

PG&E DIABLO CANYON DECOMMISSIONING ENGAGEMENT PANEL

PUBLIC MEETING

COUNTY GOVERNMENT CENTER

BOARD OF SUPERVISOR'S ROOM

1055 MONTEREY STREET

SAN LUIS OBISPO, CALIFORNIA

WEDNESDAY, MARCH 13, 2019

6:34 P.M. - 9:49 P.M.

REPORTED BY MELISSA PLOOY, CSR #13068

1 MR. ANDERS: Good evening. My name is Chuck
2 Anders. I would like to welcome the panel and the
3 public to the eighth public meeting of the Diablo Canyon
4 Decommissioning Engagement Panel. The topic for tonight
5 is spent fuel storage. Before we begin, I'd like to
6 introduce Adam Pasion, who is going to give us a safety
7 briefing.

8 MR. PASION: Good evening. We have some
9 preassigned safety roles this evening. So those with
10 safety roles, please raise your hand. Thank you. If we
11 experience an earthquake this evening, let's all duck
12 and cover as best as you can. After the shaking
13 subsides or if we need to evacuate for any other reason,
14 we'll exit through the rear doors here. You can go left
15 there, and to make an additional left or right, you'll
16 be on Monterey Street and then we also have an
17 additional exit here. To the left of the dais, you can
18 exit out the building that way. Thanks, Chuck.

19 MR. ANDERS: Thank you, Adam. I'd also like to
20 remind everyone that this meeting is being live-streamed
21 and anyone that is watching has the opportunity to
22 submit comments on Diablo Canyon Engagement Panel
23 website.

24 So the next item on our agenda is a report from
25 Tom Jones on PG&E's status on filing of the panel vision

1 report. Tom.

2 MR. JONES: Thanks, Chuck. Three main things
3 to make the panel and the public aware of in the coming
4 30 to 60 days, it's actually a very busy March for this
5 project, the proceeding and nuclear decommissioning in
6 California. So first is that last Friday on the 8th, we
7 filed the panel's strategic vision document with the
8 Public Utilities Commission via motion. So we'll wait
9 the PUC's acceptance of that and how they determine to
10 handle the proceeding going forward.

11 Second is the CPUC issued an order for some
12 additional supplemental testimony on some issues
13 submitted by Mothers For Peace and that was on reactor
14 embrittlement from an operational issue, but, still, it
15 was an order from the CPUC. So -- and there's also some
16 additional questions about used fuel strategy and so
17 those will be submitted this Friday, March 15th to the
18 Utilities Commission. Those documents will be served in
19 the service list, they'll be on our website and the
20 panel will receive an update on those items, as well.
21 So we're 72 hours out from getting additional -- or
22 excuse me -- 48 hours out from getting additional
23 information on those two topics.

24 And then, lastly, and I know the panel, many
25 have been following San Onofre's decommissioning very

1 closely, as are members of the public. On March 21st,
2 the State Lands Commission is having a long awaited
3 environmental meeting to adopt, potentially, their
4 environmental impact report on how to decommission the
5 facility. So that's one of the major discretionary
6 permits. It's a huge hurdle for San Onofre to achieve
7 that and that will allow them to then finish up with the
8 Coastal Commission and have those discretionary
9 approvals from the State of California to then begin
10 work on the project. So that's one of their two major
11 dominoes to go before they can do work.

12 Just a reminder for folks, the plant stopped
13 operating in 2012. They decided in 2013 to no longer
14 operate and they've been in that decommissioning
15 planning phase those five and a half, six years and
16 you'll find that that matches what we've been sharing
17 with the public and this panel about how we intend to
18 take advantage of the 2020 -- or 2016 time frame when we
19 announced to when the project got rolling in '17. We
20 want to use those five years, six years to obtain all
21 those permits.

22 So it's the single most important benchmark for
23 us on how the State of California, given today's rules,
24 will treat decommissioning and so we're very interested
25 and we'll be attending that proceeding and looking for

1 lessons learned as we start to inform our permitting
2 strategy.

3 MR. ANDERS: Thank you, Tom. I would now like
4 to introduce our new panel member. Jim Welsch will
5 assume the single PG&E seat on the panel in place of Jon
6 Franke. Jim is vice-president of Nuclear Generation and
7 chief nuclear officer and as of March 1st will be
8 responsible for all decommissioning activities at Diablo
9 Canyon Power Plant and, also, Humboldt Bay. Jim has 40
10 years of nuclear and energy industry experience and
11 started his career in the nuclear Navy. He is the lead
12 contact with the NRC and is a member of a Nuclear
13 Facilities Decommissioning Master Trust Committee.

14 Jim's bio's on the website for anyone who wants
15 to take a look at it and, Jim, do you have any words for
16 us?

17 MR. WELSCH: Thank you, Chuck. First I'd like
18 to -- this is my first meeting and I just want to
19 express my appreciation to this engagement panel. Very
20 warm welcome and I really appreciate the opportunity to
21 be part of this panel. My role is a little unique on
22 the panel. It's really not -- I'm not here to help
23 shape the work of the engagement panel, but it's so
24 important that I hear and really have a good
25 understanding of the intent behind and what the

1 engagement panel will work on and make suggestions for
2 PG&E.

3 You know, so this recent additional
4 responsibility relative to decommissioning, I really
5 welcome the opportunity to serve in this capacity. As
6 Chuck mentioned, I've worked at Diablo Canyon for 35
7 years. My wife is a lifelong Arroyo Grande resident. I
8 have four children and nine grandchildren on the Central
9 Coast. So aside from being the PG&E officer assigned
10 for all things nuclear, I have a personal interest and I
11 believe a good understanding of what this process should
12 be and what it can mean to this community. So I welcome
13 this opportunity.

14 My job, again, is to listen and make sure that
15 we understand well the recommendations of this
16 engagement panel and that we can carry those forward as
17 we work through our other key stakeholders and with the
18 California Public Utilities Commission. Thank you,
19 Chuck.

20 MR. ANDERS: Thank you very much.

21 MR. KARLIN: Chuck, if I might, I want to -- I
22 think I speak for the committee in saying we want to
23 thank Jon Franke for his hard work and good faith in
24 participation in our panel through the last year and
25 he's been a really good member and I think we all look

1 forward to, Jim, your participation and help, as well.

2 So thank you, but we want to thank Jon for his help.

3 MR. ANDERS: Thank you, Alex.

4 Okay. Just a quick overview of tonight's
5 agenda. We're very fortunate to have with us tonight
6 Dr. Robert Budnitz with the Independent Safety Committee
7 who is going to discuss the Independent Safety Committee
8 activities and, also, spent fuel storage. We're going
9 to have an overview of the spent fuel storage strategy
10 and schedule from PG&E and then we'll have the
11 opportunity, also, for public comment immediately after
12 the break, which will happen approximately 8:30.

13 So I just want to mention the fact that this
14 meeting is a continuation of a dialogue and discussion
15 with regard to spent fuel activities of the panel on
16 January 22nd, 23rd, held two all-day-long workshops
17 where they heard from experts and the public on spent
18 fuel issues. So without any ado, I want to introduce
19 Dr. Robert Budnitz.

20 Bob, if you could come on up, take the podium,
21 I'm going to ask you to introduce yourself and, also,
22 your experience and background dealing with nuclear
23 issues, especially at Diablo Canyon.

24 DR. BUDNITZ: Okay. I have to speak into the
25 mic because it's being recorded and broadcast or

1 something, huh? So my first reaction is it would be
2 really nice if I could face you and you, but,
3 apparently, I can't. No. I see it up there, but you
4 understood what I said.

5 Okay. Just briefly, I showed up in Berkeley
6 about just over 50 years ago as a post-doc at the
7 Lawrence Berkeley Laboratory and that's where I am now;
8 although, I had 25 years in between in which I wasn't
9 there. I had a one-man consultancy. What I do for a
10 living is nuclear power plant safety. The projects I've
11 done over the years have mostly been working either with
12 the utility industry here and abroad on trying to
13 understand safety problems that arise with large
14 reactors all over the world and I have worked all over
15 the world and tried working with them and other experts
16 to try to figure out if there's a safety problem, what
17 to do to make it go away or to reduce its impact, and
18 I've also done an awful lot of work with the Nuclear
19 Regulatory Commission trying to help them understand how
20 to regulate safety better. I had one two-year interval
21 back in the '70s at the NRC. I was on the NRC staff for
22 a couple years, in 1978, '79, '80. The accident on
23 Three Mile Island occurred right in the middle of that,
24 and for the first period there, I was the deputy
25 director of the office of research and then I became the

1 director of the office of research, which, at that time,
2 as it still does, has research programs on all the
3 different aspects of reactor safety and other NRC
4 missions, and I left the NRC in 1980 not because I love
5 that agency, I really did -- not because I didn't love
6 the agency, but we couldn't wait to get back to
7 Berkeley. We would have crawled back to Berkeley on our
8 hands and knees after two years in Washington. That was
9 personal. It wasn't because of that agency, which I
10 loved, and then I had a one-man consultancy after having
11 been in LBL, and a few years ago, I turned that in and
12 now I'm at LBL again. This is a big laboratory on the
13 hill above the campus in Berkeley and a year and a half
14 ago I retired and I'm still working because they brought
15 me back and I have a whole lot of other things I'm doing
16 that aren't part of them, too.

17 So that's just a brief background about who I
18 am. I'll explain to people that don't know what our
19 committee is. Those of you that know a lot about it
20 will be bored to tears the next minute or two. The
21 committee was established almost 30 years ago. It was
22 a -- it came from members of the public that wanted to
23 have an independent oversight of the safety of the power
24 plant, Diablo Canyon Plant, because an independent
25 oversight that wasn't the Nuclear Regulatory Commission

1 and was independent of everybody else was thought to be
2 a valuable addition to the array of groups and people
3 looking at that -- at that plant and it's been there --
4 well, we just issued our 29th annual report. So you can
5 see it's coming up to 30 years.

6 There are three of us. We serve a three-year
7 term each. They overlap. One gets appointed one year,
8 then the next year, next year, three-year terms. Per
9 Peterson is appointed by the governor. One of us is
10 appointed by the governor. I'm the attorney general's
11 appointee. I was appointed the most recent time by
12 Kamala Harris; although, going back, because I've had
13 four terms, my first appointment was by Jerry Brown when
14 he was the attorney general. I'm the attorney general's
15 appointee and Peter Lam is the appointee of the chairman
16 of the California Energy Commission.

