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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD PANEL

HEARING

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In the Matter of: : Docket No. 40-9091-MLA

STRATA ENERGY, INC. :

: ASLBP No.

(Ross In Situ Recovery : 12-915-01-MLA-BD01

Uranium Project) :

-----x

Wednesday, October 1, 2014

Wyoming Meeting Room

Energy Hall

CAMP-PLEX Multi-Event

Facilities

1635 Reata Drive

Gillette, Wyoming

BEFORE:

G. PAUL BOLLWERK, III, Chairman

DR. RICHARD F. COLE, Administrative Judge*

DR. CRAIG M. WHITE, Administrative Judge

*present via teleconference

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1 P-R-O-C-E-E-D-I-N-G-S

2 (8:30 a.m.)

3 CHAIRMAN BOLLWERK: All right.

4 Can we go on the record, please.

5 Good morning, everyone. We are
6 here for the second day of the Strata hearing,
7 and we are going to be just starting today
8 with Contention 2.

9 Having said that, if we have any
10 unfinished business relative to Contention 1,
11 then we should take care of that now.

12 MR. HARPER: We do, Your Honor.
13 This is Richard Harper from the NRC Staff.

14 The document that was referenced
15 by Dr. Johnson after the EPA report on natural
16 attenuation, we circulated out to the parties
17 and provided copies for -- hard copies for the
18 Board and at this time, we would request that
19 that exhibit be entered into the record.

20 CHAIRMAN BOLLWERK: All right.
21 And I take it -- have you put it into the e-
22 filing system yet?

23 MR. HARPER: I have not yet, but I
24 will do that shortly.

25 CHAIRMAN BOLLWERK: Okay. So, I -

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1 - this is a copy that we have. I guess
2 everyone has got a copy of this document here.
3 All right.

4 So, let's go ahead, and we will
5 mark it for identification at this point.
6 And, when we see, or you tell us that you put
7 it in the e-filing, then we will go ahead and
8 we will admit it into evidence.

9 MR. CRYSTAL: Your Honor.

10 CHAIRMAN BOLLWERK: Yes, sir.

11 MR. CRYSTAL: Could I raise a
12 concern about that?

13 CHAIRMAN BOLLWERK: Surely.

14 MR. CRYSTAL: As you know, we,
15 Joint Intervenors -- this is Howard Crystal
16 for the Joint Intervenors.

17 The first I have had an
18 opportunity to look at this document last
19 night. In general, just sort of concerned
20 about a document that we just looked at for
21 the first time, but we did have the
22 opportunity.

23 We have looked it over, but we
24 haven't had an opportunity to have our
25 witnesses comment on it, and you have heard

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1 some comments on it from Dr. Johnson.

2 In our view, while we -- we don't
3 object to the addition of this exhibit into
4 the record, we think it would be appropriate
5 to allow Dr. Abitz an opportunity to respond
6 to the comments that Dr. Johnson made about
7 that document, now that he has had a chance to
8 review it.

9 CHAIRMAN BOLLWERK: Right.

10 MR. CRYSTAL: And if we -- if he
11 can have that opportunity, because, otherwise,
12 I don't think we will have any opportunity to
13 get anything into the record about it.

14 Then --

15 CHAIRMAN BOLLWERK: Okay.

16 MR. CRYSTAL: -- we would have no
17 problem with it being submitted.

18 CHAIRMAN BOLLWERK: So, let me
19 turn back to staff counsel.

20 Do you have -- well, let me ask
21 anyone, do you have any objections to Dr.
22 Abitz having an opportunity to comment on the
23 document?

24 And we can certainly put Dr.
25 Johnson back on -- into the witness box as

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1 well. So --

2 MR. CRYSTAL: That would be our
3 recommendation, Your Honor. We have no
4 objections to that course of action.

5 CHAIRMAN BOLLWERK: Do you think,
6 between the two of them, we would have had
7 everybody we need, or do we need to put
8 anybody else into the -

9 MR. CRYSTAL: I believe, between
10 the two of them, that should suffice.

11 CHAIRMAN BOLLWERK: Are you
12 prepared to do that now, or would you prefer
13 to --

14 MR. CRYSTAL: We are prepared to
15 do that now.

16 CHAIRMAN BOLLWERK: All right.

17 MR. HARPER: We are, as well.

18 CHAIRMAN BOLLWERK: All right.
19 Let's do this.

20 MR. HARPER: Your Honor, we would
21 submit that we would like our witness to be
22 part of that, as well.

23 CHAIRMAN BOLLWERK: Witness --

24 MR. HARPER: Mr. Knode.

25 CHAIRMAN BOLLWERK: There were

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1 four people that --

2 MR. HARPER: Mr. Knode.

3 CHAIRMAN BOLLWERK: Mr. Knode.

4 All right.

5 Any objection to that?

6 MR. CRYSTAL: No objection.

7 MR. HARPER: No objections.

8 CHAIRMAN BOLLWERK: All right.

9 Let's go ahead, then, and take care of the --
10 while they are coming up, let me go ahead and
11 we will mark this for identification.

12 Again, we will use it, we will
13 mark it for identification. It sounds like if
14 this happens, there is not going to be
15 objection to its admission, so we will assume
16 we are going to do that, but I would like this
17 procedural matter of it being put in e-filing
18 done first.

19 All right. So, right now, we will
20 go ahead and mark for identification NRC052,
21 which is EPA Document, the Monitored Natural
22 Attenuation of inorganic contaminants in
23 groundwater, Volume 3.

24 (Whereupon, the above-referred-to
25 document was marked as NRC Exhibit No. 052 for

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1 identification.)

2 CHAIRMAN BOLLWERK: And I am just
3 trying to see if it has a date on it
4 somewhere. Hold on one second. And it is
5 dated September 2010.

6 All right. And so if the three
7 witnesses that we just mentioned, would like
8 to come up and take their place in the witness
9 box. Hopefully everybody is here.

10 All right. And will remind you
11 that all of you are -- continue to be under
12 oath.

13 Go ahead. If you need to get --
14 keep everybody hydrated here. We don't want
15 anybody with dry mouth. Everybody good? Do
16 you need another cup?

17 All right. Dr. Abitz, I think you
18 had something you wanted to say about the --
19 what has now been marked for identification as
20 NRC 052.

21 DR. ABITZ: Yes. The document
22 that Dr. Johnson cited yesterday, and noted
23 that -- the natural attenuation of uranium.

24 We had a chance to briefly look
25 through that yesterday, and there are three

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1 points I would like to make about that
2 specific document.

3 The first point is a general
4 point. Dr. Johnson cited this as a relevant
5 document for ISL mining, and I note that this
6 is a document by EPA on research and
7 development studies for CERCLA and RCRA sites
8 which, again, goes to show that science is
9 science and it applies to CERCLA, RCRA and ISL
10 mining sites.

11 The second point is the natural
12 attenuation, but in fact, many of these
13 studies show is that once uranium is in a plus
14 6 oxidation state, and complex bicarbonated
15 and moving through and moving through an
16 aquifer, it is very difficult to attenuate it
17 and remove it by reductive attenuation.

18 In other words, it is very
19 difficult to reduce this uranyl carbonate
20 species in the plus 6 state once it has been
21 oxidized.

22 So, in fact, natural attenuation
23 does not work very good once it is in a uranyl
24 carbonate species.

25 And the last point, we had

1 mentioned yesterday that, you know, control
2 with nitrogen gases with an error technique,
3 it would be very important in not oxidizing
4 the ore zone.

5 And the studies in this report
6 also show that when they try to remove uranium
7 4 species from sediment using carbonate in the
8 presence of nitrogen gas, it was not
9 successful.

10 So, nitrogen gas inhibits the
11 oxidation of uranium and keeps it in the
12 uranium 4 phase and out of solution, so those
13 three points are very important for our
14 arguments.

15 CHAIRMAN BOLLWERK: All right.
16 Anything further you need to say at this
17 point?

18 DR. ABITZ: Not at this time.
19 Thank you.

20 CHAIRMAN BOLLWERK: All right.
21 Let me then turn to the other two witnesses
22 who have been empaneled and ask if either of
23 the staff or Strata's witness have any
24 comments on what you just heard.

25 MR. KNODE: Just one comment. You

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1 know, in my testimony I made a comment that
2 there was, you know evidence that groundwater
3 will naturally attenuate and I was accused
4 that that was a blanket statement without any
5 support offered.

6 For support yesterday, we were in
7 3136, NRC Document 037, I believe it was, and
8 this document. The point being the natural
9 attenuation is well-known, been looked at for
10 years and works.

11 CHAIRMAN BOLLWERK: All right.

12 DR. JOHNSON: Judge Bollwerk, the
13 -- my -- my utilization of this document, this
14 report, is to understand the parameters that
15 control natural attenuation, and the
16 parameters are many, and they are discussed in
17 detail here, and the parameters are such, you
18 know, the oxidation stage has been mentioned,
19 the concentration of carbonate, which has been
20 mentioned, the mass of iron hydrozide, which
21 is discussed here, and pH, there is just a
22 host of parameters that affect the magnitude
23 or the degree of natural attenuation in
24 certain circumstances.

25 So, the -- the benefit, the

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1 utilization of a document such as this, which
2 compiles the studies and the empirical
3 evidence and, you know, the case examples and
4 so on, the compilation of these can really be
5 used to enhance natural attenuation in
6 situations where that is your objective.

7 So, this just -- this document
8 confirms that, indeed, it happens. There are
9 certainly different parameters that -- that
10 affect the degree of it, but those parameters
11 can be -- be controlled and adjusted to
12 accomplish the end.

13 CHAIRMAN BOLLWERK: All right.
14 Thank you.

15 Dr. Abitz, anything further you
16 want to say?

17 DR. ABITZ: Yes. Final point.
18 There is no doubt that natural attenuation can
19 be effective. What matters are the conditions
20 in the aquifer.

21 And, as we discussed yesterday,
22 under very high uranium concentrations and
23 carbonate during lixiviant injection,
24 attenuation by absorption is pretty much
25 swamped out, so it is not effective.

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1 So, I do not believe that natural
2 attenuation under the cases of lixiviant
3 migration apply to ISL mining sites.

4 CHAIRMAN BOLLWERK: All right.
5 Thank you.

6 DR. JOHNSON: Dr. Bollwerk, I
7 would like to just follow up on that.

8 You know, just imagine the
9 situation in which there is an area around a
10 -- you know, between the injection and the
11 production wells, rather a small area, that
12 has been -- there are high -- high
13 concentrations of carbonate from the ISR
14 activities.

15 But, postoperations and after
16 restoration has been approved, there is no
17 more pumping. So, the natural groundwater
18 gradient takes over and there is a flow,
19 although these sediments it is a rather -- it
20 is rather slow but, nonetheless, there is some
21 flow away from that wellfield.

22 So, once the transport begins to
23 be outside that wellfield, the carbonate
24 concentrations immediately decline because
25 that is the area that has not felt the effect

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1 of the injection of the lixiviant.

2 So, it is -- and it is that area
3 where natural attenuation is very critical
4 because it is in that area that is between the
5 wellfield, actual production with the
6 wellfield pattern and the perimeter monitoring
7 wells that mark the edge of the exemptive
8 aquifer.

9 So, it is that space, which is
10 roughly 400 feet in the case of the Ross
11 project where the natural attenuation will
12 occur because the situations are more normal.
13 They have not been impacted by lixiviant.

14 The carbonate concentrations start
15 declining, and then the conditions are such
16 that natural attenuation can occur.

17 CHAIRMAN BOLLWERK: All right.
18 Dr. Abitz.

19 DR. ABITZ: Yes. Thank you. Two
20 points on this. One, the fluids move away
21 from the injection point in that the
22 restoration of carbonate levels are lower.

23 The importance here is, one, as
24 they move away, if they are -- if Dr. Johnson
25 is assuming that there will be absorption then

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1 and attenuation because the conditions are no
2 longer oxidizing, then if that is the case,
3 there will not be iron oxyhydroxides present
4 for absorption of the uranium.

5 And second, the studies in the EPA
6 report she cites show that uranium, once in a
7 plus 6 state, will not be attenuated by
8 reductive acid.

9 So, I don't understand what the
10 argument is here. If the conditions moving
11 out of the mine zone are reductive, then there
12 is no iron oxyhydroxide for absorption. And
13 also, the studies show that reducing uranium
14 from plus 6 to plus 4 does not occur easily.

15 So, I -- either way, I don't see
16 that natural attenuation is applicable.

17 CHAIRMAN BOLLWERK: All right.
18 Well -- yes.

19 DR. JOHNSON: Dr. Bollwerk, I
20 would like to add to that.

21 I have been involved in many, many
22 studies that have to do with the basic
23 chemistry that forms ROLFRENS (phonetic). In
24 other words, there is an oxidation reduction,
25 boundaries and barriers.

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1 And I have looked at samples from
2 these areas, you know, under certain
3 techniques where you can actually see the
4 minerals, and in the normal setting, it is not
5 at all uncommon -- in fact, it is the common
6 situation to have pyrite, which is the reduced
7 species of iron surrounded by iron hydroxide
8 because, over time there is a lot of dynamics.

9 Water is flowing through. So, you
10 start -- so, it is not a clear situation where
11 this is reduced and this is completely
12 oxidized.

13 Generally speaking, in these
14 environments, you have got the presence of
15 pyrite and you have got the presence of iron
16 hydroxide and the predominance changes because
17 this is a very dynamic system.

18 So, the situation could be that
19 the iron hydroxide is available for
20 absorption. At the same time that you get
21 into, you know, into -- starting to get into
22 that more reducing environment by oxygen
23 levels declining.

24 And what -- what is required for
25 the uranium plus 6 to go back into the uranium

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1 plus 4 are electrons, and there needs to be
2 what is called in the -- in the science,
3 electron donors, and there can be a variety of
4 these electron donors.

5 But if the -- and that is what
6 some of the studies are showing, that you have
7 to have the right electron donors to provide
8 the electrons to make that reaction happen.

9 And, carbon, carbonate, you know,
10 carbon materials are the common ones, and
11 these -- if you have looked at the thin
12 sections, mineralogical thin sections or if
13 you looked at these under SEF, you see carbon.

14 And so, now, the right kind of
15 carbon might not be there in every little
16 spot, but if you look at it in a larger scale,
17 the carbon is generally sufficient to provide
18 the electrons required for the transformation
19 from uranium plus 6 to uranium plus 4.

20 CHAIRMAN BOLLWERK: All right.
21 Dr. Abitz.

22 DR. ABITZ: Dr. Johnson certainly
23 makes a point that would be valid, but the
24 question is, how much time is required for the
25 transfer of those electrons to reduce uranium.

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1 And the studies and the reports
2 she cites show that that does not happen in a
3 very rapid time frame.

4 And I forget what Xu and Soto
5 (phonetic) was the report where they said
6 that, once you have uranium in a plus 6 state
7 it is very difficult to remove it by reductive
8 capacity in a short period of time.

9 So, I am just citing that report
10 that was in the report that Dr. Johnson noted
11 yesterday.

12 DR. JOHNSON: Judge Bollwerk, and
13 I think in that case, when it comes to the ISR
14 facilities in the Powder River Basin, you
15 know, the proof is in the pudding, so to
16 speak, and the -- and that is where it is
17 important, this postrestoration approval
18 monitoring that was done at the A wellfield at
19 Smith Ranch, and that is a -- I think that is
20 037.

21 It was discussed yesterday, but --
22 the NRC Exhibit 037. And, you know, if -- and
23 that shows quite clearly that the -- in a very
24 short distance over -- and this was from 2005
25 to 2012, that natural attenuation appears to

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1 be effective in over -- just a very short
2 distance, because the perimeter monitoring
3 wells, they, within about 400 feet or 500
4 feet, maybe, of the -- the production well
5 that shows the high concentrations, they have
6 started out less than the drinking water
7 standard, .03 milligrams per liter, and they
8 have remained.

9 Then, if you move inward into the
10 wellfield, the -- there is a well that is
11 showing decline over time, not an increase,
12 and we could -- if you -- if it is of
13 interest, we can put that figure up on the
14 screen and you can look at it and I can
15 explain it.

16 But, you know, the proof is in the
17 pudding and this is one example where it
18 appears to be working.

19 CHAIRMAN BOLLWERK: All right.
20 Dr. Abitz, anything further?

21 DR. ABITZ: Nothing further at
22 this time.

23 CHAIRMAN BOLLWERK: All right.
24 Anything from Strata?

25 MR. PUGSLEY No, sir.

1 CHAIRMAN BOLLWERK: You are not
2 going to hop in the middle?

3 MR. KNODE: Out-gunned here.

4 CHAIRMAN BOLLWERK: Okay. Dr.
5 Johnson, anything further? You are well-done.

6 All right. Let me just see.

7 Judge Cole, I will come to you in
8 a second.

9 Judge White, anything, from what
10 we heard?

11 JUDGE WHITE Not right now. Maybe
12 I can ask the witnesses during the -- if
13 something else comes up on this topic at a
14 later point.

15 CHAIRMAN BOLLWERK: Okay. There
16 will probably be another opportunity when they
17 will all be on the stand together, I think.
18 So --

19 JUDGE WHITE: Yes.

20 CHAIRMAN BOLLWERK: All right.

21 JUDGE WHITE: So, no questions
22 right now.

23 CHAIRMAN BOLLWERK: Judge Cole,
24 did you have anything?

25 JUDGE COLE: I have no --

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1 CHAIRMAN BOLLWERK: Is that a "No,
2 I think"?

3 Try again. We didn't quite catch
4 that.

5 JUDGE COLE: I have nothing.

6 CHAIRMAN BOLLWERK: All right. I
7 think that is a no. Okay.

8 So, let me turn to the parties a
9 second. While I -- I don't think there is
10 anything -- well, let me ask you. Does anyone
11 have any cross-examination questions they want
12 to propose, or cross-questions?

13 MR. PUGSLEY None from Strata.

14 CHAIRMAN BOLLWERK: All right.

15 MS. MONTEITH: No, Your Honor,
16 none from the staff.

17 MR. CRYSTAL: None from the
18 Intervenors, Your Honor.

19 CHAIRMAN BOLLWERK: All right.
20 Then, I see that the e-filing document has
21 made it into the system. So, we will go ahead
22 at this point, if there is no objection --

23 MR. KNODE: No. No objection.

24 MR. CRYSTAL: No objection.

25 CHAIRMAN BOLLWERK: -- and go

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1 ahead and move Exhibit NRC 052, admitted into
2 the record.

3 All right. And I think we are
4 done at this point. Thank you very much, all
5 of you. Appreciate very much the information
6 you provided us.

7 All right. Is there anything else
8 we have on Contention 1 at this point? And,
9 it sounds like Judge White might want to
10 review something later, but we will take care
11 of that at the time if we need to.

12 So, I think we are ready for
13 Contention 2, and you all had requested that
14 you go ahead and -- that you be allowed to
15 make an opening statement as we went from
16 Contention-to-Contention.

17 Let me do one thing before you
18 start. Let me see if I can hide this away
19 some place here. Let me just read the
20 contention again very briefly.

21 This is Environmental Contention
22 2. The title is the "FSEIS fails to analyze
23 the environmental impacts that will occur if
24 the applicant cannot restore groundwater to
25 primary or secondary limits."

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1 And the Contention, itself,
2 states, "The FSEIS fails to meet the
3 requirements of 10 CFR Sections 51.90-94 and
4 NEPA, because it fails to evaluate the virtual
5 certainty that the applicant will be unable to
6 restore groundwater to primary or secondary
7 limits in that the FSEIS does not provide and
8 evaluate information regarding the reasonable
9 range of hazardous constituent concentration
10 values that are likely to be applicable if the
11 applicant is required to implement an
12 alternative concentration level, ACL, in
13 accordance with 10 CFR Part 40, Appendix A,
14 Criterion 5(b)(5)(c).

15 All right. At this point, then, I
16 will turn to counsel for Strata and see what
17 you have to tell us about with respect to this
18 contention

19 MR. PUGSLEY All right. Thank
20 you, Your Honor.

21 With respect to Contention 2,
22 Strata's position is that the FSEIS and the
23 entire record of decision adequately addresses
24 groundwater restoration and the satisfaction
25 of NRC regulatory requirements for successful

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1 restoration at 10 CFR Part 40, Appendix A
2 Criterion 5(b)(5).

3 For purposes of this contention,
4 Strata will rely on the expert testimony of
5 Mr. Schiffer, Mr. Demuth, Mr. Lawrence and Mr.
6 Knode.

7 With respect to this Contention,
8 Intervenors have alleged that the FSEIS does
9 not adequately assess potential impacts
10 associated with the virtual certain failure to
11 restore site groundwater to NRC primary or
12 secondary standards.

13 Here, Intervenors' prefiled
14 submissions demonstrate a lack of
15 understanding of the various statutory and
16 regulatory programs associated with ISR
17 licensing and operations, including successful
18 groundwater restoration.

19 First, the Intervenors' prefiled
20 submissions have either ignore or
21 fundamentally mischaracterize the
22 applicability of the Safe Drinking Water Act
23 and its Aquifer Exemption Program to ISR
24 operations, especially when referring to the
25 applicability of MCL's and permitting ISR

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1 operations.

2 These aquifer exemptions are
3 mandatory approval that must be obtained prior
4 to commencement of licensed operations and
5 specifically state that an exempted aquifer or
6 portion thereof cannot now, nor ever in the
7 future, serve as a source of public drinking
8 water.

9 And such exemptions cannot be
10 revoked under current EPA UIC program
11 requirements.

12 Second, as discussed in Strata's
13 position statements, the concept of successful
14 groundwater restoration for in situ recovery
15 facilities is based on Criterion 5(b)(5)
16 standards requiring groundwater restoration to
17 be conducted to Commission-approved background
18 or an MCL, whichever is higher, or an
19 alternate concentration limit.

20 The concept of an ACL as a third
21 alternative to Commission-approved background
22 or an MCL has resulted from an initial EPA
23 rulemaking under the Resource Conservation and
24 Recovery Act or RCRA, that was then
25 incorporated into EPA's Uranium Mill Tailings

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1 Radiation Control Act, based generally-
2 applicable standards in 40 CFR Part 192.

3 And then, during its conforming
4 rulemaking, the Commission adopted these
5 standards into Criterion 5(b)(5).

6 The viability of an ACL as a third
7 alternative to groundwater restoration and its
8 potential environmental impacts have been
9 vetted fully in these -- these three
10 rulemakings, all offering the public an
11 opportunity to comment and challenge such
12 rules, and the resulting regulations cannot be
13 challenged in this proceeding.

14 ACL's, by definition, are a site-
15 specific, constituent-specific risk-based
16 human-health standard, based on 19 applicable
17 criteria under 10 CFR, Part 40, Appendix A,
18 Criterion 5(b)(6), and NRC guidance, allowing
19 the use of restoration now as a justifying
20 factor to prior class of use.

21 And that would -- that,
22 effectively, by definition, demonstrates that
23 there are no irretrievably commitment of
24 resources or irrevocable impacts from an ACL.

25 ACL's, for all uranium recovery

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1 facilities, including both conventional, heat-
2 leached and in situ recovery facilities.

3 They have now determined that
4 Criterion 5(b)(5) applies as a matter of law
5 to ISR's, and they require separate license
6 amendment applications with full-fledged 10
7 CFR Part 51 NEPA environmental reviews where
8 a potential impact referenced by Intervenors'
9 must be assessed.

10 Further, in order for NRC to even
11 evaluate the site-specific, constituent-
12 specific parameters associated with an ACL
13 review, and ISR licensee must have established
14 Commission-approved background for Criterion
15 5(b)(5) and obtained all water quality data
16 during restoration postoperations and must
17 satisfy the as low as reasonably achievable
18 principle, even before the agency will allow
19 a licensee to apply for an ACL.

20 Intervenors allege that the ISR
21 industry has not been successful with
22 groundwater restoration, in that they have not
23 restored every constituent of concern to
24 Commission-approved background or an MCL,
25 whichever is higher.

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1 But they failed to note that
2 successful groundwater restoration is defined
3 as compliance with Criterion 5(b)(5)
4 requirements, which includes as a third
5 alternative an ACL.

6 The aforementioned prior class of
7 use standard has been applied successfully
8 that restorations at Cameco Smith Ranch,
9 Highland site, it's Crow Butte site and
10 Uranium One's Irigaray wellfields, and thus,
11 have not resulted in an irretrievable
12 commitment of resources or irrevocable
13 impacts.

14 NRC staff's 2009 report to the
15 Commission, SEI004A and its supporting data at
16 004B shows no impacts to adjacent nonexempt
17 aquifers and, thus, successful restoration has
18 been demonstrated.

19 Specific to the Ross site,
20 Strata's new vetted data demonstrates
21 restoration was successful within the Ross
22 project area, as it was approved by both NRC
23 under source material license and Wyoming
24 Department of Environmental Quality with the
25 license ultimately being terminated by NRC.

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1 NRC staff's FSEIS and the entire
2 record of decisions specifically addresses
3 restoration techniques and potential impacts
4 at SEI009A, at pages 118 through 121 and
5 SEI010 at pages 309 to 318.

6 With that said, Your Honor, I
7 respectfully submit that the FSEIS and the
8 record of decision adequately addresses the
9 substance of this Contention and Intervenors'
10 allegations should not result in a
11 modification of the FSEIS or the record of
12 decision.

13 Thank you.

14 CHAIRMAN BOLLWERK: Thank you,
15 sir.

16 I will turn to the staff.

17 MS. MONTEITH: Good morning, Your
18 Honor.

19 The staff's witnesses for
20 Contention 2 are John Saxton and Johari Moore
21 from whom you heard yesterday, and Kathryn
22 Johnson from whom you heard yesterday and this
23 morning.

24 In Contention 2 is admitted and
25 limited by the Board. The Intervenors argue

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1 that the FSEIS fails to analyze the
2 environmental impacts that will occur if
3 Strata cannot restore groundwater to primary
4 or second limits.

5 Specifically, they claim that the
6 FSEIS does not provide and evaluate
7 information regarding the reasonable range of
8 hazardous constituent concentration values
9 that are likely to be applicable if Strata is
10 required to implement an alternate
11 concentration limit or ACL for the Ross
12 project.

13 CHAIRMAN BOLLWERK: You may need
14 to pull that back just a little closer.

15 MS. MONTEITH: A little closer.

16 CHAIRMAN BOLLWERK: Thank you.

17 MS. MONTEITH: There are two
18 important points, however, that the Board
19 should keep in mind.

20 First, the staff's conclusion in
21 the FSEIS regarding the potential impacts from
22 the Ross project expressly accounts for the
23 possibility that Strata may require an ACL.

24 The staff explains in the FSEIS
25 that a licensee would be required by its state

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1 permit to mine and by its NRC license to
2 conduct aquifer restoration activities to
3 restore the Orozone (phonetic) Aquifer to
4 primary or secondary limits.

5 If the aquifer cannot be returned
6 to one of these conditions, Strata would be
7 required to seek approval for an alternate
8 concentration limit from the NRC.

9 The NRC would only approve an ACL
10 that it found to be as low as reasonably
11 achievable and that will not pose a
12 substantial present or potential hazard to
13 human health or the environment.

14 That standard is set forth in
15 Criterion 5(b)(6) of 10 CFR Part 40, Appendix
16 A.

17 Because the Commission must make
18 such a finding for any ACL to be approved for
19 the Ross project, the staff is able to
20 conclude that the potential impacts to water
21 quality of the exempted aquifer is expected to
22 be small.

23 This is consistent with the
24 findings and conclusions in the generic
25 environmental impact statement for in situ

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1 leached uranium milling facilities which I
2 believe is in the record as Exhibits NRC 007
3 and NRC 008.

4 Second, in the FSEIS, the staff
5 does, in fact, provide and evaluate
6 information regarding the range of
7 historically-approved alternate concentrations
8 at the three ISR sites for which the
9 Commission has approved restoration in the
10 last two decades.

11 Recognizing this, the Intervenors
12 challenged the adequacy of the data underlying
13 the staff's discussion in the FSEIS.

14 In its written testimony, the
15 staff addressed the specific deficiencies
16 alleged by the Intervenors in the Crow Butte,
17 Smith Ranch and Irigaray restoration
18 approvals.

19 We have also explained that the
20 additional data from the Smith Ranch and
21 Christensen Ranch raised by the Intervenors is
22 not relevant to the FSEIS's analysis and,
23 contrary to the Intervenor's suggestion, the
24 staff did not need to essentially reevaluate
25 the NRC's prior approvals for these facilities

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1 in order to comply with NEPA.

2 The essential fact is that the
3 staff used the best information available in
4 alternate concentration levels that the
5 Commission has historically found to be
6 protective of human health and the
7 environment, and the staff evaluated that
8 information in the FSEIS.

9 As the Commission has recognize
10 NEPA does not call for certainty or precision,
11 but an estimate of anticipated, not unduly
12 speculative impacts.

13 To attempt to satisfy the
14 Intervenors' demands for even more
15 information, which generally challenged the
16 NRC's prior technical assessments for these
17 three ISR sites, go far beyond what NEPA
18 requires in this case.

19 In sum, the staff complied with
20 NEPA by thoroughly describing the FSEIS the
21 impacts that might result from the need for an
22 ACL for restoration of the Ross project.

23 Thank you.

24 CHAIRMAN BOLLWERK: All right.

25 Thank you.

1 I turn, then, to Joint
2 Intervenors.

3 MR. FETTUS: Your Honors, thank
4 you, and may it please the Court. I am
5 Geoffrey Fettus with the Natural Resources
6 Defense Council.

7 CHAIRMAN BOLLWERK: Make sure that
8 -- those are really directional mic's, so --

9 MR. FETTUS: Okay.

10 CHAIRMAN BOLLWERK: Thank you.

11 MR. FETTUS: How is that? Better,
12 Your Honor?

13 CHAIRMAN BOLLWERK: Yes. Thank
14 you.

15 MR. FETTUS: Contention 2
16 challenges whether the EIS has taken the
17 requisite hard look at the environmental
18 impacts that will occur when, as is inevitably
19 the case, the applicant must attempt to
20 restore the groundwater to alternative
21 concentrations of contaminates.

22 Our expert, Dr. Larson, has
23 exposed the fallacy in staff's and Strata's
24 assertions, that environmental impacts will be
25 small and temporary, no matter how degraded

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1 the final alternative concentration limits are
2 in the underground aquifer.

3 The staff's unsupported assertions
4 are contradicted by the substantial amount of
5 data that is in the record, direct from the
6 NRC, itself that demonstrates substantial
7 harm.

8 Specifically, Dr. Larson has shown
9 that if the EIS were to consider the actual
10 baseline conditions on the site and compare
11 those values to the reasonably-anticipated
12 conditions postrestoration, the EIS should
13 have presented and analyzed the fact that the
14 Ross project will have significant
15 environmental impacts. This has not been
16 done.

17 First, and contrary to the
18 testimony you have heard and will hear later
19 today, it is a fact that no ISL mine has ever
20 restored a mined aquifer to its premining
21 water quality.

22 The data in the record before you
23 is uncontroverted, that each and every aquifer
24 has been degraded, in contrast to its premined
25 state, and alternative concentration limits

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1 have been applied to allow the licensee to
2 halt restoration efforts and deem them
3 successful.

4 Second, staff and Strata persist
5 in alleging that any environmental impacts are
6 small and temporary. They attempt to take
7 refuge in restoration to a, quote, class of
8 use, suggesting the water wasn't very good in
9 the first instance and that the aquifer is
10 accordingly exempted, a fact of which we are
11 quite aware, and that NEPA does not somehow
12 require exacting and quantitative analysis.

13 All of this is wrong.

14 To the suggestion that the water
15 is bad in the first place, using NRC's own
16 data, Dr. Larson demonstrated at one site the
17 great majority of the average baseline
18 groundwater samples were either below or
19 barely elevated from the NCL for uranium -- I
20 am sorry. The maximum contaminant limit for
21 uranium. Only a small percentage was more
22 elevated.

23 Next Dr. Larson demonstrated that
24 after mining and restoration, the majority of
25 samples were severely contaminated or just

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1 highly contaminated.

2 In short, drinking water quality
3 samples went from being the great majority to
4 an insignificant minority.

5 To staff and Strata's efforts to
6 contradict Dr. Larson with the suggestion NEPA
7 doesn't require exacting quantitative
8 measurements, they provide assurances
9 restoration has improved and alternative
10 concentration limits can be challenged later
11 at some future indeterminate date.

12 But Dr. Larson's testimony does
13 not turn on characterizations that are
14 speculative or unlikely to occur, rather,
15 based on the NRC's own empirical data from
16 other ISL sites and a rigorous scientific
17 explanation of the deficient manner in which
18 staff has considered and presented other sites
19 in the EIS, Dr. Larson demonstrates that the
20 EIS's conclusions about likely postrestoration
21 values at the Ross site are speculative and
22 run counter to any plain understanding of the
23 terms "large" or "small" or "temporary," and
24 "irreversible."

25 In light of the foregoing, and

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1 contrary to the testimony of SEI and staff,
2 the EIS does not take a hard look at the
3 environmental impacts that will occur when the
4 applicant must attempt to restore the
5 groundwater to alternative concentrations of
6 contaminants.

7 CHAIRMAN BOLLWERK: All right.
8 Thank you, sir.

9 All right. At this point, I think
10 we are ready for the Strata witnesses for this
11 Contention.

12 If you would like to go ahead and
13 have them come up and have a seat in the
14 witness table. And if you would begin by just
15 identifying yourselves for the record,
16 whichever end you would like to start at --
17 on.

18 MR. LAWRENCE: Errol Lawrence,
19 Petrotech Engineering.

20 MR. KNODE: Ralph Knode, Strata
21 Energy.

22 MR. SCHIFFER: Ben Schiffer, WWC
23 Engineering.

24 MR. DEMUTH: Hal Demuth, Petrotech
25 Engineering.

1 CHAIRMAN BOLLWERK: All right.
2 So, you gentlemen, your testimony has
3 previously been admitted with respect to
4 Contention 2, both your direct, prefiled
5 direct testimony and your rebuttal testimony.

6 You do remain under oath, as a
7 reminder, and I guess we will just go ahead
8 and admin the exhibits now, really, relating
9 to Convention 2. I think we have everything
10 else in we need.

11 So, let's start with -- I will
12 check with counsel. SEI035 would be the first
13 one?

14 MR. PUGSLEY Yes, sir.

15 CHAIRMAN BOLLWERK: So we are
16 going to mark for identification the following
17 exhibits, SEI-035, which is an IAEA-TECDOC-
18 720, which is -- IAEA-TECDOC-720.

19 SEI-036, the Moore Ranch FSEIS.

20 SEI-037, which is NUREG/CR6733, a
21 baseline risk-informed, performance-based
22 approach for in situ leach uranium extraction
23 licenses, final report, July 2001.

24 SEI-038, Decision of the DCEQ
25 executive director regarding Uranium Energy

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1 Corporation's permanent number UR03075.

2 (Whereupon, the above-referred-to
3 document was marked as SEI Exhibit No. 035,
4 036, 037, 038, for identification.)

5 CHAIRMAN BOLLWERK: And we are
6 going to skip forward to SEI044.

7 MR. PUGSLEY Yes, sir.

8 CHAIRMAN BOLLWERK: The May 11th,
9 2010 response to Kay Sweeney from Bradley
10 Jones regarding a 6/1/20 -- I am sorry. July
11 -- June 1, 2009 letter to the Commission
12 regarding NRC regulatory issue summary, 2009-
13 05.

14 (Whereupon, the above-referred-to
15 document was marked as SEI Exhibit No. 044 for
16 identification.)

17 CHAIRMAN BOLLWERK: And we are
18 going to skip forward.

19 MR. PUGSLEY I believe that is it,
20 Your Honor.

21 CHAIRMAN BOLLWERK: I am sorry?

22 MR. PUGSLEY I believe that is it,
23 Your Honor.

24 CHAIRMAN BOLLWERK: Is that it?
25 What about -- you are right. It is. I am

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1 into the NRC exhibits. So -- all right. So,
2 those having been identified for the record,
3 are there any objections to their admission?

4 MS. ANDERSON: No objection.

5 CHAIRMAN BOLLWERK: Having heard
6 none, we will go ahead and admit into
7 evidence, then, SEI-035, SEI-036, SEI-037,
8 SEI-038 and SEI-044.

9 (Whereupon, the above-referred-to
10 documents were received into evidence as SEI
11 Exhibit No. 035, 036, 037, 038 and 044.)

12 CHAIRMAN BOLLWERK: Does that take
13 care of everything?

14 MR. PUGSLEY Yes, sir. We are
15 good.

16 CHAIRMAN BOLLWERK: All right.
17 So, let me turn to Judge White and see if he
18 has any questions for these witnesses.

19 JUDGE WHITE: I have no questions
20 for the Strata witnesses on this Contention.

21 CHAIRMAN BOLLWERK: Okay. Judge
22 Cole, do you have any questions for these
23 witnesses on Contention 2?

24 JUDGE COLE: Well, a quick. What
25 significance -- (Inaudible due to telephone

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1 connection failure).

2 CHAIRMAN BOLLWERK: Is there
3 anything we can do?

4 Judge Cole, you are cutting out.
5 We are going to have to try again here. We
6 heard "What significance," and that was it.

