

DOCKETED  
USNRC

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION '00 JUL -5 P1:53

In the Matter of: ) Docket No. 72-22  
PRIVATE FUEL STORAGE, ) ASLBP No. 97-732-02-ISFSI  
L.L.C. )  
(Independent Spent Fuel )  
Storage Installation) )

COPY

U.S. Nuclear Regulatory Commission

Sheraton Hotel

150 West 500 South, Wasatch Room

Salt Lake City, Utah 84101

Monday, June 19, 2000

The above-entitled matter came on for hearing,  
pursuant to notice, at 9:30 a.m.

BEFORE:

THE HONORABLE G. PAUL BOLLWERK, III

Administrative Judge

Atomic Safety &amp; Licensing Board Panel

DR. JERRY R. KLINE

Atomic Safety &amp; Licensing Board Panel

DR. PETER S. LAM

Atomic Safety &amp; Licensing Board Panel

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P R O C E E D I N G S

[9:34 a.m.]

JUDGE BOLLWERK: Good morning.

Today this Atomic Safety and Licensing Board is here to begin conducting an evidentiary hearing regarding certain of the technical issues in the Private Fuel Storage, LLC proceeding.

As we noted in our hearing notices of April 19 and June 7, 2000, the Board is here to receive testimony and exhibits and allow the cross-examination of witnesses relating to certain matters at issue in this proceeding regarding the June 1997 application of Private Fuel Storage, or PFS, for a license Under 10 Code of Federal Regulations, Part 72, to construct and operate an independent spent fuel storage installation, also referred to as an ISFSI, I-S-F-S-I, on the reservation of the Skull Valley Band of Goshute Indians in Skull Valley, Utah.

In addition, as I will outline in more detail a little later, on Friday and Saturday of this week, the Board will entertain oral limited appearance statements from members of the public in connection with this proceeding.

As the April and June hearing notices indicated, the issues we will be considering over the

1 next several days include Contention Utah R, which  
2 concerns a challenge by Intervenor State of Utah to the  
3 adequacy of the PFS facility emergency plan, in  
4 particular, its fire protection provisions; Contention  
5 Utah E/Confederated Tribes F, which involves financial  
6 assurance challenges by Intervenor, the State of Utah  
7 and Confederated Tribes of the Goshute Reservation to  
8 the cost estimates for construction, operation,  
9 maintenance and on-site incident insurance for the PFS  
10 facility; and Contention Utah S, which concerns the  
11 decommissioning plan for the PFS facility, in  
12 particular, the decommissioning cost estimates.

13 As we also noted in our hearing notices,  
14 another technical issue, Contention Utah H, regarding  
15 the adequacy of the thermal design of the HI-STORM  
16 storage casks that are to be used at the PFS site  
17 originally was scheduled to be part of this evidentiary  
18 hearing. However, on June 15, 2000, the state filed a  
19 notice withdrawing this Contention, declaring that a  
20 recent NRC staff thermal analysis established to its  
21 satisfaction the thermal design regulatory limits would  
22 not be exceeded.

23 However, before we begin hearing  
24 evidence on these three contentions, there are several  
25 other matters I'd like to bring to the attention of

1 those attending today's proceeding.

2 The first is a matter of public  
3 attendance at the hearing sessions on these three  
4 issues. The evidentiary session on Contention  
5 Utah R that we will begin and possible complete today  
6 will be open to the public. The Board is then scheduled  
7 to hear evidence regarding Contention  
8 Utah E/Confederated Tribes F on financial assurance.  
9 Because it is anticipated that this contention will  
10 include substantial testimony concerning confidential,  
11 proprietary business information, the evidentiary  
12 presentations on this issue will be closed to the  
13 public.

14 Until recently we had anticipated that  
15 the same would be true relative to Contention  
16 Utah S on decommissioning cost estimates. However,  
17 we've been advised by PFS within the last ten days that  
18 it no longer believes litigation of this contention will  
19 involve proprietary information. Although this will  
20 allow this portion of the proceeding to be open to the  
21 public, witness schedules, nonetheless, may require that  
22 evidence on Contention Utah E/Confederated Tribes F and  
23 Contention Utah S be provided in close proximity, making  
24 it difficult to predict exactly when we would be  
25 conducting open sessions.

1           This is a matter the Board intends to  
2 explore with the parties in more detail later today.  
3 Nonetheless, in an effort to keep the public apprised  
4 of when we will be conducting public sessions, we will  
5 attempt to provide up-to-date information by means of  
6 the NRC's recorded meeting message service at  
7 1-800-952-9674.

8           We will also attempt to have this  
9 information posted to the agency's electronic bulletin  
10 Board system -- what changed?

11           Can we go off the record a second?

12           (A discussion was held off the record.)

13           JUDGE BOLLWERK: All right. Why don't we go  
14 back on the record.

15           We will also attempt to have this  
16 information posted to the agency's electronic bulletin  
17 board system at 1-800-952-9676 and or the NRC's web site  
18 at [www.nrc.gov/NRC/PUBLIC/meet.html#ASLB](http://www.nrc.gov/NRC/PUBLIC/meet.html#ASLB). Let me  
19 repeat that information. One more time. The recorded  
20 message service is at 1-800-952-9674, the electronic  
21 bulletin board system, 1-800-952-9676, and the NRC web  
22 site, [www.nrc.gov/NRC/PUBLIC/meet.html#ASLB](http://www.nrc.gov/NRC/PUBLIC/meet.html#ASLB).

23           Additionally, we wish to discuss with  
24 the parties this morning a schedule for reviewing the  
25 transcripts and other evidentiary material involved in

1 any closed sessions to determine what portions could be  
2 made publicly available and when.

3 As I also noted at the outset, the  
4 issues before the Board today concern technical  
5 matters. Under our current schedule for this  
6 proceeding, we will be holding additional evidentiary  
7 session in mid to late summer of next year regarding  
8 admitted technical contentions on the seismic  
9 suitability of the PFS site and the adequacy of the PFS  
10 consideration of credible accidents caused by events and  
11 facilities external to the PFS facility, including  
12 commercial and military aircraft overflights, and on  
13 admitted contentions related to the adequacy of the  
14 identification and consideration of environmental  
15 impacts under the National Environment Policy Act or  
16 NEPA.

17 With regard to the latter, I would note  
18 that today the NRC staff has indicated they will be  
19 providing to the Board and the other parties a copy of  
20 the staff's Draft Environmental Impact Statement, DEIS,  
21 which staff counsel may wish to say something about a  
22 little later.

23 Finally, as I mentioned at the  
24 beginning, the Board will be conducting oral limited  
25 appearance sessions on Friday afternoon and evening and

1 Saturday afternoon of this week. Those sessions are  
2 scheduled on Friday, June 23rd, from 1:00 p.m. to 4:00  
3 p.m. and from 7:00 p.m. to 9:30 p.m., and on Saturday,  
4 June 24th from 1:00 p.m. to 4:00 p.m.

5 Also, as is indicated in the June 7th  
6 notice, limited appearance sessions initially scheduled  
7 for Friday, June 30, and Saturday, July 1st in Tooele,  
8 Utah, have been postponed and will be rescheduled at a  
9 later date.

10 By way of further explanation, limited  
11 appearance sessions provide members of the public who  
12 are not parties and directly affiliated with parties to  
13 the proceedings with an opportunity to make a brief oral  
14 presentation to the Board regarding any concerns or  
15 matters relating to this proceeding that they wish to  
16 bring to the board's attention. The time allotted for  
17 each statement normally will be no more than five  
18 minutes, but may be further limited depending on the  
19 number persons who are preregistered to make an oral  
20 statement and others who may be present at the  
21 designated times.

22 Also, as we indicated in our April 19th  
23 and June 6th notices, oral limited appearance  
24 statements will be entertained during the hours  
25 mentioned or such lesser time as may be necessary to

1 accommodate the speakers who are present. If, however,  
2 all scheduled and unscheduled speakers present at a  
3 session have made a presentation, the Licensing Board  
4 reserves the right to terminate the session before the  
5 noticed ending time.

6 We'd like today to encourage anyone  
7 who's interested in addressing the Board later in the  
8 week and who has also not previously registered by  
9 e-mail or fax to sign up today. To this end, we've  
10 provided sign-up sheets on the table in the back of the  
11 room that you can fill out during a break or at  
12 lunchtime. If, however, you are already preregistered,  
13 you need not do so again.

14 Moreover, anyone is free at any time to  
15 submit a written limited appearance statement setting  
16 forth their views regarding this proceeding by mail to  
17 the NRC Office of the Secretary, with a copy to the  
18 chairman of this Licensing Board.

19 Now, before we move to several preliminary  
20 procedural matters and the parties' evidentiary  
21 presentations on Contention Utah R, I would like to  
22 introduce the board members.

23 To my right is Dr. Jerry Kline.  
24 Dr. Kline, an environmental scientist, is a part-time  
25 member of the Atomic Safety and Licensing Board Panel.

1           To my left is Dr. Peter Lam. Dr. Lam,  
2           who is a nuclear engineer, is a full-time member of the  
3           panel.

4           My name is Paul Bollwerk. I'm an  
5           attorney, a full-time panel member and the chairman of  
6           this Licensing Board.

7           At this point I'd like to have the  
8           representatives or counsel for the parties identify  
9           themselves for the record. Why don't we start with  
10          representatives for the various intervenors, then move  
11          to counsel for Applicant Private Fuel Storage and  
12          finally to the NRC staff.

13          State of Utah.

14          MS. CHANCELLOR: My name is Denise  
15          Chancellor. On my left is Connie Nakahara, and next to  
16          her is Diane Curran. And in the audience is Dr. Nelson,  
17          the head of the Department of Environmental Quality.

18          JUDGE BOLLWERK: All right. The only other  
19          intervenor I see here is the Skull Valley Band.

20          MR. QUINTANA: Danny Quintana for the Skull  
21          Valley Band of Goshutes.

22          JUDGE BOLLWERK: All right. We have several  
23          other intervenor groups, the Confederated Tribes of the  
24          Goshute Reservation and also OGD/SUWA, which I don't see  
25          counsel here for today. They don't have issues that are



1 before us at this point. The Confederated Tribes are  
2 the ones which they are the -- that the state is the  
3 lead counsel. They're not here today, so we will just  
4 move on to the applicant then.

5 MR. SILBERG: Yes. My name is Jay Silberg  
6 from the law firm of Shaw Pittman representing me with  
7 -- representing the applicants with me are Ernie Blake  
8 and Paul Gaukler, also partners at Shaw Pittman, and  
9 Sean Barnett and Al Taylor, also of the same law firm.

10 MS. MARCO: My name is Catherine Marco, and  
11 with me today on my left Sherwin Turk. We represent the  
12 NRC staff. And also here at the table is Mark  
13 Delligatti.

14 JUDGE BOLLWERK: All right. I would note  
15 that the presentations to the Board during this  
16 evidentiary session will be limited to the participants  
17 who have just identified themselves, subject to the  
18 requirements imposed by the Board relative to a lead  
19 party, the party with the primary responsibility for  
20 litigating the contention, and those parties that  
21 otherwise may be involved with a contention by reason of  
22 issue consolidation or adoption.

23 Also, I would note that pending with the  
24 Board is a recently submitted request to intervene in  
25 this proceeding filed by William D. Peterson. That

1 late-filed intervention petition currently is the  
2 subject of a briefing schedule established by the Board,  
3 and thus, is not being considered during these  
4 evidentiary hearing sessions.

5 With all that said, we would now like to  
6 deal with two preliminary matters before beginning the  
7 evidentiary presentations. The first is a June 15, 2000  
8 Private Fuel Storage motion requesting that the Board  
9 reconsider that portion of its unpublished June 12, 2000  
10 memorandum that denied a May 31, 2000, Private Fuel  
11 Storage Motion to Strike certain of the prefiled direct  
12 testimony of state witness Michael F. Sheehan, Ph.D.,  
13 regarding Contention Utah S.

14 In our June 15 order permitting party  
15 replies to that motion, we indicated we would permit a  
16 brief oral argument on the motion this morning. PFS is  
17 the proponent of the motion.

18 What would you like to say, gentlemen?

19 MR. GAUKLER: Good morning, Your Honor. Paul  
20 Gaukler for PFS.

21 I'd like to make a very simple point.  
22 We made a Motion for Reconsideration which is that,  
23 number one, PFS and the state agreed in the restated --  
24 Restated Contention Utah S that the issues in that case  
25 were limited to the year's dollars in which the

1 decommissioning cost estimate was made and escalation or  
2 change of those year's dollars to account for future  
3 increases in costs. That's as far as it relates to the  
4 particular Motion to Strike.

5 Dr. Sheehan in his testimony challenges  
6 both those issues, as well as the vintage of the data  
7 used to develop the cost decommissioning cost estimates.  
8 By challenging the vintage of the data, for example, I  
9 think that's 1990 or 1993 data, he is, in effect,  
10 challenging the decommissioning cost estimate, and the  
11 parties expressly stated in the Joint Motion to the  
12 Board that the decommissioning cost estimate was not --  
13 it was no longer an issue in this case.

14 The state in its pleadings claims that  
15 it's not challenging the absolute numbers, the 17,000 or  
16 the 1,600,000, but challenging the basis of the numbers.  
17 But by virtue of challenging the vintage of the data,  
18 they are, in effect, challenging those numbers. They  
19 cannot help but do that. If they were correct in their  
20 assertion, those numbers would change.

21 And therefore, we believe that the  
22 vintage of the data issue is beyond Utah S as set forth  
23 in the Amended Utah S Contention as approved by the  
24 Board.

25 JUDGE BOLLWERK: All right. Anything

1 further --

2 MR. GAUKLER: No.

3 JUDGE BOLLWERK: -- at this point?

4 JUDGE BOLLWERK: All right.

5 Ms. Chancellor -- does the staff wish to say anything on  
6 this subject? Let me hear from Ms. Chancellor first,  
7 and then we'll hear from the staff.

8 MS. CHANCELLOR: Your Honor, as we stated in  
9 our response to the PFS Motion for Reconsideration and  
10 as Mr. Gaukler stated, we are not challenging the  
11 absolute numbers. All we're asking for is for PFS to  
12 disclose the basis on which they arrived at those  
13 numbers.

14 In Attachment A to our stipulation,  
15 basis 4 for Contention S, in the second paragraph it  
16 states, "The decommissioning plan must compare the cost  
17 estimate with present funds, and if there is a deficit  
18 in present funding, the plan must indicate the means for  
19 providing sufficient funds for completion of  
20 decommissioning."

21 As we stated in our Motion for  
22 Reconsideration, it is future funding of  
23 decommissioning that we want to know the vintage of the  
24 data for. If you don't know the -- the data on which  
25 the 7,000 per cask or the 1.6 million per site

1 decommissioning is based, you can't adequately determine  
2 how much PFS may need to increase its decommissioning  
3 funding in the future.

4           What we are actually arguing about is  
5 Dr. Sheehan's response to Question 20 -- Question 19  
6 and 20. Question 19 states, "Has PFS identified the  
7 vintage of the data used for its decommissioning cost  
8 estimate?"

9           "Not in any document" -- "Answer: Not in any  
10 document that has been available to me."

11           "Question 20: Is it possible to determine the  
12 validity of the decommissioning cost estimate without"  
13 -- oh, I assume that this information isn't  
14 confidential, Your Honor.

15           Is that correct?

16           MR. SILBERG: That's correct.

17           JUDGE BOLLWERK: I don't think I've heard  
18 anything up to this point.

19           MR. GAUKLER: That is correct, Your Honor.

20           JUDGE BOLLWERK: If something -- if you hear  
21 us headed in that direction, stop us. I'm listening for  
22 numbers, and I'm not hearing those, so that's my --

23           MS. CHANCELLOR: "Question 20: Is it  
24 possible to determine the validity of the  
25 decommissioning cost estimate without knowing the

1 vintage of the data underlying the estimate and the  
2 year's dollars?"

3 "No. If you don't know, and you assumed  
4 a cost estimate was based on current cost data in  
5 current dollars, then you would have underestimated the  
6 cost of decommissioning by the amount of the real cost  
7 increase and the rate of inflation between the actual  
8 year of the data and the actual year's dollars to the  
9 current year."

10 I don't think it's unreasonable, Your  
11 Honor, for the state to request PFS to disclose the  
12 underlying data upon which the 17,000 and the  
13 1.6 million are based, and that is all we are asking  
14 for.

15 JUDGE BOLLWERK: Since I'm going to go by my  
16 recollection, you now indicated it's based on 1997  
17 dollars? Am I --

18 MR. GAUKLER: That's correct, Your Honor.

19 JUDGE BOLLWERK: All right. And then the  
20 question becomes, how was that -- the 1997 may mean 1997  
21 as -- for instance, I guess your argument it's from  
22 1994, it was then escalated to 1997 --

23 MS. CHANCELLOR: Exactly.

24 JUDGE BOLLWERK: -- and that's the figure that  
25 was used.

1           So if Ms. Chancellor were correct that it was  
2 1994 dollars taken to 1997 and used from there, then, in  
3 theory, the estimate might change? Is that -- and  
4 that's your concern, I take it?

5           MR. GAUKLER: Well, that -- when they say --

6           JUDGE BOLLWERK: If she -- if she thought that  
7 you'd calculated incorrectly.

8           MR. GAUKLER: And if she felt we calculated  
9 incorrectly, then the absolute number, which she claims  
10 she doesn't challenge, would change to 1997 dollars,  
11 because she would be cleaning up with what we took from  
12 1994 to 1997 was incorrect.

13           I'd like to point out also for this  
14 Board, as a practical matter, PFS has in its license  
15 application to reassess its decommissioning cost  
16 annually, and we will look at both the changes in scope  
17 and cost of conducting the decommissioning activities on  
18 an annual basis. So in terms of worrying about future  
19 cost estimate, we're going to take a look at the actual  
20 cost estimates and we would apply the escalation on an  
21 annual basis to make sure that it's up to date and then  
22 revise the funding as appropriate.

23           MS. CHANCELLOR: But that's precisely the  
24 point, Your Honor. If PFS commits to revise its  
25 decommissioning plan, how do we know that it's going to

1     escalate it correctly if we don't know the date on which  
2     the underlying data comes from?

3             For example, and in our response we used  
4     the example of labor. If labor costs are based on some  
5     sort of survey that was done in 1994 or '95 and then  
6     escalated up to 1997 dollars, sheer inflation may not  
7     take into account the difference in labor costs in 2005.  
8     So we need to get the date of the underlying data as  
9     well as the year's dollars in which the data are based.  
10    PFS says that it has -- that the dollar amount is in  
11    1997 dollars. We don't know whether that's the date of  
12    the data or if that's just the -- if it has been  
13    escalated to that date.

14            JUDGE BOLLWERK: All right.

15            MR. GAUKLER: I'd like to take two points,  
16    Your Honor --

17            JUDGE BOLLWERK: Okay.

18            MR. GAUKLER: -- in response to that. One,  
19    let's just talk about the vintage of data, and second,  
20    in the terms of reevaluation of the decommissioning cost  
21    estimates, we will look at the decommissioning cost  
22    wholly apart from escalation. We will at that time have  
23    people at the site who know what labor costs are and  
24    will be able to judge from there whether or not we've  
25    estimated the decommissioning costs correctly.



1           So it's not a matter of escalation from  
2 1997 dollars to 2003 or 2005. We'll look at the data at  
3 that point in time without escalating the dollars  
4 necessarily.

5           JUDGE BOLLWERK: I take it that -- that --  
6 they've told you it was done in 1997 dollars, and, in  
7 fact, if there wasn't any other, well, I'll say, base  
8 figure that was corrective, then, in theory, you're not  
9 challenging the numbers at all; is that correct?

10          MS. CHANCELLOR: That's correct.

11          JUDGE BOLLWERK: So it's only if there was  
12 some other base figure that was used that was then  
13 corrected in some way to get to 1997, that's your  
14 concern?

15          MS. CHANCELLOR: If there was some -- yes, if  
16 the base figure was escalated up to 1997, that is our  
17 concern.

18          JUDGE BOLLWERK: All right.

19          MS. CHANCELLOR: And just in response to Mr.  
20 Gaukler's last point, he says the people at the site  
21 will have a better idea of the costs. But we're looking  
22 at future costs at the end of the project, so they are  
23 still estimating those costs, they are still trying to  
24 evaluate how much it's going to be in 20 years or in 40  
25 years. So the argument that people at the site will

1 have a better idea really doesn't wash.

2 MR. GAUKLER: Two points to that, Your Honor.

3 JUDGE BOLLWERK: I haven't forgotten about the  
4 NRC staff.

5 MR. GAUKLER: We've committed to reassess the  
6 license application. We've committed to reassess the  
7 costs on an annual basis. Therefore, we'll be doing  
8 that on an annual basis up to the point in time we come  
9 to the actual decommissioning of the site.

10 Secondly, what Ms. Chancellor referred  
11 to in terms of the difference between 1994 and 1997  
12 dollars, for example, that's not an issue in this case  
13 because the basis for the contention very clearly states  
14 that it's two issues in terms of the costs. One is the  
15 year dollars in which the estimate is dated, and the  
16 second one is the escalation or evaluation of those  
17 costs in future years to make sure that we're accounting  
18 for funding adequate to cover the costs as they may  
19 change over time. Those are the two issues.

20 We have not addressed in terms of whether  
21 it's '93 or '94 dollars in our testimony at all because  
22 it was irrelevant.

23 JUDGE BOLLWERK: I'll give you a chance to  
24 respond to that, and then I'm going to go to the -- if  
25 you want to say anything about it.

1 MS. CHANCELLOR: One way to resolve this, Your  
2 Honor, may be if PFS will agree to a license condition  
3 that it will review the cost estimates yearly, the  
4 actual costs, not just escalating it in terms of  
5 Consumer Price Index, but a license condition that would  
6 require them to do that and actually commit to  
7 increasing the decommissioning funding by that amount  
8 each year that would reflect the actual -- the best  
9 estimate of the actual cost of decommissioning, then  
10 maybe this issue could go away.

11 JUDGE BOLLWERK: Anything you want to say  
12 about that?

13 MR. GAUKLER: That's beyond the scope of this  
14 Motion to Strike.

15 JUDGE BOLLWERK: All right.  
16 Staff?

17 MS. MARCO: We support the applicant's Motion  
18 for Reconsideration. As you know, we filed our own  
19 Motion to Strike this testimony. We do believe that the  
20 vintage issue is beyond the scope of the stipulated  
21 contention bases, and we question how the state can say  
22 that the -- they're not going to challenge the adequacy  
23 of the underlying cost, and yet this looks like a  
24 retreat from that position. So we see this as outside  
25 of the scope.

1 JUDGE BOLLWERK: Any questions from any of the  
2 Board members?

3 JUDGE KLINE: Yes.

4 I guess I would ask the state to confront just  
5 that last argument head on, because it does seem to me  
6 that there is a problem. If you've accepted the  
7 numbers, why is it material to a decision in this case  
8 to -- to challenge the underlying basis? The only  
9 effect -- that is, suppose you do find an error in the  
10 underlying basis. That inevitably causes a change in  
11 the numbers which you've already accepted. So there is  
12 a logical problem here that we need to confront.

13 MS. CHANCELLOR: There will be a change in the  
14 numbers in the future -- there may be a change in the  
15 numbers in the future due to increases in the various  
16 costs that make up the decommissioning. So we're not  
17 saying that the number today -- PFS must have had some  
18 reason for coming up with those numbers, with the 17,000  
19 and the 1.6.

20 All we're asking for is tell us, tell us  
21 what those numbers are based on, because that -- we  
22 aren't confronting the number as of today, but in the  
23 future, if the costs increase in the future, you need to  
24 know what it's based on. So if PFS says, These costs  
25 are based on 1995 data, and that's how we arrived at the

1     \$17,000 per cask and the 1.6 million per cask, fine,  
2     that's all we want to know. But we also want to know in  
3     the future when they reevaluate whether they need to  
4     increase their funding that they're going to take into  
5     account, for example, labor that was based on a 1995  
6     number.

7             JUDGE KLINE: But you're just in a sense  
8     requesting information as if it was almost like  
9     discovery. What -- how is it -- I mean, understanding  
10    that you have accepted the numbers, how would its  
11    underlying basis be material to a decision on this  
12    contention?

13            MS. CHANCELLOR: Because the basis clause  
14    states that the decommissioning plan must compare the  
15    cost estimate with present funds and any deficit in  
16    funding, PFS must indicate how they're going to supply  
17    that deficit in funding.

18            So for the -- to have a record of how  
19    they are going to evaluate whether there's a deficit in  
20    funding, we need to know the underlying basis, the  
21    vintage of the data from which they derive the 17,000  
22    and the 1.6 million.

23            JUDGE LAM: Ms. Chancellor, knowing the  
24    vintage of the data may not help you. I think the  
25    issue here is to forecast the future costs, liability.

1 How the applicant can do it from 1997 dollar, projecting  
2 20, 40 years in the future is material to this  
3 contention.

4 Now you're asking for how they did it  
5 escalating from 1994 to 1997. Assuming you know that,  
6 how would you use that method to compare what they are  
7 going to do forecasting the future?

8 [Pause.]

9 MS. CHANCELLOR: I beg your pardon, Your  
10 Honor.

11 We're concerned with how the 17,000 and  
12 1.6 million can be escalated in the future to -- to  
13 accommodate a future increase. And so -- I get back to  
14 the same -- I seem to have the same mantra. You need to  
15 know the underlying data on which that is based to  
16 determine how you're going to escalate it.

17 I don't know if I'm responsive to your  
18 question. I was having a hard time understanding your  
19 question.

20 JUDGE LAM: Well, you already accept the  
21 stipulated 1997 dollar figure, correct?

22 MS. CHANCELLOR: We accept the stipulation  
23 that the -- that the year -- that the cost that PFS has  
24 come up with are in 1997 dollars.

25 JUDGE LAM: Right. And you further accept the

1 amount, the \$7,000 per cask --

2 MS. CHANCELLOR: The 17,000 and 1.6, that's  
3 correct.

4 JUDGE LAM: Right. You accept the amount in  
5 1997 dollars, right?

6 MS. CHANCELLOR: In 1997 dollars.

7 JUDGE LAM: Now you're asking the question how  
8 did they get that number; is that true?

9 MS. CHANCELLOR: We're asking for them to  
10 disclose where the -- the date on which that -- the data  
11 are based that they came up with those numbers.

12 JUDGE LAM: Right. But the question is,  
13 knowing that, assuming they're willing to disclose to  
14 you, assuming they are willing, which they are not,  
15 assuming they are willing to disclose that method to  
16 you, what would you do with it?

17 MS. CHANCELLOR: If they disclose that number  
18 to us, then -- then we would be in a position to compare  
19 -- to evaluate how PFS is going to account for increase  
20 in decommissioning costs in the future.

21 JUDGE LAM: I see. So you are looking to  
22 compare. They have done it from 1994 to 1997, assuming  
23 they're willing to disclose to you, you know how they  
24 did it, and then you are going to compare how that is  
25 done to what they're going to do in the future.

1 MS. CHANCELLOR: That's correct.

2 JUDGE BOLLWERK: Anything further?

3 JUDGE KLINE: So this inquiry really goes,  
4 then, to methodology not --

5 MS. CHANCELLOR: Methodology for future  
6 increases in decommissioning funding.

7 JUDGE KLINE: Okay. And -- and what was done  
8 in the past, in your mind, is --

9 MS. CHANCELLOR: Is past.

10 JUDGE KLINE: -- is indicative of what may  
11 happen in the future. Is that the argument?

12 MS. CHANCELLOR: That's -- that's correct.

13 JUDGE KLINE: Okay.

14 JUDGE BOLLWERK: All right. Let me make one  
15 more -- anything further the staff wishes to say?

16 MR. TURK: Would you mind if I made a comment  
17 rather than --

18 JUDGE BOLLWERK: Certainly. We're flexible  
19 here.

20 MR. TURK: The thought --

21 JUDGE BOLLWERK: If Ms. Marco wants to yield  
22 the floor, that's fine with me.

23 MS. MARCO: I will yield the floor.

24 MR. TURK: The thought occurs to me, Your  
25 Honor, there are two different arguments being made.



1 One is what is the soundness of the data for the Board  
2 upon which your decision is based. The other question  
3 goes to how, after licensing occurs, will cost increases  
4 be made? What sort of information will be used for  
5 future cost increases? And that's what I hear Ms.  
6 Chancellor arguing about in her latest comments.

7 That issue is beyond what you need to  
8 address in your decision. Your decision will  
9 essentially determine whether the estimates that are  
10 before you are sound for current licensing practices.  
11 And with respect to the numbers of further current  
12 licensing that the state has already stipulated that  
13 they accept the numbers that are before you.

14 JUDGE BOLLWERK: All right. Ms. Chancellor,  
15 I'll give you one more chance, and then we'll --

16 MS. CHANCELLOR: One more chance, okay.

17 JUDGE BOLLWERK: If you want to say anything.  
18 It's up to you.

19 MS. CHANCELLOR: Of course.

20 The applicant -- as we've raised before,  
21 the applicant has failed to justify the basis of the  
22 decommissioning costs.

23 Getting back to the labor example, if --  
24 if PFS based its number on -- on a time when labor was  
25 competitive and there was plenty of labor about and it

1 didn't cost -- and they could get labor at a reasonable  
2 rate and that is the basis on which their 17,000 per  
3 cask is based, if, say, in 2005 there's a labor shortage  
4 for the particular work that they need, then those costs  
5 are going to increase greater than the Consumer Price  
6 Index.

7                   And so whether the labor costs were  
8 reasonable at the time PFS evaluated its costs and  
9 whether -- whether a dramatic increase in labor costs  
10 occur in the future, you can't compare those two  
11 unless -- unless you know the baseline, what is the  
12 starting point, and that's all we're asking. What is  
13 the baseline? What is the starting point from which we  
14 evaluate increases in decommissioning costs?

15                   And I disagree with Mr. Turk that we're  
16 not just here to determine -- I mean, we may as well go  
17 home if all we're going to argue is it 17,000 or is it  
18 1.6 million. We've already accepted that. We're  
19 arguing about the underlying -- underlying data as well  
20 as the year's dollars.

21                   That's all I have to say, Your Honor.

22                   JUDGE BOLLWERK: All right. Mr. Gaukler or  
23 Mr. Silberg? All right.

24                   MR. SILBERG: Since Ms. Marco yielded the  
25 floor to Mr. Turk.

1 THE COURT: All right.

2 MR. SILBERG: The baseline is the accepted  
3 numbers, the numbers that the staff has -- that the  
4 state has accepted that we have put forward, the \$17,000  
5 per cask, the 1.7 million for site decommissioning.  
6 That is the baseline. How one escalates it in the  
7 future depends on what happens in the future. If labor  
8 costs increase by twice what they increased  
9 historically, that's irrelevant. The question is what  
10 are they going to increase in the future, not how much  
11 more did they increase in the future compared to what  
12 they increased in the past.

13 The question of how one got to 17,000 is  
14 totally irrelevant to how one escalates in the future.  
15 We're starting with a baseline. We have to demonstrate  
16 how we will escalate that number in the future. There  
17 are a variety of ways to do that. We will discuss that.  
18 But it has no bearing whatsoever on how that number came  
19 to be in the first place. It is simply immaterial to  
20 this Board's decision on the contention before it.

21 It's not a question of our being unwilling to  
22 disclose this information. We've disclosed a lot of  
23 information. The question is whether it is within the  
24 scope of the contention as this Board has defined it,  
25 and vintage is not.

1 JUDGE LAM: Mr. Silberg, I'd like you to  
2 answer Ms. Chancellor's thesis. If you had done it  
3 wrong in the past, you may do it wrong in the future.

4 MR. SILBERG: They can ask -- they can ask  
5 that when they ask about how we will do it in the  
6 future, but it has nothing to do with what year the data  
7 was first collected, whether it was 1890 or 1990 or  
8 1994. It's totally irrelevant. How we will do it in  
9 the future is how we will do it in the future.

10 JUDGE BOLLWERK: All right. Anything further  
11 from any of the Board members?

12 JUDGE KLINE: No.

13 JUDGE BOLLWERK: All right. We will take this  
14 under advisement, and hopefully we shall rule in the  
15 very near future.

16 Mr. Sheehan is scheduled to testify now  
17 approximately perhaps Thursday, so we'll certainly do it  
18 well before then.

19 All right. The other matter that I wanted to  
20 discuss with the parties a little bit is the question of  
21 dealing with proprietary information. We will be  
22 closing some of the sessions, particularly the one on  
23 Contention E, and it occurred to me that maybe now is  
24 the time to sort of address this problem or confront it  
25 in terms of the information and the -- and the testimony

1 and the evidence we're going to have and the decision  
2 that we are going to be producing based on the  
3 information.

4 And I would propose, and I'm willing to listen  
5 to other suggestions, that when the applicant files its  
6 Proposed Findings and Conclusions, it also be able to  
7 provide the Board and the other parties with a -- I  
8 don't know if you want to call it a redacted version or  
9 a list or some kind of indication of what the numbers  
10 are that in fact are proprietary.

11 We're going to see a lot of information.  
12 My supposition is that what we're really trying to  
13 protect here are the particular numbers that are  
14 involved. If I'm wrong about that, you can correct me  
15 or just tell me something different. If what we're  
16 talking about are numbers, it strikes me that much of  
17 the testimony we're going to have, and much of the  
18 evidence, can, frankly, be put into the public record as  
19 long as those numbers, those particular numbers, are  
20 kept private and not disclosed.

21 I think that would, to some degree, get a lot  
22 more information on the record. It would also make it  
23 easier for the Board and, I think the parties, to make  
24 it clear that we don't stumble over something or  
25 something gets out that shouldn't.

1           So my proposal would be that the  
2 applicant do that when they file their Proposed  
3 Findings and Conclusions. That gives a state and the  
4 staff, if they wish to, an opportunity to respond, in  
5 the second round of reply to the Board's findings and  
6 conclusions are put in. And that should give the  
7 Board, as we draft the decision, an indication of  
8 exactly what information we're dealing with that really  
9 needs to be kept off the record.

10           So since it's your information, I'll let  
11 you have --

12           MR. SILBERG: Could we just have a moment,  
13 sir?

14           JUDGE BOLLWERK: Sure, absolutely. Or we can  
15 come back to this if you need to talk about it further.

16           [Pause.]

17           MR. SILBERG: Let me propose a  
18 counter-suggestion.

19           JUDGE BOLLWERK: All right.

20           MR. SILBERG: Had we been submitting  
21 sequential proposed findings, I would have suggested  
22 that a week after the applicant submits its proposed  
23 findings we submit a redacted transcript. However,  
24 since we're, as I understand doing simultaneously --  
25 simultaneous findings, simultaneous reply findings, I

1 think if we try to do that at the same time, knowing the  
2 schedules, we're all going to be stressed to get our  
3 findings in.

4           What I -- what I'd prefer to do would be  
5 perhaps a week after reply finding are in, that we  
6 would submit a redacted transcript. It may be more than  
7 just the numbers. We'll have to look carefully and see.  
8 We'll try to minimize whatever needs to be redacted from  
9 the public, but it could well be more than just the  
10 numbers. But I don't want to prejudge that issue.

11           I think if we try to do it at the same  
12 time as the proposed findings, however, we may be  
13 stretching the limits of our capability to get out the  
14 findings and the transcript redaction.

15           We will also be submitting at some point, I  
16 presume, proposed transcript corrections, and it might  
17 be that a good time to submit this would be with the  
18 proposed transcript corrections. And I would suggest  
19 that, you know, a week or so after the reply findings  
20 come in might be an appropriate time.

21           JUDGE BOLLWERK: All right. Let me go --  
22 that, then, would move your opportunity to review that  
23 information and make any rejections back past the reply  
24 findings, I don't know that it's critical. It just cuts  
25 into the Board's time in be able to write our decision.

1 But do you have an objection to that? I know you wanted  
2 this information as much in the public record as  
3 possible and I'm trying to move that process forward,  
4 so --

5 MS. CHANCELLOR: Yes, Your Honor. We tried to  
6 pass on the information before on Contention E and file  
7 as much as we could as an open record, and we got into  
8 trouble once on that.

9 JUDGE BOLLWERK: Right.

10 MS. CHANCELLOR: So I would rather not guess  
11 at what PFS considers to be confidential and proprietary  
12 because sometimes what should appear to be public is not  
13 considered public. So we would go along with whatever  
14 you devise as long as we can get as much of this open as  
15 possible.

16 JUDGE BOLLWERK: All right.

17 MR. SILBERG: And we share that view. We will  
18 try to make it as much as possible open to the public.  
19 It's not the intent of anybody to hide behind walls of  
20 law. We want to put this out in the public.

21 JUDGE BOLLWERK: All right. Does the staff  
22 have anything to say about this?

23 MS. MARCO: That's fine. Any solution is  
24 fine.

25 JUDGE BOLLWERK: All right. The important



1 part for me is that so when we come to the point we're  
2 writing a decision we have a different idea what is or  
3 is not to be put on the public record and your proposal  
4 would address that. One thing we will be looking at,  
5 obviously, the staff and the state, is probably a fairly  
6 prompt return on the information that they file because  
7 if there's objections, we need to deal with those as  
8 well as be drafting our decision so that's all  
9 happening at the same time.

10 MR. SILBERG: Is there a particular format you  
11 would like to see those redactions take place? Do you  
12 want the entire transcript blocked out or do you just  
13 want a list in a pleading that says on line X delete the  
14 following?

15 JUDGE BOLLWERK: Frankly, now that we have  
16 electronic versions of the transcript, it may be easier  
17 if you actually deal with the transcript itself and  
18 bracket them in some way. If that's easier for you,  
19 that's fine with me. If you prefer to list it -- I'm  
20 open at this point. Maybe you need to look at it and  
21 see what you think is the most efficient way to do it.

22 MR. SILBERG: Since I work with my quill pen,  
23 I'll have to defer to these electronic guys next to me.

24 JUDGE BOLLWERK: All right. I also don't know  
25 how much of the information there's going to be. If it

1 came to be fairly limited -- and seeing some of the  
2 exhibits here, I'm not necessarily saying when that's  
3 going to happen. But it may well be we can come up with  
4 a system where we could designate certain figures to  
5 have certain letters or number designations, and then we  
6 could just -- but I think that's probably -- you're  
7 shaking your head. I tend to agree with you. I think  
8 there's just going to be too many numbers here to use  
9 that type of a system. But in any event, we'll look at  
10 it when the time comes.

11 But I would like, in terms of, you know,  
12 what we put out onto the record in terms of our  
13 decision, as well as the other information that's been  
14 gathered to get much out there as we can. That's the  
15 point.

16 All right. Why don't we, then, look  
17 toward you providing a listing -- a redacted version of  
18 the exhibits that are on the record as well as the  
19 testimony, and telling us what can and can't be  
20 released, and we'll deal with it at that point. All  
21 right. That would be within, say, a week of the time  
22 that the reply filings are out?

23 MR. SILBERG: Yeah, normally.

24 JUDGE BOLLWERK: All right. And then we'll be  
25 looking for maybe the staff and Ms. Chancellor, the

1 state, to respond to that.

2 What do you think you can do? Two  
3 weeks? Ten days?

4 MS. CHANCELLOR: I would always take two weeks  
5 over ten days, Your Honor.

6 JUDGE BOLLWERK: Let's see how much there is.

7 MS. CHANCELLOR: Okay.

8 JUDGE BOLLWERK: We'll say that we'll be at  
9 least ten days. If it looks like there's a lot of  
10 information, perhaps two weeks. Let's see what we're  
11 talking about.

12 MR. SILBERG: And I would suggest that we try  
13 to do the proposed transcript corrections at the same  
14 time.

15 JUDGE BOLLWERK: All right. We can do that.  
16 It may well be that if there's some way that you can  
17 exchange this among yourselves even before you file it,  
18 maybe we can avoid that other problem, you know, in  
19 terms of the -- if there's some kind of arrangement or  
20 an agreement that --

21 MR. SILBERG: Well, perhaps if you gave us two  
22 weeks, we could try to do it jointly and then --

23 JUDGE BOLLWERK: That would be fine with me.  
24 If that seems more efficient, that's certainly -- I  
25 would agree with that.

1 MR. TURK: I would ask, Your Honor, that we  
2 use the strikeout rather than having separate documents  
3 we then have to compare to the testimony in order to  
4 read to see where is the change being made.

5 JUDGE BOLLWERK: Okay, sure. Certainly the  
6 transcripts will be in electronic form. The exhibits,  
7 that may be a little bit more harder problem in terms  
8 somebody may actually have go get the quill pen out and  
9 strike something through. But that's fine, that's  
10 certainly acceptable to me.

11 If the parties are willing to work on  
12 this jointly, why don't we make it two weeks after the  
13 reply filings to come up with a list of the ones that  
14 are agreed to and, if there's any objections, maybe  
15 those can be given to us as well. And we'll just move  
16 forward from there.

17 MR. SILBERG: Together with the transcript  
18 corrections.

19 JUDGE BOLLWERK: Right, together with the  
20 transcript corrections.

21 All right. Any other statements anybody  
22 wants to make on that subject?

23 MS. MARCO: That's fine.

24 JUDGE BOLLWERK: All right. Then I think  
25 we're ready then, unless the parties have anything else

1 they need to raise to the Board at this point in terms  
2 of administrative matters.

3 I should mention that I see we have all  
4 on one side and not much on this side. Maybe at the  
5 break, when we have one, we can spread out. I'm  
6 certainly -- you know, I want you all to be comfortable  
7 and be able to try this case in a way that best suits  
8 you and what would make it comfortable for your. So if  
9 there's a way to spread out, you can certainly do that.

10 MR. QUINTANA: It reflects our political  
11 views.

12 MR. SILBERG: Depends which way you're  
13 facing.

14 JUDGE LAM: You're to my left.

15 JUDGE BOLLWERK: All right. I think, then,  
16 we're ready to start with Contention R. And I'd  
17 indicated I guess in the order that I'd sent out last  
18 week, late last week, that the parties would be afforded  
19 an opportunity, depending on how they wanted to do it,  
20 either at the beginning of each contention or if they  
21 wish to make a statement at the beginning of the  
22 proceeding about the contentions, they can do so. And I  
23 don't know what the preference is at this point. Or  
24 make no statement at all, if you prefer not to. I'm not  
25 trying to force anybody to do anything here.

1 But since you -- does Private Fuel  
2 Storage wish to make any kind of opening statement at  
3 this point?

4 MR. SILBERG: We're prepared to make short  
5 opening statement either on Contention R or on all the  
6 contentions. I guess all the parties ought to do the  
7 same thing, whatever is to the Board's convenience and  
8 the other parties'. We can do it either way.

9 JUDGE BOLLWERK: Which would the state  
10 prefer?

11 MS. CHANCELLOR: Given that this is the only  
12 open session, Your Honor, I'd prefer that we make -- the  
13 state would like to make an opening statement on all the  
14 contentions so that the public has an idea of what the  
15 issues are all about.

16 JUDGE BOLLWERK: All right.

17 MR. SILBERG: And we're talking about all --  
18 the three contentions we're dealing with here today?

19 MS. CHANCELLOR: That's correct.

20 JUDGE BOLLWERK: Which would be R, E and S.  
21 All right.

22 Does the staff have any --

23 MS. MARCO: Either way is fine with us.

24 JUDGE BOLLWERK: All right. If that's the  
25 state's preference and no one has any objection, I'll

1 allow you to go ahead and do that.

2 Is the applicant ready?

3 MR. BLAKE: Judge Bollwerk, Ernie Blake, and  
4 I'll address Contention R which we'll be hearing today.

5 Contention R, which we've referred to  
6 already on the record, is the state's concerns over the  
7 adequacy of the fire protection at the PFS facility.  
8 The applicant will be presenting two witnesses on this  
9 topic, Kenneth Dungan and Wayne Lewis.

10 Mr. Dungan is a graduate engineer in  
11 chemical engineering and fire protection engineering.  
12 He has a Master's degree in environmental engineering as  
13 well. He's a fellow and a past president of the Society  
14 of Fire Protection Engineers, and he's practiced fire  
15 protection engineering for some 30 years.

16 Mr. Lewis is the lead mechanical engineer for  
17 the PFS project. He's a registered professional  
18 engineer, like Mr. Dungan, and it's been his  
19 responsibility to establish the design basis and review  
20 all the design activities of the prior protection  
21 systems at PFS.

22 In their testimony they'll address the  
23 PFS layout, that is, the site layout and the  
24 facilities, the types of combustible materials that fire  
25 protection capabilities would need to cope with. They

1 will deal with the fire protection equipment, describe  
2 it, and the personnel that would be available.

3 And given the materials on site, the  
4 activities that will be conducted on site, their  
5 conclusion will be that no possible fire exposure could  
6 cause a release of radioactive material since the fire  
7 hazards, even unmitigated, even unattacked by  
8 individuals and by equipment, are not severe enough to  
9 breach spent fuel containment.

10 Thank you.

11 JUDGE BOLLWERK: All right. That was R.

12 What about E?

13 MR. SILBERG: Yes. With respect to Utah E, as  
14 the Board knows, the underlying issue is the financial  
15 qualifications of Private Fuel Storage to construct and  
16 operate the Private Fuel Storage facility.

17 Private Fuel Storage and the staff have  
18 proposed two license conditions which basically state  
19 that construction and operation shall not take place  
20 until PFS has demonstrated that it has the financial  
21 wherewithal to construct and then to operate the  
22 facility.

23 And through the prehearing procedures,  
24 we have eliminated many of the other issues that were  
25 originally included within Utah E. The only remaining



1 issue to be determined here is what are the cost  
2 estimates for constructing the facility?

3 We will present testimony by two experienced  
4 cost estimators whose sole function, whose sole  
5 occupation, is estimating the cost of construction  
6 projects. They work for Stone & Webster Engineering who  
7 will be architect/engineer for this project.

8 We will also present testimony by John  
9 Parkyn, who is the Chairman of the Board of Managers of  
10 Private Fuel Storage, by John Kapitz of Northern States  
11 Power, who has significant responsibilities in the  
12 operation of the existing independent special storage  
13 installing at NSP's Prairie Island facility, and  
14 testimony by Hanson Pickerl, who is an insurance broker  
15 who specializes in nuclear insurance.

16 Their testimony will outline the current  
17 cost estimates for constructing and operating the  
18 Private Fuel Storage facility. These are cost  
19 estimates that have been worked out and have been  
20 developed over the years. Some are based on bids that  
21 have been received for equipment. Some are based on  
22 projections based on the experience of cost estimators.  
23 Some are based on the actual experience at operating  
24 independent spent fuel storage installations. And we  
25 will present what those numbers are prior to

1 construction and prior to operation. Private Fuel  
2 Storage will then have to demonstrate that through  
3 service agreements, through contracts, through  
4 financing, that it will have accumulated commitments for  
5 the dollars necessary to meet those cost estimates.

6 And the testimony will also show that  
7 those cost estimates will be updated as the project  
8 proceeds so that prior to demonstration of commitment  
9 with the conditions, we will have the most recent real  
10 data as to what the project will cost to operate -- to  
11 construct and to operate.

12 JUDGE BOLLWERK: All right. Contention S, do  
13 you wish to --

14 MR. SILBERG: Yes. With respect to  
15 Contention S, that issue, as we discussed in some  
16 detail before, deals with the decommissioning costs of  
17 the facility, and as we discussed, accepting the stated  
18 costs for decommissioning casks on a per-cask basis and  
19 for the facility decommissioning costs.

20 We're now looking at what year dollars  
21 those costs are in, how those dollars will be escalated  
22 in the future, how one should deal with the costs of a  
23 worst case accident, and, as we discussed, and we  
24 believe the Board will exclude the vintage of those  
25 data.

1           John Parkyn, who, as I mentioned, is the  
2 Chairman of the Board of Managers of Private Fuel  
3 Storage, will testify as to those issues. He will show  
4 that the costs as presented are in 1997 year dollars,  
5 that we have a mechanism in place not only to escalate  
6 the costs, but actually to reestimate them on an annual  
7 basis going forward.

8           We will demonstrate that the worst case  
9 accident costs are not dealt with by decommissioning --  
10 That would be inconsistent with commission regulations,  
11 commission policy -- but rather by insurance. And,  
12 indeed, there is no NRC requirement to provide  
13 decommissioning for worst case accidents. It would be  
14 inconsistent with the NRC's mechanism of handling  
15 decommissioning.

16           And we believe that that testimony by  
17 Mr. Parkyn will demonstrate that these issues are all  
18 considered within PFS's proposed decommissioning costs.

19           JUDGE BOLLWERK: All right.

20           Anything further?

21           All right. Given the order of  
22 presentation, would the staff like to speak next,  
23 please?

24           MS. MARCO: First, let me just say that the  
25 staff is pleased to be able to be here this week for

1 these hearings.

2 The staff's function is review the  
3 license application and decide whether the application  
4 meets the regulations of the commission, and, in  
5 particular, the staff must determine if reasonable  
6 assurance exists that the activities sought under the  
7 license can be conducted without endangering the health  
8 and safety of the public. The staff also considers the  
9 environmental impacts associated with the proposal.

10 The staff's completed portions of its  
11 review of the application and documented its review in a  
12 safety evaluation report which was issued this past  
13 January. We expect to complete the safety evaluation  
14 report in September 2000.

15 Recently the staff completed its Draft  
16 Environmental Impact Statement, and public meetings will  
17 be held on July 28th and 29th concerning that. A  
18 Federal Register notice will contain additional  
19 information regarding those meetings.

20 The final Environmental Impact Statement  
21 is expected to be completed in February 2001.

22 I would like you to know the witnesses  
23 the NRC will be calling at the hearing this week are for  
24 the purpose of adopting testimony that they have  
25 previously submitted. Today you will hearing from Mr.

1 Paul Lain and Mr. Randy Sullivan, the NRC staff  
2 witnesses for the fire fighting contention, which is  
3 Utah Contention R.

4 Mr. Lain is a board certified professional  
5 engineer with over 16 years' experience in fire  
6 protection engineering. He has served as a fire  
7 protection engineer for the U.S. Navy and Department of  
8 Energy before joining the NRC.

9 Mr. Sullivan is a board certified health  
10 physicist with over 25 years of experience in emergency  
11 preparedness and radiological protection. During his  
12 career he has worked in the commercial nuclear industry  
13 and for the federal government, and he was a consultant  
14 to the Department of Energy.

15 Both Mr. Lain and Mr. Sullivan have  
16 reviewed the Private Fuel Storage application as it  
17 would relates to the issue of fire fighting. Based on  
18 their review, the staff considers that the applicant's  
19 description of its means and equipment to fight fires on  
20 site provides adequate protection of the health and  
21 safety of the public and the workers at the site. They  
22 have determined that the application satisfies the  
23 requirements of the commission both for fire protection  
24 and for emergency planning.

25 Later this week we will hear from

1 Dr. Alex McKeigney and Mr. Robert Wood regarding Utah  
2 Contention E, financial assurance, and Utah Contention  
3 S, decommissioning funding.

4 Dr. McKeigney is an NRC financial  
5 analyst who has many years of experience in strategic  
6 planning and financial planning with nuclear power  
7 utilities.

8 Mr. Wood has spent his career at the NRC  
9 and has held positions relating to the development of  
10 policies and programs for nuclear property and  
11 liability insurance, financial qualification of NRC  
12 licensees and decommissioning financial assurance.

13 Both Dr. McKeigney and Mr. Wood have  
14 reviewed the applicant's financial assurance for  
15 construction, operation and decommissioning. They have  
16 also considered the issue of on-site property insurance  
17 as a part of Contention E. They concluded that the  
18 applicant provided detailed and acceptable estimates of  
19 construction and operating costs and that the  
20 applicant's property and insurance is appropriate.

21 They also concluded that the  
22 decommissioning funding plan provides reasonable  
23 assurance that needed funds will be available to cover  
24 estimated decommissioning costs as is required by the  
25 Commission's regulations.

1                   Consequently, the staff considers that  
2 Contentions E and S should be resolved in the  
3 applicant's favor. Thank you.

4                   JUDGE BOLLWERK: Thank you.

5                   MS. MARCO: Oh, I have other information here.

6                   JUDGE BOLLWERK: All right.

7                   MS. MARCO: Oh, I'm sorry. The dates for the  
8 DEIS meeting, it's the 27th and 28th, not the 28th and  
9 29th.

10                  JUDGE BOLLWERK: 27th and 28th. All right.

11                  MS. MARCO: Yes.

12                  JUDGE BOLLWERK: All right. Anything  
13 further?

14                  MS. MARCO: No.

15                  JUDGE BOLLWERK: All right. Mr. Quintana,  
16 would you like to speak before the state or after the  
17 state?

18                  MR. QUINTANA: I'll go after the state.

19                  JUDGE BOLLWERK: All right.

20                  MS. CHANCELLOR: Your Honor, I think we need  
21 to put this in perspective. In November 1997 the state  
22 filed 33 contentions, and the Board accepted 21 of those  
23 in 1998. We've been at this a long time, and now at  
24 last we get to have a hearing on three of those  
25 contentions, Contentions R, E and S.

1           Contention R, the emergency plan, I  
2 think first it's important to note what we can't  
3 litigate. We can't litigate whether PFS has the  
4 ability to fight wildfires. We can't litigate whether  
5 PFS has the ability to operate 150-ton storage casks  
6 which have a passive cooling system that need to be  
7 uprighted within 48 hours, and we can't litigate  
8 emergency response at the intermodal transfer facility.

9           What we can litigate is PFS's ability to  
10 fight fires on site. The state's witness is the state  
11 fire marshal, Gary Wise, who is sitting on my left.

12           With respect to Contention R, the state  
13 maintains that PFS must be self-sufficient. The  
14 emergency plan says that Tooele County will provide fire  
15 fighting assistance to Private Fuel Storage. However,  
16 Tooele County is too far away. It consists of an all  
17 volunteer fire brigade. And effectively PFS must have  
18 its own resources to fight fires on site.

19           Secondly, the state maintains that PFS  
20 does not have adequate staffing and training to handle  
21 fires on site. PFS says that it will train  
22 approximately five firefighters.

23           And PFS also maintains that a fire, a  
24 credible fire, will only occur during business hours.  
25 The state disputes that. And also, PFS doesn't have the



1 ability to promptly call in firefighters after hours.  
2 While we don't know where the PFS staff will be located,  
3 it's unrealistic that the firefighters will be in close  
4 proximity to the facility.

5 With respect to Contention E, the financial  
6 assurance contention, the state has entered into a  
7 confidentiality and nondisclosure agreement with PFS in  
8 order to be able to litigate this particular contention.  
9 The state would prefer that the hearings be open, but  
10 we're willing to go forward if that's the way we have to  
11 do it.

12 There are two license conditions that  
13 relate to financial assurance. The first license  
14 condition deals with whether PFS will have sufficient  
15 funding to construct the facility. PFS will construct  
16 in phases.