17 So we're appointed by three different state
18 officials, governor, attorney general, Energy Commission
19 chairman, and we write public reports, which are
20 available to everybody in the world publicly when we've
21 adopted them. The way we do our business is we go to
22 the plant about once a month, a couple of us. I
23 probably am there, say, six or seven times a year
24 because I go in between, too, and we look at almost
25 everything we can think of that affects the safety of

1 the plant. If there's a problem with the reliability of
2 valves, we'll look at that. If there's a problem or an
3 issue with the training of operators, we'll look at
4 that. Even if there isn't a problem, we have a long
5 list of things we look at that isn't a problem just
6 because we do that routinely in order to make sure we
7 understand what's going on. If there's a problem at
8 another plant somewhere in the world and we learn about
9 it and it might apply to this plant, we'll ask the
10 question about, gee, have you looked at that and does it
11 apply? Often it doesn't, sometimes it does. Usually,
12 if it does, they've done something about it, in fact,
13 essentially always, and then we'll look to see whether
14 that -- how that came out, and besides those
15 fact-finding meetings, we have three public meetings
16 every year, one in October, one in February, one in
17 June, for two days. We hold it in Avila and -- Avila
18 Beach, and at those public meetings, anybody in this
19 room -- in fact, anybody in the room can come and it
20 largely consists of presentations by PG&E experts that
21 we ask to present to us on Topic Number 3 or Topic
22 Number 17. There will be a topic that we want to make
23 sure PG&E presents and we ask questions and the public
24 can ask questions.

25 So that history goes back 29 years. It's

1 really important to understand what the charter is. The
2 charter in absolutely plain English from the start is
3 we're chartered to review the operational safety of the
4 plant and we understand that charter to mean -- of
5 course, when the plant was new, we understand that
6 charter to mean that, as it's written in plain English,
7 it would end when the plant stops operating, which is in
8 2025, still six years hence.

9 So as it sits, that's our current sunset date,
10 but at a public meeting about a year ago and then
11 repeated at each successive one, we've had members of
12 the public ask us whether or not we would consider or
13 think about whether we have a role after the plant stops
14 running and we don't have a position on that yet because
15 we haven't adopted it. We've been debating it right
16 along and we're not sure what we're going to do, but
17 recently we had an interaction -- I'm just explaining
18 the status so you'll know.

19 Recently, we had an interaction with a staff
20 member at the Public Utilities Commission who told us
21 that it would be very helpful if we could clarify our
22 thinking about that for them because it's Public
23 Utilities Commission is going to have to sort that out.
24 We haven't even adopted our own position about that.
25 Some people in the public urge us to continue, other

1 members of the public have urged us, no, no, no, we
2 should just stop when it's over, when the plant ceases
3 operation, and we're just not sure and we certainly
4 haven't done anything substantive except to think about
5 those questions. We haven't devoted much time to it.

6 We've tried -- and this is an important point
7 before I get on to the main topic here, which is the
8 spent fuel. We've tried to see if we can understand
9 right now whether the decommissioning activity planning
10 that's going on has an effect on the safety as it runs.
11 We want to make sure -- it's a question that is very
12 important to ask -- whether or not the activities that
13 are going on, which some of which have personnel
14 impacts, after all, somebody's work on that, they're not
15 working on this, some which have budget impacts, some
16 which have schedule impacts. We are charged and we are
17 diligently trying to make sure that whatever is going on
18 with decommissioning activities planning and all that
19 doesn't affect the operational safety of the plant. If
20 it does, we're going to call attention to it. That's
21 our charter.

22 The other thing that is in our charter is, of
23 course, the spent fuel. That's been true all along ever
24 since the first fuel discharge way back in 1986 or '7.
25 The spent fuel is a safety hazard, and I'll explain that

1 in a minute, and our charter has been right along to
2 look at that and make sure that part of the operation is
3 as safe as it needs to be, and then when 15 years ago or
4 so, the first planning for the independent spent fuel
5 storage installation up on the hill, the ISFSI, the
6 first planning went on, I wasn't on the committee at
7 that time, but the committee looked at that to try to
8 understand its safety and I'm going to talk about that
9 in a few minutes, and to understand what its
10 implications were for the overall risk impacts of that
11 plant out there because as long as there's spent fuel
12 there, there is a risk, which it's our charter to
13 understand.

14 So just to talk about the committee, we've
15 concentrated right along, including in this last period
16 after the announcement of the shutdown, we've
17 concentrated on trying to see if we can understand the
18 safety of that spent fuel between now and when it's shut
19 down. Okay? Because that's our charter, including the
20 plans for what they're going to do here. I'll talk
21 about that. And we've only thought a little about what
22 we might do in the long-term if we were extended -- by
23 the way, I won't be there. I'll be too old, but the
24 committee might. So it's not personal for me, but we've
25 thought about what we might do and we've differentiated

1 a couple things that I want to explain here about the
2 role of the committee so everybody understands.

3 There are two different kinds of risks. They
4 couldn't be more different. There's a risk as long as
5 that spent fuel is on that site. Either in the pools,
6 in the casks, as long as there's radioactivity on that
7 site, there's a risk, and there's now doubt about that
8 and everybody understands that.

9 There is also radiological hazard during the
10 decommissioning activities themselves, and what I mean
11 by that is after the plant shuts down and you wait and
12 do different things, there's a whole lot of stuff out
13 there that's radioactive that has to be decommissioned,
14 it has to be taken apart and cleansed using columns or
15 cleansers, or whatever, and that radioactivity has to go
16 somewhere. If it's greater than Class C, it has to go
17 into the casks and get disposed of like fuel. If it's
18 really low level stuff, it has to be disposed of that
19 way under Part 61 of the NRC's regulations. A whole lot
20 of radioactivity, but the principal hazard of the
21 decommissioning is industrial safety. It's a hazard to
22 the workers, and I can't speak for the committee because
23 we haven't decided, but if I was doing it, if it was
24 just one instead of three, I would think that our
25 charter absolutely shouldn't be involved with that

1 industrial safety stuff. It just doesn't seem to me
2 that that's the sort of hazard that the people in this
3 county are worried so much about. After all, it's
4 really quite safe, even a small thing is really quite
5 safe, but the spent fuel is dangerous. It's less
6 dangerous as time goes on and it's less dangerous in the
7 casks, but it's still dangerous.

8 So if I had my choice here, I think we would
9 recommend to the Public Utilities Commission that the
10 committee's charter be limited to looking at the safety
11 of the spent fuel. How long? I'm not sure. We have to
12 think that through. After all, it's going to be many
13 years before it's all in the casks after shutdown and
14 that schedule isn't even clear yet. So that's what I
15 would think, but that's still to come and we, the
16 committee, hasn't made a determination there.

17 I have two more things to say before I start
18 getting into the technical topic. The first is that
19 although I'm the chairman of this committee,
20 temporarily -- by the way, there are three of us and
21 we're friendly, we rotate, we said, Peter, you do it
22 this year and, Per, you'll do it next year and I'll do
23 it the next year. It's quite informal, but I'm the
24 chairman at the moment, but I'm here not talking for the
25 committee. I can't talk for the committee unless -- the

1 only way I can talk for the committee is if I read
2 reports word-for-word that we have adopted, okay, which
3 I won't do that. So I'm going to try to capture my own,
4 and it will be mine, not the committee's, my own
5 understanding of what the committee has said and I'll
6 try to make that distinction, okay, but it's mine, not
7 the committee's, even though I'm going to try to stick
8 to the meaning of what the committee has said and I'm
9 going to try to reflect what the committee has found and
10 what we've done and the things that we haven't yet done
11 and so on. Okay?

12 Then the last thing to say just before we get
13 into this is that in preparing these remarks here, I
14 thought about what I was going to say and I wrote it
15 down in an outline, it's handwritten, actually, no
16 slides, and I shared it with our two consultants. We
17 have two consultants in the committee who are experts.
18 They're fully competent engineers of the first rank,
19 certainly their credentials would qualify them to be
20 members of the committee, and I shared it with them and
21 got some feedback from them mostly about what things I
22 wanted to be sure I was on firm ground saying that the
23 committee had said just to make sure I had that right,
24 but as you can understand, I couldn't share that with
25 the other two members of the committee. It's illegal.

1 It violates some California act. All right? It's the
2 Bagley-Keene Act. So that's just explaining this
3 distinction that I want to be sure you understand.

4 Okay. Now I'm going to turn to the topic. In
5 preparation for this a couple weeks ago, Lauren Brown,
6 who is on the committee here at the end, gave us a --
7 gave the committee a two-page document, which I suppose
8 you guys saw, or whatever, which asked a whole lot of
9 questions that he was hoping or the panel was hoping
10 that I would address and I went down and I'm going to
11 try to address them all, except about a third of them I
12 can't address except to say we can't address it because
13 it's out of our scope, or in some cases, we haven't done
14 anything about it. So we'll say that. So it's with
15 those questions in mind that I've approached this --
16 this talk I'm giving here. So I'm going to start --
17 although, you had two days about this on a weekend in
18 February a few weeks ago, but I'm going to start and
19 talk about our committee's understanding of the safety
20 of those pools.

21 There are two spent fuel pools out there, one
22 in Unit 1, one in Unit 2, and those pools have, except
23 for the fuel that's been transferred up onto the hill in
24 those casks, all the rest of the fuel that's ever been
25 discharged from that reactor is in one of those two

1 pools and that stuff's hazardous. Even though a whole
2 lot of it has decayed, especially the oldest stuff,
3 imagine stuff that was decayed 30 years ago, you know,
4 taken out of the reactor the first cycle in 1987 or '88,
5 30 years ago, it's full of radioactive stuff that's
6 hazardous.

7 And just to explain, one of the most hazardous
8 radionuclides is Cz137. Its half life is 30 years. The
9 first fuel discharge 30 years ago, half of it's still
10 there. Half of that caesium is still there. The other
11 half is decayed. A whole lot of the short-lived stuff
12 is gone. There's a whole lot of stuff in that
13 radioactivity -- that radioactivity when it's freshly
14 discharged that has half lives of hours or weeks or
15 months and it's gone of that earliest stuff, but that
16 stuff is hazardous.