7 JUDGE COLE: What is the
8 significance of primary and secondary --

9 CHAIRMAN BOLLWERK: No. We heard,
10 "What is the significance of primary and
11 secondary," and that is the last we heard.

12 JUDGE COLE: And the word
13 "standards."

14 JUDGE WHITE: What is the
15 significance -- I think he saying "What is the
16 significance of primary and secondary
17 standards?"

18 Is that correct, Judge Cole?

19 CHAIRMAN BOLLWERK: Is that it?

20 JUDGE COLE: Yes, that is it.

21 CHAIRMAN BOLLWERK: Sorry. Thank
22 you.

23 MR. LAWRENCE: I might take a stab
24 at that. Errol Lawrence.

25 I assume that you are talking

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1 about primary and secondary groundwater
2 standards and typically, a primary standard is
3 related -- directly related to health effects
4 such as an MCL would be a primary standard.

5 Secondary standards are often
6 standards are that are not necessarily
7 enforceable and they don't necessarily have a
8 health risk.

9 They might be something like --
10 although iron does have some health risk, but
11 a constituent that is -- may cause changes to
12 water where it becomes -- maybe has bad taste
13 or causes staining or sort of less serious
14 health affects.

15 And so, that is my interpretation
16 of primary and secondary standards.

17 JUDGE COLE: Who manages the
18 standards that were identified in earlier as
19 NRC primary and secondary standards?

20 CHAIRMAN BOLLWERK: So who -- I
21 missed the first part. Who --

22 MR. LAWRENCE: Are you referring
23 -- Judge Cole, are you referring to
24 restoration standards?

25 JUDGE COLE: It mentions

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1 standards.

2 MR. LAWRENCE: I think,
3 historically, a lot of times there was a
4 primary goal of restoration was to meet
5 baseline or background water quality, and a
6 secondary standard -- for instance, in the
7 State of Wyoming, was class of use, but I
8 don't know that that terminology is considered
9 appropriate now that everything is governed
10 under Criterion 5(b)(5).

11 JUDGE COLE: Well, the Contention
12 states "Alleged failure of the FSEIS is to
13 analyze the environmental impacts that will
14 occur if the applicant cannot restore
15 groundwater to primary or secondary limits."

16 My question is, who prepared these
17 limits and are they -- where did they come
18 from?

19 CHAIRMAN BOLLWERK: I have to
20 defer to the NRC to define that, then.

21 MR. DEMUTH: If I could weigh-in
22 on that, Judge Cole.

23 Under Criterion 5(b)(5), there are
24 primary and secondary goals of restoration and
25 those are -- those are a goal or they could be

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1 referred to as a limit. They are not a
2 standard.

3 As Mr. Lawrence said earlier,
4 there are EPA drinking water standards that
5 are set by EPA and those are in a different
6 arena.

7 Although one of the goals of
8 Criterion 5(b)(5) can be the maximum
9 contaminant limits which are a Federal
10 Drinking Water Standard.

11 So, the Criterion 5(b)(5) process
12 allows for restoration to baseline
13 concentrations, which is Commission-approved
14 baseline, or MCL's, whichever is higher, or an
15 ACL.

16 JUDGE COLE: All right, sir.
17 Thank you.

18 CHAIRMAN BOLLWERK: All right.
19 Anything else, Judge Cole? No? Judge Cole,
20 is there anything else?

21 JUDGE COLE: No.

22 CHAIRMAN BOLLWERK: Thank you.

23 All right. Anything you want to
24 follow up in terms of that?

25 JUDGE WHITE: No, nothing else for

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1 me.

2 CHAIRMAN BOLLWERK: All right.

3 JUDGE WHITE: I have one question
4 for the panel. In terms of the analysis the
5 NRC staff did -- well, we will call, for want
6 of a better term, the bounding analysis that
7 they did in the FSEIS.

8 Did you all have any input to that
9 to agree with that to the degree where you are
10 aware of RAI's or anything like that, request
11 for additional information that were directed
12 to you that provided input to that directly or
13 --

14 MR. SCHIFFER: Judge Bollwerk,
15 this is Ben Schiffer, and I don't believe that
16 we had any RAI's that directly went to this,
17 although I can say that in a technical report
18 in regards -- in Chapter 6, we would conduct
19 a preliminary bounding analysis looking at
20 other sites to establish where this project
21 stood in terms of differing water quality and
22 estimates of -- estimates of postmining water
23 quality.

24 So, it set the stage for staff to
25 do that, and I would be happy, if we want to

1 look at that exhibit, there are several
2 tables, I believe, that compare the water
3 quality prelicense at Ross, as well as the
4 estimates of postmining water quality, and
5 that are in the technical report which would
6 be Exhibit SEI014C, I believe, if you are
7 interested.

8 CHAIRMAN BOLLWERK: Just refresh
9 my recollection in terms of the timing of that
10 technical report. That came when in the
11 process in terms of relative to the MPIS or
12 the request for more correctly -- or more
13 relevantly, the SEIS. I am sorry.

14 MR. SCHIFFER: Judge Bollwerk,
15 that document was submitted as part of the
16 initial license application in January of
17 2011.

18 CHAIRMAN BOLLWERK: They contain
19 that information, then. Have that information
20 and there wasn't a later amendment that was in
21 the initial --

22 MR. SCHIFFER: No, sir, it was
23 part of the original license application.

24 CHAIRMAN BOLLWERK: All right.
25 Has Strata done any additional analysis or

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1 look at what will be alternative concentration
2 limits potentially for this facility?

3 MR. PUGSLEY Not to my knowledge,
4 Judge.

5 CHAIRMAN BOLLWERK: All right.
6 All right. That was my -- the only question
7 I had.

8 Let's turn to counsel, then, and
9 see if they anticipate any cross-examination
10 questions, or do you need to -- do you need to
11 take a break? I guess that would be the
12 question.

13 MS. MONTEITH: I don't believe we
14 anticipate any cross-examination questions at
15 this time. If we took a break, we may have
16 some, but --

17 CHAIRMAN BOLLWERK: I am sorry.
18 You do or no?

19 MS. MONTEITH: Sorry. It doesn't
20 appear that we have any.

21 CHAIRMAN BOLLWERK: Okay.

22 MR. PUGSLEY Strata doesn't have
23 any, either.

24 CHAIRMAN BOLLWERK: All right.

25 MR. PUGSLEY Your Honor, could we

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1 take five minutes?

2 CHAIRMAN BOLLWERK: Surely.

3 MR. PUGSLEY Thank you.

4 CHAIRMAN BOLLWERK: All right.

5 Judge Cole, we are going to take
6 five minutes, and we will give you a phone
7 call when they come back if there is any
8 questions that they want to propose.

9 So, we will take a break right
10 now.

11 (Whereupon, the above-entitled
12 matter went off the record at 9:15 a.m. and
13 resumed at 9:21 a.m.)

14 CHAIRMAN BOLLWERK: All right.
15 Could we go back on the record briefly.

16 All right. We received a
17 potential question from the -- from Strata, so
18 we are going to take about a five-minute
19 break, hopefully no more, and the Board will
20 consult and we should be right back. Thank
21 you.

22 (Whereupon, the above-entitled
23 matter went off the record at 9:21 a.m. and
24 resumed at 9:28 a.m.)

25 CHAIRMAN BOLLWERK: Okay. If we

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1 can go back on the record, please.

2 Okay. We have one question we
3 would like to ask.

4 Is it practical to estimate at
5 this stage of the licensing process what
6 parameters may require a potential future ACL,
7 and at what potential concentration?

8 MR. LAWRENCE: Judge Bollwerk, I
9 would like to answer that question.

10 CHAIRMAN BOLLWERK: All right.

11 MR. LAWRENCE: Errol Lawrence,
12 Petrotech. It is not practical for a number
13 of reasons. An ACL is a site-specific,
14 constituent-specific risk-based groundwater
15 protection standard.

16 A key component of an ACL process
17 is a corrective actions assessment, which
18 includes an evaluation of the restoration that
19 was done at the site and any additional
20 corrective actions that may have been
21 implemented.

22 Also, it includes an ALARA
23 analysis of the effectiveness of the
24 restoration, and other corrective actions, and
25 an analysis of a potential alternative

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1 corrective action.

2 So, there is a lot involved on the
3 tail end, based on the final results of the
4 restoration to go into an ACL determination.

5 So, to predict on the front end of
6 what those numbers would be, even which
7 constituents would be still elevated after
8 restoration would be premature and not really
9 based on any actual data.

10 CHAIRMAN BOLLWERK: All right.
11 Anything further you have?

12 JUDGE WHITE: No.

13 CHAIRMAN BOLLWERK: Anything
14 further, Judge Cole?

15 JUDGE COLE: No.

16 CHAIRMAN BOLLWERK: All right.
17 Anything further from any of the parties?

18 MR. FETTUS: No, Your Honor.

19 CHAIRMAN BOLLWERK: All right.
20 Then, gentlemen, we thank you at this point
21 for your -- the information you provided this
22 morning.

23 Don't go away. I am sure we will
24 have you back again, and we will now move to
25 the staff witnesses for this particular

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1 Contention, which is Contention 2.

2 All right. Good morning and
3 welcome back. If -- go ahead and pour your
4 water and we will -- if you all, to begin,
5 could go ahead and identify yourselves for the
6 record, please, and you need to pull those
7 microphones down in front of you, obviously.

8 MS. MOORE: Johari Moore, NRC.

9 DR. JOHNSON: Kathryn Johnson.

10 MR. SAXON: John Saxton.

11 CHAIRMAN BOLLWERK: All right.
12 And each of you previously has testified. You
13 have been sworn, and you remain under oath.

14 Your testimony has already been
15 admitted relative to this Contention and so
16 what we need to take care of now are the
17 additional exhibits.

18 Just make sure I am on the right
19 page. Okay. And so, I am going to start with
20 NRC-021, which is a 2003 NRC document, NUREG
21 1620, Standard Review Plan for the Review of
22 a Reclamation Plan for Mill Tailing Sites
23 under Title 3 of the Radiation -- of the
24 UMTRCA, basically.

25 NRC-022, which is the Appropriate

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1 Resources 2000 report, Mine Unit 1,
2 Restoration Report Submittal and Request for
3 License Amendment.

4 And again, we are identifying
5 these for the record.

6 NRC-023, Appropriate Resources
7 2001 Report Response to NRC Request for
8 Additional Information Related to Mine Unit
9 One Groundwater Restoration Completion at Crow
10 Butte Project.

11 NRC-024, Appropriate Resources
12 2002 Mine Unit One, Groundwater Stability
13 Data.

14 NRC025, an NRC 2001 report, or
15 document, License Amendment 11 for the Crow
16 Butte Facility.

17 NRC026, a 2003 NRC Document
18 License Amendment 15, Wellfield Number One,
19 Restoration Acceptance.

20 NRC027, an NRC 2004 document,
21 Smith Ranch, Highland Project, NRC Review of
22 A Wellfield Groundwater Restoration Report.

23 NRC-028, a 2004 PRI Document, the
24 Smith Ranch Highland Project, A Wellfield
25 Ground Restoration Information.

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1 NRC-029, a 2012 Cameco, C-a-m-e-c-
2 o, Document, Highland Uranium Project,
3 2011/2012 Annual Report for Permit 603.

4 NRC-030, a 2005 COGEMA Document,
5 Response to LQD/DEQ Comments on -- is it
6 Irigaray?

7 MS. MONTEITH: I believe that it
8 is Irigaray.

9 CHAIRMAN BOLLWERK: Irigaray. I
10 am going to mispronounce that again, I am
11 sure.

12 Irigaray Wellfield Restoration
13 Report.

14 NRC-031 which, again, is a COGEMA
15 Document, 2006, A Response to NRC Request for
16 Additional Information on Irigaray Mine
17 Restoration Report.

18 NRC-033, a COGEMA Document, 2006-
19 B, a Summary Table, Response to NRC Request
20 for Additional Information on Irigaray Mine
21 Restoration Report.

22 NRC-033, again, an NRC Document,
23 2006-A, Technical Evaluation Report, Review of
24 Irigaray Mine Restoration Report, Production
25 Units 1 and 9.

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1 NRC-034, an NRC Document, 2006-B,
2 Report Required -- I am sorry. Letter
3 Regarding NRC Review of Irigaray Mine
4 Restoration Report.

5 NRC-035, a Washington -- I am
6 sorry. A Wyoming Department of Environmental
7 Quality, 2005 Document, Postmining Groundwater
8 Restoration Demonstration for the Irigaray
9 Mine, Change No. 34.

10 NRC-036, Affidavit of Kathryn
11 Johnson Concerning Drafting Error Identified
12 by Joint Intervenors, and the Strata Ross
13 FSEIS, dated April 10th, 2014.

14 NRC-037, Borch, et al, a 2012
15 Document, Determination of Contamination -- of
16 Contaminant Levels and Remediation Efficacy in
17 Groundwater at a Former In Situ Recovery
18 Uranium Mine.

19 NRC-038, NRC Document 2009-C,
20 Regulatory Issue Summary, 2009 Through '05
21 Uranium Recovery Policy.

22 Skipping ahead, NRC 048, a Wyoming
23 Department of Environment Quality 1993
24 Document, Water Quality Rules and Regulations,
25 Chapter 8, Quality Standards for Wyoming

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1 Groundwater.

2 And, NRC-049. Again, another
3 Wyoming Department of Environmental Quality
4 Document, 2005 Water Quality Rules and
5 Regulations, Chapter 8, Quality Standards for
6 Wyoming Groundwater.

7 (Whereupon, the above-referred-to
8 documents were marked as NRC Exhibits Nos.
9 NRC-021, NRC-022, NRC-023, NRC-024, NRC-025,
10 NRC-026, NRC-027, NRC-028, NRC-029, NRC-030,
11 NRC-031, NRC-032, NRC-033, NRC-034, NRC-035,
12 NRC-036, NRC-037, NRC-038, NRC-048 and NRC-049
13 for identification.)

14 CHAIRMAN BOLLWERK: Did I miss
15 anything?

16 MS. MONTEITH: No, Your Honor.

17 CHAIRMAN BOLLWERK: All right.
18 Then, let's go ahead, then, if there is no
19 objections and, hearing none, we are going to
20 go ahead and admit into evidence NRC-021, NRC-
21 022, NRC-023, NRC-024, NRC-025, NRC-026, NRC-
22 027, NRC-028, NRC-029, NRC-030, NRC-031, NRC-
23 032, NRC-033, NRC-034, NRC-035, NRC-036, NRC-
24 037, NRC-038, NRC-048 and NRC-049.

25 (Whereupon, the above-referred-to

1 documents were received into evidence as NRC
2 Exhibits Nos. NRC-021, NRC-022, NRC-023, NRC-
3 024, NRC-025, NRC-026, NRC-027, NRC-028, NRC-
4 029, NRC-030, NRC-031, NRC-032, NRC-033, NRC-
5 034, NRC-035, NRC-036, NRC-037, NRC-038, NRC-
6 048 and NRC-049.)

7 CHAIRMAN BOLLWERK: Do we have
8 everything? All right. Then, I believe we
9 are ready to talk to these witnesses.

10 And, I think that Judge White does
11 have question this time.

12 JUDGE WHITE: I do have just a few
13 questions. In staff witnesses' rebuttal
14 testimony, that is NRC-044R, page 17, you
15 state three criteria for successful
16 restoration, any one of which is sufficient to
17 meet regulatory requirements.

18 And these are listed as, one,
19 restart a Commission-approved background
20 postlicense, preoperational background.

21 Two, restore to value given in the
22 table in paragraph 5-C of Appendix A, if the
23 constituent is listed in the table and if the
24 background level of the constituent is below
25 the value listed, or.

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1 Three, restore to an alternate
2 concentration limit established by the
3 Commission, which is subject to a finding that
4 the concentration is as low as reasonably
5 achievable and will not pose a substantial
6 present or potential hazard to human health or
7 the environment.

8 Regarding Standard Three, and I --
9 I am not going to paraphrase, but they -- I
10 assume there is a lot of literature about
11 this, these terms, but in a concise way, can
12 you tell me what the standards are that are
13 required -- in other words, where can you find
14 the standards, how do you -- how do you view
15 these standards for these two requirements,
16 one of which is that concentration is as low
17 as reasonably achievable.

18 I think that is commonly referred
19 to as ALARA.

20 And the other standard is that it
21 will not pose a substantial present or
22 potential hazard to human health or the
23 environment.

24 In a brief way, how does staff
25 deal with these two standards?

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1 MR. SAXON: I will try to answer
2 that, Your Honor.

3 The requirements are actually in
4 the regulations. It is going to be under
5 5(b)(6).

6 CHAIRMAN BOLLWERK: Yes.

7 MR. SAXON: Within the regulations
8 and the Criterion 5(b)(6), Appendix A, and
9 also on the guidance document -- I forgot
10 which one has the ACL limits.

11 We have a staff position paper
12 about what needs to be done for ACL. It fits
13 the criteria in Appendix A and that is what
14 they have to let an application for, an ACL,
15 or need to be included.

16 I will get you that document after
17 I -- I think it is 1620.

18 JUDGE WHITE: Under your general
19 guidance?

20 MR. SAXON: Yes.

21 CHAIRMAN BOLLWERK: So, have we
22 given it an exhibit number yet, or is that --
23 I think that is --

24 JUDGE WHITE: Yes. That is an SE,
25 and I believe that is an SEI exhibit.

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1 CHAIRMAN BOLLWERK: Okay.

2 JUDGE WHITE: All right. So, both
3 of those terms, the ALARA term and the NUREG
4 have -- have formal definitions for those,
5 which are -- which you strictly follow?

6 MR. SAXON: That is correct.

7 MR. HARPER: Your Honor, I
8 apologize for interrupting. That exhibit is
9 -- Richard Hart with the NRC staff. That
10 exhibit is NRC Exhibit 021.

11 CHAIRMAN BOLLWERK: All right.

12 JUDGE WHITE: Thank you.

13 DR. JOHNSON: Judge White.

14 JUDGE WHITE: Yes.

15 DR. JOHNSON: May I add just a bit
16 to that?

17 JUDGE WHITE: Yes. Please.

18 DR. JOHNSON: The other part of
19 this that I think is -- it is very important
20 to understand and it is oftentimes a little
21 bit of a confusion, is that the last part of
22 this will not pose a substantial present or
23 potential hazard to human health or the
24 environment.

25 It is the -- that applies to the

1 area outside of the exempted aquifer.
2 Because, outside of the exempted aquifer it
3 can be still protected as an underground
4 source of drinking water, so that in practice,
5 that the way that is -- is managed is to
6 evaluate the concentrations, ACL's that are
7 within the wellfield and -- and then,
8 considering just natural groundwater
9 transport, will the -- the boundary of the
10 exempted aquifer will -- at that point, will
11 that be protective of human health which, in
12 other words, is meeting the drinking water
13 standards outside of that boundary.

14 JUDGE WHITE: I see. Right.
15 Okay. Thank you.

16 Regarding the successive
17 restoration at historical ISL sites and in
18 your NRC-044-R, page 19, bottom, and you are
19 referring to Crowe Butte Wellfield One, Smith
20 Ranch, Highland Wellfield A and Irigaray
21 Wellfields 1 through 9 are the three that are
22 discussed in -- in that testimony.

23 You state, "Although the approved
24 restoration concentrations for uranium
25 concentrations" -- I am not sure I read that

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1 correctly -- "at these sites exceeded
2 postlicensing preoperational values. They did
3 not exceed Class 1 domestic use standard of
4 five milligrams per liter."

5 That is a Wyoming standard.

6 You go on to state later that the
7 standards have changed. Would the restoration
8 at those sites have met the new standards, to
9 your knowledge, that are -- are in place for
10 Class 1 domestic use?

11 MR. SAXON: Without going back and
12 actually reviewing what they reviewed as part
13 of the acceptance, it would be hard for me to
14 speculate on that.

15 What I would say is that an
16 applicant now would have to submit an ACL
17 application and one of the parameters may be
18 the class use. That is one of the criteria,
19 is that what is the existing groundwater uses.

20 But it is not the sole criteria,
21 but they would have to do a hazard assessment
22 in the potential receptors.

23 What the previous restorations did
24 entail is an actual groundwater model to show
25 that outside the area that the -- impacts to

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1 the surrounding RSDW (phonetic) were not
2 impacted.

3 JUDGE WHITE: So, if at these
4 three sites, if any -- any or all of them no
5 longer met this -- this class standard, in
6 other words, if they did, in fact, exceed the
7 original class standards set by -- and those
8 are, if I am correct, set by the state. Is
9 that right? Yes.

10 If, in fact, they did exceed those
11 and ACL's were required, would the applicant
12 then be required to request a license
13 amendment in order to establish ACL's? Would
14 there be another step if -- if -- if these
15 standards had been different than what they
16 were then?

17 MR. SAXON: Again, it is really
18 hard to go back without really looking at it,
19 because you have to understand the class of
20 use doesn't just look at uranium. It looks at
21 other parameters, like radium and that is kind
22 of one of the primary drivers.

23 If the radium exceeds a class of
24 use, then for the overall, that class of use
25 is not a standard.

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1 So, if radium exceeds the MCL then
2 the regulations in the class of use is not
3 applicable for that drinking water or other
4 parameters.

5 JUDGE WHITE: Yes. In this
6 testimony, one of you is making the point that
7 -- that although the restoration
8 concentrations exceeded background, they did
9 not exceed the state class for that water.

10 And you are making a point there
11 that that was a measure of success. My
12 question, as I said was, would that measure of
13 success be met today using revised state
14 standards for uranium, because that is
15 specifically what you are talking about here
16 is uranium.

17 MR. SAXON: If I may, Your Honor,
18 when that restoration was reviewed, we were
19 under Commission directives to incorporate the
20 state's standards, and that is -- you know, I
21 don't know what the exact process was, but
22 they were -- we were directed to use the
23 standards themselves.

24 We are no longer doing that. So,
25 there is going to be a slight change in how we

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1 evaluate, you know, whether or not they meet
2 the state standard.

3 They have to meet our standard,
4 which is the ACL. We can take into account
5 the class of use for the -- for the exempted
6 aquifer, yes, in this case, or surrounding
7 aquifers as one of the factors that we do in
8 our evaluation.

9 Now, overall for us, Wyoming would
10 be doing a review strictly on the exempted
11 aquifer to make sure that it has been restored
12 to their class of use.

13 So, there is going to be two
14 independent reviews now. It couldn't meet the
15 Wyoming standard there without then meeting
16 our ACL, all our standards for that.

17 So, it is going to -- there is
18 going to be possibly some restorations that
19 were -- met the Wyoming standards, but it
20 didn't meet ours, or vice versa. I don't know
21 what a vice versa case would be because I
22 think our -- our standard is a little bit more
23 stringent.

24 DR. JOHNSON: Judge White.

25 JUDGE WHITE: Yes.

1 DR. JOHNSON: If I could just add
2 to that. These -- these three sites, as I
3 understand the record, because uranium met the
4 class of use standard or was below that, those
5 constituents, there was no so-called ACL
6 requested for those constituents.

7 There was -- they did go through
8 the process of requesting a license amendment
9 because there were ACL's requested for other
10 constituents.

11 JUDGE WHITE: I see.

12 DR. JOHNSON: So they did go
13 through that process.

14 Now, regarding uranium -- and here
15 again, my understanding of the record is that
16 when the -- right currently, uranium is not a
17 listed constituent for the Wyoming groundwater
18 standard for the class of use, so there isn't
19 a number for uranium right now on the list of
20 parameters for the class of uses in Wyoming.

21 JUDGE WHITE: Okay. So this --
22 this former standard of five milligrams per
23 liter no longer holds, but has not been
24 replaced with a new standard. Is that you are
25 saying?

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1 DR. JOHNSON: Well, it was -- my
2 read of it, it just simply was uranium as a
3 constituent, including the numerical value
4 that was associated with it just was deleted.

5 JUDGE WHITE: I see. Okay. I
6 think that answers my issues with that.

7 That is all I have.

8 Judge Cole, do you -- do you want
9 to weigh in here on this?

10 JUDGE COLE: Yes. My question has
11 to do with the staff, in their reading that
12 the impact operating these would be small and
13 the basis for that decision was the ISL that
14 you discussed.

15 The intervenors in many places in
16 their testimony, that they didn't consider the
17 impact to be harmless, and not small. They
18 almost stated the rationale for the staff
19 seems to be the same.

20 Could you describe that rationale,
21 particularly on the Ross project?

22 CHAIRMAN BOLLWERK: Let me see.
23 Did you all understand the question, or do we
24 need to get him to try to repeat or to try to
25 decipher it?

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1 Would it be helpful if he picked
2 up the hand set and did this, because the
3 microphone he is using going to be --

4 JUDGE COLE: Well, I am not
5 getting through?

6 CHAIRMAN BOLLWERK: Well, you are
7 -- sometimes, but unfortunately it is hard to
8 piece the question together.

9 MS. MOORE: Your Honor, I think I
10 understood the question.

11 CHAIRMAN BOLLWERK: If you
12 understood the question. I am not trying to
13 ask each of you to answer a question you don't
14 understand.

15 So -- they are going to take a
16 shot at trying to respond to your question.
17 They think they understand it. If it is not
18 clear from their answer, we will have to ask
19 you to repeat it again. We will go ahead and
20 try it.

21 MS. MOORE: I heard, Judge Cole
22 asking if the other projects determined that
23 the impacts from an ACL would be small and I
24 just want to clarify that the small impacts
25 determination is a NEPA determination.

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1 It is not an actual determination
2 that occurred after the -- or with the
3 approval of the restoration of its NEPA terms.

4 So, when we want to look to see if
5 other sites also had that small determination,
6 what we are looking at is other NEPA documents
7 for ISR projects, and what we are looking at
8 specifically is the GEIS that is the document
9 that the new ISR SEIS's are tearing from.

10 And the Ross SEIS is the fifth
11 SEIS hearing from the GEIS. The GEIS did have
12 a small impacts determination for impacts due
13 to aquifer restoration and I believe that the
14 other four SEIS's prior to Ross also had that
15 determination, but I think it would be a good
16 idea to look to be sure.

17 I don't want to speculate or
18 assume, but --

19 JUDGE COLE: If that is the case,
20 it could be also --

21 MS. MOORE: Yes. For the Ross
22 project, at least for Ross and Powertech,
23 those two documents were being prepared at the
24 same time, but I do know that for the three
25 SEIS's for Moore Ranch, Nichols Ranch and Lost

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1 Creek, we did all have the same determination.

2 And it is basically based on the
3 fact that the GEIS laid forth the methodology
4 for determining impact due to aquifer
5 restoration and it is based on the fact that
6 the applicant or licensee at that point would
7 have to restore the groundwater to Criterion
8 5(b)(5), which determines that it would pose
9 no significant hazard to human health.

10 And the small impact determination
11 in the GEIS and the FSEIS is that the
12 environmental impacts are not detectible or
13 are so minor that they will neither
14 destabilize, nor noticeably alter any
15 important attribute of the resource
16 considered.

17 A large impact means that the
18 environmental impacts are clearly noticeable
19 and are sufficient to destabilize important
20 attributes of the resource considered.

21 We have not found that an ACL,
22 which would have no -- pose no current or
23 potential hazard to human health would also
24 destabilize important attributes of the
25 resource considered.

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1 When we look at the important
2 attributes of groundwater, we consider that to
3 be how the groundwater is used and if the
4 groundwater is exempted as a source of
5 drinking water, then that is something that
6 goes into our determination of what would
7 destabilize that resource.

8 And so, it falls from the GEIS
9 that these impacts would be small because they
10 would neither destabilize or noticeably alter
11 an important attribute of the groundwater.

12 JUDGE COLE: On destabilizing
13 means you would do so? The change is used for
14 drinking water.

15 MS. MOORE: Yes.

16 JUDGE COLE: And nothing changed
17 there. And that is the principal reason why
18 you wind up with a determination that it is
19 small?

20 MS. MOORE: Yes, Judge Cole.

21 JUDGE COLE: Okay.

22 CHAIRMAN BOLLWERK: All right.
23 Does anybody else have anything on that -- did
24 that -- do you have any further questions,
25 Judge Cole, or did that -- did that response

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1 take care of your question?

2 JUDGE COLE: The response takes
3 care of my question. Thank you.

4 CHAIRMAN BOLLWERK: All right. Do
5 you have anything further on that?

6 JUDGE WHITE: Nothing further.

7 CHAIRMAN BOLLWERK: I have a
8 couple of questions -- as well as the fact we
9 may well have you all back to the panel after
10 we are done with all -- hearing from all of
11 the witnesses.

12 Let me kind of go through the
13 process here as you -- I guess, as you talked
14 about it in terms of the three steps that it
15 could be, or the three standards it might be
16 in terms of -- in the context of granting
17 staff approval for a restoration program.

18 So, the first one is restore to
19 Commission-approved background postlicense,
20 preoperational background.

21 And I take it if an applicant
22 comes in and says they want to do that, is
23 that a license amendment or is that just a
24 request?

25 I mean, is that -- that doesn't

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1 involve a license amendment, I take it?

2 MR. SAXON: No, that would not --
3 when in the restoration program, if they met
4 the Commission-approved background, our
5 interpretation is that that doesn't pose any
6 incremental harm to the aquifer.

7 CHAIRMAN BOLLWERK: All right.

8 MR. SAXON: Because that is what
9 was existing before.

10 CHAIRMAN BOLLWERK: So, that is
11 something they just come in and say, "We plan
12 on doing this" and you would say, "That is
13 fine because that is what we" --

14 MR. SAXON: Yes.

15 CHAIRMAN BOLLWERK: -- "the first
16 standard to meet in any event, so" --

17 MR. SAXON: Yes.

18 CHAIRMAN BOLLWERK: All right.

19 So, looking at the second
20 standard, "Restore to value given in Table --
21 in paragraph 5C of Appendix A. If a
22 constituent is listed in the table and if the
23 background level of the constituent is below
24 the value listed." Does that require a
25 license amendment?

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1 MR. SAXON: No, Your Honor. Well,
2 actually, I will clarify that. That table at
3 the time was the MCL's for those specific
4 parameters.

5 They have subsequently changed and
6 there are additional ones that are added to
7 the MCL. For instance uranium has been added,
8 and going -- if we met the MCL for some of
9 those parameters that are not listed on that
10 table, that would be an ACL, because it is an
11 alternate concentration limit.

12 So, -- but to show that it is
13 protective would be a lot easier than
14 establishing another ACL that is not --
15 doesn't have an established or regulatory
16 criteria.

17 CHAIRMAN BOLLWERK: All right.
18 So, it sounds like, in terms of license
19 amendments, all roads lead to ACL's?

20 MR. SAXON: That is correct.

21 CHAIRMAN BOLLWERK: All right.
22 And so, I guess -- well, the question would be
23 relative to number one and number two, have
24 any applicant -- I am sorry. Have any
25 licensees ever come and requested approval

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1 under one or two?

2 MR. SAXON: No, Your Honor.

3 CHAIRMAN BOLLWERK: So, everyone
4 has been under number three, up to this point,
5 anyway?

6 MR. SAXON: Number -- it would be
7 under -- at the time it wasn't an ACL because
8 we were instructed to use the class of use
9 standard.

10 So, in order to -- but it is
11 confusing, but that is called the secondary
12 standard or -- it is not an alternate
13 concentration of an ACL. It was an alternate
14 standard, if you will, but it doesn't meet our
15 ACL standard.

16 CHAIRMAN BOLLWERK: Right.

17 MR. SAXON: So if they came in and
18 requested that the approved restoration to the
19 class of use over the -- say, Wyoming, UIC
20 standards.

21 CHAIRMAN BOLLWERK: And that did
22 require a license amendment?

23 MR. SAXON: No, it didn't.

24 CHAIRMAN BOLLWERK: It did not?

25 MR. SAXON: Did not.

1 CHAIRMAN BOLLWERK: So, that is
2 the only instance where you -- where someone
3 has come in and asked for an approval for
4 restoration plan or restoration standard that
5 did not involve a license amendment?

6 MR. SAXON: No, it didn't. No,
7 Your Honor.

8 CHAIRMAN BOLLWERK: Great.

9 JUDGE WHITE: I would follow up on
10 that. Still given both NUREG 1569, which I
11 understand has been revised with regards to
12 those three standards, I think that is what
13 you just told us. Is that correct?

14 I think it is NUREG 1569, that is
15 SEI007, page 155 list those -- lists three
16 criteria for -- for meeting restoration
17 success in order, and you are saying those
18 have been revised to what has been described
19 in the rebuttal testimony I cited earlier.

20 Are you familiar -- are you
21 familiar with the restoration criteria that I
22 am referring to? They are numbered.

23 You know, the first is meet
24 baseline and then the second one is -- is
25 restore to class, and the third one is ACL's,

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1 but the restore to class is no longer -- you
2 were saying is no longer used?

3 MR. SAXON: That is correct. When
4 NUREG 1569 came out, that -- we were under
5 instructions to use class of use as a
6 standard.

7 JUDGE WHITE: Right.

8 MR. SAXON: And that would -- that
9 is no -- that is incorrect now. We don't
10 follow that, in the recent ones.

11 And let me clarify. I -- for the
12 class of use, I don't know if there was a
13 CATEX or if there was an EA prepared for each
14 of those. To the best of my recollection, I
15 don't -- I think it was just a CATEX, so there
16 was no environmental document, but I will go
17 back and I can check on that.

18 CHAIRMAN BOLLWERK: Is that an
19 acronym on the --

20 MR. SAXON: Oh. CATEX --

21 CHAIRMAN BOLLWERK: EA is an
22 environmental assessment.

23 MR. SAXON: Yes.

24 CHAIRMAN BOLLWERK: I didn't --

25 MR. SAXON: For -- for NEPA

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1 review, there is a category called
2 "Categorically-excluded."

3 CHAIRMAN BOLLWERK: Oh,
4 categorically-exclusion. Got it. All right.

5 MR. SAXON: So, there -- there was
6 probably an environmental review done. I
7 don't know if it was an EA or CATEX or if
8 there was an opportunity for hearing.

9 I don't think there was an
10 opportunity, but I can get back to you on that
11 if you want.

12 CHAIRMAN BOLLWERK: All right.
13 And a categorically exclusion, again, would be
14 one that is considered to be under the rules
15 of a category, you do not have to have an
16 environmental impact statement or an
17 environmental assessment?

18 MR. SAXON: That is correct, Your
19 Honor.

20 JUDGE WHITE: All right. Does --
21 does NRC staff evaluate a company's attempts
22 at restoring groundwater to background and to
23 ensure that a good-faith effort has been made
24 to do that prior to accepting an ACL?

25 MR. SAXON: That -- yes, Your

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1 Honor.

2 CHAIRMAN BOLLWERK: All right. I
3 think that is all the questions I have at this
4 point.

5 Judge Cole, do you have anything
6 further, given what Judge White and I talked
7 with them about?

8 JUDGE COLE: No.

9 CHAIRMAN BOLLWERK: All right.
10 Then, we will turn to the parties and find out
11 if you all want a couple of minutes to go talk
12 about cross-examination questions.

13 MR. SAXON: Yes, Your Honor. We
14 are going to need 15 or 20 minutes.

15 CHAIRMAN BOLLWERK: Fifteen or
16 twenty minutes. All right.

17 We will, then, go ahead and take a
18 break.

19 Judge Cole, we are going to take a
20 break now for 15 minutes to allow the parties
21 to prepare any proposed cross-examination
22 questions. Thank you.

23 JUDGE COLE: Thank you.

24 (Whereupon, the above-entitled
25 matter went off the record at 10:02 a.m. and

1 resumed at 10:20 a.m.)

2 CHAIRMAN BOLLWERK: Could we go on
3 the record briefly.

4 We have received a proposed
5 question, and so the Board is going to take a
6 brief recess to consult about the question and
7 we should be right back in about ten minutes
8 or less, I would hope. Thank you.

9 (Whereupon, the above-entitled
10 matter went off the record at 10:20 a.m. and
11 resumed at 10:31 a.m.)

12 CHAIRMAN BOLLWERK: All right.
13 Let's go back on the record, please.

14 We have returned from a break for
15 Board consideration of a question that was
16 posed relative to Contention 2, to the staff
17 panel, and we are going to ask the following
18 question, and this is for, at least, initially
19 for Dr. Johnson.

20 You testified that, in evaluating
21 the size and level of the environmental
22 impacts on groundwater, the focus is on the
23 nonexempt aquifer, and that, therefore, the
24 impacts to the exempted aquifer, itself, are
25 immaterial.

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1 Does this mean that if the NRC
2 were to approve an ACL thousands of times
3 above EPA Safe Drinking Water Act Standards
4 for uranium, the impacts would still be small.

5 DR. JOHNSON: Judge Bollwerk, the
6 -- I certainly did not imply that the
7 concentrations of any constituent -- let's use
8 uranium as an example -- inside the exempted
9 aquifer is immaterial.

10 The concentrations that are within
11 the exempt aquifer at the -- at the time,
12 let's say, a restoration is approved, first of
13 all, there are for two reasons, I would say.