17 PFS is requesting a license for 4,000  
18 casks. The license condition says that PFS must meet  
19 some initial minimum volume, which volume is kept  
20 confidential even though it's part of a license  
21 condition.

22 There's going to be no upfront determination  
23 of whether there is reasonable assurance that PFS has  
24 funding prior to the issuance of a license or that that  
25 will occur after the license is issued.

1           There are a number of issues that the  
2 state cannot litigate with respect to Contention E, the  
3 relationship among the eight utilities that form the  
4 membership of Private Fuel Storage, which is a limited  
5 liability company, and the obligations of those members  
6 to PFS. In other words, as a limited liability company,  
7 there are going to be no deep pockets.

8           The allocation of financial responsibility and  
9 liability amongst the members of the company is another  
10 issue we cannot litigate. We also cannot litigate  
11 whether there's an existing market for 4,000 casks of  
12 spent nuclear fuel to be stored on the Skull Valley  
13 Reservation.

14           And finally, we cannot litigate how PFS  
15 is going to fund this project, whether PFS will have  
16 sufficient funding either for the estimated costs or for  
17 any unexpected contingencies that may occur. This is  
18 particularly important because there are no deep pockets  
19 and PFS operates basically on a pay-as-you-go system.

20           What we are here to litigate is the estimated  
21 costs to construct the PFS facility, secondly, the  
22 estimated costs to operate the PFS facility and,  
23 finally, whether PFS has sufficient on-site property  
24 insurance.

25           The state will have one witness, Dr. Michael

1 Sheehan, who will be flying in this afternoon.

2           The issues that we are concerned with are  
3 that the costs are basically a moving target. The costs  
4 today will not be the costs at the time of construction.  
5 There is no mechanism to tie the costs that we're  
6 litigating in this proceeding to the license condition.  
7 There needs to be some sort of mechanism to update costs  
8 as more accurate projections are made by PFS, for  
9 example, as bids come in. So, in other words, we need  
10 to tie the cost estimates to how the license conditions  
11 will be implemented.

12           The license conditions are such that PFS  
13 only has to make a showing that it has commitments for  
14 funding. There's no requirement that PFS construct  
15 after it has made that showing. Construction under the  
16 present license conditions can occur any time in the  
17 future after PFS has made that initial showing that it  
18 has sufficient contracts in place.

19           Another issue is that PFS confuses costs  
20 and revenues. The state believes that PFS tends to  
21 lower the overall costs of construction and operation  
22 cost estimates by saying that certain, quote, costs will  
23 be passed through to customers. The state believes that  
24 these costs initially should be allocated to PFS.

25           With respect to operation and maintenance

1 costs, PFS has basically lumped all operation and  
2 maintenance costs together to come up with an average  
3 operating cost for the facility. The license condition  
4 again doesn't really tie the operation and maintenance  
5 costs very well to actual costs. The license condition  
6 2 states that PFS must have sufficient customer service  
7 agreements in place to cover operation and maintenance  
8 for the term of those service agreements.

9 The problem the state sees is that the  
10 operating costs may be different at start-up versus ten  
11 years into operating the facility versus at the end of  
12 the project, and so those operation costs should be  
13 broken out more realistically.

14 In addition, the second license condition is  
15 tied to the service agreement. The Board has accepted  
16 PFS's commitments of what will be in the service  
17 agreements with its customers. The state continues its  
18 objection at being denied the opportunity to see the  
19 actual wording of the terms and conditions of the  
20 service agreements rather than what PFS says will be in  
21 the agreements. The state believes that the devil is  
22 in the detail, and that is what contract law is all  
23 about.

24 The wording of the service agreements are  
25 important because, one, the second license condition

1 dealing with operation cost is linked to the actual  
2 service agreements; two, PFS may not be able to deliver  
3 on its so-called commitments of what will be in the  
4 service agreements because there is basically a built-in  
5 conflict of interest. PFS members, on the one hand,  
6 will be negotiating on behalf of PFS as one of the eight  
7 utility companies. On the other hand, the customer will  
8 actually be the utility who is part of PFS. And then,  
9 third, the service agreements are necessary to see  
10 whether PFS can actually pass through these costs to its  
11 customers.

12           With respect to insurance, PFS has committed  
13 to a premium. It has committed that it will pay X  
14 dollars premium for insurance coverage and not do any  
15 actual dollar amount of coverage. So if the premium  
16 costs go up, the coverage goes down. And we think this  
17 is an inappropriate way to evaluate the risks associated  
18 with the facility and what premium is required.

19           Contention S is the decommissioning  
20 contention. In this contention the state is restrained  
21 by a rule that the NRC has that says for purposes of  
22 decommissioning the site, the commission assumes that  
23 the casks will be removed from the facility. Thus, the  
24 state can't litigate whether PFS will, in fact, be  
25 temporary and whether the casks will actually be

1 removed.

2 At issue in Contention S is the failure to  
3 account for the risks associated with large accidents on  
4 decommissioning costs. There is no mechanism to ensure  
5 whether decommissioning cost estimates will actually  
6 track cost increases over time, the argument that we had  
7 the other day, and how PFS will adjust customer fees to  
8 fund increased decommissioning costs.

9 And Dr. Sheehan, again, will be the state's  
10 witness for Contention S.

11 That's all I have, Your Honor.

12 JUDGE BOLLWERK: All right. Anything  
13 further?

14 Mr. Quintana, is there anything you want  
15 to say?

16 MR. SILBERG: Judge Bollwerk, before --

17 JUDGE BOLLWERK: Yes.

18 MR. SILBERG: -- we go to Mr. Quintana, I just  
19 want to make a couple of brief forms, not to reply to  
20 the state's characterization of its testimony, but it  
21 did say it would not be able to litigate a number of  
22 issues on Contention R, Contention E and Contention S.  
23 And I think it's important for those members of the  
24 audience to understand that these issues were, in fact,  
25 litigated.

1           We went through a lengthy process called  
2       summary disposition, and the Board determined that with  
3       respect to the issues that the state says it can't  
4       litigate today, the Board found that those issues did  
5       not raise a genuine issue of material fact. So it's not  
6       the question that the state can't litigate those issues.  
7       It had its opportunity and was unable to make the  
8       showing to bring those issues to the hearing today.

9           JUDGE BOLLWERK: All right. That sort of was  
10      a reply.

11           Do you want to say anything about that?

12           Other than the fact that -- the only thing  
13      that I would add is that those issues were, as you said,  
14      mentioned, determined by the Board and that they were  
15      referred to the Commission and they're before the  
16      Commission right now.

17           So anything further you want to say on  
18      that point?

19           MS. CHANCELLOR: No. I just raised the issue  
20      of what we can't litigate so the public has an idea of  
21      the limited nature of what we'll be hearing in these  
22      evidentiary hearings.

23           JUDGE BOLLWERK: All right.

24           Mr. Quintana?

25           MR. QUINTANA: Very briefly, Your Honor. On

1   behalf of the band, this project is now in its tenth  
2   year of incubation. It started with a federal process  
3   of monitored treatable storage, and the tribe closely  
4   examined that process before deciding to make a decision  
5   to go forward.

6           After the tribe traveled to the various sites,  
7   both nationally and internationally, and made available  
8   the reports of their findings to the public and was  
9   above board on that, the tribe made a decision, as a  
10   whole, to go forward with it. And politics, of course,  
11   killed that one.

12           The tribe was approached by the utility  
13   companies to build a private facility, and we are now in  
14   I believe the fourth year of this process, which is  
15   important because I think that major industrial projects  
16   need to be subjected to public scrutiny, and if they  
17   cannot withstand scientific and judicial scrutiny, then  
18   obviously they shouldn't be built. The tribe has  
19   maintained all along that this project withstands  
20   scientific and judicial scrutiny.

21           The tribe put together a web site of  
22   skullvalleygoshutes.org, and 17 internationally  
23   acclaimed scientists wrote on the site, six of them  
24   Nobel Laureates, to address the concerns that have been  
25   raised by politicians and others.



1           If all projects were to withstand this type of  
2 scrutiny, we would make better decisions as a society,  
3 whether it's the Olympics or the scandals that have  
4 occurred there that were not subjected to this kind of  
5 scrutiny, or the Legacy Highway or other projects that  
6 are available out there.

7           I think that this process is important because  
8 it's important for the public to become involved in the  
9 overall industrial projects that take place. You get  
10 better planning, you get less environmental impact and  
11 you get better long-term results all the way around.

12           We have maintained from the beginning that  
13 this project would withstand that, and that is our  
14 position and continues to be our position.

15           JUDGE BOLLWERK: All right. If there's  
16 nothing else from the parties at this point, let's go  
17 ahead and take a break before we begin the testimony.

18           Just so you'll know, when we come back,  
19 for those of you that have never been to one of these  
20 proceedings before, what we'll do is we'll start with  
21 the applicant's witnesses on Contention R. The  
22 witnesses will be sworn in. They have prefiled direct  
23 testimony that they will then attest to, make any  
24 corrections to it. At that point we will adopt the  
25 testimony as if it had been read, and it will be put

1 into the record and made part of the transcript. At  
2 this point I would like to take the exhibits that relate  
3 to that testimony, have them marked, identified and  
4 admitted, and then we would move to cross-examination of  
5 the witness. So that will be the process we'll use for  
6 this and for others.

7 MR. BLAKE: Before we go on to break, on the  
8 chance that there might be some need for distributing  
9 documents and whatnot, because we made some changes last  
10 week, revisions to the testimony, I wanted to make sure  
11 that we're all together on what, after the break, we'll  
12 be asking to go in, and if there's any difference on  
13 that or people need more copies or whatnot, we have them  
14 here. I wonder if I can take a minute just to describe  
15 that so that the other parties will -- if there are any  
16 problems, we can take the time during the break to  
17 straighten them out.

18 JUDGE BOLLWERK: All right. Also, if you need  
19 to redistribute yourselves during the break, feel free  
20 to do that. However it's most convenient for you. I  
21 don't know, if it would help, for instance, if maybe Mr.  
22 Quintana would move over there, and you can spread out.  
23 But I'll leave that up to you, whatever you're most  
24 comfortable with.

25 And, again, I hope you've all brought the

1 appropriate copies that you can leave with the court  
2 reporter.

3 MR. BLAKE: What we'll be introducing on bar  
4 is the testimony of the two witness, and it's -- the  
5 pages which were distributed on June 15, 2000 to the  
6 other parties and to the Board, presumably, as well as  
7 replacement pages for 27, 28 and 29, which at the top of  
8 them should say June 16, 2000. Just insert those three  
9 pages right into the testimony. So that's what I'll be  
10 asking be incorporated physically into the record.

11 I also brought with me -- because we  
12 referred to changes next week which we anticipate  
13 making to the SAR and the emergency plan, I brought with  
14 me copies of exactly what those pages will be so that  
15 there wouldn't be any doubt about it. I've given them  
16 this morning to the other parties. I haven't given them  
17 -- copies to the Board because I haven't identified them  
18 as exhibits. But if there's any doubt in anybody's mind  
19 and one or another of the parties want to make it an  
20 exhibit, I have enough copies here I can provide them to  
21 the Board and we can do that. But I wanted to make  
22 sure there wasn't any questions about that so we could  
23 take the time during the break if there were a question.

24 JUDGE BOLLWERK: All right. Am I to  
25 understand that Private Fuel does not intend, at least

1 at this point, to put the entire application into  
2 evidence, they're simply giving excerpts of it to the  
3 other parties; is that correct?

4 MR. BLAKE: That's correct. I also want to  
5 point out, for purposes of the public, we've made extra  
6 copies of our testimony available on the desk at the  
7 back so that people during the break could review that  
8 before our witnesses go on.

9 JUDGE BOLLWERK: All right. I should also  
10 mention again that we do have the sign-up sheets in the  
11 back just outside the door. If anyone wants to make a  
12 limited appearance on Friday or Saturday and has not  
13 preregistered, feel free to put your name on the list,  
14 and then you will be assured of a spot on the Board's  
15 roster.

16 All right. Well, why don't we take a --

17 MS. CHANCELLOR: Your Honor, I have just one  
18 quick --

19 JUDGE BOLLWERK: Sure.

20 MS. CHANCELLOR: -- point of procedure about  
21 what Mr. Blake was referring to?

22 JUDGE BOLLWERK: All right.

23 MS. CHANCELLOR: In the revised testimony that  
24 PFS submitted, under the Board's order, the revision was  
25 to be only with respect to the issues identified in the

1 order, and that was, in essence, changing attachments or  
2 exhibit numbers. And PFS has taken that opportunity to  
3 revise the actual direct testimony -- that was a  
4 Freudian slip. The state believes that PFS should not  
5 have had the opportunity to revise direct testimony on  
6 the date on which it revised it, and furthermore, that  
7 the two sponsoring witnesses for the statements about  
8 the revisions to the SAR and the emergency plan,  
9 et cetera, do not have the authority to determine  
10 whether PFS will actually make those revisions.

11 MR. BLAKE: I was afraid if I didn't take it  
12 up before the break, we might break sometime afterwards.  
13 So I think this is a good time to talk about these  
14 topics.

15 JUDGE BOLLWERK: All right. Because I'm  
16 hearing objections to direct testimony. We need to be  
17 candid with all that. If not, we can make some rulings  
18 on it.

19 All right. How long do you need to discuss  
20 this, do you think?

21 MR. BLAKE: I don't think it will take us long  
22 during the break.

23 JUDGE BOLLWERK: Should we say -- let's take a  
24 15-minute break. We'll come back at five after eleven  
25 then.

1 (A recess was taken.)

2 JUDGE BOLLWERK: All right. Let's go back on  
3 the record, please.

4 Before the break I guess we were talking  
5 about dealing with Contention R, and I guess there was  
6 some question about the direct testimony. Is there  
7 something we need to deal with here?

8 MR. BLAKE: Counsel have discussed it during  
9 the break, and I guess I'd ask Ms. Chancellor, who had  
10 raised the question earlier, what her position is now.

11 JUDGE BOLLWERK: Okay.

12 MS. CHANCELLOR: Mr. Blake has explained that  
13 the reason for changing the notation "engage in  
14 firefighting" to "participate on the fire brigade" was  
15 to overcome a conflict that may exist in the license  
16 application. So I don't have a problem with that  
17 change, but I do have a problem with these two  
18 particular witnesses making the statements with respect  
19 to what will be contained in the license application.

20 Mr. Parkyn has typically submitted whole  
21 license revisions to the Nuclear Regulatory staff, or  
22 occasionally Mr. Donnell has. So I don't think these  
23 two witnesses are competent to make the statement with  
24 respect to the revisions to the license application.

25 MR. BLAKE: Why don't I address that because

1 I'm the one that's caused this flap, and I'm sorry about  
2 it.

3 First, I understood Ms. Chancellor's concern  
4 that after we'd looked at the state's prefiled testimony  
5 we had sought to alter ours, and that's what concerned  
6 her before the break. I explained to her that that  
7 wasn't what prompted it. What prompted it was when we  
8 were looking at preparation of the testimony with our  
9 witnesses and the documents, we discovered this  
10 inconsistency which we sought to cure. And I appreciate  
11 her willingness to allow us to do that now.

12 But with regard to the exhibit, I've placed  
13 during the break on the judge's bench and have provided  
14 as well to the parties earlier today copies of two  
15 documents. They are just excerpts of what will be next  
16 week a submittal to the NRC to amend our safety analysis  
17 report and our emergency plan. That amendment will be a  
18 good deal larger than just these couple of pages, but  
19 because we were going to be talking about this and  
20 because we had referred to it, I asked the applicant,  
21 our client, to make available to me copies of at least  
22 these pages which are, as I understand it, the only  
23 pages which would relate to Contention R's scope so that  
24 it would be available for the counsel and for the judges  
25 and there wouldn't be questions about what are you going

1 to do next week or, even when we put it on next week, do  
2 we have to go back in the record some way.

3 That's what I have distributed. Mr. Turk has  
4 asked that we make it an exhibit so it can follow the  
5 record and be available, and at the proper time I will  
6 identify it as Applicant's Exhibit G.

7 Now, with respect to its admissibility,  
8 it is true that the two witnesses that we have on R, one  
9 of whom is a consultant and one of whom is a mechanical  
10 engineer, lead mechanical engineer in this project, are  
11 not the higher levels of management in PFS. But it also  
12 is true, which Mr. Lewis can attest to when he's on the  
13 stand, that he's the one who's responsible for this  
14 area, responsible for this language in the SAR, and will  
15 be prepared to say whether or not this is, in fact,  
16 going to go in as a submittal to the NRC next week.

17 Recognizing Ms. Chancellor's objection,  
18 however, Mr. Donnell is here, the project engineer. If  
19 need be, we can swear him, and he can also say it's  
20 going to go in to the NRC next week.

21 I'm sorry. I really tried to be helpful  
22 in bringing these documents along, and I'm kind of  
23 embarrassed about the snafu. But we'll do it whatever  
24 way makes most sense to the Board and to the parties in  
25 order to have a complete record on this contention.



1 JUDGE BOLLWERK: All right.

2 Do you wish to hear from the staff or  
3 are you ready?

4 MR. BLAKE: Yes.

5 JUDGE BOLLWERK: Go ahead.

6 MR. TURK: Your Honor, I was only going to  
7 make the point that pursuant to 10 C.F.R. 2.743(c), that  
8 only relevant material and reliable evidence which is  
9 not unduly repetitious will be admitted. There is no  
10 barrier in our proceedings to the admission of hearsay  
11 evidence as long as that evidence is reliable.

12 Mr. Lewis, I believe, based on what Mr. Lain  
13 has told us, is able to testify concerning the subject  
14 matter and concerning the changes. It may be hearsay to  
15 him that Mr. Donnell and Mr. Parkyn intend to submit the  
16 revised pages, but that would nonetheless be admissible.

17 And pursuant to 10 C.F.R. 2.743(a), every  
18 party participating has the right to conduct  
19 cross-examination such as is required in order for a  
20 full and true disclosure of the facts. So the state  
21 would be able to examine Mr. Lewis or Mr. Donnell if the  
22 Board deems it's necessary to put them forward on the  
23 proposed amendment to the plan.

24 JUDGE BOLLWERK: All right.

25 Ms. Chancellor, anything further you want to

1 say? It looks like to me we're arguing the  
2 admissibility of an exhibit at this point. Is that --

3 MS. CHANCELLOR: That's correct, Your Honor.

4 JUDGE BOLLWERK: Is that correct?

5 MR. TURK: One other point, Your Honor, in  
6 terms of whether the material should come in as an  
7 exhibit. Mr. Blake noted that I did ask him to submit  
8 it as an exhibit. I think it's important that the  
9 record be complete and accurate and rather than merely  
10 alluding to future changes. I don't see why we'd keep  
11 that information out of the record.

12 JUDGE BOLLWERK: All right. Is this  
13 particular change -- I don't remember where, if  
14 anyplace is it referenced in the testimony that you've  
15 now revised.

16 MR. BLAKE: I think the only reference to this  
17 change was in the cover note --

18 JUDGE BOLLWERK: Okay.

19 MR. BLAKE: That was sent out to people on  
20 Friday.

21 MS. CHANCELLOR: On page 27?

22 MR. BLAKE: In the revised pages that we  
23 distributed last Friday, on page 27 as well, the last  
24 sentence in the answer to Question 48 is, "PFS will  
25 update the PFSF Safety Analysis Report and Emergency

1 Plan shortly to reflect this change." These are the  
2 pages that that references to.

3 JUDGE BOLLWERK: So what you're essentially  
4 doing is asking to essentially put an exhibit number  
5 there now as an exhibit basically that supports that  
6 statement? Is that -- I'm just trying to figure out --

7 MR. BLAKE: It would support that statement.

8 JUDGE BOLLWERK: Right. I mean as I  
9 mentioned before, I would like to take and, if at all  
10 possible, tie each piece of evidence into the direct  
11 testimony in some way so we don't have a lot of  
12 documentary material floating out there that isn't tied  
13 to the direct testimony.

14 MR. BLAKE: What I can ask the witnesses to do  
15 when they're on the stand is to correct this testimony  
16 to add as a parenthetical after that statement,  
17 Exhibit G, which is what the number will be if the other  
18 parties are agreeable, and we can just do it that way.  
19 And then there will be an identification and a link  
20 between the two.

21 JUDGE BOLLWERK: Right, right. Let's go ahead  
22 and do it that way, mark it that way. Then after we've  
23 gone ahead and sworn the witnesses in and had their  
24 testimony adopted, we'll then go through the exhibits  
25 and identify them and -- mark them and identify them.

1 And as we move, then, to admit them, you'll then have an  
2 opportunity to make the objections that you want.

3 MS. CHANCELLOR: Okay.

4 JUDGE BOLLWERK: I think you've already made  
5 it, and I think we understand what it is, but let's go  
6 ahead and handle that. That seems to me to be the most  
7 logical way of proceeding, and then we'll deal with the  
8 objection at that point. I think you've already heard  
9 Mr. Turk's response as well.

10 All right. Anything else about this  
11 testimony, then? Are we ready to seat the witnesses?

12 MR. BLAKE: I think we're ready.

13 JUDGE BOLLWERK: All right. Why don't we go  
14 ahead and have Mr. Dungan and Mr. Lewis.

15 If you could come up and take a seat at  
16 the witness table, please.

17 And just so I know, Mr. Blake, you've  
18 already given the court reporter a copy of their direct  
19 testimony, correct?

20 MR. BLAKE: Actually, I gave the court  
21 reporter three copies.

22 JUDGE BOLLWERK: Okay. You may need to  
23 retrieve that to make whatever revisions you're about to  
24 make in terms of -- I guess you added that exhibit  
25 number. Are there any others you're going to be making?

1 MR. BLAKE: No, but there will be some  
2 corrections that we'll make --

3 JUDGE BOLLWERK: Okay.

4 MR. BLAKE: -- in the normal way that we do  
5 with testimony. But the copies that I've given to the  
6 court reporter should be the same as everybody else has,  
7 which is a copy of testimony dated from the front cover  
8 June 15, 2000 --

9 JUDGE BOLLWERK: Okay.

10 MR. BLAKE: -- with the last three pages of  
11 it, 27, 28 and 29, all saying in the upper left-hand  
12 corner June 16, 2000. What I've done is just taken off  
13 those last three pages and replaced them with the copies  
14 that we distributed on Friday. I have extra copies of  
15 that just like that that I can make available to the  
16 Board right now if you need them. But that's what I've  
17 given to the court reporter.

18 JUDGE BOLLWERK: Okay. Again, the record is  
19 clear.

20 Although I did some appellate work, and it  
21 used to drive me crazy because I couldn't figure out why  
22 the pages were different. That's a different matter.  
23 So hopefully this will be clear to the Commission when  
24 they get to this point.

25 All right. Gentlemen, then, let me go

1 ahead, and I'm going to swear you in. Let's do it  
2 individually. Mr. Dungan -- am I pronouncing your name  
3 correctly?

4 MR. DUNGAN: It's Dungan.

5 JUDGE BOLLWERK: Dungan?

6 MR. DUNGAN: Yes.

7 JUDGE BOLLWERK: Mr. Dungan, will you raise  
8 your right hand, please.

9

10 KENNETH WILLIAM DUNGAN

11 was called as a witness on behalf of the Applicant,  
12 having been first duly sworn, was examined and  
13 testified as follows:

14 JUDGE BOLLWERK: All right. And, Mr. Lewis,  
15 could you raise your right hand, please.

16

17 WAYNE LEWIS,

18 was called as a witness on behalf of the Applicant,  
19 having been first duly sworn, was examined and  
20 testified as follows:

21 JUDGE BOLLWERK: All right. At this point,  
22 Mr. Blake, do you have any --

23 DIRECT EXAMINATION

24 BY MR. BLAKE:

25 Q. Gentlemen, do you have before you a copy

1 of a document entitled "Testimony of Ken Dungan and  
2 Wayne Lewis on Fire Protection at the PFSF-Contention  
3 Utah R"?

4 A. (Witness Lewis) Yes.

5 Q. And is the document you have before you  
6 dated in the upper right-hand corner June 15, 2000?

7 A. (Witness Lewis) Yes.

8 A. (Witness Dungan) Yes.

9 Q. And is the document comprised of some 29  
10 pages?

11 A. (Witness Dungan) Yes.

12 A. (Witness Lewis) Yes.

13 (A discussion was held off the record.)

14 JUDGE BOLLWERK: Go ahead.

15 Q. (By Mr. Bollwerk) Looking at pages 27,  
16 28 and 29 of this testimony, in the upper left-hand  
17 corner of the testimony, does it state "Revised June 16,  
18 2000"?

19 A. (Witness Lewis) Yes, it does.

20 A. (Witness Dungan) Yes.

21 Q. Now, was this testimony prepared by you  
22 or under your supervision and direction?

23 A. (Witness Dungan) Yes.

24 A. (Witness Lewis) Yes.

25 Q. And are there any changes or corrections

1     which you would like to make to this testimony?

2           A.     (Witness Lewis)   Yeah, I have a couple  
3     editorial changes I'd like to have made.

4           Q.     All right.  Can you point those out,  
5     please, for the record?

6           A.     (Witness Lewis)   Yes.

7           Q.     And go slowly, if you will, so people can  
8     follow you as they make these changes.

9           A.     (Witness Lewis) On page 8, the third  
10    line from the bottom, in the middle of the line, the  
11    statement reads, "the building walls that separates the  
12    transfer cells."  It should be separate rather than  
13    separates, so delete the S.

14                   And then on page 15, in the center of  
15    the page, there's a line that reads, "To facilitate the  
16    CTB design, 3 foam-water sprinkler zones will be used."  
17    Change the period to a colon, the "A" right after that  
18    change to a lower case, and at the end of that sentence,  
19    it reads "utilizing an auto-detection pre-action deluge  
20    system."  Delete the word "pre-action."

21                   That's all I have.

22           A.     (Witness Dungan) I have one correction.  
23    On page 27, the second line of the first full paragraph  
24    has the word "even."  It should be event, e-v-e-n-t, "in  
25    the event of."  That's the only correction I have.



1           Q.    Now, do you gentlemen also have with you  
2 up there the documents that we were referring to before  
3 you took the stand here -- and you probably heard the  
4 conversation -- that is, the proposed possible changes  
5 to the emergency plan and safety analysis report? Do  
6 you have a copy of that with you?

7           A.    (Witness Dungan) I do not.

8           MR. BLAKE: Do the other parties have an  
9 objection to my making it available to the witnesses?

10          MS. CHANCELLOR: No, no objection.

11          MR. TURK: No objection.

12          Q.    (By Mr. Blake) Now, looking at your  
13 testimony on that same page 27 where the last  
14 correction was just made, and focusing more  
15 particularly on the last sentence in the answer to  
16 question 48, is that statement regarding the update of  
17 the PFSF Safety Analysis Report and Emergency Plan --  
18 does it refer to this document which I've just provided  
19 you?

20          A.    (Witness Dungan) That's my understanding.

21          A.    (Witness Lewis) Yes, it does.

22          Q.    Okay. I want to ask whether or not you would  
23 be willing to correct your testimony assuming that this  
24 document is going to be identified subsequently as an  
25 Exhibit G, if you would change your testimony to add at

1 the end of that sentence in parentheses, Exhibit G?

2 A. (Witness Lewis) Yeah.

3 Q. Mr. Dungan too?

4 A. (Witness Dungan) Yes.

5 Q. Okay. With those corrections or  
6 modifications to your testimony, do you accept it and  
7 adopt it as your testimony in this proceeding?

8 A. (Witness Lewis) Yes.

9 A. (Witness Dungan) Yes.

10 MS. MARCO: Mr. Dungan, I didn't hear you.

11 MR. DUNGAN: Yes.

12 MR. BLAKE: Judge Bollwerk, I would ask that  
13 this testimony -- that this testimony as we've described  
14 it and as it's been corrected be physically incorporated  
15 into the record just as though it had been read by these  
16 two witnesses.

17 JUDGE BOLLWERK: All right. Any objection  
18 from any of the parties?

19 All right. Then the testimony is adopted as  
20 if read. It should be incorporated into the transcript  
21 at this point.

22 [Whereupon, the direct written  
23 testimonies of Messrs. Lewis and  
24 Dungan were inserted in the  
25 record.]

June 15, 2000

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

**TESTIMONY OF KEN DUNGAN AND WAYNE LEWIS ON  
FIRE PROTECTION AT THE PFSF—CONTENTION UTAH R**  
(Revised per Board Order of June 12, 2000)

**I. BACKGROUND--WITNESSES**

**A. Ken Dungan**

**Q1.** Please state your full name.

**A1.** Kenneth William Dungan

**Q2.** By whom are you employed and what is your position?

**A2.** I am a Principal in Risk Technologies, LLC

**Q3.** Please summarize your educational and professional qualifications.

**A3.** I received my undergraduate engineering degree from the University of Maryland, where I majored in Chemical Engineering and Fire Protection Engineering. I received my Masters degree in Environmental Engineering from the University of Tennessee. I am a registered professional engineer currently in Tennessee and Pennsylvania. I am a member of the American Institute of Chemical Engineers (AIChE) and a Fellow and past President of the Society of Fire Protection Engineers (SFPE).

**Q4.** What is your experience with fire protection generally?

**A4.** I have practiced Fire Protection Engineering for more than 30 years. My experience has included hazards analysis, risk assessments, emergency planning, design, and research and testing. I have worked in industry for a DOE (formerly USAEC) contractor, in insurance, and in consulting. My current firm, Risk Technologies LLC, provides engineering consulting services in fire protection safety, and industrial hygiene. I have published numerous papers on fire protection regarding subjects such as fire detection, fire resistance of structural steel and reliability of fire protection systems. My attached resume contains more details on my qualifications.

**Q5.** What experience do you have with firefighting?

**A5.** I have experience in firefighting both as a volunteer and with industrial brigades. I also have experience in the training of fire brigades and in pre-fire planning.

**Q6.** What knowledge do you have of National Fire Protection Association (NFPA) standards?

**A6.** NFPA is a consensus standards development organization, which produces standards on fire safety. The consensus process provides for a wide range of experts representing users, insurers, manufactures, code enforcers, fire service, special experts and testing laboratories. The NRC is represented on the NFPA committee that establishes standards for nuclear facilities. The resulting standards have broad acceptance across the country. I have been using NFPA Standards for more than 30 years and have participated in their development for more than 20 years. I have served on several committees in the past and currently chair two, Electric Generation Plants (NFPA 850, 851, and 853) and Initiating Devices (NFPA 72 Chapter 2).

**Q7.** What is your experience with nuclear facilities and NRC requirements for fire protection?

**A7.** My experience with nuclear facilities began more than 30 years ago in Oak Ridge, Tennessee. I started as a fire protection engineer for Union Carbide Corporation-Nuclear Division at the Oak Ridge Gaseous Diffusion Plant reviewing facility modifications for a major expansion program and progressed to Department Head. As Fire Protection Department Head, I also was responsible for overseeing

the on-site fire department and emergency squads, including developing fire fighting strategies and establishing training and drilling requirements. Since 1976, I have provided fire protection consulting services to nuclear facilities and other industrial and engineering clients around the world. I have worked with NRC requirements and DOE requirements on many facilities-related projects.

**Q8.** Are you familiar with the Private Fuel Storage Facility (PFSF) and the activities that will take place there?

**A8.** Yes

**Q9.** What is the basis of your familiarity with the PFSF?

**A9.** I have reviewed Chapter 8 of the SAR, the Emergency Plan, and other correspondence related to the facility and Contention Utah R.

**Q10.** What is the purpose of your testimony?

**A10.** The purpose of my testimony is to respond to the allegation in Contention Utah R that:

The Applicant has not provided reasonable assurance that the public health and safety will be adequately protected in the event of an emergency at the storage site in that PFS has not adequately described the means and equipment for mitigation of accidents because it does not have adequate support capability to fight fires onsite.

I will do so by demonstrating the adequacy of the fire protection measures at the PFSF, including PFSF firefighting capabilities, to mitigate the consequences of a fire impinging or affecting spent fuel casks at the PFSF.

**B.** **Wayne Lewis**

**Q11.** Please state your full name.

**A11.** Donald Wayne Lewis

**Q12.** By whom are you employed and what is your position?

**A12.** I work for Stone & Webster Engineering Corp., and am the Lead Mechanical Engineer for the PFSF project.

**Q13.** Please summarize your educational and professional qualifications.

**A13.** My professional and educational experience is summarized in the curriculum vitae attached to this testimony. I received my undergraduate engineering degree from the Montana State University, where I majored in Civil/Structural Engineering. I have 19 years of experience in the nuclear power industry, including 10 years of experience with the design, licensing, construction, and operation of independent spent fuel storage installations (ISFSIs). I am currently a registered professional engineer in the states of New York, Colorado, and Maine. My technical contribution focuses on the mechanical aspects of ISFSI work, including cask handling and transportation equipment and operations, building services (HVAC, plumbing, etc.), and fire protection. For the PFS project, I am also responsible for the preparation of the principal design criteria, design installation, and operating systems portions of the PFSF Safety Analysis Report. As Lead Mechanical Engineer, it is my responsibility to establish the design basis and review all design activities of the fire protection systems at the PFSF. I have reviewed some of the calculations performed to determine the effects of possible fires at the PFSF.

**Q14.** What is your experience with fire protection generally?

**A14.** I have been in the role of Lead Mechanical Engineer for several years including overseeing fire protection engineering activities.

**Q15.** What is your experience with nuclear facilities and NRC requirements for fire protection?

**A15.** I have worked with and am knowledgeable of the NFPA codes related to nuclear facilities, including the design of suppression systems, flammable and combustible liquid piping systems, and combustion engines. Since these systems are installed in nuclear facilities, I have also had to be knowledgeable with how these systems interface with the requirements of 10 CFR 50, Appendix R.

**Q16.** Are you familiar with the Private Fuel Storage Facility (PFSF) and the activities that will take place there?

**A16.** Yes. I am knowledgeable of the design and operation of the PFSF and the spent fuel casks that will be used there. I am also familiar with the resistance to fires of the spent fuel cask systems that will be used at the PFSF.

**Q17.** What is the basis of your familiarity with the PFSF?

**A17.** For the PFS project I was involved in preparation of the PFSF Safety Analysis Report (SAR), Chapters 3, 4, and 5. As the Lead Mechanical Engineer, I am currently involved in responding to NRC questions related to fire protection and PFSF mechanical systems.

**Q18.** What is the purpose of your testimony?

**A18.** The purpose of my testimony is to respond to Contention Utah R by demonstrating the adequacy of the fire protection measures at the PFSF, including PFSF firefighting capabilities, to mitigate the consequences of a fire impinging or affecting spent fuel casks at the PFSF.

## **II. THE PRIVATE FUEL STORAGE FACILITY**

### **A. Site Layout**

**Q19.** Please describe the layout of the PFSF site.

**A19.** [Lewis] The PFSF site is depicted in PFS Exhibit A. As shown in Exhibit A, the spent fuel storage casks will be located on concrete storage pads within the PFSF Restricted Area, with a crushed rock surface one foot deep surrounding the storage pads and extending throughout the Restricted Area. The Restricted Area will cover 99 acres and will also include the Canister Transfer Building (CTB), where spent fuel transportation casks will be delivered, either by rail or by heavy haul truck. In the CTB, the spent fuel canisters will be transferred from the transportation casks to storage casks and then moved out to the concrete storage pads.

**B. Combustible Material at the PFSF**

**Q20.** What are the sources of combustible material at the PFSF?

**A20.** [Lewis] The only significant sources of combustible material at the PFSF are:

1. The diesel fuel in the fuel tank of a cask transporter vehicle that will move loaded spent fuel storage casks between the CTB and the concrete storage pads and that will bring empty spent fuel storage cask overpacks to the CTB. (The transporters are tracked vehicles that do not have potentially combustible tires)
2. The diesel fuel in the fuel tanks of a heavy haul truck that, if used, will move spent fuel transportation casks between the CTB and the off-site Intermodal Transfer Point.
3. The tires on a heavy haul truck.
4. The fuel and the tires of vehicles, such as maintenance trucks, security, or other emergency vehicles, that could be present in the PFSF Restricted Area intermittently.
5. The fuel and tires on a diesel fuel delivery truck that could enter the PFSF Restricted Area to fill the diesel storage tank for the cask transporter.
6. The fuel and tires of vehicles at the PFSF that will not enter the Restricted Area (e.g., personal cars of staff or visitors, delivery trucks).
7. The diesel fuel in the fuel tanks of the locomotives that, if used, will move railcars carrying spent fuel transportation casks between off-site locations and the PFSF and will move railcars carrying spent fuel transportation casks into and out of the CTB.
8. The diesel fuel for the backup generator in the Security and Health Physics Building.



9. The diesel fuel in the tank for the diesel-driven water pump located outside the Restricted Area, near the Security and Health Physics Building.
10. The diesel fuel supply for the cask transporter, which will be located in an above-ground storage tank inside the Restricted Area approximately 200 ft northeast of the CTB and approximately 700 ft from the nearest storage casks.
11. The diesel fuel supply for the heavy-haul vehicles and on-site vehicles which will be stored in an above-ground storage tank located outside the Restricted Area, near the Operations & Maintenance Building.
12. The propane in the tank(s) for heating the CTB and the Security and Health Physics Building, located south-southwest of the CTB, a minimum distance of 1,800 ft from the CTB and the cask storage area.
13. The propane in the tank(s) for heating the Operations & Maintenance and Administration Buildings, located near those buildings.
14. Gasoline stored in gas cans in the Operation & Maintenance Building for use in yard tractors, lawn mowers, snow-blowers, weed trimmers, etc.

**C. Fire Protection Measures at the PFSF**

**Q21.** In general terms, what are the fire protection measures that will be employed at the PFSF?

**A21.** [Lewis] The fire protection measures for the PFSF employ the defense-in-depth concept by minimizing the likelihood of fires; by providing detection systems and automatic and manual suppression systems for fires that may occur; and by providing compartmentalization and spill control to prevent the spread of fire; and structural fire resistance. PFS has committed to adhering to the standards of NFPA 801 in providing fire protection for the PFSF. NFPA 801 is a national consensus standard, developed with NRC participation, for providing fire protection for nuclear materials facilities.

Regarding the structures, processes, and components at the PFSF, no combustibles are needed or used to move spent fuel, with the exception of diesel fuel for vehicles (and the vehicles' tires). The structural materials, as well as the crushed rock surface within the Restricted Area, are noncombustible and the building walls have fire resistance properties. Ignition sources are unnecessary as part of this facility's operation. Electrical equipment for lighting, ventilation, and cranes present a limited risk of small localized fires.

The CTB, where spent fuel canisters will be transferred between transportation and storage casks, is constructed of steel-reinforced concrete and is depicted in PFS Exhibit B. It is a large building, approximately 260 ft. long by 205 ft. wide at the widest point. Spent fuel transportation casks are brought into the building in the cask load/unload bay at the south end of the building. The bay is 205 ft. long by 50 ft. wide with a 90 ft. ceiling over the center portion to accommodate the building's overhead crane and semi-gantry crane, and a 30 ft. ceiling over the east and west ends. The bay will be protected by a foam-water sprinkler system that will be activated automatically, by a flame detection system and/or by fusible elements in sprinkler heads. Transportation casks will be lifted by the overhead bridge crane and carried through the crane bay and into the transfer cells. Sumps and a spill retention threshold will keep any diesel fuel spilled from a truck in the cask load/unload bay out of the crane bay, away from a transportation cask, and away from the transfer cells. The cask load/unload bay is separated from the interior of the transfer cells by a 30 ft. high concrete wall one foot thick. In the transfer cells the spent fuel canisters will be transferred from the transportation casks to the storage casks. During a transfer operation the cask transporter vehicle (which moves the storage casks between the CTB and the storage pads) will be excluded from the transfer cells by administrative procedure and the closed vehicle access doors on each of the cells. Thus, during the transfer, there will be no significant combustible materials in the transfer cells. As indicated in PFS Exhibit C, the building walls that separates the transfer cells from the cask load/unload bay, the crane bay, and the cask transporter bay are of fire resistant construction. The crane bay, and transfer cells will be protected by smoke

detectors, portable extinguishers, and hose stations for manual suppression by trained personnel.

The CTB will be protected from potential locomotive fuel spills and fires by excluding the locomotives from the interior of the CTB and sloping of the ground near the entrance to the CTB cask load/unload bay away from the building to keep any spilled fuel out of the building. In addition to administrative controls, rail stops are clamped onto the rails in the CTB to provide assurance that a locomotive cannot enter the CTB. Storage casks on the concrete storage pads are protected by virtue of being separated from the railroad tracks by a distance of approximately 110 ft. and by the slope of the ground near the tracks, away from the storage pads, that would isolate a spill of diesel fuel from a locomotive from the pads. The storage casks and the CTB are protected from other potential diesel fuel spills at the PFSF (e.g., from the backup diesel generator fuel tank, the diesel-driven water pump fuel tank, the diesel fuel storage tank located in the Restricted Area, or the diesel fuel storage tank located near the Operations & Maintenance Building) by virtue of the distance separating the casks from the sources of the diesel fuel.

To supplement the fire protection provided by the design of the PFSF and the automatic fire suppression system, PFS will also have a fire brigade on site. The brigade will be trained and equipped to NFPA standards.

### **III. FIRE PROTECTION AT THE PFSF**

#### **A. Fire Protection for the Site**

**Q22.** In your professional opinion, on the basis of your knowledge of the PFSF and the fire protection measures that will be utilized there, is the fire protection at the PFSF adequate to protect against the effects of possible fires?

**A22. [Dungan]** The fire protection proposed for the PFSF is more than adequate and meets or exceeds all applicable NRC requirements.

**Q23.** Would any of the possible fire scenarios for the PFSF result in a release of radioactive material to the environment?

**A23. [Lewis]** None of the potential fire hazards presented by the building, equipment, or processes are severe enough to breach the fuel storage canisters which is a prerequisite to the release of a significant quantity of radioactive material to the environment.

**Q24.** In general terms, how would the fire protection measures at the PFSF work?

**A24. [Dungan]** Should a fire occur, the facility will have both automatic and manual fire suppression capabilities which would adequately control any credible fire events. Automatic foam water sprinkler systems are planned for the cask load/unload bay in the CTB where the railcars or heavy haul trucks will bring spent fuel transportation casks on to the PFSF. This type of protection is very effective on fuel spill fires. For fires too small to require the actuation of these systems, portable extinguishers and hose stations will be available for manual suppression by trained personnel. In the canister transfer cells, where there will be no sprinklers, portable extinguishers and hose stations are available for manual suppression by trained personnel.

The final level of fire protection is the containment of spills and fires by the barriers, curbs and drains. These all minimize the potential for fire spread. The protection provided meets the requirements set forth in 10 CFR72.112(c).

**Q25.** What are the possible fire scenarios concerning the spent fuel casks that have been evaluated for the PFSF?

**A25. [Lewis]** The types of fire scenarios relevant to the PFSF and assessed by PFS fall into 3 major categories:

- diesel fuel and gasoline spills and truck tires
- propane gas fires
- in-situ process combustibles (electrical cables, motor windings, etc.)

The breaching of the spent fuel canister confinement by any fire at the facility is not credible. The quantity and nature of the combustibles associated with the

structures and processes are not capable of sustaining a fire of sufficient intensity and duration to significantly damage the storage or transfer casks.

**1. Diesel Fuel/Gasoline and Truck Tire Fires**

**Q26.** What would be the likelihood and effect of diesel fuel or gasoline spills at the PFSF?

**A26.** Diesel fuel or gasoline spills include both interior and exterior spill fires. Interior fires include diesel spills from a heavy-haul truck in the cask load/unload bay and diesel spills from a cask transporter in a transfer cell or in the transporter bay. Exterior spills include spills from a diesel locomotive in the PFSF Restricted Area, from diesel fuel storage tanks, and the backup diesel generator tank. The intensity and duration of a diesel fuel fire is related to the volume of fuel and the surface area of the burning fuel.

At the outset, diesel fires are difficult to ignite under normal conditions. Diesel fuel has a flash point in excess of 120°F (ranges from 126°-230°F) and a boiling point range of 380°-650°F. Since at room temperature it will not give off enough vapors to support combustion, it must be heated above its flash point. The auto-ignition temperature is greater than 490°F and may be as high as 545°F. There are no in-situ ignition sources at ground (outdoor) or floor (indoor) level capable of igniting a diesel fuel spill at the PFSF.

The only credible ignition sources for a diesel fuel spill at the PFSF is the hot surface of a vehicle engine. Since the tanks are separated from the engines, a tank failure would not cause fuel to flow onto the engine. A fuel line break could spray on the engine and be ignited. The subsequent spray fire would burn within a few feet of the broken line and would not be severe enough to endanger the spent fuel transportation or storage casks.

Gasoline ignites at lower temperatures than does diesel fuel. However, gasoline-powered vehicles (e.g., an emergency vehicle) would only be present inside the PFSF Restricted Area intermittently, if at all. Furthermore, gasoline would pose

no additional risk to the spent fuel at the PFSF in that large gasoline fires and large diesel fuel fires, which PFS has analyzed, burn with similar characteristics.

Even assuming ignition, fires involving diesel or gasoline spills from any of the diesel fuel or gasoline sources on the PFSF site, summarized in response to Question 20 above, would not threaten the integrity of a spent fuel cask.

**Q27.** Describe the function of the cask transporter at the PFSF.

**A27. [Lewis]** The function of the cask transporter is to enable transfer of the loaded concrete storage casks between the CTB and the concrete storage pads and to transport empty spent fuel storage cask overpacks to the CTB for loading with spent fuel canisters. The cask transporter is a large tracked vehicle designed to straddle a concrete storage cask and lift it for transport between the CTB and the storage pads. The transporter has a hydraulically operated lifting beam which has connections that attach to the storage cask lifting eyes. The transporter is controlled by a driver who is located on the rear corner of the vehicle. The transporter will be equipped with a manual fire extinguisher and the driver will be trained in its use.

**Q28.** What fire protection measures are employed at the PFSF with respect to the potential diesel fires involving the cask transporter?

**A28. [Lewis]** The cask transporter will have a fuel tank with a maximum capacity of 50 gallons of diesel fuel, which would limit the size of any diesel fire. The cask transporter enters a transfer cell for the purposes of moving an empty storage cask into the cell, and moving a loaded storage cask out of the cell and out to the storage pad. At no time will the transporter be in the transfer cell when the spent fuel canister is outside of either the shipping cask or the storage cask, i.e., it will not be in the cell during a canister transfer operation. During canister transfer operations, the cask transporter is physically prevented from entering a canister transfer cell by the shield door on the cell. Administrative procedures for the PFSF will require that the sliding shield doors of the transfer cells be closed after a loaded transportation cask and an empty storage cask have been moved into a

transfer cell, and remain closed throughout the canister transfer operation. The CTB is designed with sloped floors to assure that any diesel fuel spilled in the building outside of a transfer cell will not flow into a transfer cell. Thus, a cask transporter fire could not involve a transfer cask or an open spent fuel transportation cask or storage cask. As shown below in Answer 29, sealed transportation and storage casks can safely withstand fires involving 50 gallons of diesel fuel without loss of canister confinement integrity. Furthermore, in the event of a fire from the diesel fuel of the transporter, the Canister Transfer Building will be designed with interior hose stations and exterior fire hydrants that would provide sufficient water to spray and extinguish any fire.

**Q29.** Are these measures sufficient to prevent a release of radioactive material and to protect against radiological hazards to the workers at the PFSF resulting from a diesel fire involving the cask transporter?

**A29.** [Lewis] Yes. A fire involving 50 gallons of diesel fuel from the cask transporter spilled near a HI-STORM storage cask, either inside the CTB or outside on a storage pad, and very conservatively postulated to form a one meter wide ring around the cask circumference, is analyzed in Section 11.2.4.2 of the HI-STORM Storage Cask TSAR. When it granted the Certificate of Compliance for the HI-STORM Storage Cask, the NRC concluded that a 50-gallon diesel fuel spill and fire would not threaten the integrity of the cask or canister. Holtec International HI-STORM 100 Cask System Safety Evaluation Report (May 2000) at 11-8.

A transporter fuel fire would also not threaten the integrity of the HI-TRAC spent fuel transfer cask (or the spent fuel canister contained within). Nor would it threaten a spent fuel storage cask or transportation cask while its lid was unsealed during a transfer operation. As discussed above, during canister transfer operations the cask transporter is physically prevented from entering a canister transfer cell by shield doors. Administrative procedures require that the shield doors of the transfer cells be closed after a loaded transportation cask and an empty storage cask have been moved into a transfer cell, and remain closed throughout the canister transfer operation. Furthermore, outside of the cask

transfer cells, the CTB is designed with sloped floors to assure that any diesel fuel spilled in the CTB outside of a transfer cell will not run into a transfer cell. Thus, neither a transfer cask with a spent fuel canister inside, nor a storage or transportation cask with its lid open, will be exposed to a cask transporter fuel fire at the PFSF.

Therefore, a fire involving the cask transporter would not significantly damage either a loaded storage, transfer, or transportation cask, the canister containing the spent fuel would retain its integrity, and there would be no release of radioactive material from the canister.

Thus, a cask transporter diesel fuel fire, either inside the CTB or outside (at the concrete storage pads) would not cause a release of radioactive material and would pose no radiological hazard to the workers at the PFSF.

**Q30.** Describe the use and function of heavy haul trucks at the PFSF.

**A30. [Lewis]** Rail shipment of casks to the PFSF (under which PFS will not use any heavy haul trucks) is the preferred transportation alternative. However, if a rail line to the PFSF is not built, so that rail service to the PFSF is not available, then transportation casks will be shipped to the PFSF from the Intermodal Transfer Point (ITP) by means of heavy haul vehicles.

**Q31.** What fire protection measures will be employed at the PFSF with respect to the potential diesel fires involving heavy haul trucks?

**A31. [Lewis]** Each heavy-haul truck will have fuel tanks with a total capacity of 300 gallons of diesel fuel. In the event of a fuel spill in the CTB cask load/unload bay, the spilled fuel would be contained within the load/unload bay by a raised threshold between the bay and the transfer cells. Furthermore, the design provides for two 60 ft. long and 6 ft. wide sumps (PFSF SAR Section 4.3.8.1, Figs. 4.3.1, 4.7.1), one on the east and the other on the west side of the cask load/unload bay. As shown in Exhibit B, the bay floors will be sloped 0.25 in./ft. in the north/south direction to one of the two sumps. A 24 ft. long portion of each sump nearest the center of the bay will be sloped 0.25 in./ft. toward the east and



west ends of the bay, to direct spilled diesel fuel away from the central area where a shipping cask and the crane lifting cables are located. The 36 ft. long flat portions of each sump are located over 60 ft. east and west of the centerline of the bay, respectively. This design provides assurance that diesel fuel spilled from the tractor of a heavy haul vehicle would be directed into a sump, away from a transportation cask, and pool in the end of the sump at a substantial distance from important to safety equipment located near the center of the bay.

The load/unload bay will also utilize a foam-water sprinkler system for fire protection in accordance with NFPA 16 (PFSF SAR Sections 4.3.8.1 and 4.3.8.2). The system will be initiated automatically, by a flame detector and/or fusible elements in sprinkler heads. The total floor area of the cask load/unload bay is approximately 200 ft. by 50 ft. for a total of 10,000 sq. ft. NFPA-16 allows a maximum of 5000 sq. ft. per zone. Therefore, the bay will require at least 2 foam-water sprinkler zones. To facilitate the CTB design, 3 foam-water sprinkler zones will be used. A zone in each of the two low bay sections of the load/unload bay utilizing fusible element sprinkler heads and a zone in the high bay section utilizing an auto-detection pre-action deluge system. NFPA 16 requires that the design discharge density of water be no less than 0.16 gal/min./sq. ft. As discussed below in Answer 52, the foam-water system will be designed with a foam capacity of 10 minutes and a water capacity of 60 minutes, in accordance with NFPA 801. The foam-water sprinkler system is connected by piping to a source of foam concentrate and to a water supply. When activated, water flows into the piping system where foam is injected into the water, resulting in a foam solution discharging through special sprinkler heads. The CTB foam-water sprinkler system will be fed water from one of two fire pumps at a fire pump house. Water for the pumps is supplied by a primary and a backup water tank (discussed in Answer 52). One pump is powered by an electric motor, the other by a diesel engine in the event of a loss of electrical power. Both pumps have sufficient capacity to meet the PFSF's water pumping requirements.

**Q32.** Would a diesel fire involving a heavy haul truck at the PFSF threaten the integrity of a spent fuel cask such that a release of radioactive material or a radiological hazard to the workers at the PFSF would result ?

**A32. [Dungan]** No. The only credible ignition source for a fire involving diesel fuel from a heavy-haul truck inside the CTB would be the truck's diesel engine. If such a fire were to occur as a result of leaking diesel fuel, the size of the subsequent spray and pool fire would be controlled by the diesel fuel flow rate. The location of the fire would be controlled by the slope of the floor and the location of the engine. Such a fire is unlikely but credible. Since the fuel is not stored under pressure, a fuel leak around the engine would stop when the power to the fuel pump stops.

**[Lewis]** PFS has analyzed the effect of a heavy-haul truck diesel fuel spill and fire in the PFSF SAR. SAR Section 8.2.5.2. It is not credible for a diesel fuel spill fire to create fire to which the transportation casks would be exposed more severe than that bounding case described in the SAR.

**Q33.** If a fire nevertheless occurred, what would be the effect of the truck tires burning at the same time as the spilled diesel fuel?

**A33. [Lewis]** The heavy haul vehicle could have up to 122 tires depending on the trailer manufacturer. These tires would be 22 inch to 24 inch truck tires which measure approximately 10 inches wide by 36 inches in diameter.

**[Dungan]** The effect of the tires burning at the same time as the 300-gallon diesel fuel fire resulting from a fuel spill from a heavy haul truck has been analyzed and presented in SAR Section 8.2.5.2, which shows that the total heat release rate of up to 47,000 kW is not sufficient to damage the shipping cask or Canister Transfer Building. The size of the fire that might result from a diesel fuel spill in the cask load/unload bay is limited by the floor sumps controlling the final location of burning diesel fuel. A spill and fire could only ignite one axle of tractor or trailer tires and given the separation distance between axles and the heat flux required to ignite rubber, the heat from a fire at one axle is not sufficient to

ignite the tires on adjacent axles. Furthermore, calculations of the plume temperatures in the low bay area with the 30 ft. ceiling, i.e., the east and west ends of the cask load/unload bay (1372 F), and hot layer temperatures in the high bay area, i.e., the remainder of the CTB between the bottom of the hot layer 30 ft. above the floor and the 90 ft. ceiling (450 F) for this scenario verify that this exposure is not severe enough to cause structural damage to the CTB or to any of the spent fuel containers located therein, even with the assumption that no action is taken to suppress the fire.