17 Now, in the normal state, which is where it is,
18 and that's by design, it's not just luck, it's by
19 tremendous engineering effort, except for the occasional
20 fuel pin that has a small leak, and they haven't had
21 very many of those at Diablo, there are very few, all
22 that radioactivity is still contained in those fuel pins
23 that comprise the assemblies, that comprise the core of
24 the reactor. You have a pin and it's, say, 12 feet
25 long, ceramic surrounded by a cladding, and the

1 radioactivity that was created during this fission
2 process that made the heat, that made the electricity,
3 that radioactivity that was created there and the
4 original uranium that was -- that started off that's
5 radioactive, it's all in those pins, but there are
6 dozens of important radionuclide species in those fuel
7 rods, in those pins, and every one of them has a
8 different half life, some short, some long, but all of
9 them that haven't really decayed away are all still in
10 there and it's important for you to understand that the
11 principal engineering challenge of spent fuel management
12 is working to assure that with very high assurance that
13 that stuff doesn't get out. Okay? That's the point.
14 That's what engineers -- that's what I -- that's what
15 people do, working to make sure that that stuff doesn't
16 get out. We want to make sure that some day it's going
17 to go to Yucca Mountain or some other place like that,
18 you know, deep underground some place years from now,
19 that between its discharge from the reactor and going
20 underground, wherever that is some day, that none of
21 that stuff gets out of those pins. Okay? That's the
22 challenge.

23 So you might ask, well, how could it get out?
24 By the way, there are few pins with little leaks and
25 they're in the pools and they're going to have to be

1 encapsulated in some outer capsule -- you probably heard
2 about this before -- some outer capsule before it's to
3 be disposed of to make sure that when it -- you know, to
4 make sure that when it leaves the pool and goes in the
5 dry cask, that it's safe because it's encapsulated, but
6 those are a very, very tiny portion of all the pins and
7 radioactivity and so they will be handled safety. They
8 have a routine monitoring of them now and a process that
9 they haven't exercised yet, but they will when they have
10 to to make sure that happens, but the principal risk in
11 the pools is that stuff gets released.

12 Now, how does it get released? Well, unless
13 some terrorist blows it up -- I mean that in the most
14 terrible way. I mean, you know, imagine throws a -- I'm
15 not talking about a nuclear weapon, but, you know,
16 something that -- except for that, which I'll talk about
17 later when I talk about security, the way that stuff
18 could get out is if the water in those pools were to
19 disappear somehow, drain out or get boiled off, and then
20 the pins would be bare in the air.

21 Now, brand new fresh fuel pins just discharged
22 from the reactor are very, very hot thermally, and the
23 reason they're hot thermally is because they're hot
24 radioactively because every radionuclide that decays
25 produces heat, it's gamma heat or beta heat or alpha

1 some of them, and that heat heats things -- in fact,
2 that heat is -- is the concern because if that heat were
3 somehow to cause that fuel to be compromised, then
4 that's how it gets out.

5 Well, it turns out -- and this is easy to
6 explain and you probably heard it before. It turns out
7 that if it's brand new fresh fuel, just discharged, or
8 maybe it's been discharged six months ago, that for the
9 first couple of years, there's a danger that if that
10 fresh fuel were to have its water lost, that is the pool
11 were to be drained somehow, I'll talk about that in a
12 minute, that the heat generated by the fuel itself will
13 cause a compromise and a fire in the zirconium that's
14 cladding those pins -- that's cladding the pellets in
15 the pins in the spent fuel and that we call that a
16 zirconium fire, you probably heard about that, and that
17 zirconium fire can compromise the wood, compromise the
18 clay, and if it was just bare because of that, a whole
19 lot of that stuff would be convotulized and would get
20 out and that's a nasty accident. In fact, it's a really
21 nasty accident. Okay? However, if the fuel has been in
22 the water for -- and that's why it's got to be
23 underwater. It's got to be underwater to take that heat
24 away because if it's in the air, that accident is
25 possible. So it has to be kept underwater, but by the

1 way, ten years later, that won't happen.

2 Question: At what time will it -- that
3 transition take place? Well, it depends on the
4 configuration in the reactor and the fuel burn-up and
5 things like that, but, generally, it's a couple of
6 years. For some configurations and high burn-up stuff,
7 it might be a little longer, but it's generally a couple
8 years during which that's a really important accident to
9 worry about and certainly it's not three or four or five
10 years thereafter when -- if God uncovered, you wouldn't
11 have a zirconium fire and a big release. So that's
12 important for you to understand.

13 Now, how's it designed now? And I'm probably
14 reiterating something you heard before. Well, these
15 pools, if you saw them, they don't kind of look like an
16 olympic pool because they're deeper, but the pins which
17 are more than a dozen feet long with a thing, the top of
18 them is under 23 feet of water. I think I have that
19 number right, but if it isn't 23, it's close to that,
20 and that's a lot of water. Okay? That water heats up
21 because the radioactivity is doing what it's doing, the
22 decay and alpha, beta and gamma and the neutrons heat up
23 the pins and they heat up the water, and in order to
24 take that heat away, there's an engineered system, which
25 you probably heard about, in which there's -- the water

1 goes to a heat exchanger and there are pumps and valves
2 and control systems that do that and that heat exchanger
3 takes the heat away and ultimately it goes to the
4 ultimate heat sink, which is the ocean, and cooler water
5 is put back in the pool and that's how the pool is kept
6 from overheating.

7 So the accident that you could contemplate,
8 somehow, all of that heat exchanger system would fail.
9 It might fail just because equipment is unreliable, it
10 might fail because a human made an inadvertent mistake
11 in aligning things wrongly, it could fail because of a
12 large earthquake, and, of course, it could fail from a
13 terrorist, but I'm going to come to that later, and
14 those failures are failures that are similar to the
15 sorts of failures that reactors are prone to get them in
16 trouble. That is one of the big concerns in reactor
17 safety. I'm not talking about the fuel pump. The
18 reactor. It's that a pump might fail or electricity
19 might fail or a valve might fail or a control system
20 might fail and a certain combination of those things
21 will cause an accident, which causes the thing you don't
22 want. There's different combinations, but that same set
23 of equipment is vulnerable to these sorts of reliability
24 compromises.

25 So the main task of the spent fuel pool group

1 at that reactor today, and it's been true all this time
2 and it's going to be true for a while, is to make sure
3 that water is there, which make sure that heat exchanger
4 equipment is there and that it's functional and that
5 it's not compromised and our committee has been looking
6 at that right along for all these years and we're --
7 we've been very happy with the program that they have
8 for keeping that stuff reliable and doing inspections
9 and learning from little things that go wrong and making
10 sure that they learn from them and we're comfortable and
11 our committee has been saying this for right along that
12 we're comfortable that the way they're managing the
13 liability of that heat exchanger equipment, which, by
14 the way, is not just pumps and valves and so on, but it
15 has control systems that require DC power, either DC
16 from the AC because of inverters or batteries, it has
17 pumps that require AC power, and it has a whole lot of
18 valves and pipes and heat exchangers and things like
19 that that have to work properly.

20 So a principal possible accident would be if
21 you lost all the electricity, all the electricity, not
22 just the off-site power, which might happen, but there
23 are six diesel generators out there, two units, six
24 diesel generators, and now we have the flex equipment,
25 there are two more, and the likelihood that all of those

1 DC -- excuse me -- all of those diesel generators would
2 fail is a very remote, but still possible possibility,
3 but if we imagine that happened and none of this worked,
4 then it will heat up and the water will start to boil
5 and ultimately you'll lose them, you lose the level and
6 it would become uncovered, but although it varies from
7 one fuel load to the next, the time it takes to do that
8 is many, many days, many days. It's way more than three
9 days, it might be five days, it's several days, and
10 that's lots of time, if you don't mind my saying, for
11 the president or the governor or somebody to bring power
12 in. We've got a lot of diesel generators around to
13 bring power in.

14 So with that as a backup, I'm not -- because
15 there's so much time, I'm not worried that that accident
16 has any likelihood at all. I mean, I'm sure it has a
17 likelihood, but it looks very remote, and our committee
18 has found and we agree with the analysis that PG&E has
19 done and NRC has reviewed that that accident looks very
20 unlikely.

21 Well, how else might that be compromised?
22 Well, big earthquake, big earthquake, it might knock out
23 all that power, or more to the point, it might
24 compromise the pools themselves or these pools are made
25 with these walls that are reinforced -- you know,

1 steel-reinforced concrete and so on and recently the
2 PG&E team did a complete reanalysis of the seismic
3 safety of that pool structure. They had done it years
4 ago. They revisited it only within the last year or two
5 and it was reviewed by a whole lot of people and I've
6 reviewed it myself because that's what I do for a living
7 is seismic stuff and the general conclusion that
8 everybody's come to is those things are very strong. In
9 fact, they're stronger than the building it's in, the
10 pools are in. Okay? Which, itself, is very strong. So
11 we're not concerned or alarmed about that possibility
12 even though it's a possibility. We just don't think
13 that an earthquake big enough to compromise them is
14 going to come along. Okay?

15 The other new thing, new meaning only in the
16 last ten years or so, is that the NRC has an order which
17 the plant follows in which they've rearranged the fuel
18 in the spent fuel pools so as to have the old, old
19 stuff -- some of the old, old stuff that's still in
20 there is intermixed with the hotter newer stuff so that
21 the hotter newer stuff isn't all by itself. I
22 understand that Mark is going to talk about this later,
23 so I'll just mention it, and the reason that's a good
24 thing is if you lost the water, the hot -- there's a
25 whole lot of heat capacity in those old metal things and

1 the hot ones will have to use a lot of their heat to
2 heat up those and that slows down the heating process a
3 good deal and makes the time before you get in trouble a
4 lot longer than if they weren't in there.

5 The NRC asked for that reconfiguration, I can't
6 remember, about ten years ago and all the plants did it,
7 and Diablo, too, and that is safer than it was before.
8 However, as long as you need those old ones in there,
9 you can't take them all and send them up on the hill in
10 the ISFSI, not all of them. You need some because you
11 need to have this -- in other words, that's a safety
12 compromise.