14 One is because the way that the
15 approved restorations were done that are
16 discussed in the SEIS were average
17 concentrations over all the wells within the
18 -- the production area.

19 So, that average, of course, would
20 be -- would be higher if there were some wells
21 that were, you know, very, very high
22 concentrations. So, the overall average has
23 to be to, you know, some level that would --
24 would be approved.

25 And so, of course, those levels

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1 are important in any given well in terms of
2 making sure that your average meets the -- the
3 ACL that is ultimately approved.

4 Now, the ACL can't just be any
5 number. It has to be a number that -- a
6 value, a concentration, that, upon evaluation
7 shows that, once you reach the boundary of the
8 exempted aquifer, you are at drinking water
9 standards for constituents, including uranium.

10 So, if the ACL were, you know,
11 let's say, you know, at a ridiculously large
12 number then, in all likelihood, it would not
13 -- you could not demonstrate that it would be
14 protective of the human health and the
15 environment at that boundary of the exempted
16 aquifer.

17 So, the -- you know, the ACL can't
18 just be any number. It has to be a number
19 that meets that, you know, very important
20 criteria that is protective of -- at the -- at
21 the boundary of the exempted aquifer.

22 CHAIRMAN BOLLWERK: All right.
23 Judge White, do you have any --

24 JUDGE WHITE: So, you are -- am I
25 correct that you are saying that -- that the

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1 -- that the aquifer outside the exempt
2 aquifer, at that boundary of the exempt
3 aquifer, is still the standard for deciding
4 whether the impact is small, medium or large
5 and that -- and that you are saying that this
6 -- this example, this hypothetical here with
7 some extremely high value would be reflected
8 in the water quality outside the exempt
9 aquifer, and that is what -- that is still
10 what is -- is what is important?

11 It isn't really what concentration
12 in the exempt aquifer is, it is how the
13 concentration in the exempt aquifer will
14 effect water just outside the boundaries, is
15 that correct, that you are saying that?

16 DR. JOHNSON: Yes. That is
17 correct.

18 CHAIRMAN BOLLWERK: All right.
19 Judge Cole, do you have anything with regard
20 to this question?

21 JUDGE COLE: No.

22 CHAIRMAN BOLLWERK: All right. I
23 will look to the parties briefly. Any -- any
24 other --

25 MR. PUGSLEY No questions.

1 CHAIRMAN BOLLWERK: No.

2 MR. HARPER: No questions.

3 MS. ANDERSON: No, Your Honor.

4 CHAIRMAN BOLLWERK: All right.

5 Very good, then.

6 We thank you all, then, very much
7 at this point. We will probably seeing you
8 again a little -- in a couple of minutes or
9 several -- at some point later this morning.

10 So, thank you very much.

11 All right. Now, we are ready to
12 move forward to the Joint Intervenors'
13 witnesses on Contention 2.

14 MR. FETTUS: Your Honor, before we
15 start, I want to just bring one thing to your
16 attention --

17 CHAIRMAN BOLLWERK: Yes.

18 MR. FETTUS: -- that Mr. Pugsley
19 brought to our attention this morning.

20 CHAIRMAN BOLLWERK: Okay.

21 MR. FETTUS: And we have already
22 filed an errata on it.

23 CHAIRMAN BOLLWERK: Okay.

24 MR. FETTUS: We had inadvertently
25 submitted JTI056 twice and submitted JTI055.

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1 It was the same document.

2 CHAIRMAN BOLLWERK: The same
3 document with the right --

4 MR. FETTUS: JTI056.

5 CHAIRMAN BOLLWERK: Okay.

6 MR. FETTUS: We have since
7 corrected that --

8 CHAIRMAN BOLLWERK: All right.

9 MR. FETTUS: -- and resubmitted it
10 as an errata as JTI055-R.

11 CHAIRMAN BOLLWERK: Okay.

12 MR. FETTUS: And also of note, the
13 ML accession number in the original exhibit
14 list was accurate.

15 CHAIRMAN BOLLWERK: Okay.

16 MR. FETTUS: So, it was merely an
17 oversight on our part, and we want to thank
18 Mr. Pugsley for bringing it to our attention.

19 CHAIRMAN BOLLWERK: All right. We
20 had actually received the email. It has gone
21 through the e-filing system. You probably
22 have, too.

23 And so, what we will -- so, the
24 title that is on it, as well -- it is in the
25 -- the exhibit list is correct. It was just

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1 the document, itself.

2 So, what we will just do is
3 admitted it as the R version --

4 MR. FETTUS: Thank you, Your
5 Honor.

6 CHAIRMAN BOLLWERK: -- and that
7 will -- yes. Thank you for taking care of
8 that.

9 All right. If you would like to
10 bring your witnesses up for -- the Joint
11 Intervenors' witnesses for Contention 2.

12 MR. FETTUS: There is just one.

13 CHAIRMAN BOLLWERK: There is just
14 one. Okay.

15 MR. FETTUS: Yes, Your Honor.

16 CHAIRMAN BOLLWERK: He is sitting
17 in the right place that you can see him? He
18 is good? All right.

19 MR. FETTUS: Good here.

20 CHAIRMAN BOLLWERK: All right.
21 And if you could identify -- I am sorry. Go
22 ahead. Get your papers. All set?

23 I know how it is fooling with
24 papers and a bunch of computers and all that
25 sort of stuff when you are trying to get

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1 straight.

2 All right. Very good. If you
3 could identify yourself for the record,
4 please.

5 MR. LARSON: My name is Dr. Lance
6 Larson.

7 CHAIRMAN BOLLWERK: All right.
8 And, Dr. Larson, there is some dispute about
9 some of -- at least one of the exhibits here,
10 so what I would like to do is go ahead and
11 swear Dr. Larson in, and then we will stop at
12 that point, since his testimony has
13 implications as well as the one exhibit, we
14 will -- we can talk, then, about the exhibit
15 that you filed a motion in limine for.

16 Does that sound like a reasonable
17 approach?

18 MR. PUGSLEY Yes, sir.

19 CHAIRMAN BOLLWERK: All right.
20 So, Dr. Larson, if you would, raise your right
21 hand, and I need an affirmative response to
22 the question.

23 Do you swear or affirm that the
24 testimony you will give in this proceeding is
25 the truth, the whole truth, and nothing but

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1 the truth?

2 MR. LARSON: I do, Your Honor.

3 CHAIRMAN BOLLWERK: Thank you.

4 Right. So, what I would like to
5 do at this point, there is a concern that has
6 been expressed by the Applicant's SEI relative
7 to Contention -- I am sorry. -- to Exhibit
8 JTI005AR -- no. JTI005A-R.

9 Have you got that? Do I got it
10 right, that one? I think that is it, isn't
11 it? That is the right exhibit number. Let me
12 look at it again. JTI005A-R and JTI005B-R.

13 MS. ANDERSON: Yes, Your Honor.

14 CHAIRMAN BOLLWERK: Okay. I guess
15 what we would like to do is, hear briefly from
16 the parties. We read the motion, but this
17 will give you an opportunity again to state
18 your objections.

19 And then, at that point, we will
20 take -- probably take a brief recess, talk
21 with Judge Cole and then come back with a
22 ruling on that and move forward from there.

23 So, let me turn first to the
24 Applicant, since it is your motion.

25 MR. PUGSLEY Thank you, Your

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1 Honor.

2 Just to reiterate the substance of
3 our motion, and bring your attention to 10 CFR
4 Part 2.337A regarding admissibility of
5 evidence, at this proceeding, it should only
6 be admitted if it is, quote, relevant,
7 material and reliable.

8 Both Strata and NRC staff have
9 argued that the evidence associated with these
10 -- these exhibits as storymaps, quote,
11 storymaps cannot be independently verified by
12 its experts if inputted at the hearing.

13 And one additional factor is that,
14 as stated in JTI003-R at page 23, which is Dr.
15 Larson's initial testimony, he is the only one
16 who is allowed to change the parameters.

17 So, there is no way for Strata or
18 NRC staff experts to address that issue to
19 deal with what our parameters are correct, how
20 they can be changed to reflect what we would
21 likely consider a more accurate
22 representation.

23 And we do -- we do not object to
24 the snapshots as you had in your previous
25 order that have been already admitted into

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1 evidence or offered as admitted into evidence
2 on the list.

3 But, we do object to using these
4 storymaps at the hearing to present different
5 scenarios with different parameters that have
6 not been reviewed by NRC's or Strata's
7 experts.

8 And, in addition, we also believe
9 that a previous order issued by Your Honors
10 stated that URL locations were not to be
11 allowed as exhibits in this proceeding, and
12 they are identified as potential exhibits.

13 So, as far as Strata is concerned,
14 we believe that at this time, additional
15 storymap presentations with parameters that
16 have not been collected in snapshots and
17 already offered as evidence previously should
18 not be allowed during this panel.

19 CHAIRMAN BOLLWERK: All right.
20 Thank you, sir.

21 I will turn to the staff.

22 MS. MONTEITH: Your Honor, the
23 staff largely concurs with counsel for
24 Strata's position on this -- the use of the
25 storymaps applications, themselves, in this

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1 hearing.

2 Our concerns are primarily focused
3 on the reliability of the evidence, the
4 ability of the expert witnesses for the
5 Intervenors to change the data should they be
6 so inclined.

7 And also, the ability of the staff
8 to verify the accuracy of the data as
9 presented, and it impacts our ability to
10 testify to the accuracy of that data and form
11 conclusions based upon it, if it is not able
12 to be reviewed in pdf form before they offer
13 testimony on it.

14 CHAIRMAN BOLLWERK: All right.
15 Let me -- is that everything?

16 MS. MONTEITH: Yes, sir.

17 CHAIRMAN BOLLWERK: Let me then
18 turn to the joint intervenors.

19 MR. FETTUS: Your Honor, thank
20 you.

21 The law is well-established under
22 the Federal Rules of Evidence.

23 CHAIRMAN BOLLWERK: Maybe if you
24 could move the microphone a little closer.

25 MR. FETTUS: Sorry, sir. Once

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1 again, I apologize, Your Honor. These are
2 quite directional.

3 CHAIRMAN BOLLWERK: Yes. They are
4 directional.

5 The law is well-established in the
6 Federal Rules of Evidence and what we cited in
7 our opposition to the motions in limine, that
8 experts can rely on evidence that is not in
9 the record, and it is quite clear to us that
10 Dr. Larson has produced these pdf's that are
11 -- that have been offered into evidence for
12 JTI005B-R.

13 How he developed these pdf's are
14 explained in his testimony and how he used the
15 URL's to develop those applications, and for
16 us to have removed those would have entailed
17 a substantial reworking of his testimony,
18 which was something we understood the Board
19 did not want at this time, and that we would
20 have understood would be prejudicial to the
21 other parties.

22 So, in our response, we would be
23 quite happy to offer an exhibit list that
24 removed the URL's from the exhibit list so it
25 is quite clear that they are not offered as

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1 exhibits.

2 And, regarding staff's concern
3 that Dr. Larson could somehow at some future
4 date alter the pdf's that -- that would be
5 created here today.

6 We think, one, their concern is
7 premature. The Board is quite capable of
8 using cross-examination to assure that Dr.
9 Larson produces something that it can then
10 verify right here in front of us.

11 And, secondly, we are also happy
12 to offer seven days, if that -- if that is an
13 appropriate length of time for staff and SEI
14 to ensure that the pdf the Board asks to be
15 produced, if that is what happens here today,
16 is precisely what it purports to depict.

17 So, we think the Board is quite
18 capable of managing this situation through the
19 regular order of cross-examination and, unless
20 the Board has anything further.

21 CHAIRMAN BOLLWERK: I think we
22 have heard from all the parties. I think --
23 we appreciate the opportunity to hear the
24 arguments.

25 Why don't we take a brief recess.

1 We will talk with Judge Cole and we will be
2 right back and make a ruling, and we can move
3 forward from there. Thank you very much.

4 (Whereupon, the above-entitled
5 matter went off the record at 10:45 a.m. and
6 resumed at 10:55 a.m.)

7 CHAIRMAN BOLLWERK: All right.
8 Let's go back on the record, please.

9 The Board has considered the
10 motion and I will give you a brief synopsis of
11 our ruling. Actually, I will give you the
12 whole ruling. It is not going to be a
13 synopsis.

14 We understand the concerns that
15 you all have about making sure that the
16 evidentiary material is somehow in a form that
17 is locked down. That was our original
18 concern, notwithstanding the fact that you
19 all did not object to the original exhibits.

20 When I looked at them, or we
21 looked at them, I had a grave concern about
22 having something that we would call
23 evidentiary material that was not going to be
24 subject to change.

25 One of the problems with the web,

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1 it is a great source of information, but
2 things can change at the whim of the person
3 that controls the website, and that obviously
4 doesn't work -- in fact, it doesn't also work
5 for the National Archives and Records
6 Administration purposes, either, but we won't
7 go there. That is a different matter.

8 So, -- but as an evidentiary
9 matter, we want an exhibit that is an exhibit.

10 Having said that, in this
11 instance, I think that, in terms of having to
12 generate any storymaps, if that is even
13 necessary and it is not clear to us it is --
14 will be necessarily at this point, but we will
15 have to see -- we will take that as a -- as we
16 move forward.

17 We do, as the Intervenor has
18 pointed out, had the opportunity to question
19 Dr. Larson about what he has or hasn't done
20 with that website since the exhibit was
21 originally put into place, and I think that is
22 a way that we can ensure ourselves that, if we
23 do have something else generated, that if he
24 is going to give us a truthful answer about
25 what he has or hasn't done anything, and at

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1 that point we will have to make a
2 determination about whether we do or don't
3 allow that storymap to be generated.

4 Having said that, I think the
5 intervenor had two good suggestions, one of
6 which that we -- if they don't mind, we will
7 have them refile the -- both the exhibits
8 again, taking off the URL's cover pages to
9 them. I think that is unnecessary.

10 I think it would be not necessary
11 to have them refile the testimony. I think,
12 as background information, this is the way
13 this was presented. It was the way it was put
14 together, so that URL is there is a matter of
15 information. It is not there as a citation
16 that is evidentiary material.

17 And the other suggestion I thought
18 was a useful one, we had originally suggested
19 that we would be willing to admit the exhibit
20 once the new storymap, once it was put into
21 the e-filing system.

22 What we will do, instead, is we
23 will mark it for identification, assuming we
24 can follow the protocol that we laid out here
25 in terms of getting it pdf and getting it

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1 around to everyone, we will wait seven days
2 and if there are any objections to that, we
3 will hear those at that time and make a ruling
4 as to whether we actually put it into evidence
5 or not.

6 So, I think that is where the
7 Board is at. Let me see if there are any
8 questions or any clarification that anyone
9 needs.

10 Yes.

11 MR. FETTUS: Your Honor, just on
12 point of clarification. Do you want us to
13 refile the exhibit list as well with it just
14 to designate that we have refiled JTI005?

15 CHAIRMAN BOLLWERK: Yes, because
16 it is going to have an "R2" now, so --

17 MR. FETTUS: R2.

18 CHAIRMAN BOLLWERK: Yes. The
19 number is going to change.

20 MR. FETTUS: Got you. Will do.

21 CHAIRMAN BOLLWERK: So, at a
22 minimum, the number will change. So, it is
23 probably best to refile your exhibit list.

24 And you have also got another
25 amended exhibit in any event, so you can take

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1 care of that at the same time.

2 MR. FETTUS: Okay. Thank you,
3 Your Honor.

4 CHAIRMAN BOLLWERK: Surely.

5 So, let me turn to the applicant
6 and staff and see if there are any questions.

7 MR. PUGSLEY Your Honor?

8 CHAIRMAN BOLLWERK: Yes.

9 MR. PUGSLEY Just a clarification
10 if I could, because I am, by far, not an IT
11 person.

12 Is the case of how the storymaps
13 are going to be used today strictly limited to
14 what was offered in JTI005B-R, or am I
15 misunderstanding what was being done, because
16 the --

17 CHAIRMAN BOLLWERK: No. So, the
18 -- those are in evidence -- well, they will be
19 in evidence in theory.

20 The question, then, becomes, as I
21 think the dispute here was over is, are there
22 going to be any new ones generated in the
23 course of the Board's questions.

24 And the answer is, as we outlined
25 in the previous order, the answer is yes,

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1 although there will be the safeguards of, one,
2 we will be talking with Dr. Larson about the
3 -- has he done anything to his website, the
4 inputs that he had since the time, frankly,
5 that the exhibit was put into evidence -- it
6 was marked as prefiled exhibit.

7 MR. PUGSLEY Yes.

8 CHAIRMAN BOLLWERK: That is
9 obviously an important matter. Now, it may --
10 if he did something, then the question would
11 be, does that have anything to do with the map
12 that we are talking about generating.

13 If it doesn't, it may be
14 irrelevant. If it does, then it could have,
15 obviously, significance.

16 But, assuming that kind of
17 question can be answered appropriately, then
18 we would go ahead and allow him, as we said,
19 to put it on the screen, allow him to see --
20 so you can see what he is doing, go ahead and
21 generate the map.

22 We will take a look at it. The
23 intervenors, I think, have committed to going
24 ahead and pdf'g that and getting around
25 everybody immediately.

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1 We can go ahead and mark it with a
2 -- we can identify it -- mark it with a number
3 and identify it, but we will not admit it
4 until seven days have passed and you all have
5 that opportunity to say anything further you
6 want about that potential exhibit.

7 MR. PUGSLEY Okay. Thank you for
8 the clarification. I appreciate it.

9 CHAIRMAN BOLLWERK: Is that clear
10 to everyone? Have I -- any questions from the
11 joint intervenors?

12 MR. FETTUS: No, Your Honor.

13 CHAIRMAN BOLLWERK: Any questions
14 from Dr. Larson to that?

15 MR. LARSON: I think I understand.

16 CHAIRMAN BOLLWERK: I think we
17 told you that what -- what we are going to be
18 looking to you if there are any questions
19 about it.

20 So -- obviously, you are going to
21 give us a truthful answer, so -- all right.

22 Yes.

23 MR. HARPER: No questions, Your
24 Honor.

25 CHAIRMAN BOLLWERK: No questions.

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1 All right. Very good.

2 All right. Then, let's go ahead,
3 then, and move forward. And, just as a
4 planning matter, we are sort of hoping -- it
5 is now right at eleven o'clock. We are sort
6 of hoping to finish this whole -- this
7 Contention before lunchtime, and take our
8 lunch break at that point.

9 Hopefully, then, we can assess
10 where we are at in terms of the additional
11 contention the rest of the day, tomorrow, and
12 we will talk about that at that point.

13 Let's see what time -- how long it
14 takes to get -- to finish with this
15 contention.

16 All right. So, Dr. Larson, we
17 need to -- we have sworn you in. You have two
18 pieces of testimony that we need to deal with.

19 You have JTI002, which is your
20 statement of professional qualifications,
21 which is dated August 25th, 2014.

22 MR. CRYSTAL: Excuse me, Your
23 Honor. He is JTI004.

24 CHAIRMAN BOLLWERK: I am sorry.
25 JTI00 -- okay. JTI003-R is his testimony.

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1 Correct? I am sorry.

2 MR. CRYSTAL: Correct.

3 CHAIRMAN BOLLWERK: Which is the
4 testimony of Lance Larson dated August 25th,
5 2014. And also JTI004, which is the statement
6 of professional qualifications of Lance
7 Larson, dated August 25th, 2014.

8 Those relate to both Contentions 2
9 and 3, but we will admit it now and at that
10 point, when we get to Contention 3, then that
11 will have already been taken care of.

12 So, let me ask you one question
13 about that testimony. Was this testimony
14 prepared by you and under your supervision and
15 direction, and is it true and correct, to the
16 best of your knowledge and belief?

17 MR. LARSON: Yes.

18 CHAIRMAN BOLLWERK: Thank you.

19 MR. CRYSTAL: Your Honor.

20 CHAIRMAN BOLLWERK: Yes.

21 MR. CRYSTAL: I would just also
22 add at JTI052-R, it is his rebuttal testimony.

23 CHAIRMAN BOLLWERK: Right.

24 MR. CRYSTAL: Which falls in the
25 same category.

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1 CHAIRMAN BOLLWERK: Let's go ahead
2 and identify that for the record as described
3 by counsel and it is JTI052, which is the
4 prefiled rebuttal testimony of Lance -- Dr.
5 Lance Larson.

6 And let me ask you the same
7 question. Is this testimony prepared by you
8 or under your supervision and direction, and
9 is it true and correct to the best of your
10 knowledge and belief?

11 MR. LARSON: Yes.

12 CHAIRMAN BOLLWERK: All right.
13 So, we have identified for the record JTI003-
14 R, JTI004, and JTI052-R. All right.

15 (Whereupon, the above-referred-to
16 documents were marked as JTI Exhibits Nos.
17 003-R, 004 and 052-R for identification.)

18 Let's go then go through and take
19 care of the evidentiary material that supports
20 those documents.

21 At this point, for purposes of the
22 record, although you are going to be refileing
23 JTI005A-R, as R-2 when you take the exhibit --
24 the cover pages off, I am going to go ahead
25 and mark it for identification, just so we

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1 have a document that we know in the record
2 that we are all referring to.

3 And when we -- when you have gone
4 ahead and refiled that, then we will deal with
5 actually marking -- identifying it and putting
6 it into evidence.

7 But, at this moment we will simply
8 mark it for identification. It is not going
9 to be evidentiary, but it does give us -- it
10 is going to have exactly the same screenshots
11 in it and that is something that we can refer
12 to now, rather than having to wait for that
13 exhibit to be refiled.

14 MR. CRYSTAL: Your Honor, just for
15 clarification --

16 CHAIRMAN BOLLWERK: Sure.

17 MR. CRYSTAL: -- that is JTI005B-
18 R, right, not A-R?

19 CHAIRMAN BOLLWERK: Both.

20 MR. CRYSTAL: Okay.

21 CHAIRMAN BOLLWERK: We will only
22 going to be dealing with R, because both of
23 them have URL's on the front page.

24 MR. CRYSTAL: Right. Thank you.

25 CHAIRMAN BOLLWERK: Right. And it

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1 will be R-2 in both instances. Okay.

2 So, for purposes of
3 identification, JTI005A-R and JTI005B-R are
4 being marked for identification.

5 (Whereupon, the above-referred-to
6 documents were marked as JTI Exhibits Nos.
7 005A-R and 005B-R for identification.)

8 CHAIRMAN BOLLWERK: Also, let's
9 see, we -- your Contention 1 -- let me just
10 slip through here really quickly. And I will
11 rely on Counsel to let me know when I get to
12 the right one.

13 The next one I have for Contention
14 2 is JTI029.

15 MR. CRYSTAL: Yes.

16 CHAIRMAN BOLLWERK: All right.
17 Exhibit JTI029, it is from the Energy -- the
18 Energy Information Administration, Office of
19 Coal, Nuclear, Electric and Alternate Fuels of
20 the Department of Energy, a report
21 decommissioning of US Uranium Production
22 Facilities, DOE/EIAO-0592 from February of
23 1995.

24 JTI030. It is an NRC document,
25 Technical Basis for Assessing Uranium

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1 Bioremediation Performance from the Office of
2 Nuclear Regulatory Research, NRC -- I am
3 sorry. Is that a NUREG, do you think, or is
4 it a new -- it is NUREC. Is that something
5 recent --

6 MR. CRYSTAL: I don't think so.

7 CHAIRMAN BOLLWERK: In any event,
8 NUREC/CR-6973, August 2008.

9 JTI031, Western Water Consultants,
10 Incorporated Assessment Restoration
11 Activities, Sundance Project, January 22nd, of
12 1982.

13 JTI032, Nubeth Joint Venture
14 Environmental Report Supporting Information to
15 Application for Source Material License In
16 Situ Solution Mining Test Site, Sundance
17 Project, Crook County, Wyoming, 1976.

18 JTI003, an NRC Document, NRC
19 Staff's Response to NRDC and Powder River
20 Basin Research Council's Joint Motion to
21 Migrate and/or Amend Contentions and to
22 Admit New Contentions in Response to Staff's
23 FSEIS -- I am sorry. FSDEIS, April 14th,
24 2014.

25 JTI034, which is the NRC's Final

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1 Environmental Impact, Final Environmental
2 Statement Related to the Operation of the --
3 of the Irigaray -- no, that is not it.

4 MR. CRYSTAL: It is Irigaray.

5 CHAIRMAN BOLLWERK: Irigaray
6 Uranium Solution Mining Project, NUREG-0481,
7 September 1978.

8 And, JTI035, a Technical
9 Evaluation Report from the Christensen Ranch
10 Mine Units 2 and 6, Restoration Report of
11 October 23rd, 2012.

12 Skipping over, then, to JTI037,
13 that is a document by -- authored by W.F.
14 Keamey, the Director, SHE, Uranium One,
15 American's Permit to Mine Number 478 for the
16 Christensen Ranch Mine Project Unit 5, dated
17 May 10th of 2012.

18 JTI038, which is a document
19 authored by Tim McCullough, Manager Site SHE,
20 for Uranium One USA, for the Willow Creek ISR
21 Project, dated April 15th, 2014.

22 JTI039, which is authored by
23 Intera. It is an Application for Alternative
24 Concentration Limits for the Smith Ranch,
25 Highland Mine Unit B In Situ Uranium Recovery

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1 Facility in Converse County, Wyoming, dated
2 May 22nd, 2013.

3 Skipping forward, then, to JTI053,
4 which is Crowe Butte Resources Mine Unit 1
5 Restoration Report, January 2000, a Violation
6 History.

7 JTI054, which is the License SUA-
8 1341, Docket No. 40-8502, the Willow Creek
9 Project Quarterly Progress Report of the
10 Monitor Wells on Exclusion Status Second
11 Quarter 2012.

12 JTI055-R, which is the -- the
13 Irigaray and Christensen Ranch Environmental
14 Monitoring Station Locations.

15 JTI056, which is License SUA-1341,
16 Docket No. 40-8502, the Willow Creek Project,
17 Mine Unit 2-6, Groundwater Restoration.

18 (Whereupon, the above-referred-to
19 documents were marked as JTI Exhibits Nos.
20 029, 030, 031, 032, 003, 034, 035, 037, 038,
21 039, 053, 054, 055-R and 056 for
22 identification.)

23 CHAIRMAN BOLLWERK: And I believe
24 that is all your Contention 2 exhibits.

25 MR. CRYSTAL: I believe so, Your

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1 Honor.

2 CHAIRMAN BOLLWERK: Is that
3 correct? Okay. Those are all marked for
4 identification.

5 All right. So, now we are going
6 to admit into evidence the following exhibits.
7 JTI003-R, JTI004, JTI029, JTI030, JTI031,
8 JTI032, JTI033, JTI034, JTI035, JTI037,
9 JTI038, JTI039, JTI052-R, JTI053, JTI054,
10 JTI055-R, JTI056, and I think that is it.

11 (Whereupon, the above-referred-to
12 documents were received into evidence as JTI
13 Exhibits Nos. JTI003-R, JTI004, JTI029,
14 JTI030, JTI031, JTI032, JTI033, JTI034,
15 JTI035, JTI037, JTI038, JTI039, JTI052-R,
16 JTI053, JTI054, JTI055-R, JTI056.)

17 CHAIRMAN BOLLWERK: All right.
18 So, with that, Dr. Larson will now -- we are
19 now going to talk to you. Thank you for your
20 patience, sir.

21 And I think Judge White has some
22 questions.

23 JUDGE WHITE: I do have a few
24 questions. It appears, in reading your
25 prefiled written testimony and rebuttal

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1 testimony, as well as prefiled testimony and
2 rebuttal testimony from staff witnesses, at
3 least from my perspective, there seems to be
4 a difference of opinion about what constitutes
5 success in restoring groundwater quality after
6 the completion of ISR uranium mining.

7 And it is not a question, because
8 I -- I know you would agree with that.

9 Understanding that you are not a
10 lawyer, because I am really not looking for
11 legal arguments from you. I am not a lawyer,
12 either, but in your testimony, in writing your
13 testimony when you are referring to success or
14 not success, has it been your assumption that
15 any groundwater restoration effort that does
16 not return all dissolved contaminants to or
17 below premining baseline concentration is
18 unsuccessful?

19 DR. LARSON: I would have to say
20 that, with respect to successful or
21 unsuccessful, I think the disagreement would
22 come more in with how they are characterizing
23 those impacts.

24 Whereas they are saying that those
25 impacts are small with respect to getting up

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1 to some sort of potential ACL, I think that
2 the data shows that that is contradictory to
3 those impacts.

4 So, -- so, I -- the idea of
5 successful or unsuccessful is -- we can judge
6 it by, you know, primary, secondary or ACL's,
7 but the disagreement comes fundamentally with
8 respect to how they are characterizing those
9 impacts to the groundwater.

10 JUDGE WHITE: Okay. Thank you.

11 It is sort of a canned question,
12 but you do acknowledge, however, that current
13 regulations allow NRC to set alternate
14 standards for groundwater restoration if
15 reasonable efforts are not successful to meet
16 premining baseline concentrations.

17 And so that is, in effect, not
18 really your primary concern. Your primary
19 concern is with this designation of small --
20 of impact level?

21 DR. LARSON: I think my -- my
22 primary concern is how we quantify some of
23 those impacts, and so, you know, we have the
24 data to do some of those analyses and look at
25 some of that data, and so that is kind of what

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1 my testimony is hoping to support and to show.

2 JUDGE WHITE: All right. It is,
3 perhaps, a somewhat trivial thing that I
4 wanted to clear up, in your rebuttal
5 testimony, JTI052-R on page two, you state, "A
6 likelihood of meeting either the original
7 baseline or the EPA maximum contamination
8 limit for uranium is vanishingly small, do you
9 know or can you tell me what the current EPA
10 MCL for uranium is?

11 DR. LARSON: I believe it is 30
12 micrograms per liter.

13 JUDGE WHITE: I see. From your
14 review of the existing background data at the
15 Ross site, does the groundwater presently meet
16 those MCL's?

17 DR. LARSON: The background data
18 has not been collected by us.

19 JUDGE WHITE: Well, there is some
20 data available for the groundwater quality at
21 the site, at the Ross site.

22 DR. LARSON: How -- you are saying
23 that those values that were collected
24 prelicensing --

25 JUDGE WHITE: That is correct.

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1 DR. LARSON: -- would be compared
2 to --

3 JUDGE WHITE: However you would --
4 would -- just, given the values that are out
5 there that you know of.

6 DR. LARSON: So, some of the
7 testimony earlier throughout this hearing has
8 suggested that the prelicensing data wasn't
9 used for collected -- it wasn't collected to
10 assess restoration standards and goals.

11 JUDGE WHITE: No, I understand
12 that. I am just saying that from -- from the
13 data available, what we know about the
14 concentration of uranium in the groundwater
15 within the OZ aquifer right now, do those
16 values meet or exceed MCL for uranium?

17 DR. LARSON: I believe there are a
18 couple that do.

19 JUDGE WHITE: A couple -- a couple
20 exceed and a couple --

21 DR. LARSON: Don't.

22 JUDGE WHITE: -- are --

23 DR. LARSON: Yes. It varies.

24 JUDGE WHITE: Some above, some
25 below.

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1 DR. LARSON: Correct.

2 JUDGE WHITE: All right. So,
3 certainly for those that are already above
4 that, it would seem highly unlikely that you
5 could ever restore it to -- to below MCL for
6 uranium.

7 DR. LARSON: And that is where the
8 secondary standards would come in.

9 JUDGE WHITE: Yes. Yes. And
10 again, this is sort of a speculative question.
11 I am not asking you as for any legal advice,
12 but just to get a sense of what you are
13 thinking about with regards to what is success
14 and what isn't success.

15 Assuming you have read NRC
16 guidance regarding the standards required for
17 finding that the concentration of a
18 contaminant is as low as reasonably
19 achievable, and will not pose a substantial
20 present or potential hazard to human health or
21 the environment, do you agree that those
22 standards are adequate as they have been
23 referred to by staff witnesses?

24 Or, if not, do you think there
25 should be some other set of standards that are

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1 used to establish one or the other of those
2 benchmarks?

3 DR. LARSON: Do you mean
4 benchmarks with respect to primary/secondary
5 ACL's?

6 JUDGE WHITE: No. Benchmarks with
7 respect to the definition of protective of
8 human health and the environment.

9 I mean, my understanding is ACL's
10 are established, but they must be established
11 so that the values in the ACL's meet these two
12 criteria, the as low as reasonably achievable
13 and protective of human health and the
14 environment.

15 And you have heard staff witnesses
16 make reference to documents that -- that they
17 rely on for making those decisions about
18 whether something is protective or is not
19 protective.

20 And my question to you is, are
21 those documents sufficient -- is that
22 documentation sufficient or, in your opinion,
23 should there be some other set or some other
24 definition for protective of human health and
25 the environment?

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1 DR. LARSON: I would have to
2 review that document to know exactly what
3 those standards and what those methods are to
4 determine those.

5 JUDGE WHITE: Okay. There was an
6 issue in the rebuttal testimony between you
7 and staff rebuttal witnesses regarding --
8 well, I will read this.

9 In your written testimony, JTI003-
10 R, page nine, answer 14, you state, "When the
11 average" -- and you emphasize "average," --
12 "restoration, postrestoration values are
13 compared to the average," and you underline
14 that word in that part of the sentence as
15 well, "baseline," and you put quotations marks
16 around "baseline."

17 -- "the percent increased for
18 postrestoration average uranium values (range
19 from) -- well, (109 to 2640 percent) are
20 greater than the values the NRC staff provided
21 in table four."

22 All right. So -- so here you are
23 saying that the average restoration/
24 postrestoration values, or the ratio, all
25 right, NRC staff rebuttal testimony came back

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1 at NRC-044-R, page 24, and their witnesses
2 stated that, "Averaging all of the
3 measurements taken from samples collected
4 during the groundwater sweep and during the
5 stability period, rather than using final
6 concentration for comparison against baseline,
7 as done by the staff, is not appropriate
8 because of the changing and improving nature
9 of the quality of groundwater undergoing
10 restoration."

11 And I guess I would ask you if
12 staff is correct, that the quality of
13 groundwater used in this data set showed
14 improvement with time and, second, if so, why
15 is -- is your method a better method to assess
16 this than the method staff has used?

17 DR. LARSON: With the limited data
18 set that we have available for Nubeth, that is
19 one method that we can use to analyze that
20 data.

21 And, as we will show later in my
22 testimony, and looking at some of the
23 individual wells from other sites, we can see
24 that there are certain inconsistencies with
25 respect to some wells increasing, some wells

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1 decreasing.

2 So, we need to have a better
3 holistic look at the data that is presented
4 with some of these sites.

5 JUDGE WHITE: Okay. So you are --
6 you do not agree with the statement that --
7 that the data -- that all of the wells would
8 show a decreasing concentration over time?

9 DR. LARSON: I believe the wells
10 were elevated from baseline conditions.

11 JUDGE WHITE: Right now I have
12 only one other question and that is, given
13 that the issue here appears to be the lack of
14 success in restoration following the
15 completion of ISL mining operations.

16 In your opinion, is -- is there
17 current technology that exists that could be
18 used to improve those restoration results that
19 is not being used today?

20 DR. LARSON: There is a report, a
21 technical report that came out with respect to
22 some new tertiary methods of looking into how
23 to analyze it and how to look into some of
24 these new methods that are coming to
25 potentially be used for ISL operations.

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1 I think the amount of data that we
2 have specifically for ISL operations in
3 groundwater remediations sites, using these
4 technologies is -- it is in its infancy.

5 So, I think it is really early to
6 say whether these restoration methods can be
7 beneficial in the future. However, I think,
8 with more research and looking into some of
9 these different technologies, they show some
10 promising.

11 MR. PUGSLEY: Your Honor, is it --
12 that report an exhibit?

13 CHAIRMAN BOLLWERK: I am sorry?
14 Is there --

15 MR. PUGSLEY: Is that report that
16 was just referenced an exhibit?

17 CHAIRMAN BOLLWERK: Is it an
18 exhibit?

19 DR. LARSON: I believe so.

20 CHAIRMAN BOLLWERK: Okay. If you
21 can give us the number that would be -- we
22 would appreciate that.

23 DR. LARSON: It is under
24 Contention 3. It is JTI060.

25 CHAIRMAN BOLLWERK: Okay. If you

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1 -- let's see. 060. One second here.

2 If you want, we can go ahead and
3 admit that now or we can wait till -- I think
4 it is something we are going to talk a little
5 bit about, or is it --

6 MR. FETTUS: No. That answers my
7 question.

8 CHAIRMAN BOLLWERK: But if your
9 preference is to admit it now, we certainly
10 can do that, so --

11 MR. PUGSLEY: If it is pertaining
12 to Contention 3, Your Honor, I have no
13 objection to waiting until then.

14 CHAIRMAN BOLLWERK: All right.

15 MR. HARPER: We have no objection
16 as well, Your Honor.

17 CHAIRMAN BOLLWERK: All right.

18 JUDGE WHITE: Well, that is -- I
19 thank you. That is -- those are the questions
20 that I have up till now.

21 I guess I check with Judge Cole.

22 CHAIRMAN BOLLWERK: We should.

23 Judge Cole, do you have any
24 questions for the joint intervenor witness for
25 Contention 2?

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1 JUDGE COLE: I -- it still has to
2 do with the -- Dr. Larson's allegation that
3 there is risk to human health from radium and
4 uranium concentrations within the injected
5 aquifer. And I have a series of questions
6 concerning that.

