability to monitor participants' document server performance in providing requested object files to requests made through the portal. (Such as for images associated with previously retrieved text.)

**For the LSN audit site itself, the system administration staff will require network monitoring tools needed to aid in the discovery or diagnosis of network faults and suboptimal configurations.**

**System administration staff will require tools to monitor usage and access.**

**System administration staff will require tools to monitor and aid recovery from attempted or successful security incidents.**

### **4.2 Integrity of data**

To ensure the ongoing integrity of data, component subsystems such as the participants' servers and the LSN server site itself must be made accessible to the audit systems' recording of all activity (accounting) associated with posting, modification and deletion activities conducted on each underlying document collection's bibliographic, text, and image files.

### **4.3 Audit Tools**

The audit system must provide software tools to:

- collect audit data on all aspects of LSN performance;
- store audit data as a record;

- **aggregate, compile, crosscut, and otherwise analyze audit data by providing a software capability (package) which can be used to perform the analyses and provide mechanisms to generate output and reports;**
- **create user-defined reports which include descriptive statistical computations and sub-grouping (ad hoc);**
- **store user-defined, statistical reports on participant, portal, and docket system activities; and**
- **print statistical reports on participant, LSN server, and docket system activities.**

**The audit system should allow only authorized individuals to enable/disable the audit functions and to backup and remove audit files from the system. Additionally, the audit server should adhere to the same standards, where applicable, as the LSN search and retrieval server in order to ensure compatibility.**

**TAB D: 2. LOW ESTIMATE OF RELEVANT LSN PAGES**  
February 15, 2000

Year	DOE Pages/Year	DOE Cumulative	NRC Pages/Year	NRC Cumulative	Others Pages/Year	Others Cumulative	Total Pages Added Yearly	Total Cumulative Relevant Pages
1999		100 k <sup>1</sup>		306 k <sup>2</sup>		60 k <sup>3</sup>		466 k
2000	11 k	111 k	34 k	340 k	6 k	66 k	51 k	517 k
2001	12 k	123 k	37 k	377 k	7 k	73 k	56 k	573 k
2002	22 k	145 k	38 k	415 k	7 k	80 k	67 k	640 k
2003	28 k	173 k	77 k	492 k	8 k	88 k	113 k	753 k
2004	31 k	204 k	121 k	613 k	9 k	97 k	161 k	914 k
2005	33 k	237 k	39 k	652 k	10 k	107 k	82 k	996 k
2006	33 k	270 k	43 k	695 k	11 k	118 k	87 k	1,083 k
2007	22 k	292 k	46 k	741 k	13 k	142 k	81 k	1,164 k
2008	23 k	315 k	43 k	784 k	14 k	156 k	80 k	1,244 k
2009	25 k	340 k	46 k	830 k	16 k	172 k	87 k	1,331 k
2010	24 k	364 k	57 k	887 k	17 k	189 k	98 k	1,429 k

<sup>1</sup> This estimate is the minimum number of relevant web pages that DOE currently intends to make available based on its understanding of "relevant documentary material." Yearly additions (pages/year) for DOE and NRC are based on the yearly percentage increases used in the previous LSS input estimates (Milestone shifts are taken into account).

<sup>2</sup> It is estimated that 18,000 currently stored NRC program-relevant documents have an average of 17 pages per document. For the low estimate, it is assumed that the licensing proceeding will take 1.5 years. Accordingly, hearing transcripts (~285 pages/day, 5 days/week, 48 weeks/year) and exhibit material (~1,000 pages/month) have been added into years 2003 - 2004 estimates.

<sup>3</sup> It is estimated that approximately 6,000 program-related documents (~10 pages/document) are currently stored by other LSN participants. Yearly additions are estimated to be 10% a year.