13 So I'll talk about the comparison with the
14 ISFSI in a minute, but I just want to explain that that
15 old cold fuel is still warm, but it's cold, is in the
16 pools for that reason, but I also want to be sure you
17 understand the 30-year-old stuff has half as much Cz137
18 as the fresh stuff because it's a 30-year half life and
19 caesium's nasty. So you don't want to compromise that.
20 That's really important, too. That heat-up would be
21 delayed, but if you lost the water and you didn't
22 replace it, it's all going to be trouble ultimately and
23 that's a big release. You want to know how big? Well,
24 we've just had -- they've had 20 outages -- 21 -- 20
25 outages. They've got a whole lot more fuel in those

1 pools -- excuse me -- a whole lot more caesium in those
2 pools than there is in the reactor, but the reactor has
3 a whole lot of other stuff, which is short-lived and
4 it's really dangerous, but the long-live stuff, and
5 neverminding the actinides, which are longer still, but
6 not very radioactive compared to the caesium, not very
7 dangerous. I mean, they're dangerous, but not as much
8 and so that's a big concern. Okay?

9 Before I -- before I go on to the -- before I
10 go on to talk about the spent fuel in the casks, the
11 independent casks system, I want to talk just a little
12 about security and the reason I want to talk about it
13 only briefly is it's outside of the remit of our
14 committee. Our committee is specifically not chartered
15 to look at the security issues at the plant. Okay? So
16 we haven't, but I can tell you my view, which is not the
17 committee's view. This is one of the only places here
18 I'm going to give you my view and my view is based on a
19 whole lot of experience I had for a long, long time
20 looking at this, and although it's possible, this plant
21 is really very secure against an attack on those pools.
22 It's comforting to be able to say that and, of course,
23 we can't talk about that much in public. You don't want
24 to because one of you might be a -- you know, an
25 adversary and we don't want to explain, but it's been

1 looked at by a lot of people and it's really strong and
2 I can't go into that very much, but I'll give a
3 comparison with the dry casks in a minute. Okay?

4 So originally -- this is not originally being
5 when the plant was new -- the plan had been that after 5
6 or 10 or 15 years, the spent fuel in the pools would be
7 put in the transportation casks and taken to a place
8 like Yucca Mountain, which is Nevada, which is not being
9 built at the moment, as you probably know, and disposed
10 of deep underground safely, but along the way, people
11 understood that wasn't happening and that keeping all
12 that stuff in the pools didn't make sense. First, it's
13 economic, second of all, it's a risk, and third of all,
14 it's just clumsy to manage, and so it was about 20 years
15 ago, maybe a little more, that the idea of having these
16 dry casks in which the pool could be stored, not
17 disposed of, but stored, came about and the first ones
18 were built in the east and Diablo's first loading was
19 about ten years ago, and as you probably know, or I
20 won't get into it, but there are 50 out of these great
21 big casks up on the hill above the plant, the
22 independent spent fuel storage installation, the ISFSI,
23 and everybody, everybody understood that they are very
24 much stronger against an adverse terrorist or nasty
25 attack, they really are, it's really hard to compromise

1 them in the security sense. Although our committee
2 doesn't think that, I'll just tell you mine, and I think
3 everybody understands that, and, furthermore, if you
4 were to compromise one cask, it's one percent or
5 something of all the stuff that was in the pool -- that
6 would have been in the pools before. Maybe it's two
7 percent or something like that, the caesium, for
8 example.

9 So you compromise the pool and that's a lot.
10 You compromise one of those things, which looks really
11 hard to do, even with an airplane. Not much gets out,
12 and, furthermore, most of it isn't volatile or goes
13 anywhere. So those things are really much more secure.
14 Okay. They're very strong, they're very safe and
15 they're anchored against seismic concerns and I've
16 looked at that personally because that's a lot of what I
17 do for a living, but they have another really important
18 feature that I want everybody in the room to understand.
19 They sit up there cooling the fuel that's in them
20 passively. There's no active equipment, there's no
21 electricity, there's no -- it just sits there cooling it
22 passively.

23 In the same sense -- let me just give you my
24 sense. If you hard boil an egg and put it on the table,
25 it will cool passively, right? How does that happen?

1 Well, there's convection and there's radiation and a
2 little bit of, you know, conduction, and after 15
3 minutes, the egg is cool. There's no equipment. The
4 air picks up the heat and goes somewhere and we all --
5 everybody, I hope, understands that and I can't explain
6 it much, but -- I could, but I don't want to go into it,
7 but the crucial heat removals of property is that it's
8 passive, and by being passive, it means there's no
9 equipment that could fail. There's no human to make an
10 error in maintaining the equipment or turning the
11 equipment on and off when they shouldn't have, and
12 because of that, it's way safer than the pools, even
13 though the pools are really safe. Okay? They're really
14 safe, but this is safer. No doubt about that. If you
15 had a hierarchy of safety, it's safer, and it's
16 certainly more secure.

17 So, of course, it's desirable to move from A to
18 B, pool to cask, over a time frame. Okay? And our
19 committee has said that right along, but we're not the
20 only people that have said that. I think there isn't
21 anybody in the world that would dispute that there's a
22 hierarchy of safety and one's safer than the other.
23 There's no doubt about that at all.

24 So let me just go on and point something out,
25 that to the extent that the pools are also very safe,

1 the schedule for moving from one to the other, while
2 it's desirable, has other parameters that are involved
3 in it, one of which is cost, by the way, and another of
4 which is that you have to stage it in a way as long as
5 there's still going to be fresh fuel in 2025, and there
6 will be fresh fuel in 2025 for a few years, you know,
7 until it -- it cools down over the zirconium fire
8 problem. You have to have some of that old stuff in
9 there because it's way safer to have the old stuff in
10 there than not.

11 Okay. So then I just -- one more thing to be
12 sure to point out. We reviewed PG&E's schedule for that
13 transfer of the fuel from the pools to the casks a
14 couple of times in the last couple of years and it made
15 sense to us from a safety point of view, that is we
16 were -- our committee was comfortable and we wrote it
17 down, we had public meetings and stuff, that it was --
18 that that's -- that the safety of that was adequate for
19 us, but about a couple months ago now, PG&E in their
20 filing, in that triennial filing, produced a different
21 schedule than the one they had before, and probably
22 you're aware of it, but, anyway, I won't go into detail
23 about it, but it stretches out the schedule and that
24 schedule keeps more stuff in the pool longer than the
25 previous schedule and, therefore, it transfers less to

1 the casks until later, and just to tell you where we
2 are, our -- that only happened in January. Our
3 Independent Safety Committee has not reviewed that, it
4 has not reviewed the safety implications of that and
5 what we're interested in is the safety implications over
6 the next six years because remember our charter is six
7 years long, six years from now, 2025. Whether there's a
8 safety issue over the next six years with keeping that
9 rather than transferring, because they were going to be
10 transferring some of it, it's something we haven't
11 looked at, but we're going to look at very soon. I'm,
12 going to actually be back at the plant on Monday and
13 Tuesday for a fact-finding meeting and one of my
14 colleagues is going to be back a few weeks later with
15 one of our consultants and in that time we're going to
16 look at that and see if we can understand what the
17 safety issues are with that, if any, and what it means
18 and then we're going to talk about it at our public
19 meeting in June.

20 So we haven't looked at that, but my general
21 feeling is that either of those schedules is adequately
22 safe, that is, there's just a lot of safety margin, and
23 that -- which is comforting. Okay? On the other hand,
24 for sure, the casks are safer. Okay?

25 I mentioned briefly about leaking fuel. This

1 plant has had a remarkably good record on fuel
2 integrity. It's one of the best plants in the world on
3 fuel integrity, just a few little leaking pins over the
4 years and they're in the pools and they're going to have
5 to be encapsulated before they go up into the casks
6 sometime years after -- towards the end of this
7 campaign. We've looked at that. We don't think that
8 that technology is a problem. It's been used elsewhere
9 and we're comfortable that that can be done before -- in
10 the water before it gets put up in the ISFSI.

11 So now I do want to talk, though, about one
12 major problem that's a concern anyway with the casks and
13 that is those big casks have a steel -- the inner one is
14 steel. It has 32 assemblies in it and then there's
15 concrete and then there's the outer one and steel
16 corrodes. Okay? So there's a concern especially
17 because this is a marine environment, there's salt out
18 there in the air and the salt -- you know what -- you
19 live here. By the way, I live near the bay and I
20 understand it, too. That salt can cause corrosion, and
21 you probably heard about this. I'll just tell you our
22 committee's view. We reviewed that issue a couple years
23 ago and we looked at it again recently and our
24 conclusion is that that's a concern, but it's a very,
25 very slow process, meaning it's not weeks, it's not

1 months, it's years, if not, multi-years, meaning a
2 decade or more. There's a long, slow corrosion process
3 and I -- Mark Mayer said he's going to maybe talk about
4 this, so I won't go into it, and we've looked at that
5 and we think that that's adequate for now, provided they
6 continue to monitor, and we're monitoring to make sure
7 they do when they do, and, in any event, if there were
8 to be a corrosion problem, there is a design already in
9 place to take that thing and take it out and inspect it
10 and put it in another one if they had to. It's that
11 facility just at the top of the hill before you get to
12 the dry cask storage facility itself. They can remove
13 it and repack it. It's feasible. It's going to take
14 some care, it's going to be expensive, but it's
15 certainly not a problem.

16 And then to answer your question. The panel
17 asked me a direct question, gee, should we keep one of
18 those pools around even after in case, and we don't
19 think so. Okay? We don't think that's necessary. The
20 technology for doing it -- it will be cold stuff and so
21 it doesn't have to be underwater and we don't think that
22 that's something that's necessary. You might do it, but
23 it doesn't add much to the safety. Okay?

24 And then there's another crucial thing before I
25 move on to a couple other things and that is ultimately

1 this stuff is going to go in transportation casks to a
2 place like Yucca Mountain or maybe it's going to be in
3 the east or who knows where it's going to be, I mean, we
4 don't know, but some place it's going to be disposed of
5 and it's not going to be disposed of on this site right
6 here. It's going to be disposed of somewhere else.