7 CHAIRMAN BOLLWERK: All right.

8 JUDGE COLE: The first one, is --
9 Dr. Larson, did you state in 84 of your
10 rebuttal testimony that, in neither the FSEIS
11 or in the staff's August testimony is there a
12 risk of those calculations and supports a
13 contention that the elevated radium 226 and
14 uranium concentrations pose no threat to human
15 health and the environment? Last paragraph.

16 Now, isn't it true that uranium
17 ISR will only take place within that exempted
18 aquifer

19 DR. LARSON: That is correct.

20 JUDGE COLE: And do you disagree
21 that, in order to inject the aquifer, EPA and
22 WDEQ determined that the aquifer does not now,
23 and is not anticipated in the future to serve
24 as a drinking water source?

25 DR. LARSON: I believe that is the

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1 standards that EPA uses to accept an aquifer.

2 JUDGE COLE: Isn't it true that
3 the exempt aquifer, exempted portion of the
4 aquifer has been permanently exempted from
5 classification as an underground source of
6 drinking water? Permanently exempted.

7 DR. LARSON: From my
8 understanding, I -- of EPA's exemption, I
9 would have to review, but it is -- that sounds
10 correct.

11 JUDGE COLE: Now, do you disagree
12 that there are no domestic wells within the
13 entire license area and that historical
14 groundwater use has been limited to industrial
15 and livestock use?

16 DR. LARSON: That is my
17 understanding.

18 JUDGE COLE: And further, do you
19 disagree that there are no livestock wells
20 completely within the injected aquifer?

21 DR. LARSON: Could you clarify --
22 we were talking about the Crowe Butte in my
23 testimony. Are you talking about the Ross
24 site or the Crowe Butte site?

25 JUDGE COLE: I am talking about

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1 the -- on this site.

2 CHAIRMAN BOLLWERK: The Ross site
3 is on this site I think is what he said.

4 The Ross site, correct?

5 JUDGE COLE: Yes.

6 DR. LARSON: He is referring to my
7 testimony where I was discussing the Crowe
8 Butte site.

9 JUDGE COLE: Okay. That was the
10 -- that was the intervenor's Exhibit 009A,
11 page 189, the second to the last paragraph.
12 Does that refer only to Crowe Butte?

13 DR. LARSON: I believe so.

14 JUDGE COLE: Do you know if it is
15 true --

16 MR. CRYSTAL: Could we clarify
17 what exhibit we are talking about? We don't
18 have a 9A.

19 CHAIRMAN BOLLWERK: Judge Cole,
20 can you give us the exhibit number again,
21 please.

22 JUDGE COLE: Sure. It is Exhibit
23 SEI009A, and on page nine, second to the last
24 paragraph.

25 CHAIRMAN BOLLWERK: Okay. That is

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1 from the FSEIS.

2 JUDGE COLE: So that pertains to
3 this site, doesn't it?

4 CHAIRMAN BOLLWERK: We are getting
5 the document up. Give us one second here.

6 Okay. Can you see the document
7 that we have up on the screen?

8 JUDGE COLE: I am having trouble
9 reading it.

10 CHAIRMAN BOLLWERK: I just want to
11 make sure it is the right document.

12 JUDGE COLE: I am going to get the
13 secretary, the last part of the identified --
14 it a highlighted paragraph. Most of the
15 groundwater is represented in 349 have been
16 cancelled or are no longer active. Now, what
17 does that pertain to, the -- the livestock
18 wells.

19 CHAIRMAN BOLLWERK: And so, you are
20 interested in the last sentence of that
21 paragraph and, again, what is the question,
22 just so I am sure we are all on the same page?

23 JUDGE COLE: Does he agree that
24 there are no livestock wells -- do you agree
25 or disagree that there are no livestock wells

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1 completed within the exempted aquifer?

2 DR. LARSON: I guess I would have
3 to review where those wells are located.

4 JUDGE COLE: Okay. Let's go on to
5 the next question.

6 Do you disagree with NRC staff's
7 rebuttal testimony that states that the WDEQ-
8 proposed and EPA-approved reclassification of
9 groundwater within the mine unit, the Class V
10 Mineral Commercial, Industrial use?

11 That is Exhibit NRC044, at 12,
12 second paragraph.

13 CHAIRMAN BOLLWERK: Yes. It is
14 044R. It has been revised but, yes, you got
15 it.

16 DR. LARSON: Your Honor, could you
17 repeat the question? I am not --

18 CHAIRMAN BOLLWERK: Put the
19 exhibit up and then we will have it --

20 DR. LARSON: I am not sure what --

21 JUDGE COLE: Do you disagree with
22 NRC staff rebuttal testimony that states WDEQ
23 proposed and EPA approved reclassifications of
24 groundwater within the mine unit, a Class V
25 Mineral, Commercial?

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1 DR. LARSON: No, I do not.

2 JUDGE COLE: Do you not agree with
3 that?

4 DR. LARSON: I do not disagree
5 with that.

6 JUDGE COLE: Okay. You agree with
7 that?

8 DR. LARSON: That is incorrect. I
9 do not agree.

10 CHAIRMAN BOLLWERK: Wait. I think
11 we are -- I think we are confused now. Let --
12 let's take the question one more time.

13 JUDGE COLE: Okay. Do you
14 disagree with NRC's staff rebuttal testimony
15 that states WDEQ proposed and EPA approved
16 reclassification of groundwater within the
17 mine unit in (Aquifer exemption boundaries),
18 to Class V Mineral, Commercial, references
19 industrial use? And that exhibit, NRC044, I
20 guess it is R, at the 12 second, second
21 paragraph?

22 DR. LARSON: No.

23 JUDGE COLE: Okay. Do you
24 disagree that Strata will be required to
25 comply with Federal Regulation in 10 CFR 40,

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1 Appendix A, Criteria 5(b) to ensure compliance
2 with the groundwater protection standards that
3 are protective of human health and
4 environment, as stated in SEI009A and at page
5 585?

6 DR. LARSON: Your Honor, I -- I
7 don't have a -- I can't make an opinion on a
8 -- a technical opinion on the licensee's
9 conditions.

10 JUDGE COLE: Well, what would they
11 be required to do?

12 CHAIRMAN BOLLWERK: Your answer is
13 the same thing, that you are not --

14 DR. LARSON: It is the same thing.
15 I have no -- I can't --

16 CHAIRMAN BOLLWERK: All right.

17 JUDGE COLE: If there are no
18 drinking water wells within the exempted
19 aquifer or, indeed, within the entire license
20 area, there are no livestock wells within the
21 exempted aquifer and groundwater will meet the
22 Federal Standards protective of human health
23 and the environment, at the point of
24 compliance, which is the aquifer adjacent
25 boundary, where would the dose of radium 226

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1 and uranium in groundwater occur?

2 DR. LARSON: Your Honor, the data
3 that I presented show that the groundwater
4 essentially changes from one state before the
5 mining occurred to a significantly different
6 state once it was -- once it was -- the mining
7 was completed and restorations were completed.

8 And, by "state," I mean, as --
9 with respect to quantifying concentrations of
10 certain constituents in that water.

11 JUDGE COLE: But there are no
12 drinking water wells within the exempted
13 aquifer, and drinking water wells will not be
14 permitted in the exempted aquifer. Am I
15 correct?

16 DR. LARSON: That is my
17 understanding.

18 JUDGE COLE: Now, where would the
19 dose of radium 226 and uranium in groundwater
20 occur?

21 DR. LARSON: Your Honor, this --
22 this gets into a larger issue with respect to
23 potentially some of this stuff moving off-
24 site. That would probably be more associated
25 with fluid migration. That is Contention 3.

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1 JUDGE COLE: Okay. Thank you.

2 CHAIRMAN BOLLWERK: Judge White,
3 do you have anything further at this point?

4 JUDGE WHITE: No. I agree with
5 you that those are issues that I plan to
6 cover, as well, and we will look forward to
7 your testimony on that in Contention 3.

8 CHAIRMAN BOLLWERK: All right. At
9 this point I don't have any questions. Let's
10 look to the parties. Do you need several
11 minutes to talk about proposed cross-
12 examination questions?

13 MR. PUGSLEY: Your Honor, ten
14 minutes for us would be sufficient.

15 MR. HARPER: We agree.

16 MR. FETTUS: Ten minutes is fine.

17 CHAIRMAN BOLLWERK: Ten minutes.
18 All right. Let's take a ten-minute break,
19 then, and we will come back and see if there
20 is any proposed cross-examination questions.

21 (Whereupon, the above-entitled
22 matter went off the record at 11:36 a.m. and
23 resumed at 11:52 a.m.)

24 CHAIRMAN BOLLWERK: On the record.
25 We received some questions. We're going to

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1 talk with Judge Cole about these. It's a
2 scheduling matter. Just so you know when we
3 finish with the cross examination questions
4 for Dr. Larson, the individual ones, we then
5 will be impaneling all the witnesses for
6 Contention 2 and asking them some questions.
7 Just so you're aware and have folks around,
8 that will be what we have next.

9 At this point, we'll take a brief
10 recess and we'll be right back. Off the
11 record.

12 (Whereupon, the above-entitled
13 matter went off the record at 11:36 a.m. and
14 resumed at 12:08 p.m.)

15 CHAIRMAN BOLLWERK: Can we go on
16 the record please.

17 Dr. Larson, we have a couple of
18 additional questions to ask you. Are you
19 aware of any existing NRC licensees that have
20 attempted to follow the proposed bio-
21 restoration methods similar to those discussed
22 in JTI-60 which is the one that hasn't been
23 admitted into evidence? As you pointed out,
24 this was in the record.

25 DR. LARSON: Are you asking if

1 anyone has been required to try these methods?

2 CHAIRMAN BOLLWERK: No. I'll
3 restate the question again.

4 DR. LARSON: Okay.

5 CHAIRMAN BOLLWERK: Are you aware
6 of any existing NRC licensees that have
7 attempted to follow the proposed bio-
8 restoration methods similar to those discussed
9 in JTI-60?

10 DR. LARSON: I believe there have
11 been attempts to use it.

12 CHAIRMAN BOLLWERK: Okay. And do
13 you know what level of success they've had?

14 DR. LARSON: I think it's mixed.
15 And I would have to look into more of the data
16 and see more of exactly where they tried these
17 projects.

18 CHAIRMAN BOLLWERK: So you don't
19 know any of the details.

20 DR. LARSON: I don't know the
21 quantitative details. I can't tell you how
22 successful these projects have been.

23 CHAIRMAN BOLLWERK: Okay.

24 DR. LARSON: I know they've been
25 attempted and all that I've heard about them

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1 is that they're mixed review or mixed results.

2 CHAIRMAN BOLLWERK: Okay. Can you
3 envision a site that has an ACL and -- Put it
4 this way. Do you think that restoration to an
5 ACL at any ISR site would constitute a large
6 impact?

7 DR. LARSON: I think that would
8 depend on what the ACL is and what sort of
9 modeling program that's been in place and what
10 sort of data that we can collect to show and
11 demonstrate and prove quantitatively that that
12 material is not moving offsite. However, I
13 don't believe that's been done.

14 CHAIRMAN BOLLWERK: Okay. You
15 were asked whether you believe there are ways
16 to further improve restoration at ISL uranium
17 sites. Doesn't your testimony assume that
18 companies are using the available restoration
19 methods and complying with NRC Criteria 5B?

20 DR. LARSON: Throughout the
21 majority of my testimony, I've used the
22 proposed methods for groundwater restoration
23 that has been proposed for raw sites with
24 sites that have used similar methods with
25 respect to progressions, the methods used.

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1 And I demonstrated that using -- I know those
2 methods and under those conditions that the
3 data that I presented showed the values of
4 certain constituents, namely uranium, are
5 substantially elevated beyond pre-mining
6 conditions.

7 CHAIRMAN BOLLWERK: Does your
8 testimony then go to the likely impacts in the
9 mine aquifer post restoration?

10 DR. LARSON: Repeat the question
11 please.

12 CHAIRMAN BOLLWERK: Certainly.
13 Does your testimony go to the likely impacts
14 in the mine aquifer post restoration?

15 DR. LARSON: Yes. My testimony
16 shows how that aquifer changes with respect to
17 post restoration.

18 CHAIRMAN BOLLWERK: And do those
19 impacts exist irrespective of the potential
20 use of the aquifer for human or other
21 consumption?

22 DR. LARSON: Correct.

23 CHAIRMAN BOLLWERK: All right.
24 Anything further?

25 JUDGE WHITE: Nothing.

1 CHAIRMAN BOLLWERK: Judge Cole, do
2 you have anything?

3 JUDGE COLE: No.

4 CHAIRMAN BOLLWERK: All right. At
5 this point, I think we'd like to have all the
6 witnesses for Contention 2 come up and take a
7 seat. And just let me ask the court reporter.
8 Do you want me to have them identify
9 themselves or are you good? All right.

10 I think probably all of you were
11 here yesterday when we had the panel and some
12 of you were on the panel that we had. So I
13 think you have a sense of how this works.

14 One thing I should mention that I
15 didn't do yesterday and I will be direct about
16 enforcing today is the comments that you're
17 making are to the Board. So you should direct
18 all your statements to us, not to each other.

19 If you have something that you
20 want clarified or you think something ought to
21 be asked of another witness, certainly let us
22 know that and we'll go from there. But we're
23 trying to get -- Let me put it this way. We'd
24 like to have your discussion, but the
25 discussion should be directed to us and not to

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1 each other necessarily.

2 Obviously, when you're answering
3 our questions, everyone is hearing it and it
4 will work that way. So that won't be an
5 issue.

6 Before I start, again I'm going to
7 be looking at the rebuttal testimony and some
8 of the things that were in that. But let me
9 ask one question of the staff just as an
10 introductory matter for my information.

11 You've put what's been described
12 as a bounding analysis into this environmental
13 impact statement. Is this something -- We
14 talked about this yesterday with respect to
15 another item -- that's unique to the Ross SEIS
16 or is this something that's now going to be
17 incorporated into other NRC FEISes related to
18 other ISR projects?

19 MS. MOORE: Your Honor, we added
20 the bounding analysis in response to the
21 contentions that were raised against the
22 license application and the draft FEIS. And
23 because of that, I don't expect necessarily
24 that that sort of analysis would need to be
25 included in a future final SEIS or draft SEIS

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1 unless there was a similar issue raised.

2 Each SEIS is site specific and
3 there can be differences for each that may be
4 based on the characteristics of the site and
5 also differences that can be due based on the
6 input from the stakeholders during scoping or
7 in a hearing or comments on the draft. We
8 found that the information that was in the
9 GEIS was sufficient to allow us to come to an
10 impact conclusion regarding impacts due to an
11 ACL. That information was only added to
12 satisfy stakeholder interest.

13 CHAIRMAN BOLLWERK: Okay. Thank
14 you. All right. So what I'd like to talk
15 about a little bit is my questions are going
16 to be directed initially to the staff. And
17 I'd like to get your response to Dr. Larson's
18 answer to his rebuttal question four. I
19 believe that's JTI-051 or 052 if I remember.

20 MR. PUGSLEY: 052R.

21 CHAIRMAN BOLLWERK: 052, okay.
22 That's the basic document we'll be using. In
23 that question, he talks about both the Crow
24 Butte and the Smith Ranch facilities. And
25 with respect to Crow Butte, there's a

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1 statement that "Despite roughly equivalent
2 uranium concentrations observed previously
3 which were deemed not protected, the NRC
4 approved restoration as adequately protective
5 without SEIS explanation of the basis for
6 finding similar concentration limits
7 protective in one instance and not in
8 another." I want to see if the staff has any
9 comments on that.

10 DR. JOHNSON: Yes, Judge Bollwerk.
11 In the first instance, the finding of --

12 CHAIRMAN BOLLWERK: Make sure the
13 microphone is right down by your mouth.

14 DR. JOHNSON: Excuse me.

15 CHAIRMAN BOLLWERK: It's actually
16 probably right at your nose. There we go.
17 Perfect. Thank you.

18 DR. JOHNSON: Thank you, Judge
19 Bollwerk. In the first instance, the finding
20 of not being able to ensure that it was
21 protective was the fact that there was some
22 suggestion that it had not reached, the
23 concentration had not reached, a stable level.
24 So there was some concern that over time the
25 concentrations would slowly increase.

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1 Therefore, the finding of that
2 being protective was not possible because
3 there was concern that it would increase to
4 some unknown level in the future. And then
5 the requirement to address that was some
6 stability monitoring.

7 And the stability monitoring
8 showed that indeed, that concentration, those
9 concentrations were stable over time.
10 Therefore the analyses could be done to
11 determine if that would be protective outside
12 that exempted aquifer and indeed it was.

13 CHAIRMAN BOLLWERK: All right.
14 Dr. Larson, anything you want to say in
15 response to that?

16 DR. LARSON: No.

17 CHAIRMAN BOLLWERK: All right.
18 Anything anyone from Strata has in that
19 regard?

20 (No verbal response.)

21 No. All right.

22 Then again with respect to Crow
23 Butte, there's a statement that indicates that
24 the approval of the Crow Butte Unit 1
25 concentration levels of 18 times background as

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1 protective of human health and in the
2 environment was an arbitrary standard that
3 lacked any scientific or empirical basis and
4 had little meaning for future alternate
5 concentration levels at the raw site.
6 Anything the staff wants to say about that
7 observation.

8 DR. JOHNSON: Yes, Judge Bollwerk.
9 That finding was the finding that came out of
10 the NRC staff's review of the aquifer
11 restoration request. As preparing of the SEIS
12 we didn't reevaluate those findings. We
13 accepted them as this was the decision that
14 was made for accepting restoration at that
15 time. And I'd have to go back and redouble
16 check this.

17 But in their practice, NRC staff's
18 practice, in looking at that, it's that they
19 evaluated generally the kind of the transport
20 that would go on from the location within the
21 protection area out to that exempted boundary,
22 the boundary of the exempted aquifer.

23 In addition to which this was the
24 secondly standard developed by the state of --
25 in Crow Butte's case -- Nebraska in their UIC

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1 permit. And the assumption was that if this
2 was the standard that they were bound by then
3 that would be protective of outside of the
4 production area.

5 CHAIRMAN BOLLWERK: All right.
6 Dr. Larson.

7 DR. LARSON: I am familiar with a
8 transport model that's been proposed for the
9 Crow Butte project. And so if NRC staff could
10 provide the model that they used, that would
11 be helpful as well.

12 CHAIRMAN BOLLWERK: All right. So
13 you're saying without the model you don't
14 really have -- don't want to say anything
15 further.

16 DR. LARSON: Yes. And I think
17 without understanding saying that it's not
18 transporting without a transport model it's
19 unclear.

20 DR. JOHNSON: Judge Bollwerk.

21 CHAIRMAN BOLLWERK: Anything
22 further the staff wants to say?

23 DR. JOHNSON: The documents that
24 led to that aquifer approval are in our
25 exhibits. And all of the analyses and the

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1 evaluation that was done by NRC staff at that
2 time are included in those exhibits.

3 CHAIRMAN BOLLWERK: All right.
4 Anything further, Dr. Larson?

5 DR. LARSON: No.

6 CHAIRMAN BOLLWERK: Anything from
7 SEI? No, all right.

8 The second facility that's talked
9 about in Question 4 is the Smith Ranch
10 facility. And I was wondering if the staff
11 could provide any response that they might
12 have relative to the analysis about the
13 histogram that's on page seven of the
14 rebuttal. And again, that's JTI052 is the
15 number and it's Bates seven.

16 DR. JOHNSON: Judge Bollwerk.

17 CHAIRMAN BOLLWERK: Yes.

18 DR. JOHNSON: This histogram is a
19 very nice depiction of the fact that the
20 aquifer approval was essentially the ACL's.
21 As Mr. Saxton explained, at the time there
22 wasn't precisely the ACL that are the
23 regulatory practice today. But they
24 essentially served as ACLs.

25 What this histogram showed was the

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1 reason for and the consequence of the ACLs.
2 In other words, there were -- I think there is
3 a number of samples at a certain concentration
4 level, but it shows that a number of samples
5 exceeded the baseline. He compares it to
6 baseline at the time of aquifer restoration
7 approval.

8 CHAIRMAN BOLLWERK: All right.
9 And so you described this very nicely. I
10 don't think you have any problems with a
11 histogram.

12 DR. JOHNSON: No. I think it
13 demonstrates very clearly the situation that
14 there was the equivalent an ACL for -- In
15 fact, that's not quite true. There wasn't an
16 equivalent of an ACL for uranium because
17 uranium met the Class 1 domestic standard in
18 Wyoming at that time.

19 But if you strip away the
20 regulatory requirements there and you just
21 simply look at the concentrations -- the
22 concentrations in those wells the way it's
23 depicted here as samples -- there were more of
24 them that exceeded the baseline after
25 restoration than before ACL activities. And

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1 this situation was considered directly in the
2 analyses that we did for the FEIS, the
3 supplemental environmental impact statement.

4 This really captures the situation
5 that exists when the fourth 12:23:45 option
6 for meeting the regulatory criteria in 5(b)(5)
7 is requested. In other words, this is the
8 situation that would be there when an ACL
9 would be requested for a particular
10 constituent. In this case, that would be
11 uranium. This is the situation. So this just
12 demonstrates, it illustrates, the situation
13 that would be suitable for a request for an
14 ACL.

15 CHAIRMAN BOLLWERK: All right.
16 Dr. Larson, anything you want to say about the
17 histogram or your testimony relative to it
18 given what you heard here?

19 DR. LARSON: The histogram is a
20 cumulative distribution of data with respect
21 to baseline and post restoration samples.

22 CHAIRMAN BOLLWERK: All right.
23 Anything further you have on that?

24 JUDGE WHITE: Just for curiosity
25 sake, I believe we heard that -- Is it correct

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1 that 0.03 is the MCL for drinking water?

2 MR. SAXTON: That's correct.

3 JUDGE WHITE: So on this graph we
4 would see at least part of that baseline lies
5 under that value. Certainly none of the
6 restoration lies under that value.

7 MR. SAXTON: Sure.

8 JUDGE WHITE: I just wondered if
9 there's any comment that either staff or you
10 would make. I mean, does that mean that
11 people could have been drinking that water
12 before the mining and may have been drinking
13 that water before the mining? Then they were
14 not going to be able to drink the water after
15 the mining? I mean that's my sort of simple
16 minded interpretation of that.

17 MR. SAXTON: They wouldn't be able
18 to get an exempted aquifer if people were
19 drinking the water.

20 JUDGE WHITE: So the exempted
21 aquifer regardless of some of the wells in
22 fact met MCL people still wouldn't have been
23 told.

24 MR. SAXTON: Whether or not it
25 meets an MCL is not part of the criteria for

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1 --

2 JUDGE WHITE: An exempted act.

3 MR. SAXTON: It's whether or not
4 it is used now or in the future or it has
5 mineralization. Those are the criteria.

6 JUDGE WHITE: Yes. I understand
7 that. So the idea of an exempted aquifer is
8 it's exempted because of the fact that it has
9 potential for economic exportation.

10 MR. SAXTON: That's correct. And
11 I haven't reviewed all the data, but I assume
12 that it's correct for the distribution data.
13 One of the problems is that for radium that's
14 generally all above the MCLs, a lot of the
15 well fields. So not only do you have to look
16 at uranium, you look at radium as well because
17 that's another radiological that's always
18 prohibitive as a drinking water source.

19 JUDGE WHITE: Thank you.

20 CHAIRMAN BOLLWERK: Dr. Larson,
21 anything further you want to say about the
22 histogram?

23 DR. LARSON: No.

24 CHAIRMAN BOLLWERK: All right.
25 The next question I have goes to -- again

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1 looking for a response from the staff at least
2 initially -- question five on the same
3 rebuttal testimony from Dr. Larson. And there
4 is a couple of different things. I want to
5 take them one at a time.

6 The first would be the point that
7 he makes about net uranium flux as an
8 explanation for decreased uranium
9 concentrations per the Borch study.

10 DR. JOHNSON: Your Honor.

11 CHAIRMAN BOLLWERK: Yes.

12 DR. JOHNSON: I think that this
13 would be helpful in responding to this to have
14 this document, a certain page of it, on the
15 big screen.

16 CHAIRMAN BOLLWERK: We're
17 hopefully doing that right now.

18 DR. JOHNSON: Oh, excuse me. This
19 is 037. And I believe NRC037.

20 CHAIRMAN BOLLWERK: By document,
21 you mean the Borch study?

22 DR. JOHNSON: Yes.

23 CHAIRMAN BOLLWERK: I'm sorry. I
24 misunderstood.

25 DR. JOHNSON: And if you'd go to

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1 the second to the last page and above the
2 acknowledgments, the third paragraph up.

3 CHAIRMAN BOLLWERK: The one that
4 starts "There is potential..."

5 DR. JOHNSON: The paragraph begins
6 by "The very low concentrations of target
7 species..."

8 CHAIRMAN BOLLWERK: All right.

9 DR. JOHNSON: Okay. "Uranium and
10 radium ..." This is the paragraph that was
11 reflected in the NRC staff's testimony. And
12 it's rather straightforward. It strikes me
13 that "the very low concentrations of target
14 species, uranium and radium, at the two
15 monitoring wells indicate that natural
16 attenuation is likely to play a major role at
17 the mobilizing residual, i.e., after
18 remediation, concentrations of uranium-6
19 species, thus preventing them from moving
20 outside the mined area."

21 That was the conclusion that the
22 staff summarized in the testimony. And, to
23 add a little bit more understanding to that
24 point, it might be good to go to page four of
25 the document, the figure, just past the

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1 figure. Right there. If you could blow it up
2 to make sure we can see it.

3 If I may, I'd just like to explain
4 really what this is about. The squares with
5 the dots is a portion of the wellfield
6 patterns. At the time restoration was
7 approved, there were two wells, MP4 and
8 another one, MP5, which really isn't the
9 subject here.

10 But those were production wells.
11 They have the highest levels of uranium that
12 existed in that wellfield at the time
13 restoration was approved.

14 The next well -- that has a scale
15 on it. You can see what 200 feet is. So the
16 estimated distance between MP4 and I21 is
17 about 150 feet. I21, I stands for injection.
18 Those were injection wells. That was the edge
19 of the production wellfield pattern.

20 LTM is a long-term monitoring well
21 that was put in to monitor a post aquifer
22 restoration approval. M3 and M4 were
23 monitoring wells that were in the parameter
24 monitoring ring.

25 The data that Borch interprets is

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1 data that was collected from 2005 to 2012 by
2 the licensee, Cameco, and submitted to the
3 state agency. And the concern was since MP4
4 had a high level of uranium at the time that
5 the aquifer restoration was approved they
6 wanted to determine whether the predictions of
7 natural attenuation would hold through time
8 which would then prevent any migration out of
9 that exempted aquifer.

10 We got seven years of data for
11 those wells. The statistical analyses done by
12 Borch in MP4 showed that over that period of
13 time there was an increase of about 4.4
14 percent in uranium concentration.

15 But I21 which is 150 feet down
16 gradient the uranium concentration in that
17 well started out much lower than at MP4. It
18 declined 30 percent over those eight years.
19 I'm going to read my numbers just to make
20 sure. Yes, 30 percent over those eight years.

21 LTM, the long-term monitoring well
22 4 and M3 and M4 which are in the parameter
23 monitoring wells, they started out being less
24 than the MCL for uranium which is 0.03
25 milligram per liter. And after 12 years, they

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1 were still below the MCL and they showed no
2 statistical indication of a declining
3 concentration or an inclining concentration
4 increasing.

5 So it was based upon the numbers,
6 the volumes measured in LTM for M3 and M4 that
7 Borch was referring to when he made that
8 statement supporting natural attenuation in
9 his conclusion section that the staff then
10 took and used it in the testimony.

11 CHAIRMAN BOLLWERK: All right.
12 Dr. Larson, anything you'd like to say?

13 DR. LARSON: Yes. As I already
14 said in my rebuttal which was up previously,
15 those interpretations had been taken out of
16 context. If you look at what they said in the
17 actual report that the concentration, the
18 decreasing concentrations, of I21 could be due
19 to either natural attenuation mechanisms or to
20 net uranium flux leaving the well. That means
21 it could be either sequestered into the
22 aquifer itself or transporting offsite and
23 that's why it was decreasing.

24 Furthermore, he goes on to state
25 that they really can't establish an idea for

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1 which one of these it could be because of the
2 lack of hydrological and biogeochemical data
3 -- I'm paraphrasing -- that's available for
4 him.

5 And even if you look at this
6 figure, we don't have any sort of idea with
7 respect to potential natural flow in this
8 aquifer. All we have is an estimated flow
9 direction. If we had that potential natural
10 surface data, we could make better predictions
11 with respect to where the groundwater was
12 actually flowing, if it actually was flowing
13 from west to east. We don't really know.

14 That's one of the concerns that
15 the Borch paper was referring to. So that's
16 where my rebuttal testimony was referring to
17 with respect to this question.

18 CHAIRMAN BOLLWERK: All right.

19 JUDGE WHITE: The alternative to
20 natural attenuation was uranium flux. Could
21 you tell us what you mean by that?

22 DR. LARSON: Yes. So uranium
23 would be leaving with the groundwater flow.

24 CHAIRMAN BOLLWERK: Would staff
25 like to respond?

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1 DR. JOHNSON: Yes. I just want to
2 be clear that the staff's testimony did not
3 purport to explain the decline of 30 percent
4 over those years for I21. Our testimony was
5 specific to those monitoring wells. That's
6 very clear that the Borch suggests that that's
7 from natural attenuation.

8 CHAIRMAN BOLLWERK: All right.
9 Dr. Larson? Do you need a second to find
10 something?

11 DR. LARSON: Well, I was going to
12 what I was in my testimony responding to with
13 respect to what they had said in their initial
14 testimony. I can cite that if you'd like.

15 CHAIRMAN BOLLWERK: Okay.

16 DR. LARSON: For the record, it's
17 in the staff's initial at that Q2. tab?

18 CHAIRMAN BOLLWERK: All right.
19 Anything further the staff has on this point?
20 No.

21 All right. Judge Cole, at any
22 point if you need to chime in, just let us
23 know. All right?

24 JUDGE COLE: Okay.

25 CHAIRMAN BOLLWERK: The second

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1 part of this, again the same question,
2 rebuttal question five dealing with the Smith
3 Ranch. Maybe not. The second part of
4 rebuttal question five, I'd like the staff's
5 response to the portion of Dr. Larson's answer
6 that talks about the lack of staff bounding
7 analysis discussion, the trend toward
8 increasing uranium concentration in the ore
9 zone such as for the Smith Highland Mine Unit
10 A and the Christianson Mine Unit 5-2 to
11 support a finding of small and temporary
12 impact versus large and permanent impacts. If
13 you need a second to look at the testimony,
14 you should do that.

15 DR. JOHNSON: Yes.

16 CHAIRMAN BOLLWERK: It's question
17 five. I don't have a page. Unfortunately, I
18 didn't write that down.

19 DR. JOHNSON: Judge Bollwerk, I
20 can response to that.

21 CHAIRMAN BOLLWERK: Okay.

22 DR. JOHNSON: And this really is I
23 guess a couple things. One is that I can't
24 speak for the Christianson Ranch because that
25 aquifer restoration has not been approved.

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1 But in terms of the wellfield A at
2 Smith Ranch, the regulations that we follow
3 are as that the concentrations that exist of
4 the constituents in the production area and
5 exempted aquifer need to be protective at the
6 point of compliance which is the boundary of
7 the exempt aquifer into the underground
8 sources of drinking water.

9 Now it was determined by the NRC
10 staff at the time of aquifer restoration that
11 the concentrations that remained were
12 protective. And that situation then allows us
13 to follow the impact analyses that were first
14 established in the generic environment impact
15 statement and tiered into the SEIS for the
16 Ross project of being small. It's just as
17 straightforward as that.

18 CHAIRMAN BOLLWERK: All right.
19 Anything further you want to say on this, Dr.
20 Larson?

21 DR. LARSON: I'm just quoting what
22 the data says.

23 CHAIRMAN BOLLWERK: All right.

24 Judge White, anything further?

25 Okay.

1 Just a couple more. First, this
2 one I would like the staff's response to Dr.
3 Larson's answer to rebuttal question six that
4 the Irigaray Mine Units 9-2 concentrations who
5 the actual range of increase from average
6 baseline of between 16 and 125 times, thereby
7 exceeding the staff's proposed upper and lower
8 bounding levels of four and 71 times which
9 shows how this bounding analysis does not
10 provide a meaningful range of baseline values
11 or ultimate concentration limits.

12 DR. JOHNSON: Judge Bollwerk.

13 CHAIRMAN BOLLWERK: Yes.

14 DR. JOHNSON: Could you help me on
15 the page you're at? Who did you read from?

16 CHAIRMAN BOLLWERK: Let's see. I
17 would need see -- Hold on one second here.
18 Let me see if I can find it.

19 MR. HARPER: It's immediately
20 before 11.

21 MR. FETUS: Eleven and 12.

22 CHAIRMAN BOLLWERK: Eleven and 12,
23 thank you.

24 DR. JOHNSON: Excuse me. And
25 could you, Judge Bollwerk, explain where on

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1 that page you were reading from?

2 CHAIRMAN BOLLWERK: Could you
3 bring it down to like 75 or maybe 100 so that
4 I can see the whole page? It's page 12.

5 MR. HARPER: It's on page 12
6 immediately before that beginning of question
7 seven.

8 CHAIRMAN BOLLWERK: Question seven
9 is right there. You need to come down this
10 way. There we go.

11 DR. JOHNSON: So do I understand
12 correctly that it's the last part to the last
13 paragraph that starts with "However"? Is that
14 the paragraph that you'd like us to address?

15 CHAIRMAN BOLLWERK: Right. Yes.

16 DR. JOHNSON: Okay. I'll try to
17 take a stab at this and if I'm missing the
18 target.

19 CHAIRMAN BOLLWERK: Right. Again,
20 if you need to take a second to read it over,
21 I'd like for you to read it than try to shoot
22 from the hip as it were. Do the best that you
23 can anyway.

24 DR. JOHNSON: This situation goes
25 back to the approach taken for establishing

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1 the equivalent of the ACL at that time and of
2 the averaging mine units 1-9. And they looked
3 at that as a whole and established an ACL,
4 equivalent of an ACL, for the whole. This was
5 based upon average concentrations.

6 Now the premise of this rebuttal
7 testimony is that mine unit one was
8 anomalously, the uranium concentrations were
9 higher than in mine units 2-9. And therefore
10 if you strip away mine unit one and set that
11 aside and then reevaluate what the ACL would
12 have looked like in mine units 2-9, they would
13 have generated that the concentration units,
14 the 1.46, 3.8 and the average baseline
15 increase from 16 times to 125 times.

16 That may be the case. I don't
17 know. I didn't do the calculations. As I
18 believe it is stated pretty clearly in our
19 testimony for this analyses we took the
20 aquifer restoration approvals as they existed
21 and we didn't reanalyze and re-evaluate and
22 second guess those approvals. So we did not
23 do the calculations of how this would have
24 looked if the aquifer restoration would have
25 been done differently.

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1 And that's what this is. This is
2 assuming that the aquifer restoration would
3 have been differently and had broken it apart
4 in different fashion.

5 It goes back to the concept of
6 averaging whether averaging wells in a
7 particular mine unit or wellfield. Or in this
8 case, they're averaging mine units. Every
9 time there's an average you've got some that
10 are higher and some that are lower.

11 This is an attempt to redo that
12 aquifer restoration. And that's not the
13 situation at hand. The aquifer restoration
14 that was approved is just what it is.

15 CHAIRMAN BOLLWERK: Right. Dr.
16 Larson.

17 DR. LARSON: So the point I was
18 trying to make was that I'm not trying to
19 second guess or redo. What I'm saying was and
20 I've documented this well throughout the
21 majority of my testimony of the issues
22 associated with the research and development
23 activities in irrigated mining which skewed
24 the concentrations for baseline with respect
25 to all the mining when they are all

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1 collectively put together.

2 If we can circumvent that issue
3 and look at the data behind those other mine
4 units that weren't affected by research and
5 development activities, we can actually get an
6 idea of what the impacts to those individual
7 mine units were. Based upon that data, those
8 relationships between baseline for each mine
9 unit and post restoration concentrations range
10 between 16 times to 125 times.

11 CHAIRMAN BOLLWERK: All right.
12 Judge White, anything? No. All right.

13 One last question at least from me
14 anyway. I'd like to get the staff's response
15 to Dr. Larson's answer in again rebuttal
16 question six that disputes the staff's
17 assertion that the Irigaray site has no
18 relevance to the Ross site operation. And
19 that was further up I guess if I've got the
20 right rebuttal question. I hope I did.

21 DR. JOHNSON: Judge Bollwerk.

22 CHAIRMAN BOLLWERK: Yes.

23 DR. JOHNSON: That's rather
24 straightforward. And that simply put is not
25 an approved aquifer restoration. The licensee

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1 submitted some materials on that and the NRC
2 staff did the review. In fact, Mr. Saxton
3 here can talk about that in greater detail.