**TAB D: 1. HIGH ESTIMATE OF RELEVANT LSN PAGES**  
February 15, 2000

Year	DOE Pages/Year	DOE Cumulative	NRC Pages/Year	NRC Cumulative	Others Pages/Year	Others Cumulative	Total Pages Added Yearly	Total Cumulative Relevant Pages
1999		4,000 k <sup>1</sup>		306 k <sup>2</sup>		90 k <sup>3</sup>		4,396 k
2000	440 k	4,440 k	34 k	340 k	9 k	99 k	483 k	4,879 k
2001	488 k	4,928 k	37 k	377 k	10 k	109 k	535 k	5,414 k
2002	887 k	5,815 k	38 k	415 k	11 k	120 k	936 k	6,350 k
2003	1,015 k	6,920 k	77 k	492 k	12 k	132 k	1,194 k	7,544 k
2004	1,245 k	8,165 k	121 k	613 k	13 k	145 k	1,379 k	8,923 k
2005	1,306 k	9,471 k	119 k	732 k	14 k	159 k	1,439 k	10,362 k
2006	1,326 k	10,797 k	43 k	775 k	16 k	175 k	1,385 k	11,747 k
2007	864 k	11,661 k	46 k	821 k	17 k	192 k	927 k	12,674 k
2008	933 k	12,594 k	43 k	864 k	19 k	211 k	995 k	13,669 k
2009	1,008 k	13,602 k	46 k	910 k	21 k	232 k	1,075 k	14,744 k
2010	952 k	14,554 k	57 k	967 k	23 k	255 k	1,032 k	15,776 k

<sup>1</sup> This estimate assumes that approximately 50% of currently stored DOE program-relevant (~8 million) pages may be relevant to the HLW licensing proceeding in accordance with the definition of "documentary material" in §2.1001 of the LSN Rule when other participant requests are addressed by the presiding officer. (Note: The previous DOE page estimate to be stored through 1999 was over 7.3 million pages, applying a 50% relevancy factor.) Yearly additions (pages/year) for DOE and NRC are based on the yearly percentage increases used in the previous LSS input estimates (Milestone date shifts are taken into account).

<sup>2</sup> It is estimated that 18,000 currently stored NRC program-relevant documents have an average of 17 pages per document. For the high estimate, it is assumed that the license hearing will take 2.5 years. Accordingly, hearing transcripts (~284 pages/day, 5 days/week, 48 weeks/year) and exhibit material (~1,000 pages/month) have been added into years 2003 - 2005 estimates.

<sup>3</sup> It is estimated that approximately 6,000 program-related documents (~10 pages/document) are currently stored by other LSN participants and an additional 3,000 program-related documents (~10 pages/document) are stored by their consultants and contractors. Yearly additions are estimated at 10% per year.

**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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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.

**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**

## TAB C

### **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.

Requirement Identifier	Function/Event	Conditions	Response Time 15/50 concurrent users
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.
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

\*These queries were selected as representative of typical user queries which are not overly simple or complex. INFD-T3-Q 1: Find documents where text includes phrase like 'repository' & 'seals 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.

**TAB B**

**Old LSS Response Time Requirements  
(New LSN Benchmarks Required)**

<b>Requirement Identifier</b>	<b>Function/Event</b>	<b>Conditions</b>	<b>Response Time 15/50 concurrent users</b>
LSS2-065-2	Retrieval of query results list.	UNLV test query INJD-T3-Q1 or TEJA-T#-Q2.* 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 document.	First page: 10 seconds/15 seconds Each subsequent page: 3 seconds at the Main Facility, 6 seconds at the Supported Sites
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 ½ 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)

**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 TAB C.

LSS Field	Mandatory or Req'd by Participant	Mandatory or Req'd by LSSA	Multivalued (max # of entries)	Max Field Length	Authority Table	Required Format
Addressee Organization	R	N	Y (500)	65	Y	
LSS Record Housekeeping Info: Date Received at LSS Date Available in LSS Date/Time Loaded into LSS Date/Time of Last Modification LSS Indexer ID (DELETE?) Station ID (DELETE?) QC ID (DELETE?) Subject and Abstract Cataloger ID (DELETE?) Cataloging QC ID (DELETE?) Processing Stage Status (DELETE?) Verification ID (DELETE?) Change Tracking Log Electronic Signature Verification Electronic Image Location Searchable Text Reference Info.	N	Y	TBD	TBD	TBD	TBD
LSS Audit Info	N	R	TBD	TBD	TBD	TBD

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.)