Therefore, the analysis in the SAR shows that the postulated fire would not be severe enough to damage the structure of the CTB or damage any spent fuel canisters inside, even if it is assumed that there is no cooling or extinguishing of the fire by the foam-water sprinkler system that PFS will have installed in the CTB cask load/unload bay. In fact, it is likely that any fire involving spilled diesel fuel would be extinguished by the sprinkler system before any of the truck tires were ignited.

**Q34.** Would any of the other vehicles that will be regularly or intermittently present at the PFSF (i.e., other than the cask transporter and the heavy haul trucks) pose a fire hazard to any spent fuel casks at the facility?

**A34. [Lewis]** No. The effects of any fire that could result from a fuel spill involving other vehicles that might be present at the PFSF would be bounded by the effects of the fires PFS has analyzed and discussed above. For example, while PFS maintenance trucks might be intermittently present within the Restricted Area, the fuel tanks on the maintenance trucks are smaller than the 50-gallon tank on the cask transporter vehicle. Thus, the effects of any fire that might result from a fuel spill from a maintenance truck would be bounded by the effects of a cask transporter vehicle fire. Diesel fuel for the storage tank for the cask transporter will be brought on-site by truck. The cask transporter fuel storage tank, however, is located 200 ft. from the CTB and 700 ft. from the nearest storage casks on the concrete storage pads. Thus, any fire involving the diesel fuel delivery truck would be bounded by PFS's analysis of locomotive fuel spills and fires discussed

in Answer 36 below, in that the locomotive fire would be only 100 ft. from the casks on the pads while the diesel truck would be 700 ft. away (while the maximum capacity of the diesel fuel truck could be 10,000 gallons as compared to 6,400 gallons for the locomotives, the potential size of the truck spill would be more than offset by the much greater distance between the truck spill and the casks compared to the case of the locomotive spill). (Any cask in the CTB would be shielded from the effects of the fire by the building walls).

Other vehicles at the PFSF that would not enter the Restricted Area, such as the cars of visitors, would not pose a hazard because of the distance between their locations and the spent fuel at the site. The fact that such vehicles might be gasoline-powered instead of diesel-powered does not affect this conclusion, in that once they are ignited, large gasoline and diesel fires burn with similar characteristics.

**Q35.** Describe the use and function of the diesel locomotives at the PFSF.

**A35.** [Lewis] Locomotives will be used to transport spent fuel transportation casks to and from the PFSF on railcars, under the Low Corridor Rail Line transportation alternative, on a rail line to be built to the PFSF. The locomotives will bring railcars into the PFSF Restricted Area. There, the locomotives and railcars will be rearranged so that a locomotive can push a railcar carrying a spent fuel cask into the CTB with a spacer car between the spent fuel car and the locomotive so that the locomotive never enters the CTB.

PFS will use mainline locomotives, such as the General Motors SD-40-2, Type C-C, to bring the spent fuel to the PFSF and PFS could use one such locomotive to move spent fuel cars into the CTB. PFS will also procure a shortline or switching locomotive, such as the General Motors MP-15AC, to move spent fuel cars into the CTB and potentially to bring spent fuel cars to the PFSF from the Union Pacific mainline at Low Junction.

The locomotives would be used at the PFSF only with the Low rail line transportation alternative. The Low rail line alternative would not be used simultaneously with the ITP alternative. Therefore, locomotives and heavy haul trucks will not be used simultaneously at the PFSF.

**Q36.** What fire protection measures will be employed at the PFSF with respect to the potential diesel fires involving the diesel locomotives?

**A36.** [Lewis] First, administrative procedures at the PFSF will not permit a locomotive to enter the CTB. When a railcar carrying a spent fuel transportation cask is to be moved into the cask load/unload bay, a spacer car will be positioned between the spent fuel car and the single locomotive. The dimensions of the cask car and spacer car assure that when the cask is positioned in the center of the bay in preparation for pickup of the cask by the overhead bridge crane, the locomotive will remain outside the building. Rail stops will be clamped to the railroad tracks to ensure that this commitment is not violated. As discussed in SAR Section 8.2.5.1, with the transportation cask positioned in the center of the cask load/unload bay, the closest part of the locomotive would be about 16 ft. outside of the CTB, with the diesel fuel tanks approximately 20 ft. beyond, or 36 ft. outside of the CTB.

Further, the concrete apron in front of the west doors of the CTB, where the rail line enters the building, will be sloped away from the building to assure that fuel spilled from a locomotive outside the CTB is physically prevented from flowing into the CTB. Thus, any diesel fuel spilled outside would flow away from the entrance to the building and fires resulting from diesel fuel spilled from a locomotive would not enter the CTB.

As discussed in SAR Section 8.2.5.2, the natural land contour of the PFSF site has a downward slope from the rail lines to the cask storage area. In order to prevent diesel fuel spilled from locomotives situated on the rail lines west of the CTB from approaching the cask storage area, the slope of the terrain directly north of the north rail tracks will be engineered such that there is an intervening uphill

grade near the rail line, then a downhill slope to and through the cask storage area. The length of the uphill grade and height of this rise will be designed to restrict the flow of a spill involving the total diesel fuel inventory of two main line locomotives (PFSF SAR Section 8.2.5.2 considers 6,400 gallons) near the rail line, and not permit any fuel to flow over the top of the rise and toward the storage casks. (While PFS might use a smaller switching locomotive to move spent fuel railcars into the CTB, the effects of a fuel fire involving a switching locomotive would be bounded by the effects of the fuel fire involving the mainline locomotive that PFS has analyzed in that the switching locomotive would have significantly smaller fuel tanks).

In addition, as discussed in SAR Section 4.8.3.2 fire hydrants will be located near the Canister Transfer Building which would provide an adequate supply of water to aid in extinguishing a locomotive diesel fuel fire external to but adjacent to the building, although the use of such hydrants would not be necessary to prevent significant harm to the CTB or a spent fuel cask.

**Q37.** Are these measures sufficient to prevent a diesel fire involving the diesel locomotives from threatening the integrity of a spent fuel cask and thus causing a release of radioactive material or a radiological hazard to the workers at the PFSF?

**A37. [Dungan]** Yes. PFS has conservatively analyzed the potential effects on the storage casks of a locomotive diesel fuel fire (conservatively assuming no sloping of the tracks away from the storage casks), and showed that no release of radioactive material would occur from such a fire. The analysis in the PFSF SAR assumed that all four of the fuel tanks on two coupled locomotives postulated to be at the PFSF were full and ruptured simultaneously to yield a 6,400 gallon spill. SAR Section 8.2.5.2. There are no credible ground level ignition sources, so not only is the likelihood of one or more tank failures low, but the likelihood of subsequent ignition of a fuel spill is also low.

Nevertheless, the analysis assumes these unlikely events occur and evaluates the combined effects of two pool fires assuming each fire is centered under the associated locomotive, considering several pool diameters (50 ft, 75 ft, and 100

ft). The exposure to the storage casks would be radiant heat from the fire. The emissive power of a hydrocarbon pool fire, in terms of an energy flux (e.g.,  $\text{kw/m}^2$  or  $\text{BTU/s/ft}^2$ ) goes down as the pool diameter goes up. Tests of large pool fires of materials similar to diesel fuel (kerosene and JP-5) show emissive power 25 to 30  $\text{kw/m}^2$  (2.2 to 2.6  $\text{Btu/sec-ft}^2$ ) for a 30m diameter pool. Even if this heat flux were applied directly to the distant, massive concrete storage casks, it would show no significant effect on the casks because of the low thermal conductivity and large heat capacity of the concrete and the distance from the fire. The PFSF SAR, Section 8.2.5.2, shows that the worst-case heat flux impinging on the spent fuel storage casks ( $1.38 \text{ Btu/sec-ft}^2$   $\text{BTU/s/ft}^2$ ) from the postulated locomotive pool fires would be significantly lower than the radiative heat flux that would result from a cask transporter diesel fuel fire that engulfed a cask ( $6.0 \text{ Btu/sec-ft}^2$ ). Furthermore, in addition to the radiant heat input from the transporter fire, there is also substantial convective heat input since the transporter fire is assumed to encircle the cask and flowing hot gases impinge on the sides of the cask. For the locomotive fuel fires, convective heat transfer is negligible because of the distances from the edge of the postulated fires to the storage casks (minimum of 60 ft). Therefore, the thermal effects of the cask transporter fire discussed above would bound those associated with the postulated locomotive diesel fuel fires.

While the locomotive fire might last longer than the cask transporter fire, the SAR shows that if the heat flux is integrated over the duration of the fire, the total energy deposited on the cask surface is significantly lower in the case of the locomotive fire than in the case of the cask transporter fire. The total energy deposition per unit area from radiant heating alone for the cask transporter fire is  $1304 \text{ Btu/ft}^2$ , whereas the total energy deposition per unit area on only one side of a storage cask from the postulated locomotive fire is  $592 \text{ Btu/ft}^2$ .

The conclusion that a locomotive fire would not threaten the integrity of a spent fuel storage cask also holds for the spent fuel transfer cask at the PFSF, in that the transfer cask would be shielded from the heat flux from the fire by the walls of the CTB.

**Q38.** What would be the effect of a diesel fuel storage tank fire at the PFSF?

**A38. [Lewis]** The location and capacity of fuel tanks as described in the SAR create no threat to the spent fuel storage casks or the CTB. The effects of a diesel storage tank fire are bounded by the analysis of the locomotive fuel spill fire. The diesel storage tank for the fuel for the cask transporter will be located 200 ft. from the CTB and 700 ft. from the nearest casks on the concrete storage pads, significantly farther away than the locomotives. Furthermore, yard hydrants in the vicinity of the CTB could be used to provide water to extinguish a spilled diesel fuel fire from the storage tanks. The diesel storage tank for heavy haul trucks (if used) and other on-site vehicles will be located near the Operations and Maintenance Building, outside the PFSF Restricted Area, roughly 1,500 ft. from the CTB and even farther away from the nearest casks on the concrete storage pads. In addition, both diesel storage tanks will be designed in accordance with NFPA 30, which requires that the tanks be equipped with fusible link shut off valves that would close if a fire were present and prevent further spillage of diesel fuel.

**Q39.** What would be the effect of a backup diesel generator tank fire or a diesel-driven water pump fuel tank fire at the PFSF?

**A39. [Lewis]** Like the diesel fuel storage tank, the location and capacity of the backup diesel generator tank, as described in the SAR, creates no threat to the spent fuel storage casks or the CTB. The effects of a backup diesel generator tank fire are also bounded by the analysis of the locomotive spill fire because the backup diesel generator will be located in the Security and Health Physics Building, 385 ft. from the CTB and about 945 ft. from the nearest casks on the concrete storage pads. In addition, the diesel generator fuel tank is double walled and fitted with fusible shut off valves in accordance with NFPA 30 to prevent any additional fuel from spilling from the tank and fueling a nearby fire.

Similarly, the diesel fuel tank for the diesel-driven water pump would also create no threat to the spent fuel storage casks or the CTB. The tank for the diesel-driven water pump will be located outside the Restricted Area, near the Security



and Health Physics Building—farther away than the backup diesel generator tank located in the building. The diesel-driven water pump fuel tank will also be smaller than the backup diesel generator tank. Thus, like the backup diesel generator tank, any fire scenario involving the diesel-driven water pump fuel tank would be bounded by PFS's locomotive fuel spill and fire analysis.

## **2. Propane Fires**

**Q40.** Describe the nature of potential propane fires that could occur at the PFSF.

**A40.** [Lewis] Propane for heating the CTB and the Security and Health Physics Building will be stored in a centralized propane fuel storage tank (or group of tanks) having a total volume of no greater than 20,000 gallons (PFSF SAR Sections 4.3.12 and 8.2.4.1). This tank(s) shall be located a minimum distance of 1,800 ft south-southwest of the CTB, and shall be a minimum distance of 1,800 ft from the nearest cask storage pads. The propane storage tank(s) will be above-ground, designed in accordance with the requirements of NFPA 58.

The propane distribution system will consist of buried all-welded steel piping to minimize the possibility of propane leakage. Due to the relatively large distances from the propane storage tank(s) to the Canister Transfer Building and the Security and Health Physics Building, the design of the propane distribution system will include a compressor, located near the storage tank(s), to provide the motive force necessary to transfer propane vapor from the storage tank(s) to these buildings. An excess flow control feature will be installed at the storage tank(s) that will shut off the flow of propane into the affected distribution line in the event a flow rate detector senses an abnormally high flow rate, which could be indicative of a large leak or pipe rupture. The propane heaters at the Canister Transfer Building will be roof-mounted, configured such that the propane gas does not enter the building itself. Instead, the heaters will heat air that is blown into the building by means of fans and ducting. The propane distribution system will be designed in accordance with NFPA 58. The propane heating system will be installed in accordance with NFPA requirements.

**Q41.** Could an unconfined vapor cloud explosion occur at the propane tanks at the PFSF?

**A41. [Dungan]** The likelihood of an unconfined vapor cloud explosion from the propane used for space heating is extremely low. Propane tanks meeting ASME pressure vessel design requirements and NFPA 58, Liquefied Petroleum Gas Code, piping and valving requirements minimize the likelihood and size of gas releases. Experience shows that for an unconfined vapor cloud explosion (pressure wave as opposed to a flash fire) to occur the following conditions must exist:

- a large, rapid release of vapor (gas), usually in excess of 1,000 kg
- obstruction, such as buildings or process structures capable of causing turbulence, and
- a high energy ignition source.

A release large enough and rapid enough not to disperse is not possible without a tank failure. Based on the locations of the tanks and the openness of the area, turbulence-causing obstructions which would help a pressure wave to develop (by accelerating the flame front) do not exist. Also, based on the location of the tanks, there are no ignition sources capable of igniting a large release. The propane compressor will be located approximately 25 feet from the tank. There will be electric power from the site electrical distribution panel that will be protected with breakers that would minimize the chance of ignition of a fire due to a short. To protect against lightning, the compressor and tank will be grounded. PFS will install lightning protection in the form of a couple of air terminals mounted on 30 ft poles near the tank.

**Q42.** Could flash fires or boiling liquid expanding vapor explosions occur at the propane tanks at the PFSF and if so what would their effect be?

**A42. [Dungan]** Flash fires and boiling liquid expanding vapor explosions are more credible incidences involving propane than unconfined vapor cloud explosions, although they are still unlikely. Both of these events create fire balls and flame fronts that emit a high radiative heat flux but for only a short duration. The separation distance from the propane storage tanks and the non-combustibility of

the structure of the CTB and the spent fuel casks to be used at the PFSF prevent these events from threatening the integrity of a spent fuel cask or canister.

**Q43.** Would propane fires within the CTB pose any radiological hazards due to fires?

**A43. [Lewis]** The propane heaters used to heat the CTB will be located on the roof of the CTB. Propane will be burned in the heater furnace outside of the CTB. The propane will not enter the CTB. The forced air convection heating will heat the air by having a fan blow the air across the heating tubes and into the CTB. The heating tubes will contain combustion gases that will be exhausted to the atmosphere. All propane components such as the heaters must comply with the requirements of NFPA 54, The National Gas Code, which ensures that gas burning devices are equipped with safety devices or control systems that would minimize fire propagation.

### **3. In-situ Combustible Fires**

**Q44.** What effect would a fire involving in-situ combustibles have at the PFSF?

**A44. [Dungan]** At the PFSF, in-situ combustibles are few in types and quantities. Fires involving them would be mostly small electrical fires. Small electrical fires cannot generate enough energy to propagate in the structures and would not pose a threat to any of the spent fuel storage configurations at the PFSF. Furthermore, outside the electrical equipment room, all electrical cable will be encased in conduit (or duct bank), which will protect against potential electrical fires.

### **4. Conclusion**

**Q45.** What is the basis for your opinion that the scenarios discussed above are the bounding fire scenarios involving radioactive materials at the PFSF?

**A45. [Dungan]** The nature of the storage activities at the PFSF requires no other significant quantities of combustible materials that could create any additional fire exposures greater than those discussed above.

**Q46.** For each fire scenario you identified, why would it not cause a release of radioactive material?

**A46. [Dungan]** In each case, the potential fire exposures are not capable of breaching the confinement of the spent fuel.

**B. The PFSF Fire Brigade**

**Q47.** Describe the PFSF fire brigade, to include its composition, training, and equipment at its disposal.

**A47. [Lewis]** The PFSF fire brigade will provide a response to fire emergencies with a minimum of 5 personnel who will be trained and equipped as a structural fire brigade in accordance with NFPA 600, Standard on Industrial Fire Brigades. Brigade personnel will come from PFSF staff. PFS will also have use of two fire trucks, one on site and one stationed at the Skull Valley Band of Goshute village.

**Q48.** Given the possible fire scenarios you have identified for the PFSF and the other fire protection measures that will be employed there, what role would the PFSF fire brigade play in mitigating the consequences of a fire involving radioactive materials at the site?

**A48. [Dungan]** The fire brigade role would be to extinguish fires too small to actuate the automatic suppression systems, and to ensure that the fire was out and perform salvage operations to minimize post-fire damage (which could not cause a release of radioactive material). The brigade will also provide support to ensure fire pumps are running, personnel evacuate properly and utilities (power and fuel) are shut off as appropriate. For outside fires, the brigade's role in most cases will be to control the burning to limit fire exposures and to suppress a transporter or other vehicle fire in the unlikely event of an occurrence that cannot be handled by the vehicle driver.

Scenarios requiring a brigade response inside the structures are only credible during normal hours. The heavy haul trucks, spent fuel cask transporters, and locomotives will not operate during normal off-hours (i.e., when no operations are underway). During off-hours when no operations are underway, an interior fire requiring a prompt fire brigade response is unlikely. Electrical fires would not pose a hazard in that electrical fires are unlikely in the first place and most electrical equipment at the PFSF will not be used during off-hours. Moreover, even if an electrical fire were to occur, it would not require a prompt response, in

that the absence of other combustibles at the site would preclude an electrical fire from threatening the integrity of a spent fuel canister or the structural integrity of the CTB.

Therefore, because a prompt response will not be required during off-hours, in the event of a fire PFSF security personnel would employ a call-in procedure to muster fire brigade members from off-site to respond to the fire. The role of PFSF security personnel, who will be trained in fire response, would be to assess the fire and promptly notify the fire brigade. Security personnel will not, however, participate on the fire brigade.

PFS had previously represented to the NRC Staff that security personnel would be used to expedite the staffing of a fire brigade and, where appropriate, used for the initial response. As described above, however, it is not necessary for security personnel to actually participate on the fire brigade. PFS will update the PFSF Safety Analysis Report and Emergency Plan shortly to reflect this change.

**Q49.** What will be the role of the fire trucks at the PFSF?

**A49. [Dungan]** The fire trucks are not necessary to respond to any fire emergencies inside the PFSF Restricted Area and thus are not needed to prevent damage to a spent fuel cask or canister. Because the site has an adequate and reliable water supply (see Answer 52), the trucks function as a way to bring additional hose for use with hydrants, nozzles, breathing apparatus, etc.

**Q50.** Will the PFSF fire brigade be adequate to perform its role?

**A50. [Dungan]** The proposed brigade will be adequate both in numbers and training. The requirements of NFPA 600, to which brigade members will be trained and equipped, represent industry best practice.

**C. Water Supply at the PFSF**

**Q51.** What sources of water will be available at the PFSF for firefighting?

A51. [Lewis] The water supply is two tanks of 100,000 gallons each and two fire pumps. The CTB cask load/unload bay is to be protected by a foam-water sprinkler system in accordance with NFPA 16. The PFSF will also have hose stations inside the buildings on-site, designed and located in accordance with NFPA 14, and fire hydrants outside the buildings on-site, designed and located in accordance with NFPA 24.

PFS had previously represented to the NRC Staff that two 200,000-gallon water tanks would be present at the PFSF, but in light of the actual water requirement for the facility, the tanks have been reduced in size to 100,000 gallons each. As shown below, that is more than enough for firefighting at the PFSF.

Q52. Given the possible fire scenarios you have identified for the PFSF and the fire protection measures that will be employed there, would the supply of water at the PFSF be adequate for firefighting?

A52. [Dungan] The proposed water supply is extremely conservative for a site the size and hazard of PFSF. Water supplies are typically sized for the maximum fire flow demand. For the PFSF, the biggest demand would be presented by the sprinkler system in the cask load/unload bay.

For the foam-water sprinkler system for the cask load/unload bay, the conservative design criteria of NFPA 16, which is subsumed in NFPA 801, requires 0.16 gpm/ft<sup>2</sup> for a demand area of 5,000 ft<sup>2</sup> (tests have demonstrated that 0.1 gpm/ft<sup>2</sup> of aqueous film forming foam (AFFF) can extinguish a fuel spill fire). The NFPA 16 requirement includes a foam supply capable of meeting this demand for 10 minutes, but a water supply capable of meeting this demand for 60 minutes. These totals include 240 gallons of foam and 48,000 gallons of water. Adding 250 gpm for fire brigade hose lines, the worst case water demand required by NFPA standards would be 63,000 gallons. Because of the large size of the cask load/unload bay relative to the other areas in the CTB, this requirement bounds any other requirements for water at the PFSF. NFPA 801 requires that where a tank provides the water supply, the tank should be capable of being

refilled within 8 hours. This requirement would be satisfied at the PFSF in that PFS will have a second full water tank, identical to the first, that will contain over 50 percent more than the 63,000 gallons of water required for the site.

A more realistic water requirement for the PFSF would be for the operation of the foam-water sprinklers for 10 minutes with a concurrent 100 gpm hose line for a total water need of 9,000 gallons for an interior fire response. (A system operator at the PFSF could shut off the sprinkler after the fire was extinguished) Each water tank at the PFSF will contain more than 10 times this amount. The water supply proposed for PFSF is more than adequate, and the excess capacity and redundant tanks and pumps make it extremely reliable.

**D. Maintenance of Fire Protection Equipment**

**Q53.** - Will PFS have a program for maintaining the fire protection equipment at the PFSF?

**A53.** [Lewis] Yes. As indicated in the PFSF SAR, Section 4.3.8.1, the fire protection equipment at the PFSF, including the CTB foam-water system, yard hydrants, fire pumps, water storage tank, service mains, and all associated components will be maintained in accordance with NFPA 25. The PFSF fire detection system will be installed and maintained in accordance with NFPA 72.

**IV. CONCLUSION**

**Q54.** In conclusion, would fire be a possible hazard to cause a release of radioactive material to the environment from the PFSF?

**A54.** [Dungan] No possible fire exposure could cause a release of radioactive material, since the fire hazards, even unmitigated, are not severe enough to breach the spent fuel confinement.

**KENNETH W. DUNGAN, P.E.**  
**PRINCIPAL**  
**RISK TECHNOLOGIES, LLC**

**EDUCATION**

B.S., Chemical Engr. and Fire Protection Engr., University of Maryland, 1971

M.S., Engr., Environmental Engr. (Chemical Engr. minor), University of Tennessee, 1977

**PROFESSIONAL AFFILIATIONS**

Registered Professional Engineer, Tennessee and Pennsylvania

Society of Fire Protection Engineers, Fellow

President (1992)

Qualification Board (1978-1984), Past Chairman

Board of Directors 1984-1994)

Tennessee Valley Chapter, Past President

Harold E. Nelson Service Award, 1996

SFPE Scientific and Educational Foundation, Board of Governors (1994-present)

National Fire Protection Association, Member (1974-present)

Environmental Advisory Committee (1988-1998), Chair (1997-1998)

Technical Committee on Signaling Systems, Initiating Device Task Group (1978-present)

Technical Committee on Non-Nuclear Power Plants (1980-present), Chairman (since 1995)

Technical Committee on Wood, Paper, and Cellulosic Dusts (1984-1999)

American Institute of Chemical Engineers, Member (1972-present)

Health and Safety Section (1988-present)

American Association of Engineering Societies

Executive Committee, Vice Chairman, 1994-1995, Chair-Elect 1996, Chair 1997

National Research Council, Board on Assessment of National Institute of Standards and  
Technology Programs (1995-1997)

Building and Fire Research Laboratory, Vice Chair 1997

**PROFESSIONAL EXPERIENCE**

Mr. Dungan has a broad, diversified background in safety, fire protection, and environmental engineering. He currently provides engineering services, including performing hazards and safety analyses, risk assessments, developing design criteria, reviewing engineering design, conducting and reviewing testing programs, research, investigating losses, developing and reviewing loss prevention and emergency response programs, auditing risk management programs, and presenting seminars and workshops on fire protection and safety. He has particular expertise in utilities, telecommunications, semiconductors, and chemical industries.

Prior to co-founding Risk Technologies, LLC in 1995, he founded Professional Loss Control in 1976 and served as its President for nineteen years. Mr. Dungan was the assistant director of engineering for a captive insurance company where he was responsible for establishing engineering guidelines for the safe design and operation of chemical-related facilities, and was the department head for fire protection engineering of a large chemical and nuclear



production facility.

Mr. Dungan has taught college level courses on many aspects of fire protection. He has also lectured across the United States, Canada, Europe, Asia, and Africa on various subjects of loss prevention, risk control, and emergency response.

#### AREAS OF SPECIALIZATION

Risk Management

Process Safety Management

Emergency Preparedness

Design

Research

Fire and Explosion Investigation

#### PUBLICATIONS AND PRESENTATIONS

- DiNunno, Philip J., and Dungan, Kenneth W., "An Evaluation of Prediction Methodologies for Effectiveness of Fire Barriers in LWR Facilities," Sandia Laboratories, 1979.
- DiNunno, Philip J., and Dungan, Kenneth W., "Evaluation of the Effectiveness of Detection Systems in LWR Facilities," Sandia Laboratories, 1980.
- Dungan, Kenneth W., "Fire Protection in Coal Handling Facilities-New and Retrofit," Annual SFPE Meeting Fire Protection Engineering Seminar, Dallas, Texas, 1981.
- Dungan, Kenneth W., "Finish Fire Test on Turbine Lube Oil Hazards," presented at WATTEC 1980, Knoxville, Tennessee, February 1980.
- Dungan, Kenneth W., "Kracht Centrales en Brandbeveiliging, Stichting Informatieve Preventie," No. 20, August 1980.
- Dungan, Kenneth W., "Mechanical Design Considerations for Turbine Fire Protection," ASME Meeting, Chicago, Illinois, November 1980.
- Mowrer, D.S., and Dungan, K.W., "Coal Handling Facilities-Rejuvenating Old Problems Requires New Solutions," 15<sup>th</sup> Loss Prevention Symposium of the AIChE, Detroit, Michigan, 1981.
- Dungan, Kenneth W., "Fire Protection for Air Rights Structures," NFPA Annual Meeting, Kansas City, Missouri, May 1983.
- Dungan, Kenneth W., and Lorenz, Mark S., "Fire Loss Data Update for Nuclear Power Plants," Electric Power Research Institute, Palo Alto, California, March 1983.
- Dungan, Kenneth W., "Evaluation and Control of Pulverized Fuel Systems Hazards," NFPA Annual Meeting, New Orleans, Louisiana, May 1984.
- Dungan, Kenneth W., "Practical Application of Quantitative Fire Hazards Analyses,"

SFPE Symposium on Techniques of Quantitative Fire Hazards Analyses, University of Maryland, College Park, Maryland, March 1985.

- Dungan, Kenneth W., "Simplified Methodology for Evaluation of Fire Resistance of Structural Steel," presented at WATTEc 13, Knoxville, Tennessee, February 1986.
- Dungan, Kenneth W., "Fire Risk Assessment," presented at "Emergency Planning and Response: The Fire Aspects," SFPE, Philadelphia, Pennsylvania, November 1987.
- Dungan, Kenneth W., "Evaluating Fire Resistance Requirements of Structural Steel," presented at "Seminar on Fire Protection for Building Construction," SFPE, North Texas Chapter, Dallas, Texas, April 1989.
- Dungan, Kenneth W., "Fire Protection: Design by Objective," presented at the SFPE Engineering Seminar, NFPA Fall Meeting, Seattle, Washington, November 1989.
- Dungan, Kenneth W., "Fire and the Environment," presented at the SPPE, Arizona Chapter, Phoenix, Arizona, April 1991.
- Dungan, Kenneth W., "Design Guide for Fire Protection of Grouped Electrical Cables," Electric Power Research Institute, Research Project Number RP2969-4, Palo Alto, California, 1991.
- Dungan, Kenneth W., "The Benefit (and Costs) of Change," presented at Conference on Fire Safety Design in the 21<sup>st</sup> Century, Worcester, Massachusetts, May 1991.
- Dungan, Kenneth W., "Chemical Process Safety in the USA," KISCO Safety Conference, Seoul, Korea, July 1994.
- Dungan, Kenneth W., "Fire Protection Performance-Based Design," presented Ontario Chapter SFPE, Toronto, Canada, October 1994.
- Dungan, Kenneth W., "Using Fire Models for Design and Operation," EEI Fire Protection Committee, Richland, Virginia, April 1995.
- Dungan, Kenneth W., "Risk-Based, Reliability-Centered Maintenance Applied to Fire Protection Systems," Second International Conference on Fire Research and Engineering, Gaithersburg, MD, 3-8 August 1997.
- Dungan, Kenneth W., Principal Engineer and co-author Military Handbook, MIL-HDBK 1117 "inspection, Test and Maintenance of Fire Protection Systems", USDoD, April 1999.

### **SPECIFIC EXPERIENCE**

For the past 21 years, Mr. Dungan has been supporting industrial clients around the world to understand and manage their risks from fire, explosion, and toxic releases. He has helped plants develop responses to regulations for nuclear facilities, such as USNRC's BTP 9.5-1

Appendix A and 10 CFR 50.48 Appendix R, and USDOE Orders. He has also helped plants comply with regulations such as OSHA 1910-119, Process Safety Management and USEPA Risk Management Planning. He has conducted numerous engineering evaluations to assess the performance of fire protection/safe shutdown strategies and emergency preparedness. He has also audited many fire protection programs.

Mr. Dungan has helped to advance the application of engineering analysis to fire safety issues for numerous plants. He developed a simplified methodology for evaluation of fire resistance for structural steel and won acceptance of the methodology by the USNRC. He developed the test program and developed the topical report for conduit internal fire stopping criteria for 22 electric utilities and won acceptance of the USNRC. He has supported EPRI on a variety of projects including a design guide for fire protection of grouped electrical cables, the development of the Fire Induced Vulnerability Evaluation (FIVE) methodology and thermolag resolution testing. He also helped develop the Fire Safety Evaluation Methodology for the Atomic Energy Control Board in Canada.

Throughout his career, Mr. Dungan has developed a reputation with regulatory agencies for the credible application of engineering to fire safety issues.

May 1999

**DONALD WAYNE LEWIS**

**LEAD ENGINEER  
MECHANICAL DIVISION**

### **EDUCATION**

Montana State University - Bachelor of Science, Civil Engineering - 1980  
Daniel International Corp. - Course in ASME Section III - 1982  
Daniel International Corp. - Course in Welding - 1983

### **REGISTRATIONS**

Professional Engineer - New York (1988)  
Colorado (1997)

### **EXPERIENCE SUMMARY**

Mr. Lewis has 17 years of engineering experience in the power generation industry, and has participated in all phases of power plant engineering from design through construction, pre-operational testing to on-line modifications.

Mr. Lewis has experience on several nuclear facilities. Assignments include the design of spent nuclear fuel storage facilities, plant systems design modifications, and on-site engineering of mechanical systems installation. Spent fuel storage facility design involved preparation of the design of mechanical aspects and related licensing of the facilities, including an on-site assignment as project engineer for the client for construction of one of the facilities. Plant systems modification assignments involved resolving system design problems, preparing design changes and supporting analyses, revising drawings and preparing specifications. On-site engineering of mechanical systems installation involved resolving pipe and equipment installation conflicts, reviewing and revising design drawings, ensuring code compliance, procuring system components, and developing start-up procedures.

Mr. Lewis has experience on four coal-fired boiler plants. Assignments included the design of mechanical systems on a flue gas scrubber project, development of system descriptions and operating instructions; and the evaluation of a coal to natural gas conversion design. Work involved design of piping systems, component selection and sizing, preparing calculations and specifications, reviewing proposal submittals, initiating process flow and layout drawings; writing plant operation instructions; and preparing cost analyses.

Mr. Lewis is currently assigned to several projects: the Indian Pt 2 spent fuel conceptual design project where he is Project Engineer, the Maine Yankee Atomic Plant spent fuel storage project where he is Lead Mechanical Engineer, the Private Fuel Storage Project where he is Lead Mechanical Engineer, and the Northern States Power Prairie Island Generating Plant where he is Project Engineer, responsible for overseeing the High Energy Line Break Upgrade Project and spent fuel storage issues.

DETAILED EXPERIENCE RECORD  
LEWIS, DONALD WAYNE

**STONE & WEBSTER ENGINEERING CORPORATION, DENVER, COLORADO**

(Apr 1988 - Present)

Appointments:

Lead Engineer, Mechanical Division - Jan 1998

Senior Mechanical Engineer, Mechanical Division - Nov 1990

Mechanical Engineer, Mechanical Division - Jan 1989

Indian Point 2 Nuclear Plant, Buchanan, NY – Consolidated Edison

(January 1999 - Present)

PROJECT ENGINEER

Maine Yankee Atomic Plant, Wiscasset, ME – Maine Yankee Power Company

(November 1998 - Present)

LEAD MECHANICAL ENGINEER

Yucca Mountain Project, Las Vegas, NV - U.S. Department of Energy

(June 1998 - August 1998)

SYSTEMS ENGINEER

Rocky Flats Environ. Tech. Site, Golden, CO - Rocky Flats Engineers & Contractors, L.L.C.

(May 1998 - Sept 1998)

RADIOLOGICAL CONSULTANT

Prairie Island Generating Plant, Red Wing, MN - Northern States Power Company

(Oct 1997 - Present)

PROJECT ENGINEER

National Wind Technology Center, Golden, CO - National Renewable Energy Laboratory

(Oct 1997 - Apr 1998)

SENIOR MECHANICAL ENGINEER

Rocky Flats Environmental Technology Site, Golden, CO - BNFL

(July 1997 - Oct 1997)

SENIOR MECHANICAL ENGINEER

Private Fuel Storage Facility, Goshute Indian Res., UT - Private Fuel Storage

(Oct 1996 - Present)

SENIOR MECHANICAL ENGINEER

Goodhue County ISFSI, Frontenac, MN - Northern States Power Company

(Aug 1995 - Sept 1996)

PROJECT ENGINEER

Navajo Generating Station, Page AZ - Salt River Project

(Sept 1993 - Nov 1995)

SENIOR MECHANICAL ENGINEER

Prairie Island Generating Plant, Red Wing, MN - Northern States Power Company

(Jan 1992 - Aug 1993)

SENIOR MECHANICAL ENGINEER

Neil Simpson Station, Gillette, WY - Black Hills Power Company

(Sept 1991 - Dec 1991)

SENIOR MECHANICAL ENGINEER

North Omaha Station, Omaha, NE - Omaha Public Power District

(July 1991 - Aug 1991)

SENIOR MECHANICAL ENGINEER

Fort Calhoun Power Station, Ft Calhoun, NE - Omaha Public Power District

(Apr 1988 - June 1990) (Nov 1990 - Aug 1991)

SENIOR MECHANICAL ENGINEER

Prairie Island Generating Plant-Unit 2, Red Wing, MN - Northern States Power Company

(July 1990 - Oct 1990)

LEAD MECHANICAL ENGINEER

EG&G Rocky Flats Inc., Golden, CO - U. S. Department of Energy

(July 1990)

MECHANICAL ENGINEER

U. S. Department of Energy, Hanford, WA

(June 1990)

MECHANICAL ENGINEER

**STONE & WEBSTER ENGINEERING CORP., CHERRY HILL, NEW JERSEY**

(Sept 1983 - Mar 1988)

Appointments:

Engineer, Mechanical Division - Aug 1987

Construction Engineer - Oct 1985

Senior Field Engineer - Oct 1984

Field Engineer - Sept 1983

Nine Mile Point Nuclear Station, Unit 2, Lycoming, NY - Niagara Mohawk Power Corporation

(Sept 1983 - Mar 1988)

ENGINEER, Mechanical Division (Aug 1987 - Mar 1988)

ENGINEER, Construction Division (Sept 1983 - July 1987)

Oswego Steam Station Units 5 & 6, Oswego, NY - Niagara Mohawk Power Corporation  
(Dec 1986)

CONSTRUCTION ENGINEER

**DANIEL INTERNATIONAL CORPORATION, GREENVILLE, SOUTH CAROLINA**  
(June 1982 - Aug 1983)

Wolf Creek Nuclear Plant, New Strawn, KS - Kansas Gas & Electric  
CONSTRUCTION ENGINEER II

**J.A. JONES CONSTRUCTION COMPANY, CHARLOTTE, NORTH CAROLINA**  
(Oct 1981 - Apr 1982)

Washington Nuclear Plant No. 1, Handford, WA - Washington Public Power Supply System  
FIELD ENGINEER

**WRIGHT SCHUCHART HARBOR-BOECON-GERI, RICHLAND, WASHINGTON**  
(Mar 1981 - Oct 1981)

Washington Nuclear Plant No. 2, Handford, WA - Washington Public Power Supply System  
ASSOCIATE STRUCTURAL ENGINEER

**MONTANA STATE HIGHWAY DEPARTMENT, HELENA, MONTANA**  
(July 1979 - Sept 1979, July 1980 - Mar 1981)  
CIVIL ENGINEER I (Traffic Division, Jan 1981 - Mar 1981)  
ENGINEER AIDE (July 1979 - Sept 1979)

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1           Q.    (By Mr. Blake)  Now, is there attached  
2   to the testimony that you have before you -- are there  
3   attached two documents, an Attachment 1 and an  
4   Attachment 2?

5           A.    (Witness Lewis)  Yes, there is.

6           Q.    And first, Mr. Dungan, is Attachment 1 a  
7   copy of your curriculum vita?

8           A.    (Witness Dungan)  I didn't bring a copy  
9   with me, if I can look at Wayne's.

10          Q.    Sure.

11          A.    (Witness Dungan)  Yes.

12          Q.    And do you adopt it as your further testimony  
13   in this proceeding of your academic credentials and  
14   experience?

15          A.    (Witness Dungan)  Yes, I do.

16          Q.    Mr. Lewis, with respect to Attachment 2,  
17   same questions of you, do you recognize this document?

18          A.    (Witness Lewis)  Yes, I do.

19          Q.    And is it, in fact, a copy of the curriculum  
20   vita for Donald Wayne Lewis?

21          A.    (Witness Lewis)  Yes, it is.

22               MR. BLAKE:  I would ask that these two  
23   documents as well be physically incorporated in the  
24   record just as though read.  They can either be at this  
25   point, Judge Bollwerk, or even right along with the

1 testimony so it's available for people to review  
2 subsequently.

3 JUDGE BOLLWERK: All right. I take it there  
4 are no objections by any of the parties to this  
5 attachment?

6 All right. Having heard none, why don't  
7 we go -- with respect to, I think I mentioned,  
8 curriculum vitas, as long as they don't exceed I  
9 believe it was 10 pages, we'll go ahead and have them  
10 attached into the record along with the testimonies.  
11 All other exhibits, then, will be marked separately and  
12 included as separate exhibits.

13 Q. (By Mr. Blake) Now, gentlemen, do you  
14 have with you as well three documents which we've  
15 previously referred to as Exhibits A, B and C?

16 A. (Witness Lewis) Yes.

17 Q. Focusing on the first, do you have before you  
18 a document which is noted at the top as PFS Exhibit A  
19 and in the lower right-hand corner as PFSF General  
20 Arrangement Figure 1.2-1?

21 A. (Witness Lewis) Yes.

22 Q. And do you recognize this document?

23 A. (Witness Lewis) Yes, I do.

24 Q. Are you prepared to answer questions  
25 about it?

1 A. (Witness Lewis) Yes.

2 Q. And you're familiar with it?

3 A. (Witness Lewis) Yes.

4 Q. Do you have before you as well Exhibit B?

5 A. (Witness Lewis) Yes, I do.

6 Q. And does this document state at the top  
7 PFS Exhibit B and in the lower right-hand corner  
8 referred to as the Canister transfer Building, Figure  
9 4.7-1 (Sheet 1 of 3)?

10 A. (Witness Lewis) Yes, it is.

11 Q. And are you familiar with this document?

12 A. (Witness Lewis) Yes, I am.

13 Q. And are you prepared to answer questions  
14 about it?

15 A. (Witness Lewis) Yes.

16 Q. And do you have as well available to you  
17 PFS Exhibit C?

18 A. (Witness Lewis) Yes.

19 Q. And does this document state at the top  
20 PFS Exhibit C and in the lower right-hand corner  
21 described as the Canister Transfer Building Fire zones &  
22 Barriers, Figure 4.3-1?

23 A. (Witness Lewis) Yes, it is.

24 Q. And are you familiar with this document?

25 A. (Witness Lewis) Yes, I am.

1 Q. And prepared to answer questions about  
2 it?

3 A. (Witness Lewis) Yes.

4 MR. BLAKE: Judge Bollwerk, with respect to  
5 these A, B and C that have been previously distributed  
6 to the parties, I would ask that they be accepted into  
7 evidence as PFS Exhibits A, B and C.

8 JUDGE BOLLWERK: All right. We're going to  
9 initially mark for identification PFS Exhibits A, B, and  
10 C, A being a drawing of PFS General Arrangement, B being  
11 a Canister Transfer Building drawing and C being a  
12 Canister Transfer Building Fire Zones and Barriers  
13 drawing. Those exhibits are marked for identification.

14 [Applicant's Exhibits A, B and C  
15 were marked for identification.]

16 JUDGE BOLLWERK: Any objection to their  
17 receipt into evidence? Let's go Exhibit A.

18 Hearing no objection, Exhibit A is  
19 admitted into evidence.

20 [Applicant's Exhibit A was  
21 received in the record.]

22 JUDGE BOLLWERK: B?

23 Hearing no objection, Exhibit B is  
24 admitted into evidence.

25 /

1 [Applicant's Exhibit B was  
2 received in the record.]

3 JUDGE BOLLWERK: Exhibit C?

4 Hearing no objection, Exhibit C is  
5 entered into evidence.

6 [Applicant's Exhibit C was  
7 received in the record.]

8 JUDGE BOLLWERK: All right. Mr. Blake?

9 MR. BLAKE: Judge Bollwerk, I'm now turning to  
10 the documents that we previously had been discussing  
11 before the break and more recently as well.

12 Q. (BY MR. BLAKE) Gentlemen, do you have before  
13 you a two-page page document entitled SAR Chapter 9,  
14 Revision 13, page 9.1-13, 9.3-3 and 9.5-2?

15 A. (Witness Lewis) Yes, we do.

16 Q. And are you able to identify that  
17 document, Mr. Lewis?

18 A. (Witness Lewis) Yes.

19 Q. And can you describe what it is, please?

20 A. (Witness Lewis) Yeah. This is a portion  
21 of Chapter 9 out of our Safety Analysis Report for the  
22 Private Fuel Storage facility.

23 Q. And is this a document which is currently  
24 on record with the NRC?

25 A. (Witness Lewis) Yes, it is.

1 Q. And is this revision currently on  
2 record?

3 A. (Witness Lewis) No.

4 Q. And what's the intention with respect to  
5 this revision or these pages?

6 A. (Witness Lewis) This revision is part of  
7 an amendment that is scheduled to be sent to the NRC at  
8 the end of this week.

9 Q. And are you familiar with these pages?

10 A. (Witness Lewis) Yes.

11 Q. And are you prepared to answer questions  
12 about them?

13 A. (Witness Lewis) Yes, I am.

14 MR. BLAKE: Judge Bollwerk, I would ask that  
15 this document be identified as Applicant's Exhibit G and  
16 then because it's related to the other one, G little a,  
17 and then I'll do A and B for this exhibit which is all  
18 related to the same thing.

19 JUDGE BOLLWERK: So you're going to mark each  
20 page individually, then?

21 MR. BLAKE: Well, no. The two -- there is one  
22 which refers to the SAR which we've just covered and one  
23 -- a set of a couple of pages that refers to the  
24 Emergency Plan, EP Chapter, those I would say are  
25 separate documents.

1 JUDGE BOLLWERK: All right. So this one -- at  
2 this point we're only -- we're marking --

3 MR. BLAKE: The SAR.

4 JUDGE BOLLWERK: Chapter 9.

5 MR. BLAKE: Yes, as Applicant's Exhibit G and  
6 then little A.

7 JUDGE BOLLWERK: All right. And let me just  
8 go back and ask one question, then. Is it going to be  
9 clear from the way we've marked the testimony that all  
10 these exhibits are going to be referring to that point  
11 in the testimony since we only marked it as G not G with  
12 a little A or B or --

13 MR. BLAKE: Well, I hope so.

14 JUDGE BOLLWERK: So do I.

15 MR. BLAKE: That's why I really elected to do  
16 it as G and then the little A and B. You can drop the A  
17 and B. I'll go on and do the rest and we can put it all  
18 in as G if you want. Then there won't be any doubt.

19 JUDGE BOLLWERK: All right. Why don't we just  
20 mark the whole thing as Exhibit G. Is the same person  
21 going to speak to that?

22 MR. BLAKE: Yes.

23 JUDGE BOLLWERK: That way we won't have any

24 JUDGE BOLLWERK: Chapter 9?

25 MR. BLAKE: Yes, as Applicant's

1 Exhibit G and then little A.

2 JUDGE BOLLWERK: All right. And let me just  
3 go back and ask one question, then. Is it going to be  
4 clear from the way we've marked the testimony that all  
5 these exhibits are going to be referring to that point  
6 in the testimony, since we're only marked it as G, not  
7 G with a little A or B or --

8 MR. BLAKE: Well, I hope so.

9 JUDGE BOLLWERK: So do I.

10 MR. BLAKE: That's why I really elected to do  
11 it as G and then the little A and B. You can drop the A  
12 and B. I'll go on and do the rest, and we can put it  
13 all in as G if you want. Then there won't be any doubt.

14 JUDGE BOLLWERK: Okay. Why don't we just mark  
15 the whole thing as Exhibit G.

16 MR. BLAKE: Yes.

17 JUDGE BOLLWERK: Is the same person going to  
18 speak to that?

19 MR. BLAKE: Yes.

20 JUDGE BOLLWERK: That way we won't have any --  
21 I'm not so concerned about what the -- now what we've  
22 marked the testimony, I don't want to be --

23 MR. BLAKE: Let me finish up, then, with the  
24 emergency plan.

25 Q. (BY MR. BLAKE) Do you also have before you,



1 gentlemen, a copy of four pages in the upper right-hand  
2 corner which refers to EP, the first page Chapter 1, the  
3 second page Chapter 3, third page Chapter 4 and fourth  
4 page Chapter 6?

5 A. (Witness Lewis) Yes, we do.

6 Q. And do you recognize these four pages?

7 A. (Witness Lewis) Yes, I do.

8 Q. And can you describe what these four  
9 pages are?

10 A. These are a portion of our Emergency  
11 Plan for the Private Fuel Storage facility.

12 Q. And each of the pages refers to  
13 Revision 9. Has Revision 9 yet be submitted to the NRC?

14 A. (Witness Lewis) No, it has not.

15 Q. And what are your intentions with regard  
16 to Revision 9?

17 A. (Witness Lewis) It will go in with the  
18 same amendment that is the SAR chapter at the end of  
19 the week to the NRC.

20 Q. And are you familiar with these pages?

21 A. Yes.

22 Q. And are you prepared to answer questions  
23 about them?

24 A. (Witness Lewis) Yes, I am.

25 MR. BLAKE: I would ask that all the

1 documents that have just been identified with this  
2 witness, that is, the three pages that refer to SAR  
3 Chapter 9 and the four pages which refer to Emergency  
4 Plan chapters, be collectively referred to as  
5 applicant's Exhibit G and be identified as such.

6 JUDGE BOLLWERK: All right. The request has  
7 been made that documents -- the document which includes  
8 two portions, one, three pages for SAR Chapter 9,  
9 Revision 13, pages 9.1-13, 9.3-3 and 9.5-2, and four  
10 pages from Emergency Plan Revisions, Chapter 1, Revision  
11 9, page 1-4, Emergency Plan Chapter 3, Revision 9, page  
12 3.5, Emergency Plan Chapter 4, Revision 9, page 4.3,  
13 Emergency Plan, Chapter 6, Revision 9, page 6.2, marked  
14 as PFS Exhibit G, marked and identified for the record,  
15 and that should be marked and so identified that way.

16 [Applicant's Exhibit G was  
17 marked for identification.]

18 JUDGE BOLLWERK: All right. Any objections  
19 to this exhibit, the admission of this exhibit?

20 MS. CHANCELLOR: Yes, Your Honor.

21 JUDGE BOLLWERK: All right. Would you state  
22 your objection, please.

23 MS. CHANCELLOR: My objection, Your Honor, is  
24 that the witness is not competent to testify whether or  
25 not this particular amendment will be submitted to the

1 Nuclear Regulatory Commission. In the past, license  
2 amendments have only be submitted to the NRC by Mr.  
3 Parkyn and, on occasion, by Mr. Donnell. Mr. Lewis, to  
4 my knowledge, has never submitted a license amendment  
5 to the NRC, and there's been no establishment that he  
6 has authority to do so.

7 JUDGE BOLLWERK: All right. There's been an  
8 objection. Any response from the applicant?

9 MR. BLAKE: I didn't hear anything new in this  
10 objection to what we previously discussed on the record,  
11 and I have nothing to add. It was all in an attempt to  
12 complete the record, Your Honor.

13 JUDGE BOLLWERK: All right. Mr. Turk,  
14 anything you wish to say?

15 MR. TURK: No. I'd rest on my previous  
16 comments, Your Honor.

17 JUDGE BOLLWERK: All right. We're going to go  
18 ahead and admit the exhibit. I believe an adequate  
19 foundation has been laid for its admission. So Exhibit  
20 G is admitted.

21 [Applicant's Exhibit G was  
22 received in the record.]

23 MR. BLAKE: Judge Bollwerk, that completes the  
24 applicant's case on this contention with this testimony  
25 and these four exhibits in the record, and these two

1 witnesses are available for cross-examination.

2 JUDGE BOLLWERK: All right. Then,  
3 Ms. Chancellor, do you have any cross-examination  
4 planned?

5 MS. CHANCELLOR: Yes, I do, Your Honor.

6 May I approach the bench?

7 JUDGE BOLLWERK: Absolutely.

8 CROSS-EXAMINATION

9 BY MS. CHANCELLOR:

10 Q. Mr. Dungan, the first question to you,  
11 have you ever visited Skull Valley?

12 A. (Witness Dungan) No, I have not.

13 Q. Do you have any familiarity with the  
14 Skull Valley area itself?

15 A. (Witness Dungan) Other than where it's  
16 located and looking at it on a map, no, I have never  
17 been there.

18 Q. Okay. Mr. Lewis, do you have any  
19 familiarity with the Skull Valley site?

20 A. (Witness Lewis) Yes, I do.

21 Q. Have you visited the site?

22 A. (Witness Lewis) I've passed by there  
23 from I-80.

24 Q. From I-80?

25 A. (Witness Lewis) Yes.

1 Q. How far is it from I-80?

2 A. (Witness Lewis) Twenty-four miles.

3 Q. Twenty-four miles. Do you know whether PFS  
4 will -- either witness -- do you know whether PFS will  
5 have any off-site assistance for fighting fires?

6 A. (Witness Lewis) Can you repeat that,  
7 please?

8 Q. Do you know whether PFS will have any  
9 off-site assistance for fighting fires?

10 A. (Witness Lewis) Well, we're not required  
11 to, but we could have off-site assistance from the area  
12 departments -- area fire departments.

13 Q. And where are the area fire departments?

14 A. (Witness Lewis) I believe the two that  
15 are located closest to us are Terra and then -- I  
16 forgot the other one, up in the northern part of the  
17 valley.

18 Q. And do you know anything about the size  
19 of the fire department at Terra?

20 A. (Witness Lewis) Yes. Inside the  
21 emergency planning booklet that's put out by the  
22 county, there is a listing of what kind of equipment  
23 that they have there, and I believe there are three fire  
24 trucks and a tanker truck.

25 JUDGE BOLLWERK: Is that spelled Terra, like

1 T-a-r --

2 MS. CHANCELLOR: T-e-r-r-a.

3 JUDGE BOLLWERK: T-e-r-r-a.

4 Q. (By Ms. Chancellor) Is that for the  
5 Terra Fire Department or for the Tooele City -- the fire  
6 department that's located at Tooele City?

7 A. (Witness Lewis) No, it's for the Terra  
8 area.

9 Q. And how long does it take to get from  
10 Terra to the Skull Valley site?

11 A. (Witness Lewis) By road it is about 12  
12 to 15 miles.

13 Q. And isn't it true that the Terra Fire  
14 Department is an all volunteer fire department?

15 A. (Witness Lewis) I do not know.

16 Q. Do you have any idea how long it would  
17 take the fire department from Terra to arrive at the  
18 Skull Valley site?

19 A. (Witness Lewis) No, I do not.

20 Q. Isn't it true that in the Emergency  
21 Plan, PFS states that it will receive off-site  
22 assistance from Tooele, not from Terra?

23 A. (Witness Lewis) I do not remember that  
24 statement.

25 Q. Isn't it true that PFS must be

1 self-sufficient in its fire fighting needs?

2 A. (Witness Lewis) Yes.

3 Q. In answer to Question 20, which is  
4 Mr. Lewis, you state that the only significant sources  
5 of combustible materials at the PFS, and one of the  
6 items you mention is the diesel fuel in the fuel tanks  
7 of the locomotives. What size fuel capacity did you  
8 assume, or did you assume any particular size fuel  
9 capacity, for the locomotives?

10 A. (Witness Lewis) The site could have two  
11 different types of locomotives, a small switcher or what  
12 we call a main line locomotive. And for our analysis we  
13 considered the larger of the two, which would be the  
14 most conservative. It has a capacity I believe of 3,500  
15 gallons.

16 Q. And where did you acquire that number  
17 from, the 3,500 gallons?

18 A. (Witness Lewis) We -- we looked up  
19 received information from the two manufacturers that  
20 supply main line locomotives currently in the United  
21 States.

22 Q. And what did you find?

23 A. (Witness Lewis) For -- for a locomotive  
24 of about 4,000 horsepower, we looked at the types of  
25 fuel capacity that they would have.

1           Q.    And isn't it true that PFS is going to  
2   have two main line locomotives?

3           A.    Yes, it is.

4           Q.    Isn't it true that PFS is going to use  
5   refurbished locomotives?

6           A.    (Witness Lewis) I'm not aware of that  
7   myself.

8           Q.    Would that make any difference to the  
9   quantity of fuel that the locomotive stored?

10          A.    Possibly if it -- it most likely would  
11   be less fuel. The newer -- the newer models come out  
12   with more fuel so that they have a greater distance  
13   capacity.