4 But they asked for additional
5 information. And therefore it's not an
6 approved restoration. So the analyses that
7 was done for the final SEIS was simply based
8 upon those where the aquifer restoration had
9 been approved.

10 CHAIRMAN BOLLWERK: All right.
11 Anything further the staff wants to say before
12 I turn it over to Dr. Larson?

13 MR. SAXTON: Can you rephrase the
14 question? Did you say Crystal Ranch?

15 CHAIRMAN BOLLWERK: No, I believe
16 it's -- Hold on one second here.

17 DR. JOHNSON: Excuse me. I
18 misunderstood. I'm sorry.

19 CHAIRMAN BOLLWERK: It was the
20 Irigaray site I think. Do I have that
21 correct, Dr. Larson?

22 DR. LARSON: Irigaray is my
23 understanding.

24 CHAIRMAN BOLLWERK: Irigaray, I
25 keep mispronouncing it. But hopefully it will

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1 be spelled correctly on the record.

2 MR. FETUS: It's actually, Your
3 Honor, question seven.

4 CHAIRMAN BOLLWERK: Is it seven?
5 I apologize. I've got the wrong question
6 number.

7 DR. JOHNSON: Judge Bollwerk.

8 CHAIRMAN BOLLWERK: Yes.

9 DR. JOHNSON: I believe I
10 understand.

11 CHAIRMAN BOLLWERK: Okay. I'm
12 sorry about the question number. It didn't
13 help things any.

14 DR. JOHNSON: Yes, I think I was
15 mixed up anyway. But the staff testimony that
16 is being referred to in seven, Q7, and answer
17 seven is testimony from our A.2.11. And its
18 continuation of the point that I made just
19 previously and that is that there's no reason
20 for us to do a recalculation of Irigaray mine
21 units and considers units 2-9 and unit one
22 independently.

23 The measure that was evaluated for
24 aquifer restoration was whether it would be
25 protective. Those concentrations would be

1 protective at the boundary. And indeed that's
2 the finding that was made by the NRC staff of
3 the aquifer restoration. There was no reason
4 to go in and try to redo and second guess the
5 staff's decision at that time.

6 Now if the answer in seven then
7 brings this in to the Nubeth for Ross
8 considering that Nubeth was indeed an R&D,
9 research and development, facility that
10 occurred some 30 years or more, 35 years,
11 prior. And there's differences.

12 Even though I'm not intimating
13 familiar with the research and development
14 activities in mine unit one for Irigaray,
15 there are differences in the one with Nubeth
16 because (1) we know that Nubeth was a very
17 small operation. And that's well documented.
18 (2) Also the pre-license site characterization
19 data that were developed by Strata that was
20 used for the Final SEIS establishes that there
21 isn't an impact from the Nubeth operations on
22 the situation today at the Ross site.

23 CHAIRMAN BOLLWERK: All right.
24 Dr. Larson, anything further you want to say
25 on this subject?

1 DR. LARSON: Just the point I was
2 making with this was respect to if you have
3 some sort of R&D activity located within a
4 proposed mine boundary. There is the
5 potential to have artificially elevated
6 concentrations of certain contaminants of
7 concern which would potentially result in a
8 situation similar that we saw at Irigaray
9 where we saw very high concentrations due to
10 research and development activities which
11 could potentially mask the groundwater
12 impacts. That was my concern with the Nubeth
13 operations with respect to what we've already
14 seen happen at another ISL site.

15 MR. SAXTON: Your Honor, if I
16 might.

17 CHAIRMAN BOLLWERK: Yes.

18 MR. SAXTON: I'm not intimating
19 familiar with all the studies that were done
20 in Irigaray. But it's my understanding that
21 it was a seven pattern site, a pilot site.
22 And they didn't get approved restoration
23 before they went into commercial. So that's
24 a big difference because Nubeth that have the
25 approved restoration.

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1 And, secondly is that even though
2 the answer in this indicated that ammonium
3 will not be different from carbonate-based
4 lixiviant. Past history has shown that that's
5 more troublesome than a regular carbonate-
6 based lixiviant.

7 CHAIRMAN BOLLWERK: Right. I'm
8 sorry.

9 DR. LARSON: So the thing I was
10 saying with respect to sodium carbonate
11 lixiviant which to any of the ISL sites that
12 have been shown in data throughout my
13 testimony on the commercial scale sites have
14 used sodium bicarbonate and the issues that
15 have arisen from that. I was making a point
16 that if you had elevated concentrations it
17 doesn't necessarily matter. We had issues
18 restoring either one of these.

19 CHAIRMAN BOLLWERK: All right.
20 Anything further from the staff at this point
21 or from -- Make sure you pull it down and get
22 it to your mouth. Thank you.

23 MS. MOORE: I just wanted to
24 reiterate a statement I made yesterday that
25 when we are considering the environmental

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1 impacts of the Ross project, we're considering
2 the impacts to the affected environment as
3 they exist today. And we are not attempting
4 to consider the impacts to the environment if
5 it had never been impacted by a previous
6 project. That's in the direct
7 impact section. But as I mentioned yesterday,
8 we do consider the impacts cumulatively in the
9 cumulative impact section.

10 CHAIRMAN BOLLWERK: All right.
11 Let me ask one question of the staff. Is
12 there anything you want to say about that, Dr.
13 Larson?

14 DR. LARSON: No.

15 CHAIRMAN BOLLWERK: All right. So
16 does the staff have a schedule for the
17 Christianson Mine in terms of making a ruling
18 on the pending restoration request?

19 MR. SAXTON: The short answer is
20 no. We've submitted something back to the
21 licensee for them to come back to us with more
22 or less a schedule. I met the project manager
23 of that particular site.

24 But in essence there were several
25 different mine units 2-6 and some of them were

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1 a little bit closer to meeting a restoration
2 standard than others. Then we went back into
3 one of them, mine unit 5, as has been reported
4 and they started operations back up there.
5 That one will not be submitted with the others
6 as they were before.

7 The short answer is I don't know
8 what the schedule is. Hopefully, we hope to
9 see some information about what we recommended
10 in our evaluation back in 2012.

11 CHAIRMAN BOLLWERK: Anything
12 further you have? Anything further anyone of
13 the panel wants to say anything about? All
14 right.

15 Judge Cole, do you have anything?
16 No.

17 MR. KNODE: Judge Bollwerk.

18 CHAIRMAN BOLLWERK: Yes.

19 MR. KNODE: Can I make a comment
20 please?

21 CHAIRMAN BOLLWERK: Sure.

22 MR. KNODE: Can we bring back up
23 NRC 037?

24 CHAIRMAN BOLLWERK: Okay, 037.

25 MR. KNODE: Can we go to the

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1 schematic of the wellfield that Dr. Jones --
2 Yes, thank you very much.

3 CHAIRMAN BOLLWERK: All right.

4 MR. KNODE: Maybe a little context
5 here. I was general manager of operations at
6 Cameco at the Highland mine at this time.
7 Restoration was then complied but there was
8 concern about regulatory agencies that their
9 plume would move out of underneath the
10 wellfield and it would move towards the open
11 pit which is there still today.

12 Clearly, you can see the direction
13 of flow as shown. And that goes right to the
14 pit. The thought was that mine 3 and 4 would
15 eventually pick up this path. It was going to
16 be in that direction and it did not attenuate.
17 But that's a long ways away from the
18 wellfield.

19 So we went with the regulators to
20 install well LTM4 to catch a plume if it was
21 moving away from the wellfield. And as Dr.
22 Johnson, I think, described, that did not
23 happen. And the uranium concentrations are as
24 she stated quite low.

25 And I would go back to what Dr.

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1 Johnson said earlier today. The proof is in
2 the pudding. Throughout the testimony there
3 are accusations of some large plume moving off
4 the lack of an absorptive, remember, were in
5 an exempted aquifer here.

6 The accusations are throughout
7 their testimony that this all is about to run
8 off out
9 of the aquifer exemption into the drinking
10 water sources and have a large impact. I
11 think this is a very good example of how that
12 is not going to happen. Thank you.

13 CHAIRMAN BOLLWERK: All right.
14 Dr. Larson, anything you want to say?

15 DR. LARSON: Just getting to the
16 point where if we actually look at the
17 estimated flow direction line it's an
18 estimated flow direction. So to properly
19 assess which way this groundwater is moving,
20 we would need further data with respect to
21 what a potential metric surface was for this
22 confining unit.

23 Getting to this idea where we've
24 made assertions of large contaminate plumes
25 moving offsite and getting into drinking

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1 water, I don't think that has been presented
2 in my testimony. The thing that we have
3 discussed over the majority of my testimony is
4 with respect to the potential for some of
5 these impacts to occur and where we can look
6 into assessing further data where we can
7 properly assess where those impacts might
8 occur.

9 CHAIRMAN BOLLWERK: All right.
10 Anything further the staff wants to say in
11 this regard or SEI?

12 MR. KNODE: Your Honor, there's
13 absolutely no question where the water is
14 going. There is a 500 foot deep open pit is
15 still recharging slowly. That water is going
16 straight to the pit and there cannot be
17 uranium flux. It has to be natural
18 attenuation.

19 CHAIRMAN BOLLWERK: Anything
20 further, Dr. Larson?

21 DR. LARSON: I think I need to see
22 further assessment data.

23 CHAIRMAN BOLLWERK: Right. Okay.
24 Judge White, anything that you have?

25 JUDGE WHITE: Nothing more from

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1 me.

2 CHAIRMAN BOLLWERK: All right.
3 Judge Cole, anything further?

4 JUDGE COLE: No.

5 CHAIRMAN BOLLWERK: I think that
6 was a no. Thank you. Anything the parties
7 want to propose in terms of questions?

8 MR. PUGSLEY: None, Your Honor.

9 DR. LARSON: None, Your Honor.

10 CHAIRMAN BOLLWERK: Nothing. All
11 right. At this point, we're going to dismiss
12 the panel for Contention II. We thank you all
13 very much for providing us with the
14 information. It's been very helpful both in
15 your individual testimony and your group
16 testimony.

17 JUDGE WHITE: Yes, thank you all.
18 Appreciate it.

19 CHAIRMAN BOLLWERK: Let's talk for
20 a second about scheduling. We're right at
21 1:00 p.m. We have one more contention to go.
22 This contention took us if we subtract the
23 portion at the beginning that we had to deal
24 with Contention 1 a little bit further about
25 four hours.

1 The first question is how long
2 would you like to have for lunch. We can do
3 it in probably as little as half an hour or 45
4 minutes. But we'll defer to you all.

5 PARTICIPANT: Thirty minutes.

6 MS. MONTEITH: Can you clarify?
7 Was the question about how long for lunch?

8 CHAIRMAN BOLLWERK: Yes.

9 MS. MONTEITH: Oh, we can support
10 half an hour as short as that if that's okay.

11 MR. FETUS: Your Honor, we have to
12 go offsite.

13 CHAIRMAN BOLLWERK: Okay.

14 MR. FETUS: We don't actually have
15 staff.

16 CHAIRMAN BOLLWERK: Okay.

17 MS. ANDERSON: Your Honor, we also
18 would like some time to read.

19 CHAIRMAN BOLLWERK: All right. So
20 how long would like? An hour like yesterday?

21 MS. ANDERSON: Yes.

22 CHAIRMAN BOLLWERK: Okay. We'll
23 do an hour then. So we'll come back at 2:00
24 p.m. Then that puts us here at 2:00 p.m.

25 It took us about four hours to do

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1 Contention 2. Right, 2:00 p.m. So that's
2 6:00 p.m. Judge Cole has offered to stick
3 around if we think we're going to finish which
4 puts him at the 8:00 p.m.-9:00 p.m. range
5 depending on what time we get done. Are you
6 all willing to go to 6:00 p.m. or 7:00 p.m. to
7 finish this up?

8 (Chorus of yeses.)

9 CHAIRMAN BOLLWERK: Yes. I see a
10 lot of head nodding. Is that alright with
11 you, Judge Cole, if we're -- You said you
12 wanted to finish, right?

13 JUDGE COLE: Yes.

14 CHAIRMAN BOLLWERK: Yes, okay.
15 All right. Then the plan will be when we come
16 back, when we start, we're going to go until
17 the end. Hopefully, we'll be done by 6:00
18 p.m. or thereabouts. We'll see how long it
19 takes.

20 All right. Very good. I guess I
21 should mention one other thing. At the site
22 visit tomorrow, it sounds like if we're done
23 today that's a possibility I suppose.

24 MR. PUGSLEY: Let me defer to Mr.
25 Knode on that because he's been in contact

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1 with the Your Honor's folks.

2 MR. KNODE: I've been in touch
3 with Your Honor's personnel. They have not
4 gotten back to me yet.

5 CHAIRMAN BOLLWERK: Okay.

6 MR. KNODE: But I have alerted
7 them that we would likely want to try and have
8 a tour tomorrow.

9 CHAIRMAN BOLLWERK: Okay.

10 MR. KNODE: Can I get with you?

11 CHAIRMAN BOLLWERK: Yes. We'll
12 wait to hear from you whatever it is.

13 MR. KNODE: I just wanted to
14 confirm that we were actually going to finish
15 today.

16 CHAIRMAN BOLLWERK: That's fine.
17 Anybody again that wanted to go or was onboard
18 to go before would probably need to make sure
19 that they're still going and let Mr. Knode
20 know assuming it's going to come off.

21 Okay. We'll take our recess.
22 We'll come back at 2:00 p.m. Thank you. Off
23 the record.

24 (Whereupon, at 1:00 p.m., the
25 above-entitled matter recessed to return at

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1 2:01 p.m. the same day.)

2 CHAIRMAN BOLLWERK: On the record.
3 Good afternoon, everyone. We're here after
4 our lunch break to start on Contention 3. And
5 before we do just a couple of administrative
6 items.

7 I don't know how many of you had
8 met Maureen Conley who's with the Office of
9 Public Affairs from the NRC. But we heard
10 that her mother passed away. She was actually
11 headed to Chicago from here. We're certainly
12 sorry to hear about that. She's a very nice
13 person and we were glad to have her with the
14 Board to help us out with public affairs
15 matters. Sorry to hear about her loss.

16 I understand from the folks at SEI
17 that at least at this point subject to weather
18 the site visit for tomorrow is on, although it
19 looks like we're going to have to do the
20 vehicles somewhat differently. I think they
21 are going to provide a four-wheel drive
22 vehicle and the Board has at least one. So I
23 think we're going to try to do that rather
24 than the van.

25 We do need to know or they need to

1 know how many folks are still planning on
2 going to the site visit. For instance, I know
3 the Board had four and we still have four.

4 Does the staff know how many
5 individuals?

6 MS. MONTEITH: Four I believe.

7 CHAIRMAN BOLLWERK: Four, okay.
8 That's eight. How about the joint
9 intervenors?

10 MS. ANDERSON: Your Honor, I
11 believe it'll just be myself.

12 CHAIRMAN BOLLWERK: Just one. So
13 that's nine. And how many -- I guess does
14 that give you the information you need?

15 (Off microphone comment.)

16 Two. So that's 11. If we split
17 up like five and whatever -- five and six or
18 something like that.

19 MR. HARPER: Your Honor, the staff
20 also has a four wheel drive vehicle that we
21 can use to get out there.

22 CHAIRMAN BOLLWERK: Okay. We can
23 decide which one is the best one to take.
24 Who's got the best four wheel drive right?

25 (Off microphone comments.)

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1 Also the four wheel drive vehicles
2 we're driving are four wheel drive, but
3 they're not -- Think about that in any event.
4 That's the plan anyway.

5 At this point, subject to some
6 additional weather issues, and if there is
7 additional weather out there, that may still
8 require that we cancel. But it looks like the
9 trip is on. The same schedule would apply,
10 8:00 a.m. tomorrow morning, assuming we get
11 done tonight. We're certainly going to press
12 forward with that. Out at the Strata offices
13 and then we'll go from there.

14 Any questions anybody has? All
15 right.

16 I'm trying to think in terms of --
17 I think the only evidentiary issues we have
18 are you all are going to refile the two
19 exhibits. Was there anything else relative to
20 Contention 2 that I'm missing evidence-wise?
21 I don't think so.

22 All right. Let's move forward to
23 Contention 3. And following the protocol we
24 set up, we'll hear from each of the counsel
25 for approximately five minutes on their

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1 position relative to this contention. And
2 then we'll have the first panel come up from
3 SEI. All right.

4 CONTENTION 3

5 MR. PUGSLEY: Thank you, Your
6 Honor. With respect to Contention 3,
7 Intervenors have alleged that the FSEIS has
8 failed to include adequate information
9 regarding containment or recovery solutions
10 and potential impacts to groundwater. For
11 purposes of this contention, Strata will rely
12 on the expert testimony of Mr. Ray Moores, Mr.
13 Mike Griffin, Mr. Knode, Mr. Demuth, Mr.
14 Lawrence and Mr. Schiffer.

15 Strata respectfully submits to the
16 Board that its license application, subsequent
17 submissions and the entirety of NRC staff's
18 record of decision including the FSEIS
19 adequately comply with NUREG 15.69 guidance
20 which pursuant as stated before to Commission
21 precedent is to be accorded special weight and
22 deference and 10 CFR 51 NEPA requirements.

23 With respect to the legal aspects
24 of Contention 3, as a general matter, Chapter
25 5 of NUREG 15.69 specifically anticipates post

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1 license issuance development of a detailed
2 site-specific hydrogeological analysis within
3 the confines of a wellfield package, SEI015 at
4 license condition 11.5. License conditions
5 are currently in Strata's NRC license
6 requiring additional site specific
7 hydrogeological information post license
8 issuance. And that is the same exhibit at
9 license condition 10.13. This again is as
10 stated before consistent with the Commission's
11 policy on performance-based licensing.

12 As noted with respect to
13 Contention 1 as well, this approach is
14 directly endorsed in the Commission's decision
15 in CLI-06-01, 63 NRC 1 which is known as the
16 Hydro Resources case, and it specifically
17 identifies post license issuance development
18 of items such as wellfield packages, UCLs.

19 Specific points of contention
20 levied by Intervenors under Contention 3
21 include allegations that Strata will not be
22 able to monitor for and correct excursions due
23 to potential unplugged historical exploratory
24 bore holes or that Strata pump test did not
25 provide enough information for NRC staff to

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1 make an informed evaluation of potential
2 impacts.

3 With respect to excursion
4 monitoring and corrective action, NRC
5 regulations in Strata's license SEI015,
6 License Condition 11.5 on page 13,
7 specifically requires immediate corrective
8 action upon identification of an excursion.
9 And the Commission as a general matter does
10 not presume that a licensee will violate its
11 regulations or licensee's license conditions.
12 That is seen in the Private Fuel Storage case
13 at CLI-01-9.

14 The Licensing Board has been
15 provided with evidence in SEI026 at A.28 at
16 page 14, the expert testimony of Mr. Demuth
17 and Mr. Lawrence, that an excursion itself is
18 not a violation of regulatory requirements,
19 but rather it is an early warning of the
20 potential for migration of recovery solutions
21 outside the recovery zone.

22 Technically, the definition of an
23 excursion is an event where a monitor well in
24 an overlying or underlying where parameter
25 monitor well ring detects increased and

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1 identified and approved monitoring parameters
2 or UCLs which are selected based on their
3 ability to provide an early warning of
4 potential recovery solution migration because
5 they move at a substantially similar rate to
6 groundwater. This is typical practice at ISL
7 facilities and is expressly recognized both in
8 NUREG 15.69 and NUREG 19.10, otherwise known
9 as the Generic Environmental Impact Statement.

10 Strata's numerical gravel water
11 model also simulated in excursion from a Ross
12 wellfield using site-specific and conservative
13 characteristics and wellfield patterns as
14 shown in the SER and SEI014H at pages 142-160
15 and the SER itself, its conclusions have not
16 been and are not subject to challenge in this
17 proceeding.

18 Strata has already demonstrated
19 proficiency for identifying and plugging
20 historical bore holes. There are a total of
21 1,483 historic exploration bore holes in the
22 Ross license area. To date, Strata has
23 physically located 1,354 of these holes. So,
24 more importantly, 92 percent of historic bore
25 holes within the proposed monitor well rings

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1 have been physically located.

2 With respect to Strata's plans to
3 re-abandon historical bore holes, it is
4 generally understood and accepted practice
5 that ISL operators address such bore holes
6 through site-specific investigation, post
7 license issuance pump test, potentially metric
8 and water quality assessments after
9 installation of complete monitor well network
10 which is affected will detect an unplugged
11 bore hole that will be properly plugged
12 pursuant to license condition 10.12.

13 However, Strata has gone above and
14 beyond these typical requirements and has
15 committed at license condition 10.12 which
16 specifies that historic bore holes within the
17 perimeter monitor well rings will be properly
18 plugged and abandoned prior to conducting
19 wellfield scale aquifer tests.

20 With respect to allegations that
21 Strata's pump tests were too short in
22 duration, Strata has offered an NRC staff
23 evaluated seven pump test which serves to
24 satisfy applicable NUREG 15.69 requirements.
25 The pump test were of adequate duration to

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1 satisfy their intended purpose including
2 determining characterization of aquifer
3 hydrological properties and whether there is
4 communication between your zone and overlying
5 and underlying aquifers.

6 Mr. Moore's expert testimony in
7 SEI042 at page six shows that Strata located,
8 reentered and plugged all historical bore
9 holes near the 72 hour pump test. The results
10 confirmed hydrological isolation of the
11 recovery zone.

12 Strata also used additional data
13 such as water level differences in the SM and
14 OZ aquifers showing static water levels
15 measured at each well that shows several to
16 tens of feet of difference between the
17 aquifers. These water level differences along
18 with water quality differences demonstrate
19 hydrologic isolation.

20 Strata has committed per license
21 condition to conduct additional wellfield
22 scale pump tests to further assure adequate
23 hydrogeologic isolation. And without such a
24 demonstration, license ISL operations cannot
25 commence. Under Strata's NRC license, a

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1 wellfield package for the initial wellfield is
2 subject to review and verification license
3 condition and pre-operational inspection by
4 NRC staff. And subsequent wellfield packages
5 will be submitted to NRC and be available for
6 inspection consistent with the Commission
7 endorsed policy on performance-based
8 licensing.

9 Finally, Intervenors' witness, Dr.
10 Abitz, also raised in his rebuttal testimony
11 at JTI051R at A.14 the concept of preferential
12 groundwater flow paths. This issue was
13 addressed by NRC staff in SER-SEI010 at 86-87
14 and that SER has not been challenged in this
15 proceeding.

16 With that said and with the
17 testimony of our expert witnesses, we
18 respectfully submit to the Board that Strata's
19 NRC license and the record of decision should
20 not be modified as a result of any of the
21 substance of Contention 3. Thank you.

22 CHAIRMAN BOLLWERK: Thank you.

23 Staff then.

24 MS. MONTEITH: I just want to
25 check and see if I'm coming through on this

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1 microphone. I've been told I'm a little quiet
2 here.

3 CHAIRMAN BOLLWERK: How is that?

4 MS. MONTEITH: All right.

5 JUDGE COLE: I can hear you.

6 MS. MONTEITH: Great. Thank you.

7 The staff expert witnesses for
8 Contention 3 are John Saxton, Johari Moore and
9 Kathryn Johnson from whom you've heard today.
10 In addition, Dr. Anthony Burgess will be
11 joining the panel for Contention 3.

12 Dr. Burgess is a hydrogeologist,
13 an engineer with over 45 years experience in
14 this field. Dr. Burgess prepared the sections
15 that relate to groundwater issues.

16 In Contention 3 among other
17 issues, the Intervenors expressed concerns
18 regarding the existence of historic drill
19 holes located within the Ross project area and
20 the potential is pathways for vertical
21 excursions. As the staff explained in its
22 written testimony, the effects of historic
23 drill holes were taken into consideration and
24 evaluated by the staff in the FSEIS as
25 particularly in Sections 3.5.3.2 and 4.5.1.2

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1 of that document which I believe is SEI
2 Exhibit SEI 009A. The staff also inserted a
3 condition in Strata's license to address
4 historic drill holes. Strata's license
5 exhibit SEI015.

6 License condition 10.12 requires
7 Strata to attempt to locate and abandon all
8 historic drill holes within the well ring
9 perimeter prior to operation. Strata will
10 include information documenting its efforts in
11 the wellfield package.

12 In addition, Condition 10.13 of
13 the license requires that Strata submit the
14 wellfield package to the NRC for review and
15 verification. If, after review, the staff
16 determines that Strata failed to make a good
17 faith effort to abandon all drill holes within
18 the well ring perimeter the staff would not
19 concur on the wellfield package and would
20 notify Strata that commencing operations would
21 result in a violation of its license.

22 The Intervenors claim that the
23 staff is placing too much faith in Strata's
24 ability to locate and abandon these drill
25 holes characterizing license condition 10.12

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1 as little more than a promise that will be
2 left unfulfilled. This demonstrates a basic
3 misunderstanding of the nature of license
4 conditions. If Strata does not conform to the
5 conditions of its license, it will be subject
6 to enforcement action by the NRC.
7 Importantly, as the Commission stated in the
8 Private Fuel Storage case which is CLI-01-9,
9 the NRC does not operate under an assumption
10 that a licensee will violate its obligations.

11 In addition, the staff performed a
12 detailed review of Strata's methodology for
13 collecting the hydrological information used
14 to inform the staff's fluid migration impact
15 assessment. The staff determined that Strata
16 methodology including the types of pumping
17 tests used to collect hydrological data met
18 the guidance for such procedures in the
19 standard review plan. The staff also found
20 that the hydrological data developed as a
21 result of Strata's methodology conformed to
22 the acceptance criteria in the standard review
23 plan.

24 As I mentioned in my opening
25 statement yesterday concerning Contention 1,

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1 while the standard review plan as Commission
2 guidance is not directly binding on the Board,
3 the Commission has stated such guidance is
4 implicitly endorsed by the Commission and is
5 entitled to corresponding special weight.

6 Finally, the Intervenors
7 challenged the staff's analysis of the
8 geochemistry of the aquifers and has claimed
9 that the staff erred in failing to evaluate
10 uranium as an early excursion indicator. In
11 its pre-filed testimony, the staff described
12 why the manner in which uranium interacts with
13 the aquifer qualifies it as a poor early
14 excursion indicator. The point of the staff's
15 excursion indicator analysis performed in its
16 SER described in the FSEIS to establish which
17 parameter should be monitors as a leading
18 indicator to identify the excursion most
19 quickly.

20 As the staff discussed in its
21 written testimony, the excursion indicators
22 for the Ross project have little potential for
23 interfering chemical reactions that would
24 inhibit their movement through the aquifer.
25 It is for this reason that the staff did not

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1 evaluate uranium as an early excursion
2 indicator in the Ross project FSEIS.

3 In sum, the staff complied with
4 NEPA by thoroughly describing in the FSEIS the
5 likelihood of impact of fluid migration.
6 Thank you.

7 CHAIRMAN BOLLWERK: Thank you.

8 Let's hear now from the Joint
9 Intervenors.

10 MR. CRYSTAL: Thank you, Your
11 Honor. As to Contention 3, challenges by the
12 NRC has taken a hard look at the environmental
13 impacts associated with uranium or other
14 contaminants migrating beyond the areas in
15 monitoring well network. Our experts
16 demonstrate that SEI and staff's assertions
17 that there will be no such impacts are based
18 on several erroneous premises.

19 First, Dr. Abitz demonstrates that
20 the protests incorporated in the OS do not
21 demonstrate that the aquifer is confined. The
22 evidence will show that the duration of the
23 protests are not sufficient to demonstrate
24 confinement over an operational period of
25 seven years and it fully depends on the

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1 filling of over 1,000 bore holes.

2 Second, both Drs. Abitz and Larson
3 demonstrate the FEIS and ORC's assumption that
4 these bore holes will all be filled. They
5 explain that the vast difficulties in finding
6 and filling these holes. Both staff and SEI
7 urge the Board to assume that the bore holes
8 will all be filled, as we explained in our
9 pre-trial brief, citing several precedents.
10 It is not sufficient for an agency to simply
11 assert that it will mitigate environmental
12 impact without providing details to support
13 that assertion, details that are missing from
14 this EIS.

15 In none of this legal requirement,
16 the evidence will show that the EIS does not
17 adequately demonstrate that the bore holes
18 will filled.

19 Finally, because the NRC has
20 demonstrated neither that the aquifer's
21 confined nor that the bore holes will all be
22 filled, they have failed to address the likely
23 environmental impacts associated with
24 excursions. To the extent those were not
25 addressed at all, staff and SEI experts

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1 erroneously claim that any excursions will be
2 detected and addressed.

3 But as Drs. Abitz and Larson
4 explain, the simple sanctions made regarding
5 contaminant transport in an homogenous,
6 isotropic aquifer are insufficient to
7 demonstrate that excursions are likely at this
8 site as the NRC asserts.

9 In conclusion, Joint Intervenors
10 will demonstrate in Contention 3 that first,
11 assuming that the bore holes will filled;
12 second, assuming that the aquifer will be
13 confined; and third, assuming that any
14 excursions will be detected and resolved,
15 fails to take a hard look at the environmental
16 impacts of the project which must be disclosed
17 and taken into account in the NRC's decision
18 making. Therefore, as with Contentions 1 and
19 2, the Joint Intervenors respectfully request
20 that based on this contention the Board vacate
21 this SEI's license and ROD for staff to
22 complete EIS that fully complies with NEPA.
23 Thank you.

24 CHAIRMAN BOLLWERK: Thank you.
25 All right. We are ready now for the witnesses

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1 for SEI. And while they're coming forward,
2 I'm going to take one second here and read the
3 text of the contention into the record just so
4 it's clear to everybody what we're litigating.

5 This is Environmental Contention
6 3. The FSEIS fails to include adequate
7 hydrological information to demonstrate SEI's
8 ability to contain groundwater fluid
9 migration. And the contention states the
10 FSEIS fails to assess adequately the
11 likelihood and impacts of fluid migration to
12 the adjacent groundwater as required by 10 CFR
13 Sections 51.90-94 and NEPA and as discussed in
14 NUREG 15.69 Section 2.7. In that, (1) the
15 FSEIS fails to analyze sufficiently the
16 potential for and impacts associated with
17 fluid migration associated with unplugged
18 exploratory bore holes, including the adequacy
19 of Applicant's plan to mitigate possible bore
20 hole related migration impacts by monitoring
21 wellfields surrounding the bore holes and/or
22 plugging the bore holes; and (2) there was
23 insufficient information for the NRC staff to
24 make an informed fluid migration impact
25 assessment given that the Applicant's six

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1 monitor well clusters and 24 hour pump test
2 for these clusters provided insufficient
3 hydrological information to demonstrate
4 satisfactory groundwater control during
5 planned, high yield industrial raw operations.
6 That is Contention 3.

7 All right, gentlemen. Why don't
8 we have everyone identify themselves for the
9 record. And you need to pull the microphones
10 down in front of you because they are very
11 directional whichever one you're going to use.

12 MR. GRIFFIN: Mike Griffin,
13 Strata.

14 MR. DEMUTH: Hal Demuth, Texas
15 Tech.

16 MR. MOORES: Roy Moores, WWC
17 Engineering.

18 MR. KNODE: Ralph Knode, Strata.

19 MR. LAWRENCE: Errol Lawrence,
20 Petra Tech.

21 MR. SCHIFFER: Ben Schiffer, WWC
22 Engineering.

23 CHAIRMAN BOLLWERK: All right. I
24 believe for four of you we've already admitted
25 your testimony and sworn you in. So we need

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1 to swear in Mr. Griffin and Mr. Moores I
2 believe who have not previously been sworn in.

3 (Mr. Moores and Mr. Griffin sworn
4 in.)

5 Thank you very much. Then we're
6 going to be looking at both your initial
7 written testimony as well as your rebuttal
8 testimony. The initial testimony for Mr.
9 Griffin is SEI039 and Mr. Moores initial
10 testimony is SEI042. And then for Mr. Morris,
11 the rebuttal testimony is SEI048. Mr. Griffin
12 the rebuttal testimony is SEI049. And those
13 have been identified for the record.

14 (Whereupon, the above-
15 referred to documents
16 were marked as Exhibits
17 SEI039, SEI042, SEI048
18 and SEI049 for
19 identification.)

20 I would also ask each of you to
21 give me an oral response to the following
22 question. Was this testimony prepared by you
23 or under your supervision and direct? Is it
24 true and correct to the best of your knowledge
25 and belief?

1 MR. GRIFFIN: It is, Your Honor.

2 MR. MOORES: Yes, Your Honor.

3 CHAIRMAN BOLLWERK: All right.

4 Thank you very much. Then no objection to
5 that testimony, we will admit that with the
6 remaining Strata exhibits and let's go through
7 quickly and identify those and get them into
8 the record.

9 They include SEI040 which Mike
10 Griffin CV, SEI041 which is an August 19, 1999
11 NDEQ letter to Crow Butte, SEI043 which is Ray
12 Moores CV. SEI048 which is Ray Moores
13 Rebuttal testimony I've already identified
14 that. We'll skip that. We'll go to -- Sorry.

15 (Whereupon, the above-
16 referred to documents
17 were marked as Exhibits
18 SEI040, SEI041 and
19 S E I 0 4 3 f o r
20 identification.)

21 MR. PUGSLEY: I believe that's it.

22 CHAIRMAN BOLLWERK: You could be
23 right. It looks like that's it. Did I miss
24 anything? Are we good?

25 MR. PUGSLEY: No sir.

1 CHAIRMAN BOLLWERK: All right. So
2 those have been identified for the record.
3 Let's go ahead and admit them. We're
4 admitting into evidence SEI039, SEI040,
5 SEI041, SEI042, SEI043, SEI048 and SEI049,
6 again identified for the record and have been
7 admitted.

8 (Whereupon, the above-
9 referred to documents
10 m a r k e d f o r
11 i d e n t i f i c a t i o n a s
12 Exhibits SEI040-SEI043,
13 SEI048 and SEI049 were
14 received into evidence.)

15 Thank you very much. All right.
16 I think as we've been doing in the past Judge
17 White has some questions for you.

18 JUDGE WHITE: I do have a few.
19 Focusing on unplugged bore holes, Strata has
20 committed to plugging all of the bore holes
21 that can be located within the perimeter
22 monitoring well ring and beneath the central
23 plan. I believe that's correct. Is that?

24 MR. KNODE: That is correct.

25 JUDGE WHITE: Is there any

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1 distance or any reason that you would plug any
2 bore holes that might exist beyond the monitor
3 well ring?

4 MR. SCHIFFER: Judge, this is Ben
5 Schiffer. And I guess I'll take a first pass
6 at this. And I think it's key to understand
7 that the bore holes are primarily located
8 adjacent to the ore bodies. When we get very
9 far away from them, there really aren't very
10 many bore holes. I think that's critical to
11 understand. So that's really the reason.

12 And I think secondarily the reason
13 is that perimeter monitor well ring is the
14 point at which we could detect if there was
15 fluid migration that had gone past the
16 wellfield areas. And given the rigorous
17 monitoring that has to be done at this
18 perimeter monitor well rings and then the
19 general low number of holes that are beyond
20 that, there doesn't seem to any reason to go
21 to the effort to do that.

22 JUDGE WHITE: I see. So for the
23 most part, the fact that the commitment does
24 not extend beyond the perimeter monitoring
25 reflects your confidence that contaminant

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1 bearing solutions won't migrate past the
2 perimeter well ring during the course of
3 mining.

4 MR. SCHIFFER: That is correct,
5 Your Honor.

6 JUDGE COLE: Can I ask something
7 here?

8 CHAIRMAN BOLLWERK: Sure. Go
9 right ahead, Judge Cole.

10 JUDGE COLE: What's the constant -
11 - between the monitoring well and the well
12 system that you're using to take your reading?

13 MR. SCHIFFER: Judge Cole, the
14 perimeter monitor wells are offset from the
15 mining areas by a distance of 400 feet.

16 JUDGE COLE: So there are no
17 mining operation wells that are closer than
18 400 feet to the monitoring system?

19 MR. SCHIFFER: Let me be clear.
20 We can be closer with our mining activities to
21 those monitor wells. But we cannot be farther
22 away.

23 JUDGE COLE: Do you have any idea
24 how close you get to the well system?

25 MR. SCHIFFER: I think our

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1 preference would be that we stay at that 400
2 feet distance. That's the distance that was
3 modeled as part of the license application and
4 it demonstrates that we can easily detect an
5 excursion within the time frames required by
6 the regulations. And obviously if that
7 monitor well ring were closer to the principal
8 mining areas, we would detect those
9 perturbations much or sooner than we would at
10 400 feet.

11 JUDGE COLE: You're going 400 feet
12 did you say?

13 MR. SCHIFFER: Actually, I believe
14 with the State of Wyoming the distance can be
15 no more than 400 feet from our wellfield.

16 JUDGE COLE: The reason why I ask
17 if you could get closer is there might be
18 other wells that are past that and it might
19 within the detection distance.