<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>
Related Record Code	R	Y	Y (500)	7	Y	N
Special Class	R	N	Y (10)	50	Y	N
Abstract (Field under consideration to be deleted)	N	N	N	5000	N	N
Package Identifier	R	Y	Y (500)	50	N	N
Document Type (Includes package types)	M	N	Y (3)	40	Y	N
Identifiers	N	N	Y (100)	80	N	N
Comments	N	N	N	1000	N	N
Media	R	N	Y (5)	7	Y	N
QA Record	M	N	N	1	Y	N
Traceability Number	R	R	Y (10)	50	N	N
Traceability Code	R	R	Y (10)	5	Y	N
Keywords	N	N	N	5000	N	Y - Separate terms and phrases by punctuation
Number of Images	N	M	N	6	N	N
Physical Location Reference Information	R	R	N	1000	N	N
Address Name	R	N	Y (500)	50	Y	Last Name, FI MI

## TAB A

Minimum Header Fields for LSS Documentary Material  
 OLD Header Structure  
 LSN Candidate Deletions marked "(DELETE?)"

LSS Field	Mandatory or Req'd by Participant	Mandatory or Req'd by LSSA	Multivalued (max # of entries)	Max Field Length	Authority Table	Required Format
LSS Accession Number	N	M	N	13	N	Must be a unique number 3 digit alpha code w/ submitting organization, 7 numerics and check digit
Participant Accession Number	M	N	Y (50)	25	N	Alpha numeric, no required format
Title	M	N	N	1000	N	N
Author Name	M	Y	Y (200)	50	Y	Last Name, First Initial, Middle Initial
Author Organization	M	N	Y (200)	65	Y	
Document Date	M	N	N	8	N	YYYYMMDD
Document Number	R	N	Y (5)	30	N	N
Version	R	N	Y (5)	50	N	N
Access Control Information	R	N	Y (10)	3	Y	N
Related Records Number	R	Y	Y (500)	25	Y	Alpha numeric

# ***GLOSSARY OF TECHNICAL TERMS***

Prepared for:

**Licensing Support Network  
Technical Working Group Report**

February 23, 2000

# **GLOSSARY OF TERMS<sup>1</sup>**

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## **ASP**

An application service provider (ASP) is a company that offers individuals or enterprises access over the Internet to application programs and related services that would otherwise have to be located in their own personal or enterprise computers. Sometimes referred to as "apps-on-tap," ASP services are expected to become an important alternative, especially for smaller companies with low budgets for information technology. Early applications tend to be generalized and include:

1. Remote access serving for the users of an enterprise
2. An off-premises local area network (LAN) to which mobile users can be connected, with a common file server
3. Specialized applications that would be expensive to install and maintain within your own company or on your own computer

Hewlett-Packard, SAP, and Qwest have formed one of the first major alliances for providing ASP services. They plan to make SAP's popular R/3 applications available at "cybercenters" that will serve the applications to other companies. Microsoft is allowing some companies to offer its BackOffice products, including SQL Server, Exchange and Windows NT Server on a rental, pay-as-you-use basis.

While ASPs are forecast to provide applications and services to small enterprises and individuals on a pay-per-use or yearly license basis, larger corporations are essentially providing their own ASP service in-house, moving applications off personal computers (referred to as thin clients) and putting them on a special kind of application server that is designed to handle the stripped-down kind of thin client workstation. This allows an enterprise to reassert the central control over application cost and usage that corporations formerly had in the period prior to the advent of the PC. Microsoft's Terminal Server and Citrix's WinFrame products are leading thin-client application server products.

ASP is also an abbreviation for Active Server Page.