14          Q.    Would the two main line locomotives be  
15   located on the site at the same time?

16          A.    Yes, they would be.

17          Q.    So we're talking about a combined total  
18   of 7,000 gallons?

19          A.    That is correct.

20          Q.    Are you familiar with the layout of the  
21   Private Fuel Storage site?

22          A.    Yes.

23          Q.    In PFS's license application, it states  
24   that there will be physical stops so that the  
25   locomotive can't enter into the canister transfer



1 building; is that correct?

2 A. That is correct.

3 Q. Could you explain these physical stops?

4 A. Yeah. There are two stops, if you want  
5 to call them that, that are clamped to the track that  
6 would be located towards the back of the canister  
7 transfer building. Each one weighs approximately 250  
8 pounds. They're fairly substantial. And they are used  
9 by the railroad companies to stop cars.

10 Q. And isn't it true that if a locomotive  
11 were backing up too fast or approaching those stops at  
12 too fast a rate of speed, it could cause the -- the load  
13 on the train to roll?

14 A. To --

15 Q. To rollover?

16 A. To tip over?

17 Q. Yes, tip over.

18 A. No. What it would do -- it wouldn't break  
19 the stops, but it would derail the car that was carrying  
20 the load.

21 Q. And have you analyzed the potential for  
22 any fire incidents that may occur because of a tip-over  
23 from the train running into those stops?

24 A. Well, there's -- there's nothing  
25 combustible on the car that would be carrying the

1 shipping cask. It's just a metal car and a metal cask.

2 Q. But the cask could tip off the -- off --  
3 is it the cask that would come off the flatbed railcar,  
4 or would the railcar with the cask overturn?

5 A. Well, I don't think the car would overturn.  
6 It would just derail and just run along the side of the  
7 track.

8 Q. Oh, I see what you mean. Thank you.

9 The location of the track as it comes into  
10 the canister transfer building on Exhibit A, PFS  
11 Exhibit A, it's a little difficult to read, but is it  
12 true that the rail track is at the south of the storage  
13 pad?

14 A. Yes, it is.

15 Q. And is the rail line built up on an  
16 embankment at all?

17 A. Yes, a slight rise.

18 Q. And the area by the south edge of the  
19 storage pads, is there a gravel area? Do you know what  
20 is at the area to the south of the storage pads, between  
21 the storage pads and the rail line?

22 A. Yeah. It's -- it's gravel, and we have  
23 intentionally designed the gravel with a slope and a  
24 slight rise so that it does not slope towards the pads,  
25 but it slopes towards the track.

1           Q.    And isn't it true that if there was a  
2 spill of diesel fuel, the diesel fuel could pool and  
3 collect in that gravel area?

4           A.    Around the track.

5           Q.    But the track is above the gravel area,  
6 correct?

7           A.    Well, yes.

8           Q.    What's the elevation difference between  
9 the gravel pad and the railroad track?

10          A.    Like the top of the track?

11          Q.    Yes.

12          A.    I -- I'm not -- I don't remember at this  
13 particular time, but it would be -- it's probably over 6  
14 inches.

15          Q.    6 inches, not 6 feet?

16          A.    I don't remember.

17          Q.    Isn't it true that PFS has not conducted  
18 an analysis of the potential for fuel to be drawn  
19 inside the storage cask intake duct?

20          A.    No, we have not.

21          Q.    In terms of combustible material, has  
22 PFS looked at any other building other than the  
23 canister transfer building?

24          A.    Yeah. We've looked at the security and  
25 operations building -- security and health physics

1 building. Excuse me.

2 Q. Have you looked at the administration  
3 building?

4 A. Not at this time. We will during detail  
5 design.

6 Q. Isn't it true that the administration  
7 building will contain a cafeteria?

8 A. The current design shows a cafeteria, I  
9 believe, yes.

10 Q. Isn't it true that the cafeteria could  
11 be a source of fire hazard?

12 A. That is possible, but during detail  
13 design we would determine what kind of protection was  
14 necessary. And that is outside of the restricted area  
15 for where storage casks are being stored.

16 Q. Has PFS only analyzed the restricted  
17 area with respect to its own emergency plan, the fire  
18 fighting capability?

19 A. Primarily those areas where radiation --  
20 or radioactive material safety is of importance. If we  
21 were to have a fire at the administrative building, it  
22 would be more a monetary loss than a safety issue.

23 Q. Isn't it true that it would also place  
24 people inside those buildings at risk?

25 A. We would afford the same protection in

1 that building that would be required for any particular  
2 building built anywhere in the state of Utah.

3 Q. Is that in the Emergency Plan?

4 A. I'm not sure.

5 Q. Getting back to the train derailment,  
6 how would PFS upright such a derailment?

7 A. Upright?

8 Q. Well, put it back on its track.

9 A. We'd have to bring in a mobile crane to  
10 lift up the car and move it over and set it back on the  
11 track.

12 Q. Are there any hazards created by that,  
13 fire hazards?

14 A. (Witness Lewis) I'm sure we would do  
15 some special activities to make sure that when we  
16 brought the mobile crane in, whatever type of fuel  
17 source it has, we don't have any shipping casks near it.

18 Q. What size fuel capacity would a mobile  
19 crane have?

20 A. (Witness Lewis) I wouldn't know.

21 Q. And you haven't analyzed that?

22 A. (Witness Lewis) No.

23 Q. I'd like to turn now to the sprinkler  
24 system. Are you familiar with the sprinkler system that  
25 PFS intends to install at the site, either one of you?

1           A.     (Witness Lewis)   Yes, I am.

2           Q.     Which buildings will contain a  
3     sprinkler system?

4           A.     (Witness Lewis)   The canister transfer  
5     building will have a foam sprinkler system located in  
6     the load/unload bay, and the security and health physics  
7     building will have a sprinkler system in its diesel  
8     generator room.

9           Q.     And a sprinkler system in the canister  
10    transfer building will only be in the load/unload bay;  
11    is that correct?

12          A.     (Witness Lewis)   That is correct.

13          Q.     And what is the height of the  
14    load/unload bay?

15          A.     (Witness Lewis)   The load/unload bay has  
16    three areas.   Two on either side are what we call low  
17    bay areas which are about 30 feet tall, and in the  
18    center bay or the center portion of the bay is a high  
19    bay area which is about 90, 91 feet.

20          Q.     And where physically are the sprinkler  
21    systems located?

22          A.     (Witness Lewis)   Well, they would be  
23    located primarily along the walls or ceiling, depending  
24    on how we design the -- the heads.

25          Q.     And with respect to the water capacity

1 for the sprinkler system, where does that come from?

2 A. (Witness Lewis) The water capacity comes  
3 from two tanks that would be located just outside of the  
4 restricted area.

5 Q. What's the capacity of those tanks?

6 A. (Witness Lewis) Each tank is 100,000  
7 gallons.

8 Q. And how is water moved from the storage  
9 tanks to the sprinkler system?

10 A. (Witness Lewis) We have two pumps. There  
11 will be an electric pump and then a backup diesel pump.

12 Q. And where is the backup diesel pump  
13 located?

14 A. (Witness Lewis) Both pumps are located  
15 next to the tanks.

16 Q. The pumps are located next to the tanks.  
17 So tell me again, where are the tanks located.

18 A. (Witness Lewis) Okay. They're --  
19 they're just to the east of the health -- security and  
20 health physics building.

21 Q. Would any of your exhibits show the  
22 location?

23 A. (Witness Lewis) A would show the area.  
24 We've not located where exactly that will be at this  
25 time, but we have stated that it would be somewhere

1 outside of the restricted area to the east of that  
2 security and health physics building. So on Exhibit A,  
3 can you see where the security and health physics  
4 building is?

5 Q. You didn't provide a magnifying glass  
6 with your exhibit, Mr. Lewis.

7 A. (Witness Lewis) It would be above the  
8 figure block on the lower right-hand corner of the  
9 drawing.

10 Q. Okay.

11 A. (Witness Lewis) Probably alongside of  
12 the roadway there.

13 Q. And what's the capacity of the -- there  
14 are diesel tanks, correct, to fuel the diesel pump; is  
15 that correct?

16 A. (Witness Lewis) Yes. The tank is  
17 actually located directly underneath the pump.

18 Q. In this east location from the --  
19 outside the restricted area?

20 A. (Witness Lewis) Yes.

21 Q. And what is the water capacity of the  
22 sprinkler system? I mean, how long can it sprinkle  
23 for?

24 A. (Witness Lewis) The system is designed  
25 to sprinkle for 60 minutes at a rate of 0.16 square



1 feet.

2 Q. In the testimony in response to Question 31  
3 on page 15, six lines from the bottom, it states, "The  
4 CTB foam-water sprinkler system will be fed water from  
5 one of two fire pumps at the fire pump house." What is  
6 the fire pump house?

7 A. (Witness Lewis) Well, that's just a small  
8 enclosure that -- where the two pumps would be located.  
9 Typically, when you purchase fire pumps, they come on a  
10 skid, you call it, that is like a small shed, and they  
11 would be located inside there.

12 Q. So this fire pump house, does that contain  
13 only the fire pumps -- the fire hoses? Strike that  
14 question.

15 What is contained in the fire pump  
16 house?

17 A. (Witness Lewis) The pumps and the piping  
18 that is connecting from the tanks and out to the  
19 underground fire protection system.

20 Q. Is the pump house heated?

21 A. (Witness Lewis) Not necessarily. It  
22 depends on the pump design that we could procure at the  
23 time.

24 Q. How would -- how would you account for  
25 freezing in the wintertime?

1           A.   (Witness Lewis)  If the building is not  
2 heated, then the lines are thermally protected with -- I  
3 forgot the terminology that is used, but it's -- it's a  
4 freeze protection that is --

5           A.   (Witness Dungan)  Heat tracing.

6           A.   (Witness Lewis)  Yeah, heat tracing, and  
7 then insulation around all the piping.

8           Q.   And then what temperature is that good  
9 for?

10          A.   (Witness Lewis)  It depends on the  
11 climate conditions that you have in the area, but  
12 typically the heat tracing will prevent the lines from  
13 dropping below approximately 40 degrees.

14          Q.   Forty degrees Fahrenheit?

15          A.   (Witness Lewis)  Yes.

16          Q.   It won't protect below that?

17          A.   (Witness Lewis)  No, no.  It will prevent  
18 the temperature in the piping from being below that.

19          Q.   Oh, I see.  So if the temperature went  
20 down to minus 20, would the system keep the temperature  
21 at 40 degrees?

22          A.   (Witness Lewis)  Correct.

23          Q.   Could you go over your answer again with  
24 respect to the sprinkler system, the rate at which the  
25 sprinkler system would work?

1           A.   (Witness Lewis)  Yes.  It's -- I should  
2   have said 0.16 gallons per minute per square foot,  
3   which is required by the code in FPA 16.

4           Q.   Thank you.

5                   Isn't it true that even with the  
6   sprinkler system that there could be fire damage to  
7   electrical wiring and fuses?

8           A.   (Witness Lewis)  This is in the canister  
9   transfer building?

10          Q.   I beg your pardon.  Yes, in the canister  
11   transfer building.

12          A.   (Witness Lewis)  In the general area  
13   around the sprinkler system or just in other  
14   areas --

15          Q.   In the canister transfer building  
16   itself.

17          A.   (Witness Lewis)  It is possible that  
18   wiring in other parts of the building could be affected  
19   by fire.  It is not likely that it would be affected in  
20   the area of the sprinkler system simply because the  
21   sprinkler system would protect it.

22          Q.   You testified that the sprinkler system  
23   will only be in the load/unload bay, correct?

24          A.   (Witness Lewis)  That is correct.

25          Q.   And that there is an electrical wiring

1 systems and fuses in the canister transfer building  
2 other than the load/unload bay area, correct?

3 A. (Witness Lewis) Correct. But most of  
4 those wires would be carried inside the conduit or all  
5 of those wires would be carried inside the conduit which  
6 would help protect them from the fire.

7 Q. Including the wiring for the electric pumps  
8 that operate the sprinkler system?

9 A. (Witness Lewis) Well, the -- the  
10 electric pump is also located outside the restricted  
11 area in the pump house. Both pumps are located  
12 together.

13 Q. All right. With respect to the water  
14 supply at PFS, what is your understanding of how PFS is  
15 going to acquire water for the site?

16 A. (Witness Lewis) Right now we are  
17 anticipating that water would come from either wells or  
18 from off-site water supply systems.

19 Q. What do you mean by off-site water  
20 supply systems?

21 A. (Witness Lewis) I think we have a  
22 statement in there that we might carry some water from  
23 the reservation.

24 Q. And how would you fill the two -- were  
25 they hundred thousand gallon tanks, the water supply?

1 What water would PFS use to fill those tanks?

2 A. (Witness Lewis) Primarily water from the  
3 wells.

4 Q. And are those two tanks interconnected  
5 or are they independent?

6 A. (Witness Lewis) They're independent of  
7 each other -- well, I mean there's piping that connects  
8 the two tanks, but there's valving that treats those  
9 tanks as independent. One tank is actually a backup for  
10 the second -- for the first tank.

11 Q. Do you know whether PFS has authority  
12 from the state engineer to drill wells at its site?

13 MR. BLAKE: Objection. I believe that's  
14 outside of the scope of this contention.

15 JUDGE BOLLWERK: Mrs. Chancellor?

16 MS. CHANCELLOR: Whether PFS has sufficient  
17 water or not on site is relevant to whether it has the  
18 ability to fight fires, and I'm asking the witness  
19 whether he knows whether PFS has or will obtain  
20 authority from the state engineer to drill wells. It's  
21 a yes/no question.

22 MR. QUINTANA: Your Honor, I would object.  
23 The state engineer doesn't have jurisdiction on this  
24 issue on the Skull Valley Reservation. It's outside  
25 the scope.

1 JUDGE BOLLWERK: I'm not sure -- since Mr.  
2 Blake is the lead counsel, I'm not sure -- but the  
3 question you're raising is the one that I'm thinking  
4 about in terms of --

5 MS. CHANCELLOR: The state has authority to  
6 regulate groundwater under the McCarren Doctrine. I can  
7 get into the legal basis for it. All I'm asking is  
8 whether PFS intends to go to the state engineer to get  
9 permission to drill wells on site. If PFS doesn't go to  
10 the state engineer to get permission to drill wells on  
11 site, potentially PFS could be judicially stopped from  
12 drilling wells on the site. And so all I need to know  
13 from the witness is has PFS or will PFS go to the state  
14 engineer for permission to drill wells on site.

15 JUDGE BOLLWERK: All right. From what I'm  
16 hearing, this question is outside the bounds of this  
17 contention, so I'm going to sustain the objection.

18 Q. (By Ms. Chancellor) Has PFS entered  
19 into any arrangements with the Skull Valley Band of  
20 Goshutes to use the water from the band's reservoir?

21 A. (Witness Lewis) That is not my area. I  
22 wouldn't know.

23 Q. With respect to a diesel fire on the heavy  
24 haul truck, do you agree that if there were a fire  
25 involving the tires on a heavy haul truck that there's a

1 potential for worker safety to be compromised?

2 A. (Witness Lewis) No.

3 Q. And why is that?

4 A. (Witness Lewis) Well, for one thing, the  
5 fire, whether it be from the diesel fuel or from the  
6 tires, will probably be put out in just a couple of  
7 minutes from the foam system. But the building is very  
8 tall, and so most of the smoke right away is going to go  
9 to the ceiling. In addition, we have fairly large  
10 roll-up doors on either end where the workers could open  
11 the doors and there would be plenty of air at that  
12 point.

13 Q. Isn't it true that potentially it could  
14 require the fire brigade to come in and conduct a  
15 rescue of workers inside the building?

16 A. (Witness Lewis) That's possible.

17 Q. Has PFS analyzed any nonradiological  
18 hazards with respect to on-site fires?

19 A. (Witness Lewis) I believe we have, but I  
20 am not aware of them.

21 Q. Do you agree that PFS's Emergency Plan  
22 must cover radiological and nonradiological hazards?

23 A. (Witness Lewis) Yes.

24 MR. BLAKE: Objection.

25 JUDGE BOLLWERK: What's the objection?

1 MR. BLAKE: If The objection is a question  
2 about the scope of the Emergency Plan in general, it  
3 might be a legal -- ask for a legal conclusion, it might  
4 be a whole variety of areas. We're in the narrow area  
5 of fire protection, Your Honor.

6 JUDGE BOLLWERK: I'm going to allow the  
7 witness to answer the question.

8 Go ahead.

9 Ms. Chancellor: I believe he  
10 answered it, Your Honor.

11 JUDGE BOLLWERK: Why don't you restate it  
12 and let him answer it again. I think the objection may  
13 have -- go ahead.

14 Q. (By Ms. Chancellor) Do you agree that  
15 PFS -- can you read back the question, please?

16 JUDGE BOLLWERK: Let me just ask the  
17 question.

18 Did you get the answer?

19 THE REPORTER: Yes.

20 JUDGE BOLLWERK: You did? Okay. Then let's  
21 go on. I thought maybe the objection went over the  
22 answer. So if you got it, let's move on.

23 Q. (BY MS. CHANCELLOR) Do you agree that the  
24 propane -- strike that.

25 Isn't it true that PFS will have propane



1 tanks on site?

2 A. (Witness Lewis) On site, you mean on --

3 Q. At the PFS facility.

4 A. (Witness Lewis) Yes.

5 Q. And where will those propane tanks be  
6 located?

7 A. (Witness Lewis) The propane tanks for  
8 the canister transfer building and security and health  
9 physics building will be located approximately 1,800  
10 feet south of those buildings, and then the propane  
11 tanks for the maintenance and operating building and  
12 administration building will be located near those  
13 buildings.

14 Q. And isn't it true that PFS is going to  
15 use some sort of a generator or pumping system to get  
16 propane from the propane tanks to the canister transfer  
17 building?

18 A. (Witness Lewis) Yes. The propane has to  
19 be either pumped or compressed -- a compressor is used  
20 to push vapor, propane, to the -- to the buildings.

21 Q. Isn't it true that if the -- if the gas  
22 is -- is compressed -- that the propane is compressed,  
23 that it may turn into a liquid, from gas to liquid  
24 because of the pressure?

25 A. (Witness Lewis) Usually the -- the

1 propane -- I suppose -- I'm not aware of that  
2 happening. Typically the compressors are designed to  
3 just -- just move the vapor of the propane. They're not  
4 of such pressure that it would -- that it would turn the  
5 vapor back into liquid.

6 Q. What is the pressure of the compressor?

7 A. (Witness Lewis) I'm not specifically  
8 aware of exactly how much pressure, but I know it is in  
9 the level of -- we're only talking 5, 10 pounds per  
10 square inch or less.

11 Q. Isn't it true that if the compressor did  
12 turn the propane into a liquid that it may cause the  
13 fuel supply to the canister transfer building, propane  
14 supply to the canister transfer building to cause the  
15 heating to be either too low -- strike that.

16 Isn't it true that if a unit that's  
17 being designed to move gas and instead turns that gas  
18 into a liquid, that that may cause problems with the  
19 heating system?

20 MR. BLAKE: Objection. There's no factual  
21 basis for this. The witness was previously asked about  
22 this prospect. He said the compressor's capability  
23 wouldn't be expected to turn this gaseous propane into  
24 liquid, and now we're having a question, Well, if it  
25 were liquid, what would happen?

1 MS. CHANCELLOR: It's okay, Your Honor. I  
2 will move on.

3 JUDGE BOLLWERK: All right.

4 Q. (By Ms. Chancellor) I'd like to turn to  
5 the fire trucks. How many fire trucks will PFS have  
6 access to?

7 A. (Witness Lewis) There is one fire truck  
8 located at the PFS, and we have sited a second fire  
9 truck located at the reservation.

10 Q. Exactly where on the PFS site will the  
11 fire truck be located?

12 A. (Witness Lewis) Most likely the fire  
13 truck would be housed inside of the maintenance and  
14 operating building, but that has not been determined at  
15 this time.

16 Q. And the fire truck -- the Goshute fire  
17 truck, exactly where would that be located?

18 A. (Witness Lewis) I believe it's located  
19 at the Goshute village, but I'm not sure exactly where.

20 Q. What do mean by Goshute village?

21 A. (Witness Lewis) The community -- the  
22 reservation has a small community that's located  
23 approximately two and a half miles away from PFS.

24 Q. So your understanding is it would be  
25 located there rather than the Pony Express building?

1           A.   (Witness Lewis) They already have a fire  
2 truck. I'm not exactly sure where they house it.

3           Q.   Will there be any operators trained to  
4 use the fire truck at the PFS site?

5           A.   (Witness Lewis) Yes, there would be.

6           Q.   And how many operators will be trained?

7           A.   (Witness Lewis) In terms of driving the  
8 truck or in terms of operating the truck equipment?

9           Q.   Both.

10          A.   (Witness Lewis) I believe right now we  
11 have planned that all the operators would have licenses  
12 to drive heavy equipment such as a fire truck. In  
13 addition, all the operators would be required to have  
14 fire brigade training which would enable them to operate  
15 the equipment on the truck.

16          Q.   Let me just ask you one question. When  
17 you say "all the operators," what do you mean by all the  
18 operators?

19          A.   (Witness Lewis) The Private Fuel Storage  
20 would have a number of personnel that we would call  
21 operators in terms of like mechanical operators or  
22 electrical instrumentation operators. Those would be  
23 the people who would operate the cranes, the heavy haul  
24 trucks, the locomotives, transporter, those kinds of  
25 pieces of equipment.

1           Q.    Are you familiar with PFS's organizational  
2 chart as to the personnel that it will have at the site?

3           A.    (Witness Lewis)   Somewhat.

4           Q.    When you say that all mechanical operators,  
5 the PFS organizational chart is broken down into -- this  
6 is at Figure 4-1.  It is exhibit -- proposed Exhibit 1  
7 to the state's testimony on Contention R?

8           MR. BLAKE:  Can we just take a second?  I'm  
9 sure the witnesses don't have it.

10          JUDGE BOLLWERK:  Well, if they need it, let's  
11 go ahead and mark it and show it to them, then.

12          MS. CHANCELLOR:  Your Honor, I'm not sure how  
13 to handle when we do an exhibit that we've already  
14 identified as a State's exhibit.  Do we mark it as a  
15 State's exhibit --

16          JUDGE BOLLWERK:  Right.  We'll just mark it  
17 as State's 1, let them see it, and we'll eventually get  
18 to it -- we can admit it now or we can wait until -- the  
19 important part is to get it identified and let them see  
20 it.

21          Go ahead and give your copies to the  
22 court reporter at this point so she can mark them for  
23 identification.

24          MR. BLAKE:  What's your exhibit number going  
25 to be?

1 JUDGE BOLLWERK: I think it is No. 1.

2 MS. CHANCELLOR: It is No. 1, but it's  
3 Exhibit No. 1, Your Honor, from -- Exhibit No. 1  
4 consists of the Emergency Plan, page 4-2, 4-3 --

5 JUDGE BOLLWERK: Right.

6 MS. CHANCELLOR: -- 4-4 and Figure 4-1. So  
7 that is all of State's Exhibit 1.

8 JUDGE BOLLWERK: All right. Why don't we  
9 just go ahead and have that marked for identification.  
10 You can show them the exhibit and point them to what  
11 page you want them to look at.

12 MS. CHANCELLOR: And I should give the court  
13 reporter --

14 JUDGE BOLLWERK: Yes. She needs her original  
15 and two copies at this point.

16 [Pause.]

17 MS. CHANCELLOR: Sorry, Your Honor.

18 JUDGE BOLLWERK: No problem.

19 MS. CHANCELLOR: Could I have the witnesses  
20 look at one that I'm going to give to the court  
21 reporter? We've got three here somewhere. I just can't  
22 find them.

23 JUDGE BOLLWERK: That's fine. We just need  
24 to make sure it gets over to the court reporter so that  
25 she has the appropriate number of copies.

1 MS. CHANCELLOR: Okay.

2 JUDGE BOLLWERK: All right. Let the record  
3 reflect that we're marking for identification State's  
4 Exhibit No. 1 as it was described by Ms. Chancellor.

5 [State's Exhibit 1 was marked  
6 for identification.)

7 Q. (By Ms. Chancellor) Would you please  
8 turn to the last page of State's Exhibit 1, Figure 4-1?  
9 Do you have that?

10 A. (Witness Lewis) Yes, we do.

11 Q. Have you seen this functional PFSF  
12 organization chart before?

13 A. (Witness Lewis) Yes, I have.

14 Q. You're testifying about the operators at  
15 PFS. Could you explain, based on this chart, the  
16 positions that these operators would hold?

17 A. (Witness Lewis) The operators are located on  
18 the second from the left side block in the center there  
19 entitled "Mechanical Maintenance/Operators."

20 Q. Is that the mechanical technicians (2)?

21 A. Yes.

22 Q. Any other person in that group?

23 A. (Witness Lewis) Well, the general plant  
24 worker just is a generic term for all of the mechanical  
25 maintenance operators that would operate any number of

1 pieces of heavy equipment around the site.

2 Q. So are there three people designated  
3 under mechanical maintenance/operations who would drive  
4 heavy equipment?

5 A. (Witness Lewis) No, there could be several.  
6 Actually, what you have here is you have a lead  
7 mechanical/operator, which is the person who's in  
8 charge, you have two technicians, and then there could  
9 be several workers.

10 Q. Isn't it true that PFS will have a total  
11 of 42 employees at the site?

12 A. (Witness Lewis) That is our current  
13 estimate, yes.

14 Q. Isn't it true that without the security  
15 staff there will be a total of 24 workers?

16 A. (Witness Lewis) I'm not exactly sure  
17 what that number would be, but it would be somewhat less  
18 than 42, yes.

19 Q. Isn't it true that this chart reflects  
20 the total number of workers at the PFS site?

21 A. It is a breakdown for those 42, yes.

22 Q. Isn't it true that if you add up the  
23 numbers on Figure 4.1 that you get a total of  
24 the -- of the 24 workers -- nonsecurity workers at the  
25 PFS site?



1           A.   (Witness Lewis) I'm not sure. This isn't --  
2 this isn't my level -- or my area of expertise on the  
3 chart.

4           Q.   How many total people for PFS will operate  
5 equipment? When you say all operators, I'm trying to  
6 find out how many people that is.

7           A.   (Witness Lewis) Based on this particular  
8 chart, I am not particularly sure on how many operators  
9 -- you know, as it's laid out in this particular chart.

10          Q.   How many people will be available to be  
11 trained to drive the fire truck?

12          A.   (Witness Lewis) At this time, I don't  
13 know.

14          Q.   What type of training will those unknown  
15 number of people have to drive the fire truck?

16          A.   (Witness Lewis) They would have the same  
17 type of training that is required by the State of Utah  
18 to drive heavy equipment, such as any diesel truck.

19          Q.   Are you familiar with the State of Utah  
20 requirements for driving heavy equipment?

21          A.   (Witness Lewis) No.

22          Q.   What sort of training -- how many people  
23 at the PFS site would be trained to not just drive the  
24 truck but to operate the truck?

25          A.   (Witness Lewis) Can I refer to

1 Exhibit G?

2 Q. Certainly.

3 A. (Witness Lewis) The page that's entitled  
4 the Emergency Plan?

5 Q. All right.

6 A. (Witness Lewis) And, in particular,  
7 page 4-3. In this particular statement, there is a  
8 listing of the types of personnel that would be trained  
9 for the fire brigade training which would include  
10 operation of the fire truck, and in there we have listed  
11 instrument/electrical maintenance, mechanical  
12 maintenance and operations and radiation protection, a  
13 total of 11 persons.

14 Q. So this has changed from the time you  
15 filed your original testimony when there were only  
16 going to be five people trained for the fire brigade; is  
17 that correct?

18 A. (Witness Lewis) The five people is only  
19 a minimum. We would always have more than five people  
20 trained, but we're required to have at least five  
21 people. We would have to train more because you're  
22 going to have some people that would be on vacation,  
23 some people that might not be in today, and so you have  
24 to train a number more than just five.

25 Q. So these 11 persons who would receive

1 fire brigade training, these 11 persons could drive the  
2 fire truck; is that correct?

3 A. (Witness Lewis) It's possible. Most  
4 likely the mechanical maintenance/operations people,  
5 people who have a heavy equipment operator's license,  
6 would be the ones that could drive the fire truck.

7 Q. And any of these 11 persons, would any of  
8 those 11 persons be specifically designated to operate  
9 the fire truck?

10 A. (Witness Lewis) I'm not sure at this  
11 time.

12 Q. Will at least one person be trained to  
13 operate the fire truck?

14 A. (Witness Lewis) You mean to drive it?

15 Q. No, no. Once it's actually driven to  
16 the site, to actually physically operate the truck and  
17 -- well, let me ask this question: Can you describe the  
18 fire truck?

19 A. (Witness Lewis) You know, the fire truck  
20 would have a pump and a small tank on it and some hose.  
21 Any number of these people could operate the equipment  
22 on the fire truck.

23 Q. What is required to operate the equipment on  
24 the fire truck?

25 A. (Witness Lewis) You'd have to have --

1 Q. Yeah, go ahead.

2 A. (Witness Dungan) First you're assuming  
3 that they need to operate the fire truck. You may not  
4 need to because there is going to be a hydrant system  
5 and there's going to be pressure that's provided by the  
6 diesel and electric pump.

7 But under the conditions where you would  
8 want to use the truck, in essence, it operator needs to  
9 connect the supply line to a fire hydrant or some source  
10 of water and needs to monitor the pressure that's going  
11 out to the hoses, whoever are manning -- personing,  
12 manning, the hoses for fire fighting purposes. So if,  
13 in fact, you were going to be using the truck to provide  
14 pressure and control for the hose lines that are being  
15 operated by the brigade members, then you would have to  
16 have one person operating the truck. So that would mean  
17 that you'd have to always have one person available.  
18 You'd have to train more than one person to have one  
19 person available. But whether that's all 11 people or 6  
20 of the 11, I don't know. I don't have any basis for  
21 saying how many they would.

22 Q. You said that the -- that some of the  
23 fire hydrants will be pressure pumped. Exactly what  
24 pressure will the fire hydrant system have?

25 A. (Witness Dungan) I don't know that

1 that's been designed yet, but it will be designed to  
2 provide its maximum demand, which would be the  
3 sprinkler systems. So there may be -- probably if the  
4 engine in was needed for anything, it would be to reduce  
5 the pressure, not to boost the pressure.

6 Q. But if you needed a fire hose to fight a  
7 fire at Private Fuel Storage, isn't it true that you  
8 would somehow need to pressurize the water system?

9 A. (Witness Dungan) No.

10 Q. Why is that?

11 A. (Witness Dungan) Well, the system's  
12 already pressurized. We have a -- well, I'll let in  
13 what talk about the design.

14 A. (Witness Lewis) Repeat the question  
15 again, please.

16 MS. CHANCELLOR: Would you read back that  
17 question, please.

18 (The question was read.)

19 WITNESS LEWIS: The fire hydrants which are  
20 connected by piping to the fire pumps are pressurized by  
21 the fire pumps themselves.

22 Q. (By Ms. Chancellor) Do you know if there's  
23 any difference between the demand -- the pressure  
24 demands for a sprinkler system versus the pressure  
25 demands for fighting fires with a hose?

1           A.     (Witness Dungan)   Yes.   We're limited for  
2     the safety of the brigade members not to exceed certain  
3     pressures at the nozzle.   We're mandated by the  
4     hydraulics of the sprinkler systems to have adequate  
5     pressure to overcome the friction loss and the elevation  
6     differences between where the sprinkler heads are and  
7     where the water supply is.

8                 In this case I would think that the pumps  
9     would probably be designed -- and the pumps have not  
10    been designed yet, to my knowledge, but they would  
11    probably have an discharge pressure somewhere in excess  
12    of 125 psi.   And I would also envision that our brigade  
13    primarily is going to be using preconnected  
14    inch-and-a-half hose lines in the standpipe systems for  
15    all interior structural problems so they won't need the  
16    fire truck unless there some problem with the water  
17    supply mains.   And in that case, depending on the  
18    design, we may end up having to put in pressure-reducing  
19    orifices so that we don't exceed, you know, the 125 psi  
20    at the nozzles.

21                I don't know if that answers your question  
22    but --

23           Q.     Is it correct that PFS has not done a  
24    final design of its system for fighting fires such as  
25    the sprinkler system -- the sprinkler system and the

1 fire hydrants and what pressure they would be?

2 A. (Witness Lewis) The piping that supplies  
3 the hydrants, the standpipes and the sprinkler systems,  
4 the design for those are all mandated by the codes, the  
5 NFPA codes. For the main lines to the hydrants, we  
6 would use NFPA 24. NFPA for the sprinkler systems, all  
7 of those codes give you the types of pressures that you  
8 have to have for certain services and for certain  
9 sprinklers and for specified coverages. It's not  
10 anything that we would particularly determine, it's just  
11 something that we design for.

12 Q. And will PFS adhere to those NFPA standards?

13 A. (Witness Lewis) Yes. We have said in  
14 our safety analysis report that we would adhere to  
15 those.

16 Q. What's the number of people required to  
17 man the fire truck? You said that you need one for the  
18 -- to -- to be actually on the site of the truck and  
19 watch the pressure gauges and what have you. How many  
20 people total are required to man the fire truck?

21 A. (Witness Dungan) I'm not sure I understand  
22 what you mean by man the fire truck. I mean, it's --  
23 it's not responding from a station to an event, so we're  
24 -- you could envision one person driving the truck to  
25 the site, one person hooking it up to the hydrant and

1 that same person operating the pump. So I mean --

2 Q. You could have the same person operating  
3 the end of the fire pump as you would --

4 A. (Witness Dungan) End of the fire pump?

5 Q. Fire hose.

6 A. (Witness Dungan) No. That's -- that's  
7 not operating the truck. That's operating the hose  
8 line.

9 Q. Okay.

10 A. (Witness Dungan) That's why I didn't  
11 understand you.

12 Operating the truck is the person who's  
13 monitoring the pressures --

14 Q. Okay.

15 A. (Witness Dungan) -- and that takes one  
16 person.

17 Q. And with respect to the fire truck that  
18 will be located at the Goshute village, who will  
19 operate that truck?

20 A. (Witness Lewis) First off, you have to  
21 understand that we don't necessarily need that truck,  
22 nor do we need the truck that's at our particular site.  
23 In the event that we had some sort of fire -- and that  
24 -- the only type of fire that I could envision that we  
25 would need in excess of our sprinkler system or our



1 truck would be something like a wildfire. But we could  
2 dispatch an operator to the Goshute village to procure  
3 that truck and bring it to the site to help aid in a  
4 fire.

5 Q. And how long would that take?

6 A. (Witness Lewis) The Goshute village is  
7 about two and-a-half miles away, so ten minutes.

8 A. (Witness Dungan) May I add something to  
9 that?

10 Q. Sure.

11 A. (Witness Dungan) I envision realistically  
12 the only basis for having a fire truck on site would be  
13 to back up the manual fire pumps, if for some reason one  
14 of the fire pumps failed, say, the loss of electricity  
15 or -- you know, imagine anything whether one of the  
16 fixed fire pumps wouldn't work. Then we could use the  
17 backup. We could, in fact, park the fire truck out at  
18 the tank house and use that to take suction from the  
19 tank and pump into the lines. That's really about the  
20 only event I can imagine on site where we would use the  
21 pumper portion of the fire truck.

22 The two people who are on the hose?

23 A. (Witness Dungan) Typically we would  
24 require one person outside what we call the hot zone who  
25 is monitoring what's going on so if he has to get

1 assistance or help those people that he can.

2 Q. So just one backup person?

3 A. (Witness Dungan) Yes.

4 Q. You pointed to this new potential  
5 revision to the environmental report that says that  
6 there will be -- 11 persons shall receive fire brigade  
7 training. What positions will those 11 persons hold?

8 MR. BLAKE: I suspect, just for record  
9 purposes, that you're referring to the EP, which is the  
10 emergency plan, not the environmental report.

11 MS. CHANCELLOR: Oh, yes, EP. I beg your  
12 pardon. Thank you.

13 WITNESS LEWIS: What positions would those 11  
14 people hold in terms of their normal --

15 Q. (By Ms. Chancellor) In terms of their  
16 normal duties.

17 A. (Witness Lewis) Well, it lists them as  
18 the instrument/electrical maintenance, mechanical  
19 maintenance/operators and radiation protection.

20 Q. Could you refer to the chart, State's  
21 Exhibit 1, Figure 4.1? Could we go over specifically on  
22 this chart where those -- the positions that these  
23 persons would hold?

24 A. (Witness Lewis) Yes. On the third line  
25 down where all of the positions are shown, at the far

1 left is the instrument/electrical maintenance.

2 Q. And how many people from that -- from  
3 that department or division?

4 A. (Witness Lewis) This -- this chart  
5 doesn't tell me how many in specific are in  
6 those -- each of those locations.

7 Q. It says -- isn't it true that under  
8 electrical -- instrument/electrical maintenance there is  
9 a lead I&E technician, two I&E technicians and a general  
10 plant worker?

11 A. (Witness Lewis) But again, the general  
12 plant worker could be more than one person. And in the  
13 fourth position --

14 Q. Just -- just a moment. I didn't want to  
15 do this, but we can take the time to go through and add  
16 up the positions on this -- on this chart and I think  
17 you will find that it adds up to 4 -- not counting the  
18 security personnel, who PFS says won't be fire brigade  
19 members, that there are 24 people listed on this chart.  
20 Isn't it your position that PFS will employ a minimum  
21 of 42 people?

22 A. (Witness Lewis) Okay. Just looking at  
23 the chart --

24 Q. Right.

25 A. -- if you assume that the general plant

1 worker is one person, then you would have four persons  
2 under the instrument/electrical maintenance, four  
3 persons under the mechanical/maintenance operations --

4 Q. Okay.

5 A. -- and then three persons until the  
6 radiation protection, which I believe is where we've  
7 come up with the 11 persons in the emergency plan  
8 revision.

9 Q. Okay. Thank you.

10 And to what standards would these 11  
11 persons be trained for fire fighting?

12 A. (Witness Lewis) They're trained to  
13 NFPA 600.

14 Q. Let me just back up. With respect to  
15 this chart for the 4.1, what hours would these 11  
16 persons work at the PFS site?

17 A. (Witness Lewis) These 11 persons are  
18 primarily day shift operators.

19 Q. And what's a day shift?

20 A. We'll assume from eight to five.

21 Q. And does a day shift differ depending on  
22 whether there's any transfer operations taking place or  
23 not?

24 A. (Witness Lewis) No. The transfer  
25 operations would only occur during the day shift.

1           Q.    Isn't it true that transfer operations  
2 take up to 19 hours to complete?

3           A.    (Witness Lewis) No. The process of  
4 bringing the casks in to finally setting them down on  
5 the pad takes 19 hours. The transfer operation itself  
6 where we specifically bring the shipping cask into a  
7 transfer cell and transfer the canister over to the  
8 storage cask, that process is approximately four hours.

9           Q.    And would the transfer operation -- isn't it  
10 true that PFS will transfer more than one cask in a  
11 shipment -- strike that question.

12                    Isn't it true that the shipments of casks  
13 something will be more than one cask at a time?

14           A.    (Witness Lewis) Yes, there could be  
15 three to five shipping casks in a shipment.

16           Q.    And the transfer operations for the  
17 three to five shipping casks, will they occur -- how  
18 would they occur in time sequence?

19           A.    (Witness Lewis) We would do -- we  
20 actually have three transfer cells. We can perform --  
21 we can prepare the shipping cask for three different  
22 transfers. We do not have the crane capacity, however,  
23 to perform all of those transfers at once. We do have  
24 two cranes, so we could do at least two transfers at  
25 once, but this process of transferring the cask would

1 occur over a week's period of time.

2 Q. And would the -- would any of the 11  
3 members of the fire brigade be involved in the transfer  
4 operations?

5 A. (Witness Lewis) Yes, they would be.

6 Q. How many of those 11 would be involved in the  
7 transfer operations?

8 A. (Witness Lewis) Depending on how many  
9 transfer operations we had, all of them could be  
10 involved.

11 Q. So your entire fire department could be  
12 involved in transfer operations; is that correct?

13 A. (Witness Lewis) In -- in the process of  
14 doing something in that operation, yes.

15 Q. With respect to training, under NFPA 600, how  
16 frequently would the members of the fire departments  
17 receive training?

18 A. (Witness Dungan) NFPA 600? The training  
19 that we've committed to would require that the training  
20 be done at minimum on a quarterly basis, live fire  
21 exercises minimum once a year and then additional  
22 drilling twice a year.

23 Q. And has PFS committed to do this particular  
24 -- this specific training in its license application or  
25 has it just said, in general, that we'll comply with

1 NFPA 600?

2 A. (Witness Dungan) I can't answer that.

3 Q. You mentioned he that it's difficult to  
4 know what PFS is going to do because the license  
5 application has changed, but before you said in this  
6 proposed license change, PFS stated that there would be  
7 other training for non-fire brigade members. Is that  
8 still the case?

9 A. (Witness Lewis) Yes. All employees are  
10 required to take what we call general employee training  
11 or GET training. In that, in terms of fire protection,  
12 all employees are trained on basic fire fighting skills  
13 such as the types of fires that you could encounter,  
14 reporting fires to security or manually picking up a  
15 fire extinguisher and fighting the fire if they deemed  
16 that they were able to do so.

17 Q. Does this include the security personnel?

18 A. (Witness Lewis) Yes, it does.

19 Q. Now, you mentioned that normal hours are  
20 basically eight to five, nine to five. Could  
21 you -- isn't it true that PFS considers that -- that  
22 it's not credible for a fire to occur other than during  
23 those business hours?

24 A. (Witness Lewis) In order for a fire to  
25 occur, you usually have to have something that would

1 start the fire, an ignition source. Typically, if there  
2 are no workers around, it would be very unlikely that  
3 any ignition sources could be created.

4 Q. Isn't it true that with the five shipments of  
5 fuel, of casks coming in, that workers will be working  
6 on site other than the nine to five -- eight to five  
7 hours?

8 A. No, it is not. The casks can be -- the  
9 shipping casks can sit on the railroad car inside the  
10 canister transfer building, or they might be out in the  
11 yard awaiting the process to remove the canister out of  
12 those casks up to the pads.

13 Q. If PFS were to use the intermodal transfer  
14 facility, wouldn't there be workers on site in addition  
15 to -- other than the eight to five normal operating  
16 hours?

17 A. (Witness Lewis) No. Again, if we were to  
18 use the intermodal transfer point, we could have cars  
19 awaiting the process at the intermodal point. But the  
20 process of putting them onto a truck and then hauling  
21 them to the site would only occur during the daytime  
22 hours. We could -- we have determined that we could  
23 move two shipping casks per day from the railroad cars  
24 to the trucks and down to the site. There would be no  
25 need to do any after-hours work.



1           Q.     However, a wildfire may require a response  
2     from PFS, correct, on non-normal hours?

3           MR. BLAKE:  Objection.  Wildfires have been  
4     the subject of a good deal of conversation and dispute  
5     in other pleadings and procedures.  They're not included  
6     in this contention.

7           JUDGE BOLLWERK:  Ms. Chancellor, anything you  
8     want to say?

9           MS. CHANCELLOR:  The witness stated that if  
10    there was a wildfire, they may need to retrieve the  
11    truck from the Goshute village.  That would take away  
12    the ability of PFS to have sufficient workers on site to  
13    deal with on-site fires.

14          MR. BLAKE:  I'd just as soon go back to that  
15    portion of the transcript.  I don't think that's a very  
16    accurate representation of what the witness said.  And  
17    the fact that the witness mentions the word "wildfire"  
18    does not change the scope of this contention.

19          JUDGE BOLLWERK:  Right.  I'm going to sustain  
20    the objection.

21          MS. CHANCELLOR:  I thought you would, Your  
22    Honor.

23          Q.     (BY MS. CHANCELLOR)  During off-normal hours,  
24    could you describe how PFS will get workers back to the  
25    site who will have the ability to fight fires, should

1 one occur?

2 A. (Witness Lewis) If there were a fire, we  
3 have fire detectors located in all the buildings that  
4 would notify the security staff that there was fire. It  
5 would be the security staff to assess that fire,  
6 primarily to ensure that there is not a security problem  
7 because of the fire, and second, to notify off -- or to  
8 notify personnel that could come in to fight the fire.

9 Q. And how would they notify off-site  
10 personnel?

11 A. (Witness Lewis) I suspect through  
12 telephone.

13 Q. And where would you expect the off-site  
14 personnel to be housed?

15 A. (Witness Lewis) You mean in terms of  
16 their location?

17 Q. In terms of where they're going to live.

18 A. (Witness Lewis) They could live in the  
19 Tooele Valley. They could live near Salt Lake.

20 Q. So how long would you expect it would take  
21 for firefighters -- the fire brigade to assemble and get  
22 back to the PFS site in off-normal hours?

23 A. (Witness Lewis) We've stated that it  
24 would take approximately 90 minutes. It would probably  
25 take less than that, but for conservatism, we've used 90

1 minutes.

2 Q. Haven't you also testified that you have  
3 only seen the PFS site from Interstate 80?

4 A. (Witness Lewis) Yes.

5 JUDGE BOLLWERK: We're coming up on  
6 one o'clock, and I probably need to take a break.

7 MS. CHANCELLOR: That was the last question,  
8 Your Honor.

9 JUDGE BOLLWERK: All right. Why don't we go  
10 ahead here and take our lunch break I think until two,  
11 and we'll then resume when we come back with the  
12 cross-examination.

13 [Lunch recess was taken.]

14 JUDGE BOLLWERK: Why don't we go back on the  
15 record, then. We're back for our afternoon session  
16 after a lunch break. And I have the applicant's panel  
17 on Contention R, and I think we're ready for the staff  
18 cross-examination.

19 MR. TURK: Thank you. For the record, let me  
20 note for the record that I've distributed a copy of my  
21 cross-examination plan to the licensing board members.

22 CROSS-EXAMINATION

23 BY MR. TURK:

24 A. Good afternoon, gentleman. My name is Sherwin  
25 Turk. I'm an attorney with the NRC staff, and I'd like

1 to ask you some questions about your testimony.

2 Your Honor, some of these questions will be  
3 following the cross-examination plan and some will be in  
4 furtherance of testimony that was elicited earlier today  
5 by the state. Those questions won't appear on the  
6 cross-examination plan.

7 Gentlemen, the first thing I wanted to get at  
8 is the analysis for the hazard posed by the diesel fuel  
9 spill from locomotives. In your oral testimony today  
10 I've heard mention of a 4,000-horsepower locomotive and  
11 7,000 gallons of diesel fuel, but when I read your  
12 testimony I see reference to the SAR, which contained an  
13 analysis of 6,400 gallons. Can you explain that  
14 discrepancy, please?

15 A. (Witness Lewis) Yes. It's just a matter of  
16 how many numbers I'm trying to remember. It should have  
17 been 3,200 rather than 3,500. So what is in the SAR  
18 Chapter 9 is correct, or Chapter 8 is correct.

19 Q. So the proper analysis is the 6,400 gallon  
20 spill which was analyzed in the SAR?

21 A. (Witness Lewis) Correct.

22 Q. The locomotives you mentioned in the SAR, I  
23 recall that there was mention of 3,000 horsepower  
24 locomotives. Is that the locomotive that PFS was using,  
25 or are you talking about 4,000 horsepower?

1           A.   (Witness Lewis) No, 3,000 is correct. Again,  
2 not remembering all the numbers.

3           Q.   In your testimony you mentioned that PFS has  
4 now determined it will have two 100,000-gallon water  
5 tanks on site for dealing with fire suppression, and yet  
6 previously you had indicated to the staff that there  
7 would be two 200,000-gallon tanks. Do you know whether  
8 the staff has evaluated the adequacy of your now having  
9 two 100,000-gallon tanks?

10          A.   (Witness Lewis) Yes. I talked to the staff  
11 the other day, and they have also come up with the  
12 numbers showing that a 100,000-gallon tank would be  
13 adequate.

14          Q.   In your testimony you mentioned a minimum  
15 requirement of 63,000 gallons of water. Do you know  
16 whether the staff has accepted that number as being the  
17 proper minimum requirement, or have they indicated that  
18 there is some other number the staff thinks is the  
19 appropriate minimum requirement?

20          A.   (Witness Lewis) I'm not sure if the staff has  
21 accepted that number or not. I know that there were  
22 some questions regarding that number.

23          Q.   Questions from the staff?

24          A.   (Witness Lewis) Correct.

25          Q.   I know also that both of you are engineers.

1 Neither one of you indicates in your resume that you're  
2 an emergency planning specialist. Is that correct?

3 A. (Witness Lewis) That's correct.

4 A. (Witness Dungan) That's correct.

5 Q. In your testimony today I believe over  
6 objection you were allowed to answer questions as to  
7 whether the emergency plan is intended to deal with both  
8 radiological and non-radiological hazards. Do you  
9 recall that question and answer?

10 A. (Witness Lewis) Yes, I do.

11 Q. Are you familiar with the NRC emergency  
12 planning requirements contained in 10 C.F.R. part 72?

13 A. (Witness Lewis) Somewhat, yes.

14 Q. When you gave your answer, did you have in  
15 mind any of the NRC requirements in 10 C.F.R. Part 72?

16 A. (Witness Lewis) Yes, but not exclusive of  
17 that.

18 Q. Is it fair to say in any event that if the NRC  
19 requirements for emergency preparedness are to address  
20 accidents that have a potential for radiological release  
21 that you would accept that as the purpose of an  
22 emergency plan for NRC licensing requirements?

23 A. (Witness Lewis) Would you repeat that question  
24 again?

25 Q. Yes. Let me see if I can rephrase it. In

1 10 C.F.R. Section 72.32, there is an indication in  
2 subsection (a)(2) that an applicant for a license is  
3 required to identify each type of radiological -- I'm  
4 sorry -- each type of radioactive materials accident.  
5 Are you familiar with that requirement?

6 A. (Witness Lewis) Yes, I am.

7 Q. I see nothing in the regulations that would  
8 require an applicant to address accidents that do not  
9 involve radioactive materials. Are you aware of  
10 anything that I'm not aware of?

11 A. (Witness Lewis) No.

12 Q. To what extent has PFS developed at this time  
13 its training program for the fire brigade?

14 A. (Witness Lewis) I believe only to the extent  
15 that we have committed to training them in accordance  
16 with NFPA 600.

17 Q. And that is a commitment that PFS has made?

18 A. Yes, it is.

19 Q. Has PFS considered whether some other NFPA  
20 requirement or standard such as NFPA 1500 could apply to  
21 a facility?

22 A. We have concluded that it does not apply to  
23 our facility.

24 Q. And on what basis did PFS reach that  
25 conclusion?

1           A.   (Witness Dungan) In the introduction and now  
2 the appendix of NFPA 600 and also in the scope of NFPA  
3 1500, it clearly points out that NFPA 600 is the  
4 standard that is for industrial fire brigades, and NFPA  
5 1500 clearly states it is not going to cover industrial  
6 fire brigades or industrial fire departments that fall  
7 under or commit to NFPA 600.

8           Q.   Has PFS developed at this point its emergency  
9 plan implementing procedures, the procedures for the  
10 fire brigade?

11          A.   (Witness Lewis) No, we have not.

12          Q.   When would you expect those procedures to be  
13 developed?

14          A.   (Witness Lewis) Sometime between now and  
15 operations.

16          Q.   That is not something that you would submit  
17 necessarily before licensing?

18          A.   (Witness Lewis) No.

19          Q.   And would those procedures include matters  
20 such as what the operating staff would do in the event  
21 of a fire so that they would then assume the fire  
22 brigade duties?

23          A.   (Witness Lewis) Yes, they would.

24               MR. TURK: I have nothing further, your Honor.

25               JUDGE BOLLWERK: All right. Mr. Blake, do you



1 have any redirect?

2 MR. BLAKE: I do.

3 JUDGE BOLLWERK: All right.

4 REDIRECT EXAMINATION

5 BY MR. BLAKE:

6 Q. Earlier you were asked in the course of the  
7 cross-examination by the state of a six-inch height  
8 differential. What height differential were you  
9 referring to when you answered the question?

10 A. (Witness Lewis) Six inch-height in regards  
11 to --

12 Q. It had to do with the tracks, the railroad  
13 tracks. It was in that examination by Ms. Chancellor.  
14 Do you remember referring to a six-inch height or being  
15 asked about it?

16 A. (Witness Lewis) Yeah. The six-inch height I  
17 was referring to would have been from the top of the  
18 rail to the gravel underneath the rail, since the rail  
19 height is six inches.

20 Q. You were also asked about the potential effect  
21 of the rail cars hitting the stops which were physically  
22 clamped to the rail line. Do you recall that --

23 A. (Witness Lewis) Yes, I do.

24 Q. -- testimony? You referred at that point to  
25 the fact that when those stops were hit, the cars might

1     derail.

2           A.     (Witness Lewis) Uh-huh.

3           Q.     Can you describe what you meant by derailment  
4     there, how it might occur, what the effect actually  
5     would be?

6           A.     (Witness Lewis) Well, as the car would be  
7     moving into the building, it would be going in at a  
8     fairly slow speed, two miles an hour or less. And if  
9     they hit the rail stop and didn't stop, you know, if the  
10    locomotive was still pushing it, it could -- you have  
11    like your car with the shipping cask on it with the rail  
12    stops, and then you have a spacer car and then you have  
13    a locomotive. What would most likely happen is when it  
14    hit the stop and we kept going, somewhere in there  
15    you're going to push one of the cars off of the track,  
16    most likely between the spacer car and the cask car.

17          Q.     And how would you recover from that? Would  
18    you use -- initially call for a mobile crane as the  
19    questioner had suggested earlier, or would there be  
20    other methods of recovery?

21          A.     (Witness Lewis) Well, the building itself  
22    actually has two cranes -- well, one crane in that  
23    particular area that you could actually use to assist  
24    moving the cask car back onto the tracks. But here's  
25    the sequence that we would follow. First thing we would

1 want to do is we would want to get the shipping cask off  
2 of the car, so we would use our crane to pick that  
3 shipping cask off and just get it out of the way. And  
4 then, depending on where the derailment occurred, if it  
5 was in the area where we could access it with the  
6 building crane, we'd use the building crane. If it was  
7 an area beyond where the crane accessed, then we would  
8 bring in, as I said, like one of these mobile cranes  
9 like a small cherry picker style unit that could come in  
10 and pick up a few tons and move the car back onto the  
11 tracks.

12 Q. At the time any mobile crane were brought in  
13 to participate in this recovery operation, would there  
14 be a cask in the area or any threat to any of the spent  
15 fuel?