20 MR. SCHIFFER: Judge Cole, I'm not
21 sure what other wells you may be referring to.

22 JUDGE COLE: Monitored wells.

23 JUDGE WHITE: Historical wells I
24 think he means.

25 MR. SCHIFFER: Judge Cole, there

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1 is a potential that there are bore holes that
2 are outside of the perimeter monitor well
3 ring. But as I indicated earlier, the density
4 of that drawing is substantially less just
5 because very likely there's no uranium there.

6 JUDGE COLE: Thank you.

7 CHAIRMAN BOLLWERK: Just so I
8 understand. What Judge Cole is raising is the
9 possibility that your monitoring well is like
10 350 feet away and there's an unplugged bore
11 hole at 400 feet which would normally be
12 inside but now is outside because of where the
13 monitoring well is. Is that the basic point?

14 MR. SCHIFFER: Yes. That's what
15 he's saying.

16 CHAIRMAN BOLLWERK: And you're
17 saying that's not going to occur or you're
18 saying there's real possibility it could
19 occur.

20 MR. SCHIFFER: No, I think that
21 possibility exists. Our requirement is to
22 plug those within the perimeter monitor well
23 ring.

24 CHAIRMAN BOLLWERK: So you're
25 going to basically draw a circle 400 feet

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1 around it and make sure you plug everything
2 that's within whether the monitor well is at
3 the boundary inside that ring.

4 MR. KNODE: We're going to draw a
5 circle around the outside of the active
6 wellfields that's 400 feet away from those
7 active wellfields.

8 CHAIRMAN BOLLWERK: Okay.

9 MR. KNODE: The perimeter monitor
10 wells will be along that line and we will plug
11 everything in sight of that line.

12 CHAIRMAN BOLLWERK: Okay. All
13 right.

14 JUDGE WHITE: Okay. In trying to
15 clear up some of these number regarding
16 historical bore holes, in the FSEIS, SEI009A,
17 page 316, next to last paragraph it states "As
18 of October 2010 the applicant had located 759
19 of the estimated 1,682 holes from Nubeth
20 exploration activities and it plugged 55 of
21 them." We heard counsel's statement that many
22 more of those have been plugged now.

23 But what I'd like to know is have
24 you first located additional Nubeth's holes
25 beyond that 1,682 and how many of the Nubeth

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1 holes have been plugged to date.

2 MR. KNODE: I'm not sure where the
3 1,682 comes from.

4 JUDGE WHITE: The 1,682 comes from
5 the FSEIS.

6 MR. KNODE: That's not just --
7 That's the Ross permit area plus a half mile
8 buffer outside.

9 JUDGE WHITE: Okay.

10 MR. KNODE: That's in addition.
11 That's larger than the Ross permit area.

12 JUDGE WHITE: Okay.

13 MR. KNODE: So inside the Ross
14 permit area, there's 1,483 wells. You're
15 correct initially that there were 625 that
16 were located. We have located an additional
17 729. So as my testimony reflects as of I
18 believe it was August of this year the total
19 number of located wells inside the Ross permit
20 area is 1,354.

21 So of the 1,483, we have found
22 1,354 to date. Of those 1,354, we have
23 plugged 108 or re-abandoned 108 of those.

24 JUDGE WHITE: How many of those
25 1,354 are inside the proposed perimeter ring?

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1 MR. KNODE: Well, what I need to
2 stress is that we do not know exactly where
3 that perimeter ring will be for all of the
4 mine units. So we can make an educated guess
5 how many. Inside the proposed or the
6 estimated boundaries of mine units 1, 2, 3 and
7 4, inside those monitor rings would be 1,382
8 wells of which 1,265 have been located.

9 And by located I think you saw on
10 the site tour, you saw an example of what
11 those look like. There's a cement cap with a
12 metal plug that has been located and
13 resurveyed.

14 JUDGE WHITE: And that goes to
15 emphasize a previous comment that the great
16 majority of the historical Nubeth holes are
17 going to be inside your perimeter well ring
18 anyway and not very many outside.

19 MR. KNODE: Correct.

20 JUDGE WHITE: Now I kept saying
21 Nubeth because that's what the FSEIS mentions
22 Nubeth. Are in fact all of the wells that
23 you've just mentioned that you've identified
24 and plugged historical wells from the two
25 Nubeth projects in the late 1970s?

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1 MR. KNODE: Yes, it's my
2 understanding that all those wells are
3 historic Nubeth expiration holes.

4 JUDGE WHITE: In Figure 3.2 of the
5 FSEIS on page 149, it shows that there are
6 also several abandoned petroleum bore holes.
7 I guess petroleum. I don't know if they are
8 oil or gas in the Ross area. To your
9 knowledge, are all the historical petroleum
10 within your perimeter ring been located and
11 properly plugged?

12 MR. SCHIFFER: Judge, this is Ben
13 Schiffer. And I can attest to that. As part
14 of the Class I UIC permit application that
15 Petro Tech compiled and we ultimately received
16 a permit for, they provided a detailed
17 assessment of the exploration of oil and gas.
18 And those tests that were conducted as well as
19 the plugging and abandonment of those were
20 from oil test wells so to speak that have been
21 done over time.

22 Yes, we have those data and they
23 have been submitted as part of a Class I UIC
24 application. And those data indicate that
25 those holes have been plugged and abandoned

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1 with cement.

2 JUDGE WHITE: So just to be sure
3 to get the statement, to your knowledge you
4 feel confident that there are no improperly
5 abandoned petroleum wells or unlocated
6 petroleum wells inside the perimeter well
7 ring.

8 MR. SCHIFFER: To our knowledge
9 there are no unplugged exploration for oil or
10 gas holes. And maybe Hal can elaborate on
11 that.

12 MR. DEMUTH: Yes, Judge. Hal
13 Demuth with Petro Tech. As Mr. Schiffer
14 alluded to, during the UIC permitting process
15 for Class I injection well, we had to provide
16 a very thorough review of the AOR, area of
17 review, for a potential Class I well. In this
18 case there are multiple wells planned for the
19 offsite. And they cover the vast majority in
20 terms of the area pressure influence that
21 would be exerted by the Class I wells.

22 And we had to evaluate not only
23 onsite but also offsite. That evaluation was
24 reviewed and approved by WDEQ and a Class I
25 permit issued. So I think we can state

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1 confidently that those wells have been
2 located. They have been plugged. They have
3 been reviewed by the state agency.

4 JUDGE WHITE: For the hydrocarbon
5 wells, what was the geologic formation that
6 was the target?

7 MR. DEMUTH: The primary target
8 for production is Minnelusa which is
9 approximately 7,000 to 8,000 feet in depth.

10 JUDGE WHITE: It's my
11 understanding that the geologic section
12 presented in numerous documents indicates that
13 that formation overlies the Madison aquifer.
14 Is that correct?

15 MR. DEMUTH: That is correct.

16 JUDGE WHITE: To your knowledge,
17 would there be any wells in the Ross property
18 that would be likely to have penetrated to the
19 Madison aquifer?

20 MR. DEMUTH: We have no records of
21 any wells that have penetrated the Madison
22 within the Ross perimeter area.

23 JUDGE WHITE: Good. SEI014C, page
24 239, SEI Technical Report, I'll paraphrase
25 that report and also this is paraphrasing

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1 again some of the comments counsel made in his
2 initial statement. After all the bore holes
3 have been identified and plugged, the
4 applicant will conduct aquifer tests to
5 determine among other things that the
6 overlying and underlying aquifers are
7 hydrologically isolated from the mineralized
8 sandstone. Are these aquifer tests similar to
9 the pump tests? Or will they be performed
10 similar to the pumping tests that were
11 performed earlier at well clusters for the
12 purpose of site characterization?

13 MR. SCHIFFER: Judge, this is Ben
14 Schiffer. I'll take the first pass at that.
15 In my experience and I'd think you'd hear from
16 everybody else here, those tests are typically
17 done over a fairly long duration. And that
18 duration can be 72 hours and up to a week in
19 order to demonstrate not only that there
20 hasn't been a response in the overlying or
21 underlying system but also -- and I think I
22 mentioned this yesterday -- to demonstrate a
23 response in those perimeter monitor wells. So
24 those tests vary in length and it's dependent
25 on site-specific conditions, but are generally

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1 long duration tests.

2 JUDGE WHITE: So I'd be correct in
3 saying that in a general sense those pumping
4 tests would be considered more rigorous than
5 the pumping tests carried out for the site
6 characterization.

7 MR. SCHIFFER: We had one test of
8 72 hours. And I think that that would be on
9 the pre-licensing. I think that that would be
10 likely a minimum test duration in a raw field
11 hydrologic test.

12 MR. MOORES: One other thing. In
13 my experience on those pumping tests is
14 usually you're monitoring a lot more wells
15 during the pumping test. So, yes, they would
16 be more rigorous because you do have more
17 wells that you're monitoring during the pump
18 tests.

19 JUDGE WHITE: I see.

20 JUDGE COLE: These pumping tests
21 that you just talked about, these are not
22 number specific, right? These are done in a
23 quarter of all aquifers, after pumping?

24 MR. SCHIFFER: Judge Cole, this is
25 Ben. And there's no objection typically in

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1 these tests. Actually, there's just pumping
2 of at least one well and sometimes over
3 different phases multiple wells. So there is
4 no injection of lixiviant proposed. We cannot
5 do that until we have authorization from both
6 the State of Wyoming and the NRC.

7 JUDGE COLE: I understand. How do
8 you know you get the results? What are you
9 looking for? Differences in elevation?

10 MR. SCHIFFER: Judge Cole, in my
11 experience and I think you'd hear from the
12 group at the table here, these wells are all
13 instrumented with pressure recording
14 transducers. They're logging the pressure
15 that's exerted in the wells and then that is
16 a very accurate measurement of the response to
17 pumping from usually at least one, often
18 multiple, wells. They're instrumented and I
19 believe that those instruments detect to
20 1/100th of a foot. And they log the data
21 continuously both during the buffet phase as
22 well as the recovery phase of those tests.

23 JUDGE COLE: So that would mean
24 the level of communication was pretty much --

25 MR. SCHIFFER: The instruments and

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1 the data I've seen, it's very clear if there
2 is a response to a stress in the aquifers.

3 JUDGE COLE: And that would be
4 called communication, right?

5 MR. SCHIFFER: A response, it
6 depends on how it's interpreted. But given
7 the right conditions it can be interpreted as
8 a response, yes.

9 JUDGE COLE: Thank you.

10 JUDGE WHITE: So in the pre-
11 licensing site characterization -- and this is
12 really not soliciting a discussion of that --
13 am I correct that by a couple of wells there
14 was an indication of hydrologic communication?
15 A pumping test showed an indication of
16 hydrologic communication both in SEI documents
17 and in staff documents which were attributed
18 to unplugged historical bore holes. Is that
19 correct?

20 MR. SCHIFFER: Yes, that is
21 correct.

22 JUDGE WHITE: Okay. If the
23 pumping test in the wellfield indicated at
24 least for some wells a similar communication
25 with either the SM or the DM aquifer, what if

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1 any engineering or operational responses would
2 be available to SEI to remedy the situation
3 prior to commencement of mining?

4 MR. SCHIFFER: I'll take a first
5 pass at that, Judge. But there are some other
6 guys that have more experience than me. And
7 I'll be honest that first thing that you would
8 probably look at is to ensure that the
9 integrity of the wells that were tested was in
10 fact the case that the annular space between
11 the casing and a bore hole well was intact.
12 So the first engineering test that's done.
13 And our wells in this project, production
14 injection, and monitoring wells would have to
15 pass a mechanical integrity test. So that
16 would be the first engineering test.

17 And then at least in my experience
18 you would look at other potential engineering
19 solutions and/or evaluations of looking
20 primarily at the bore holes and depths of
21 penetration. So those are a couple of things
22 that we do in those scenarios.

23 JUDGE WHITE: I guess what I'm
24 getting at is these pumping tests are
25 performed to ensure that the aquifer that's

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1 the target of mining is isolated
2 appropriately. And the tests -- I'm sure you
3 hope and everybody else would too -- prove
4 that. But they don't, I'm wondering beyond
5 what you said what you could do about it.

6 MR. SCHIFFER: I'll take a first
7 pass, but I think the guys at Petro Tech could
8 provide more detail. I believe that for the
9 pumping tests there is some mathematics that
10 could be done to identify where a potential
11 leak is occurring. And that once you get it
12 down to an area you can look more closely to
13 see what potentially could be occurring there.

14 MR. DEMUTH: Judge, if I could add
15 to that. First of all, when we perform the
16 pumping test and we see a response -- just for
17 example let's say it's an improperly
18 constructed well -- in a sense there's a
19 benefit there because it shows that the
20 process works. NRC guidance and license
21 conditions require we do a wellfield pump test
22 to demonstrate confinement, to demonstrate
23 communication between the pumping well and the
24 monitor walls. So if we do have a well that's
25 an issue, the well is found. It's plugged and

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1 then the formation is retested. And we have
2 numerous examples of where exactly that has
3 happened at different sites.

4 That does give us confidence that
5 if there is a problem well it can be found.
6 It can be remediated. It can be retested.

7 In rare example where there appear
8 to be an improperly abandoned well that cannot
9 be exactly located, we have been able to
10 assist operators with engineering controls.
11 And in one situation additional monitor wells
12 in that area, overlying and underlying
13 monitoring, reduced injection pressures, those
14 types of scenarios where the operation could
15 be safely conducted.

16 JUDGE WHITE: Since the tests are
17 going to be responses, it's going to be
18 detected by a number of wells. You said
19 earlier that it might be possible to narrow
20 the area in which the leak has taken place.
21 Then would there be a mechanism by which you
22 could carry out some further exploration to
23 see if you could identify a previously
24 unlocated historic bore hole?

25 MR. DEMUTH: Yes, we refer to that

1 as triangulation where we look at the dry down
2 at distance and direction and determine the
3 most likely location of the potential problem
4 either well or unplugged bore hole.

5 JUDGE WHITE: How would you go
6 about finding an unplugged, previously
7 unlocated bore hole that had been covered by
8 wind-blown dust and so you can't see the
9 evidence of it at the surface?

10 MR. DEMUTH: Well, in that case,
11 we have to scrap the surface and look for
12 surface evidence. One thing that is very
13 encouraging from our standpoint -- and we
14 have worked on the majority of IRS projects
15 certainly in Wyoming and Colorado and Nebraska
16 -- is there is clear evidence for many of the
17 holes at rocks. And as I was talking to Mr.
18 Knode over the last couple of days it's
19 encouraging that they've been able to find so
20 many positively identified on the surface.

21 They've had a greater success at
22 that than any site that we've ever worked on.
23 So that increases our level of confidence even
24 more that they can locate those wells. Other
25 sites it's more difficult. We've used

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1 historic land set images. And sometimes it
2 comes to scraping the surface and looking for
3 surface indication.

4 JUDGE WHITE: Thank you. That's
5 all the questions I have about bore holes.
6 Judge Cole, do you have any more bore hole
7 oriented questions?

8 JUDGE COLE: No.

9 CHAIRMAN BOLLWERK: Let me just --
10 It's still eight percent, right, that they
11 have to find. They found 92 and they're still
12 looking for eight percent which is --

13 MR. KNODE: A clarification,
14 Judge. We employed summer students, summer
15 interns, to take the old survey records and to
16 take metal detectors out. They were able to
17 find the numbers that I've given to you. We
18 have not yet gone back and implemented a more
19 rigorous search for those other remaining
20 holes.

21 CHAIRMAN BOLLWERK: The eight
22 percent?

23 MR. KNODE: The eight percent,
24 right. So we do have very precise survey
25 information on that.

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1 CHAIRMAN WHITE: Okay. So there
2 will be additional efforts to locate holes.

3 MR. KNODE: Of course.

4 JUDGE WHITE: Before you perform
5 these well tests.

6 MR. KNODE: Correct.

7 JUDGE WHITE: Okay. Good. I just
8 have one really brief question to get into
9 something that I think we're probably getting
10 into more with staff and Intervenors about the
11 issue of the first arrival of lixiviant
12 indicators before uranium reaches a monitoring
13 well. And in written testimony, I believe
14 it's Mr. Demuth and Mr. Lawrence, SEI026, page
15 14, there is a statement that -- Actually, I
16 guess you're citing an NRC staff document. It
17 would probably be better addressed to staff.
18 ISL production fluids are conservative in the
19 sense that they move at roughly the same rate
20 as groundwater flow and are not significantly
21 attenuate by adsorption or reduced by other
22 factors.

23 I'm not sure whether this is
24 correct or not. Not in that specific
25 statement but I believe in another part of

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1 that testimony it's mentioned that adsorption
2 is only one factor that serves to impede or
3 reduce uranium moving through the groundwater.
4 Am I correct that by other factors you're
5 referring to this idea of natural attenuation
6 by some other process?

7 MR. LAWRENCE: The natural
8 attenuation discussion is the gross
9 compilation of all these things such as
10 adsorption or precipitation.

11 JUDGE WHITE: Okay.

12 MR. LAWRENCE: Also to some extent
13 advective flow. So dilution as you mix waters
14 one concentration with another you tend to
15 blend them out. So it's the combination of
16 all those processes.

17 JUDGE WHITE: So precipitation, by
18 precipitation, are you talking about the fact
19 that just as a result of entering a reducing
20 environment uranium converts back into
21 quadravalent ion and precipitates as uraninite
22 or something like that.

23 MR. LAWRENCE: Yes, it could
24 precipitate or co-precipitate to something
25 else just depending on the read out

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1 conditions.

2 JUDGE WHITE: Okay. So I guess
3 the point that I was trying to get to with
4 this question is that in this statement it was
5 implied that adsorption is not the only
6 mechanism by which uranium is attenuated. I
7 just wanted to confirm that that was true.
8 And you've recited a number of processes other
9 than adsorption that can do this.

10 MR. LAWRENCE: Correct.

11 JUDGE WHITE: And I guess this
12 will be explored more with the staff. So
13 that's all I have for Strata witnesses. Judge
14 Cole, anything else?

15 JUDGE COLE: Yes. So
16 substituting sulfates for chlorates I believe,
17 in this lawsuit, is a factor. Any comment on
18 that?

19 MR. SCHIFFER: Judge Cole, this is
20 Ben Schiffer. And I can talk briefly to that.
21 In what we have in the underlying water
22 interval below the ore zone that Ross is a bit
23 of a unique geochemical situation where the
24 natural concentrations of chloride were highly
25 elevated. And in that scenario using chloride

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1 as an excursion indicator we would have
2 actually had to have measure a reduction or a
3 decrease in the concentrations of chloride.
4 And that was not something that we were
5 comfortable doing and not really comfortable
6 proposing that to the regulatory agencies.

7 In lieu of chloride as an
8 excursion indicator for that particular
9 interval, we suggested sulfate. And really
10 what we're looking at here is that the sulfate
11 concentrations will increase. The sulfate
12 concentrations in that water bearing interval
13 are relatively low. So it will be easy for us
14 to detect an excursion based on an increase in
15 sulfate.

16 JUDGE COLE: So you had too much of
17 a good thing with chloride.

18 MR. SCHIFFER: Not much of
19 something that's for sure.

20 JUDGE WHITE: Is sulfate a normal
21 constituent of lixiviant or do you add the
22 sulfate strictly as an indicator?

23 MR. SCHIFFER: Sulfate in my
24 experience is going to increase in the
25 lixiviant primarily due to the dissolution of

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1 pyrite for the mining process. So it's
2 naturally going to increase during mining
3 which makes it a sortable ultra excursion
4 perimeter.

5 JUDGE WHITE: So your answer is
6 neither of my suggestions are correct. It's
7 not part of the lixiviant at all. It's added
8 to lixiviant as part of the dissolution
9 process that takes place in the mine.

10 MR. SCHIFFER: Yes, Judge.

11 CHAIRMAN BOLLWERK: Anything else,
12 Judge Cole?

13 JUDGE COLE: No, I'm fine.

14 CHAIRMAN BOLLWERK: One of you had
15 mentioned previously that I guess in other
16 places that you've worked you had dealings
17 with excursions before. I'm trying to
18 remember what the testimony was now. As you
19 were -- Let me put it this way. Is there any
20 incidents where you had concerns about a
21 particular bore hole or series of bore holes
22 or well where you were drilling that you
23 thought excursion might actually occur? Is
24 there anything that would indicate that based
25 on the monitoring that you do in the wells

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1 that you drill?

2 JUDGE WHITE: Was that part of
3 counsel's statement referring to something
4 like that?

5 CHAIRMAN BOLLWERK: It may have
6 been. I don't remember.

7 MR. DEMUTH: Your Honor, if I
8 might take a stab at that. Yes, we have
9 performed wellfield pump tests where we've
10 located wells that had they remained in that
11 condition could have caused an excursion.

12 CHAIRMAN BOLLWERK: Okay.

13 MR. DEMUTH: Those wells were
14 located. They were plugged. And then the
15 formation was retested to show that that
16 pathway no longer existed. So does that help
17 answer your question?

18 CHAIRMAN BOLLWERK: Right. And so
19 if you see that, does that mean that you're
20 going to run other pump tests? Or if you see
21 that here, does that suggest that's there a
22 problem in this particular area? Once you
23 have that happen, what is your response then
24 in terms of others or being concerned about
25 other potential excursions like that?

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1 MR. DEMUTH: Commonly, those are
2 discovered during the wellfield scale pump
3 test. And we'll see that there might be an
4 issue in one well and in one location.

5 That does not necessarily reflect
6 on the other parts of the pump test. If we
7 did have communication, we'd see the dry down
8 response that would so indicate. But just
9 because we have one well that might be a
10 problem doesn't mean that all the wells are a
11 problem.

12 If it were a geologic issue, it
13 might cause you to go back and revisit some of
14 the geology and make sure you're understanding
15 the geology is as complete as it needs to be.
16 And we've done that as well.

17 CHAIRMAN BOLLWERK: And again I
18 take that based on what you've seen with the
19 well test here, there's not a concern in that
20 regard.

21 MR. DEMUTH: Based on review of
22 the Strata data, I have no concerns about the
23 confinement that's been demonstrated by the
24 hydraulic testing to date.

25 CHAIRMAN BOLLWERK: All right.

1 Thank you. I'm sorry. My question was not
2 very artfully worded. I appreciate you.

3 MR. LAWRENCE: Can I add just a
4 little bit to that?

5 CHAIRMAN BOLLWERK: Sure.

6 MR. LAWRENCE: A couple of things
7 to consider. It's not like once the wellfield
8 test is done that there's no additional
9 indications of excursions. Obviously, the
10 whole ISL concept is based on a lot pumping
11 and injecting.

12 CHAIRMAN BOLLWERK: Right.

13 MR. LAWRENCE: So the whole point
14 of having the overlying and underlying monitor
15 wells is to detect any changes. Typically,
16 the first thing you're going to see is
17 changing water levels in those wells if there
18 is some kind of leakage going on. So you
19 would have throughout the course of your
20 operations continuous monitoring that would
21 indicate if you are developing a problem in
22 one particular area.

23 You might not see it initially
24 because you're not operating in that part of
25 the wellfield. But as you move closer to it,

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1 all of a sudden you see some indication in
2 terms of typically a change in pressure in the
3 well that would tell you that there seems to
4 be something going on here that we need to
5 look at more closely and remediate or fix
6 before we continue on.

7 And that brings up one other
8 point. We've been talking about these
9 excursion perimeters. But the best perimeter
10 is the water level indication because those
11 pressures are the first things that show up as
12 an indication that you have something out of
13 bounds or something that is communicating it
14 shouldn't be. And that happens long in
15 advance of any alkalinity arrival. So there
16 are other safeguards in place even beyond what
17 we've been talking about.

18 CHAIRMAN BOLLWERK: All right.
19 Thank you.

20 JUDGE WHITE: Yes. That's
21 interesting. I hadn't seen that in the
22 documents. So the lixiviant indicators, the
23 sulfates are monitored every two weeks. How
24 is the water level monitored? Is that also
25 measured on an every two weeks basis? Or is

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1 there some way that an abrupt change in the
2 water level in those wells would be indicated
3 between regular intervals of geochemical
4 monitoring?

5 MR. SCHIFFER: Judge, this is Ben
6 Schiffer. And a normal course of protocol and
7 procedure prior to any sample collection of a
8 monitoring well a water level is taken. And
9 in my experience, those water levels are then
10 compared to water levels from the preceding
11 two week interval and looked at in terms of
12 any long term trends. It's absolutely a
13 matter of procedure that a water level be
14 taken.

15 And just for clarification the
16 sulfate is only for the underlying interval at
17 the Ross project. Chloride, alkalinity, EC
18 are the excursion parameters for the perimeter
19 monitoring well ring as well as the overlying
20 monitor well system.

21 CHAIRMAN BOLLWERK: Thank you for
22 that. Judge Cole, anything you might have
23 additional?

24 All right. Then I think for this
25 panel then I think we're ready for any cross

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1 examination questions there might be, opposed
2 cross examination questions. Do you all need
3 five or ten minutes? Fifteen minutes? What
4 do you think?

5 MR. PUGSLEY: Five is fine.

6 CHAIRMAN BOLLWERK: Five. All
7 right. We'll take a five minute break then.
8 Off the record.

9 (Whereupon, the above-entitled
10 matter went off the record at 3:02 p.m. and
11 resumed at 3:11 p.m.)

12 CHAIRMAN BOLLWERK: Can we go back
13 on the record please. We've been informed by
14 the parties that there are no additional cross
15 examination questions they wish to propose.
16 So at this point, gentlemen, subject to being
17 recalled for our grand session at the end,
18 thank you for the information you've provided
19 and your service to the Board.

20 We are not going to proceed with
21 the staff's witnesses on Contention 3.

22 MR. HARPER: Your Honor, it
23 appears that Mr. Burgess has stepped outside
24 for a moment. If we could --

25 CHAIRMAN BOLLWERK: Sure. Why

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1 don't we just take a two minute recess until
2 he comes back. Off the record.

3 (Whereupon, the above-entitled
4 matter went off the record at 3:12 p.m. and
5 resumed at 3:13 p.m.)

6 CHAIRMAN BOLLWERK: Let's go back
7 on the record please. If the staff panel
8 could identify themselves for the record
9 please.

10 MS. MOORE: Johari Moore.

11 DR. JOHNSON: Kathryn Johnson.

12 MR. BURGESS: Anthony Burgess.

13 MR. SAXTON: John Saxton.

14 CHAIRMAN BOLLWERK: All right.
15 And all of you have been placed under oath
16 previously. Mr. Burgess, we brought your
17 testimony in a little earlier because it was
18 a unified testimony and then swore you in and
19 then had you step aside. Now you're back and
20 again everyone remains under oath.

21 I believe there's some testimony -
22 - All the testimony is in now I believe.

23 MR. HARPER: That's correct.

24 CHAIRMAN BOLLWERK: So we need to
25 start with the NRC exhibits. And I think it's

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1 39 the first one.

2 MR. HARPER: I believe so, Your
3 Honor.

4 CHAIRMAN BOLLWERK: All right.
5 Let's then start with exhibits and we're going
6 to identify for the record which is a Wyoming
7 Department of Environmental Quality 2001
8 document letter of conference and conciliation
9 exclusion at Cameco Resources Well CM-32;
10 NRC's 040, Uranium I Mine Unit 5 response
11 August 2010; NRC 041, Uranium I 2012
12 document, the Willow Creek Project monthly
13 excursion report for selected monitor wells;
14 NRC 042, an NRC document dated 2007,
15 NUREG/CR6870, consideration of geochemical
16 issues in groundwater restoration at Uranium
17 in situ leach mining facilities.

18 Moving on from there, we have
19 NRC050 which is an NRC document from 1985,
20 NUREG/CR-3709, Methods of minimizing
21 groundwater contamination from in situ leach
22 uranium mining; and NRC 051, which is a
23 Wyoming Department of Environmental Quality
24 1978 letter on Christianson Ranch restoration.

25 (Whereupon, the above-

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1 referred to documents
2 were marked as Exhibits
3 NRC039-NRC042 and
4 NRC050-NRC051 for
5 identification.)

6 Is that everything?

7 MR. HARPER: That is everything.

8 CHAIRMAN BOLLWERK: All right.

9 Those documents having been identified for the
10 record, let's move them into evidence. There
11 being no objections, then NRC039-NRC042 and
12 NRC050-NRC051 are all admitted into evidence.

13 (Whereupon, the above-
14 referred to documents
15 marked for
16 identification as
17 Exhibits NRC039-NRC042
18 and NRC050-NRC051 were
19 received into evidence.)

20 With that, we turn to Judge White.

21 Do you have some questions?

22 JUDGE WHITE: I do. We just heard
23 Strata' witnesses testify about their efforts
24 to identify, locate and plug historical bore
25 holes within the production monitoring region

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1 of the Ross site. But I have a few questions
2 just to clarify in my mind what the
3 consequences would be if there were unlocated
4 and improperly or unplugged bore holes within
5 the facility area.

6 I'm not sure that that's been
7 adequately explained in my mind anyway in the
8 documents I've read. So I would like to
9 explore that very briefly.

10 To begin with to quote the FSEIS,
11 page 311, "ISL operations withdraw an average
12 of 1.25 percent more water than is injected
13 into the wellfields which is referred to as
14 production bleed. Groundwater bleed ensures a
15 net inflow of groundwater into the wellfield
16 to minimize potential movements of lixiviant
17 and its associated contaminants out of the
18 wellfield."

19 Would you say that maintaining
20 production bleed is a primary defense against
21 lateral excursions of lixiviant during mining?

22 MR. BURGESS: Yes, that is primary
23 method. Yes.

24 JUDGE WHITE: So I'm curious about
25 how the presence of unplugged bore holes would

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1 react in a mining situation. How would it
2 affect groundwater flow? In other words,
3 would the artificial gradient created by
4 production bleed cause groundwater to flow
5 into the production zone from aquifers above
6 and below the ore horizon along conduits
7 generated by unplugged bore holes?

8 MR. BURGESS: That would dependent
9 on the relative hydraulic heads in the
10 overlying and underlying aquifers relative to
11 what the head is in the ore zone. Currently,
12 in the SM aquifer, the piezometric head, the
13 hydraulic head, is of the order of 100 feet
14 higher than in the ore zone. So if there were
15 an unplugged bore hole, it would induce a
16 higher head in the ore zone than would
17 normally be the case.

18 JUDGE WHITE: And this is in
19 consequence or in conjunction with the fact
20 that there is an artificial reversal of normal
21 flow into the ore zone created by the
22 production bleed.

23 MR. BURGESS: Yes. I mean that
24 artificial reversal is only in the ore zone.
25 And that is taking the ore zone or the

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1 individual wellfield as a whole. Within that
2 individual wellfield, there will be areas
3 obviously of injection and areas of
4 extraction.

5 So whether the head is higher or
6 lower than in the overlying or underlying
7 aquifer would depend upon where that unplugged
8 bore hole is relative to the injection points
9 and the extraction points and depend upon the
10 relative heads in the overlying and underlying
11 aquifer relative to the ore zone.

12 CHAIRMAN BOLLWERK: I think if you
13 would press your microphone down a little bit
14 closer to your mouth.

15 MR. BURGESS: How's that? Better?

16 CHAIRMAN BOLLWERK: There we go.
17 Yes. Thank you.

18 JUDGE WHITE: In the possibility
19 of appearing dense which I am with regards to
20 groundwater hydrology, my simpleminded view,
21 the production bleed for the wellfield as a
22 whole is insurance against excursions because
23 lateral flow of water within the ore zone
24 aquifer is in general sense always going to be
25 moving slightly toward the wellfield as a

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1 whole.

2 MR. BURGESS: That is correct.

3 JUDGE WHITE: That is correct. If
4 there's an easy connection between aquifers
5 above and below, wouldn't the production bleed
6 tend to then also draw water from those
7 aquifers into the ore zone aquifer owing to
8 this negative gradient that's generated there?
9 You probably answered that. But if you could
10 answer it again in an even simpler way, I
11 would appreciate it.

12 MR. BURGESS: First of all, the
13 concept of the ore zone is correct that the
14 heads towards the outside of the ore zone or
15 the wellfield are higher or above than the
16 heads within the wellfield. So there's this
17 net inward flow. And that flow is due to the
18 hydraulic heads from the outside relative to
19 what they are where there's pumping going on.

20 Now you've also got to consider
21 what is the hydraulic head in the overlying or
22 underlying aquifer relative to what it is in
23 the ore zone. As I pointed out in the SM
24 aquifer, the head is about 100 foot, maybe 130
25 feet, higher. It varies. But it's certainly

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1 times feet higher than it is in the ore zone.

2 Even under conditions as they
3 exist currently, if there is an unplugged bore
4 hole which is a significant conduit it would
5 as of today be feeding water into the OZ
6 aquifer. And that would manifest itself by
7 seeing as it were the opposite of a cone of
8 depression, a cone of increase in head in the
9 OZ aquifer.

10 To the best of my knowledge, we
11 haven't seen that. And to some extent that's
12 come forward by the fact that there are
13 pumping wells in the industrial pumping wells.

14 Judge Cole.

15 JUDGE COLE: When you've got
16 another aquifer driving more into the OZ zone
17 it will increase the flow in that aquifer
18 wouldn't it, that traveling in the reverse
19 direction?

20 MR. BURGESS: Yes. Likely an
21 artificial charge into that aquifer. So it
22 would increase the head at the location of
23 that bore hole and the effect of that would
24 spread out radially from that unplugged bore
25 hole.

1 JUDGE COLE: Okay. Now without
2 the bore hole being there and creating a
3 problem, the hydraulic feed line in the ore
4 zone creating the flow towards the center
5 receiver is caused by pumping systems,
6 correct, that control flow? Is that correct?

7 MR. BURGESS: You're saying
8 during operation or currently?

9 JUDGE COLE: During operation.

10 MR. BURGESS: During operations,
11 the pumping systems within the wellfield that
12 are pumping slightly more water when it's
13 being injected in the injection wells.

14 JUDGE COLE: So the adding of
15 additional water might not change that system
16 very much except by rerouting it.

17 MR. BURGESS: That is correct.
18 That's what I'm saying. It depends on the
19 route you have. Suddenly, the SM aquifer has
20 a head above the ore zone aquifer. So as long
21 as that is maintained by head gradient, as I
22 say, the only problem is you're going to
23 direct the lixiviant to the OZ.

24 JUDGE COLE: Thank you.

25 JUDGE WHITE: So in that situation

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1 then if you had an unplugged conduit, you're
2 saying water would flow from the SM aquifer
3 into the OZ aquifer.

4 MR. BURGESS: Provided the head in
5 the SM was higher than the head in the OZ at
6 that location, yes.

7 JUDGE WHITE: And then would water
8 flow into or out of the DM aquifer?

9 MR. BURGESS: In general the heads
10 in the DM are similar to the OZ or slightly
11 less than the OZ. So if that penetration were
12 further from OZ and into the DM then there's
13 the potential for it to flow out of the OZ and
14 into the DM.

15 JUDGE WHITE: But most of the
16 Nubeth holes would have ended in the OZ
17 aquifer and it would have penetrated the SM
18 but not the DM.

19 MR. BURGESS: That's my
20 understanding because they were going after
21 the ore and the ore was obviously limited to
22 the OZ and didn't extend into the DM.

23 JUDGE WHITE: I guess all of this
24 roundabout is to try and answer the question
25 I had in my head which was that if there were

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1 an unplugged bore hole and if additional water
2 were flowing into the OZ down from the SM
3 would that tend then to sort of counteract the
4 production bleed in preventing lateral outward
5 flow.

6 MR. BURGESS: I think I understand
7 what you're saying. That would depend upon
8 the relative amount of flow in that unplugged
9 culvert relative to the production bleed.

10 JUDGE WHITE: Right.

11 MR. BURGESS: But I think what
12 happened is that the amount of the wells in
13 the OZ during operation you would see
14 anomalous heads. And the operators would
15 therefore correct for those so that they would
16 maintain the overall inward bleed.

17 JUDGE WHITE: I know it's a lot
18 more complicated. But I'm just trying to
19 think about what the consequences of these in
20 a little more rigorous way, the consequences
21 of unplugged bore holes, might be during
22 production. And so it might be fair to say
23 that if for inexplicable reasons the
24 production was maintained at a constant bleed,
25 then the fact that there was an unplugged bore

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1 hole could, in fact, make production less
2 effective in controlling lateral migrations
3 and also make production be less effective in
4 controlling lateral excursions.

5 But you're saying that if such a
6 connection was available and did occur, that
7 it would be recognized by the operators and
8 adjusted for relatively quickly.

9 MR. BURGESS: Yes. That's how I
10 understand it. The production bleed doesn't
11 set upon a number that this is what the
12 production bleed is going to be. It's
13 basically that we will adjust water levels
14 such that there's orbital flow and we believe
15 that there will be results in the production
16 bleed of about one and one-half percent,
17 something like that.

18 JUDGE WHITE: And then finally in
19 the scenario that I believe I understand you
20 outlined, the consequences of introducing
21 contaminant-bearing lixiviant into the SM
22 aquifer or not the consequences but the
23 likelihood of contaminant-bearing lixiviant
24 moving up into the SM aquifer is highly
25 unlikely. But it might be more likely that

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1 contaminant-bearing lixiviant would move
2 downward into the DM aquifer. And in fact
3 that's what I guess -- maybe not lixiviant --
4 the connection was when they believed that
5 there was some connection during the pre-
6 licensing pumping tests. They seemed to show
7 connectivity there.