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## **BANDWIDTH**

The bandwidth of a transmitted communications signal is a measure of the range of frequencies the signal occupies. The term is also used in reference to the frequency-response characteristics of a communications receiving system. All transmitted signals, whether analog or digital, have a certain bandwidth. The same is true of receiving systems.

Generally speaking, bandwidth is directly proportional to the amount of data transmitted or received per unit time. In a qualitative sense, bandwidth is proportional to the complexity of the data for a given level of system performance.

<sup>1</sup> Reference: <http://www.whatis.com>

# **GLOSSARY OF TERMS<sup>1</sup>**

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## **BANDWIDTH (continued)**

For example, it takes more bandwidth to download a photograph in one second than it takes to download a page of text in one second. Large sound files, computer programs, and animated videos require still more bandwidth for acceptable system performance. Virtual reality (VR) and full-length three-dimensional audio/visual presentations require the most bandwidth of all.

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## **DVD**

DVD (digital versatile disk) is an optical disk technology that is expected to rapidly replace the CD-ROM disk (as well as the audio compact disc) over the next few years. The digital versatile disk (DVD) holds 4.7 gigabytes of information on one of its two sides, or enough for a 133-minute movie. With two layers on each of its two sides, it will hold up to 17 gigabytes of video, audio, or other information. (Compare this to the current CD-ROM disk of the same physical size, holding 600 megabytes. The DVD can hold more than 28 times as much information!)

DVD-Video is the usual name for the DVD format designed for full-length movies and is a box that will work with your television set. DVD-ROM is the name of the player that will (sooner or later) replace your computer's CD-ROM. It will play regular CD-ROM disks as well as DVD-ROM disks. DVD-RAM is the writeable version. DVD-Audio is a player designed to replace your compact disc player.

DVD uses the MPEG-2 file and compression standard. MPEG-2 images have four times the resolution of MPEG-1 images and can be delivered at 60 interlaced fields per second where two fields constitute one image frame. (MPEG-1 can deliver 30 noninterlaced frames per second.) Audio quality on DVD is comparable to that of current audio compact disks.

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## **FTP**

FTP (File Transfer Protocol), a standard Internet protocol, is the simplest way to exchange files between computers on the Internet. Like the Hypertext Transfer Protocol (HTTP), which transfers displayable Web pages and related files, and the Simple Mail Transfer Protocol (SMTP), which transfers e-mail, FTP is an application protocol that uses the Internet's TCP/IP protocols. FTP is commonly used to transfer Web page files from their creator to the computer that acts as their server for everyone on the Internet. It's also commonly used to download programs and other files to your computer from other servers.

# **GLOSSARY OF TERMS<sup>1</sup>**

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## **FTP (continued)**

As a user, you can use FTP with a simple command line interface (for example, from the Windows MS-DOS Prompt window) or with a commercial program that offers a graphical user interface. Your Web browser can also make FTP requests to download programs you select from a Web page. Using FTP, you can also update (delete, rename, move, and copy) files at a server. You need to log on to an FTP server. However, publicly available files are easily accessed using anonymous FTP.

Basic FTP support is usually provided as part of a suite of programs that come with TCP/IP. However, any FTP client program with a graphical user interface usually must be downloaded from the company that makes it.

---

## **HTML**

HTML (Hypertext Markup Language) is the set of "markup" symbols or codes inserted in a file intended for display on a World Wide Web browser. The markup tells the Web browser how to display a Web page's words and images for the user. The individual markup codes are referred to as elements (but many people also refer to them as tags).

HTML is a standard recommended by the World Wide Web Consortium (W3C) and adhered to by the major browsers, Microsoft's Internet Explorer and Netscape's Navigator, which also provide some additional non-standard codes. The current version of HTML is HTML 4. However, both Internet Explorer and Netscape implement some features differently and provide non-standard extensions. Web developers using the more advanced features of HTML 4 may have to design pages for both browsers and send out the appropriate version to a user. Significant features in HTML 4 are sometimes described in general as dynamic HTML. What is sometimes referred to as HTML 5 is an extensible form of HTML called XHTML.