16 A. (Witness Lewis) We would move the shipping  
17 cask off of the car before we brought in any kind of  
18 mobile crane.

19 Q. There were a number of questions of you with  
20 regard to the numbers of personnel to be used at the  
21 facility -- numbers that would be used in the fire  
22 brigade setting, numbers that would be used to drive a  
23 fire truck if that were necessary. How many members  
24 would be minimum on the fire brigade?

25 A. (Witness Lewis) We'd have to have at least

1 five members on the fire brigade.

2 Q. And how many would be minimal -- what minimum  
3 number would be trained of PFS employees to be fire  
4 brigade participants?

5 A. (Witness Lewis) As I pointed out in our  
6 revision to the emergency plan, we'd have at least 11  
7 people trained to be on the fire brigade.

8 Q. So there would be at least 11 of the PFS  
9 employees would be trained as fire brigade potential  
10 members? At any point in time you'd have a minimum of  
11 five brigade members available?

12 A. (Witness Lewis) Correct.

13 Q. Now, how many of those fire brigade members  
14 would be trained to operate a fire truck if it were  
15 there on scene?

16 A. (Witness Lewis) I believe we've said that all  
17 of them would be trained to operate the fire truck of  
18 the brigade unit.

19 Q. And how many of the brigade members would be  
20 capable of driving the fire truck to get it to the  
21 scene?

22 A. (Witness Lewis) All of them.

23 Q. And how many in addition to the minimum 11  
24 fire brigade members would be available to drive the  
25 truck there if the fire brigade members were otherwise

1 occupied?

2 A. (Witness Lewis) In addition to the fire  
3 brigade members?

4 Q. Yes.

5 A. (Witness Lewis) That were not trained as fire  
6 brigade members?

7 Q. Correct.

8 A. (Witness Lewis) Other personnel on site who  
9 have been trained to and have a heavy haul or a heavy  
10 operator's license.

11 Q. And were those the operations maintenance  
12 people potentially who otherwise hadn't been trained  
13 already as fire brigade members?

14 A. (Witness Lewis) Repeat that again, please.

15 Q. Would those be the operations maintenance  
16 individuals, operators who you were referring to earlier  
17 who might not be trained as fire brigade members?

18 A. (Witness Lewis) Yeah.

19 Q. Will the fact that PFS employees who are fire  
20 brigade members or potential fire brigade members also  
21 have other primary duties, will that interfere with  
22 their ability to participate as fire brigade members in  
23 the event of a fire?

24 A. (Witness Lewis) No.

25 Q. And why do you say that?

1           A.   (Witness Lewis) Well, let's take, for example,  
2   the transfer operation that I mentioned earlier that  
3   would take four hours. That process -- throughout that  
4   process it's not like all of the people working on it  
5   are doing things at the same time. You have a person  
6   who is moving the transfer cask with the crane for a  
7   period of time. Some of those persons are radiation  
8   workers who are just there to ensure that the doses  
9   around the cask are just to survey what the doses are  
10   around the cask. So there would be a number of people  
11   during the transfer operation if there were a fire to  
12   occur who could step out of that situation right then  
13   and go fight the fire without affecting a transfer  
14   that's in place.

15          Q.   (Witness Lewis) You were asked about potential  
16   fires in the canister transfer building, and you were  
17   also asked about fire pump circuitry. Could a fire in  
18   the canister transfer building impact or otherwise  
19   affect fire pump circuitry?

20          A.   (Witness Lewis) No. The fire pumps are  
21   located outside of the restricted area. They would have  
22   a totally separate wiring circuit. It wouldn't even be  
23   related to the canister transfer building.

24          Q.   There were a number of questions about hours  
25   of operation of the PFS facility and hours of working by

1 employees or shift operations. Do you recall referring  
2 to daylight hour operation only?

3 A. (Witness Lewis) I recall referring -- talking  
4 about operations that occurred in daylight.

5 Q. And do you know what the limit -- what leads  
6 to that kind of limitation on operations?

7 A. (Witness Lewis) I think the only limitation I  
8 know of in terms of daylight hours that we've committed  
9 to is just movement between the intermodal transfer  
10 point and the PFS.

11 Q. And is it a fact that you can get two casks  
12 from the ITP down and into the PFS facility during any  
13 one day during daylight hours?

14 A. (Witness Lewis) Yes, we do.

15 Q. And are there limitations on operations within  
16 the PFS facility itself to daylight operations?

17 A. (Witness Lewis) No. I mean, primarily we're  
18 going to operate only in daylight or the day shift time.  
19 But if we needed to, we could work around the clock.

20 Q. And in the event you were to operate around  
21 the clock or work beyond daylight hours, what would be  
22 the requirements for a fire brigade availability?

23 A. (Witness Lewis) Well, if you're doing  
24 operations then you have to have a fire brigade there.  
25 But then again, if you're doing operations, you have the

1 personnel that could do the fire brigade that would be  
2 assigned to the fire brigade.

3 Q. The staff just asked you about whether you had  
4 a training commitment to NFPA 600, and you testified  
5 yes. Has PFS committed to meet NFPA 600 in all  
6 respects?

7 A. Yes, we have.

8 MR. BLAKE: I have no more questions.

9 JUDGE BOLLWERK: Ms. Chancellor, any recross?

10 MS. CHANCELLOR: No, your Honor.

11 JUDGE BOLLWERK: All right, then. I think  
12 that completes these witnesses' testimony, I believe.  
13 Gentlemen, I thank you very much for your time. Oh -- I  
14 forgot. Judge Lam has some questions. Do you have any  
15 questions?

16 JUDGE KLINE: No.

17 JUDGE LAM: Mr. Dungan?

18 THE WITNESS: Yes.

19 JUDGE LAM: If you would go to page 24 of your  
20 testimony. I'd like to ask you a couple questions  
21 related to question 41. In your response you said the  
22 likelihood of an unconfined vapor cloud explosion from  
23 the propane tank is extremely low, and you went on to  
24 give the basis for that statement. Is that correct?

25 MR. DUNGAN: Yes.



1 JUDGE LAM: May I ask you, how low is  
2 extremely low?

3 MR. DUNGAN: I did not do a probabilistic risk  
4 assessment, but in looking at the incident data of  
5 propane releases, they have typically come during  
6 loading and unloading operations. And in recent  
7 hearings at the Department of Transportation, testimony  
8 was put forward by the OP Gas Association that, based on  
9 the number of reported events and the number of transfer  
10 operations, the likelihood of a leak during transfer is  
11 one in 35 million. And I would certainly think that the  
12 catastrophic failure of the tank would be significantly  
13 lower than that.

14 The only catastrophic tank failures that have  
15 been reported have been cargo vessels that have collided  
16 with other vehicles, not just tanks sitting idly  
17 unfueled.

18 JUDGE LAM: The next question is, if that  
19 catastrophe were to occur, what would be the consequence  
20 of it, understanding the tank has a capacity of 20,000  
21 gallon and the separation distance between the tank and  
22 the building, all the storage casks a minimum of 1,800  
23 foot. The question is, what would the consequence be,  
24 or more specifically, what type of pressure weight would  
25 we expect?

1           MR. DUNGAN: We have -- our initial analysis  
2 was catastrophic release of 20,000 gallons ignited at  
3 the tank. And in that particular evaluation it showed  
4 that there would be a pressure wave or an overpressure  
5 of 1 PSI out to about, if I remember correctly, it was  
6 between 14 and 15 hundred feet. So the 1,800 feet was a  
7 conservative number.

8           Subsequent to that the staff had asked, what  
9 if the cloud had delayed ignition. So recently we have  
10 looked at additional scenarios of leaks at the tank,  
11 both liquid phase and gas phase leaks, and also the  
12 catastrophic failure of the tank to determine, one, if  
13 we could get any concentrations in the proximity of the  
14 canister transfer building within the explosive range,  
15 and also if in fact we had ignition of this cloud  
16 delayed and remote from the tank itself. I don't know  
17 what that ignition source would be, since it's open  
18 space, but we have hypothesized that there would be an  
19 ignition source.

20           And we basically have determined that in all  
21 those scenarios, with the possible exception of the  
22 20,000-gallon tank failure, that we will not reach under  
23 worse atmospheric stability conditions the lower  
24 flammable limit at the canister transfer building.

25           And we have also determined that in the cases

1 of a two-inch vapor space leak, a two-inch liquid space  
2 leak, and a 5,000-gallon tank with delayed ignition in  
3 all those conditions we have more than adequate  
4 stand-off separation with that 1,800 feet. However, we  
5 did determine if some unbeknown event caused the 20,000  
6 gallon tank to fail and it did under worse atmospheric  
7 conditions float toward the building, we could reach  
8 lower explosive limit, as I remember, out to as much as  
9 700 meters, and the building is about 549 meters away.

10 We also showed that if we ignited that cloud  
11 that we would probably reach pressures in excess of 1  
12 PSI at the building. Less than 2 PSI but greater than 1  
13 PSI. And I think that -- and I'm really not the one  
14 that makes that decision, but I think based on that  
15 information that the design will be changed to  
16 incorporate multiple tanks rather than one large tank so  
17 that a failure of any single tank will fall within that  
18 envelope.

19 Wayne, do you want to talk about the design?

20 JUDGE LAM: Well, what is the design pressure  
21 of the building?

22 MR. DUNGAN: We basically have said from a --  
23 and again, I probably should have let Wayne answer this.  
24 From the standpoint we've taken the position that if  
25 we're below 1 PSI over pressure that we're going to --

1 that we don't have to evaluate the effects of an  
2 explosion on the building. The building pressures that  
3 have been evaluated have been tornado pressures, which  
4 are different.

5 JUDGE LAM: You answered my question. I do  
6 have another question for Mr. Lewis. Can a canister  
7 stay in the transfer cell outside a shipping cask or a  
8 storage cask for a period of time longer than four  
9 hours?

10 A. (Witness Lewis) You mean when it was in the  
11 transfer cask?

12 Q. No, when it's in the transfer cell.

13 A. (Witness Lewis) Yeah. Okay, let me back up.  
14 The way the process works is the canister is inside the  
15 shipping cask, and we have to keep it shielded at all  
16 times because of the radiation dose. So when we pick it  
17 up we lift it into a transfer cask which is then moved  
18 over on top of the storage cask, and then the canister  
19 is moved down inside the storage cask. Could it stay  
20 inside the transfer cask longer than four hours? Sure.

21 JUDGE LAM: Could it stay outside of any cask  
22 longer than four hours?

23 A. (Witness Lewis) Well, we wouldn't bring it  
24 outside of any cask, ever. It has to always remain  
25 inside of one of the casks due to radiation shielding.

1 JUDGE LAM: Thank you. That's all I needed to  
2 know.

3 JUDGE KLINE: I just want to clarify whether  
4 the second fire truck, the one on the Goshute  
5 reservation, does that play any essential role in the  
6 emergency plan for PSF?

7 A. (Witness Lewis) No. And to some extent, nor  
8 does the one at the PFS.

9 JUDGE KLINE: Okay.

10 A. (Witness Lewis) Understand that we can -- let  
11 me back up. If we didn't have any sprinkler system, we  
12 have contained the fire or put in provisions such that  
13 even if the fire were allowed to burn it would not be a  
14 threat to the integrity of the shipping cask. So we've  
15 added the foam system to aid in that. That should put  
16 the fire out. We'd have hose systems there that would  
17 help us also put the fire out. The fire truck isn't  
18 necessary, but it's just another additional thing that  
19 we can add to help fight fires if we needed to.

20 JUDGE KLINE: So you don't mention it as --  
21 with the intent of meeting any regulatory requirement,  
22 then. Is that correct?

23 A. (Witness Lewis) We do not need it to meet any  
24 regulatory requirements, no.

25 JUDGE KLINE: Okay, thank you.

## 1 RECROSS-EXAMINATION

2 BY MR. TURK:

3 Q. I'd like to ask one follow-up question to  
4 Judge Lam's question, if I may. The discussion you had  
5 with Judge Lam about the potential for a vapor  
6 explosion, you mentioned that you may be changing the  
7 design of the tanks so that you will be using multiple  
8 propane tanks rather than the current design. Has PFS  
9 determined whether in fact it will do so and what the  
10 timing of the submission might be to the NRC with that  
11 kind of information?

12 A. (Witness Lewis) Yes. We have decided because  
13 of the analysis that Kinia's (phonetic) done showing  
14 that an explosion of 20,000 gallons could in fact, based  
15 under those very conservative conditions, could in fact  
16 being a problem. We've decided to break the  
17 20,000-gallon tank into four 5,000-gallon tanks.  
18 Therefore, a rupture of a 5,000 gallon tank would not  
19 harm the transfer building. That information would be  
20 included in the submittal that we plan to issue this  
21 week.

22 MR. TURK: Thank you.

23 JUDGE BOLLWERK: Anyone else have any  
24 follow-up questions based on what the board asked?

25 All right, then. I apologize, Judge Lam. I

1 knew you wanted to make some questions, and then I  
2 forgot.

3 Gentlemen, I thank you for your testimony and  
4 your service to the board, and you're excused. Thank  
5 you very much.

6 MR. BLAKE: It is possible that we would bring  
7 one or the other back as a rebuttal witness, so they're  
8 excused at least subject to that.

9 JUDGE BOLLWERK: You're excused subject to  
10 being recalled. And they will be under oath if they sit  
11 down there again, so yes.

12 All right, I think, then, we're ready for NRC  
13 staff's panel, Mr. Lain and Mr. Sullivan.

14 MR. TURK: Your Honor, I would ask that Paul  
15 Lain and Randy Sullivan please take the witness stand.  
16 And as they're moving things up to the stand, your  
17 Honor, I have some housekeeping matters I'd like to take  
18 care of.

19 JUDGE BOLLWERK: All right.

20 MR. TURK: First, the staff has indicated that  
21 we have one exhibit that we would like to introduce into  
22 the record of the proceeding, and that is Staff Exhibit  
23 A, which is the SER, which the staff issued in December  
24 1999, has reissued in January 2000. And I'd like to  
25 distribute that to the parties and the court reporter at

1 this time and to licensing board members.

2 And while we distribute that exhibit, your  
3 Honor, which I will formally request to be identified  
4 and to be admitted in just a moment, I will also  
5 distribute copies of the prefiled testimony of Mr. Lain  
6 and Mr. Sullivan dated May 15, 2000.

7 For formality, your Honor, I would ask that  
8 Staff Exhibit A be marked for identification and then be  
9 admitted into the record of the proceeding.

10 JUDGE BOLLWERK: All right, let's go ahead and  
11 mark it right now. I'll let the record reflect that  
12 Staff Exhibit A, which is the December 15th, 1999 safety  
13 evaluation report as revised on January 4th, 2000 has  
14 been marked for identification.

15 (Staff Exhibit A was marked  
16 for identification.)

17 JUDGE BOLLWERK: Mr. Lain, if you could raise  
18 your right hand, please. Mr. Sullivan, will you raise  
19 your right hand.

20 PAUL W. LAIN

21 and

22 RANDOLPH L. SULLIVAN

23 were called as witnesses on behalf of the Staff and,  
24 having been first duly sworn, were examined and  
25 testified as follows:



1 JUDGE BOLLWERK: All right, gentlemen, you've  
2 been sworn. Mr. Turk?

3 MR. TURK: Thank you, your Honor.

4 DIRECT EXAMINATION

5 BY MR. TURK:

6 Q. Good afternoon, gentlemen. Mr. Sullivan and  
7 Mr. Lain, I've placed before each of you a copy of a  
8 document entitled NRC staff testimony of Paul W. Lain  
9 and Randolph L. Sullivan concerning contention Utah R,  
10 on-site fire fighting capability, and that document is  
11 dated May 15, 2000.

12 Do you recognize that document, gentlemen?

13 A. (Witness Lain) Yes, sir.

14 A. (Witness Sullivan) Yes, sir.

15 Q. And could you identify it?

16 A. (Witness Lain) The document is our testimony  
17 concerning contention Utah R, on-site fire fighting  
18 capability.

19 Q. And have you prepared that for presentation in  
20 this proceeding?

21 A. (Witness Lain) Yes, sir.

22 A. (Witness Sullivan) Yes.

23 Q. Gentlemen, have you also prepared statements  
24 of your professional qualifications?

25 A. (Witness Lain) Yes, sir.

1           A.   (Witness Sullivan) Yes.

2           Q.   And are your statements of professional  
3 qualifications attached to the document we've just been  
4 discussing, the testimony prepared for submittal in this  
5 proceeding?

6           A.   (Witness Sullivan) Yes, it is.

7           A.   (Witness Lain) Yes, sir.

8           Q.   Do either of you have any corrections,  
9 revisions, additions or deletions you wish to make to  
10 your testimony for your professional qualifications?  
11 And I would ask you each to respond to that  
12 individually, beginning with Mr. Lain.

13          A.   (Witness Lain) Yes, sir, I do. Beginning page  
14 1, our offices recently reorganized, so on line 3 cross  
15 out "licensing and international safeguards branch" and  
16 replace with "fuel cycle licensing branch." On page 8,  
17 line 11, it talks about the locomotive that moves the  
18 shipping casks. It should be locomotives, that is,  
19 plural.

20          Q.   Locomotives that move?

21          A.   (Witness Lain) Yes, sir, locomotives that move  
22 the shipping casks. Add an S to motives.

23          Q.   And strike an S from moves?

24          A.   (Witness Lain) Yes, sir. On page 13, line 6  
25 and 7, the line, the sentence that says "PFS has

1     calculated this demand and has specified," after the  
2     word "specified" put "in its testimony." "That two,"  
3     and then in front of the word "two" -- or replace  
4     200,000 gallons, put 100,000 gallons.

5             Q.     So strike the word --

6             A.     (Witness Lain) 200,000 and put in 100,000.

7             Q.     So the sentence would read, "PFS has  
8     calculated this demand and has specified in its  
9     testimony that two 100,000-gallon water tanks will be  
10    provided"?

11            A.     (Witness Lain) Yes, sir.

12            Q.     "In primary and secondary water supply?

13            A.     (Witness Lain) Yes, sir.

14            Q.     Okay.

15            A.     (Witness Lain) On page 14, second paragraph,  
16    line 3, which will read, "The applicant had indicated  
17    that the security staff will be trained to handle an  
18    initial response during minimal staffing periods,"  
19    instead of a period put comma, "although I understand  
20    that this provision may be deleted in the future."

21                   JUDGE BOLLWERK: Shall we read that one more  
22    time?

23            Q.     If we go up to the second line of that first  
24    full paragraph after the semicolon, it reads, "In  
25    addition, the," insert the words "applicant had

1 indicated that the," and the line continues as it was in  
2 the original prefiled version, "security staff will be  
3 trained to handle an initial response during minimal  
4 staffing periods." After that line take out the period,  
5 insert a comma, and insert after that the words  
6 "although I understand that this provision may be  
7 deleted in the future." That's correct, Mr. Lain?

8 A. (Witness Lain) Yes, sir.

9 JUDGE BOLLWERK: So the sentence now reads,  
10 "The Applicant's Emergency Plan (EP) indicates that a  
11 five- member fire brigade will be available during the  
12 normal 40-hour week and on-call after hours; in  
13 addition, the applicant had indicated that the security  
14 staff will be trained to handle an initial response  
15 during minimal staffing periods, although I understand  
16 that this provision may be deleted in the future."

17 MR. LAIN: Yes, sir.

18 JUDGE BOLLWERK: Okay.

19 Q. (BY MR. TURK) And do you have a change to make  
20 to your professional qualifications statement as well?

21 A. (Witness Lain) Yes, sir. Fourth line up from  
22 the bottom, after it says "Nuclear Materials Safety and  
23 Safeguards," strike out "in the Licensing and  
24 International Safeguards Branch" and add in "in the  
25 Division of Fuel Cycle Safety and Safeguards."

1           Q.       Mr. Lain, do you have any other corrections  
2 or revisions to your testimony aside from those that you  
3 mentioned?

4           A.       (Witness Lain) No, sir.

5           Q.       Mr. Sullivan, do you have any corrections,  
6 additions, deletions or revisions to your testimony or  
7 professional qualification statements?

8           A.       (Witness Sullivan) No, I do not.

9           Q.       (BY MR. TURK) Gentlemen, with the corrections  
10 and revisions that we've heard from Mr. Lain, is your  
11 written testimony and your attached statements of  
12 professional qualifications true and correct, to the  
13 best of your information and belief?

14          A.       (Witness Lain) Yes, sir.

15          A.       (Witness Sullivan) Yes, they are.

16          Q.       And do you adopt your written testimony as has  
17 now been revised as your sworn testimony in this  
18 proceeding?

19          A.       (Witness Lain) Yes, sir.

20          A.       (Witness Sullivan) Yes, sir.

21               MR. TURK: Your Honor, the staff has completed  
22 its examination of Mr. Lain and Mr. Sullivan, and they  
23 are available for questioning by the parties and the  
24 licensing board.

25               JUDGE BOLLWERK: All right. And the record

1 should reflect that the testimony will be bound in as if  
2 read.

3 [Whereupon, the direct written  
4 testimonies of Messrs. Lain and Sullivan  
5 were inserted into the record.]  
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May 15, 2000

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

PRIVATE FUEL STORAGE, L.L.C.

(Independent Spent  
Fuel Storage Installation)

)  
)  
)  
)  
)

Docket No. 72-22-ISFSI

NRC STAFF TESTIMONY OF PAUL W. LAIN  
AND RANDOLPH L. SULLIVAN  
CONCERNING CONTENTION UTAH R  
(ONSITE FIRE FIGHTING CAPABILITY)

Q1. Please state your names, occupations, and by whom you are employed.

A1(a). My name is Paul W. Lain (PWL). I am employed as a Fire Protection Engineer in the Fuel Cycle Licensing Branch, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission (NRC), in Washington, D.C. A statement of my professional qualifications is attached hereto.

A1(b). My name is Randolph L. Sullivan (RLS). I am employed as an Emergency Preparedness Specialist in the Operator Licensing, Human Performance, and Plant Support Branch, Division of Inspection Program Management, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission (NRC), in Washington, D.C. A statement of my professional qualifications is attached hereto.

Q2. Please describe your current responsibilities.

A2(a). (PWL) I currently conduct fire safety reviews for fuel cycle facilities licensed by the NRC, and also perform various project management duties for the NRC in connection with its regulation and oversight of nuclear fuel cycle facilities.

A2(b). (RLS) I develop, review and revise emergency preparedness inspection procedures and programs. I review and evaluate nuclear facility Emergency Plans and revisions to those plans to ensure regulatory compliance, and to ensure that the Emergency Plans can be implemented in a manner that protects the public health and safety in the event of an emergency.

Q3. Please explain what your duties have been in connection with the NRC Staff's review of Private Fuel Storage, L.L.C.'s (PFS or the Applicant) application to construct and operate an Independent Spent Fuel Storage Installation (ISFSI) on the reservation of the Skull Valley Band of Goshute Indians.

A3(a). (PWL) As part of my official responsibilities, I reviewed the Applicant's Safety Analysis Report (SAR) and Emergency Plan (EP), pertaining to the Applicant's fire protection equipment and firefighting capabilities, as well as its responses to the NRC Staff's Requests for Additional Information (RAIs). In addition, I was principally responsible for preparing the NRC Staff's Statement of Position on Contention Utah R, dated December 15, 1999; and I participated in preparing the NRC Staff's response to the Applicant's motion for partial summary disposition of Contention Utah R, filed on July 28, 1999.

A3(b). (RLS) As part of my official responsibilities, I reviewed the Applicant's Emergency Plan and prepared Chapter 16 ("Emergency Plan") of the NRC Staff's Safety Evaluation Report (SER) for the PFS facility, which was issued on December 15, 1999 (revised and reissued on January 4, 2000). In addition, I assisted in preparing the NRC Staff's response to the Applicant's motion for partial summary disposition of Contention Utah R, which the Staff filed on July 28, 1999.



Q4. What is the purpose of this testimony?

A4. The purpose of this testimony is to provide the NRC Staff's views concerning Utah Contention R, involving (a) the Applicant's systems and ability to fight fires onsite, and (b) the adequacy of the Applicant's planning for fighting fires, as set forth in its Emergency Plan. Accordingly, this testimony provides an evaluation of fire protection safety at the PFS facility, and an evaluation of the Applicant's emergency planning with respect to fires.

Q5. Are you familiar with Utah Contention R?

A5. Yes. Utah Contention R states as follows:

The Applicant has not provided reasonable assurance that the public health and safety will be adequately protected in the event of an emergency at the storage site [or the transfer facility]<sup>1</sup> in that: . . . PFS has not adequately described the means and equipment for mitigation of accidents because it does not have adequate support capability to fight fires onsite.

The State, in the contention's basis section, further asserted that PFS had not described the means and equipment needed for mitigating the consequences of fires, contrary to 10 C.F.R. § 72.32(a)(5) and Regulatory Guide (Reg. Guide) 3.67, § 5.3. In particular, the State asserted that (a) the EP "does not state whether sufficient water is available to fight a fire of any consequence"; (b) the EP does not describe the program for maintaining any equipment"; and (c) while the SAR indicates that PFS will obtain water for fighting fires from surface storage tanks, the tanks' water capacity requires evaluation.

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<sup>1</sup> The "transfer facility" is not addressed in this testimony, inasmuch as the Licensing Board has dismissed all portions of the contention that relate to the Rowley Junction Intermodal Transfer Point. See *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-99-39, 50 NRC 232, 233, 236 (1999).

**Fire Safety**

Q6. Please identify the Commission's requirements related to fire safety at an away-from-reactor ISFSI.

A6. (PWL) The Commission has established minimum general design criteria (GDC) applicable to the design, fabrication, construction, testing, maintenance and performance of structures, systems, and components important to safety (SSCs) at an ISFSI, as set forth in 10 C.F.R. § 72.120 *et seq.* In particular, with respect to fire hazards the regulations provide as follows:

**§ 72.122 Overall requirements.**

(b) Protection against environmental conditions and natural phenomena. (1) Structures, systems, and components important to safety must be designed to accommodate the effects of, and to be compatible with, site characteristics and environmental conditions associated with normal operation, maintenance, and testing of the ISFSI . . . and to withstand postulated accidents.

(c) Protection against fires and explosions. Structures, systems, and components important to safety must be designed and located so that they can continue to perform their safety functions effectively under credible fire and explosion exposure conditions. Noncombustible and heat-resistant materials must be used wherever practical throughout the ISFSI or MRS, particularly in locations vital to the control of radioactive materials and to the maintenance of safety control functions. Explosion and fire detection, alarm, and suppression systems shall be designed and provided with sufficient capacity and capability to minimize the adverse effects of fires and explosions on structures, systems, and components important to safety. The design of the ISFSI or MRS must include provisions to protect against adverse effects that might result from either the operation or the failure of the fire suppression system.

(g) Emergency capability. Structures, systems, and components important to safety must be designed for emergencies. The design must provide for accessibility to the equipment of onsite and available offsite emergency facilities and services such as hospitals, fire and police departments, ambulance service, and other emergency agencies.

Regulatory guidance concerning these requirements has been provided in the Standard Review Plan for Spent Fuel Dry Storage Facilities, NUREG-1567.

Q7. With respect to fire safety, do you agree with the State of Utah's contention that the Applicant has not adequately described the means and equipment for mitigation of accidents because it does not have adequate support capability to fight fires onsite?

A7. (PWL) No.

Q8. Please explain the basis for your conclusion in this regard.

A8. (PWL) I have reviewed the Applicant's description of the facility's general layout; its building design; shipping, storage, and transfer cask designs; fire protection systems; water supply; credible fire scenarios; and fire fighting capability and equipment, as set forth in the Applicant's Safety Analysis Report (SAR), Emergency Plan (EP), and responses to Staff Requests for Additional Information (RAIs). On the basis of my review, I have determined that the Applicant's description of its means and equipment to fight fires onsite is adequate to protect the health and safety of workers and the public.

Q9. From a fire safety standpoint, please describe the general layout of the proposed PFS facility.

A9. (PWL) The PFS facility has three main areas within the Restricted Area (RA): (1) the storage pads, (2) the Canister Transfer Building (CTB), and (3) the Safety and Health Physics Building (S&HPB). The storage pads are where the loaded storage casks will be placed for long term storage and are relatively isolated in the northwest portion of

the RA. The RA will be covered with compacted gravel and the area will be void of any significant combustibles. A minimum 200 ft fire break will be provided between any vegetation and the nearest storage pad. The rail line is reported to be 110 ft away from the storage pads, the CTB a distance of 425 ft, the diesel fuel tank is 700 ft, and the nearest propane tank will be 1800 ft away.

The CTB has three "fire areas": The office/equipment rooms, the low level waste storage room, and the operations area. The office/equipment rooms are separated from the radiological areas by a one hour fire barrier. In the low level waste storage room, contaminated combustibles are stored in metal barrels and the room is segregated from the other areas by a one hour fire barrier. The operations area contains three main bays: the cask transporter bay, the transfer cell/crane bay, and the cask load/unload bay. The cask transporter bay is where the cask transporter moves storage casks in and out of the canister transfer cells and is separated from the transfer cells by a two hour fire barrier. The crane bay is 90 ft high and contains three canister transfer cells. The cells are separated from each other and the load/unload bay by 30 ft high concrete walls. The cells have no ceiling, thereby allowing the gantry crane to perform canister transfer operations. The crane bay has a bridge crane for moving the shipping casks to and from the load/unload bay to the transfer cells.

The cask load/unload bay is used to load/unload shipping casks from rail cars or the heavy haul vehicle and has three sections: the crane bay and two low bays. The crane bay is an extension of the transfer cell/crane bay and is separated by a 1 inch threshold to help prevent diesel fuel spills from spreading into the transfer cell bays. The low bays are attached to opposite sides of the crane bay with 22 ft high doorways and 30 ft high

ceilings. These low bays provide shelter for the heavy haul vehicle and rail car during load/unload operations.

The S&HPB is the control point for the RA. It houses the central monitoring alarm station, fire brigade equipment, and the emergency diesel generator. The S&HPB is the central point for dispatching the fire brigade.

Q10. Please identify any significant combustible sources that will be located at the facility, and discuss the adequacy of the containers in which those materials will be stored.

A10. (PWL) Diesel fuel is the significant combustible fuel source within the RA. Significant quantities of diesel fuel within the RA will be located in: (1) a storage tank, (2) the generator day tank, (3) the cask transporter vehicle, (4) the heavy haul vehicle, and (5) two locomotives. The storage tank is located inside the RA, 200 ft from the CTB and 700 ft from the storage pads. The diesel storage tank will be on a concrete pad, will be double walled and will hold 1000 gallons of diesel fuel for refueling the cask transporter and the emergency generator (in contrast, the locomotive and heavy haul vehicle will be refueled outside the RA). The diesel storage tank will be installed in accordance with NFPA 30, "Flammable and Combustible Liquids Code," UL-142, "Above Ground Tanks for Flammable and Combustible Liquids," and UL-2085, "Insulated Secondary Containment for Aboveground Storage Tanks, Protected." UL-2085 requires the tank to meet a two hour liquid pool fire test, vehicle impact, and projectile resistance criteria. The location and fire protection design of the diesel fuel storage tank are adequate to protect against a fire which could affect the containment of radiological material.

The diesel generator day tank will hold 350 gallons and will be located in the S&HPB. The fuel supply is sized to provide continuous 24 hour generator operation. The

fuel tank will be a dual wall sub-based tank in accordance with NFPA 37, "Installation and Use of Stationary Combustion Engines and Gas Turbines."

An automatic sprinkler system will be provided to protect against a fire in the diesel generator room and one hour fire rated barriers will segregate the room from the rest of the building. The location, fire protection, and design of the diesel generator day tank provide adequate assurance that the fire hazard posed by this tank will not affect the containment of radiological material.

The cask transporter holds 50 gallons of fuel and moves the storage casks between the CTB and the storage pads. The heavy haul vehicle holds 300 gallons of fuel in two saddle tanks and moves the shipping casks between the intermodal transfer point and the CTB. The locomotive that moves the shipping casks between the main rail line and the CTB holds 6400 gallons of fuel, and the switching locomotive that moves rail cars within the RA holds 1100 gallons of diesel fuel.

Q11. Please provide the basis for your view that the Applicant's building design is adequate from a fire safety perspective.

A11. (PWL) Under the ISFSI general design criteria in 10 C.F.R. § 72.122(c), non-combustible and heat-resistant materials must be used wherever practical throughout the ISFSI. The Applicant's SAR describes the CTB design. The material of construction is concrete, which meets the non-combustible criteria and can withstand the effect of large fires for long periods of time. The size of the facility is also beneficial, in that the heat from a fire would dissipate in the high bay, allowing more time before the building becomes untenable for workers to egress and emergency response personnel to suppress the fire. The segregation of the transfer cells with concrete walls is beneficial because it shields the transfer operation from a fire in the load/unload bay. The cask transporter will also be

segregated from the transfer cells during transfer operations with a two-hour fire rated barrier.

In addition, the facility is designed to control the spilling of fuel from transportation vehicles. The SAR discusses the drainage design of the CTB in detail. The floor in the cask transport bay will be sloped to prohibit fuel from entering the transfer cell from a cask transporter spill. A one inch threshold is provided between the transport bay and the load/unload bay and the load/unload bay floors will be sloped to divert a heavy haul vehicle fuel spill away from transfer cells and shipping casks into two large sumps, one in each low bay. Each sump's capacity will hold the fuel load from the heavy haul vehicle (300 gallons) and 30 minutes of flow from the foam water deluge system.

**Q12** What are the structures, systems and components important to safety (SSCs) at the PFS facility, and where will the SSCs be located?

**A12.** (PWL) PFS has designated the spent fuel canister, storage cask, storage pads, transfer cask, associated lifting devices, bridge crane, semi-gantry crane, canister transfer building, and seismic support struts as SSCs. The cranes, lifting devices, support struts, and transfer casks will be located within the CTB. The storage pads are located within the northwest portion of the RA.

**Q13.** Please explain how the Applicant's description of cask construction provides a basis for your conclusion that the Applicant's description of its means and equipment to fight fires onsite is adequate?

**A13.** (PWL) Regarding the storage cask, NUREG-1567 provides that "[t]he reviewer should verify that the fire conditions of the worst case, credible site fire do not exceed the fire assumptions made in the fire analysis of the cask." In other words, the storage casks, at a minimum, should be able to withstand the thermal exposure from the

available fuel present. The PFS facility SAR and cask TSAR demonstrate that the HI-STORM storage cask exceeds this guidance standard.

The HI-STORM storage cask was evaluated under a thermal threat of a 200 gallon diesel fuel fire for 15 minutes. The evaluation showed that only a few inches of the heavy concrete structure is affected and the canister is maintained within accepted thermal limits. The bounding threat to the HI-STORM storage cask is the cask transporter fire, which is 50 gallons of diesel fuel that is expected to burn less than five minutes.

The canister transfer cask is protected by lead shielding and a water jacket. The lead and water act like a heat sink, slowing the thermal insult on the canister during a fire. The bounding fire threat to a loaded transfer cask is a fire in the load/unload bay. The PFS SAR discussed an analysis of the transfer cask during an unmitigated bounding fire and concluded the calculated maximum temperatures around a loaded transfer cask poses no threat to the structural integrity of the steel canister or transfer cask. The short term temperature limits for the transfer cask and canister shell is 700°F and 775°F, respectfully. The calculated temperatures from the unmitigated bounding fire were below these short term limits.

Based on its review of these matters, the Staff has concluded that the maximum credible (i.e., the bounding) fire scenario does not present a threat to the integrity or performance of the HI-STORM storage cask, transfer cask, or steel canister.

Q14. Please explain how the Applicant's description of credible fire scenarios provides a basis for your acceptability finding?

A14. (PWL) The Applicant's SAR reviews the bounding credible fire scenarios, which involve the cask transport vehicle, the heavy haul vehicle, and the locomotive. The cask transporter moves the storage casks in and out of the transfer cells and out to the



storage pad. The fuel loading on the cask transporter is 50 gallons of diesel fuel. Two fire scenarios were evaluated: one at the storage pad, and another in the transfer cell. In both cases, the fire insult was bounded by the Holtec TSAR thermal evaluation of a 15 minute fire involving 200 gallons of diesel fuel.

The Applicant's SAR postulates a heavy haul vehicle fire (300 gallons of diesel fuel) in the load/unload bay. The SAR evaluates this scenario with additional fuel loading (tires from the heavy haul vehicle) and utilizes computer analysis to calculate the fire plume temperature in the lower bay and the average upper layer temperature in the transfer bay. The plume temperature analysis showed that the facility's concrete structure can withstand this fire without collapse and the upper layer temperature in the transfer bay would not affect a loaded transfer cask. Upper layer temperatures were half of those needed to cause flashover of the facility's contents (flashover occurs when the upper layer temperature is high enough to cause most of the combustibles within the fire area to auto-ignite). This analysis was conservative since it did not take into effect the benefits of the smoke removal system, load/unload bay drainage, foam-water deluge, and manual efforts to mitigate the fire before these temperatures are reached.

The Applicant's SAR also evaluates a 6400 gallon locomotive diesel spill and its effects on storage casks located on the storage pads. The storage pads are located no closer than 110 feet from the rail line. PFS calculated the heat flux from three different size pool fires and the effects on the storage casks. PFS determined that the fire would produce less heat flux on the storage casks than the cask transporter fire and therefore, this scenario was bounded.

PFS has committed to prohibit the locomotive from entering the CTB, and the SAR discusses the strategy. The locomotive will push a loaded rail car into the CTB, and will pull

the empty car out of the CTB after it is unloaded. PFS will place a 66 ft spacer car between the locomotive and the rail car in moving the rail car into and out of the CTB. In addition, physical stops will be mounted on the rails to assure the locomotive does not enter the building. These measures provide adequate assurance that the locomotive will not enter the CTB.

Q15. Please explain the basis for your conclusion as it relates to the Applicant's description of its fire protection systems?

A15. (PWL) Under the ISFSI general design criteria in 10 C.F.R. § 72.122(c), fire detection, alarm, and suppression systems will be designed and provided with sufficient capacity and capability to minimize the adverse effects of fires on structures, systems, and components (SSCs) important to safety. The Applicant's SAR discusses the use of a foam-water deluge system in the load/unload bay. The foam-water deluge provides superior suppression of Class B fires (applicable here), around the heavy haul vehicle. Fire hoses and portable extinguishers will be provided for quick deployment. Hydrants will be located near buildings to support manual fire suppression from the fire trucks. Two fire pumps, one electric and one diesel, and two water tanks are provided for redundancy.

The Applicant's SAR also describes the smoke detection, fire alarms, and a smoke removal system for the CTB. In accordance with NFPA 72, smoke detection will be provided for early warning to the building occupants. The fire alarm annunciates within the building and at a central alarm panel in the Security and Health Physics Building for continuous 24 hour a day monitoring. Smoke removal is provided by the building's exhaust ventilation fans and should reduce the smoke level and upper layer temperature of the transfer bay during a fire. These systems provide adequate mitigation of the CTB fire risk to reduce the impact on SSCs.

Q16. Please explain the basis for your conclusion as it relates to the Applicant's description of the water supply.

A16. (PWL) PFS plans to construct a water system to provide water for the fixed fire suppression systems, hose lines, and hydrants. The capacity of the primary tank meets NFPA requirement to specify the largest fixed fire suppression system demand and hose stream allowances, per NFPA 13. PFS has calculated this demand and has specified that two, <sup>100,000</sup>~~200,000~~ gallon water tanks will be provided for a primary and secondary water supply. <sup>in its testimony</sup> The largest fixed fire suppression system is the foam-water deluge system installed to protect the CTB load/unload bay area; this system should be adequate to suppress the bounding fire scenario for the load/unload bay area, involving the heavy haul vehicle. The primary capacity is also within the norms for an industrial facility. Factory Mutual's Loss Prevention Data Sheet 3-2 ("Water Tanks for Fire Protection") notes that "tanks of 100,000 to 300,000 gal (379 to 1136m<sup>3</sup>) capacity are usually selected for storage purposes." Since NFPA 801 requires an eight hour refill time, PFS plans to provide an equal secondary supply. The Applicant has also stated that it will obtain water from one or more wells drilled on-site, from the reservation's existing supply, or from additional wells drilled on reservation property. The Staff is satisfied with this design and concludes that PFS will have an adequate water supply for fire fighting.

Q17. Please explain the basis for your conclusion as it relates to the Applicant's description of its firefighting capability and equipment?

A17. (PWL) Under the ISFSI general design criteria in 10 C.F.R. § 72.122(g), structures, systems and components important to safety must be designed for emergencies. The design must provide accessibility to onsite and offsite emergency equipment and services such as fire departments. In this regard, standpipes and hose

systems will be provided throughout the CTB, in accordance with NFPA 14, "Standard for the Installation of Standpipes and Hose Systems." In addition, portable extinguishers will be located throughout the facility per industry standards (NFPA 10); the NRC has accepted these industry standards as adequate for facility fire safety. The Applicant's EP indicates that emergency response equipment will be located in the Security and Health Physics Building away from the CTB. One fire truck will be located on-site, one will be located at the Goshute village 3.5 miles away, and additional fire fighting assets will also be available from the Tooele County. This dispersion of assets provides adequate accessibility of fire fighting equipment and gear for use by response personnel in the event of an emergency at the facility.

The Applicant's Emergency Plan (EP) indicates that a five-member fire brigade will be available during the normal 40 hour work week and on-call after hours; in addition, the Applicant had indicated that the security staff will be trained to handle an initial response during minimal staffing periods. <sup>although I understand that this provision may be deleted in the future,</sup> The brigade will receive training and equipment in accordance with industry standards (NFPA 600) and additional training will be provided for fire truck operations. Training to familiarize offsite responders will be offered annually. The Staff considers this description of the Applicant's fire protection training program to be adequate.

Q18. The State has also asserted that the EP does not describe the program for maintaining equipment. Do you agree with this assertion?

A18. (PWL) No. In the EP, the Applicant has committed to have fire fighting equipment and gear stocked, inventoried, and maintained in accordance with NFPA 600. This standard requires equipment to be maintained in accordance with manufacturers' instructions. The Applicant also committed to conduct inventories of emergency response equipment and supplies quarterly and after each use. The Staff concludes that PFS'

commitment to maintain fire fighting equipment in accordance with industry standards is acceptable and will provide adequate maintenance of its fire fighting equipment.

Q19. Please provide your conclusions regarding the adequacy of the Applicant's support capability to fight fires onsite?

A19. (PWL) It is my conclusion that the Applicant's description of its means and equipment to fight fires onsite provides a defense-in-depth approach and is adequate to assure the health and safety of its workers, the public and the environment.

### **Emergency Planning**

Q20. Please describe the NRC's requirements and the generic standards which apply to Emergency Plans for away-from-reactor ISFSIs.

A20. (RLS) Pursuant to 10 C.F.R. § 72.24(k), an application for a Part 72 license must contain a Safety Analysis Report describing the Applicant's plans for coping with emergencies, as required by 10 C.F.R. § 72.32. Pursuant to 10 C.F.R. § 72.32(a), each application for an ISFSI be accompanied by an Emergency Plan that includes specific information, as set forth in 10 C.F.R. § 72.32(a)(1) through (16). These requirements specify the content of Emergency Plans, including:

- Facility description
- Types of accidents and the detection and classification of those accidents
- Mitigation of potential consequences of the identified accidents and the means of restoring the facility to a safe condition
- Assessment of any potential releases associated with the identified accidents
- Responsibilities of licensee personnel to ensure the implementation of the Emergency Plan

- Commitments for the notification of and coordination with offsite response organization and a description of the information to be communicated to those offsite response organizations
- Commitments for the training of emergency response personnel, including the conduct of drills to develop and maintain proficiency
- Arrangements for requesting and effectively using offsite assistance
- Arrangements for providing information to the public
- Commitment to allow offsite response organizations to comment on the initial submittal of the Emergency Plan.

Additionally, NUREG-1567, "Standard Review Plan for Spent Fuel Storage Facilities" (Draft Report, October 1996) provides detailed guidance criteria for use by the Commission in reviewing an ISFSI emergency plan and evaluating the adequacy of an applicant's emergency preparedness program elements.

Q21. Do the Commission's emergency planning regulations contain specific requirements that apply to an applicant's fire fighting capability?

A.21. (RLS) The Commission's emergency planning regulations do not explicitly address fire fighting capabilities. Specification of such capabilities may be necessary, however, if the identified emergency events for a facility involve fire. In such cases, as is the case for the PFS facility, NUREG-1567 indicates that an Emergency Plan must provide the following with regard to fire fighting:

- identify the types of potential accidents, including fires,
- describe how a fire would be detected,
- describe firefighting capabilities,
- describe fire fighting equipment and gear,

- specify emergency response organization interfaces with fire fighting efforts,
- describe training for fire fighting personnel,
- describe arrangements for offsite firefighting support, and
- describe maintenance of fire fighting equipment.

Q22. Please state your view as to whether the information provided in the PFS Emergency Plan is adequate and complies with NRC regulatory requirements and guidance with respect to fire events requiring an emergency response, including the Applicant's fire fighting capability.

A22. (RLS) Based on my review of the Applicant's Emergency Plan, and its provisions relating to an emergency response to a fire event, I am satisfied that the Applicant's Emergency Plan complies with applicable regulatory requirements and guidance, providing reasonable assurance that the public health and safety will be protected in the event of a fire at the PFS facility. The PFS Emergency Plan complies with applicable regulations and guidance with respect to fire fighting capability, in accordance with 10 C.F.R. § 72.32(a) and the detailed criteria set forth in Draft NUREG-1567. The Staff has concluded that the Applicant's Emergency Plan with respect to fire fighting is, therefore, adequate.

With respect to fires, the PFS Emergency Plan indicates that "fires involving a loaded storage or transfer cask that last longer than 15 minutes" would warrant an emergency action level (EAL) of an Alert (EP at 2-12). In Chapter 3 of its Emergency Plan, PFS describes its plans for accident detection, mitigation, and assessment of radiological releases. With respect to the mitigation of accident consequences involving a fire, the Plan states as follows (*Id.* at 3-5 - 3-6):

Fire fighting capability is available onsite, consisting of a fire truck, fire fighting equipment and trained personnel assigned to the fire brigade. Personnel will be evacuated from the affected area and the fire brigade will be mobilized to mitigate the consequences of a fire. A second fire truck, stationed near the PFSF site at the Skull Valley Indian Reservation village, is also available and can rapidly respond to the site to supplement the fire fighting capability at the PFSF. The Tooele County Fire Department will be called to assist in extinguishing fires beyond the capability of the fire brigade.

The Canister Transfer Building is constructed of fire retardant and non-flammable building materials. Administrative controls will restrict combustibles within the building to those necessary for canister transfer operations. However, the diesel fuel in tanks of the heavy-haul transport vehicles will enter the Canister Transfer Building when shipping casks are trucked into and out of the building. Automatic fire detection and suppression capability will be provided in the Canister Transfer Building, in accordance with National Fire Protection Association (NFPA) requirements, to mitigate the effects of a worst case fire and assure a diesel fuel fire is extinguished in a timely manner.

In Chapters 4 and 5 of its Emergency Plan, PFS describes its normal and emergency response organizations, and personnel responsibilities for emergency response -- including duties during normal and off-shift hours; the use of emergency communications equipment; equipment and means for protection of onsite personnel; and emergency response equipment and facilities. With respect to fires, the emergency response equipment includes, *inter alia*, the following:

Automatic fire detection and suppression equipment located in the Canister Transfer Building;

The PFSF onsite fire truck

Personnel protective equipment, including respirators and anti-contamination clothing;



Fire fighting equipment and gear, including self-contained breathing apparatus stocked, inventoried, and maintained in accordance with NFPA 600 . . . .

*Id.* at 5-8. The Emergency Plan further indicates that specialized training will be provided to the emergency response organization, including the following: "Facility Fire Brigade members will receive training as prescribed by NFPA 600. . . . The training will include methods of controlling fires under accident conditions in accordance with Fire Protection Procedures, search and rescue, first aid, and procedures for handling and treating contaminated and injured personnel. Additional training will be provided on operation of the fire trucks." *Id.* at 6-2. In addition, the Emergency Plan indicates that fire drills will be conducted in accordance with Fire Protection Procedures, at least annually. *Id.* at 8-2.

In sum, the Staff has concluded that the Applicant's Emergency Plan satisfies the Commission's emergency planning regulations, and that sufficient information has been provided concerning the Applicant's plans for detecting, assessing, and mitigating the consequences of fires at the facility, based on the sufficiency of the Applicant's plans for responding to a fire event.

Q23. Please describe the manner in which the PFS Emergency Plan complies with the NUREG-1567 guidance with respect to fire fighting capabilities?

A23. (RLS) The following discussion compares the Applicant's Emergency Plan, as it applies to fire fighting capabilities, with the specific Draft NUREG-1567 guidance criteria, and explains the Staff's views as to the manner in which the PFS Emergency Plan complies therewith.

Identify the types of potential accidents, including fires. The Emergency Plan contains a discussion of the areas in which a fire could take place, the potential size and duration of a fire, and the potential impact such a fire.

Describe how a fire would be detected. The Emergency Plan states that fires would be detected by visual observation by site personnel. Additionally, as discussed above, automatic fire detection and suppression equipment is located in some buildings, including the Canister Transfer Building.

Describe firefighting capabilities. As discussed above, the Emergency Plan states that fire fighting capabilities are available onsite and consist of a fire truck, fire fighting equipment and trained personnel. The Fire Brigade will be available onsite during normal work hours, which is appropriate, since that is when spent fuel transfer operations are conducted and the risk of a fire resulting in a radiological release may exist.

Describe fire fighting equipment and gear. The Emergency Plan states that fire fighting gear and equipment will be available on site, including a fire truck. The fire fighting equipment and gear includes personnel protective equipment, including respirators and anti-contamination clothing. The gear, equipment and truck will be in accordance with NFPA 600, "Standard on Industrial Fire Brigades," 1996, National Fire Protection Association.

Specify emergency response organization interfaces with fire fighting efforts. The Emergency Plan states that the fire brigade will interface with the Maintenance/Radiation Protection coordinator, who reports to the Emergency Response Leader.

Describe training for fire fighting personnel. The Emergency Plan states that fire brigade personnel will receive training as prescribed by NFPA 600.

Describe arrangements for offsite firefighting support. The Emergency Plan states that arrangements for support from the Tooele County Fire Department will be made.

Describe maintenance of fire fighting equipment. The Emergency Plan states that fire fighting equipment and gear will be stocked, inventoried and maintained in accordance with NFPA 600.

Based on a review of the Applicant's Emergency Plan, as it relates to fire fighting, the Staff has concluded that the PFS Emergency Plan satisfies the requirements of 10 C.F.R. § 72.32, and the guidance criteria in Draft NUREG-1567. The operability of the Applicant's fire protection systems (including fire truck, fire pumps, and sprinkler systems), the adequacy of training to be received by its fire brigade, and the results of fire drills that are performed by PFS, will be evaluated by the Staff during its post-licensing operational inspections of the facility.

Q24. Does this conclude your testimony?

A24. Yes.

**Paul W. Lain, P.E.**  
**Statement of Professional Qualifications**

Mr. Lain is a board certified professional engineer with more than 16 years of experience in fire protection engineering. He has held technical and project management positions for the U.S. Navy, Department of Energy (DOE), and the Nuclear Regulatory Commission (NRC). He has conducted inspections on aircraft carriers, battleships, plutonium and uranium manufacturing facilities, and a nuclear waste storage facility. He has conducted over 100 shipboard fire tests to verify the effectiveness of smoke control systems onboard naval vessels. He was the fire protection expert on multiple Operational Readiness Reviews for DOE nuclear facilities. Mr. Lain authored the Fire Protection Chapter of the Standard Review Plan for NRC fuel cycle facilities, and conducted the fire protection review for the re-licensing of the Nuclear Fuel Services facility in Tennessee. Currently, Mr. Lain conducts the fire protection licensing reviews for fuel fabrication facilities licensed by the NRC.

**EDUCATION**

Bachelor of Science in Fire Protection Engineering from the University of Maryland, 1983  
Master of Science in Fire Protection Engineering from Worcester Polytechnic Institute, 1996

**PROFESSIONAL EXPERIENCE**

From 1983 to 1991, Mr. Lain was a fire protection engineer for the Fire Protection Systems Branch of the Naval Sea Systems Command. He was the project manager for many research projects pertaining to fire protection onboard U.S. naval ships and submarines. He conducted over 100 large scale fire tests onboard the navy's test vessel USSX Shadwell, to determine the feasibility of active smoke control utilizing the existing shipboard ventilation system. He performed fire protection inspections and design reviews on a variety of U.S. naval vessels.

From 1991 to 1997, Mr. Lain was a fire protection engineer for the Division of Nuclear Material and Facility Stabilization at DOE. Mr. Lain was the fire protection subject matter expert for reviews of Safety Analysis Reports (SARs) at Rocky Flats Environmental Technology Site and Idaho National Engineering Laboratory, for Operational Readiness Reviews of F-Canyon, FB-Line, and the Inter Tank Processing facilities at the Savannah River Site, and the Fire Protection Vulnerability Review of Y12 and K25 facilities at Oak Ridge.

Since May of 1997, Mr. Lain has been a fire protection engineer for the NRC Office of Nuclear Materials Safety and Safeguards, in the ~~Licensing and International Safeguards Branch~~. He conducts fire safety reviews of fuel cycle facilities licensed by the NRC and was the NRC project manager for the Siemens Power Corporation facility in Richland, Washington. Additional duties include the development of the Fire Safety Chapter of the Standard Review Plan for fuel cycle facilities, inspections of the Oak Ridge National

Division of Fuel Cycle  
Safety and Safeguards.

Laboratory's Research and Engineering Development Center, the Gaseous Diffusion Plant at Paducah, KY., and the Nuclear Fuels Services Facility in Erwin, TN.

## **MEMBERSHIPS**

Mr. Lain is a member of the National Fire Protection Association (NFPA) and has served on several standards committees of the NFPA. He is a licensed professional engineer in the State of Maryland.

**Randolph L. Sullivan**  
**Statement of Professional Qualifications**

Mr. Sullivan is a board certified health physicist with more than 25 years of experience in emergency preparedness and radiological protection. He has held senior technical and managerial positions within the commercial nuclear industry and the Federal Government. His expertise includes health physics, technical hazards assessment, engineering and emergency preparedness. He has provided consulting assistance to more than 12 commercial nuclear utilities and several private firms. He has performed on projects for Department of Energy prime contractors. His experience in private industry has included responsible management and technical staff positions. He managed a full-scope nuclear power plant emergency preparedness program and was the Project Manager on the startup of an emergency preparedness program. As a Radiation Specialist at the Nuclear Regulatory Commission, he inspected commercial nuclear power plants, large byproduct-material licensees, a waste disposal site, and a fuel fabrication facility. Mr. Sullivan currently is an Emergency Preparedness Specialist with the Nuclear Regulatory Commission.