8 MR. BURGESS: Yes. There were I
9 believe a couple of tests that did show or did
10 indicate that there might be some connection
11 from the OZ into the DM.

12 JUDGE WHITE: But am I correct in
13 a kind of simpleminded way of saying that the
14 aquifer below the ore zone aquifer would be
15 more at risk for contamination than the
16 aquifer above if there were an unplugged bore
17 hole existing during production?

18 MR. BURGESS: Yes. With the
19 caveat that there are a lot less unplugged
20 bore holes from the OZ to the DM.

21 JUDGE WHITE: That's right.

22 MR. BURGESS: Than the OZ to the
23 SM.

24 JUDGE WHITE: We did previously
25 mention that, didn't we?

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1 MR. BURGESS: Yes.

2 JUDGE WHITE: Thank you.

3 MR. SAXTON: Your Honor, I just
4 want to add one clarification, though. In the
5 production area, you're going to have
6 injection well and production wells. Near the
7 injection well, you will have a greater head
8 than the average dry down. And there could be
9 a potential right there. That is why we
10 require especially within the wellfield to tag
11 all the bore holes.

12 Again, 100 feet of head is what
13 you need. And at the injection rates that
14 they have it's probably not going to be
15 exceeded. But it is a potential that because
16 that's where at the local area of the
17 injection well it's higher than the average.

18 JUDGE WHITE: So then there would
19 be a potential for upward movement of
20 lixiviant.

21 MR. SAXTON: It's a potential.
22 But I'm saying probably not at 100 feet. I
23 doubt that it's 100 feet, but it could
24 especially if the well gets plugged or
25 something you can't inject as much as you

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1 want. But that is why we require the plug in
2 the wells and the monitoring to make sure.

3 In addition to the bore holes,
4 it's the well casings that also could
5 contribute to flow. If the well casings
6 aren't complete, that would be a conduit as
7 well. So that and the MIT tests on the wells,
8 it's all integrated to make sure that there's
9 control within the production area.

10 JUDGE WHITE: And the well casings
11 issue you just described is similar to the
12 likely issue that Strata witnesses described.
13 If pre-production pumping tests showed that
14 there was leakage, that would be their first
15 likely culprit. Is that correct? And that's
16 what you're describing, too.

17 MR. SAXTON: Yes. In the case
18 that they were describing actually when they
19 were leaning the well out, the reamer actually
20 stayed open and it cut a hole in the casing.
21 And that's why a poor cement job in that case.
22 But yes. That's indeed the case.

23 But if you had it close in that
24 job and then over time it didn't maintain the
25 integrity of the well, it could be an avenue.

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1 So again it's just one of the things that we
2 have to look at and we try to make sure that
3 there's adequate monitoring. All the
4 monitoring is designed to minimize that
5 impact.

6 JUDGE WHITE: One last question
7 about these, if pumping tests do show the OZ
8 aquifer is not sufficiently isolated, what
9 action from the NRC staff's standpoint with
10 regards to regulatory action would staff
11 take. In other words, are you monitoring the
12 results of these pre-production pumping tests
13 and ensuring that eventually the problem is
14 solved if a problem does arise?

15 MR. SAXTON: Generally, if they
16 recognize a problem they will identify it
17 before they submit well completion or
18 wellfield data report to us. If it is
19 geologic -- let's say they finally air things
20 out dramatically -- we would expect that they
21 put a well there at least or enhanced
22 monitoring or not include production zones in
23 that area.

24 We're going to require them to
25 maintain possession of the lixiviant in the

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1 exempted aquifer. If it gets out, then they
2 have to correct for it no matter what the
3 source is. We will be looking at that, yes.

4 JUDGE WHITE: Okay. And that was,
5 in fact, a question that I was going to have
6 that you just answered before I asked. That
7 was what if there was a situation such as
8 something inherent within the geology that
9 made a certain portion of the wellfield just
10 impossible to mine without excursions. Then
11 NRC staff would ensure that, in fact, that
12 portion of the wellfield wasn't mined.

13 MR. SAXTON: That is correct. And
14 it would be counter to what their conceptual
15 model was that they presented in the
16 application. And we would make sure that they
17 revised their conceptual model and make sure
18 if indeed there is connection then they have
19 to demonstrate to us that they know throughout
20 the entire wellfield what is going on.

21 JUDGE WHITE: Any further
22 questions about bore holes, Judge Cole?

23 JUDGE COLE: No.

24 CHAIRMAN BOLLWERK: I'm good at
25 this point.

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1 JUDGE WHITE: I was going to ask
2 one or two questions about this issue again of
3 excursion monitoring. And this probably is
4 going to be answered by Dr. Johnson. In his
5 rebuttal testimony, JTI052R, page 19, Joint
6 Intervenors' witness, Dr. Larson, described a
7 number of studies both published and I think
8 studies that he actually performed himself or
9 data analysis that he performed himself,
10 indicating that uranium is not a strongly
11 adsorbed on the surfaces of minerals if it is
12 complexed with calcium and carbonate. And he
13 went on to assert that because of this
14 indicator compounds would not reach monitor
15 wells before uranium, but would presumably
16 arrive at the same time. And therefore it
17 would increase the likelihood that water
18 outside the monitoring ring would become
19 contaminated.

20 Now Dr. Johnson addressed this in
21 her rebuttal testimony, NRC044R, page 25. I
22 want to ask again for a little clarification
23 from Dr. Johnson. Once uranium combines with
24 calcium and carbonate to form a soluble
25 complex, you state that the change in water

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1 chemistry could reverse this process and
2 liberate U-6 ions back into the groundwater.
3 And would you expect this to occur when
4 uranium-bearing lixiviant flows away from the
5 ore-rich zone?

6 DR. JOHNSON: Yes, Judge White.
7 In fact, many of these studies that are
8 referenced are studies to understand the
9 effect of the controlling parameters, which in
10 the most part is the carbonate concentration
11 of alkalinity, the calcium concentration and
12 also uranium concentration. Those are the
13 parameters that affect the degree of complex
14 solution and then how those complexes behave.
15 Are they stable? Do they fall apart or just
16 whatnot? So many of these studies really
17 that's what they address. They address the
18 effect of those parameters.

19 But to fully answer this question,
20 if we could have Exhibit JTI058 on the screen
21 please. And this is actually just right in
22 the abstract. Here we go. I can read it
23 here.

24 This is really -- I'm having a
25 little trouble. So about halfway down in that

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1 abstract it says, under conditions where, and
2 it's the calcium-uranium-carbonate species,
3 and we're seeing the different parameters, but
4 the level of calcium that's what they were
5 adjusting up and down. It reduced the
6 adsorption of quartz from 77 percent in the
7 absence of -- could you slide it over please
8 -- of calcium to 42 percent and then the
9 adsorption on the ferrihydroxide which is iron
10 hydroxide from 83 percent to 57 percent in
11 different concentrations of calcium.

12 There's no question that the
13 complexes form. And the degree of how much
14 they remain in solution versus things that are
15 absorbed on these different media are variable
16 and they vary depending upon the particular
17 chemicals. Here of course it's calcium that
18 they were measuring.

19 But it's a range. But some of that
20 range goes to zero percent adsorption. So
21 there's always some adsorption of these
22 complexes. Because we don't know what the
23 level of adsorption is going to be in the
24 aquifer because these parameters can change
25 and they can change in particular when they

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1 move from the production area where the
2 lixiviant has been there versus outside, the
3 chemistry can change dramatically. And it's
4 very sensitive to these parameters.

5 At a minimum, the adsorption is
6 going to be at a lower number and at a maximum
7 it could be a higher number. So we just don't
8 know. And therefore we just don't make
9 predictable parameters for early detection.

10 JUDGE WHITE: Could you explain a
11 little bit and I guess I'm not fully clear
12 about this adsorption process. So it was
13 mentioned earlier that somewhere along the
14 line that what we're looking at are specific
15 sites on the surface of a crystal that are
16 receptive to adsorption of an attachment of a
17 uranium ore, in this case, less susceptible
18 but it's still somewhat susceptible to
19 attachment of one of these complexes.

20 Now I think we also heard something
21 about that there's sort of a limited number of
22 these sites. And once you move enough uranium
23 you can fill up all the sites. And then
24 adsorption no longer becomes effective. Is
25 that correct?

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1 DR. JOHNSON: In a very narrow
2 slice of the aquifer I would say that's
3 correct. But the surface of iron hydroxide is
4 a very dynamic surface. Iron hydroxide, if it
5 matures and it's hydrated. So those autumns
6 of water which are really kind of an OH,
7 they're constantly changing in these
8 situations.

9 Even though when we do modeling,
10 when I do modeling of adsorption, we put a
11 number in for how many sites are available.
12 That's kind of a theoretical situation because
13 it's a very dynamic situation out in the
14 field. But also let's say that they do get
15 saturated at one location when the water flows
16 into the next cell and the next box, then they
17 will be adsorbed there and then it's the next
18 one.

19 I mean it's a fact that they do get
20 saturated. So you have to move downstream to
21 take on the next line. And that's how it
22 works. So it really depends upon the capacity
23 of the iron hydroxide or in this case they
24 were doing some experiments with quartz also.
25 It's the capacity to adsorb. It's how much

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1 uranium that will be adsorbed. And then
2 really you calculate how long it will take.

3 JUDGE WHITE: The theory behind the
4 lag -- see if I'm correct on this -- is that
5 the leading uranium and the lixiviant
6 indicators start out together in a moving mass
7 of groundwater. The leading uranium as soon
8 as they get into one of these adsorption
9 environments drop out because they're attached
10 to the surfaces of these minerals.

11 Meanwhile, the lixiviant indicators
12 are unaffected by any of this and continue to
13 moving on. Eventually, as the surfaces get
14 saturated, uranium will eventually reach the
15 monitor well. But it will reach it after the
16 lixiviant indicators because the leading
17 uranium ions have all been grabbed onto by the
18 mineral surfaces along the way. Is that too
19 simplified or is that kind of the idea?

20 DR. JOHNSON: No, that's the idea.
21 And I think there's just one other
22 consideration that needs to be thought about
23 and that is that to detect these in these
24 monitoring wells there's always a background
25 or a naturally occurring level of all these

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1 constituents. To be a indicator, not only
2 does it have to move in the groundwater but it
3 has to be a large enough difference between
4 what is already existing. So when it gets
5 there you recognize it. You don't get it
6 mixed up with what might already be there
7 naturally.

8 So a molecule let's say of uranium
9 could make it there at the same time chloride
10 would make it there. But the concentration
11 would be low and you may not see it over the
12 naturally occurring level. Whereas, chloride
13 let's just say none of it would be retarded
14 along the path. When it arrives at that
15 monitoring well, the concentration would be
16 there in great enough magnitude that it could
17 be easily seen right there at the naturally
18 occurring level.

19 JUDGE WHITE: And then finally the
20 document, the journal article, you just showed
21 us indicates that still some, even if these
22 uraniums are complex, of them will be
23 adsorbed, less than if it were uranium ions
24 isolated and not complex. But some would.

25 Were the numbers that are cited in

1 that article be significantly retard the
2 movement of uranium even if the uranium
3 remained in complex? Or are those numbers
4 indicating that that would be effectively as
5 if they weren't adsorbed? What kind of effect
6 does the complexing have? Does it completely
7 eliminated this lag? Or does it simply make
8 the lag less effective?

9 DR. JOHNSON: Well, certainly the
10 complexes increase the solubility of uranium.
11 In other words, no adsorption. But to me the
12 important part of these research studies to
13 show that -- I think the numbers could range
14 anywhere from like 10 percent adsorption to 88
15 percent adsorption.

16 JUDGE WHITE: Right.

17 DR. JOHNSON: And that they are so
18 sensitive to certain parameters that it's just
19 not possible to predict.

20 JUDGE WHITE: Those were controlled
21 experiments.

22 DR. JOHNSON: Yes.

23 JUDGE WHITE: So all variables
24 weren't tested in those experiments.

25 DR. JOHNSON: And that's another

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1 parameter, yes. They were controlled
2 experiments. So it's even more difficult to
3 really take these experiments and really
4 understand to a high level of certainty what's
5 going to happen out in the field. But the
6 general kind of school of thought is that
7 carbonate complexes -- now they're
8 understanding more about these calcium
9 carbonate complexes -- certainly increases
10 solubility.

11 And that's why it's used in the
12 lixiviant to dissolve it and solublize it.
13 But the adsorption is a factor and even though
14 calcium carbonate complex, it's not considered
15 conservative because of these varying degrees
16 of adsorption as in the case of chloride for
17 example.

18 JUDGE WHITE: And my last question
19 is given the complexity of the geochemical
20 environments in these systems, are there
21 conceivable natural processes that would
22 impede or restrict or take out of solution the
23 sulfates or other lixiviant indicators? I
24 mean, can we count on them remaining in
25 solution in these environments?

1 DR. JOHNSON: The chloride is
2 considered to be the closest thing to a more
3 conservative indicator.

4 JUDGE WHITE: But they can't use
5 that at Ross.

6 DR. JOHNSON: Well they can for the
7 horizontal to detect horizontal excursions.
8 It's just that vertical excursions dive into
9 the underlying interval of groundwater that
10 has the high chloride background. But
11 chloride is used for the horizontal.

12 JUDGE WHITE: Oh, I see. I was
13 thinking that was --

14 DR. JOHNSON: And the upper.

15 JUDGE WHITE: -- sulfate used for
16 that as well.

17 DR. JOHNSON: No, just in the
18 lower, the first interval below the ore zone.
19 So chloride certainly works. Now alkalinity
20 and sulfate, we could create a scenario where
21 they wouldn't be as conservative as chloride
22 because of certain reactions. But even if
23 there were some reactions that affected it
24 slightly, because of the difference in
25 concentrations between what is naturally

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1 occurring at that perimeter well ring and the
2 lixiviant, they make good early detector
3 parameters.

4 And electric conductivity, that's
5 a mixture. So because of the differences in
6 the concentrations between these detection
7 wells in the monitoring ring and the
8 lixiviant, electric conductivity is a very
9 good indicator.

10 JUDGE WHITE: Thank you.

11 Judge Cole, anything on this issue
12 or any other issue related to Contention 3?

13 JUDGE COLE: No.

14 JUDGE WHITE: Nothing at this
15 point.

16 CHAIRMAN BOLLWERK: I don't have
17 anything at this point. So I guess we're at
18 the point where we're looking for any opposed
19 cross examination questions for this panel.
20 And do you need five, ten, fifteen?

21 MR. PUGSLEY: Five minutes is fine.

22 CHAIRMAN BOLLWERK: Five minutes.
23 Does anybody want to take a break at this
24 point to use the restroom? Do you want to
25 take additional time?

1 MR. PUGSLEY: Five minute break.

2 CHAIRMAN BOLLWERK: Is five minutes
3 good enough? All right. We'll do that then.
4 We'll take a five minute break and see if
5 there is any cross examination. Off the
6 record.

7 (Whereupon, the above-entitled
8 matter went off the record at 3:51 p.m. and
9 resumed at 4:09 p.m.)

10 CHAIRMAN BOLLWERK: Can we go back
11 on the record please. All right. We're back
12 from consulting with Judge Cole. We had one
13 question and it reads this way. What is the
14 protocol for plugging and abandoning bore
15 holes once found?

16 MR. BURGESS: My understanding is
17 that they follow the guidelines of the Wyoming
18 regulatory agency. I forget which in
19 particular. But that's the guidelines that
20 they follow.

21 CHAIRMAN BOLLWERK: So do you know
22 exactly what the protocol is? What the steps
23 are or?

24 MR. BURGESS: No, I don't know.
25 Not off the top of my head.

1 CHAIRMAN BOLLWERK: Does someone
2 else want to comment?

3 MR. SAXTON: Strata has it in the
4 application in one of the appendices. Strata,
5 do you have the appendix that has the plug
6 ins? 2.6?

7 CHAIRMAN BOLLWERK: Is someone has
8 it we'll wait? If someone has a record site,
9 that would be terrific?

10 MS. ANDERSON: Your Honor, we would
11 appreciate having that for this witness.

12 MR. SAXTON: Can you pull up
13 SEI014A? Can you go to the table of contents?

14 MR. PUGSLEY: It's SEI014F at 29.
15 Twenty-eight.

16 CHAIRMAN BOLLWERK: Take a look at
17 that and then I'm going to have a second
18 question for you.

19 PARTICIPANT: Third paragraph.

20 MR. SAXTON: Thank you. Okay.

21 CHAIRMAN BOLLWERK: Could you
22 shrink that just a little bit more? To 100
23 percent. There we go. Terrific.

24 MR. HARPER: Your Honor, in order
25 to get this in the record would it be

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1 acceptable to request the witness to read that
2 section?

3 CHAIRMAN BOLLWERK: If that would
4 be useful. I think the second question I'm
5 going to ask but we'll --

6 MR. SAXTON: Hole plugging
7 procedures include locating the hole, enter
8 the drill hole with a bit and drill pipe which
9 is washed to the bottom. The type 1 submit
10 14.8 to 15 pounds per gallon with two percent
11 bentonite is put through the drill pipe and
12 then the pipe is removed from the hole. The
13 hole is topped off with cement and a narrow
14 metal ID tag is placed at the surface. As
15 discussed in Addendum 2.7(f), Aquifer test
16 report, some 55 holes in the vicinity of the
17 1218 well cluster were located, reentered and
18 plugged in this fashion. It is Strata's
19 intent to locate the remainder of the Nubeth
20 drill holes and banter them in a similar
21 fashion.

22 CHAIRMAN BOLLWERK: All right. So
23 you indicated that it's your understanding
24 that this is Wyoming protocol, Wyoming State
25 protocol, that they're following.

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1 MR. BURGESS: Yes. I'm not sure if
2 that was correct, but this indicates the
3 method by which they do it.

4 CHAIRMAN BOLLWERK: That indicates
5 I'm sorry.

6 MR. BURGESS: This indicates the
7 method by which they do plug the holes.

8 CHAIRMAN BOLLWERK: Okay. So the
9 question that I have for you is given what we
10 just saw and what we just heard and what you
11 told me, how documented and verified by the
12 NRC staff is this process. In other words,
13 what have you all done in terms of adopting it
14 and indicating that this is what the Ross or
15 other applicants should be following?

16 MR. SAXTON: When they cement the
17 wellfield data package, I expect that there
18 would be filed a list of all the wells that
19 they abandoned. The exact procedure is the
20 licensee is under two programs, one of which
21 is the state's UIC program and the procedures
22 to abandon the holes are generated from that
23 program. And we accept that as the proper way
24 of abandoning the wells.

25 CHAIRMAN BOLLWERK: So then you

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1 anticipate that any wells that are abandoned
2 are going to be done in line with whatever the
3 state protocol and the state process.

4 MR. SAXTON: That is correct.

5 CHAIRMAN BOLLWERK: All right. Any
6 questions you have about that?

7 JUDGE WHITE: No, I have no
8 questions.

9 CHAIRMAN BOLLWERK: Judge Cole?

10 JUDGE COLE: No.

11 CHAIRMAN BOLLWERK: All right. And
12 again let me just ask one other question
13 actually. So what degree as they do this
14 process do you all inspect for that process?

15 MR. SAXTON: Do we physically go
16 out and verify that they properly abandoned
17 the holes? We're on the site for probably a
18 semi-annual inspection. At that time, we
19 usually either go see sampling of the wells or
20 if they happen to be doing a pump test, I went
21 and observed the pumping test.

22 If they are plugging holes, I will
23 go over and look at it what they're doing.
24 But normally the Applicant committed to doing
25 this. We verify the records that show that

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1 they properly abandon up the bore holes.
2 That's NRC's policy of what we do.

3 CHAIRMAN BOLLWERK: Right.

4 MR. SAXTON: We don't have to go
5 and be there 100 percent of the time.

6 JUDGE WHITE: But they are required
7 to have a record other than -- I mean, does
8 the record extend to anything other than
9 here's the bore hole, check we abandoned it?
10 Or is there some record of in this particular
11 bore hole we put down so many cubic feet of
12 cement or so many cubic feet of bentonite?

13 MR. SAXTON: Generally, that's --

14 JUDGE WHITE: Do you have numbers
15 attached to any of that?

16 MR. SAXTON: I think both ways.
17 Mostly to keep record of what they put down.
18 Sometimes they put bentonite mixture or
19 sometimes cement. And then they have to case
20 it off with cement at the top at the surface.
21 So that's another piece of the record.

22 It's usually a line item that we
23 would look at and we'll have various columns
24 of what they did. Yes, it's a combination of
25 here is the bore hole and here's the date.

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1 Here's probably the rig that did it and the
2 person who did it. As an NRC inspector, we
3 would go out and ask them about it.

4 For instance, if there is a problem
5 with the bore hole -- let's say there is a
6 detection in the overlying, then they say it's
7 the bore hole. We would ask to see that
8 record. We would ask to talk to the person
9 who did the abandonment.

10 But generally the records are not
11 just check-off. But there is some other
12 additional information. We don't have a
13 format for each licensee to record. But we do
14 make sure that they maintain the records.

15 I'm sure -- I don't inspect this
16 personally -- they have a well completion
17 abandonment record for each well that they do
18 because even when they circle a well they have
19 individual pages of what they have to do.

20 JUDGE WHITE: My understanding is
21 that many states require whenever you're
22 abandoning a well that you have some kind of
23 record of how deep it was and what you did.
24 And are you aware where the State of Wyoming
25 is going to require SEI to keep records and

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1 submit them to the state for some record
2 keeping?

3 MR. SAXTON: I'm not sure what the
4 state requirement is. I know our requirement
5 is that they maintain the records on file for
6 the life of the license. I don't know what
7 the state is.

8 But the state is pretty much more
9 proactive I would imagine from my interactions
10 with the state of making sure that the --
11 Especially the surface expression because
12 that's how as Hal Demuth had talked about that
13 for Wyoming if a wellfield is not disturbed
14 you can generally see where all expiration
15 drill holes were. Sometimes they have a mud
16 pit that's so visible, a metal detector. A
17 lot of them don't have that, but they do. But
18 you can see where it's disturbed.

19 And the state really is cognizant
20 of that because when you abandon it they want
21 to make sure that it goes back to natural
22 grasses and is not as disturbed as in the
23 future.

24 CHAIRMAN BOLLWERK: All right.
25 Anything further? Judge Cole, do you have

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1 anything further?

2 JUDGE COLE: No.

3 CHAIRMAN BOLLWERK: All right. At
4 this point is there anything further from the
5 parties than what we've heard? All right
6 then. I very much appreciate your testimony
7 this afternoon and I think you will be back
8 joining us probably in a couple of minutes.
9 Thank you again for the information you've
10 provided.

11 All right. I think we're to the
12 Joint Intervenors panel for Contention 3.
13 There will be two witnesses. While they're
14 coming up, let me just ask one question about
15 JTI005A and B[®]. What is your intent in terms
16 of trying to put those into the electronic
17 format?

18 MR. CRYSTAL: We have now filed
19 them while the day has progressed here.

20 CHAIRMAN BOLLWERK: Okay.

21 MR. CRYSTAL: In the last half
22 hour. So we've refiled those two as
23 instructed.

24 CHAIRMAN BOLLWERK: There they are.
25 Okay.

1 MR. CRYSTAL: And also a revised
2 exhibit list that conforms to how those
3 exhibits should be designated.

4 CHAIRMAN BOLLWERK: Terrific.

5 MR. CRYSTAL: If we could complete
6 the process in moving them into evidence that
7 would be terrific.

8 CHAIRMAN BOLLWERK: So I see them.
9 They have come up. That's the witness list
10 and the exhibit. I can't get into the -- Can
11 you get into them from my computer or are you
12 having yours?

13 (Off record comments.)

14 CHAIRMAN BOLLWERK: All right.
15 Why don't we go ahead and we'll identify those
16 and put them into evidence. And then we'll
17 turn to what we have to do with the two
18 witnesses.

19 We're looking at what are now going
20 to be identified as Exhibits JTI005A-R2 and
21 JTI005B-R2 which are JTI005A-R2 are NRC
22 database spreadsheets which are PDFs, so the
23 NRC data that are referenced. And then
24 JTI005B-R2 is representative PDFs of story
25 maps. And we will go ahead and mark those for

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1 identification.

2 (Whereupon, the above-
3 referred to documents
4 were marked as Exhibits
5 JTI005A-R2 and JTI005B-R2
6 for identification.)

7 Any objection to their admission
8 into evidence? No. Then we will go ahead and
9 admit them.

10 (Whereupon, the above-
11 referred to documents
12 marked for identification
13 as Exhibits JTI005A-R2
14 and JTI005B-R2 were
15 received into evidence.)

16 We've taken care of that. Let's
17 move onto the exhibits that go with these two
18 witnesses on Contention 3. And I believe
19 their testimony is already in. So we're
20 looking at if my count is correct JTI022 is
21 the first exhibit. All right. Let's do this
22 quickly and move on.

23 We're marking for identification
24 JTI022 which is a document authored by Curtis
25 and others in 2006, a simulation of reactive

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1 transport of uranium 6 in groundwater with
2 variable chemical conditions.

3 JTI023, an ExxonMobil document.
4 Highland Uranium Mill site, final site closure
5 proposal, Casper, Wyoming, August 3, 2010.

6 Exhibit JTI024, a document by Zhou,
7 Ping and Baohua Gu, extraction of oxidized and
8 reduced forms of uranium from contaminated
9 soil, effects of carbonate concentration and
10 pH from Environmental Science and Technology
11 39.12, 2005.

12 JTI025-R, an document authored by
13 Davis, J.A. and Gary Page, Curtis. It's an
14 NRC Office of Research document, a
15 consideration of geochemical issues in
16 groundwater restoration at Uranium Institute
17 Leach Mining Facilities.

18 JTI026, from Texas Railroad
19 Commission, Surface Mining and Reclamation
20 Division, Uranium Energy Corporation,
21 Weesatchie Project, Goliad County, Uranium
22 Exploration Permit No. 123 Inspection Report
23 dated March 27, 2007.

24 JTI036, Wright Environmental
25 Services, Inc. and Telesto Solutions, Inc.

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1 2012 Status Update, casking leak
2 investigations C, E and F. Wellfields Smith
3 Ranch Highland Operations, February 20, 2013.

4 JTI040, a document authored by
5 Anastasi, Frank S. and Roy E. Williams,
6 aquifer restoration at Uranium Institute Leach
7 sites, International Journal of Mine Water
8 3.4, 1984.

9 JTI041 authored by Raymond H.
10 Johnson, reactor transport modeling for the
11 proposed Dewey-Burdock Uranium Institute
12 Recovery Mine in Edgemont, South Dakota, USA,
13 2011.

14 JTI042, a document authored by
15 Raymond H. Johnson and others, reactive
16 transport modeling at Uranium Institute
17 Recovery sites, uncertainties in uranium
18 solution on iron hydroxides, The Reliable Mine
19 Water Technology Journal, 2013.

20 JTI043, an article document
21 authored by Stewart, Brandy D and others,
22 influence of uranyl speciation and ion oxides
23 on uranium biogeochemical redox reactions from
24 the Geomicrobiology Journal, 2011.

25 JTI044, a document authored by Gary

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1 R. Konowinski, Project Manager for Licensing
2 Branch No. 1 of NRC's Region IV, environmental
3 assessment for Malapai Resources, the
4 Christianson Ranch Institute Leach Satellite
5 Operation dated May 4, 1988.

6 JTI045, John F. Winter, author of
7 Manager of Environmental and Regulatory
8 Affairs in Wyoming for Uranium I monitor well
9 5MW66 on the Christianson Ranch, September 1,
10 2010.

11 JTI046, John McCarthy, Manager,
12 author from the Safety Health and
13 Environmental Affairs, Division of Power
14 Resources, Smith Ranch Highland Uranium
15 Project, southwest area hydrologic tests, for
16 NRC License SUA-1548, February 21, 2007.

17 And I think that may be it. Three
18 more. JTI057 -- it looks like six more --
19 Gary Curtis' biography from USGS website.

20 JTI058, Fox, et al, from 2006, the
21 effect of calcium on aqueous uranium(VI)
22 speciation and adsorption to ferrihydrite and
23 quartz.

24 JTI059, Kelly, et al, 2006, X-ray
25 absorption spectroscopy identifies calcium-

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1 uranyl-carbonate complexes at environmental
2 concentrations.

3 JTI060, Yabusaki, et al, the author
4 is assessing the potential for power
5 restoration of Uranium Institute Recovery
6 sites.

7 JTI061, an article by Hua, et al,
8 2006 kinetics of uranium (VI) reduction for
9 hydrogen sulfide in anoxic aqueous systems.

10 And finally JTI062-R, groundwater
11 quality samples obtained from the Christianson
12 Ranch mine unit 5 excursion well 5MW66.

13 (Whereupon, the above-
14 referred to documents
15 were marked as Exhibits
16 JTI022-JTI026, JTI036,
17 JTI040-JTI046, JTI057-
18 JTI058, JTI060-JTI062-R
19 for identification.)

20 Okay. Anything I've missed? Are
21 we good?

22 MR. CRYSTAL: No, Your Honor.

23 CHAIRMAN BOLLWERK: Those are all
24 identified for the record. Let's go ahead and
25 admit them, starting with Exhibit JTI036.

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1 MR. CRYSTAL: Twenty-two I think is
2 the first.

3 CHAIRMAN BOLLWERK: Is that the
4 first one?

5 MR. CRYSTAL: Twenty-two.

6 CHAIRMAN BOLLWERK: Twenty-two.

7 Thank you. I'm admitting for the record
8 JTI022, JTI023, JTI024, JTI025-R, JTI026,
9 JTI036, JTI040, JTI041, JTI042, JTI043,
10 JTI044, JTI045, JTI046, JTI057, JTI058,
11 JTI060, JTI061, and JTI062-R. Anything I
12 missed? Are we good?

13 (Whereupon, the above-
14 referred to documents
15 marked for identification
16 as Exhibits JTI022-
17 JTI026, JTI036, JTI040-
18 JTI046, JTI057-JTI058,
19 JTI060-JTI062-R was
20 received into evidence.)

21 I thank you all for your patience
22 in allowing me to do that. And now we're
23 ready for the panel. By the way, gentlemen,
24 why don't you go ahead and introduce
25 yourselves. I think we forgot to do that for

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1 the record.

2 DR. ABITZ: Richard Abitz.

3 DR. LARSON: Lance Larson.

4 CHAIRMAN BOLLWERK: All right. And
5 you're both under oath and you continue to be
6 so. Thank you.

7 JUDGE WHITE: I have some questions
8 for these witnesses, but they pertain directly
9 to testimony that we just heard from the
10 staff. And so I'd like to postpone them until
11 the entire panel is seated. It seems like
12 that would be a better opportunity for the
13 discussion to be more productive than to just
14 have you folks sitting by yourselves. So
15 other than that I have no questions.

16 CHAIRMAN BOLLWERK: Judge Cole.

17 JUDGE COLE: That sounds like a
18 good plan.

19 CHAIRMAN BOLLWERK: All right. Let
20 me ask one question. We heard a lot of
21 testimony about the number of bore holes that
22 are existing, what have been filled and what
23 haven't been filled. Do you have any comments
24 on the information that we were provided
25 today? Any concerns you have about the

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1 numbers we were given.

2 DR. ABITZ: I don't so much have a
3 comment on the number given. But I still
4 believe that the FSEIS does not have
5 sufficient information to show how the well
6 holes will be plugged and abandoned properly
7 and how that will be verified and documented.
8 I didn't see in the FSEIS any forms that
9 showed what information is reported on a plug
10 and abandonment log.

11 CHAIRMAN BOLLWERK: So what you're
12 concerned about is they haven't provided us
13 with the logs that they use for doing this.

14 DR. ABITZ: Correct. We haven't
15 seen the information that's put on a plug and
16 abandonment log to see if sufficient cement
17 and bentonite was added to account for the
18 volume of the bore hole down to whatever the
19 horizon was.

20 CHAIRMAN BOLLWERK: All right. Dr.
21 Larson, is there anything that you have to say
22 about this?

23 DR. LARSON: I don't have a
24 comment.

25 CHAIRMAN BOLLWERK: All right.

1 Maybe that's one of the things we can discuss
2 with the next group. All right.

3 JUDGE COLE: One question.

4 CHAIRMAN BOLLWERK: Judge Cole, do
5 you have something? I'm sorry.

6 JUDGE COLE: So would you agree
7 that if properly done pumping tests can
8 reasonably ensure that vertical obscurities
9 resulting from unplugged boreholes are
10 unlikely to occur during mining?

11 DR. ABITZ: I'll answer that, Dr.
12 Cole. I don't believe that plugging and
13 abandoning bore holes are enough. Fluvial
14 stratigraphy by nature is very complex. And
15 as we heard from the NRC staff, it can thin
16 and be absent. Complying layers can be
17 absent. So plugging bore holes is not enough
18 to ensure that vertical excursions will not
19 occur.

20 JUDGE COLE: What else do you think
21 they should do?

22 DR. ABITZ: I think they need to
23 have a very detailed stratigraphic model
24 showing where the thinning horizons are in the
25 sand units.

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1 JUDGE COLE: All right. Thank you.

2 CHAIRMAN BOLLWERK: Judge White,
3 anything further?

4 JUDGE WHITE: No.

5 CHAIRMAN BOLLWERK: Anyone have any
6 cross examination questions given what we've
7 just asked?

8 MR. PUGSLEY: No, Your Honor.

9 MR. HARPER: No, Your Honor.

10 MS. ANDERSON: Your Honor, can we
11 have two minutes?

12 CHAIRMAN BOLLWERK: Why don't you
13 take five? Probably being a little optimistic
14 with two. I think five is more like it. So
15 we'll take a break for five minutes. Off the
16 record.

17 (Whereupon, the above-entitled
18 matter went off the record at 4:33 p.m. and
19 resumed at 4:39 a.m.)

20 CHAIRMAN BOLLWERK: Let's go on the
21 record for one second. We have received a
22 couple of sets of questions. So we're going
23 to go talk with Judge Cole and be back
24 hopefully in no more than 10 minutes. Thank
25 you. Off the record.

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1 (Whereupon, the above-entitled
2 matter went off the record at 4:39 p.m. and
3 resumed at 4:50 p.m.)

4 CHAIRMAN BOLLWERK: Can we go back
5 on the record please. We have a couple of
6 questions that the Board would like to posed
7 based on what we received from the parties.

8 The first one is for Dr. Larson.
9 given the data that you reviewed, do you have
10 an example of a vertical excursion at a site
11 that would be similar to what you might expect
12 to see at the Ross site?

13 DR. LARSON: By looking at the
14 historical critical excursions, we can see
15 that they're proportional. A lot of the
16 reports tell us that they're proportional to
17 the drilling intensity with respect to
18 historical well drills, the actual operational
19 drills.

20 So the data that I would most
21 likely point is stuff that I presented in my
22 story maps with respect to Smith Highland,
23 dozens of failed well casings which resulted
24 in contamination in the shallow aquifers. So
25 those were primarily less than 200 feet from

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1 the surface. That would primarily be the
2 source that I'd cite to with respect to that.

3 JUDGE WHITE: Those are failed well
4 casings in operating wells, not historical
5 wells.

6 DR. LARSON: So how that
7 contamination actually got there could be
8 multiple reasons. There's no kind of silver
9 bullet with respect to this is exactly how
10 this got elevated. We know that there's
11 probably multiple reasons or possible reasons
12 of why those concentrations were observed. To
13 the exact extent, we know it's proportional to
14 the drilling intensity.

15 CHAIRMAN BOLLWERK: Again, do you
16 want to provide us with any reasons? Or I
17 guess you basically said it could be multiple
18 reasons, right? Failed casings or?

19 DR. LARSON: Failed casings.
20 thinning geology, historical well holes.

21 CHAIRMAN BOLLWERK: All right.
22 Judge Cole, do you have anything on that? On
23 this question?

24 JUDGE COLE: No.

25 CHAIRMAN BOLLWERK: All right.

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1 Then if we could we'd like to pull up Exhibit
2 SEI014G and go to page 275. This is an
3 example from the Strata technical report of an
4 abandonment cementing worksheet. And I don't
5 know if you want to take a look at that. And
6 there are apparently at least 100 of these
7 sheets that are in this document.

8 Are those the sorts of things you
9 would anticipate providing you with the type
10 of information you would want to see?

11 DR. ABITZ: That is correct.

12 CHAIRMAN BOLLWERK: Okay.
13 Obviously, we're not going to go through them
14 all right now. But those are in the record.

15 Could you then pull up SEI014C?
16 I'm sorry. Page 41 and toward the bottom I
17 believe. I think it may be the next page
18 actually. Maybe not.

19 It says the details of the plugging
20 of each bore hole will be recorded on an
21 abandonment record, examples in the appendix,
22 which I think that's what we just looked at
23 which will be filed at the Oshoto Field Office
24 in the appropriate in the hole record and
25 provided with a respective wellfield data

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1 package.