7 The transportation casks that are envisioned
8 for that in which have already been designed and tested
9 and licensed and all that stuff can take radioactive
10 leaker stuff in them because they're sealed against that
11 even if it was so, which it won't be. Okay? So that's
12 an additional safeguard -- engineering safeguard and our
13 committee's looked at that and we're comfortable with
14 that technology. Okay?

15 Just want to move on. So now I've got a few
16 other things you asked me and I'm going to see what I
17 can say about it. The panel asked me -- asked us to
18 talk about whether a consolidated spent fuel storage
19 facility some place else -- for example, there's one in
20 Texas that's seeking a license from the NRC and there's
21 one in New Mexico that's doing the same thing. It
22 hasn't happened yet, but maybe. It's called a
23 consolidated -- they would take fuel from many reactors.
24 Whether that would be -- the safety would be comparable
25 to the safety up here and the security, too. We haven't

1 looked at that. Nobody asked us to and it's outside of
2 our remit, but the general feeling in the engineering
3 community is that the safety would be comparable, but
4 the security would be comparable, too, but way cheaper,
5 way cheaper.

6 Imagine you have to have guards at Humboldt,
7 just guarding, costs money for those, what, three of
8 them or four of them. If it was in some consolidated
9 place where there's hundreds of them, the guard force is
10 way cheaper and way more efficient. So the security is
11 cheaper and the consolidation would be comparably safe.
12 That's the general feeling in the whole engineering
13 community. Our committee hasn't looked at that,
14 particularly. Okay?

15 I've just got a couple other things to mention
16 here and then I'll be done. The risk in the pool does
17 depend on the loading and it depends on the density of
18 the loading in those pools. I mentioned before that if
19 you have a release, it's more or less proportional how
20 much spent fuel is in there because of the big
21 radionuclide of concern is caesium and it's -- it's just
22 pretty much proportional; although, there's a 30-year
23 decay, but after just a couple of years, the risk of the
24 zirconium fire goes away and then the rest of it is you
25 lose the water and you've got a few days to put the

1 water back in and so that looks comparably safe.

2 So the risk is different depending on the
3 loading, but it's very small and it's not very
4 different. That's a way of saying it. It's small, it's
5 different, but it's not very different. Okay?

6 Finally, to talk about corrosion, one of the
7 concerns that we have had, that PG&E has had, the whole
8 industry has had is the concern about how you go about
9 measuring the corrosion of these steel things in those.
10 When the corrosion is very, very slow on the surface and
11 takes a long, long time in trying to understand how you
12 measure that very early corrosion process as it's
13 beginning because of salt is a difficult engineering
14 problem.

15 Fortunately, the industry has been working on
16 it for a long time and have technologies that they have
17 been developing. This is an electric power search
18 institute and there's some work overseas and those are
19 going to be tried out and tested soon in the next, I
20 don't know, months or year and we're going to watch it,
21 too, and if those technologies are actually shown to be
22 as efficacious as we hope they will be, then being able
23 to make those measurements in those things will be far
24 more effective and helpful than if they can't. Okay?
25 In which case, if you really were worried about it, you

1 probably have to -- you definitely have to take one
2 apart and look. We don't think that that's anywhere
3 near in terms of the time frame coming up -- coming on
4 us soon.

5 So I'm going to summarize with a couple of
6 points I want to be sure to emphasize and that our
7 committee said. It is definitely so that the safety of
8 the spent fuel in those casks in the ISFSI is safer than
9 it is in the pools, but they're both really quite safe.
10 We've said that, NRC says that. I can't think of a good
11 metaphor. You know, it's -- it's just that there are a
12 lot of other risks and it looks like that's a real low
13 possibility; although, PG&E's got to be doing it to make
14 sure it stays low, which means they've got to do this,
15 they've got to do this and they've got to do this and
16 somebody's got to check on them. That's what we do.

17 And then, finally, I've said our committee
18 hasn't looked at security, it's outside of our remit,
19 but our feeling is the pools are highly secure and the
20 casks are way more so, just way more so, in part,
21 because if an adversary compromised one cask, it's a lot
22 of radioactivity, it's hard to do than compromising one
23 pool. That's important for you to think about.

24 And, I guess, with that, I'm done. I'm here to
25 answer any questions you might have and -- oh, wait. I

1 can answer one more question that you asked me. If
2 there was water in those casks inside, inside the --
3 wouldn't that increase the risk of corrosion? Well,
4 yes, but, in fact, before the -- the MPC30 -- before the
5 thing is loaded, it's cleaned out and dried out with a
6 helium dry-out to make sure there isn't any water in
7 there and then it's sealed up and welded shut and
8 everything and no water in there. Okay? I mean, that's
9 just -- okay? Provided it remains -- it has the
10 integrity it's supposed to have and you have to look at
11 that to make sure. So you asked that question. That
12 was a simple thing to answer. I think I'm done. Okay?

13 MR. ANDERS: Thank you, Dr. Budnitz. We have
14 about 15 minutes for questions and answers. So anyone
15 have a question? Sherri.

16 MS. DANOFF: Okay. I'm wondering if the dry
17 casks should be disassembled and inspected after a
18 certain number of years. You said it's definitely too
19 early now.

20 DR. BUDNITZ: Well, the NRC -- just to say --
21 probably you know what I'll say. The NRC gave these
22 installations a 20-year license not because they will
23 last 20 years, because they said at the beginning they
24 wanted to not give them a longer license because they
25 wanted to have the opportunity to reevaluate whether or

1 not extending that made sense case by case, site by
2 site, plant by plant. So far, they've extended each one
3 that came along. Diablo is up for that in another few
4 years, I suppose you know, and the general engineering
5 consensus is that that's something that is not upon us
6 now and won't be for a decade or quite a while, but
7 ultimately it might, depending on whether or not -- by
8 the way, some of these some day is going to have to take
9 some of these apart. I'm not sure when, but -- or maybe
10 should, it will be long after me, and look and see, and
11 if there's trouble, then, at that time, yeah, you've got
12 to have to think hard about repackaging, but it's been
13 too short a time to see much, and even if there was a
14 little bit, it's too short for it to compromise
15 anything. Okay? Which is -- by the way, it's not just
16 nice to know, it was by design. The thing was designed
17 for this long period without much, if any, trouble, and
18 that was known going in. Okay?

19 MS. DANOFF: Thank you.

20 MR. ANDERS: Linda then Kara.

21 MS. SEELEY: Thank you for coming tonight.

22 Your presentation was very interesting. I do want to
23 remind you and everybody else in this room that this is
24 March 13th, 2019.

25 DR. BUDNITZ: Yup.

1 MS. SEELEY: On March 11th, 2011 --

2 DR. BUDNITZ: It was only -- it was just eight
3 years ago.

4 MS. SEELEY: It was just eight years ago that
5 Fukushima melted down in an earthquake that was
6 unanticipated. They thought it could not happen there
7 and you -- they thought it could not happen there
8 because it had the design of -- that nuclear power plant
9 was such that it could accommodate the highest possible
10 earthquake that could happen there. Unfortunately, a
11 bigger earthquake happened than had ever been
12 anticipated. So --

13 DR. BUDNITZ: Do you want me to talk about
14 that?

15 MS. SEELEY: No, I don't because it's a big
16 topic, but I just want to keep that in our minds because
17 what I'm saying is that when you say things with
18 certainty, like you said an earthquake that big is not
19 going to come along, when you said that about according
20 to the seismic analysis, but I just -- you know, things
21 happen that we don't anticipate. Even though the
22 possibility is very tiny, the consequences of it can be
23 immense.

24 DR. BUDNITZ: But I need to explain something
25 to you and everybody. The earthquake didn't cause that

1 accident. The tsunami did. Now, it's really important
2 to understand. The earthquake was 80 miles offshore,
3 something like that, but, nevertheless, on shore it was
4 the largest ground motion ever experienced in Japan,
5 onshore 80 miles away.

6 MS. SEELEY: I know that.

7 DR. BUDNITZ: I know. I know you do. And
8 those of you that don't, now you do. The seismic
9 performance of that station and of the nearby station
10 called Dai-ni and of the nearby station called Onagawa
11 worked just a design with this huge, huge ground motion.
12 At Dai-ni, there wasn't a seismic failure of any
13 equipment. We can inspect it now, and at Onagawa, too,
14 and it's been inspected and you can go and look.

15 Now, at Daiichi, which is the plant that had
16 the trouble, you can't inspect it, it's too radioactive,
17 but for the first 45 minutes, its best understanding is
18 everything that functioned the way it should, except the
19 loss of off-site power, the grid went down and it was
20 the switch arms. It wasn't the grids, it was the switch
21 arms. Okay? But everything functioned as it was
22 supposed to in the largest earthquake ever to occur in
23 Japan and way above the design basis.

24 Well, here, here, the things that start getting
25 in trouble are even bigger fraction percentages, bigger

1 than that earthquake in Japan. That is -- the equipment
2 and the structures and everything out here, and I've
3 reviewed it, that earthquake that might compromise them
4 is way, way higher than this plant's been designed for
5 and there's one heck of a lot of margin and that's
6 important to know, as happened in Japan. What got them
7 was the tsunami and that's really a terrible story,
8 which I don't want to get into here because it's off the
9 subject, but, you know, they just -- and 16,000 people
10 died because of that, not from the plant. 16,000 people
11 died because that tsunami came in and killed all those
12 people. It was terrible. The Japanese just totally
13 missed that, which troubles a lot of people. So we have
14 to be humbled about that, but, in fact, the earthquake
15 safety of this plant is really very strong.

16 MS. SEELEY: I know and I'm glad.

17 DR. BUDNITZ: I am, too, by the way.

18 MS. SEELEY: I am very thankful for that and
19 there are things that happen that are unanticipated.
20 That's all I wanted to say, but I want to ask you a
21 couple of questions.

22 DR. BUDNITZ: Sure.

23 MS. SEELEY: How -- you said that they can
24 monitor and inspect the canisters.

25 DR. BUDNITZ: Well, right now, every electric

1 power service is developing a technology, which, if it
2 proves out, will make that feasible commonly, but right
3 now, right now, that technology is not available.