**EDUCATION**

B.S. Engineering Science, Illinois Institute of Technology  
U.S. Atomic Energy Commission, Reactor Health Physics Training Courses

**BACKGROUND**

At U. S. Nuclear Regulatory Commission, he is an Emergency Preparedness Specialist, performing licensing activities for nuclear licensees.

At Advanced Technologies and Laboratories, Inc. he was a consultant to DOE, supporting the Office of Environmental Management in the assessment of LLW disposal site radiological capacity, the Office of Environment, Safety and Health (ES&H) in the development of professional level Radiation Protection training programs and the Office of Emergency Management in the assessment of demonstration exercises and the development of performance measurements. He assisted the Waste Isolation Pilot Plant site in the conduct of emergency management exercises during their Operational Readiness Review and in the mentoring of Emergency Preparedness staff

At Program Management Inc., Mr. Sullivan provided technical support to DOE's Office of Environment, Safety and Health in radiation protection standards and policy development. He supported the development of an Environmental Assessment for amendments to 10 C.F.R. Part 835, "Occupational Radiation Protection" and finalization of Revision 2 to the DOE Radiological Control Manual.

At Natural and Technical Hazards Management Inc.(NTHMC), Mr. Sullivan developed emergency action levels for the Power Burst Facility and the Test Area North at Idaho National Engineering Laboratory. This included detailed efforts to assess radiological and toxic chemical hazards.

At mbs Consulting Partners, Mr. Sullivan was the Chief Partner of this consulting group, which provided custom dose projection software to seven nuclear power plant sites. The software implemented the new 10 C.F.R. Part 20 and EPA 400 regulations. mbs was also the American distributor for the Safe Training System, a chemical and radiological contamination simulation system.

At GPU Nuclear, Mr. Sullivan was the Oyster Creek Nuclear Generating Station Emergency Preparedness Manager, responsible for a full scope Emergency Preparedness (EP) program and a staff of senior technical personnel. He implemented numerous improvement projects leading to the only NRC rating of SALP-1 at this site for several reporting periods. He established a "state of the art" Technical Support Center including automated data projection systems and an online dose projection system. He upgraded and standardized training programs to minimize student time while maximizing training impact by the use of case studies and hands on testing. He developed numerous drill/ exercise scenarios, conducted the associated critiques and assigned corrective actions. Mr. Sullivan critiqued over 20 actual emergency events, assigning corrective actions where appropriate and presenting findings to Management and NRC. He was responsible for extensive interface with State and local officials in the implementation of supportive emergency plans as well as conducting media briefings and responding to media inquiries. He was responsible for all NRC interface for emergency preparedness. He participated in Institute for Nuclear Power Operations EP assessments at nuclear plant sites and was requested to critique several exercises at neighboring power plants. Mr. Sullivan was selected as Secretary of the Site Management Team, a senior level committee created to foster a culture of excellence. He managed engineering, technical and craft personnel during the 15R outage as the Turbine Building Manager.

At Hydro Nuclear Services, Mr. Sullivan provided health physics audit and consulting services to Nuclear Pharmacy Inc., a large byproduct-material licensee. He supported several emergency preparedness and health physics projects for nuclear power plants.

At Impell Corporation, Mr. Sullivan was Project Manager for an emergency preparedness startup and licensing effort at a nuclear power plant. He managed a group responsible for the development of a unique simulator-based training and drill program. He trained and coached executive and senior management personnel through a successful first exercise.

At Allen Nuclear Associates, Mr. Sullivan was part of a technical staff performing the start-up of a full scope nuclear plant health physics program. He assisted in the development of the emergency preparedness program and the ALARA program. He performed management analysis for the selection of appropriate staff for senior emergency plan positions.

At Quadrex Corporation, Mr. Sullivan was Manager of Health Physics Services, responsible for multiple projects including preparation of emergency plans and procedures, nuclear plant decommissioning, accident analysis, diffusion modeling, environmental monitoring, and the Systematic Evaluation Program for two power plants. He participated in the assessment of the General Atomic Fusion Reactor and supported the Hanford Tank Farm remediation project. He performed a hazards assessment in support of the startup of the Loss of Flow Test Facility at INEL.

While with the NRC (in the 1970s), Mr. Sullivan was responsible for the regulation and inspection of Health Physics and Emergency Preparedness programs at nuclear plants, research reactors, a fuel fabrication facility, hospitals, universities, and large industrial byproduct-material licensees.

As a Health Physics Technician at the University of Illinois, Mr. Sullivan routinely inspected over 100 medical research labs, developed procedures, shipped rad-waste, implemented a TLD system, and supported radiation therapy dosimetry.



1 MR. TURK: Thank you.

2 JUDGE BOLLWERK: The copy that you provided  
3 the court reporter, does it include these corrections or  
4 not?

5 MR. TURK: It does not, your Honor. It was  
6 the original filed copy.

7 JUDGE BOLLWERK: My concern is that if it  
8 doesn't reflect that, it's not going to get in there the  
9 way it's --

10 MR. TURK: During the next break I can do a  
11 hand mark.

12 JUDGE BOLLWERK: If you wouldn't mind doing  
13 that, I think that would will help out a lot.

14 MR. TURK: Should I do it just one copy and  
15 let the reporter copy those, then? I can do all three.

16 JUDGE BOLLWERK: That would probably be better  
17 for them. That way we make sure that it -- we did not  
18 do that on Mr. Blake's copy the first time around, but  
19 I'm afraid it's not going to look the way we want it to.  
20 So if there are corrections, I would appreciate if you  
21 could help the court reporter out by making those when  
22 you get an opportunity before the testimony is  
23 actually -- this is an overnight transcript, and if we  
24 want to make it look right, we kind of have to help out.  
25 All right.

1           We also have I guess Exhibit A, which has been  
2 identified -- marked and identified. Do you wish to  
3 move the -- I guess you move the receipt of that  
4 exhibit?

5           MR. TURK: Yes, your Honor. I believe I have  
6 requested that it be admitted, but if not, I request it.

7           JUDGE BOLLWERK: All right. Any objection  
8 from any of the parties? All right, then Staff Exhibit  
9 A is received into evidence.

10                               (Staff Exhibit A was received  
11                               into the record.)

12           And at this point this panel is available for  
13 cross-examination.

14                               CROSS-EXAMINATION

15 BY MS. CHANCELLOR:

16           Q. Good afternoon. Could either of you tell me  
17 what -- could both of you tell me whether you are  
18 familiar with the Private Fuel Storage site?

19           A. (Witness Sullivan) I am not.

20           Q. Mr. Lain?

21           A. (Witness Lain) I am familiar through the  
22 documentation I read in the SAR and the EP.

23           Q. Have you ever visited the site?

24           A. (Witness Lain) I have not, but I have seen  
25 pictures in the EIS.

1           Q.    And Mr. Randolph, have you ever visited the  
2 site?

3           A.    (Witness Sullivan) It's Mr. Sullivan, and  
4 no --

5           Q.    Mr. Sullivan. I beg your pardon.

6           A.    (Witness Sullivan) -- I've never visited the  
7 site, although I have looked at the submission in SAR is  
8 the extent of my familiarity with the site.

9           Q.    Are you aware in the emergency plan that PFS  
10 states that it will obtain off-site assistance from  
11 Tooele County?

12          A.    (Witness Sullivan) Yes, I am.

13          Q.    And do you know how far away the Tooele County  
14 Fire Department is?

15          A.    (Witness Sullivan) No, but it's -- not the  
16 exact number, but it's a number of miles, if I'm not  
17 mistaken. Over ten.

18          Q.    Do you agree that effectively PFS must be  
19 self-sufficient in its ability to fight fires on site?

20               MR. TURK: May I ask, Ms. Chancellor, if you  
21 don't mind, I'm not sure which of the witnesses is most  
22 competent to answer that question, but ask them, if you  
23 don't mind, to select among themselves.

24               MS. CHANCELLOR: Certainly. If I want a  
25 particular witness, I will direct it to him.

1           A.     (Witness Lain) I think from a fire protection  
2 standpoint or a nuclear safety standpoint that yes, they  
3 must be capable of fighting their own fires. We do  
4 consider -- consideration that they do have the  
5 assistance from the county also.

6           Q.     Sorry. Could you repeat that?

7           A.     (Witness Lain) We do consider when I've  
8 reviewed the plan that they do have backup from the  
9 county, yes, they do.

10          Q.     And what consideration did you give your  
11 assumption that they would have assistance from Tooele  
12 County?

13          A.     (Witness Sullivan) The regulations require  
14 that the applicant develop arrangements for support from  
15 local government, and the applicant indicated in the  
16 emergency plan that those arrangements were made.

17          Q.     Other than stating that PFS named Tooele  
18 County as its off-site assistance provider, is there  
19 anything else that NRC requires?

20          A.     (Witness Sullivan) There are other  
21 requirements, but I am -- may I have the regulations in  
22 front of me? I'm not sure whether it's the guidance or  
23 the regulations that I'm remembering.

24                 MR. TURK: Your Honor, may I take them to him?

25                 JUDGE BOLLWERK: Certainly. Counsel, there's

1 no objection to him looking at the regulation?

2 MS. CHANCELLOR: No, absolutely not.

3 A. (Witness Sullivan) If I can take a minute.

4 Thank you.

5 MR. TURK: While we're pausing, if I may point  
6 out and identify these witnesses. Mr. Lain is a fire  
7 protection engineer with a master of science degree, and  
8 Mr. Sullivan is an emergency preparedness specialist  
9 with I believe 25 years experience in emergency  
10 preparedness issues.

11 A. (Witness Sullivan) Yes, I believe I've sorted  
12 out my memories. The guidance is a bit more extensive  
13 on this subject, and the guidance would suggest that  
14 the -- that an acceptable way to approach this issue is  
15 to have formal arrangements with the local agencies.  
16 The regulations simply state that the plan will include  
17 a brief description of the arrangements made for  
18 requesting and effectively using off-site assistance.

19 Q. And do you consider -- have you made a  
20 determination of whether PFS will effectively use  
21 off-site assistance on site or whether it actually needs  
22 it?

23 A. (Witness Sullivan) Yes. The emergency plan is  
24 adequate in that it meets this part of the regulation.  
25 So if you're asking me does it meet this regulation,

1 it's been our determination that it does.

2 Q. No, my question was not whether it met the  
3 regulation. The question is, will PFS have to  
4 effectively use off-site assistance.

5 A. (Witness Lain) I can answer that. From a fire  
6 safety standpoint --

7 MR. TURK: I just want to object, your Honor.  
8 I heard the question differently. I heard the question  
9 that the witness is answering, which was answered  
10 properly, that they made a determination that regulation  
11 has been met. I don't object to the question; I just  
12 want to make sure that the record is clear that they did  
13 respond.

14 JUDGE BOLLWERK: All right. So there's not an  
15 objection pending, I take it.

16 MR. TURK: I don't object to the new question.  
17 I would object to argumentation.

18 JUDGE BOLLWERK: Answer the question, then,  
19 please.

20 A. (Witness Lain) I think the question that's  
21 posed, does PFS count on the county to provide nuclear  
22 safety at the facility. Is that a good way of phrasing  
23 the question?

24 Q. I wouldn't call it nuclear safety, I would  
25 call it its ability to fight fires on site, which is

1     what the contention is all about.

2             MR. TURK: I think I have to object to that,  
3     your Honor. I think the contention speaks to itself.

4             MS. CHANCELLOR: I'll withdraw the last part  
5     of my question.

6             JUDGE BOLLWERK: I guess at this point I'm a  
7     little confused about what the question is. Maybe we  
8     ought to go back to that point.

9             MR. TURK: I would ask that the question just  
10    be restated, your Honor.

11            JUDGE BOLLWERK: That's I guess what I'm  
12    saying.

13            Q.     (BY MS. CHANCELLOR) Well, PFS's ability to  
14    fight fires on site, does it need to -- does its plan  
15    have to include how it can effectively use off-site  
16    assistance on site?

17            A.     (Witness Lain) That's -- the question is back  
18    on the plan.

19            A.     (Witness Sullivan) The plan is adequate in  
20    that it addresses the availability and use of off-site  
21    agency resources.

22            Q.     But you have stated that PFS does effectively  
23    need to be self-sufficient in its fire fighting needs;  
24    is that correct?

25            A.     (Witness Lain) Yes.

1 MS. CHANCELLOR: Thank you. I'd like to ask,  
2 did you hear the testimony from Private Fuel Storage's  
3 witnesses about the physical stops in the locomotive?

4 A. (Witness Lain) Yes, I did.

5 Q. Has the staff analyzed the effect of a  
6 derailment of the locomotive due to problem with these  
7 running into these stops?

8 A. (Witness Lain) Not to my knowledge.

9 Q. Do you know where the location of the rail  
10 tracks going into the canister transfer building are in  
11 relation to these ISFSI pads?

12 A. (Witness Lain) Well, the tracks I think are  
13 110 feet away from the pads, the storage pads.

14 Q. And are the tracks elevated?

15 A. (Witness Lain) From what I've read in the SAR,  
16 that the tracks are above the storage pads in elevation.

17 Q. And if there were a diesel spill, would it be  
18 possible for the diesel fuel to pool in the area below  
19 the railroad track near the ISFSI pads?

20 A. (Witness Lain) Also included in the SAR was a  
21 discussion that they were going to install a berm to be  
22 able to maintain the fuel close to the tracks.

23 Q. And that's a berm specifically to alleviate  
24 the fuel spread as opposed to a berm for probable  
25 maximum --



1           A.     (Witness Lain) That's the way I interpreted  
2 the site.

3           Q.     Do you see any potential for fuel to be --  
4 spilled diesel fuel to be drawn into the cask intake  
5 duct during -- if a fire were to occur with diesel fuel?

6           A.     (Witness Lain) Could you rephrase that? Is  
7 that --

8           Q.     Let me back up. Let me ask you a foundation  
9 question. Are you familiar with the Private Fuel  
10 Storage's storage casks?

11          A.     (Witness Lain) Yes.

12          Q.     Are you aware that there's an intake valve at  
13 the bottom of the storage cask?

14          A.     (Witness Lain) I'm aware, yes.

15          Q.     The question is, if there were a diesel fuel  
16 spill and the fuel caught on fire, is it possible for  
17 the fuel to be drawn into the cask intake duct?

18                 MR. TURK: Could we ask for clarification,  
19 your Honor? I didn't hear in the question any premise  
20 as to where the cask is located -- whether it's on the  
21 pad, whether it's in the canister transfer building.

22                 MS. CHANCELLOR: I'm talking about the casks  
23 on the pad.

24                 JUDGE BOLLWERK: That's what I understood, but  
25 I think that's a useful clarification.

1           A.     (Witness Lain) I think that was evaluated  
2 during the TSAR phase, and also there was an answer in  
3 the comment back on the federal register that the NRC  
4 had reviewed that. But I had not reviewed that.

5           JUDGE BOLLWERK: Could you -- TSAR?

6           MR. LAIN: Is the safety analysis report for  
7 the cask.

8           Q.     (BY MS. CHANCELLOR) Do you know whether the  
9 HI-STORM technical safety evaluation report analyzed  
10 specifically the effects of a fire between -- that would  
11 occur where the fire would be drawn inside the intake  
12 valve such that you would have a fire between the  
13 interior of the storage cask and the canister?

14          A.     (Witness Lain) I do not know that  
15 specifically.

16          Q.     Thank you. This is directed to either one of  
17 you. Is it the NRC staff's position that PFS's  
18 emergency plan needs to deal with more than just  
19 radiological incidents?

20          A.     (Witness Sullivan) Well, it's not a matter of  
21 our position. The regulations speak to the need to  
22 address hazardous chemicals, and I believe I'm in  
23 72.32(a)(13), and it simply states that a certification  
24 that the applicant has met the responsibilities under  
25 the emergency planning and Community Right to Know Act

1 with respect to hazardous materials at the facility. So  
2 there is an obligation. This particular application has  
3 indicated that they do not meet the threshold quantities  
4 for this applicable -- for this regulation. And so  
5 their obligation is fulfilled, to the best of my  
6 knowledge, if they did have threshold quantities on  
7 site, then there would be -- would be an obligation.

8 MS. CHANCELLOR: In terms of 72.32 (a)(5),  
9 mitigation of consequences, is it the staff's position  
10 that PFS only needs to mitigate consequences of an  
11 incident of a fire involving radiological materials, or  
12 all fires on site?

13 A. (Witness Sullivan) No, our concern is public  
14 health and safety, and the concern here is radiological  
15 threat. And so if I understood your question correctly,  
16 we're interested in their ability to protect the public  
17 health and safety from a radiological release, so most  
18 certainly the fires that we are analyzing and are  
19 concerned about in the emergency plan are fires that  
20 would involve radioactive material, i.e., the casks. A  
21 fire in the admin building, while it's very important to  
22 the applicant, is not really the concern of nuclear  
23 safety or public health and safety as it's spoken to  
24 here.

25 Q. Now, I understand that both of you gentlemen

1 assisted the staff in responding to PFS's motion for  
2 summary disposition with respect to Contention R. Is  
3 that correct?

4 A. (Witness Lain) Yes, ma'am.

5 A. (Witness Sullivan) Yes.

6 Q. And footnote 16 of the Staff's Motion for  
7 Summary Disposition -- let me first read the statement  
8 that refers to footnote 16. "As set forth in the  
9 Affidavits of Paul Lain and Randolph Sullivan, this  
10 determination is based, not on the credibility of a fire  
11 occurring which may result in a significant release of  
12 radiation, but on the sufficiency of the Applicant's  
13 plan for responding to a fire event." And then there's  
14 a footnote 16 that says that "The Staff agrees with  
15 PFS's assertion that, under 10 C.F.R. 72.32 (a)(5), the  
16 Applicant needs to describe the means of mitigating the  
17 consequences of each type of radiological accident at  
18 the PSFC (see Motion at 4). The Staff does not agree,  
19 however, that events involving fires are beyond the EP  
20 planning basis; indeed, the Commission's regulatory  
21 guidance indicates that an ISFSI emergency plan needs to  
22 consider events involving fires. See, e.g., NUREG-1567,  
23 Appendix C," etc.

24 Given that statement, then, the staff's  
25 response to the motion for summary disposition, is it

1 your -- have you changed your position that the  
2 emergency plan does not need to cover events involving  
3 fires up beyond those involving radiological incidents?

4 MR. TURK: Your Honor, I need to enter an  
5 objection. Miss Chancellor has read from a document  
6 that I authored dated July 28, 1999 on page 11 of the  
7 staff's response to the applicant's motion for summary  
8 disposition. I would note first of all that this is not  
9 necessarily the witness's position, it is a position  
10 taken by staff counsel. And I believe that, first of  
11 all, the witnesses should be allowed to see the document  
12 and study it and then to respond to see if this document  
13 is consistent with their views or not.

14 JUDGE BOLLWERK: I would agree at minimum they  
15 need to see the document. I've heard the question, but  
16 I think we need to put a copy of it in front of them.  
17 But you can do that with your copy, or if Ms. Chancellor  
18 wants to provide them a copy.

19 MS. CHANCELLOR: It's marked up, your Honor.

20 JUDGE BOLLWERK: It depends what the markings  
21 are. If Mr. Turk doesn't have an objection to it, I  
22 certainly don't. So...

23 MR. TURK: I think also, your Honor, it's  
24 important to note the context in which this paper was  
25 written. In the applicant's motion for summary

1 disposition, as I recall, they had argued or they had  
2 asserted that emergency planning regulations were  
3 satisfied because their fire hazard analysis showed that  
4 there was no fire that could result in a radiological  
5 release, in a significant radiological release of  
6 material.

7           And the position taken here as a legal matter  
8 is that the proper way to address whether or not the  
9 emergency plan is adequate is to look to see whether  
10 credible events are considered. And this footnote that  
11 Ms. Chancellor pointed out indicates that the  
12 applicant's emergency plan itself listed fire as an  
13 event which could result in an emergency action level  
14 being declared, and therefore we consider it appropriate  
15 that fire events be classified within the emergency plan  
16 and be treated with emergency planning rather than  
17 simply fire analysis.

18           MR. BLAKE: I'd like to second that. Our  
19 recollection of footnote 16 of the staff's response to  
20 our motion for summary disposition a year ago was that  
21 it went to whether there were credible or incredible  
22 radiological events, not whether or not it was  
23 radiological or nonradiological. It was just a  
24 different issue.

25           JUDGE BOLLWERK: All right.

1 MR. SULLIVAN: I think I understand the issue,  
2 so I'd like to provide you an answer.

3 MS. CHANCELLOR: Thank you.

4 MR. TURK: If my witness is ready to go, your  
5 Honor, I'll sit down.

6 MR. SULLIVAN: Yeah, I believe I understand  
7 it. There are fires that could affect the cask. A fire  
8 in the vicinity of the cask is declared as an emergency,  
9 if I'm not mistaken. Those -- so the fires that we're  
10 talking about here are strictly fires with the potential  
11 for a radiological consequence. And that's what we're  
12 addressing. I believe that's what I said earlier was  
13 that if there's the potential for a fire to have a  
14 radiological consequence, the emergency plan must  
15 address it, and this emergency plan does.

16 Q. (BY MS. CHANCELLOR) Would you tell me, then,  
17 how 72.32 (a)(5) mitigation of consequences, which  
18 states, "a brief description of the means of mitigating  
19 the consequences of each type of accident including  
20 those provided to protect workers on site and a  
21 description of the program for maintaining the  
22 equipment." Is it your position that protection of  
23 workers on site only relates to whether there's a fire  
24 that threatens the cask?

25 MR. TURK: To the extent that the question

1 calls for a legal analysis of the regulations, I would  
2 object, your Honor. I don't object to the witness  
3 providing his understanding of how the regulation plays  
4 into the emergency planning.

5 JUDGE BOLLWERK: I recognize he's not a lawyer  
6 and he doesn't give legal opinions, but I think he is  
7 going attempt to read the regulation as he sees it.

8 A. (Witness Sullivan) My understanding of this  
9 regulation is to protect workers from radiological  
10 problems. And if I can just go on a little bit. While  
11 we have agreements with OSHA, we don't protect workers  
12 from normal industrial hazards. Our purview, as I  
13 understand it, is nuclear safety.

14 So my interpretation of this part of the  
15 regulations, my understanding of this part of the  
16 regulations is that we are looking at nuclear safety  
17 issues, radiological issues. So, as I attempted to say  
18 earlier, a fire in the administration building is an  
19 important thing, but is not the focus of this emergency  
20 plan.

21 Q. So for purposes of NRC staff's review of PFS's  
22 emergency plan, NRC is not concerned with whether the  
23 workers, worker safety will be jeopardized unless it is  
24 somehow tied to the release of radiation?

25 MR. TURK: I'm going to object to the



1     characterization in which Ms. Chancellor says the NRC is  
2     not concerned. The issue is, what do the regulations  
3     require us to evaluate, not what we as human beings or  
4     as a responsible government agency may have a concern  
5     about. The staff's mission is to enforce its  
6     regulations.

7           Q.     (BY MS. CHANCELLOR) I'm trying to understand  
8     what it is that the staff evaluated in PFS's emergency  
9     plan and whether they're only -- whether they have only  
10    evaluated the effects of radiological incidents and no  
11    other health and safety issues that go to mitigation of  
12    consequences and worker safety.

13           JUDGE BOLLWERK: Is that question clear?

14           A.     (Witness Sullivan) Yes.

15           A.     (Witness Lain) I think we do that. We  
16    actually do look at -- from the accidents described that  
17    we would look at egress from a facility and point those  
18    out, not maybe from a regulatory responsibility, but  
19    just from a review from a fire protection standpoint.  
20    We would look at egress from the facility to see that  
21    they would have other egress points out of the facility  
22    from any type of fire, and point it out to the -- to PFS  
23    if we saw something that worried us.

24           I'm not sure we necessarily had the regulatory  
25    authority to press upon them in OSHA type issues, but

1       when we look at those things it's hard not to include  
2       those in our review.

3           A.     (Witness Sullivan) Well, and just to elaborate  
4       on that a bit, there are requirements to have a medical  
5       capability, for instance, for potentially injured  
6       workers. Now, that medical capability needs to be able  
7       to deal with radiological incidents, but it's largely  
8       focused at non radiological incidents.

9           So there are examples of protection of workers  
10      that are embedded in the emergency plan, but our  
11      responsibility ultimately is public health and safety  
12      with regard to radiological incidents.

13           MS. CHANCELLOR: Now, Mr. Lain, you mentioned  
14      egress from the facility. Do you mean egress from  
15      specific buildings or from the facility site? What do  
16      you mean by egress from the facility?

17           A.     (Witness Lain) I think when I conducted my  
18      review I looked at the egress from the canister transfer  
19      building.

20           Q.     I'd like to turn to PFS's fire fighting  
21      capability. I assume you just learned today that PFS is  
22      reducing the storage capacity of the -- the proposed  
23      storage capacity of its water tanks from 100,000  
24      gallons -- 200,000 gallons to 100,000 gallons?

25           MR. TURK: Did you say that they just learned

1 today?

2 MS. CHANCELLOR: Yes.

3 JUDGE BOLLWERK: Actually, it's probably more  
4 technically correct to say they learned it on May 15th  
5 when you filed their testimony? Was that --

6 MR. LAIN: Yes, sir. I learned through  
7 reading PFS's testimony.

8 MS. CHANCELLOR: Correct, your Honor.

9 JUDGE BOLLWERK: I see what you're saying,  
10 Mr. Turk.

11 MS. CHANCELLOR: That's correct.

12 MR. TURK: I appreciate the help, your Honor.

13 MS. CHANCELLOR: Me too.

14 JUDGE BOLLWERK: Let's move on. All right.

15 Q. (BY MS. CHANCELLOR) Did you learn through the  
16 pretrial testimony that PFS has planned to reduce the  
17 water capacity of its storage tanks from 200,000 gallons  
18 to 100,000 gallons?

19 A. (Witness Lain) Yes, ma'am. Two tanks, each  
20 containing 100,000 gallons of water.

21 Q. And have you analyzed the supply of the  
22 reduced supply of water and PFS's ability to fight fires  
23 on site?

24 A. (Witness Lain) Yes, ma'am.

25 Q. And when did you conduct that analysis?

1           A.   (Witness Lain) I would say sometime earlier  
2 this month, in June.

3           Q.   And do you know where PFS will get its water  
4 supply from?

5           A.   (Witness Lain) From references in the SAR or  
6 the RAI's that talked about wells on site or on the  
7 reservation.

8           Q.   And do you know whether PFS has the authority  
9 to drill wells on site?

10          A.   (Witness Lain) No, ma'am, I do not know.

11          Q.   How many fire trucks are you aware of that PFS  
12 will have access to?

13          A.   (Witness Lain) Two.

14          Q.   And where are they located?

15          A.   (Witness Lain) One located at the facility and  
16 another at the village, at the Indian village.

17          Q.   And what is your understanding of the role of  
18 the fire truck or trucks?

19          A.   (Witness Lain) That the trucks would be able  
20 to supply -- bring equipment to bear on the emergency  
21 and also have some pumping capacity.

22          Q.   And what is your understanding of where any  
23 sort of fire fighting gear such as self-contained  
24 breathing apparatus and that sort of thing, where will  
25 that be located?

1           A.   (Witness Lain) In the safety and health  
2 physics building.

3           Q.   Anywhere else?

4           A.   (Witness Lain) It's a little difficult to  
5 remember the exact quote from the emergency plan. I  
6 could perhaps dig it up if it's important. I mean,  
7 they've committed to have such equipment on site. The  
8 location of the equipment is not coming to memory. I  
9 suppose I could do some research and see.

10          Q.   But you found whatever is in the emergency  
11 plan to be adequate?

12          A.   (Witness Sullivan) Yes.

13          Q.   With respect to staffing and training, what's  
14 your understanding of the duties that PFS's fire brigade  
15 members will hold?

16          A.   (Witness Lain) Their duties as in their fire  
17 brigade duties?

18          Q.   No, duties additional to their fire brigade  
19 duties.

20          A.   (Witness Lain) Oh, they would have normal  
21 operational type jobs.

22          Q.   Did you inquire of PFS specifically what types  
23 of jobs those fire brigade members would have?

24          A.   (Witness Lain) I think through reading the SAR  
25 it was mentioned something like maintenance personnel,

1       so I did not inquire past that.

2           Q.     Did you evaluate the ability of the fire  
3       brigade members to conduct their duties and also be  
4       members of the fire brigade at the same time?

5           A.     (Witness Sullivan) Your previous question was  
6       did we inquire -- could you repeat it, please?

7           MS. CHANCELLOR:   Could you repeat that next to  
8       last question, please.

9           (The record was read.)

10          A.     (Witness Sullivan) There was a formal question  
11       asked of PFS that spoke to that. We wanted to establish  
12       whether -- who the initial responders were, was it  
13       security people or was it other operational people.  
14       They answered as Paul stated, that it would be  
15       operational sorts of people. That's my recollection of  
16       the questions that were asked.

17          Q.     And based on the best of your recollection,  
18       operational sorts of people, did you inquire further as  
19       to what specific duties these operational sorts of  
20       people would hold?

21          A.     (Witness Sullivan) Well, I didn't inquire  
22       because I understood to some degree the operations that  
23       would be going on, and so I understood that they would  
24       be on-site operational staff either performing  
25       maintenance or operation of the equipment associated

1 with the cask storage.

2 Q. So, for example, if a fire brigade member was  
3 also a crane operator involved in the transfer of casks,  
4 would you assume that that person would also be able to  
5 take on the fire duties?

6 A. (Witness Sullivan) Yes. There are operations  
7 that may require the worker to put his equipment into a  
8 safe condition before he or she responds. That's  
9 possible -- and typical, if I might add, in the nuclear  
10 industry. But in general, staff members are available  
11 to respond rather rapidly to these kinds of incidents.

12 Q. What is your understanding of how many non-  
13 security personnel PFS will employ at the site?  
14 Non-security -- the number of non-security personnel PFS  
15 will employ at the site.

16 A. (Witness Sullivan) I don't know how many they  
17 will employ.

18 A. (Witness Lain) I think it was discussed in the  
19 previous testimony.

20 Q. But that's not something that the NRC staff  
21 has analyzed; is that correct?

22 A. (Witness Lain) Yes.

23 MR. TURK: In what respect? With respect  
24 to --

25 JUDGE BOLLWERK: Is that an objection?

1           MR. TURK: It's a request for clarification.  
2     The question that I heard was the NRC staff has not  
3     analyzed how many people would be on site, and I'm  
4     asking for the follow-on clause, with respect to fire  
5     safety or nuclear safety or whatever the follow-on is  
6     intended to be.

7           Q.     (BY MS. CHANCELLOR) With respect to the  
8     ability of the fire brigade to undertake a dual role of  
9     the normal duties as well as fire brigade duties.

10          A.     (Witness Sullivan) Well, maybe I can say what  
11     I did do, and perhaps that will help. I did look at the  
12     normal organization that was proposed by PFS in their  
13     emergency plan. I did look at the emergency  
14     organization that was put forth by PFS in their  
15     emergency plan. I saw that in my analysis there was  
16     adequate people in a normal organization to staff the  
17     positions they had committed to in the emergency plan.  
18     So in that way, yes, we analyzed normal staffing versus  
19     emergency staffing.

20          Q.     What do you mean by normal staffing?

21          A.     (Witness Sullivan) The organization chart  
22     that's in the emergency plan is what I was calling  
23     normal staffing.

24          Q.     And do you agree with PFS's assumption that a  
25     fire can only occur during, quote, normal hours?



1 MR. TURK: A fire can only occur?

2 Q. A credible fire involving radiological  
3 materials can only occur during normal hours?

4 A. (Witness Lain) No, I wouldn't agree with that  
5 assessment.

6 Q. And what is your assessment?

7 A. (Witness Lain) My assessment that a fire can  
8 occur at any time, but also that they have built in a  
9 robust passive fire protection within the cask systems  
10 that active fire fighting may or may not need to play a  
11 role.

12 Q. And who would ascertain whether active fire  
13 fighting would need to play a role during off normal  
14 hours?

15 A. (Witness Sullivan) The emergency plan speaks  
16 to an initial lead emergency manager, and the title is  
17 escaping me at the moment. But the shift, the security  
18 shift person is capable and trained to take that role.  
19 That person is there round the clock and is responsible  
20 for decisions made to implement the emergency plan. I  
21 believe it's the emergency response leader is the name  
22 of that position. I can dig it out of the emergency  
23 plan if you want that exactly.

24 Q. Based on the late -- the proposed amendment to  
25 PFS's license application, isn't true that the security

1 staff and this emergency -- and I assume this emergency  
2 response person who's there after hours will not be  
3 members of the fire brigade?

4 MR. TURK: Could I ask you to repeat it,  
5 please?

6 JUDGE BOLLWERK: I'm sorry? I missed that.

7 MR. TURK: I don't understand the question.

8 JUDGE BOLLWERK: Could you restate it some  
9 way? I recognize that --

10 MS. CHANCELLOR: Okay.

11 JUDGE BOLLWERK: That was an objection, I take  
12 it?

13 MR. TURK: Yes.

14 JUDGE BOLLWERK: All right.

15 Q. (BY MS. CHANCELLOR) The person that you say  
16 is called the -- that is at the PFS facility 24 hours, I  
17 assume it's not the same person, correct? The emergency  
18 response coordinator, leader, whatever the title is,  
19 that person, isn't it true that that person would not be  
20 at the site 24 hours a day?

21 A. (Witness Sullivan) If I said person, I  
22 misspoke. I meant position. There is a position that  
23 is on site 24 hours a day. It's staffed by various  
24 people. That position would take the lead in emergency  
25 response initially.

1 MS. CHANCELLOR: And is that person, after  
2 hours, is that person a member of the security staff  
3 that would fill that position?

4 A. (Witness Sullivan) I believe that it's the  
5 security shift lead, whoever that is, sergeant,  
6 whatever. That person is not on the fire brigade, if  
7 that's what you were asking.

8 Q. That was my next question. Thank you.

9 JUDGE BOLLWERK: Just so the record is clear:  
10 I think the person we're talking about is the emergency  
11 response leader, if I'm looking at the proper --

12 MR. SULLIVAN: Thank you.

13 Q. (BY MS. CHANCELLOR) And what is your  
14 understanding of how PFS would call in members of the  
15 fire brigade during off normal hours?

16 A. (Witness Sullivan) My understanding is that  
17 there is at least one pager and a telephone list that  
18 will be used to call people out.

19 Q. And do you have any idea how far from the  
20 facility the PFS fire brigade members will live?

21 A. (Witness Sullivan) I do not, but the applicant  
22 gave an estimate of a 90-minute response time.

23 Q. And how did you evaluate whether or not that  
24 was reasonable?

25 A. (Witness Sullivan) How did I? I'm sorry. The

1 question is how did I evaluate that?

2 JUDGE BOLLWERK: Yes.

3 A. (Witness Sullivan) The way I evaluated that  
4 was to review it against the criteria of the standard  
5 review plan and the regulations as they're written here.  
6 Neither specify a response time.

7 Q. You testified that you have not been to the  
8 Skull Valley site; is that correct?

9 A. (Witness Sullivan) I have not been to the  
10 Skull Valley site.

11 Q. And isn't it true that you're unaware of the  
12 housing facilities in the area?

13 A. (Witness Sullivan) I am unaware of the housing  
14 facilities in the area, yes.

15 Q. And you're unaware of where the PFS staff may  
16 actually reside once the facility is open --

17 A. (Witness Sullivan) Yes, that's correct.

18 Q. -- and operating. And isn't it true, then,  
19 that if you are unaware of the amenities around the PFS  
20 site, that you can't evaluate whether 90 minutes is a  
21 reasonable time for response during off normal hours  
22 from the fire brigade?

23 A. (Witness Sullivan) On this issue I took the  
24 applicant's analysis at face value. I assumed that the  
25 90 minutes was true, and I based my judgment on the 90

1 minutes, the nominal 90 minutes being true. However,  
2 I'd like to repeat that there's no regulation or  
3 specific guidance that gave me a criteria to work  
4 against for that. So while I did apply judgment as to  
5 the hazard presented off hours versus the need for a  
6 response, there would have been perhaps a range of  
7 response times that would have been adequate given that  
8 the regulations don't speak to that specific issue.

9 Q. So the bottom line is, practically you don't  
10 know whether that 90 minutes is an accurate number; you  
11 took the applicant's word for it?

12 A. (Witness Sullivan) I took the applicant's word  
13 for the 90 minutes, yes.

14 MS. CHANCELLOR: Thank you. I have no further  
15 questions.

16 JUDGE BOLLWERK: All right. Mr. Blake, would  
17 you like to try cross-examination, or do we have to take  
18 a break?

19 MR. BLAKE: Break before I do. I may have  
20 none, but I'd like to break if I could.

21 JUDGE BOLLWERK: All right. Why don't we go  
22 ahead and take an afternoon break, then. Let's take ten  
23 minutes, make this a quick one.

24 (Brief Recess.)

25 JUDGE BOLLWERK: Mr. Blake is helping

1 schedule. I think he doesn't have any cross-examination  
2 for the staff. Is that correct?

3 MR. BLAKE: That's correct.

4 JUDGE BOLLWERK: Not trying to keep you  
5 from -- if you need to do it, you should do it. At this  
6 point I guess we're to redirect, then.

7 MR. TURK: We're ready for redirect.

8 REDIRECT EXAMINATION

9 BY MR. TURK:

10 Q. Let me begin first of all by asking  
11 Mr. Sullivan, early in your testimony this afternoon you  
12 were asked whether you are familiar with the PFS site,  
13 and I believe you answered that you are not. Could you  
14 please describe the extent of your familiarity with the  
15 site?

16 A. (Witness Sullivan) My familiarity with the  
17 site is based on a review of the SAR chapter looking at  
18 photographs and asking questions regarding the  
19 surroundings of the site. So while I haven't been there  
20 personally, I do have some knowledge of the site as can  
21 be obtained by review of the documentation and looking  
22 at pictures of the site.

23 Q. Have you also had occasion to examine any maps  
24 of the area?

25 A. (Witness Sullivan) Several, yes.

1           Q.    Based on what you know about the site, do you  
2    feel have you a good understanding of the location of  
3    the site in Skull Valley and its proximity to population  
4    centers in the area?

5           A.    (Witness Sullivan) Yes.

6           Q.    And Mr. Lain, I would ask you the same  
7    question. Have you had an occasion to become familiar  
8    not through personal observation of the site but through  
9    other means of the general location of the site  
10   vis-a-vis surrounding areas?

11          A.    (Witness Lain) Yes, sir.

12          Q.    And do you comfortable that you have a good  
13   understanding of that location of the site?

14          A.    (Witness Lain) Yes, sir.

15          Q.    Mr. Sullivan, some questions took place  
16   earlier today by Ms. Chancellor concerning mitigation of  
17   accident consequences, and I would ask you to give us  
18   your understanding of 10 C.F.R. Section 72.32. What  
19   types of accidents need to be evaluated in an emergency  
20   plan or considered in an emergency plan?

21          A.    (Witness Sullivan) The types of accidents that  
22   need to be considered in an emergency plan are those  
23   credible accidents that could affect public health and  
24   safety.

25          Q.    When you used the phrase "public health and

1 safety" are you speaking about accidents that can  
2 involve a radiological release?

3 A. (Witness Sullivan) Yes, I am.

4 Q. Is that what you mean by that phrase?

5 A. (Witness Sullivan) Yes, I do.

6 Q. And in terms of mitigation of accident  
7 consequences, are those the same type of accidents that  
8 require mitigation under the regulations, as you  
9 understand the regulations?

10 A. (Witness Sullivan) Yes.

11 Q. Mr. Lain, Ms. Chancellor asked you whether you  
12 had done an analysis of the applicant's revised water  
13 tank provision whereby they're now going to provide two  
14 100,000-gallon tanks. And do you recall you stated you  
15 had done that analysis?

16 A. (Witness Lain) Yes, sir.

17 Q. What were the results of your analysis?

18 A. (Witness Lain) My analysis I -- my results is  
19 that they need at least 93 or 94 thousand gallons and  
20 that the 63,000 gallons was not enough but it was  
21 bounded by the 100,000-gallon tanks that they do have.

22 Q. So do you still conclude that the provision of  
23 two 100,000-gallon tanks are adequate?

24 A. (Witness Lain) Yes, sir.

25 Q. Also, Mr. Lain, at one point in your testimony



1 you were describing where equipment would be located,  
2 fire fighting equipment, I believe that was. Do you  
3 recall that?

4 A. (Witness Lain) Yes.

5 Q. And I believe you used the phrase "safety and  
6 health physics building." Is that the correct --

7 A. (Witness Lain) No, sir. The security and  
8 health physics building.

9 Q. And that's the more correct statement, then?

10 A. (Witness Lain) Yes.

11 Q. Now, during questioning a little bit towards  
12 the end, Ms. Chancellor asked you whether you agreed,  
13 and this is directed to Mr. Lain, whether you agreed  
14 with the applicant concerning the fire hazard posed  
15 during off hours, during off normal hours. Do you  
16 recall that you gave some testimony in that regard?

17 A. (Witness Lain) Yes, sir.

18 Q. Could you explain to us whether you completed  
19 your answer or if you have any further statements you  
20 should make in that regard?

21 A. (Witness Lain) That the fire hazards posed in  
22 off hours would be -- would be -- the probability of  
23 them happening would probably be less, the credible  
24 ones, and would not -- would not pose a nuclear safety  
25 risk.

1           Q.    Do you believe that during off hours there is  
2 any credible fire event that could result in a  
3 significant radiological release?

4           A.    (Witness Lain) No, sir.

5           Q.    So you do agree with the applicant in that  
6 regard?

7           A.    (Witness Lain) Yes, sir.

8           Q.    And did you look at various factors in  
9 reaching that conclusion?

10          A.    (Witness Lain) Yes, sir.

11          Q.    Could you give us an example of some of the  
12 things that you considered?

13          A.    (Witness Lain) Considered that during off  
14 hours it would not be operating, the heavy haul vehicle  
15 would not be operating the cranes and that the fuel  
16 canisters would be in either the shipping casks or the  
17 storage casks. And so you don't have the equipment  
18 that's up and running so you don't have the ignition  
19 sources that should be safe at that point.

20          Q.    In your opinion, then, is there a need for a  
21 fire brigade at the site during off hours?

22          A.    (Witness Lain) No, sir.

23          Q.    Mr. Sullivan, I would ask you questions along  
24 the same line. Ms. Chancellor asked you some questions  
25 concerning the distance of PFS staff residences from the

1 facility and the driving time it might take require them  
2 to come back to the facility. Do you recall your  
3 testimony in regard to those questions?

4 A. (Witness Sullivan) Yes, I do.

5 Q. Do you believe that it is significant that  
6 there may be a 90-minute driving time for fire brigade  
7 members to come back to the site?

8 A. (Witness Sullivan) Well, I don't believe it's  
9 significant.

10 Q. And why is that?

11 A. (Witness Sullivan) Well, there is no credible  
12 fire that could affect a -- that could create a  
13 radiological release during off normal hours. It's  
14 prudent, of course, to be able to get the fire brigade  
15 in for industrial reasons and perhaps other reasons.  
16 But there is no -- there's no credible fire that we're  
17 working against where we would need a response any  
18 different than what was proposed by the applicant.

19 Q. And in reaching that conclusion did you take  
20 into consideration the fact that there are systems on  
21 site which also are capable of addressing or suppressing  
22 a fire without a manual response?

23 A. (Witness Sullivan) Yes, I did, and I took into  
24 consideration the lack of manipulation of the equipment  
25 off normal hours.

1 Q. Do you agree with those conclusions, Mr. Lain?

2 A. (Witness Lain) Yes, sir.

3 MR. TURK: May I have just a minute, your  
4 Honor?

5 JUDGE BOLLWERK: Yes.

6 MR. TURK: I have nothing further, your Honor.

7 JUDGE BOLLWERK: Any recross, then?

8 MS. CHANCELLOR: Just one question, your  
9 Honor.

10 RE CROSS-EXAMINATION

11 BY MS. CHANCELLOR:

12 Q. You calculated a -- was it a 93,000-gallon  
13 fire flow that DFS would meet?

14 A. (Witness Lain) See, I calculated 93 to 94  
15 thousand gallons that they would need to meet industry  
16 standards and NFPA 16.

17 Q. I think I said fire flow. I meant water flow.  
18 And that amount, quantity of water, is that just for the  
19 canister transfer building?

20 A. (Witness Lain) That would be -- that would be  
21 the worst case fire flow that our demand on the system  
22 has per industry standard requirements, yeah.

23 Q. And where would the worst flow event occur?

24 A. (Witness Lain) From the foam water system  
25 flowing, and use of hand lines is also included in that

1 calculation.

2 Q. So it would be a contemporaneous use of flow  
3 from the sprinkler system as well as from fire hoses; is  
4 that correct?

5 A. (Witness Lain) Yes.

6 MS. CHANCELLOR: Thank you. I have no further  
7 questions.

8 JUDGE BOLLWERK: All right. Any questions?  
9 All right. Judge Lam?

10 JUDGE LAM: I have questions for both  
11 Mr. Sullivan and Mr. Lain. During your safety review,  
12 have you discovered any scenario, credible scenario in  
13 which the fuel canister radiation level would interfere  
14 or adversely impact on fire fighting capacity? Now, I'm  
15 well aware that there are plenty of testimony about  
16 excluding by administrative measures the cask  
17 transporter from the transfer itself. My question is,  
18 beyond that, have you discovered any scenario?

19 MR. LAIN: No, sir.

20 MR. SULLIVAN: No, sir.

21 JUDGE LAM: The next question would be, we  
22 also heard today that the locomotive is prevented  
23 administratively from entering the building by a spacer  
24 car and by rail stop; therefore, these measures would  
25 appear to mitigate a fire from the diesel tank. There

1 are about four tanks, am I correct, together about 6,400  
2 gallons of diesel fuel?

3 MR. LAIN: Yes, sir.

4 JUDGE LAM: Are you convinced that these  
5 diesel tanks would not explode during a fire?

6 MR. SULLIVAN: Judge, it's my understanding  
7 that under accident situations diesel in general does  
8 not explode. I guess you could envision some -- some  
9 kind of scenario where it could be -- where that might  
10 happen involving projectiles or something, but in  
11 general it's my understanding that in an accident  
12 involving heavy equipment, diesel does not explode.

13 JUDGE LAM: Even though in the scenario where  
14 a supply line rupture, spray diesel on the hot engine,  
15 therefore trigger a fire, and then the fire impinges on  
16 another diesel tank; even in that situation, that tank  
17 is relatively safe from exploding?

18 MR. SULLIVAN: I may not be qualified to speak  
19 to that.

20 JUDGE LAM: And just for the sake of argument,  
21 if an explosion were to occur, what good does the spacer  
22 car do for you?

23 MR. LAIN: In that you are outside the  
24 facility during this explosion, yes, it would have some  
25 effects inside, but less effects outside. But no, we

1 did not evaluate that situation.

2 JUDGE LAM: I would like to see if you had the  
3 opportunity to address the issue of both likelihood of  
4 occurrence and the consequence.

5 Thank you. That's all I have.

6 MR. TURK: Your Honor, may I ask just for  
7 clarification on that? If I heard the question  
8 correctly, I believe you stated that there are four  
9 diesel tanks?

10 JUDGE LAM: Right.

11 MR. TURK: I thought there was two. I thought  
12 there was two of them, each 3,200.

13 MR. LAIN: Each locomotive has two tanks.

14 MR. TURK: I see. I stand corrected. Could I  
15 ask if Mr. Lain wants to add anything to Mr. Sullivan's  
16 answer whether diesel is normally an explosive material  
17 or if he perceives that to be a potential?

18 JUDGE LAM: Sure, we'd like to hear.

19 MR. LAIN: I think you would -- you could  
20 probably get a failure of the second tank as the flame  
21 is being impinged upon and have it rupture and get a  
22 deflagration. I'm not sure a detonation, meaning with a  
23 shock wave, would occur or not. Not having an expertise  
24 in explosions, would have to refer to some other  
25 documents to take a look at that specific scenario, and

1 maybe assistance from the center.

2 JUDGE BOLLWERK: I have just one question. I  
3 thought I heard you answer Ms. Chancellor's question  
4 originally about the off hours response you had some  
5 concerns. And then I guess on redirect you said I guess  
6 you in fact did not. Did I misunderstand your answer to  
7 her?

8 MR. LAIN: I think I initially answered her  
9 question with whether there could be a fire after hours  
10 is what the question I thought was. And I said yes,  
11 there could be a fire after hours.

12 And then on cross directive there was a -- to  
13 finish the statement do I believe that there's a fire  
14 that could cause a nuclear release after hours, and I do  
15 not believe that that would be the case from the  
16 bounding fires that I've studied that have been  
17 presented in this document.

18 JUDGE BOLLWERK: So you're drawing the  
19 distinction, if I understand what you're saying,  
20 between, for instance, the fire in the administrative  
21 office building which could occur after hours and one  
22 that could have some kind of radiological impact or with  
23 the cask or the cask transferability?

24 MR. LAIN: Also -- yes, I think also. Yes,  
25 sir.



1 JUDGE BOLLWERK: All right.

2 MR. TURK: I don't know if Mr. Lain had  
3 finished his answer.

4 JUDGE BOLLWERK: If he hadn't, I wasn't trying  
5 to stop him.

6 MR. TURK: I think there was some confusion in  
7 the question that was posed, your Honor, and I should  
8 have objected at that point. But I did intend the  
9 witness to answer the question as to his understanding  
10 of what it was, and that's what we brought out on  
11 redirect.

12 JUDGE BOLLWERK: Right.

13 MR. TURK: The case of what the applicant's  
14 assumption has been with respect to is it credible that  
15 you have a fire event and not realize what was --

16 JUDGE BOLLWERK: That's what I was trying to  
17 clarify in my own mind, and I heard it. I just wanted  
18 to make sure that I understood what the answer was.

19 MR. TURK: I don't think any witness is saying  
20 you couldn't have a piece of waste paper or some other  
21 fire start somewhere, even the canister transfer  
22 building. But the question is, could you have any  
23 radiological leak, and that's what the redirect  
24 addressed.

25 JUDGE BOLLWERK: Anything else, Judge Kline,

1 Judge Lam? If not, then these witnesses are dismissed  
2 subject to being recalled if necessary. Gentlemen, we  
3 thank you for your time this afternoon.

4 MR. LAIN: Thank you, sir.

5 JUDGE BOLLWERK: All right, I think we're next  
6 ready to move on to the state's witness on contention  
7 Utah R, which is Mr. Wise, State Fire Marshal Wise.

8 JUDGE BOLLWERK: Did you have a chance to make  
9 corrections, by the way?

10 MR. TURK: I did have a chance, your Honor.

11 JUDGE BOLLWERK: Just so we get it done before  
12 they have to send it back to the office.

13 MR. TURK: Okay.

14 MR. BLAKE: I checked on mine, Judge. Long  
15 gone.

16 JUDGE BOLLWERK: I guess we may have to deal  
17 with that tomorrow. It is in the transcript, so it's  
18 not like it's not there. I think it's better if it's  
19 actually on the testimony that's inserted. It may well  
20 be that someone from the staff can retrieve it and make  
21 them right now, if that's convenient for you.

22 MR. TURK: Ms. Marco is going to --

23 JUDGE BOLLWERK: That's fine. All right.

24 Mr. Wise, could you raise your right hand,  
25 please.

1                               GARY A. WISE,  
2       was called as a witness on behalf of the State and,  
3       having been first duly sworn, was examined and testified  
4       as follows:

5                       MS. CHANCELLOR: I've provided the court  
6       reporter, your Honor, with the original and two copies  
7       of the exhibits as well as a copy of the testimony, and  
8       I believe that the parties and the board have a copy of  
9       the testimony and the exhibits.

10                               DIRECT EXAMINATION

11       BY MS. CHANCELLOR:

12               Q.    Mr. Wise, do you have you have before you a  
13       copy of the testimony that was prefiled by you -- for  
14       you in this case?

15               A.    Yes, I do.

16               Q.    And is that testimony, prefiled testimony  
17       revised for board order June 12 and dated June 14th? Is  
18       that correct?

19               A.    Yes, it is.

20               Q.    And does your testimony consist of ten pages?

21               A.    Yes, it does.

22               Q.    And attached to your testimony as Exhibit A,  
23       is there a copy of your resume?

24               A.    I don't believe the resume is in here.

25                       JUDGE BOLLWERK: Do you think the copies you

1 gave to the court reporter have those?

2 MS. CHANCELLOR: Yes.

3 Q. (BY MS. CHANCELLOR) And is the testimony --  
4 do you have the resume before you now?

5 A. Yes, I do now.

6 Q. Is the testimony and resume, has that been  
7 prepared by you under your direction?

8 A. Yes, it has.

9 Q. Do you accept and adopt the testimony in this  
10 proceeding?

11 A. Yes, I do.

12 MS. CHANCELLOR: Your Honor, I would ask that  
13 the testimony and resume be accepted as if it were read  
14 into the record.

15 JUDGE BOLLWERK: All right. And he has no  
16 corrections, I take it?

17 MS. CHANCELLOR: Do you have any corrections?

18 MR. WISE: No, I don't.

19 JUDGE BOLLWERK: All right. The testimony,  
20 then, of Gary Wise on behalf of the State of Utah  
21 regarding Contention Utah R will be accepted into  
22 evidence in the proceeding and put into the transcript  
23 and adopt it as if read.

24 MS. CHANCELLOR: And the attachment for his  
25 resume as well.

1 JUDGE BOLLWERK: And the attachment for his  
2 curriculum vitae as well.

3 (Whereupon, the direct written  
4 testimony of Mr. Wise  
5 was inserted in the record.)  
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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of:

PRIVATE FUEL STORAGE, LLC  
(Independent Spent Fuel  
Storage Installation)

)  
)  
)  
)  
)

Docket No. 72-22-ISFSI

ASLBP No. 97-732-02-ISFSI

June 14, 2000

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**PREFILED TESTIMONY OF GARY A. WISE  
ON BEHALF OF THE STATE OF UTAH  
REGARDING CONTENTION UTAH R**

**(Revised per Board Order of June 12, 2000)**

On behalf of the State of Utah, Gary A. Wise submits the following testimony regarding the Applicant's ability to fight fires on site at the Private Fuel Storage, LLC ("PFS") independent spent fuel storage installation ("ISFSI") site to be located on the Skull Valley Band of Goshute Indians Reservation, Utah.