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## **HTML FORMS**

Web forms let a reader return information to a Web server for some action. For example, suppose you collect names and e-mail addresses so you can e-mail some information to people who request it. For each person who enters his or her name and address, you need some information to be sent and the respondent's particulars added to a database.

This processing of incoming data is usually handled by a script or program written in Perl or another language that manipulates text, files, and information. If you cannot write a program or script for your incoming information, you need to find someone who can do this for you.

<sup>1</sup> Reference: <http://www.whatis.com>

# **GLOSSARY OF TERMS<sup>1</sup>**

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## **HTML FORMS (continued)**

The forms themselves are not hard to code. They follow the same constructs as other HTML tags. What could be difficult is the program or script that takes the information submitted in a form and processes it. Because of the need for specialized scripts to handle the incoming form information, fill-out forms are not discussed in this primer.

---

## **ISP**

An ISP (Internet service provider) is a company that provides individuals and other companies access to the Internet and other related services such as Web site building and hosting. An ISP has the equipment and the telecommunication line access required to have points-of-presence on the Internet for the geographic area served. The larger ISPs have their own high-speed leased lines so that they are less dependent on the telecommunication providers and can provide better service to their customers. Among the largest national and regional ISPs are AT&T WorldNet, IBM Global Network, MCI, Netcom, UUNet, and PSINet.

They also include thousands of local providers. In addition, Internet users can also get access through online service providers (OSPs) such as America Online and Compuserve.

The larger ISPs interconnect with each other through MAEs (ISP switching centers run by MCI WorldCom) or similar centers. The arrangements they make to exchange traffic are known as peering agreements. There are several very comprehensive lists of ISPs world-wide available on the Web.

An ISP is also sometimes referred to as an IAP (Internet access provider). ISP is sometimes used as an abbreviation for independent service provider to distinguish a service provider that is an independent, separate company from a telephone company.

<sup>1</sup> Reference: <http://www.whatis.com>

# **GLOSSARY OF TERMS<sup>1</sup>**

## **PORTAL**

Portal is a new term, generally synonymous with gateway, for a World Wide Web site that is or proposes to be a major starting site for users when they get connected to the Web or that users tend to visit as an anchor site. There are general portals and specialized or niche portals. Some major general portals include Yahoo, Excite, Netscape, Lycos, and Microsoft Network. Examples of niche portals include Garden.com (for gardeners), Fool.com (for investors), and SearchNT.com (for Windows NT administrators).

Most portals have adopted the Yahoo style of content categories with a text-intensive, faster loading page that visitors will find easy to use and to return to. Companies with portal sites have attracted much stock market investor interest because portals are viewed as able to command large audiences and numbers of advertising viewers.

Typical services offered by portal sites include a directory of Web sites, a facility to search for other sites, news, weather information, e-mail, stock quotes, phone and map information, and sometimes a community forum. Excite is among the first portals to offer users the ability to create a site that is personalized for individual interests.

<sup>1</sup> Reference: <http://www.whatis.com>

# **GLOSSARY OF TERMS<sup>1</sup>**

## **TCP/IP**

TCP/IP (Transmission Control Protocol/Internet Protocol) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in the private networks called intranets and in extranets. When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

TCP/IP is a two-layered program. The higher layer, Transmission Control Protocol, manages the assembling of a message or file into smaller packets that are transmitted over the Internet and received by a TCP layer that reassembles the packets into the original message. The lower layer, Internet Protocol, handles the address part of each packet so that it gets to the right destination. Each gateway computer on the network checks this address to see where to forward the message. Even though some packets from the same message are routed differently than others, they'll be reassembled at the destination.