4 MS. SEELEY: So --

5 DR. BUDNITZ: Okay. So right now --

6 MS. SEELEY: -- we've actually employed a
7 technology to store the nuclear waste for which we have
8 no way to inspect it, then we're having faith or
9 whatever that it's going to be okay?

10 DR. BUDNITZ: You've just explained it
11 perfectly. The process is so slow that the NRC gave
12 20-year licenses in order to say, well, maybe we're
13 going to have to look at it then. They've done that and
14 they say still so slow, we'll give them another 20
15 years. Not here, but other places because it's slow,
16 but if, ultimately, the concern appears, they're going
17 to have to take them apart and look at them, unless this
18 technology for in situ inspection is developed and
19 deployed. So, in fact, you're right. They were
20 deployed in these things before a routine inspection
21 method for the whole thing was available. Absolutely.
22 That's a fair comment.

23 MS. SEELEY: Okay. And then one more question
24 about the hi -- you said the, quote, "hierarchy of
25 safety is indisputable," when you were talking about --

1 DR. BUDNITZ: I don't know anybody that
2 disputes what I said, that it's safer than they're, you
3 know...

4 MS. SEELEY: It's safer in the --

5 DR. BUDNITZ: In the casks, yeah.

6 MS. SEELEY: -- dry casks than in the pools,
7 but then you said but it's really safe in the pools,
8 too, but it's even safer in the dry cask.

9 DR. BUDNITZ: Yeah.

10 MS. SEELEY: So are you going to make a
11 recommend -- you said you're going to make a
12 recommendation to PG&E about their plan now to put it
13 all into 1,340 --

14 DR. BUDNITZ: We're not sure. We're going to
15 go look at that carefully and then we're not sure what
16 we're going to say, but just to talk about hierarchy of
17 safety, I want to describe something. Okay?

18 MS. SEELEY: Okay.

19 DR. BUDNITZ: I have -- I live in Berkeley. I
20 have driven down here for these meetings and I have
21 flown. Okay? Flying is safer, indisputably, than
22 driving, but when you're driving on 101 and it's freeway
23 all the way, by the way, from Berkeley all the way, it's
24 freeway, if you're not dumb and you're -- you know,
25 driving is safe, too. In other words, I don't not drive

1 because it's safe. I have other reasons for -- but --
2 so you can have a hierarchy of safety and still find the
3 less safe thing to be safe enough for you. Now, I know
4 people that don't drive, but I'm not one of them.

5 MS. SEELEY: And people who don't fly.

6 DR. BUDNITZ: Of course. And, by the way, by
7 the way, the most dangerous thing I did today was I
8 walked from the hotel three blocks over here because
9 when you walk -- I don't have to finish that.

10 So, you know, having a hierarchy of safety
11 doesn't mean that the less safe thing is unsafe, it just
12 means that it's less safe. And, by the way, the other
13 thing is that the safety in the eye of the beholder is a
14 really important thing. I might judge something safer
15 or less and I might judge them both adequate and you
16 might judge them neither adequate. That's okay. That
17 has to do with where your adequacy threshold is, but
18 that's different from the hierarchy which we can agree
19 on. Okay?

20 MS. SEELEY: Thank you.

21 DR. BUDNITZ: That's a really important, you
22 know, thing.

23 MR. ANDERS: Okay. Thank you. Thank you,
24 Linda. Comment from Kara and we've got about five
25 minutes left and then from Sherri and Frank and Lauren.

1 DR. BUDNITZ: I'm having fun.

2 MS. WOODRUFF: Thank you for being here this
3 evening. I have a lot of questions, but there are a lot
4 of us. So I'll narrow them down.

5 DR. BUDNITZ: It's okay. By the way, I didn't
6 say that our committee is available to your panel at any
7 time to ask us any question in writing or here I am and
8 we'll do the best we can to answer any question within
9 our remit, which is the safety of the plant. Okay?

10 MS. WOODRUFF: Thank you.

11 DR. BUDNITZ: You should know that. We're a
12 public committee here. By the way, any citizen here can
13 ask us a question, anybody. Public meeting, send us a
14 letter. You, too. Okay? That's a pledge we made early
15 on and which I'm in firm footing because everybody
16 agrees that we'll answer any question you have if we
17 can.

18 MS. WOODRUFF: Thank you. So during our two
19 days of workshops, we heard from a number of cask
20 manufacturers and they had different designs. Do you or
21 does your committee have any recommendations on the sort
22 of style of casks that may be more --

23 DR. BUDNITZ: No, no. We haven't looked at
24 that. It wasn't within our charter or remit to do so
25 because it didn't come up, but it's coming up because if

1 PG&E has a decision to choose something else, or if that
2 becomes an issue, we'll review it, too, but it --

3 MS. WOODRUFF: I think that would be very
4 helpful.

5 DR. BUDNITZ: Yeah, but it hasn't come to us
6 yet.

7 MS. WOODRUFF: So when it does, please do
8 discuss it and let us know. That would be very helpful.

9 DR. BUDNITZ: If somebody asks us, we'll do
10 what we can. Even if you don't ask us, we'll do what we
11 can because it's in our charter.

12 MS. WOODRUFF: My second question is you had
13 mentioned that consolidated interim storage facility
14 concept and I guess there's a few in the works right
15 now.

16 DR. BUDNITZ: Well, yeah. Those plans have
17 been around for a while. It doesn't exist because it
18 hasn't been licensed.

19 MS. WOODRUFF: What is your opinion? You
20 mentioned they both might be secure, but if you had to
21 make a choice --

22 DR. BUDNITZ: Well --

23 MS. WOODRUFF: -- versus what we have today
24 with two plants in California --

25 DR. BUDNITZ: The --

1 MS. WOODRUFF: -- right on the water versus
2 that --

3 DR. BUDNITZ: The casks are really safe and
4 secure, but there's nothing like having it in a remote
5 area rather than around a whole lot of numerous -- for
6 example, there are few casks that PG&E has at Humboldt
7 Bay, Rancho Seco, the Sacramento municipal, too, has
8 some casks, you know, near Folsom Lake, south and east
9 of Sacramento. San Onofre has, you know --
10 consolidating them away from people is better than --
11 it's a hierarchy and it would be safer, okay, as well as
12 the security's really good, but it would be cheaper,
13 too. Okay?

14 MS. WOODRUFF: Makes sense to me. One last
15 question.

16 DR. BUDNITZ: Sure.

17 MS. WOODRUFF: If you live by the ocean and you
18 have a car, we drive it in a garage and it doesn't
19 corrode as quickly, it's sort of common sense, and I
20 guess one question I would have that didn't seem to come
21 up during the workshops was if corrosion is an issue for
22 casks that are sitting by the sea, wouldn't a simple
23 cheap solution to be to build a structure around those?

24 DR. BUDNITZ: If corrosion turns out to be an
25 issue, which we don't know and, in fact, most of the

1 experts -- I'm not a corrosion expert -- think that it's
2 going to be -- there won't be an issue, but if that
3 turns out to be, then you have to evaluate what to do.
4 That could be one way to address it, but there could be
5 other ways and you have to ask whether that -- which way
6 is less expensive and will last longer and is safer and
7 so there's a whole lot of evaluation that we haven't
8 done. Okay? It could easily be that this process,
9 although it exists, is a century long, in which case
10 there's a lot of time to worry because we hope they will
11 be in some other pad before then, but I've not seen an
12 analysis and we haven't evaluated it.

13 MS. WOODRUFF: Thank you.

14 DR. BUDNITZ: But there's some trade-offs.

15 MR. ANDERS: Thank you, Kara. Sherri and then
16 Frank and Lauren.

17 MS. DANOFF: Hi. I have a couple of questions.
18 In your opinion, should the dry casks be stored inside
19 of a climate control structure?

20 DR. BUDNITZ: She just asked that and I said
21 that there's a tradeoff between how rapidly corrosion
22 might be taking place if it's important and other
23 approaches to mitigating the corrosion. We've not seen
24 an analysis of that.

25 MS. DANOFF: Okay. And then do you know --

1 this may be something, too, that you haven't
2 investigated, but would you know whether any casks are
3 available that can be internally inspected?

4 DR. BUDNITZ: We haven't looked at that. I
5 just -- I just don't know.

6 MS. DANOFF: Okay.

7 DR. BUDNITZ: I mean, our committee has looked
8 at the casks here. That's our remit. Okay?

9 MS. DANOFF: And I have one more, mostly a
10 comment, but some years ago I read the environmental
11 impact report that was done for the steam generator
12 that's been installed and there was a recommendation --

13 DR. BUDNITZ: Me, too.

14 MS. DANOFF: -- made, it was a mitigation for
15 the spent fuel pools, that there be a spray water system
16 installed, you know, in case there was lost water in the
17 pool and then a report was distributed to this panel
18 that I just read today and it made that same
19 recommendation. So I wonder if you have any thoughts
20 about that.

21 DR. BUDNITZ: You probably -- it may be that
22 report I sent to the panel that came from the national
23 academy a dozen years ago. That was evaluated amongst
24 other improvements, and at this plant, it didn't make
25 enough of a difference. Remember that if you're losing

1 water, it's because you lost power. If you lost power,
2 that system isn't going to -- you can finish the
3 sentence.

4 So what you want to do if you get in trouble is
5 you've got to restore that power. That's why they have
6 eight diesel generators and they have to fly one in from
7 Phoenix or whatever and you have several days to do
8 that.

9 So that system was evaluated at that time and,
10 as I remember, it was thought that its vulnerability
11 would be vulnerable for most of the scenarios in which
12 you were in trouble anyway, which is lost power, which
13 made that heat exchanger pump system not work. Okay?

14 MS. DANOFF: Okay. Thanks.

15 MR. ANDERS: Thank you. Frank and then the
16 last question from Lauren.

17 MR. MECHAM: Thank you. Earlier, the question
18 was raised about the possibility of the Independent
19 Committee to continue through the decommissioning
20 process and I know you said you haven't made a
21 recommendation on that.