**Q. 1. Please state your name and qualifications.**

A. 1. My name is Gary A. Wise. I am State Fire Marshal for the State of Utah, a position I have held from December 1996 to the present. A copy of my resume is attached to this testimony. The responsibilities of my office include licensing and certification of the propane industry, fireworks industry, and fire suppression industry. My office also prepares plan reviews and inspections of new construction of State-owned buildings, schools, some hospitals, nursing homes, and the like; assists the fire service in fire cause determination, and arson investigation; and provides public education in fire prevention and injury prevention.

As State Fire Marshal, I meet with Fire Chiefs around the State, many of whom are in charge of volunteer fire departments. A prime concern is to keep the Fire Chiefs apprized of current National Fire Protection Association, Inc. ("NFPA") standards and federal Occupational Safety and Health Administration ("OSHA") regulations and discuss how their departments can comply with those requirements. The State Fire Marshal's Office provides funding for the Utah Fire and Rescue Academy.

Prior to my present position, I was Chief of the Fire Division, Orem Department of Public Safety, Orem, Utah from July 1990 to December 1996. My responsibilities were to manage the Orem Fire Department, which provides the fire protection for the City of Orem, and at the time consisted of three fire stations and 52 persons. In that position I was responsible for the Department's compliance with NFPA 1500 standards and applicable OSHA regulations. Prior to that, I was Division Commander, Support Services, Orem Department of Public Safety, from August 1988 to July 1990. My responsibilities were law enforcement related, and included communications, warrants, animal control, the holding facility, and support services. I was Fire Captain for the Orem Department of Public Safety from February 1983 to August 1988, and was station commander, responsible as the on-scene commander of fire or other emergency incidents, and managed one of the fire stations. Additionally, prior to 1983 I worked as a firefighter in Utah and California for 15 years, and held positions of Fire Lieutenant and Fire Engineer during part of that time.

I earned an A.S. degree in Fire Science from Rancho Santiago College, Santa Ana, California, and am Fire Officer II Certified, Haz-Mat Operations Level Certified, P.O.S.T. Certified Peace Officer since 1985, and EMT Certified since 1973. I attended Command & Control of Fire Department Operations at Catastrophic Disasters, National Fire Academy, January 1992, and have additional training in fire officer management and tactics, fire apparatus purchase, building construction for suppression, fire prevention inspections, fire incident management, wildland firefighting, haz-mat environmental response and incident command, CEM exercise design, emergency communications, community emergency response teams trainer, and fire service instructor.

In 1991 Utah Governor Bangerter appointed me to the State Fire Prevention Board for a six year term, and in 1994 Governor Leavitt appointed me to the State EMS Committee for a two and one half year term. I have held the position of President of the Greater Salt Lake Valley Chief Fire Officer's Association (1992) and the Utah State Fire Chief's Association (1996). Presently I am a member of the National Association of State Fire Marshals and the International Association of Fire Chiefs, and am a past member of a number of fire, emergency, rescue, and other related community organizations.

In the course of my fire department career, I developed the "Life Safety Trailer Program" for the fire service statewide; designed and implemented a new communications Dispatch Center for the City of Orem; implemented an enhanced 911 system for the City of Orem; established the statewide adoption of the Uniform Fire Code; developed and implemented several public fire education programs; developed emergency response map books for the Fire Division; developed the Vial of Life Program for Orem; and established

Orem's Haz-Mat response vehicle. I was awarded the NFPA Champion Award in 1993 for Fire Prevention Programs, the Firefighter of the Year in 1984 and 1991, and the Orem Employee of the Quarter in 1990.

**Q. 2. What is the purpose of your testimony?**

**A. 2.** The purpose of my testimony is to explain the basis for my professional opinion that the Applicant will not have a sufficient number of personnel or adequately trained personnel to fight fires on site at the PFS facility.

**Q. 3. What materials did you review in support of your evaluation and opinion?**

**A. 3.** My examination and review included, but was not limited to, the Applicant's Emergency Plan ("EP"); relevant portions of the Safety Analysis Report ("SAR") and responses to Requests for Additional Information ("RAIs") as those documents relate to onsite fires; NFPA standards; OSHA regulations; and 10 CFR 72.32(a).

**Q. 4. What offsite fire fighting assistance will be available to PFS and, effectively, what support could that offsite assistance render at the site?**

**A. 4.** According to the Applicant's Emergency Plan, PFS intends to call on the Tooele County Fire Department to "augment PFSF fire fighting capabilities and to fight large fires beyond the capability of the PFSF fire brigade." EP Rev. 5 at 10-2. In addition, the response time for the PFS fire brigade personnel to be called back to the site during off-normal hours is anticipated to be approximately 90 minutes. Safety RAI Response No. 2, EP-7, dated February 10, 1999.

The fire departments in Tooele County consist of an all volunteer force. Members of the fire departments hold a variety of full time positions, such as law enforcement officers. The City of Tooele is located over 50 miles from the PFS facility and availability of such offsite assistance would be at least as long as it would take PFS to recall its personnel during off-normal hours (*i.e.*, 90 minutes). Any offsite fire fighting assistance after a delay of 90 minutes would be totally ineffective in controlling and containing onsite fires. Consequently, PFS must be totally self-reliant in its ability to fight fires onsite.

**Q. 5. What is your understanding of the organization, training and equipment to be utilized by PFS personnel to fight fires at the PFS facility?**



A. 5. PFS's Emergency Plan states: "A minimum of five PFSF staff personnel is required to fully staff a PFSF fire brigade." EP Rev. 5 at 4-3 (State's Exhibit 1, EP Chapter 4). The EP states that the five fire brigade members will be organized, operated, trained, and equipped in accordance with NFPA 600. Id. If fire occurs during off-hours, PFS will fill positions through call out by telephone. Id. The estimated response time for personnel to return to the site during off-hour events is anticipated to be 90 minutes. This time estimate, however, is uncertain because PFS does not know where personnel will live or the distance and time it will take them to arrive back at the site. State's Exhibit 2, Safety RAI Response No. 2, EP-7, dated February 10, 1999.

Figure 4-1 of the EP ("Functional PFSF Organization") shows Fire Protection, as well as Security and First Aid/EMT functions coming under PFS's "Security" organization. This unit consists of a captain, a sergeant and 17 guards. It is presumed that the five fire brigade members fall under the "Security" functional organization chart on Figure 4-1. *See* Exhibit 1.

If fire breaks out at the facility, one fire brigade member "will supervise the four remaining brigade members, with two persons assigned to each hose." Safety RAI Response No. 2, EP-7, dated February 10, 1999 at p. 1 (*see* Exh. 2). This means that only five trained persons will be available to take on the necessary tasks of incident commander or officer, operator of the fire truck, manning the hoses, and providing trained back up on standby to relieve or rescue the persons manning the fire hoses. PFS plans that additional personnel, with some unknown level of fire fighting training, may also provide response to fires. EP Rev. 5 at 4-3. These quasi trained employees will be used for initial response and are to be replaced, as conditions permit, as soon as assigned fire brigade members are available. Id.

If PFS decides that, during normal working hours, it needs the assistance of another fire truck, it will send a fire brigade member five miles to the Goshute village to bring back another fire truck. State's Exhibit 3, Safety RAI Response No. 2, EP-8, dated February 10, 1999. It is unclear whether the person sent to retrieve the truck is one of the five member fire brigade team or a person from another part of the organization. It appears, however, that it must be a fire brigade member because "[o]nly properly trained PFSF personnel will operate the backup fire truck when it is used in response to fires at PFSF." Id.

The EP states that the five member fire brigade will be organized, trained, and equipped in accordance with NFPA 600. EP Rev. 5 at 4-3. The training is to include methods of controlling fires under accident conditions in accordance with fire protection

procedures, search and rescue, etc. EP Rev. 5 at 6-2. The fire brigade members are also to receive training on the types of fires (including those involving radioactive materials), fire tetrahedron, dangers of fire, protective clothing, self-contained breathing apparatus, and types of fire extinguishers and their uses as well as participate in fire drills annually. State's Exhibit 4, Safety RAI Response No. 2, EP-21, dated February 10, 1999.

The equipment available to the five member fire brigade includes automatic fire detection and suppression equipment to be stored at the canister transfer building; two pumper trucks, one onsite at the facility and the other at the Goshute village. SAR RAI No. 1, Question 9-14, dated June 15, 1998; *see also* EP Rev. 5 at 5-8. The fire fighting equipment and gear includes personnel protective clothing, self-contained breathing apparatus, respirators and anti-contamination clothing, inventoried and maintained in accordance with NFPA 600. EP Rev. 5 at 5-8 to 5-9. State's Exhibit 5, EP Rev. 5, Section 5.5.1 (pp 5-8 & 9), Equipment and Supplies.

**Q. 6. What is your opinion of PFS's ability to fight fires on site?**

**A. 6.** In my opinion, PFS has not complied with all of the requirements found in NFPA 600, *Standard on Industrial Fire Brigades*. NFPA 600 applies to any organized private, industrial group of employees having fire fighting duties such as emergency brigades, emergency response teams, fire teams, and plant emergency organizations. In its Emergency Plan, PFS has not given an adequate "organizational statement" as required by NFPA 600 § 1-4.1 and § 2-1.2.1. Such a statement is to establish the basic organizational structure; the type, amount, and frequency of training to be provided the fire brigade members; the expected number of members in the fire brigade; and the functions that the fire brigade is to perform at the workplace.

In its EP, PFS has provided only sketchy details on the type, amount, and frequency of training to be provided the fire brigade members. PFS states that fire brigade members will receive training that includes methods of controlling fires under accident conditions, search and rescue, and the like. EP Rev. 5, at 6-2. In addition, PFS states that fire brigade members will receive training on the types of fires (including those involving radioactive materials), fire tetrahedron, and dangers of fire. Response to Safety RAI No. 2, EP-21, dated February 10, 1999 (*see* Exh. 4). Also, PFS maintains that fire brigade members are to receive hands on training in fighting fires using all types of fire fighting equipment. *Id.* Additionally, PFS states that fire drills will be conducted at least annually. State's Exhibit 7, EP Rev. 0 at 8-2. Such statements do not meet the specificity required by NFPA 600 and thus do not suffice as a proper organizational statement. The EP affirmatively states that the

PFS fire brigade is to consist of five members, but it does not state what functions those members are to perform at the facility. To fully comply with NFPA 600, PFS must develop and articulate a proper organizational statement.

In addition, the training PSF claims it will provide appears to be deficient. If the PSF fire brigade members perform or are anticipated to perform “advanced exterior”<sup>1</sup> or “interior structural fire fighting”<sup>2</sup> beyond the “incipient stage,”<sup>3</sup> then under NFPA 600, §§ 4-2.2 and 5-2.2 all fire brigade members are required to participate in a drill “at least semi-annually” to meet the general education, training, and drills requirements of NFPA 600 § 2-3. Given the unavailability of timely off-site response assistance, PFS should anticipate that the PSF fire brigade will be required to perform advanced exterior and interior structural fire fighting in emergencies at PFS. Thus, PFS’s statement that all fire brigade members participate in drills annually is deficient under NFPA 600 and must be revised.

Another concern is PFS’s statement in its EP that a “back-up fire brigade” will also provide fire response, which is unsupported by an organizational statement that describes the types, amounts, and frequency of training to be provided these back-up members. Response to Safety RAI No. 2, EP-8, dated February 10, 1999 (State’s Exh. 3). Clearly, these “back-up fire brigade” members are “employees with fire fighting duties”; thus, NFPA 600 and its requirements should apply to them as well. To comply with NFPA 600, PFS

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<sup>1</sup> Advanced Exterior Fire Fighting: Offensive fire fighting performed outside of an enclosed structure when the fire is beyond incipient stage. Advanced exterior fire fighting often requires fire brigade members to contain, control, and extinguish exterior fires involving site-specific hazards, such as flammable and combustible liquid spills or leaks, liquefied petroleum gas releases, and electrical substations. Thermal protective clothing is required and the use of self-contained breathing apparatus (SCBA) could be required. See NFPA 600, § 1-5 (Definitions).

<sup>2</sup> Interior Structural Fire Fighting: The physical activity of fire suppression, rescue, or both, inside of buildings or enclosed structures that are involved in a fire situation beyond the incipient stage. See NFPA 600, § 1-5 (Definitions).

<sup>3</sup> Incipient Stage: Refers to the severity of a fire where the progression is in the early stage and has not developed beyond that which can be extinguished using portable fire extinguishers or hand lines. A fire is considered to be beyond the incipient stage when the use of thermal protective clothing or self-contained breathing apparatus is required or a fire brigade member is required to crawl on the ground or floor to stay below smoke and heat. See NFPA 600, § 1-5 (Definitions).

must provide an organizational statement that outlines the numbers, training, and functions of the “back-up fire brigade.”

As outlined in NFPA 600 § A-1-4, the potential exposure and training is what “separates an organized fire brigade from designated employees who have some fire response duties within the general work area.” Also, under NFPA 600 § A-1-4.2, “[d]esignated employees who are intended to respond to incipient fires within their immediate work area should receive training commensurate with the duties they are expected to perform. Their responsibilities are normally limited to sounding an alarm, taking immediate action to extinguish the fire, and evacuation of the area.” However, the training these employees receive should be “commensurate with the duties and functions they are expected to perform” as required by NFPA 600 § 2-3.1. NFPA 600 § 2-3 and chapters 3, 4, 5 and 6 outline the general education, training, and drills for all fire brigade members. The “back-up fire brigade members” should receive much the same training as the regular fire brigade members because in many foreseeable instances and due to a considerable estimated response time for the fire brigade after-hours, these “back-ups” will have to perform fire fighting duties beyond incipient fire fighting if the safety of the facility is to be maintained.

**Q. 7. Do you have other concerns with PFS ability to fight fires on site?**

**A. 7.** Yes. In my opinion the size of the PFS fire fighting group is a concern and would be insufficient to operate both the PFS onsite fire truck and the fire truck from the Goshute village. The five member PFS fire brigade may also be too small to operate any more than one hose on the PFS pumper truck.

When two fire fighters are fighting an interior structural fire, two other fire fighters must be located at a safe distance from the first two so they may perform rescue operations if necessary. One of the standby fire fighters may act as incident commander so long as he or she can also perform rescue operations. It is unclear from PFS’s description of the pumper truck located at the PFS site if more than one hose is available on that truck. With only five trained persons, however, PFS could not operate both hoses. Furthermore, PFS would not have enough additional trained firefighters to retrieve and operate the back-up fire truck from the Goshute village.

In its EP, PFS appears to rely on the fact that a second fire truck located at the Goshute village is available to bolster the adequacy of its fire protection at the facility. However, PFS’s fire brigade consisting of five members, including the fire brigade leader, may only be adequate in size to operate one hose on the fire pumper truck located at the

facility. Consequently, the PFS fire brigade is not large enough to adequately operate the back-up truck if it is needed. When the PFS fire brigade is fighting a fire within the canister transfer building (i.e., interior structural fire) or any other structural fire, all five fire brigade members would be needed to operate the PFS fire truck and one of the hand lines necessary to fight the fire. Two would be required on one hose, another two would need to standby, and the fifth member would operate the pumper truck. This would leave no available fire brigade members to operate another hose on the PFS pumper truck or, if needed, to safely operate the back-up fire truck from the Goshute village. Thus, if PFS wants to use more than one hose on its pumper truck or rely on the second fire truck and safely provide fire protection for the facility, it must add additional members to its fire brigade.

**Q. 8. What other NFPA standard(s) could PFS follow to organize, train, and equip a fire fighting unit?**

**A. 8.** PFS could follow NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*

**Q. 9. How does NFPA 1500 differ from NFPA 600?**

**A. 9.** The purpose of NFPA 600 is to set minimum requirements for the organizing, operating, training, and equipping of industrial fire brigades.<sup>4</sup> NFPA 600 § 1-2 (State's Exh. 6). It also sets the minimum requirements for the occupational safety and health of industrial fire brigade members while performing fire fighting and related duties. NFPA 600 § 1-1.1. The standard also applies to any organized private, industrial group of employees having fire fighting duties such as emergency brigades, emergency response teams, fire teams, and plant emergency organizations. NFPA 600 § 1-1.2.

In contrast, NFPA 1500 sets minimum requirements for a fire-service-related occupational safety and health program. NFPA 1500 § 1-1.1. The standard applies to public, governmental, military, private, and industrial fire department organizations providing rescue, fire suppression, emergency medical services, hazardous materials mitigation, special operations, and other emergency services. NFPA 1500 §1-1.2. However, this standard does not apply to industrial fire brigades or industrial fire departments meeting

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<sup>4</sup> Fire brigade is defined in NFPA 600 as an organized group of employees within an industrial occupancy who are knowledgeable, trained, and skilled in at least basic firefighting operations, and whose full-time occupation might or might not be the provision of fire suppression and related activities for their employer. See State's Exh. 6, NFPA § 1-5.

the requirements of NFPA 600. NFPA 1500 § 1-1.3. The purpose of the standard is to specify the minimum requirements for an occupational safety and health program for a fire department and to specify safety guidelines for those members involved in rescue, fire suppression, emergency medical services, hazardous materials operations, special operations, and related activities. NFPA 1500 § 1-2.1 (State's Exhibit 8, NFPA 1500, Chapter 1 and App. A (Explanatory Material)).

**Q. 10. Considering the location and the unique circumstances surrounding the PFS facility, in your opinion, which of the two above named standards should PFS comply with in organizing, training and equipping its fire fighting unit?**

**A. 10.** I believe that the PFS fire fighting unit should be organized, trained, and equipped in compliance with NFPA 1500. As stated in NFPA 1500, most industrial fire brigades are not considered industrial fire departments, but where a "plant is located far from municipalities with organized fire departments" an industrial fire brigade may be considered an industrial fire department. NFPA 1500 § A-1-5 (Industrial Fire Department). The distance from the PFS facility to the nearest municipality with an organized fire department is a concern because if adequate back-up is needed, the lengthy response time could put the facility and the safety of those working there at risk. The closest municipality with a fire department to the PFS site is Tooele City, which is over 50 miles away, and it could take up to 90 minutes for the Tooele fire department to reach the facility after a call is made.

Additionally, the fire fighting unit, as currently organized by PFS, should comply with NFPA 1500 because it meets the requirements for an industrial fire department. The standard states that industrial fire departments "are organized and equipped for interior structural fire fighting . . . Their apparatus is similar to that used by municipal fire departments." *Id.* Structural fire fighting is defined in NFPA 1500 as "activities of rescue, fire suppression, and property conservation in buildings, enclosed structures, aircraft interiors, vehicles, vessels, or like properties that are involved in a fire or emergency situation." NFPA 1500 § 1-5. Likewise, the PFS fire fighting unit will be trained and expected to perform rescue and fire suppression and property conservation in the canister transfer building, other facility buildings, enclosed structures, vehicles, vessels, and like properties. Also, the fire fighting brigade at the PFS facility will be equipped for interior structural fire fighting. PFS will have two fire trucks available, one onsite and another to be located at the Goshute village some five miles away. Response to Safety RAI No. 2, EP-8, dated February 10, 1999 (State's Exh. 3). Personnel protection and fire fighting equipment includes respirators, anti-contamination clothing, and self contained breathing apparatus. EP Rev. 5 at 5-8 (State's Exh. 5).

Furthermore, industrial fire brigades that provide rescue services are to be considered industrial fire departments. Rescue is defined in NFPA 1500 as “those activities directed at locating endangered persons at an emergency incident, removing those persons from danger, treating the injured, and providing for transport to an appropriate health care facility.” NFPA 1500 § 1-5. According to the PSF Emergency Plan, the Fire Brigade will receive training in “search and rescue” and related services. EP Rev. 5 at 6-2. In sum, the PFS fire fighting unit should be staffed and trained according to NFPA 1500.

**Q. 11. In your opinion, what are the consequences of having an inadequately staffed and trained organization to fight fires on site at the PFS facility?**

**A. 11.** As a consequence of inadequate staffing and training of its fire fighting unit, PFS onsite workers and others, as well as the fire brigade itself, may be endangered and placed at risk of injury or death. Inadequate staffing and training could lead to PFS's inability to timely control onsite fires. To illustrate, flammable liquids, such as diesel fuel, would become free burning almost immediately and require immediate response by fire fighters, especially if the fire occurred in an internal structure. If left unabated, the fire would progress at a greater rate and burn for a longer period of time than if no internal attack were waged. PFS's ability to protect onsite workers is questionable when its fire fighting unit is deficiently staffed and trained, contrary to 10 CFR § 72.32(a)(5), which requires mitigation of consequences of accidents and protection of onsite workers.

Finally, if PFS security personnel take on duties other than security during a fire emergency, especially during off-normal hours, security at the facility may be compromised. Accordingly, the Applicant's Emergency Plan is inadequate to protect human health and safety or comply with NRC regulations.

**Q. 12. Does this conclude your testimony?**

**A. 12.** Yes.

**Gary A. Wise**  
**1053 East 720 North**  
**Orem, UT 84097**  
**801-224-0435**

**Professional  
Experience**

- Utah State Fire Marshal, State of Utah, --Dec., 1996 to present
- Chief of Fire Division, Orem Department of Public Safety, Orem, UT - July 1990 to Dec., 1996
- Division Commander Support Services, Orem Department of Public Safety, Orem, UT - August, 1988 to July, 1990.
- Fire Captain, Orem Department of Public Safety, Orem, UT - Feb., 1983 to August, 1988.
- Fire Lieutenant, Fire Engineer, Firefighter, Orem Department of Public Safety, Orem, UT - Nov., 1978 to Feb., 1983.
- Firefighter/Engineer - Anaheim Fire Department, Anaheim, California, - August, 1968 to Oct., 1977.

**Education**

- A.S. Degree in Fire Science - Rancho Santiago College, Santa Ana, CA.
- Fire Officer II Certified
- Command & Control of Fire Department Operations at Catastrophic Disasters, National Fire Academy, January, 1992.
- Haz-Mat Operations Level Certified.
- P.O.S.T. Certified Peace Officer - 1985.
- EMT Certified since 1973.
- Other seminars and conferences as follows:
  - Dynamics of Supervision
  - Fire Service Instructor
  - Fire Officer Management & Tactics
  - Improved Management Through Better Leadership
  - Fire Incident Management
  - Fire Apparatus Purchase
  - Wildland Firefighting
  - Building Construction for Suppression
  - Fire Prevention Inspections
  - Haz-Mat Environmental Response
  - CEM Exercise Design
  - Emergency Communications
  - I.C./Emergency Communications Center
  - Community Emergency Response Teams Trainer
  - Haz-Mat Incident Command

**Professional**



**Organizations -** Appointed by Governor Bangarter to the State Fire Prevention Board for 6 year term - 1991.

- Appointed by Governor Leavitt to the State EMS Committee for 2 ½ year term - 1994.
- President, Greater Salt Lake Valley Chief Fire Officer's Assoc. - 1992.
- President of the Utah State Fire Chief's Association - 1996.
- Member of the National Association of State Fire Marshals
- Member of the International Association of Fire Chiefs
- Past Member of ;  
Board of Directors for Orem City Employee's Credit Union.  
Utah State Paramedic Advisory Subcommittee.  
Orem City Development Review Committee.  
Utah County Fire Chief's Association.  
Utah State Fire and Rescue Academy's Standard and Training Council.  
Utah State EMS Trauma Task Force Committee.  
Utah Attorney General's Regional Exchange Effort (AGREE).  
Utah County EMS Council.

**Professional Accomplishments**

- Developed the "Life Safety Trailer Program" for the fire service statewide.
- Designed, purchased equipment and implemented new communications Dispatch Center for the City of Orem.
- Implemented Enhanced 911 System for the City of Orem.
- Statewide adoption of the Uniform Fire Code established through the State Fire Prevention Board.
- Implemented several public fire education programs.
- Developed emergency response map books for the Fire Division.
- Developed Vial of Life Program for Orem, Utah.
- Established Orem's Haz-Mat Response Vehicle in 1992.
- Awarded the NFPA Champion Award in 1993 for Fire Prevention Programs.
- Awarded Firefighter of the Year twice - 1984 and 1991.
- Awarded Orem Employee of the Quarter - 1990.

1 JUDGE BOLLWERK: And I think you have  
2 some exhibits?

3 Q. (BY MS. CHANCELLOR) Yes. Are there eight  
4 exhibits attached to your testimony, Mr. Wise?

5 A. Yes, there is.

6 Q. And the first exhibit, is the first exhibit at  
7 the top Emergency Plan Chapter 4 consisting of five  
8 pages? Is that correct?

9 A. Yes, that's correct.

10 Q. Exhibit 2 --

11 JUDGE BOLLWERK: Exhibit 1's already been  
12 identified for the record, so we're all right there.

13 MS. CHANCELLOR: That's correct.

14 Q. (BY MS. CHANCELLOR) Exhibit 2, is Exhibit 2  
15 a -- in the bottom left-hand corner, PFSF Safety RAI  
16 No. 2, EP-7, and it consists of two pages; is that  
17 correct?

18 A. That's correct.

19 Q. Exhibit 3 in the left-hand corner again, PFSF  
20 Safety RAI No. 2, EP-8 consisting of one page, State's  
21 Exhibit 3; is that correct?

22 A. That's correct.

23 Q. Exhibit 4, on the bottom left-hand corner,  
24 PFSF Safety RAI No. 2, EP-21 consisting of two pages; on  
25 the right-hand corner, State's Exhibit 4; is that

1 correct?

2 A. Yes, it is.

3 Q. Exhibit 5 Emergency Plan Chapter 5, State's  
4 Exhibit 5 consisting of two pages; is that correct?

5 A. Yes.

6 Q. Exhibit 6, in the bottom right-hand corner  
7 State's Exhibit 6, NFPA 600 Standard on Industrial Fire  
8 Brigades consisting of numerous pages?

9 A. Yes, that's correct.

10 Q. State's Exhibit 7, EP Chapter 8 consisting of  
11 one page; is that correct?

12 A. Yes, that's correct.

13 Q. Exhibit 8, State's Exhibit 8, NFPA 1500  
14 consisting of -- consisting of eight pages?

15 A. Yes.

16 Q. Are you prepared to answer questions about the  
17 exhibits that we have just identified?

18 A. Yes, I am.

19 MS. CHANCELLOR: Your Honor, these have been  
20 previously distributed to the parties. I ask that they  
21 be admitted into evidence.

22 JUDGE BOLLWERK: All right. Let the record  
23 reflect that State Exhibits 2, 3, 4, 5, 6, 7, and 8 have  
24 been identified for the record as described by counsel  
25 for the State of Utah. Do we need to stop at this point

1 and take a second to mark them, or --

2 (State Exhibits 2-8 were marked  
3 for identification.)

4 MS. CHANCELLOR: Your Honor, they have been  
5 premarked.

6 JUDGE BOLLWERK: Then at this point the motion  
7 has been made they be received into evidence. Any  
8 objection from any of the parties?

9 MR. BLAKE: No.

10 MR. TURK: Your Honor, we would object. Maybe  
11 I should wait for Mr. Blake. We object, your Honor. We  
12 previously indicated our position on NFPA 1500 which the  
13 state has offered as Exhibit No. 8. We believe that it  
14 is irrelevant, and I would just renew that objection.

15 JUDGE BOLLWERK: All right. And I think the  
16 board already ruled that it would admit the testimony  
17 and the exhibit along with it, so that objection is  
18 overruled.

19 As a consequence, and I will also deal with  
20 State Exhibit 1, so State's Exhibit 1, 2, 3, 4, 5, 6, 7,  
21 and 8 are all received into evidence.

22 [State Exhibits 1-8 were  
23 received into the record.]

24 All right, anything else for this witness,  
25 then?

1 MS. CHANCELLOR: No, I have no further  
2 questions, your Honor.

3 JUDGE BOLLWERK: All right, then the witness  
4 is available for cross-examination. Mr. Blake, you're  
5 standing, so I'm assuming that you want to do something.

6 CROSS-EXAMINATION

7 BY MR. BLAKE:

8 Q. Mr. Wise, on your deposition you really have  
9 just been designated and hadn't had a chance to review  
10 much the material, and I see now you have reviewed some  
11 materials. And referring to your testimony, on page 3  
12 in your answer to question 3, there you identify several  
13 of the documents that you've reviewed, and you also  
14 state it wasn't limited to these documents. What else  
15 did you review?

16 A. As far as in the references to NFPA standards  
17 and OSHA regulations, is that what you're referring to?

18 Q. Where it says my examination review included,  
19 applicant's emergency plan and relevant portions of the  
20 SAR, etc. My interest is in it wasn't limited to. What  
21 else did you review?

22 A. As it states there, OSHA regulations. Also  
23 information from parties in Tooele County.

24 Q. What's that information?

25 A. Just the -- talking with the fire chiefs,

1 asking questions about their capabilities or their  
2 equipment, just in general.

3 Q. Any documentation?

4 A. No.

5 Q. So if I were to say my examination with you  
6 included these documents that you've identified there,  
7 and I had some discussions with fire officials in Tooele  
8 County, that would be a complete answer?

9 A. Yes.

10 Q. In your answer to 4, you state that fire  
11 fighting assistance after a delay of 90 minutes probably  
12 wouldn't be effective and could cause problems, as you  
13 state later in your testimony. What is it that you  
14 believe would cause a fire at this facility in the off  
15 hours?

16 A. Any number of things. I have -- from my  
17 experience I have found that surge protectors,  
18 computers, other type of wiring, small space heaters,  
19 candles, those type of things have caused fires.

20 Q. Are there any computers located in the  
21 restricted area of this facility?

22 A. I don't know.

23 Q. Are there any space heaters located in the  
24 restricted area of this facility?

25 A. I don't have that information.

1           Q.    Are there any candles located in the  
2 restricted area of this facility?

3           A.    I don't have that information.

4           Q.    Would it be only fire in the restricted area  
5 which could lead to radiological release?

6           A.    Probably.

7           Q.    Have you evaluated the potential for  
8 radiological release from a fire?

9           A.    No.

10          Q.    With regard to your reference to the 90  
11 minutes in which Tooele County could be expected to  
12 respond, that is your position, correct?

13          A.    I've been told that it was -- by the applicant  
14 that that was an estimate in reading that was the  
15 estimate.

16          Q.    In terms of talking about Tooele fire  
17 officials and firemen from the Tooele -- the assistance  
18 from the city, is that a 90-minute estimate as you  
19 believe was about right for this facility and its  
20 location?

21          A.    I didn't ask them that specifically, and so  
22 I'm not positive how accurate that number is.

23          Q.    Do you have a judgment about whether or not it  
24 ought to be 90 minutes?

25          A.    It would be a guess without actually driving

1 it and under the time of day conditions and so on.

2 Q. Did you get the 90 minutes from something that  
3 you believed that the applicant had said about how long  
4 it would take Tooele County to respond?

5 A. I believe it was in one of the documents that  
6 I read.

7 Q. Are you able to identify the document?

8 A. If you give me time to flip through this.

9 Q. Let me represent to you, I don't believe that  
10 the applicant has made this representation, but  
11 certainly sometime during a break maybe you can get a  
12 chance to look, or maybe your counsel can assist.

13 As I read your testimony, I understood you to  
14 understand that we would only have five people trained  
15 to be fire brigade members. You've been here today and  
16 you've listened to the testimony today. Do you now  
17 understand that there would be a minimum of 11  
18 individuals from the organization who would be trained  
19 to participate as fire brigade members?

20 A. After the testimony today, yes, I understand  
21 that there will be 11.

22 Q. Was I right that at least when you prepared  
23 this testimony you believed there might only be five  
24 people who would be trained to become fire brigade  
25 members?



1           A.    That's correct.

2           Q.    And now with the minimum of 11 people who  
3 would be trained, do you have a different view of  
4 whether the staffing is adequate?

5           A.    It's difficult to determine in the fact that  
6 not knowing if all 11 are working at the same time. I  
7 can't really determine that.

8           Q.    Let's assume that the 11 are out on a normal  
9 workday, five of them are designated as the brigade for  
10 that day, but the other six are out there working and  
11 could pitch in. Would that be sufficient, in your view?

12          A.    Depending upon the magnitude of the incident.

13          Q.    Can you conceive of an incident there which  
14 would require more than 11?

15          A.    In my imagination, as far as looking at worst  
16 case scenario, possibly. But exact example, I don't  
17 know. It depends upon the circumstances at the  
18 facility.

19          Q.    As you know, the applicant here has tried to  
20 evaluate what it regarded as bounding conditions or  
21 possibilities for fires. Did you agree with those kinds  
22 of fires that the applicant looked at?

23          A.    Could you give me an example of what you're  
24 talking about?

25          Q.    Sure. The potential for a locomotive fire

1 outside the facility, the possibility for the cask  
2 transporters fire inside the facility, those kinds.

3 A. And the question being again?

4 Q. Did you agree that fires that the applicant  
5 had looked at with the types of bounding fires that  
6 ought to have been evaluated?

7 A. Some of them, yes.

8 Q. And was there a fire which you believed the  
9 applicant had not looked at which should have been  
10 looked at?

11 A. Yes.

12 Q. And which one was that?

13 A. It seems like the focus was always on a fire  
14 that was -- would result in a radiological release. And  
15 in that turn, I think it disregarded the life safety of  
16 the employees and the fire brigade members in dealing  
17 with the other buildings that are on that site being  
18 outside of the restricted area.

19 Q. And which fire in particular was of concern to  
20 you that wasn't evaluated?

21 A. Being any of the administrative building,  
22 operations and maintenance building or security building  
23 could have an incident and endanger life and property.

24 Q. And did you do an evaluation of those fires?

25 A. No. I have not seen details of the -- other

1 than the floor plans of those facilities.

2 Q. You were here for the testimony earlier today  
3 from both the applicant's witnesses and from the staff's  
4 witness. Do you now understand that any fire brigade  
5 member will be trained to drive a fire truck, and that  
6 as well there will be other people not necessarily on  
7 the fire brigade but from the operations or maintenance  
8 organizations who as well maybe qualified to drive a  
9 truck?

10 A. Yes.

11 Q. And in your view is that an adequate number of  
12 people to drive a fire truck?

13 A. Yes.

14 Q. And did you understand from today's testimony  
15 that there would be -- that people on the fire brigade  
16 would all be trained in order to operate the facility,  
17 that is, the pumper, once the pumper is needed?

18 A. I understand what was said. I don't know if  
19 the testimony understood all the ramifications of  
20 operating it.

21 Q. Did you hear the commitment today with regard  
22 to following NFPA 600?

23 A. I did.

24 Q. And given that commitment to follow NFPA 600  
25 and Mr. Dungan's testimony about quarterly training,

1 semiannual drills and annual hot exposure training, do  
2 you believe that was adequate to follow 600?

3 A. Following 600? No.

4 Q. Do you believe that if we were to do training  
5 and drilling and hot exercises on that schedule, it  
6 would be adequate to follow 600, it would be adequate to  
7 comply with 600?

8 A. Well, 600 requires those specifics is what  
9 you're saying.

10 Q. Yes.

11 A. And I agree that's what 600 says.

12 Q. Okay. And if you met those requirements, then  
13 you would agree that you would be complying with 600?

14 A. A portion of 600, those specific sections.

15 Q. Fair enough. I take it your difference would  
16 be that it ought to be 1500 in what's required there  
17 rather than 600. Is that the way we have a difference?

18 A. That's correct.

19 Q. Okay, we'll get to the 1500, 600. With regard  
20 to your statements about the inadequacies of the  
21 organizational statement and your view that we ought to  
22 have added detail on numbers or training or functions,  
23 are you aware that we have not yet completed all of the  
24 operational procedures which will be required before  
25 this facility goes into operation?

1           A.    Am I aware that you have not completed all of  
2 them?

3           Q.    Yeah.

4           A.    I guess no in the fact that I deemed it to be  
5 inadequate.

6           Q.    And if there is additional detail as you've  
7 outlined in your testimony on the numbers and training  
8 and functions of individuals in the procedures, would it  
9 be adequate, in your view, then, to comply with NFPA  
10 600, that is, the combination of the general plan and  
11 the procedures which give additional specifics?

12          A.    If they had enough detail and so on, I could  
13 determine if it met 600 or 1500, I imagine.

14          Q.    Are you aware, or do you appreciate now from  
15 the documents that you reviewed and hearing the  
16 testimony today that in fact the applicant takes no  
17 credit for the use of the fire truck or the arrival of  
18 the fire truck or the hoses from the fire truck in  
19 meeting the NRC's requirements?

20          A.    I understand that that was testified to. That  
21 was new testimony or new information.

22          Q.    With regard to our difference between the 600  
23 and 1500 and which standard should be followed -- do you  
24 have a copy of your exhibits?

25          A.    Yes, I do.

1           Q.    Will you pull those out, 600 and 1500. Those  
2           are Exhibits 6 and 8. In your answer to question 10 in  
3           your testimony, in the second sentence you indicate that  
4           it's stated in NFPA 1500, most fire brigades aren't  
5           considered industrial fire departments, but where a  
6           plant's located far from municipalities with organized  
7           fire departments, that it may be considered an  
8           industrial fire department. Is that what 1500 says?

9           A.    I'd have to refer back to 1500. Just a  
10          moment.

11          Q.    Sure.

12          A.    That terminology is not in that reference, and  
13          I know that it's in there somewhere.

14          Q.    Let me help you.

15          A.    Okay.

16          Q.    How about A-1-5?

17          A.    That's what I was looking at, and I'm trying  
18          to find it.

19          Q.    It's in the appendix.

20          A.    Right.

21          Q.    In the explanatory material.

22          A.    That's what I was looking at, and I'm trying  
23          to locate it and may be just overseeing it.

24          Q.    Let's see. I don't know that I have the same  
25          one that you do, but it's on the second page in the

1 appendix. There's an A-1, A-1-5 candidate and there's  
2 an A-1-5 industrial fire department. That paragraph.

3 A. That's the one I'm looking for, and I'm  
4 looking for that -- oh, there it is. Yes, usually where  
5 the plant is located far from the municipalities with  
6 organized fire departments. And I think the other key  
7 part is that the industrial fire brigades that provide  
8 rescue services, and rescue being rescue of life from a  
9 burning building or incident as such, with those two  
10 factors, I think that those qualify the brigade to be  
11 called an industrial fire department.

12 Q. Let me focus first right on the same paragraph  
13 that you're looking at where you've got this language,  
14 usually where the plant is located. Is that what you  
15 read as the test, that is, where the plant is located,  
16 or is it rather it's found only at large industrial  
17 facilities and industrial facilities that also perform  
18 municipal fire fighting usually where the plant's  
19 located?

20 A. I read it as you read it. But to me, that  
21 fire brigade, a municipal fire department exiguities  
22 fires, deals with hazardous incidents, performs rescue.  
23 Possibly performs EMS services. I'm assuming that maybe  
24 the fire brigade would be doing that. I don't know for  
25 sure. I guess to me the fire brigade meets some of

1 those criteria.

2 Q. Let's look at 600 just for the moment, and  
3 look at the forward to 600.

4 Q. Again, I don't know whether you have the same  
5 version I have.

6 A. I do. NFPA puts out one version.

7 Q. Okay. In the first column under "forward,"  
8 near the bottom of that column there is a paragraph that  
9 begins, "the primary difference between industrial fire  
10 brigades," etc. See that paragraph?

11 A. Uh-huh.

12 Q. Now, do you agree with this distinction  
13 between fire brigades as we've termed our fire  
14 protection organization and municipal fire departments  
15 are in fact industrial fire departments?

16 A. I understand that the facility will have a  
17 very specialized function and threat. But also I  
18 believe there's other portions of that facility that  
19 fall under another type of arrangement, being again the  
20 administrative and maintenance and operating, security.  
21 They are not part of the specialty, I would guess.  
22 And --

23 Q. Isn't it true that "fire brigade" as we have  
24 termed our organization is one that is organized to  
25 fight fires at one specific facility with which they are



1 familiar and on which they'll train?

2 A. I'm assuming that they probably will not be  
3 going outside their facility.

4 Q. Right. And if they won't be going outside  
5 that facility and if they're trained only on that  
6 facility and that's their only reason for being, isn't  
7 that the definition of a fire brigade as these standards  
8 understand?

9 A. That could be one. I still feel that if  
10 they're doing certain functions, and I guess I'm looking  
11 at it as firefighter safety --

12 Q. Sure.

13 A. -- and also the occupancy. And when I see  
14 firefighters dying at about a hundred year in line of  
15 duty, my concern is for the individual firefighters.  
16 When they're trained to do certain functions, then they  
17 should be have the expertise and the training that's  
18 appropriate to keep them safe. Also the PPE.

19 Q. Isn't it true that most of the firefighters  
20 that run into those life-threatening situations are in  
21 fact firefighters who are fighting at unknown locations  
22 unknown to them previously and with materials that they  
23 didn't know how to anticipate?

24 A. Firefighters die in all different  
25 circumstances. Recently there was one in Utah that died

1 in a little two-story home, very small and very simple.  
2 So as far as the predictability of when firefighters  
3 die, there's too many variables.

4 Q. Are you aware of any firefighters who have  
5 died in an industrial brigade circumstance?

6 A. I have not read all of the hundred plus  
7 firefighter deaths or fatalities per year.

8 Q. Are you aware of any of that from your  
9 readings?

10 A. No, I have not. I have not read about each  
11 one of them.

12 Q. Okay. I grant that you haven't read all of  
13 them. But I want to know whether you're --

14 A. No.

15 Q. -- aware of any.

16 A. Well, let me think. I can't think of one  
17 specific incident on site.

18 Q. And isn't the major difference between the  
19 training and the drilling that brigades go through and  
20 which departments go through, whether municipal or fire  
21 departments, due to the fact that brigades are only  
22 formed, only organized, only trained to cope with their  
23 specific privately owned facility, and firefighters, as  
24 you point out, have to cope with wherever the fire  
25 occurs within the municipality?

1           A.    I'm sure that their training is more  
2 specialized and probably has a larger emphasis in the  
3 PFS facility towards the radiological issues. That  
4 would probably be the -- interior structure fire  
5 fighting might be a much less priority.

6           Q.    Aren't you required under the 600 standard to  
7 in fact prepare themselves for interior fighting as  
8 well?

9           A.    That's correct.

10          Q.    And you understand the applicant has committed  
11 to follow 600 in all respects?

12          A.    That's correct.

13          Q.    And so they would be trained for interior fire  
14 fighting as well as radiological consequences?

15          A.    I understand that. And what you said before,  
16 my feeling is that the radiological release in that type  
17 of fire will be the priority issue of training versus  
18 the more common instance that could cause a fatality or  
19 serious injury for the firefighter or an occupant  
20 employee in one of the other type of buildings also.

21          Q.    If we looked further at 600 -- do you still  
22 have that in front of you?

23          A.    Yes, I do.

24          Q.    Okay. If you look at under Scope 1-1.2.  
25 "This standard shall apply to any organized private,

1 industrial group of employees having fire fighting  
2 duties, such as emergency brigades, emergency response  
3 teams, fire teams, and plant emergency organizations."  
4 Does that sound like what exists at DFS?

5 A. Yes, it could be.

6 Q. Look at the next one, 1-1.3. "This standard  
7 shall not apply to industrial fire brigades that respond  
8 to fire emergencies outside the boundaries of the  
9 industrial facility when the off-site fire involves  
10 unfamiliar hazards or enclosed structures with layout  
11 and contents that are unknown to the fire brigade." Is  
12 that what we also previously agreed was the case?

13 A. It appears so.

14 Q. From a pure terminology standpoint, whether we  
15 call this a fire brigade or we call it a fire  
16 department, doesn't that automatically obligate us to  
17 qualify under NFPA 1500, or could we still qualify under  
18 600? Do you know?

19 A. I don't know if I could make that ruling or  
20 determination, but I think that it would be prudent when  
21 looking at employee safety that going the extra mile and  
22 going NFPA 1500 standards of protection for the  
23 employees as firefighters, I think that would be the  
24 prudent thing to do.

25 Q. But it doesn't make any difference just purely

1 by the terminology whether or not you follow 600 or  
2 1500? That's not what makes the determination for you,  
3 it's the circumstances that we've previously discussed  
4 that is important?

5 A. Yes, I think that there's certain issues that  
6 are defined in NFPA 600, specific duties that they may  
7 be trained for and may have to conduct that then puts  
8 them in the role of an industrial fire department versus  
9 a brigade. And with that emphasis, that 1500 adds a  
10 little bit higher level of safety and requirements for a  
11 little bit better training and expertise. That's what  
12 we're talking about is people's lives, not so much the  
13 property of that administration building and so on  
14 burning down, but there's also people that could be  
15 inside, workers that could be inside for some reason be  
16 trapped. And if those fire brigade members don't have  
17 the expertise and the regular training to have the  
18 confidence level to make an interior attack, a rescue,  
19 then someone's going to lose their life. And to go to  
20 1500 I don't think is an unwarranted requirement.

21 Q. But you've agreed with me that under 600 a  
22 fire brigade must be trained in and is trained in  
23 interior fighting capabilities in building?

24 A. Actually 600 can be met at different levels,  
25 can't it?

1           Q.    One of the great things about being a lawyer  
2    is I don't have to answer questions.

3           A.    But I believe that that's true as it's broken  
4    up into different levels.  So I guess 600 can be met at  
5    different levels, depending upon what the facility  
6    determines what they want their people to do, whether it  
7    be specifically exterior fire fighting.

8           Q.    Can you give me just a second?  I need a break  
9    here.

10          A.    Do I have to answer that?

11               MR. BLAKE:  Sorry for the delay, but this is  
12    one of the coordination businesses.

13               MR. TURK:  May we take a short recess?

14               JUDGE BOLLWERK:  Why don't we go ahead and do  
15    that.  Let's take -- is this going to take --

16               MR. BLAKE:  No, it won't take long.

17               MR. QUINTANA:  It's only going to take two  
18    minutes.

19               JUDGE BOLLWERK:  Okay.

20               (Discussion off the record.)

21           Q.    (BY MR. BLAKE)  Thanks for your patience.  Are  
22    you aware that in terms of the level of training and  
23    participation by PFS's fire brigade that they have  
24    committed to an interiorly structural brigade, that is,  
25    the highest level of interior fire fighting capability

1 under 600?

2 A. Just for clarification, are you talking about  
3 meeting Chapter 6 requirements?

4 Q. My understanding it's 5 and 6, to respond to  
5 your question.

6 A. Okay. I guess what I'm saying is, Chapter 6  
7 includes Chapters 1, 2, 4, and 5.

8 Q. Uh-huh.

9 A. And so my --

10 Q. Yes.

11 A. The reason I ask that is, meaning Chapter 6  
12 meeting -- if you meet Chapter 6 you meet Chapters 1, 2,  
13 4, and 5.

14 Q. I'll need to confirm that. The answer is yes,  
15 from our standpoint in terms of what our commitment is.  
16 And I'm prepared to put that on the record that that's  
17 what the applicant's commitment is. Given that, does  
18 that answer your question about whether we'll be at the  
19 highest level in --

20 A. I understand that now, yes.

21 Q. Okay.

22 A. And the question is whether I feel that's  
23 adequate? Is that what you're asking?

24 Q. No. You understand now that we'll be meeting  
25 the highest level in responding to NFPA 600 give that

1 commitment?

2 A. I understand that that's what you're telling  
3 me that PFS is committed to in Chapter 600.

4 Q. The reason that I'm using the term "highest  
5 level" is because you raised it with regard to  
6 whether -- you know, they're all levels of approaching  
7 600, and I'm trying to give you some assurance in  
8 addition to establishing a record, because your views  
9 are important to us, whether that answers your question  
10 about whether we'll be at the highest levels in applying  
11 the 600.

12 A. Could you give me just a minute --

13 Q. Sure.

14 A. -- to review 5 again?

15 JUDGE BOLLWERK: Off the record.

16 (Discussion off the record.)

17 A. I guess my answer is that the Commission  
18 allows PFS to function under FPA 600, and I would expect  
19 without a doubt that PFS should meet Chapter 6. But I  
20 would still recommend that NFPA 1500 is not that out of  
21 reach. And I guess I wonder why PFS has such reluctance  
22 to just take that extra step for employee safety.

23 Q. We've gone through 600 and 1500 and the  
24 distinctions which the standards themselves set out as  
25 the difference, and we've agreed that the application of



1 600 is specified facilities known to the brigades and  
2 not a general fire fighting capability outside in areas  
3 where they're unfamiliar is in fact what applies here.  
4 Is that correct?

5 A. I thought that you were explaining something.  
6 I didn't know it was a question. You're going to have  
7 to --

8 JUDGE BOLLWERK: I agree until the last part  
9 of it.

10 Q. Go back. We've agreed when we look at 600  
11 and --

12 A. I'm sorry. Who's agreed?

13 Q. We, you and me in our prior conversations  
14 here. We've agreed that when you look at 600 and 1500  
15 and the ways in which the standards themselves state  
16 distinctions that the PFS facility and the fire brigade  
17 at the PFS facility more closely resembles 600's  
18 situation than 1500's, and the reason for that is the  
19 brigade has been organized, it will be trained and it  
20 will be equipped to cope with fires at the PFS facility,  
21 a known facility with known materials and known spaces  
22 to that brigade. Is that correct?

23 A. In taking certain I want to say definition --  
24 certain terminology, yes, it does meet that.

25 MR. BLAKE: I don't have any more questions.

1 JUDGE BOLLWERK: All right. Mr. Turk or  
2 Ms. Marco?

3 MR. TURK: Mr. Turk.

4 CROSS-EXAMINATION

5 BY MR. TURK:

6 Q. Good afternoon, Mr. Wise.

7 A. Good afternoon.

8 Q. My name is Sherwin Turk. I'm an attorney with  
9 the NRC staff in Washington. I'd like to say first of  
10 all, personally this is the first time I've had occasion  
11 to meet a fire marshal, much less ask questions of one.

12 A. You have one in Washington, D.C.

13 Q. Yes, but we've never had occasion to bring him  
14 to the NRC for questioning. So I have to say this is  
15 one of the interesting components of our work is that we  
16 do interface with a lot of disciplines, a lot of  
17 different areas of expertise. I'm pleased to meet you.  
18 And I hope when I'm done you'll still feel the same way.  
19 I'm sure I will.

20 A. I won't take it personally.

21 Q. I'd like to come back for a moment to a line  
22 of questions that Mr. Blake was pursuing about the  
23 applicability of NFPA 1500 versus NFPA 600. And I guess  
24 I'd like to understand from you, what is the difference  
25 in your mind between an industrial fire brigade and a

1 municipal fire department or fire fighting organization?

2 A. I would guess -- well, some of the things are  
3 frequency of training, maybe intensity of training. I'd  
4 have to refer to -- well, actually I don't have all of  
5 1500 here, I don't think. But there's -- 1500 I believe  
6 addresses some specifics to be a little bit complete. I  
7 know that 600 is addressing the brigade concept, but I  
8 guess again I view the PFS facility and the brigade  
9 being, under those two criteria in particular, the  
10 rescue and the distance from I want to say secondary  
11 backup or municipal fire department, puts it into the  
12 industrial fire department category. And by leaning  
13 over that line, the 1500 is more appropriate.

14 Q. In your testimony you referred to NFPA 600,  
15 and one of the exhibits attached to the testimony or  
16 that's now been filed separately is the state's Exhibit  
17 No. 6, which is the 1996 edition of NFPA 600. To your  
18 knowledge, is that the latest version of that standard?

19 A. You know, I'm not sure. They do reviews  
20 approximately every three or four years, about four  
21 years. So I'm not sure if they're working on one or if  
22 they just released one.

23 Q. I'd like to show you a document.  
24 Unfortunately, I only have one copy.

25 And if I may have your Honor's permission to

1 approach the witness.

2 JUDGE BOLLWERK: Okay.

3 Q. And I'll show this to counsel for the state  
4 first. Mr. Wise, I'd like to show you a document which  
5 is entitled NFPA 600, Standard on Industrial Fire  
6 Brigades, 2000 edition. And at the bottom of this  
7 document it bears the mark of the National Fire  
8 Protection Association with their address in Quincy,  
9 Massachusetts. And I'd ask if you've seen this version  
10 or this document before.

11 A. I don't believe I have, but I'm looking for  
12 the release date. No, I haven't. Since it was just  
13 released February 11th, I have not been -- I have not  
14 reviewed this.

15 Q. And you mentioned that it was released  
16 February 11th. Did you see that release date?

17 A. That's what it appears, yes.

18 Q. Does this then appear to you to be the most  
19 recent version of NFPA 600?

20 A. Yes.

21 Q. And I'd like you to read with me a statement  
22 that appears in what looks to be Chapter 7 -- I'm  
23 sorry -- Appendix A, Explanatory Material, which follows  
24 immediately after Chapter 7. Do you see where I'm  
25 pointing, Appendix A?

1           A.    Yes.

2           Q.    And I'd like to read the following statement  
3   that appears in this Appendix A which is labeled  
4   Explanatory Material.  I guess I should first start off  
5   with reading the description of what Appendix A is.  
6   Quote, "Appendix A is not a part of the requirements of  
7   this NFPA document but is included for informational  
8   purposes only.  This appendix contains explanatory  
9   material numbered to correspond with the applicable text  
10  paragraphs."  Close quote.  Did I read that correctly?

11          A.    I believe so.

12          Q.    And I'd like to also direct your attention to  
13  language in the following paragraph in Appendix A,  
14  quote, "The primary difference between industrial fire  
15  brigades and municipal fire departments is that  
16  industrial fire brigades must deal with conditions and  
17  hazards that are limited to those that exist within a  
18  given facility, that is, generally privately owned and  
19  operated.  Although these site specific hazards can and  
20  do represent the same degree of hazard to both  
21  industrial fire brigade members and municipal  
22  firefighters, industrial fire brigade members are not  
23  usually concerned with, nor are they expected to deal  
24  with, hazards and emergencies beyond the boundaries of  
25  the facility that the brigade serves."

1                   Did I read that correctly?

2           A.    That's correct.

3           Q.    I'd like to skip the next paragraph, I don't  
4 think it's particularly relevant, and go on to the one  
5 that follows, which begins with the following sentence.  
6 "A municipal fire department as a local government  
7 function must provide a service to a very broad-based  
8 municipality with a multitude of unknown factors at  
9 every given response. Variables such as property size  
10 and accessibility, building size, construction and  
11 contents, manufacturing process hazards, fixed fire  
12 extinguishing systems and special agent availability,  
13 and storage and use of solvents, oils, chemicals or  
14 other hazardous materials are all potential unknown  
15 factors that can hinder the effectiveness at any  
16 municipal fire department and place a greater safety  
17 risk on the firefighters." Did I read that paragraph  
18 correctly?

19          A.    Yes.

20          Q.    And then finally, one last paragraph in that  
21 section -- and by the way am I correct this is in  
22 reference to Section A-1-1?

23          A.    That's correct.

24          Q.    The final paragraph of this section says,  
25 quote, "The distinct advantage of familiarity achieves a

1 higher level of industrial fire brigade safety and  
2 allows for the fundamental difference between a  
3 municipal fire department and an industrial fire  
4 brigade." Did I read that correctly?