TCP/IP uses the client/server model of communication in which a computer user (a client) requests and is provided a service (such as sending a Web page) by another computer (a server) in the network. TCP/IP communication is primarily point-to-point, meaning each communication is from one point (or host computer) in the network to another point or host computer. TCP/IP and the higher-level applications that use it are collectively said to be "stateless" because each client request is considered a new request unrelated to any previous one (unlike ordinary phone conversations that require a dedicated connection for the call duration). Being stateless frees network paths so that everyone can use them continuously. (Note that the TCP layer itself is not stateless as far as any one message is concerned. Its connection remains in place until all packets in a message have been received.)

Many Internet users are familiar with the even higher layer application protocols that use TCP/IP to get to the Internet. These include the World Wide Web's Hypertext Transfer Protocol (HTTP), the File Transfer Protocol (FTP), Telnet (Telnet) which lets you logon to remote computers, and the Simple Mail Transfer Protocol (SMTP). These and other protocols are often packaged together with TCP/IP as a "suite."

<sup>1</sup> Reference: <http://www.whatis.com>

# **GLOSSARY OF TERMS<sup>1</sup>**

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## **URL**

A URL (Uniform Resource Locator) (pronounced YU-AHR-EHL or, in some quarters, UHRL) is the address of a file (resource) accessible on the Internet. The type of resource depends on the Internet application protocol. Using the World Wide Web's protocol, the Hypertext Transfer Protocol (HTTP), the resource can be an HTML page from your web browser, an image file, a program such as a CGI application or Java applet, or any other file supported by HTTP. The URL contains the name of the protocol required to access the resource, a domain name that identifies a specific computer on the Internet, and a hierarchical description of a file location on the computer.

On the Web (which uses the Hypertext Transfer Protocol), an example of a URL is:

`http://www.mhrcc.org/kingston`

which describes a Web page to be accessed with an HTTP (Web browser) application that is located on a computer named `www.mhrcc.org`. The specific file is in the directory named `/kingston` and is the default page in that directory (which, on this computer, happens to be named `index.html`).

An HTTP URL can be for any Web page, not just a home page, or any individual file. For example, this URL would bring you the `whatis.com` logo image:

`http://whatis.com/whatisAnim2.gif`

A URL for a program such as a forms-handling CGI script written in Perl might look like this:

`http://whatis.com/cgi-bin/comments.pl`

A URL for a file meant to be downloaded would require that the "ftp" protocol be specified like this one:

`ftp://www.somecompany.com/whitepapers/widgets.ps`

A URL is a type of URI (Uniform Resource Identifier).

<sup>1</sup> Reference: <http://www.whatis.com>

# GLOSSARY OF TERMS<sup>1</sup>

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## VPN

A virtual private network (VPN) is a private data network that makes use of the public telecommunication infrastructure, maintaining privacy through the use of a tunneling protocol and security procedures. A virtual private network can be contrasted with a system of owned or leased lines that can only be used by one company. The idea of the VPN is to give the company the same capabilities at much lower cost by using the shared public infrastructure rather than a private one. Phone companies have provided secure shared resources for voice messages. A virtual private network makes it possible to have the same secure sharing of public resources for data. Companies today are looking at using a private virtual network for both extranets and wide-area intranets.

Using a virtual private network involves encrypting data before sending it through the public network and decrypting it at the receiving end. An additional level of security involves encrypting not only the data but also the originating and receiving network addresses. Microsoft, 3Com, and several other companies have proposed a standard protocol, the Point-to-Point Tunneling Protocol (PPTP) and Microsoft has built the protocol into its Windows NT server. VPN software such as Microsoft's PPTP support as well as security software would usually be installed on a company's firewall server.

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## WEB SERVER

In general, a *server* is a computer program that provides services to other computer programs in the same or other computers. The computer that a server program runs in is also frequently referred to as a server (though it may contain a number of server and client programs).

In the client/server programming model, a server is a program that awaits and fulfills requests from client programs in the same or other computers. A given application in a computer may function as a client with requests for services from other programs and a server of requests from other programs.

Specific to the Web, a **Web Server** is the computer program (housed in a computer) that serves requested HTML pages or files. A Web client is the requesting program associated with the user. The Web browser in your computer is a client that requests HTML files from Web servers.