22 DR. BUDNITZ: Yeah, we haven't.

23 MR. MECHAM: The fact that the three of you are
24 appointed, is that -- is there a possibility that there
25 would be three new individuals on that panel and who

1 makes that --

2 DR. BUDNITZ: For sure.

3 MR. MECHAM: -- and who makes that final
4 determination?

5 DR. BUDNITZ: Oh, no. For sure. Here's how it
6 works. My term is coming up. It's every three years.
7 I've had four of them and my term is coming up in June
8 and a public process took place in January -- in
9 December, January in which the Public Utilities
10 Commission advertises for anybody in the world that's
11 qualified can apply and there were two other people that
12 applied besides me and the attorney general will make
13 that choice because I'm the attorney general's -- this
14 is the attorney general -- now, if we were to become
15 exclusively concentrating in some later time on spent
16 fuel issues, you probably want to have -- all three of
17 us have real deep expertise about that if that was our
18 scope. Right now our scope is much broader. It's the
19 whole of reactor safety, which is a whole lot of stuff,
20 which is you want people with that background.

21 MR. MECHAM: Thank you.

22 DR. BUDNITZ: But that's still -- that's
23 still -- not only is it a bunch of years in the future,
24 but that stipulates there will be a change in the
25 charter and I can't tell you about it. We just...

1 MR. ANDERS: Thank you, Frank.

2 DR. BUDNITZ: And even if we recommend it, we
3 don't know what's going to happen.

4 MR. ANDERS: Last question, Lauren.

5 MR. BROWN: Dr. Budnitz, in January we had two
6 full days of workshops.

7 DR. BUDNITZ: I know. I wanted to come, but I
8 couldn't. I was out of town.

9 MR. BROWN: We heard a lot of interesting
10 information and out of it we ended up with a bunch of
11 questions --

12 DR. BUDNITZ: Yeah, I know. You asked them.

13 MR. BROWN: -- and you have taken a good run at
14 giving us valuable comment on that.

15 DR. BUDNITZ: Thank you.

16 MR. BROWN: I want to thank you for that.

17 DR. BUDNITZ: Thank you.

18 MR. BROWN: And I do have one question.

19 DR. BUDNITZ: Go ahead.

20 MR. BROWN: One of the issues that has come up
21 is how rapidly should the spent fuel be moved out of the
22 pools into dry storage --

23 DR. BUDNITZ: You bet. That's a big issue.

24 MR. BROWN: -- and in one of the reports of the
25 NRC, I saw that there was some concern that if it moved

1 out too soon, that the temperature of the spent fuel
2 rods would increase a little more rapidly and --

3 DR. BUDNITZ: In the event of a loss of water.

4 MR. BROWN: Yeah. I mean, the water goes away
5 once you move it into the dry cask.

6 DR. BUDNITZ: No, no. Yeah, but you're talking
7 about the pools?

8 MR. BROWN: No. I'm talking about when you
9 finally do move it into the dry casks, the water, of
10 course, is not around, so you're depending on passive
11 cooling and what -- the issue is if you move these rods
12 out too soon or faster, that there's more heat generated
13 and could have a negative impact?

14 DR. BUDNITZ: So, first of all, the NRC has a
15 rule that it's got to be cool for five years, by which
16 time, the passive cooling would work even though nothing
17 here is that young, it's all been moved much longer than
18 that. Okay. So even if it was moved in a shorter time
19 than they're planning, the passive cooling would be
20 effective enough.

21 MR. BROWN: Okay.

22 DR. BUDNITZ: Okay? Does that help?

23 MR. BROWN: Thank you.

24 MR. ANDERS: Thank you. Nancy has one quick
25 question, then we're going to move on.

1 MS. O'MALLEY: Quick question. I just want to
2 make sure I really understand risk here about the spent
3 fuel pools. So if there's an increased density in the
4 pool, it does increase risk in the event --

5 DR. BUDNITZ: There's an increase of -- go
6 ahead. Increase of what? I didn't hear.

7 MS. O'MALLEY: -- increased density of fuel
8 assemblies in the pool, it would increase risk in the
9 event that the water evaporates and there's a fire, but
10 having increased --

11 DR. BUDNITZ: Not quite. Go ahead.

12 MS. O'MALLEY: No? Is that not true?

13 DR. BUDNITZ: No. Keep going.

14 MS. O'MALLEY: I'm just trying to understand
15 the thinking here, but by having a larger density of
16 older fuel assemblies, it would increase the time to
17 ignition if the water did evaporate?

18 DR. BUDNITZ: Well, it's not -- yeah. Let me
19 say it's a trade-off. Keeping more stuff in the pools
20 makes it less safe than if it was in the casks, but
21 keeping that old stuff in the pools makes it more safe
22 against the accident we fear, which is the loss of
23 water, because the heat-up of the thing would be slower
24 because of all that extra mass. So there's a trade-off
25 between more and less safe in this decision.

1 MS. O'MALLEY: But if it did heat up, it would
2 be worse because there's more material --

3 DR. BUDNITZ: Yeah. If ultimately you really
4 couldn't do anything and it did, then there would be a
5 larger what we call source term. There's more of the
6 radioactivity is now there than would have been up
7 there.

8 MS. O'MALLEY: And then there's also the risk
9 of the number of years that fuel is in the pools rather
10 than in dry storage. So --

11 DR. BUDNITZ: Yes. The risk is --

12 MS. O'MALLEY: -- is that a good trade-off --

13 DR. BUDNITZ: Yes. The risk is --

14 MS. O'MALLEY: -- is that a good trade-off to
15 say --

16 DR. BUDNITZ: Yes.

17 MS. O'MALLEY: -- let's do all we can to
18 minimize the number of years that we actually have fuel
19 in the pool --

20 DR. BUDNITZ: Yes. That's --

21 MS. O'MALLEY: -- even if it means a higher
22 density?

23 DR. BUDNITZ: That's the other trade-off. Let
24 me try to explain to everybody. Let's imagine that the
25 accident we're worried about is just plain you lost

1 off-site power, the diesel didn't start and you couldn't
2 keep the heat exchanger going, and a long time later,
3 days, it finally evaporated. Okay? Now, that accident
4 can take place any day. It's very unusual, but it might
5 start tomorrow or it might start a year from tomorrow.
6 If it's going to be 20 years instead of 10, there's now
7 20 years for that to happen rather than 10. Yeah. So
8 that's -- right? But -- so that's the trade-off. On
9 the other hand, there's this other trade-off, too.

10 So there's several different indicators of the
11 safety and the risks that have to be thought about
12 together to decide which is the best balanced approach.
13 Okay? And you put your nail right on -- you put the
14 hammer right on the nail. That possibility, which is, I
15 would say, linear or proportional to the duration,
16 though, is actually mitigated by the fact that if you
17 wait, you know, 20 some -- there isn't any young fuel
18 anymore. Okay? That is after only two or three years,
19 and ten years later, ten years, it's 2025, in 2035, the
20 youngest fuel is ten years old and, therefore, if you
21 waited a real long time, and there are plants that are
22 doing that, as I suppose you know, there are plants that
23 are going to wait 50 years, that risk, although it
24 continues, is reducing each year because of the decay
25 and the source term and the heat.

1 So there's a whole bunch of different positives
2 and negatives to balance to make that judgment. That's
3 a very fair description of different people having
4 different values, even though it's really all -- it's
5 quite safe. You know, this isn't -- this isn't an
6 accident waiting to happen tomorrow. It might, but we
7 don't think it is.

8 MR. ANDERS: Thank you very much, Dr. Budnitz.
9 Thank you for traveling all this way.

10 DR. BUDNITZ: It's not so far. 25 minutes in
11 an airplane.

12 MR. ANDERS: Thank you.

13 DR. BUDNITZ: It took longer than that to go
14 through security.

15 MR. ANDERS: Our next item on the agenda is to
16 hear from PG&E, and to start us off, Tom Jones is going
17 to discuss an overview of PG&E's spent fuel storage
18 strategy and schedule.

19 So, Tom, you're going to speak from what we
20 call the pit down there?

21 MR. JONES: Yeah. So my partner, Mark Mayer,
22 and I will both be down here to address panel questions.
23 So I'll be talking about some of the regulatory
24 components that got us here today, and then Mark Mayer,
25 for those in the audience, he handles all of our fuel

1 programs, both how we procure the fuel in its
2 composition and its disposition at the plant, how we
3 store it, and he runs our dry cask storage program, as
4 well. He's a recognized expert on that and he'll be
5 here tonight to talk about some of those strategies and
6 these areas of opportunity as we embark upon pursuing a
7 request for proposal for some modification to our system
8 to overall reduce the time in the pool and the way we
9 handle the fuel.

10 Okay. So the purpose tonight for our
11 presentation is to describe our current spent fuel
12 storage system. We've updated, based on the panel
13 feedback, our public videos that explain how we manage
14 the fuel and it's now all in high-def and it's quite
15 easy to see. I think you'll find that we have a
16 truncated version. The panel's seen a 15-minute
17 version. This is about a 3-minute condensed version.
18 Both will be moving to our website and it's also
19 available for the public tonight in our exhibit room
20 just outside of the main doors here, and then Mark's
21 going to talk about the next steps in the process and
22 how we'll look at addressing these complex issues that
23 you've tackled so far tonight.

24 So Adam's going to go ahead and cue up the
25 video here for us. It will be about a three-minute

1 video here, maybe four.

2 MR. MECHAM: Do we get popcorn?

3 MR. JONES: No, you do not.

4 (Video played.)

5 MR. JONES: So that's the CliffsNotes version
6 of that, and the other version, of course, is available
7 outside, but thanks to the panel, also, for some of your
8 feedback and we incorporated that in the video with the
9 numbers and to scale of the video imagery.

10 What got us here and where we're reevaluating
11 some of the times, there are two regulatory events in
12 the State of California. One was through the joint
13 proposal where we have an agreement to look at
14 benchmarking San Onofre's used fuel storage, and at the
15 time, their estimated completion was seven years. As we
16 know, they've had some fuel-handling events that have
17 changed their time frame and we're still following that
18 and our team, including Mark, work closely with them and
19 that's an industry-wide watched event.

20 Additionally, once we've come up with a plan,
21 it's to then be shared with the Energy Commission that's
22 begun and we have an ongoing plan with the Energy
23 Commissioning including a tour currently scheduled for
24 them for April 4th to go through the facility and then
25 give us some of their input to be included in our

1 request for proposal on some new or modified system.