5 A. That's correct.

6 Q. And that is in fact what NFPA 2000 -- I'm  
7 sorry -- NFPA 600 in 2000 edition states is the primary  
8 difference between industrial and municipal fire  
9 departments, correct?

10 A. That's correct.

11 JUDGE BOLLWERK: What was the last provision  
12 you read from? What was it designated? The very last  
13 one. The very last provision you read from, what was it  
14 designated as?

15 MR. TURK: It's the final paragraph in Section  
16 A-1-1 of Appendix A to NFPA 600, the 2000 edition, which  
17 is entitled Standard on Industrial Fire Brigades.

18 MS. CHANCELLOR: Your Honor, the states wishes  
19 to raise an objection that we've never seen this  
20 document before, and it's difficult to understand what  
21 the differences are between the 2000 version and the  
22 1996 version. And maybe we should take a break and  
23 Mr. Turk make copies for everybody.

24 MR. TURK: I can do that, your Honor, or I can  
25 do it after I'm done. My understanding of this is, when

1 I look at the 2000 edition and compare it to the 1996  
2 edition, I didn't see this narrative discussion in the  
3 exhibit that you have before you. I may have missed it,  
4 but in my knowledge --

5 JUDGE BOLLWERK: I'm looking at page 600-4,  
6 which is the --

7 MR. BLAKE: Mr. Silber informs me it's in the  
8 forward of the '96 edition.

9 JUDGE BOLLWERK: Okay.

10 MS. CHANCELLOR: I guess, your Honor, if  
11 Mr. Turk's going to use the 2000 document for a line of  
12 questioning, we would like the document to be able to  
13 follow along with him. If he's merely pointing out that  
14 there's something different in 2000 and he's going to go  
15 on, then we won't need to see it.

16 JUDGE BOLLWERK: Frankly, from what you read,  
17 I didn't see too many differences. But there was an  
18 "and" that was added to fix a grammatical word problem.

19 MR. TURK: You're more familiar with the  
20 state's exhibit than I was, your Honor, because I did  
21 not see the error in the exhibit.

22 JUDGE BOLLWERK: Am I wrong it's there?

23 MR. TURK: Mr. Silberg has shown the language  
24 to me now, and I'm not doing a word for word comparison,  
25 but I think the only point to be made is this is the



1 current standard narrative discussion of the differences  
2 between industrial and municipal fire brigades or  
3 departments.

4 JUDGE BOLLWERK: But again, I didn't see any  
5 distinctions between that version and this version that  
6 had any --

7 MS. CHANCELLOR: Substance.

8 JUDGE BOLLWERK: -- substance. But I was  
9 reading along with everyone else.

10 MR. BLAKE: If it's any help for  
11 Ms. Chancellor, this was the precise section that I  
12 talked with Mr. Wise about, the forward to 600. It's  
13 the same language, I think very close.

14 MS. CHANCELLOR: That's fine.

15 JUDGE BOLLWERK: My suggestion, I think we  
16 ought to go ahead and have the proper number of copies  
17 made, have it marked and identified and go ahead and put  
18 it into the record. I don't necessarily want to stop  
19 right now and take the time, but let's go ahead at this  
20 point. Let's go ahead and identify it for the record,  
21 and then when Mr. Turk gets copies made for everyone,  
22 then we can go ahead and put it in. If we don't do that  
23 and no one has an objection this evening, we'll do it  
24 tomorrow.

25 MS. CHANCELLOR: That will be fine.

1 JUDGE BOLLWERK: I feel better with it in the  
2 record.

3 MR. TURK: We can make copies of it tonight,  
4 your Honor. I'll have to erase some pencil marks in it,  
5 and then I can distribute it to the parties.

6 JUDGE BOLLWERK: All right. Just so we know  
7 what we were referring to and we were just talking  
8 about, let's go ahead and -- would you identify the  
9 document again, Mr. Turk, just for the record.

10 MR. TURK: Yes. The document is entitled  
11 NFPA 600, Standard on Industrial Fire Brigades, 2000  
12 edition. And your Honor, in terms of numbering, the  
13 staff had previously offered Exhibits B through E, and  
14 then they withdrew those exhibits and are no longer  
15 required -- the State has withdrawn.

16 JUDGE BOLLWERK: So you're now at Staff  
17 Exhibit B?

18 MR. TURK: This will be B.

19 JUDGE BOLLWERK: So let the record reflect the  
20 document just identified by Mr. Turk has been marked and  
21 identified for the record as Staff Exhibit B. And we'll  
22 hold off receiving it at this point so that copies can  
23 be made. You can look at it; if you have any further  
24 objections to its use, let us know tomorrow whenever we  
25 get it.

1                   [Staff's Exhibit B  
2                   was marked for identification.]

3                   JUDGE BOLLWERK: Again, just so you know, the  
4                   last minute, but generally cross-examination materials  
5                   should be original and two just like all the other  
6                   exhibits, just so it's clear to the parties.

7                   Okay, you've shown it to him. Do you need to  
8                   talk with him some more about it?

9                   MR. TURK: No, I'm done with it. Should I  
10                  offer it at this time? Or why don't we wait until I can  
11                  distribute the copies.

12                  JUDGE BOLLWERK: Let's wait to distribute the  
13                  copies. I want to make sure everybody's seen it and  
14                  there's no questions about it. But it has been  
15                  identified for the record.

16                  Q. (BY MR. TURK) Mr. Wise, how much time would  
17                  you estimate that you've spent renewing the application  
18                  and preparing for testimony since your deposition?

19                  A. Several hours. I'm not -- that's a tough one  
20                  to guess at.

21                  Q. On the order of two or three?

22                  A. It's been at different times that I would read  
23                  a document and then possibly review it later.

24                  Q. Can you give a ballpark? Would it be less  
25                  than ten all total?

1           A.    Remind me when my deposition was.  What was  
2 the date?  What month?

3           Q.    Your deposition was conducted on May 27th.

4           MS. CHANCELLOR:  Which year?

5           MR. TURK:  There seems to be a typo in the  
6 copy I have.  It was this year, wasn't it?

7           MS. CHANCELLOR:  No.

8           A.    No.  I would guess probably over ten hours,  
9 figuring that length of time and different information  
10 being reviewed.

11          Q.    Over ten but less than fifteen?

12          A.    Possibly.  It's really tough to --

13          MS. CHANCELLOR:  Objection, your Honor.  The  
14 witness has done the best he can to answer the amount of  
15 time he's taken in his review.

16          Q.    Can you put a realistic upper limit on how  
17 much time you've spent in reviewing the application?

18          A.    Under a hundred hours.

19          Q.    Somewhere, then, between ten and a hundred?

20          A.    I imagine.

21          Q.    I'll drop it.

22                Your experience to date has been as a public  
23 servant, has it not?

24          A.    In my career in the fire service?

25          Q.    Yes.

1           A.    In 32 years of fire service career, yes,  
2 public servant.

3           Q.    My point is, in that time, since you left  
4 school -- why don't I back up for a minute. You  
5 received an associate in science degree in fire safety?

6           A.    Yes, fire science.

7           Q.    Fire science. And what year was that? I can  
8 go to your resume.

9           A.    Thank you. I probably have it in front of me,  
10 too. I didn't put the date on it.

11          Q.    Your professional qualifications indicates  
12 that you earned an AS degree in fire science. You don't  
13 state the date. You state that you have been EMT  
14 certified since 1973. Do you recall offhand when your  
15 degree was issued?

16          A.    I don't.

17          Q.    In the time since your degree was issued, have  
18 you spent all of your career in public service?

19          A.    In the fire service?

20          Q.    Yes.

21          A.    Yes.

22          Q.    There is no time during that period that you  
23 worked for a private organization?

24          A.    No. In the fire service capacity, no.

25          Q.    So you've never been a member of a private or

1 industrial fire brigade?

2 A. No, I have not.

3 Q. In your deposition you stated that you've  
4 never evaluated a fire brigade private or industrial  
5 fire brigade.

6 A. No. I've only I guess worked in conjunction  
7 with them. Do you want me to define what I mean by  
8 conjunction?

9 Q. Well, no. If you would just answer the  
10 question that I asked, and that is, is it not correct  
11 that you've never evaluated the adequacy of a private or  
12 industrial fire brigade?

13 A. That's correct.

14 Q. Have you ever reviewed the fire protection  
15 plans of a nuclear facility other than the PFS proposed  
16 spent fuel storage installation?

17 A. No.

18 Q. Have you ever reviewed NRC requirements or  
19 regulatory guidance for a nuclear -- for a nuclear  
20 facility with respect to fire protection?

21 A. No.

22 Q. Have you ever conducted an evaluation of the  
23 fire hazards present at a nuclear facility, any nuclear  
24 facility?

25 A. Any other facility?

1 Q. Any nuclear facility.

2 A. Well, in PFS, as far as the information that I  
3 was giving.

4 Q. Did you conduct an analysis or evaluation of  
5 the fire hazards that are present at the PFS facility?

6 A. Limited, I guess, in the information I was  
7 given as far as in evaluation or an opinion.

8 Q. Can you describe what you did?

9 A. In looking at the limited information and  
10 looking at the documentation of referring to the  
11 possible fuel available, it was all in documents that  
12 were given me. Looking at the brief floor plans and so  
13 on, just looking at those.

14 Q. Is it correct that you have no basis to state  
15 whether any of the fires which were considered by PFS  
16 would pose a risk of radiological release?

17 A. Do I have the expertise?

18 Q. That's part of it.

19 A. No.

20 Q. Do you know whether NRC has ever required a  
21 nuclear facility to comply with NFPA 1500?

22 A. I do not.

23 Q. Would you agree with a general proposition  
24 that not all fires require a response by firefighter or  
25 by fire brigade?

1           A.    Your question is not all fires need a  
2 response?

3           Q.    Yes.

4           A.    By a fire department? I guess there can be  
5 some exceptions, yes.

6           Q.    And is it true that not all fires would  
7 require a fire suppression?

8           A.    Fire suppression zero or fire suppression  
9 system?

10          Q.    In other words, some fires can be allowed to  
11 burn with no hazard to life or property.

12          A.    True.

13          Q.    That's true?

14          A.    There's some little small fires that burn  
15 themselves out.

16          Q.    Or there could be a large fire, as long as  
17 there's no hazard to person or property, you might let  
18 that burn out by itself?

19          A.    Forestry Service seems to think so.

20          Q.    Can you think of any other examples?

21          A.    Sure. A trash bin that's out away from a  
22 building.

23          Q.    A propane tank, if it's not located near a  
24 building, near people, or it does not pose a hazard to  
25 anyone or anything, wouldn't that be an instance where



1 perhaps you'd let the fire burn out rather than risk a  
2 firefighter's life and send him to an area close to the  
3 blaze?

4 A. Possibly.

5 Q. And is it correct also that you have not done  
6 an evaluation to determine which fires at the PFS  
7 facility would need a manual response which would not --  
8 you have not done that evaluation?

9 A. No, I haven't.

10 Q. Are you familiar with the NRC licensing  
11 process with respect to when the NRC expects to see the  
12 decals of a fire brigade training program?

13 A. No.

14 Q. Do you know when the NRC expects to see  
15 emergency plan implementing procedures or fire brigade  
16 procedures --

17 A. No.

18 Q. -- with respect to the timing of that  
19 submission?

20 A. No.

21 Q. Do you know whether NRC accepts NFPA 600 as  
22 being an adequate standard for nuclear facilities?

23 A. Do I know that?

24 Q. Do you know that?

25 A. I suspect it, but I don't know it.

1           Q.    Do you know what NFPA standard is accepted for  
2 facilities such as nuclear power plants?

3           A.    No, I don't.

4           Q.    If I told you that NRC accepts NFPA 600 for  
5 nuclear power plants, would that change your view as to  
6 whether NFPA 600 would be acceptable here?

7           A.    It wouldn't surprise me, and I don't know if  
8 it would change my view, my personal view.

9           MR. TURK:  Can I have just a moment, your  
10 Honor?

11           Your Honor, I don't have anything further.

12           JUDGE BOLLWERK:  All right.  We're at the  
13 point now for redirect.  Do you have much, or do you  
14 want to --

15           MS. CHANCELLOR:  I don't think I have very  
16 much.

17           JUDGE BOLLWERK:  Why don't we go ahead and do  
18 that, then we can see where we're at at that point.  I  
19 don't know if there are many board questions or not.

20                       REDIRECT EXAMINATION

21           BY MS. CHANCELLOR:

22           Q.    Mr. Wise, have you received various  
23 information from the state with respect to the PFS  
24 facility?  Have you received documents in addition to  
25 the license application?

1 A. Yes.

2 Q. Would these documents typically be from PFS  
3 discovery?

4 A. I believe so.

5 Q. So in response to Mr. Blake's question about  
6 additional information that you have reviewed, would it  
7 be correct to say that you also reviewed documents from  
8 discovery?

9 A. Yes.

10 Q. And have you reviewed floor plans that PFS  
11 submitted to the state fairly recently?

12 A. Yes.

13 Q. And if this were a facility located in the  
14 state of Utah, what type of review would your department  
15 do to evaluate the facility's fire fighting ability?

16 A. We'd look at the plan review process in  
17 looking at the construction of the facilities, square  
18 foot usage, access, hydrants, locations, volume of water  
19 available, pressures available at the hydrants, both  
20 residual and static, those type of things.

21 Q. And what type of documentation would you need  
22 to be able to conduct that review?

23 A. Complete set of plans.

24 Q. And to your knowledge, has PFS submitted to  
25 the state a complete set of plans?

1           A.    I have not received a complete set, no.

2           Q.    Okay.  You were present, correct, when PFS's  
3 witnesses testified with respect to this contention?  
4 You heard their testimony?

5           A.    Yes.

6           Q.    And do you remember the witness referring to  
7 Terra?

8           A.    Yes.

9           Q.    How big is Terra?

10          A.    Very small.

11               MR. BLAKE:  I'm going to impose an objection  
12 here.  This is something called redirect.  I don't  
13 remember any questions during cross about Terra or  
14 anything of the sort.  It might have been that there was  
15 some desire on the state's part to put on supplemental  
16 direct at the beginning, but this clearly is not  
17 appropriate redirect.

18               MS. CHANCELLOR:  Your Honor, I was trying to  
19 do rebuttal at the same time.  I'd be glad to drop this  
20 line of questioning and bring Mr. Wise back for  
21 rebuttal.

22               MR. BLAKE:  That's fine.  If it's called  
23 something, a rebuttal and we want to get on and get  
24 Mr. Wise on, that's all right with me.  I'm prepared to  
25 let it go if we just change the calender and she needs

1 to get on to the point and is trying to get this witness  
2 on and off.

3 JUDGE BOLLWERK: It sounds to me like that's  
4 exactly what she's trying to do. If you don't have an  
5 objection to that, we'll go forward.

6 It sounds like you would acknowledge it's  
7 actually rebuttal more than redirect. He's willing to  
8 get you go forward on that basis. Do you have a problem  
9 with that?

10 MS. CHANCELLOR: No, I don't have a problem  
11 with that. I knew I was beyond direct, but that's fine.

12 JUDGE BOLLWERK: All right. If there's no  
13 objection, go ahead.

14 MS. CHANCELLOR: I'll admit that it's beyond  
15 direct.

16 JUDGE BOLLWERK: Okay. Answer the question,  
17 then, about Terra, the size of it.

18 A. Very small residential community located in a  
19 very rural area.

20 Q. Approximately what population?

21 A. Guessing 150, 200. Around there, I would  
22 imagine.

23 Q. And do you know whether that's an all  
24 volunteer fire brigade, fire department?

25 A. It is.

1           Q.    And would you anticipate that any of the  
2 volunteer firefighters would actually work in Terra?

3           A.    I don't know, but I would guess that any --  
4 most employed people would probably work out of that  
5 area, out of the town of Terra.

6           Q.    Are there any jobs available in -- any  
7 positions that -- strike that. Does Terra have any sort  
8 of industry or shops or what have you that would employ  
9 people?

10          A.    Not really. I think that when I was thinking  
11 of anyone working there, it would be home occupation.

12          Q.    And the witness testified that Terra has three  
13 fire trucks. Typically in these small communities, what  
14 type of fire trucks do they have?

15          A.    It varies throughout the state. I'm not  
16 familiar with Terra's specific equipment, but in the  
17 state it can vary from a 1960 fire engine to a brand new  
18 one.

19          Q.    In response to a question by Mr. Blake, you  
20 testified that PFS didn't understand the ramifications  
21 of operating a fire truck. Could you explain what you  
22 mean by the ramifications of operating a fire truck?

23          A.    Well, from hearing the testimony and the  
24 references to driving and operating and so on, I was  
25 under the impression that the understanding of proper

1 pump pressures, knowing what the intake pressure is,  
2 estimating how many more additional hose lines you can  
3 have available to fight the fire, can be calculated, the  
4 use of a relief valve, the -- I guess all of those  
5 hydraulic calculations to make sure that the various  
6 hose lines that are different lengths have adequate  
7 pressures and not too much pressure, being able to gate  
8 down those that are shorter length and that type of  
9 thing. That it's not just walking up and putting water  
10 into the pump and it comes out and it's everything's  
11 dandy.

12 Q. And did you also hear PFS testify that they  
13 would need two people on the end of the hose and one  
14 people out as a backup?

15 A. I did hear that.

16 Q. And what is your opinion of that from a safety  
17 procedure point of view?

18 A. I see that it is not prudent to have one  
19 person on a backup line. Nationally it's recognized  
20 that there needs to be two people on a backup line. In  
21 case one of the firefighters or both firefighters that  
22 are the initial pack line are lost or go down or  
23 something happens to them, you have two individuals on a  
24 backup line to go and perform that rescue. Or if the  
25 fire suddenly escalates, that that backup line can

1 protect them for their egress.

2 Q. Also with PFS's testimony, with respect to the  
3 sprinkler system, in the unload bay, the central bay I  
4 understand is 90 feet high. Is there any problems with  
5 the sprinkler system being located at that distance?

6 A. The way I understand it, and I'm not a fire  
7 protection engineer, but the way I understand, with that  
8 height the fire would have to burn more intense,  
9 possibly longer, possibly larger to build up an adequate  
10 heat to activate the sprinkler heads. When they're that  
11 distance it takes longer for the heat to rise and to  
12 concentrate to be hot enough to activate the sprinkler.

13 Q. What's your understanding of what activates  
14 the sprinkler head?

15 A. Certain heat level.

16 Q. And does the fact that PFS has the ability to  
17 remove smoke from the area, does that affect -- does  
18 that also affect the sprinkler system?

19 A. When I read that, it raised a concern in the  
20 fact that it's smoke removal, and I'm thinking that it's  
21 removing the heat also, which in theory it seems like it  
22 would also delay the action of the sprinkler head in the  
23 fact that the heat would not build up as fast. And  
24 that's a concern, I guess, unless the specifics could be  
25 explained, to be very clear how the system's designed.



1 But it seems logically that if the heat isn't adequate,  
2 then the sprinkler isn't going to work.

3 Q. And finally, I'd like to turn to the series of  
4 questions Mr. Turk asked you with respect to nuclear  
5 power plants. Would you anticipate that nuclear power  
6 plants have a staff greater than what would be employed  
7 at PFS facility?

8 A. I'm sorry --

9 Q. At a nuclear -- Mr. Turk --

10 A. Oh, at a nuclear plant.

11 Q. At a nuclear reactor.

12 A. I don't know what staffing level is at a  
13 nuclear reactor.

14 Q. Would you anticipate that a nuclear reactor  
15 would be able to have off-site assistance from a  
16 municipal fire department?

17 A. I don't know.

18 Q. Are you aware of any nuclear reactors that are  
19 located in an area similar to Skull Valley?

20 A. No.

21 MS. CHANCELLOR: I have no further questions,  
22 your Honor.

23 JUDGE BOLLWERK: All right. At this point if  
24 there's any recross, or in the case of the rebuttal,  
25 cross-examination with respect to the rebuttal, I think

1 I've got at least two items in there that seem to be  
2 rebuttal as much as they were redirect questions.

3 Do you need a second, Mr. Blake?

4 MR. BLAKE: No. I think when we bring  
5 Mr. Dungan back up we may address one of or two of these  
6 areas.

7 RECROSS-EXAMINATION

8 BY MR. BLAKE:

9 Q. But I really just have one question for you,  
10 Mr. Wise. When you talked about the two in, two out, or  
11 two in, one out -

12 A. I didn't hear that comment, two in, two out.  
13 I didn't hear that phrase.

14 Q. Isn't that what you were referring to when you  
15 talked about --

16 A. Very possibly.

17 Q. Oh, well. Remove any doubt. Is that what you  
18 were talking about?

19 A. I don't want to be accused of bringing that  
20 phrase up.

21 Q. I see. Okay.

22 JUDGE BOLLWERK: It was introduced enough.

23 Q. When you talked about the fact that in your  
24 view that one backup wouldn't be sufficient if you had  
25 two firefighters in the hot area on the hose, are you

1     aware that 600 refers to at least one industrial member  
2     being sufficient?

3           A.     If you could refer me to the section.

4           Q.     Sure. 2-2.4(f).

5           A.     2-4.1(f)?

6           Q.     2-2.4.

7           A.     I'm sorry. I got the four in the wrong spot.

8     Okay, I read that. And what is the question?

9           Q.     My question is, were you aware that this  
10    national standard be a -- 600 says that one is  
11    sufficient?

12          A.     I am now. I don't recall that.

13          Q.     Well, given that, do you quarrel with the  
14    standard?

15          A.     I quarrel with that reference, because --  
16    well, it all depends upon how you look at that. It says  
17    call for help. I hate to say it, but that's not going  
18    to help those two people inside if they're in need of  
19    immediate assistance. And that's why when you mentioned  
20    two in, two out, that's why it's so important.

21          Q.     So in fact you do not accept the national  
22    standard, at least in this respect?

23          A.     I think that how it's interpreted there, I  
24    would have to study the whole section to see if maybe  
25    that's not referring to the specific of an interior

1     attack. Hot zone is used in different terminologies.  
2     In HAZ-MAT it could be an area of a half mile radius. I  
3     would have to go and study that a little bit more. But  
4     on the surface, I guess the issue being two in, two out,  
5     yes, it needs to be two people outside for firefighter  
6     safety.

7             Q.     Do you need more time to study this? I  
8     thought you would be familiar with this standard.

9             A.     Well, in the context, I want to make sure that  
10    I'm reading it --

11            Okay. D, I guess that's -- this is why I  
12    wanted to look at it. In D, "Fire brigade members shall  
13    operate," shall, that means must, "Operate in teams of  
14    two or more in response to fires that have advanced  
15    beyond the incipient stage. I go with D. To me --

16            Q.     Do you understand D to mean that you would  
17    have two standing by outside?

18            A.     If it's beyond the incipient stage, they're in  
19    teams of two or more. If there's two inside, then there  
20    would be two outside is what I see it. I understand  
21    what you're saying, that there has to be more than one  
22    to go to any fire past the incipient stage. It's only  
23    two people that are at a fire that's beyond the  
24    incipient stage and it's an exterior attack, I would --  
25    well, that's all they could do.

1 Q. Do you read D as requiring two at the hose  
2 truck as well?

3 A. No.

4 Q. Why would you apply it to the two that are  
5 outside the hot area but not to the truck?

6 A. There is no need to have two at the truck.  
7 This is -- there's no need to have two incident  
8 commanders. It does say at least one. To me, that one  
9 is not going to go inside for rescue. He's just going  
10 to run for assistance. And that's the flaw I see in  
11 this requirement now. NFPA could possibly give better  
12 definition to the technical committee on what they meant  
13 by that. I don't know.

14 MR. BLAKE: I have no more questions.

15 JUDGE BOLLWERK: All right. Staff?

16 MR. TURK: I have a brief follow-up to that  
17 last line, your Honor.

18 JUDGE BOLLWERK: All right.

19 RE-CROSS EXAMINATION

20 BY MR. TURK:

21 Q. Mr. Wise, I'm going to have to have you help  
22 me with my understanding of NFPA 600, if you might. The  
23 section Mr. Blake was questioning you on now was in  
24 Chapter 2, am I correct, requirements for all fire  
25 brigades. And it's there I believe in section 2-2.4(f)

1       that the requirement was stated to be the fire brigade  
2       members are operating in the hot zone, at least one fire  
3       brigade member with capability to call for assistance to  
4       remain outside the hot zone.

5           A.    I'm sorry.  Can I ask you to read g also?

6           Q.    Well, I can read it.  It's in the record.  
7        "When fire brigade members are operating in the hot  
8        zone, additional brigade members shall be standing by in  
9        the warm zone with appropriate equipment to provide  
10       assistance or rescue."  Is that the section?

11          A.    Uh-huh.

12          Q.    Now, the question I wanted to ask you is, this  
13       applies generally to the fire brigade, section f that I  
14       was reading.  How does that differ from Chapter five,  
15       fire brigades that perform interior structural fire  
16       fighting only?  And there I think you'll see in the 1996  
17       edition a similar sort of a statement I believe in  
18       Section 5-3.5.  The second paragraph of that section, it  
19       says, "Where members are involved and operations require  
20       the use of SCBA or other respiratory protective  
21       equipment, at least one member should be assigned to  
22       remain outside the area where respiratory protection is  
23       required."

24          A.    That one person very easily could be the  
25       incident commander or safety officer.  I think that's

1 the intention. Because in the previous paragraph it  
2 says, when using SCBA they operate in teams of two or  
3 more. I think what the reference is is the safety  
4 officer, and that's what I think it is referring to, for  
5 accountability, in having an accountability system in  
6 place.

7 Q. Are the duties of the group that's covered in  
8 Chapter 5 different from the duties of the fire brigade  
9 generally? Chapter 5 again is fire brigades that  
10 perform interior structural fire fighting only.

11 A. Much higher danger in interior structure fire  
12 fighting.

13 Q. And when you were talking about your view that  
14 there should be two on two in and two out, are you  
15 talking about interior structural firefighting or are  
16 you talking about generally?

17 A. It's imperative that it's on interior. It's  
18 actually when there's any IDLH atmosphere occurs that  
19 you should have the two on the outside also. And IDLH  
20 stands for immediate death and something to health.  
21 Help me out. Sounded like you rattled it off.

22 Q. Immediate death, lethal dose.

23 A. Yeah.

24 Q. Are these the fire brigade members who operate  
25 the fire truck, or are these people who are operating

1 equipment within the structure?

2 A. They're the fire brigade members that have  
3 responsibility for fire fighting.

4 Q. No, I'm talking about Chapter 5, interior  
5 structural fire fighting. Is this specific to the  
6 interior fire protection systems and response, or does  
7 it include fire truck responders as well?

8 A. It refers to any brigade member that's  
9 fighting a fire, an interior structure. I'm sure what  
10 you're leading to or what your question is.

11 Q. Would it apply also to people who operate a  
12 fire truck?

13 A. Operating being the person that's operating  
14 the pump?

15 Q. Well, I don't know how to limit it. So I want  
16 to ask the question a little more generally. Do you  
17 believe that this covers both the fire truck operations,  
18 which would include the hose, the pump, the water tank,  
19 two on, two out -- two in, two out? Do you believe this  
20 section applies to the fire truck operations as well, or  
21 does it only apply to the people who are within the  
22 facility?

23 A. Your question is confusing in the fact that  
24 what I'm saying --

25 Q. They're not going to drive the truck into the



1 canister transfer building, right?

2 A. I don't know what they're going to -- how  
3 they're going to get to place it. That's their option  
4 depending upon the hazard. But what I'm saying is, if  
5 there's two people in fighting the fire on the interior  
6 structure, then there should be two on the -- another  
7 line outside ready to enter.

8 Q. Would you be interested to know that NFPA, the  
9 2000 edition has revised the standard so that it now  
10 specifies two in, two out under Section 5-3.5?

11 A. Probably to be in compliance with OSHA.

12 MR. TURK: May I coach the witness again, your  
13 Honor?

14 JUDGE BOLLWERK: If Ms. Chancellor has no  
15 objection.

16 MR. TURK: It supports her testimony.

17 MS. CHANCELLOR: If NFPA version 600 has two  
18 in, two out, that's basically what the witness is  
19 testifying to. I don't know why you'd see it, but he's  
20 welcome to show it to him.

21 MR. TURK: I think that the difference is that  
22 the '96 edition specifies two in, one out in this  
23 section. That's been changed in the 2000 edition. But  
24 we'll make that available to you in copies.

25 Q. (BY MR. TURK) I'm showing the witness what

1 has marked for identification as Staff Exhibit B, the  
2 2000 edition of NFPA 600, and I'm pointing to paragraph  
3 5-3.5, the second paragraph of that section, and I'll  
4 read this sentence. "Where industrial fire brigade  
5 members are involved in operations that require the use  
6 of SCBA, at least two members shall be assigned to  
7 remain outside the area where respiratory protection is  
8 required." And it continues to say, "One member shall  
9 be responsibility for maintaining a constant awareness  
10 of the number and identity of personnel using SCBA,  
11 their location, function, and time of entry. These  
12 members of SCBA shall be trained, equipped, and  
13 available for rescue." Did I read that paragraph  
14 correctly?

15 A. Pretty close. I think you did. You missed a  
16 couple words.

17 Q. I thought I got them all, but if I'm --

18 MS. CHANCELLOR: Don't do it again.

19 Q. If I'm wrong, we'll offer it in tomorrow.

20 A. But that one person is probably the safety  
21 officer on accountability.

22 Q. This chapter again applies to the industrial  
23 fire brigades that perform interior structural fire  
24 fighting only. But if you turn to the other section  
25 which Mr. Blake had examined you on, which is in Chapter

1 2, requirements for all industrial fire brigades, in  
2 2-2.4, in Section 2-2.4, subparagraph 6 it states, if  
3 I'm not mistaken, "When industrial fire brigade members  
4 are operating in the hot zone, at least one industrial  
5 fire brigade member with the capability to call for  
6 assistance remains outside the hot zone and maintains an  
7 awareness of the safety of industrial fire brigade  
8 members located inside." Did I read that correctly?

9 A. Yes, you did.

10 Q. So they make a distinction, or at least they  
11 make a distinction in the 2000 edition between fire  
12 brigades generally and those which have interior  
13 structure fire fighting responsibility?

14 A. It appears, yes.

15 Q. Finally, Mr. Wise, if the applicant commits to  
16 meet FPA 600 including the latest version, then it would  
17 appear that they would be committing to meet these  
18 standards; is that correct?

19 A. If they're committing to meet all of the  
20 standards of NFPA 600, 2000 edition, all chapters is  
21 what I'm saying.

22 Q. At least these in particular.

23 MS. CHANCELLOR: Objection, your Honor. The  
24 witness has not reviewed the entire document. We don't  
25 know whether the 2000 version is different from the 1996

1 version, which is State's Exhibit 6. If Mr. Turk wants  
2 to ask about State's Exhibit 6, fine. If he wants to  
3 make a distinction between 2000 version, he should point  
4 out those distinctions or else make the exhibit  
5 available to us.

6 MR. TURK: I will make the exhibit available.  
7 I'll withdraw the question, and I'll point out that the  
8 2000 edition does bear margin bars inserted by NFPA  
9 which presumably show the differences between this  
10 version and the previous version.

11 JUDGE BOLLWERK: All right.

12 MR. TURK: And I have nothing further.

13 JUDGE BOLLWERK: If there's nothing further  
14 you wish -- well, ask a question about the commitment  
15 you made, I guess that wouldn't make any sense. But in  
16 any event -- all right. Any further questions,  
17 Ms. Chancellor?

18 MS. CHANCELLOR: I need to confer with  
19 Mr. Blake just one moment.

20 JUDGE BOLLWERK: All right.

21 MS. CHANCELLOR: I have just one question that  
22 I forgot to ask Mr. Wise on redirect/rebuttal.

23 FURTHER REDIRECT EXAMINATION

24 BY MS. CHANCELLOR:

25 Q. The breathing apparatus, do you -- what is

1 your understanding what the breathing apparatus and  
2 other fire fighting equipment or protective gear will be  
3 located at the PFS facility?

4 A. It seems like the previous testimony is going  
5 to be stored in the -- I want to say the health  
6 building.

7 Q. The physics building?

8 A. I believe so.

9 Q. And do you see that as a problem with respect  
10 to fighting a fire in the canister transfer building?

11 A. It could be a problem in the fact that  
12 wherever a fire might be, the fire brigade members would  
13 need to go to that building, get their personal  
14 protective equipment prior to responding to  
15 extinguishing the fire if it was beyond the incipient  
16 stage. That delay could cause some problems. The other  
17 fear is that firefighters or fire brigade members would  
18 start an initial attack even though it was beyond  
19 incipient stage and without personal protective  
20 equipment and be at much higher risk.

21 MS. CHANCELLOR: Thank you. I have no  
22 additional questions.

23 JUDGE BOLLWERK: Any additional questions with  
24 respect to that line of question? Staff? You thinking,  
25 Mr. Turk?

1 MR. TURK: Yes, your Honor.

2 /

3 FURTHER RE-CROSS EXAMINATION

4 BY MR. TURK:

5 Q. Is that the sort of situation you would expect  
6 to be addressed in the procedures for the fire brigade  
7 as to what their initial response should be when they  
8 should get their protective gear?

9 A. Definitely in their training issues and so on  
10 to ensure safe procedures in fighting fires, possibly  
11 alternatives of trying to make sure that people do not  
12 get injured and killed.

13 MR. TURK: Thank you.

14 JUDGE BOLLWERK: All right. Any further from  
15 the parties? All right, board questions?

16 JUDGE KLINE: Yeah. I would just like to  
17 clarify the meaning of some terms here. You appear to  
18 take a grave view of the hazard to firefighters of a  
19 so-called interior structure fire. And is it my  
20 understanding that this appears in the context of a  
21 generally applicable standard, not just related to  
22 nuclear facilities?

23 THE WITNESS: That's correct.

24 JUDGE KLINE: Okay. Now, does an interior  
25 structure fire refer to a fire in which the structure

1       itself is on fire?

2               THE WITNESS:  It's something -- the contents  
3       could be on fire.

4               JUDGE KLINE:  Together with the contents,  
5       okay.

6               THE WITNESS:  Yes.

7               JUDGE KLINE:  Is your view of the grave hazard  
8       to firefighters changed at all by the fire, the bounding  
9       fires that appear in the applicant's testimony in which  
10      it appears that the fire is caused by a pool of spilled  
11      fuel and the structure itself is not on fire?

12              THE WITNESS:  That particular scenario is  
13      unique in the fact that it possibly could be interior?

14              JUDGE KLINE:  Well, it's an interior fire but  
15      not an interior structural fire.  That is, the structure  
16      is not on fire in any case.

17              THE WITNESS:  That's true.  But it's unique in  
18      the fact that the structure is so large that it would  
19      be -- that would be more as an exterior attack,  
20      possibly, depending upon the size of the fire.  In the  
21      fact that normally in an interior structure fire, the  
22      heat and smoke builds up from ceiling down and causes  
23      visibility to be much worse, the heat level is much more  
24      dangerous, flashover, which means that the combustible  
25      materials all ignite at the same time, all of these at a

1 certain heat level. All of these things can happen in a  
2 more confined area. In a very large area those are  
3 lessened. And so the visibility might be a little bit  
4 better and you wouldn't be as close to the fire itself.  
5 You can see the seed of the fire, and that's -- so it's  
6 kind of unique in that particular application, diesel  
7 fuel type of thing.

8 JUDGE KLINE: Well, I'm really inquiring into  
9 your view of the hazard to firefighters in what appears  
10 to be the general case where there could be flashover,  
11 contents burning, structure itself burning, versus a  
12 pool of fuel in an otherwise apparently noncombustible  
13 building.

14 THE WITNESS: As far as the hazard?

15 JUDGE KLINE: Yeah, the hazard to firefighters  
16 in this case.

17 THE WITNESS: I think that the hazards can be  
18 different.

19 JUDGE KLINE: Yeah, that's what I want to  
20 know.

21 THE WITNESS: And I would say that one of the  
22 things that were alluded to earlier is possibly one  
23 diesel tank is exposed, and the other has a tight cap on  
24 it and so on. One is leaking and creates a hazard that  
25 could be surprise to the firefighters. It could release



1 at a later time during the fire fighting. It could pose  
2 other dangers.

3 JUDGE KLINE: Do you have in your mind a  
4 scenario for a bounding fire that exceeds those outlined  
5 by the applicant's testimony?

6 THE WITNESS: I'm sorry. I'm not sure what  
7 you're asking.

8 JUDGE KLINE: Well, the applicant has made an  
9 analysis of fires from various, mostly spilled fuel.

10 THE WITNESS: Uh-huh.

11 JUDGE KLINE: Do you have in mind a larger  
12 fire than any of those analyzed by the applicant?

13 THE WITNESS: That's tough to say, because to  
14 visualize what say 500 gallons of diesel fuel might look  
15 like in that certain facility compared to, say, the  
16 administration building, it's well involved in fire.  
17 Size wise it's difficult to compare.

18 JUDGE KLINE: Okay.

19 JUDGE BOLLWERK: All right. Judge Lam?

20 JUDGE LAM: Mr. Wise, on page 5 of your  
21 prefiled testimony you have expressed an opinion of the  
22 applicant's ability to fight fires. In your 30 some  
23 years of professional experience in fighting fires, how  
24 bad is applicant's ability to fight fire? Can you give  
25 us a rough gauge? Are they very bad, I mean, in terms

1 of deficiency and lack of compliance?

2 THE WITNESS: I guess because inadequacy of  
3 the plan in knowing more about it and its -- Mr. Turk  
4 alluded to is evidently the NRC requires some of this  
5 information at a later date or something. From the  
6 information I received, it raised some concerns. I need  
7 a lot more answers to feel differently, I guess. And so  
8 with the limited information I had, yes, it raised some  
9 real concerns in my opinion about their ability,  
10 particularly the initial is five people. So there is a  
11 lot of information that I had or information I didn't  
12 have to raise those concerns.

13 JUDGE LAM: Right. But based on what you  
14 have, my question is, one would be concerned about  
15 noncompliance and deficiency. But is your level of  
16 concern, how high do they rise? Would it rise to the  
17 level if you had jurisdiction you would not  
18 absolutely -- you would absolutely not permit this  
19 facility to go forward, or would it be ,no, I would  
20 prefer to see improvement, or would it be of the level  
21 that these are minor matters to be resolved? I mean,  
22 how would you categorize your concern based on what you  
23 know today?

24 THE WITNESS: I would want the plant, the fire  
25 brigade to be very specific, be very complete, to have a

1 very intensive training program, to document those  
2 training programs. There's some general things about  
3 the -- those people that operate the pumpers will  
4 conduct annual tests on the pumpers. That would have to  
5 be done. And that takes some considerable training,  
6 too. And if all 11 people are going to know how to run  
7 the pumper test, that would be great. But there's a lot  
8 of detail that needs to be included in how the fire  
9 brigade is going to function, their SOP's on response,  
10 all addressing efficiency, safety, and proper operations  
11 of the brigade in emergency situations.

12 JUDGE LAM: If I can rephrase my question a  
13 little bit. Let us assume this facility is owned and  
14 operated by the State of Utah.

15 MS. CHANCELLOR: That is a big assumption.

16 JUDGE LAM: Then you would have -- your office  
17 would have jurisdiction and authority and licensing and  
18 certification. Am I right? If this facility is owned  
19 and operated by --

20 THE WITNESS: In the area of fire fighting?

21 JUDGE LAM: Yes.

22 THE WITNESS: I guess that's a possibility.  
23 But if the state owned it, then we would also be making  
24 more money, the employees.

25 JUDGE LAM: The reason I asked that is because

1 in your prefiled testimony on page 1, you mention -- let  
2 me read -- the responsibility, in answer to question 1,  
3 line 3, the responsibilities of my office include  
4 licensing and certification of the propane industry,  
5 fire work industry, and fire suppression industry. My  
6 office also prepares plan review and inspections of new  
7 construction of state-owned buildings. This is what I  
8 was leading to.

9 THE WITNESS: Sure.

10 JUDGE LAM: If this is the case that this  
11 facility is owned and operated by the State of Utah,  
12 then what additional requirement would you mandate over  
13 and beyond what the applicant is now proposing?

14 THE WITNESS: If I had that control, we would  
15 do a plan review like we do with every other state owned  
16 building, but it would be specific to this type of  
17 operation, of course. There's NFPA standards and  
18 there's uniform code, fire code references and so on to  
19 specific areas, hazardous areas and so on. And we would  
20 make sure that it is as safe as possible.

21 And as far as if I was -- had responsibility  
22 for the fire suppression and making sure that there was  
23 a chief there and training officer, I'd make sure that  
24 that was probably a 1500 compliant department. I  
25 think -- and also we could regulate the OPG issue, the

1 use of that compressor, which is a concern. The problem  
2 is it's on tribal ground, and I'm afraid that my office  
3 does not have jurisdiction.

4 JUDGE LAM: Your answer seems to indicate your  
5 requirement at the state level appeared to be higher  
6 than what the staff is comfortable with.

7 THE WITNESS: It's probably higher than what  
8 NRC staff is requiring, yes.

9 JUDGE LAM: Thank you.

10 THE WITNESS: Can I clarify why that?

11 JUDGE LAM: Sure, please.

12 THE WITNESS: It's because it seems the NRC  
13 staff is looking at public safety, which I do, too, but  
14 I also look at the employee safety, which means the  
15 public, to the fire brigade member safety and the public  
16 safety. And in their view it seems like it's focused  
17 towards a fire that would result in a radioactive  
18 release, and I look at all aspects of their safety in  
19 whether it's radioactive or not, and so I would look at  
20 it and consider the firefighter safety if they were  
21 fighting a fire in an area in one of those buildings  
22 that were not related to the radioactivity issue. And I  
23 guess maybe that's my focus is towards total safety of  
24 all employees, not just the radioactive issue of  
25 exposure.

1 JUDGE LAM: Thank you.

2 JUDGE BOLLWERK: All right.

3 MR. TURK: I have a very brief follow-up, your  
4 Honor.

5 JUDGE BOLLWERK: All right.

6 Q. (BY MR. TURK) Mr. Wise, Dr. Lam asked you  
7 some questions about the situation that exists if the  
8 State of Utah wants to build a building on non  
9 reservation land, and you indicated that you would build  
10 a plan review, do a very careful review. At what stage  
11 of the planning process would you become involved?

12 A. On a facility this large, probably  
13 immediately. As soon as it was brought forward in the  
14 fact that we would be bringing in experts because this  
15 is such a unique facility.

16 Q. Does the State of Utah issue something called  
17 a building permit?

18 A. That actually falls within the -- not the --  
19 it's the building, D -- which one is it? I want to keep  
20 saying DHRM, but that's human resources. Division of --

21 MS. CHANCELLOR: DFCM?

22 THE WITNESS: DFCM, yes.

23 Q. (BY MR. TURK) What does that stand for?

24 A. Division of facilities, maintenance and  
25 operations. They're kind of the building officials of

1 the state.

2 Q. Does that division also issue occupancy  
3 permits?

4 A. They co-issue. We sign off, they sign off.  
5 And they're actually the building officials as far as it  
6 goes.

7 Q. When a building permit is issued, am I correct  
8 that you have not yet done a review of fire brigades or  
9 fire brigade procedures or fire brigade training? You  
10 would do that in connection with an issuance of an  
11 occupancy permit. Isn't that correct?

12 A. In a facility this large we would be  
13 addressing all aspects of it early on in the stage.

14 Q. Would your approval be required at the  
15 building permit stage, or not until the occupancy permit  
16 stage?

17 A. I can't answer that.

18 Q. You don't know?

19 A. This facility is so unique that it would be  
20 probably handled differently.

21 Q. You don't know, do you?

22 A. No, because we haven't built the facility by  
23 the state.

24 Q. If this was not a nuclear facility, if this  
25 was a state office building, again, this division of

1 state government would issue a building permit, correct?

2 A. You know, we're getting into someplace that I  
3 can't answer because it's individual and because of  
4 DFCM.

5 Q. But you do --

6 A. Operates differently than a municipal building  
7 department.

8 Q. You do know at what stage the fire marshal  
9 becomes involved in certifying that a fire brigade is  
10 acceptable or that a fire protection procedure is  
11 acceptable. You do know that, don't you?

12 A. No. See, now what you're asking me, we  
13 don't -- it doesn't occur. You're talking about fire  
14 suppression capabilities. The state does not have fire  
15 suppression capabilities. We don't respond to fires.  
16 We enforce the code.

17 Q. My question has to do with, when does the fire  
18 marshal's office become involved in certifying that a  
19 building is acceptable with respect to its fire  
20 protection plans? Do you do that before any building  
21 permit at all is issued, or do you certify, like most  
22 states, at the time that the occupancy permit is  
23 requested?

24 A. No. During the plan review process when --  
25 before it is built we review the plan to identify a



1     sprinkler system is installed, if it's adequately  
2     designed, the exiting. A variety of fire code issues.

3             Q.     The design?

4             A.     Yes.

5             Q.     If you look at building permits. But the fire  
6     brigade training program and the fire brigade  
7     procedures, is it not correct that you wait until later  
8     after a building permit is issued and you look at those  
9     things at the occupancy permit stage?

10            MS. CHANCELLOR: Objection, your Honor. The  
11     question has been asked and answered.

12            MR. TURK: It's been asked but not answered.

13            MS. CHANCELLOR: Go ahead.

14            Q.     (BY MR. TURK) Try one more time.

15            A.     Once again, the state facilities do not have  
16     fire brigades, so we don't address fire brigades for  
17     state owned facilities.

18            Q.     Okay. Let's assume, then, that it's an  
19     industrial facility of a non nuclear nature and this  
20     private industrial facility wants to build a plant of  
21     some sort. They need a building permit, correct?

22            A.     Sure.

23            Q.     They need an occupancy permit, correct?

24            A.     Uh-huh.

25            Q.     That's a yes?

1 A. Uh-huh, yes.

2 Q. At what stage does the fire marshal's office  
3 certify that the fire brigade training program and  
4 procedures are adequate?

5 A. We don't. It does not fall under our  
6 jurisdiction.

7 Q. Whose jurisdiction does it fall in?

8 A. Local jurisdiction.

9 Q. Do you know at what stage they reach that  
10 determination?

11 A. Depends upon the local jurisdiction.

12 Q. You can't state the answer as you sit here?

13 A. No. We have too many varieties of local  
14 jurisdictions in Utah.

15 MR. TURK: All right.

16 JUDGE BOLLWERK: Nothing further from the  
17 board members? Any other questions?

18 MR. TURK: One last one. I'm sorry.

19 Q. (BY MR. TURK) You made a comment that what  
20 the state requires is probably higher than what the NRC  
21 staff requires.

22 A. No, it was my opinion of what I would require  
23 if I had jurisdiction over this facility if it was built  
24 by the state.

25 Q. Okay. But to confirm: you had never seen NRC

1 regulatory guidance with respect to what NRC requires  
2 for fire protection systems or brigades, correct?

3 A. No. I've gathered my opinion from what I've  
4 heard today.

5 MR. TURK: Thank you.

6 JUDGE BOLLWERK: All right. I just want to  
7 clarify one thing. I've heard a lot of discussion about  
8 NFPA 1500, and you mentioned, I guess, that you thought  
9 the frequency and intensity of training that's in that  
10 particular standard or guideline is something that you  
11 would want to see applied. Is there any other specific  
12 provisions of NFPA 1500 that think are appropriate or  
13 need to be --

14 THE WITNESS: Well, I think 1500 as a whole is  
15 very complete. We'll put it that way.

16 JUDGE BOLLWERK: All right. If there's  
17 nothing else, then, sir, you're excused as a witness.

18 MR. BLAKE: I'm sorry.

19 MR. QUINTANA: Just one moment.

20 MR. BLAKE: We're consulting, and I apologize.

21 JUDGE BOLLWERK: I was premature.

22 MR. BLAKE: I have no questions.

23 JUDGE BOLLWERK: All right. Then you're  
24 excused subject to being recalled, and I thank you very  
25 much for your appearance and your service on the board

1 today.

2 THE WITNESS: Your Honor, on recall, will I be  
3 notified well in advance?

4 JUDGE BOLLWERK: If there's any reason to. I  
5 don't expect that's going to happen, but we leave that  
6 option open, obviously.

7 THE WITNESS: Okay, thank you.

8 JUDGE BOLLWERK: All right. We're at the  
9 point now where I think -- let me ask two questions. Do  
10 we have any rebuttal testimony putting aside Fire  
11 Marshal Wise?

12 MR. BLAKE: I do, and I think it will be very  
13 brief.

14 JUDGE BOLLWERK: Would you prefer to take a  
15 brief break and then do it, or do you want to just put  
16 it on and get it over with?

17 MR. BLAKE: I'd prefer -- I need to talk to  
18 the witness, but I'd prefer to put it on and get it off.  
19 My recommendation. I'll see what happens.

20 JUDGE BOLLWERK: All right. Why don't we go,  
21 then --

22 MR. BLAKE: We're ready to go.

23 JUDGE BOLLWERK: Is that a change in  
24 midstream, or did I miss --

25 MR. BLAKE: No, there was a brief

1 consultation.

2 JUDGE BOLLWERK: I see. The consultation has  
3 taken place, then. Does the staff have any rebuttal  
4 witnesses they're going to be putting on?

5 MR. TURK: I don't believe so, your Honor.

6 JUDGE BOLLWERK: All right. If he's ready,  
7 then, let's do it. I'm sure there are some people that  
8 are ready for a bathroom break, but maybe we can get  
9 this over and we can just adjourn for the evening.

10 All right, sir. The witness is under oath.  
11 Do you have some questions for him?

12 KENNETH WILLIAM DUNGAN  
13 was called as a witness on behalf of the Applicant and,  
14 having been previously duly sworn, was examined and  
15 testified as follows:

16 REBUTTAL EXAMINATION

17 BY MR. BLAKE:

18 Q. The first question I have is nonrebuttal. You  
19 may recall that Dr. Lamb asked a question of the staff  
20 witnesses with regard to the possibility of an explosion  
21 of the diesel fuel tanks on the locomotive.

22 A. Yes.

23 Q. Can you address that same topic?

24 A. Yes. That's not a very likely event. Diesel  
25 tank explosions are mainly Hollywood special effects.

1 The tank's designed so that only two phenomenon can  
2 cause it to fail. One would be an overpressure and one  
3 would be a puncture of something. The overpressure, to  
4 prevent overpressure from the fire exposure, the tank's  
5 provided with a vent so it is possible that you could  
6 boil off the liquid and burn it. But it's not possible  
7 that the tank would overpressurize because of the  
8 boiling liquid inside. And if the tank were punctured  
9 or ruptured as part of the accident itself, then you  
10 would have a spill fire and not an explosion. I'm not  
11 aware of any incident where we've had an explosion that  
12 was capable of generating any kind of a pressure wave  
13 associated with the diesel fuel tanks.

14 Q. Mr. Wise was asked a question by his counsel  
15 with regard to sprinkler initiation and whether or not  
16 sprinklers would actually be initiated at their height  
17 and location high enough in the building, the canister  
18 transfer building. Can you address that topic, please?

19 A. Yes. In fact the reason for dividing the  
20 system into three zones is so that the high bay area is  
21 not operated by closed heads. So the fusible element in  
22 the sprinkler head doesn't have to operate. In fact,  
23 there will be detection devices, and I don't know that  
24 it's been determined precisely what kind, but my guess  
25 is it would be flame detectors that would be looking for

1 a spill fire at floor level. And then all the heads in  
2 that particular zone, that's why we called it a deluge  
3 system, all the heads in that zone would operate in the  
4 low bay area, the 30-foot-high ceiling is where we would  
5 have closed head in there. In that case individual  
6 sprinkler heads themselves like the ones in here would  
7 have to fuse for the foam water solution to come out.  
8 So he's absolutely right, at 90 foot you'd have an  
9 enormous us fire before they'd operate, and that's why  
10 we went with an open head system.

11 Q. There was some discussion about the changes  
12 which have been incorporated in the 2000 edition of the  
13 NFPA standard 600. Is it your view that the PFS fire  
14 brigade will meet the 2000 edition of NFPA 600 even in  
15 its requirements to have two members assigned to remain  
16 outside?

17 A. Yes.

18 MR. BLAKE: I have no more questions.

19 JUDGE BOLLWERK: Any --

20 MS. CHANCELLOR: No questions, your Honor.

21 JUDGE BOLLWERK: Mr. Turk?

22 MR. TURK: No, your Honor.

23 JUDGE BOLLWERK: All right. Any board  
24 questions? All right, sir, then you're excused.

25 All right, at this point, then, I think we

1 have basically completed the evidentiary presentation on  
2 contention Utah R. The plan will be that tomorrow  
3 morning at 9:00 a.m. we will reconvene in closed  
4 session, as we discussed today, to receive evidence on  
5 Contention Utah E. And I think I mentioned it looks at  
6 this point that our next open session will probably be  
7 at some point on Wednesday morning. If we can clarify  
8 that in some way we will, and we'll put information on  
9 the NRC bulletin board, the help line or the information  
10 line, and also the web site if we can accomplish that  
11 and get it back to our folks in Washington and have them  
12 put up there. So if there are members of the public  
13 interested in attending on Wednesday, we'll do the best  
14 we can to get the information out there.

15 I'll also mention again that we have the  
16 limited appearances on Friday and Saturday, and if  
17 someone's not had the opportunity to sign up, they're  
18 certainly welcome to do so. The sheets I believe are  
19 still in the back.

20 At this point also just let me make -- go  
21 ahead and do our ruling with respect to Contention S and  
22 the testimony that was in issue. We are going to deny  
23 the motion for reconsideration. We'll give a further  
24 explanation. We believe that the figures that have been  
25 put out under the stipulation have been accepted and are



1     there in the record as part of the stipulation and they  
2     were not contested. What we will allow the information  
3     or the evidence to be with respect to vintage, just to  
4     use that term, is to the degree that the evidence has  
5     some materiality or relevance to the question of the  
6     future planning in terms of what was raised, that  
7     questions could always be raised about how they'll do  
8     this in the future. If you'd made mistakes in the past,  
9     then those mistakes may be repeated in the future. That  
10    may be material in some way or another. That's what  
11    this evidence we would see going to, not to the question  
12    of the validity of the figures which I think the  
13    stipulation has accepted.

14             All right. So again, it may have some  
15    relevance or materiality, it may not. We wanted to see  
16    what the evidence shows in terms of the future planning  
17    that's been going on.

18             All right. Do any board members have anything  
19    in addition in addition to that? All right, then we  
20    stand adjourned until nine o'clock tomorrow morning.  
21    Thank you.

22             (Proceedings adjourned at 6:21 p.m.)  
23  
24  
25

# PRIVATE FUEL STORAGE 6/19/00

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# PRIVATE FUEL STORAGE 6/19/00

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