2 If I understand what's being -- And
3 we can ask the folks from Strata about this
4 when we convene our big session after that.
5 But is the kind of access you would expect to
6 be able to find things at?

7 DR. ABITZ: That is correct.

8 CHAIRMAN BOLLWERK: Okay. And we
9 will ask them actually about what NRC's access
10 to those records is as well when we have the
11 -- So I just wanted to -- We were made aware
12 of that and we thought we ought to put that on
13 the record.

14 DR. ABITZ: Thank you.

15 CHAIRMAN BOLLWERK: Thank you. All
16 right. Anything else from the parties?

17 MS. MONTEITH: Your Honor, we had
18 one late question if it's possible.

19 CHAIRMAN BOLLWERK: A late filed
20 question.

21 MS. MONTEITH: Yes sir.

22 (Off record comments.)

23 CHAIRMAN BOLLWERK: Judge Cole,
24 we'll go back over in my office and we'll take
25 another five minute break. And we'll call

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1 over there in two minutes. Thank you. Off
2 the record.

3 (Whereupon, the above-entitled
4 matter went off the record at 4:57 p.m. and
5 resumed at 5:01 p.m.)

6 CHAIRMAN BOLLWERK: Can we go back
7 on the record please. Given the nature of
8 this question I think the better way to handle
9 this is go ahead and put all the witnesses
10 back on the stand which we were going to do
11 anyway. Then we'll have a little discussion
12 about bore holes. So if we could have all the
13 -- We don't have any more individual questions
14 for you all. Let's go ahead and have if we
15 can all the witnesses for Contention 3 come
16 into the witness area.

17 (Off record comments.)

18 So let's talk for a couple minutes
19 about bore holes and the way that they're
20 abandoned and the methods by which they are
21 abandoned and who know about it and who
22 doesn't, what records are kept.

23 Let's start perhaps with the folks
24 from Strata. You've heard that there's been
25 some testimony about bore hole records that

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1 you are required to keep by the State of
2 Wyoming. Can someone describe sort of how
3 that system works for you all? If we need to
4 pull up any exhibits, just let us know
5 different from what we've already shown.

6 MR. SCHIFFER: Judge, this is Ben
7 Schiffer. And I can tackle what was started
8 in the developing the license application if
9 that helps the Board. Briefly, I was
10 responsible for overseeing the plugging and
11 abandonment of some 55 exploration holes
12 around one of the monitor well clusters. And
13 those records were records that we have
14 brought up for Dr. Abitz to take a look at a
15 few minutes ago.

16 I think the interesting thing, a
17 couple of interesting things, about that
18 program is that when we entered those holes
19 with a drilling rig and it is with a normal
20 drilling rig just like we use for exploration
21 as well as well insulation. The thing that I
22 thought was interesting is that they actually
23 have to drill down to get to the total depth
24 of those holes.

25 Those holes are not open. Those

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1 holes over time have sealed themselves off to
2 some extent. So the drill rig/drill pipe
3 actually has to circulate and circulate water
4 as well as turns. So the drill pipe has to
5 turn. And I thought that was interesting.

6 The bore width of those holes are
7 now fully open and just literally a hole.
8 It's really a misnomer. Over time, the turns
9 tend to collapse and tend to swell and tend
10 plug these things off. I thought that was
11 interesting.

12 In fact, I think it's important to
13 note that virtually all holes in that radius
14 failed. That was also important. We were
15 able to find them. We were able to set a
16 drill rig up on them. And we were able to
17 reenter them and reabandoned them per the
18 standards that have today.

19 CHAIRMAN BOLLWERK: All right.
20 What are those standards?

21 MR. SCHIFFER: I apologize we don't
22 have the exhibit, but the quality division has
23 a chapter and regulations that oversees
24 abandonment of drill holes. And it's done in
25 particular for exploration programs. And it's

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1 reappplied at division chapter 8, yes, Land
2 Quality Division, Chapter 8. So that puts out
3 the details about how the wells are to be
4 abandoned.

5 And what it prescribes are plug gel
6 which is a viscous mix of router and
7 bentonite. It also prescribes bentonite grout
8 and we can also use sealant. So those are the
9 methods that Chapter 8 allows us to use.
10 Strata was very conservative in its license
11 application and included the use of both
12 bentonite grout and sealant as was one of your
13 procedures brought up previously for
14 abandonment of these holes.

15 MS. MONTEITH: Your Honor, if I
16 may. That exhibit to which he was referring
17 is Exhibit SEI013 for the record.

18 CHAIRMAN BOLLWERK: All right. And
19 in terms of your interaction with the Wyoming
20 Department of Environmental Quality could you
21 describe that? You heard something about how
22 the NRC staff approaches the inspections that
23 it does relative to bore holes. What is your
24 interaction with the Wyoming Department of
25 Environmental Quality both in terms of

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1 paperwork to do and any onsite inspections
2 that they might do?

3 MR. SCHIFFER: I can talk, discuss,
4 about what our perimeter monitor requires.
5 And as with evidence previously, the wellfield
6 packages for each well unit detailed plugging
7 and abandonment records as we've seen today an
8 example of in that package. So they also want
9 to know if it will and where these holes are
10 located and that we have re-entered them and
11 plugged them in accordance with the
12 requirements in our permit.

13 CHAIRMAN BOLLWERK: And so you said
14 they look at the well packages.

15 MR. SCHIFFER: Yes, Judge.

16 CHAIRMAN BOLLWERK: Do they come
17 onsite and do an onsite inspection like the
18 NRC apparently does from time to time?

19 MR. SCHIFFER: Yes, Judge.

20 CHAIRMAN BOLLWERK: And how often
21 is that? I think the NRC said theirs is semi-
22 annual.

23 MR. GRIFFIN: I can probably help
24 with that. DQ inspects it. They'll have at
25 least an annual inspection. But in the case

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1 of for instance the Lost Creek mine they're
2 inspecting them monthly. I would expect that
3 when we're in operation that we will probably
4 see them there monthly.

5 CHAIRMAN BOLLWERK: All right.

6 JUDGE WHITE: For the plugging and
7 abandonment of historical holes, does the
8 State of Wyoming require you to submit
9 paperwork such as we saw in your exhibit to
10 some state office for each hole?

11 MR. SCHIFFER: Judge White, the
12 wellfield package for each mining that we've
13 described go forth to NRC as well as the State
14 of Wyoming. And our requirements for the
15 agencies are virtually identical. So, yes,
16 they will be looking at those records in
17 detail during review of the individual mine
18 unit hydrogeologic packages.

19 JUDGE WHITE: So there is some kind
20 of a bore hole record for each bore hole,
21 historic bore hole, Nubeth hole, that you guys
22 plugged with this information we saw on it.

23 MR. SCHIFFER: Yes, that is
24 correct.

25 JUDGE WHITE: Thank you.

1 CHAIRMAN BOLLWERK: Let me see if
2 the NRC staff has anything further they want
3 to say on this subject. And then we'll go to
4 the Joint Intervenor witnesses.

5 MR. BURGESS: The only thing which
6 we would like to add is that this information
7 is contained in FSEIS on page 443. Sorry,
8 page 442. We talk about breaches to the
9 integrity of the confining unit and we
10 describe about the hole plugging and then
11 cross refer to Strata 2011B which is the
12 technical report. And it also cross
13 references the SEIS 2.1 which in turns
14 references the Wyoming DEQ regulations.

15 CHAIRMAN BOLLWERK: Anybody have a
16 citation for the exhibit number that we're
17 talking about?

18 MS. MONTEITH: Exhibit number would
19 be SEI009. We're looking for the PDF page
20 number right now.

21 MR. PUGSLEY: It's SEI009A, 316.

22 CHAIRMAN BOLLWERK: All right.
23 Anything further the staff wants to say? Let
24 me turn then to the witnesses for the Joint
25 Intervenors. Is there anything further you

1 want to say on the subject of bore hole
2 abandonment?

3 DR. ABITZ: Just one final comment
4 on this.

5 CHAIRMAN BOLLWERK: Sure.

6 DR. ABITZ: Or not final comment
7 but one comment based on our filed testimony.
8 There's a disturbing statement that brought
9 this up in the FSEIS on page 337. It says
10 "The applicant will attempt to locate and
11 properly abandon all historical drill holes."

12 So there does not seem to be any
13 teeth in making sure that happens. And
14 because there are no teeth to make sure that
15 happens, the FSEIS conclusion that the impact
16 will be low is really unfounded unless there
17 is some way to demonstrate that that will
18 indeed occur.

19 CHAIRMAN BOLLWERK: Let me ask
20 staff a question. Given that license
21 condition which I understand you believe is
22 risk-based, if they have attempted to fill
23 bore holes and we're a year down the road and
24 you find another one, what are you going to
25 do? They've attempted it, but guess what?

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1 They weren't totally successful.

2 MR. SAXTON: But we're going to
3 require a good faith effort. And if they just
4 go out and say "We sent a couple of students
5 on Saturday afternoon to locate them using a
6 metal detector," that's not a good faith
7 effort. If they try to locate them versus GPS
8 and a backhoe and they still can't locate them
9 all and then eventually there is something
10 that's identified, we would look at it and
11 make sure that it wasn't one of those things
12 where they said they were going to try to
13 attempt and they didn't fulfill their
14 commitment.

15 CHAIRMAN BOLLWERK: Would they be
16 subject to enforcement action?

17 MR. SAXTON: Only if it's willful.
18 And that's a little bit harder. They may be
19 subject to violation, but again that's going
20 to be more difficult too because of the way
21 the license condition is written. We
22 indicated that make good faith effort.

23 The enforcement action generally
24 you have to go through the enforcement
25 division and that's more involved as far as

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1 willful or some other.

2 CHAIRMAN BOLLWERK: When you said
3 they might be subject to a violation, is that
4 different from enforcement action?

5 MR. SAXTON: Yes, you can get a
6 violation from not -- For instance, if you
7 didn't report your F-1 limits regularly or on
8 time and you go out there and inspect and we
9 see that you didn't file it, you'll get a
10 violation. What happens when you get a
11 violation, generally it's a level 4 which is
12 the lowest level. But you have to address
13 that.

14 Usually when you go on an
15 enforcement, it involves a lot more than --
16 You have to show some sort of criminal intent
17 or willful disregard and that sort of thing.

18 CHAIRMAN BOLLWERK: Does a
19 violation get reported to the NRC Office of
20 Enforcement?

21 MR. SAXTON: I don't know the exact
22 procedure. But it gets reported in the
23 inspection report. We would have to
24 acknowledge it and then you would have to have
25 some corrective active or root cause and show

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1 us that this won't happen again.

2 MS. MONTEITH: Your Honor, I don't
3 believe that our witnesses are qualified to
4 testify to the enforcement process. That
5 falls in a different division of the NRC.

6 CHAIRMAN BOLLWERK: Well, it
7 appears that he knows something about it. So
8 we'll take what he's given us. Thank you.

9 MS. MONTEITH: It may not be
10 accurate.

11 MR. GRIFFIN: Your Honor, may I add
12 to that as far as to the identification of the
13 bore holes and plugging in?

14 CHAIRMAN BOLLWERK: Okay.

15 MR. GRIFFIN: I believe that
16 license condition is worded the way it is and
17 we will attempt to locate them is recognizing
18 that there are a large number of holes out
19 there. And we may not be able to find every
20 single one of them.

21 But if we aren't able to find them
22 before we do a pump test, they should show up
23 in that pump test. If they do not and we were
24 to go into operation, the concern here is that
25 they would cause a vertical excursion.

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1 We have a license condition that if
2 we have a vertical excursion we have to stop
3 injection in that mine unit until we determine
4 the cause of it. So we have layers of defense
5 there if there is a bore hole that gets by us.

6 CHAIRMAN BOLLWERK: Okay.

7 MR. DEMUTH: Judge, if I might add
8 to that. There seems to be a slight
9 presumption that bore holes that are a problem
10 exist. And if I might, we've done over 40 of
11 these pump tests. We do not have bore holes
12 that are a problem. The exception is that you
13 do.

14 So I would suggest we have geologic
15 information. We have hydrologic information
16 wherein we show differences in water levels
17 between formations. That in itself if we had
18 bore holes that were already free-flowing
19 communication we would not see differences in
20 water levels.

21 So we have multiple lines of
22 evidence to suggest that we don't have a
23 problem. And then as Mr. Griffin said, we
24 also will do a pump test as well.

25 CHAIRMAN BOLLWERK: All right.

1 Yes.

2 MS. MOORE: Your Honor, I would
3 just like to add that the SEIS does not assume
4 that all the bore holes will be plugged and
5 there would be no excursions. The SEIS does
6 account for the fact that there could be
7 excursions due to confinement issues or bore
8 holes. And we take that into account when we
9 make our impacts determination.

10 CHAIRMAN BOLLWERK: All right.
11 Again, I think the problem from the
12 Intervenors' perspective to paraphrase Yoda
13 "There is no try. There is do." And I think
14 they want to make sure that it gets done. But
15 that's where we're at here.

16 Anything further that the Joint
17 Intervenors' witnesses want to say on the
18 subject?

19 DR. ABITZ: Nothing at this time.

20 CHAIRMAN BOLLWERK: Okay. Judge
21 Cole, anything that you'd like to say?

22 JUDGE COLE: No. You've generally
23 covered it.

24 CHAIRMAN BOLLWERK: All right.
25 Judge White, anything you have on this subject

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1 or something else if you want to change the
2 subject here?

3 JUDGE WHITE: No. You've already
4 said you had no further comment. I was just
5 going to ask before Intervenors' witness
6 brought it up whether you would consider the
7 preproduction pump test as an demonstration.

8 Your statement was that attempt to
9 abandon indicated that there would be no
10 demonstration of completion. Would you agree
11 though that the pump test is a way to
12 demonstrate whether or not there are abandoned
13 wells within the site?

14 DR. ABITZ: I will state again what
15 I stated in my testimony that a pump test of
16 a short duration such as 72 hours and even a
17 week is really no demonstration of no
18 connectivity between the horizons when you're
19 running an extraction process in a wellfield
20 for two or three years. So I stand on that.
21 There's no science presented that shows there
22 will be no communication between the aquifers
23 when you run a production center for two or
24 three years.

25 JUDGE WHITE: So you would

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1 disagree.

2 DR. ABITZ: I would disagree,
3 correct.

4 JUDGE WHITE: That's all I'm trying
5 to establish. Thank you.

6 There are just two things that I
7 wanted to ask. I'll actually start with
8 Intervenors' witnesses because I did mention
9 that I wanted to give you folks a chance to
10 comment on some of the testimony that staff
11 offered earlier. And two in particular, but
12 I'll start with one, I would like to know if
13 you have any comments on Dr. Burgess' analysis
14 of the hydrologic effects that might be
15 expected if in fact there were unlocated and
16 unplugged bore holes within the mining area.

17 DR. ABITZ: The only comment I
18 would have on Dr. Burgess' analysis was really
19 with a follow-on from NRC staff. I noted that
20 even though there is a flow into the
21 extraction wells, the injection wells if they
22 plug, could build up enough pressure where
23 there would be a potential for a vertical
24 excursion in that area. So that would still
25 open the door for vertical excursions around

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1 injection zones if there were problems. So I
2 would keep that open.

3 JUDGE WHITE: Despite the
4 hydrologic head in the upper aquifer as was
5 pointed out by Mr. Saxton that those
6 excursions could still happen.

7 DR. ABITZ: Correct. I have not
8 seen what the pressures could build to if
9 there was plugging. I do not know at what
10 pressure they would shut off the well and if
11 that pressure would exceed the 100s -- I
12 forget what the unit was, but approximately
13 100 in the SM over the ore zone. So we don't
14 have data in the FSEIS to my knowledge to
15 evaluate that scenario.

16 JUDGE WHITE: Or assuming that
17 unplugged bore holes will exist, but it's
18 important to understand what the effects of
19 them would be if they did exist. Any comments
20 from staff to follow?

21 MR. BURGESS: Yes. If I could just
22 add to that. The problem with injection bore
23 holes when they do lose some of their capacity
24 is that you get the plugging very close to the
25 well bore. It doesn't extend very far out

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1 from the well bore in general. So those high
2 pressures would be restricted to a very
3 limited area around that injection well bore.

4 JUDGE WHITE: Any follow-up?

5 DR. ABITZ: My follow-up on that
6 would be we still see vertical excursions and
7 there's a reason for that. I can't put my
8 finger on exactly what the mechanism is. We
9 know it could be unplugged bore holes. We
10 know it could be bad casings. We know it
11 could be thinning of the units.

12 The record shows there still are
13 excursions. So although many of them may be
14 controlled with the methods being discussed
15 here, it's not failproof.

16 JUDGE WHITE: Any other comment on
17 that particular issue?

18 MR. BURGESS: I think the only
19 comment is that as Ms. Moore indicated the
20 potential for excursions has been included in
21 the FSEIS.

22 JUDGE WHITE: My next question
23 again is an opportunity for Intervenors'
24 witnesses to comment on Dr. Johnson's analysis
25 of the experimental studies reported by Fox

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1 and others in Joint Intervenors' Exhibit 058.

2 DR. LARSON: I'd like to comment.

3 I have two comments on Dr. Johnson's
4 interpretations of those studies. First, the
5 study that was referenced in the previous
6 testimony, essentially what they were doing
7 was under pristine conditions. So they were
8 taking these batch reactor systems and running
9 them under various conditions.

10 Essentially, you have ferrihydrite
11 cores and you kind of stress test these under
12 various conditions and you see how that
13 behaves. Under those conditions, they saw
14 that when it's in this phase when you have a
15 bunch of calcium and a bunch of carbonite what
16 happens is it complexes and it becomes
17 unreactive.

18 Now when we take that out to the
19 field system where it's substantially more
20 complex, you have to think about you don't
21 have peer phase ferrihydrite or you
22 potentially could or you potentially couldn't.
23 You don't really know. It could be different,
24 iron hydroxide. The type of iron hydroxides
25 are incredibly complex of what's in the actual

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1 environment. So that's the first point I
2 wanted to make on that.

3 The second point is that we know
4 these systems are very complex. And the
5 reason that we do research and the reason that
6 we study these things in laboratory
7 experiments is that we want to develop models.
8 So we use this data from this research to
9 develop models to try to understand and
10 explain these complex systems so that we can
11 better make decisions.

12 That's why we do these models and
13 these predictions so we can kind of use those
14 predictions to help us make better decisions
15 with respect to how these systems are actually
16 behaving. That's my comments on her
17 testimony.

18 JUDGE WHITE: Dr. Johnson.

19 DR. JOHNSON: Yes. I would just
20 like to make sure that it's understood that in
21 these experiments which I agree are controlled
22 experiments in the laboratory with pure phases
23 they showed that by changing these parameters
24 you could alter the degree of reactivity. But
25 in no case did they alter the parameters such

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1 that they created a nonreactive uranium
2 species so that there was no adsorption.

3 And I agree wholeheartedly that
4 these studies are done to further understand
5 and further refine our knowledge on these, on
6 uranium and how it behaves in the natural
7 geochemical system. And furthermore, I think
8 it's very likely that the studies that are
9 being done now, both currently and
10 contemporary, will at some point inform best
11 practices when it comes to restoration, in the
12 wellfield pattern itself between the
13 production and injection well because we're
14 understanding more and more about that.

15 But where I disagree that these
16 studies don't show that uranium is a
17 nonreactive species. Therefore, it would make
18 a good indicator parameter for excursions.

19 JUDGE WHITE: Do you have a reply?

20 DR. LARSON: I would disagree with
21 that and especially since we don't have the
22 data to look at to see if there's even any
23 ferrihydrite bore cores and even some of these
24 systems know where it's even at, what type of
25 geology, what type of mineralogy. Making

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1 claims with respect to that it's nonreactive
2 without having the essential data collected,
3 it's a difficult claim to make.

4 JUDGE WHITE: Any other comment on
5 that issue?

6 DR. JOHNSON: Yes, Judge White.
7 I'd just like to say that the idea that
8 there's no core is hardly realistic
9 considering the materials out there. And iron
10 hydroxide is ubiquitous in these kinds of
11 settings.

12 I agree that there's a lot of the
13 details in terms of exactly how much and where
14 and different nuances on the mineralogical
15 form and how much calcite goes along with it
16 and so on. We certainly don't know that and
17 it changes from spot to spot as you go on.
18 But we certainly understand in general what
19 minerals are in these sediments.

20 DR. LARSON: Dr. Johnson is exactly
21 right. It does change. It's highly variable
22 in some of these systems. And she's also
23 right in saying that with respect to some of
24 these minerals it depends on what type of
25 minerals are there. And that has significant

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1 implications with respect to how they interact
2 with certain species in the water.

3 You can have different types of
4 iron hydroxides that will react completely
5 different with uranium. We know that from the
6 literature. So we can use some of this
7 information and collect some of this data that
8 would help assess some of these situations.

9 JUDGE WHITE: Any other comment on
10 this issue?

11 DR. ABITZ: If I could comment on
12 two things with respect to this discussion on
13 uranium. We have discussed this before. The
14 first is we have to look at the historical
15 record. Excursions occur very frequency at
16 ISL mining sites. So uranium does make it to
17 the monitor well ring and beyond. And we also
18 discussed the fact that these sites become
19 saturated and uranium continues to pass by
20 once those adsorption sites are saturated.

21 And what we don't have here are
22 data from the Ross mining project that shows
23 what the capacity is in the aquifer for
24 adsorption of uranium and how that compares
25 with the expected concentrations and durations

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1 of lixiviant injection to come up with a mass
2 bounds here on what sites are available and
3 what concentrations would potentially reach
4 the monitor well ring. Data shows that
5 uranium gets out.

6 So without that kind of data to
7 really assess this, we can talk about all the
8 studies we want. But the bottom line is we
9 don't have data to look at this in a
10 quantitative fashion for the Ross project.

11 DR. JOHNSON: Judge White.
12 Contention 3 addresses the appropriate
13 indicator parameters that are used to detect
14 excursions. And certainly the record shows
15 and there's been several brought into exhibits
16 that there are certain situations that have
17 been on excursion status for a certain amount
18 of time and elevated uranium is measured in
19 those wells.

20 That's not the point here as I see
21 it. The point is really what's the best and
22 appropriate indicator parameter. And I think
23 that our testimony, both our direct and
24 rebuttal, has shown that uranium is not the
25 best indicator. There are others that are

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1 better like chloride and electroconductivity
2 and alkalinity.

3 But also in several of the examples
4 that were discussed by the Intervenors that
5 showed uranium in these excursion wells, the
6 record also shows that they weren't detected
7 on the basis of uranium. The conventional
8 excursion parameters were used to detect the
9 excursion.

10 And then during the course of that
11 well being on excursion status -- and Mr.
12 Saxton can explain some of the details about
13 the complexities and so on -- uranium did show
14 up. But in all cases they were recovered and
15 the uranium concentrations declined in
16 accordance with that recovery process.

17 DR. ABITZ: If I could respond to
18 that. We heard a bit earlier Dr. Johnson
19 talked about sulfate and alkalinity not being
20 perhaps the best excursion indicators because
21 they are reactive. They can form
22 precipitates. But their concentrations are
23 far enough elevated in lixiviant compared to
24 the monitor well ring that they would still be
25 good indicators. And that is exactly the case

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1 with uranium also.

2 Even if there is minor adsorption
3 of uranium as it makes its way to the perimeter
4 monitor well ring, some of those monitor well
5 rings are going to have levels of uranium that
6 are below detection when the amount of uranium
7 in lixiviant can be 100 milligrams per liter.
8 So we're talking four or five orders of
9 magnitude higher difference here. If the
10 logic is that sulfate and chloride can still
11 be used, then that logic applies to uranium,
12 too.

13 DR. JOHNSON: Judge White, to be
14 clear, there are reactions that can affect
15 alkalinity and sulfate. They don't even --
16 Those reactions in this type of environment,
17 in this type of geochemical environment, in my
18 opinion wouldn't even come close to the
19 reactivity that you could see with uranium.

20 Now these are within the controlled
21 studies and so on. They show up to 80 some
22 percent adsorption. The field study in
23 wellfield A shows the retardation of uranium.
24 That retardation happens pretty close to that
25 production well that is of concern. And even

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1 after all this time they've not shown up in
2 those monitoring wells.

3 Even though I appreciate the
4 studies that are being done to try to
5 understand in more detail the adsorption and
6 the complexation of uranium, we're not even
7 close to turning that into a very predictive,
8 dependent and reliable excursion parameter.

9 DR. ABITZ: Again, I professionally
10 disagree with Dr. Johnson because uranium has
11 been used as an excursion indicator in the
12 past. And we haven't seen any numbers to show
13 what the ratio is of sulfate and alkalinity in
14 the lixiviant compared to the monitor well
15 ring. And then in that ratio number of
16 whatever it is, 100 or 1,000 it's higher than
17 what uranium would be at the monitor well
18 ring. So until we see that kind of
19 information, I don't believe that the book is
20 closed on this.

21 JUDGE WHITE: Is the book closed on
22 this discussion?

23 MR. GRIFFIN: Your Honor, may I add
24 a little bit of information?

25 JUDGE WHITE: Of course.

1 MR. GRIFFIN: NRC did a report in
2 2009. They looked at groundwater impacts from
3 ISL mining. And one of the things they looked
4 at was excursions. Now it's been said that
5 there are many excursions caused by these
6 operations.

7 Just to put some numbers to that,
8 this is SEI004B. At the time of this report,
9 COGEMA Irigaray Christianson Ranch which is
10 currently Willow Creek had had 31 excursion
11 events. Peer Smith Ranch Highland had had 12.
12 And we're talking about horizontal excursions.

13 CHAIRMAN BOLLWERK: What page are
14 you reading from?

15 MR. GRIFFIN: I'm sorry. It's page
16 seven in the document. I think it's PDF page
17 seven also.

18 CHAIRMAN BOLLWERK: All right.

19 MR. GRIFFIN: And on page eight,
20 Crow Butte had had 20 excursions. So these
21 are infrequent occurrences. We have shown
22 that we can pull them back when they do occur.

23 Also as related to the question on
24 whether uranium should be an excursion
25 indicator, I'm not sure it's been mentioned up

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1 to this point. But the State of Wyoming
2 requires that if we have an excursion that we
3 haven't recovered within 30 days, we need to
4 run a full sweep, a full Guideline 8 sweep,
5 which includes uranium.

6 So if it's a quick hit with
7 chloride and we pull it right back in the next
8 sample, then they're not going to go make us
9 do that sample. But if it goes 30 days, we're
10 going to look at everything that's there, not
11 just chloride and alkalinity and conductivity.

12 JUDGE WHITE: Any follow-up on
13 those comments? Anything else that you have
14 to discuss here?

15 CHAIRMAN BOLLWERK: Judge Cole, do
16 you have any follow-up for the panel? Judge
17 Cole?

18 JUDGE COLE: Yes.

19 CHAIRMAN BOLLWERK: Do you have
20 anything for the panel?

21 JUDGE COLE: No.

22 CHAIRMAN BOLLWERK: All right. I
23 think I do not as well. At this point, I
24 believe that we've have completed this portion
25 of Contention 3 and with the testimonial

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1 portion of our proceeding.

2 Before you all stand up and run
3 off, let me take one second to thank all of
4 you on behalf of the Board. The information
5 you provided us over the last two days has
6 been extremely useful to us in deciding the
7 difficult issues we have to decide in this
8 case. And I know you've all been forthright
9 with us.

10 And the discussions we've had
11 especially in the larger groups have been very
12 professional and evenhanded. And we do
13 appreciate that from all of you.

14 JUDGE WHITE: Thanks, too, to all
15 of you.

16 CHAIRMAN BOLLWERK: Your service to
17 the Board, we appreciate it very much. Thank
18 you very much all of you. All right.

19 Let's talk with counsel for a
20 couple of seconds. In terms of schedule, I
21 think at this point we're pretty much caught
22 up with all the exhibits in terms of
23 everything that's been revised. We do have a
24 couple of dates we need to be made aware of.

25 The first one we've put the

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1 transcript in for three days. So I'm assuming
2 this is Wednesday, right. Probably Monday
3 we'll be getting this in. And probably on
4 Friday, you'll get yesterday's transcript in.

5 So why don't we look for any
6 transcript corrections by Tuesday, October
7 14th. That gives everybody a week. You
8 should be aware I guess that Monday is --

9 MS. ANDERSON: Your Honor, just to
10 clarify that the transcript will be filed in
11 the electronic filing system.

12 CHAIRMAN BOLLWERK: Yes. We'll put
13 it into the electronic file, the electronic
14 hearing docket. Yes. So Tuesday, October
15 14th, would be for transcript corrections.
16 Two things I would ask you. Actually, three
17 things I would ask you to look at carefully.

18 One is the exhibits. If there are
19 any questions in the transcript about the
20 status of an exhibit, make sure you bring that
21 to our attention.

22 The second thing is particularly in
23 looking at transcript corrections if you see
24 the -- There were a lot of folks up here. I'm
25 sure the court reporter is doing the best he

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1 can. But if you see what you think is mis-
2 attributed testimony in one of these larger
3 groups or otherwise, make sure that that's
4 something you bring to our attention.

5 The third thing I would say is
6 we're not here to write the transcript. You
7 might have wished you would have said --
8 There's a lot of things I probably wished I
9 would have said a little better. Just go
10 ahead and make corrections. Obviously, if
11 there's a not missing or no missing, something
12 is incorrect. But don't try to go ahead and
13 add any terms and making it sound better.
14 Everybody's prose could be a little bit
15 improved.

16 MR. FETUS: Your Honor, just to
17 clarify. Would you like us to file a notice
18 if there is something significant or just to
19 submit our corrections to everybody?

20 CHAIRMAN BOLLWERK: Actually, what
21 I think is you're getting to the point I was
22 just going to get it. If we could arrive
23 hopefully for the most part at joint
24 transcript corrections that would be the
25 optimum. If everyone can share them and if we

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1 have no objections to them, it makes it very
2 easy for the Board to adopt them.

3 If you find that the 14th is not
4 enough time for that because there is some
5 delay with the transcript or whatever, let us
6 know. But let's try to stick with that date
7 because it would be the Board's intention
8 assuming that everybody is happy with the way
9 of the status of the exhibits and with the
10 transcript corrections to close the record
11 shortly after that. That's where we'd be
12 headed.

13 Any questions about the transcript
14 corrections? Again, do the best you can. But
15 it isn't really necessary to rewrite the
16 transcript. And there are some folks that
17 seem to want to do that. And it's really not
18 useful.

19 We do want to make it accurate as
20 we can, not necessarily to make it a good read
21 which is what it is. We said it and we've got
22 to live with it.

23 In terms of the proposed findings
24 of fact, the general schedule that we've had
25 for some time indicates that those are due on

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1 Monday, November 3, 2014. Response of
2 findings of fact are on Monday, November 17,
3 2014.

4 And then I believe the Board's date
5 of issuing a decision is in early January
6 which let's see if I can find the date really
7 quickly. It's I believe January 9, 2015.

8 I should tell you that for some
9 reason we're not going to meet that date we
10 will go on the record and let the Commission
11 know and you know that there's a delay of some
12 length. But we are going to do our best to
13 make that date. Again, January 9th or
14 thereabouts is when we hope to issue something
15 in this case in terms of the initial decision.

16 I'm trying to think if there is
17 anything else we should anticipate. Anything
18 that any of the counsel has in procedural
19 concerns about anything at this point?

20 MR. PUGSLEY: No, Your Honor.

21 MR. HARPER: No, Your Honor.

22 CHAIRMAN BOLLWERK: No. All right.

23 MR. FETUS: No, Your Honor.

24 CHAIRMAN BOLLWERK: All right. On
25 behalf of the Board I would like to thank all

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1 of you as we thanked the witnesses. You all
2 put a lot of work into this case clearly.

3 The initial statements of position
4 and the rebuttal statements indicated that you
5 obviously thought through your positions very
6 clearly. You've done the best you can I think
7 to support it with the evidence you believe
8 will carry the day for you. In the end, we'll
9 see how that works out.

10 But I think you all have done what
11 you could do to put the best case in front of
12 the Board that you could. We very much
13 appreciate your efforts. And we'll try to do
14 the best we can to make a decision that even
15 if you don't agree with it you'll find
16 something that makes some sense. You can then
17 take it to the Commission. In the end,
18 they're the ones that decide whether we're
19 correct or incorrect. That's the way the
20 system works.

21 With any of these proceedings,
22 there's a lot of people that are involved in
23 the background and sometimes in the foreground
24 depending on how the technology is working.
25 And I want to acknowledge a couple of those

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1 folks right now.

2 Kathleen Schroeder and Alana Wase
3 are law clerks. One has been over there
4 putting up the exhibits and the other one has
5 been over there keeping track of what's going
6 on with the Go To Meeting that we've been
7 doing with Judge Cole back in Rockville as
8 well as a number of other things, both to
9 them. And we couldn't have done this without
10 them. We very much appreciate their efforts.

11 Karen Valloch, our administrative
12 assistant, who is back there someplace. If
13 you have a glass of water in front of you, you
14 can thank Karen as well as having this meeting
15 area as well. She's done a tremendous job
16 putting together and making sure that we can
17 all come together in an environment that I
18 think has been conducive to having the
19 hearing.

20 The concrete floors are
21 interesting. They actually talked about
22 getting some carpet in here for next time.
23 But that probably won't be for us, but whoever
24 the next person in here is.

25 Joe Deucher and Andy Wilkie are IT

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1 specialists. Andy is in Rockville helping
2 Judge Cole. Joe is over here behind the table
3 that you see. We do use some technology here.

4 Judge Cole, were you satisfied with
5 the way things worked out more or less?

6 JUDGE COLE: More or less.

7 CHAIRMAN BOLLWERK: More or less.

8 Okay, we'll go with that. We did have some
9 hitches from time to time. You heard the
10 problems we had with the speakers.
11 Apparently, we found that the NRC's system for
12 doing conference calls and the one they had
13 here were conflicting with each other and
14 that's why things were coming and going. But
15 we solved that problem in the end. But we
16 couldn't have done it without Joe and Andy and
17 we really appreciate their efforts.

18 The court reporter, Brandon
19 Paterson, we appreciate your efforts as well.
20 In the end, hopefully, we'll get a great
21 transcript and everyone will be happy with it.

22 Our folks from NRC Security, Gary
23 Simpler and Dennis Brady, who provided us
24 support here to make sure that we were all
25 secure, both here and on our limited

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1 appearance session out at Sundance. We
2 appreciate them coming and spending the time
3 with us and making sure that everything went
4 smoothly.

5 They were able to help us through
6 the Campbell County Sheriff's Department and
7 Captain Roy Seeman to get Corporal Paul
8 Pownall -- I'm going to mispronounce it -- P-
9 O-W-N-A-L-L. We'll get it spelled right in
10 the record anyway. Office Janaia, J-A-N-A-I-
11 A, Mueller and Officer Dan Maul who were all
12 here for two days supporting us. Thank you
13 very much for your efforts. We had no reason
14 for concern here in terms of the safety and
15 security of what we were doing.

16 And then here at the CAM-PLEX
17 facility which I frankly found to be very good
18 in terms of the purpose for which we were
19 putting it, Barbara Steele Stuart, S-T-U-A-R-
20 T, who is the marketing coordinator who worked
21 with Karen a lot in setting this up.
22 Recently, she's been replaced by Alicia
23 Torres, the Assistant Facilities Coordinator,
24 who's done a lot of work in helping us out.
25 I think one of the things she did was help you

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1 all find alternate quarters. She was very
2 helpful in doing that.

3 And then the technical folks for
4 the Technical Director Adam Skoglund, S-K-O-G-
5 L-U-N-D, and all the others, two or three
6 folks, that we had in here trying to get this
7 whole thing to work together in terms of the
8 monitors, the AV, all the things that you saw
9 and we used. I think it worked pretty well on
10 the whole. We really appreciate their
11 efforts.

12 Anything you want to say, Judge
13 White?

14 JUDGE WHITE: Just to echo my
15 thanks to all the folks you mentioned and to
16 the witnesses and counsel.

17 CHAIRMAN BOLLWERK: Judge Cole, are
18 you there?

19 JUDGE COLE: Thanks for your help.
20 Much appreciated.

21 CHAIRMAN BOLLWERK: All right. I
22 think Judge Cole, it's going on 8:00 p.m. out
23 there. I think he's ready to call it a day.

24 And again, I know the effort that
25 you all put into this, a lot of effort. We

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1 really appreciate what you put in front of us.
2 It's been a good hearing I think. And now the
3 onus is on us to do something with all the
4 information you provided.

5 Again, we thank you. Just as a
6 last reminder, those that are going on the
7 site trip tomorrow, it's still set for 8:00
8 a.m. Is that correct? Is it still on?

9 MR. KNODE: Yes. We should discuss
10 it after the hearing.

11 CHAIRMAN BOLLWERK: We'll take that
12 offline. If we do it, it should be at 8:00
13 a.m. at the Strata offices. But maybe that's
14 not going to happen. We'll talk about that
15 offline. But in any event, thank you all and
16 at this point we stand in recess. Thank you.
17 Off the record.

18 (Whereupon, at 5:46 p.m., the
19 above-entitled matter was concluded.)
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