2 Additionally, in the previous Nuclear
3 Decommissioning Cost Triennial Proceeding, it was the
4 2015 proceeding that was ruled on in 2017. The decision
5 was it's reasonable for PG&E to look at seven years
6 versus ten. Our current technical specification in our
7 license on average has about a ten-year storage time in
8 the spent fuel pool before it's loaded. Mark's going to
9 go into some of the reasons behind that. The
10 regulations might change, our licensing might change,
11 but the physics doesn't and so his team has to do,
12 essentially, a custom blend on every cask that's loaded
13 to balance the heat and radiation levels.

14 So it's these two events that now have us
15 contemplating how to make some modifications to the
16 system to lower overall loading times and potentially
17 change its configuration, and so with that, I'll hand it
18 over to Mark.

19 MR. MAYER: Thanks, Tom, and good evening,
20 everyone. What we're looking at here is our initial
21 assessment of what -- well, what changed with trying to
22 go to a seven-year offload. If you look right here,
23 these are the old curves that we used to have in our
24 earlier submittals. This one looks at our current
25 plans, which would basically leave all the pool alone

1 until we reach the ends of our operating license and
2 then let everything cool off and offloaded everything at
3 that point in time.

4 One of the things that come out of that will be
5 a choice of another cask because our current cask limits
6 do not have enough flexibility in the license
7 requirements to allow us to offload that quickly. So
8 like Tom was talking about, we'll be looking at a
9 request for proposal from the three vendors to come up
10 with a more up-to-date, more capable cask design.

11 One of the other things Dr. Budnitz did a nice
12 job of covering was the decay heat dispersal. So the
13 requirements that we have for trying to disperse decay
14 heat to share that decay heat among colder assemblies
15 with one hot one requires us to basically keep four
16 colder assemblies, four assemblies that have been in the
17 pool for at least a year so they've had a chance to
18 substantially reduce their decaying. For every hot
19 assembly that we discharge, it's a requirement that if
20 we are going to leave the assemblies in the pool for
21 more than 60 days, we have to distribute these
22 assemblies to basically share that heat-up so that it
23 slows down the overall heat-up of any fuel that would be
24 in the pool and that's a mitigative strategy that the
25 NRC refers to as B5 Bravo.

1 So if we were to do a full core offload at the
2 end of life, for example, you know, it's going to sit
3 there for more than 60 days. So we would have to have,
4 basically, the 772 assemblies that you see here on this
5 line.

6 The previous campaigns that we had planned had
7 us dipping a little bit below that on a couple of our
8 campaigns when we would offload fuel from the pool into
9 the dry cask storage. So we would dip down below that a
10 little bit and the issue there would be is if we would
11 have a refueling outage, we would basically have to
12 credit the new fuel, the unirradiated fuel for those
13 additional decay heat dispersal requirements, should we
14 have to leave the core out of -- the containment out of
15 the reactor for extended periods of time. So it's okay
16 to go a little bit below it as long as we would have new
17 fuel to share that e-load. So, basically, you've got an
18 assembly that would absorb all that heat, but it's not
19 generating any of its own.

20 So we were talking about the request for
21 proposal from the three vendors. So what you see here
22 is basically what you could characterize as an area of
23 opportunity, this green area in the graph right here.
24 So you see the green block, that's basically the
25 underside of what we expect the worst case to be, to get

1 down to that seven-year offload time. If we were to
2 find a cask vendor that could substantially improve on
3 that, we could conceivably start offloading sooner and
4 trim a lot off of that green area. So that will be one
5 of the key items that we'll be looking at when we look
6 at our request for proposal.

7 Moving along. So you guys have seen the casks
8 up on the hill and so you know that we use the empty
9 C32. So that's a canister that can hold 32 assemblies.
10 It has a number of restrictions. It's -- in our
11 license, it requires our fuel to have at least five
12 years of cooling and there's an intricate set of
13 relationships that we have to meet to make sure that
14 those fuel assemblies meet the right combination of
15 burn-up, decay time, decay heat, right? We don't want
16 to put too much decay heat into a canister because it's
17 not designed to dissipate that kind of heat. Our
18 calculation requires us to be less than 62 gigawatt days
19 per metric ton of uranium. We have to keep our decay
20 heat on the hot assemblies down below 1.1 kilowatts,
21 1,100 watts. That's for the design with the two color,
22 the two region up here. So the inner assemblies could
23 be at 1,131 watts. These outer ones have to be below
24 600 watts, and so that's -- the question has come up why
25 do we need cold assemblies to go with the hot

1 assemblies. So these would be the hottest assemblies
2 that we could ever discharge under our current license,
3 and so for every one of these, we need basically one and
4 a half cold assemblies, and when we get down to 600
5 watts, we're talking about something that's been sitting
6 in the pool for quite a few years. Not five years.
7 We're talking, like, 15 years, 20 years. So for every
8 one of those red assemblies, I have to come up with a
9 couple of blue ones and it has to be really decayed.

10 The other alternative is to go with what we
11 call a uniform loading pattern. That one allows you an
12 intermediate amount of decay heat. So in our case right
13 now, it's 898 watts and we could go and load the whole
14 cask with those, but that takes a large population of
15 our fuel out of the picture because they haven't decayed
16 down to that 898 watts. So those red assemblies in this
17 region are typically too hot to meet the requirements
18 for the uniform loading.

19 So there are assemblies that would have to
20 remain in the pool potentially for extended periods of
21 time. If I don't have enough of these light blue ones,
22 then it's going to have to sit until some of the other
23 fuel assemblies make it to that light blue category.

24 Timeline. So what we're looking at is for
25 RFP, we're expecting, to issue the request this year.

1 So we'll be talking to the vendors, getting an official
2 letter out to request that proposal.

3 Let's see. Where are we talking here? So
4 we've done our dry cask storage workshops, right, Tom?

5 MR. JONES: Correct.

6 MR. MAYER: So we're going to get ready here
7 to -- well, we're talking today, actually. This is the
8 engagement panel meeting. We'll be evaluating feedback
9 and updating our RFP based on any inputs, any
10 considerations that get brought to our attention, we'll
11 hold a CPUC case workshop in April and then our
12 decommissioning team will be looking at starting
13 hearings for our NDCTP, our triennial proceedings for
14 the nuclear decommissioning costs.

15 A little later on in the year, we will actually
16 issue that request for proposal and we'll get the offers
17 back from our vendors and then we'll start our
18 evaluation. The current schedule has us issuing our
19 purchase order sometime in the 2021 time frame. In
20 2021, we'll have our next triennial proceeding for our
21 decommissioning costs. Somewhere in that time frame,
22 we'll be looking at doing the design, the licensing and
23 the permitting required to change out the storage
24 systems because right now we have a license for,
25 basically, a single system and that system doesn't meet

1 the expectation of seven years. Then, obviously, in
2 late 2024, Unit 1 will shut down, and at the end of the
3 summer in 2025, Unit 2 will shut down.

4 So confirming here. So it's definitely -- and
5 you heard Dr. Budnitz talk about safety. It's safe and
6 feasible to offload our fuel after about seven years.
7 We've gone through enough evaluations and looked at the
8 offerings from the three vendors and we're comfortable
9 that all of that can be accommodated in that seven-year
10 time period.

11 There is a significant amount of additional
12 engineering required to deal with our Greater Than Class
13 C Waste. There's a very strong effort in our
14 decommissioning team out there right now trying to get
15 their hands around that problem and make sure that it
16 stays manageable. Obviously, one of the considerations
17 will be where do we store it and we may actually have
18 ability to store more stuff on the pad with a new
19 system. So it may also help us accommodate our Greater
20 Than Class C Waste storage and disposal.

21 Further expediting could be achieved and driven
22 by responses to our RFP process. So we'll be able to
23 take advantage of the vendors' willingness to work with
24 us to come up with a better system.

25 Additional loading campaigns ends up dealing

1 fuel transfer to the ISFSI and it can commit additional
2 spent nuclear fuel to dry cask storage design. It's --
3 basically, it's not necessarily better to keep on
4 emptying the pool now. It could be better to leave it
5 at the end. That's our current feelings. We need to
6 have those blue assemblies rather than just purple ones.

7 And then the NRC licensing is going to have to
8 be looked at again. Right now we have a site-specific
9 license. Changing vendors and systems, potentially, we
10 could look at a site-specific license still or we could
11 go with a current Certificate of Compliance. There are
12 a lot of licensing aspects of that that need to be
13 evaluated to determine what the best course of action
14 will be.

15 Our current action plan. So we'll be doing --
16 well, we've included already in the triennial
17 proceedings estimates what we think the cost estimate
18 will be for the seven-year offload schedule. The RFPs
19 will be upcoming after we talk to the California Energy
20 Commission. We'll be, obviously, working with the
21 engagement panel to try to make sure we get the best
22 answer that we can and we'll make sure that we also
23 touch basis with any affected stakeholders.

24 We anticipate offload schedules will be less
25 than seven years, like I talked about our area of

1 opportunity. So we would like to trim that as much as
2 everyone. And let's see. In 2021, we'll be updating
3 our cost estimates based on what that RFP evaluation
4 looks like and which system we decide is optimal for our
5 case and then we'll be pursuing the appropriate
6 licensing actions, either a license amendment request or
7 other regulatory reviews and approvals for an updated
8 system.

9 And with that, I'd like to say thank you for
10 giving us the opportunity to speak to you guys and
11 present this information. Tom.

12 MR. JONES: So we're available for any
13 questions that the panel might have.

14 MR. ANDERS: We have opportunity for a few
15 questions. Lauren, Frank, Scott, Alex, Nancy, Kara.

16 MR. BROWN: Mark, I just want to clarify. The
17 main driver for looking at a new dry cask is to reduce
18 the period of time required from ten years to seven
19 years? Is that the main driver?

20 MR. MAYER: Lauren, that's definitely a key
21 driver. I don't know that I could qualify it as the
22 main driver.

23 MR. BROWN: So what are the other drivers?

24 MR. MAYER: Obviously, one of the big drivers
25 will be just being able to decommission the plant. So,

1 yes, shortening from ten years to seven years will help
2 us in that respect. The other driver, in my mind,
3 anyway, is the regulatory requirements. Because of the
4 way our current license for our ISFSI is written, it's
5 conceivable that we could have to hold stuff for a lot
6 longer than even ten years. It could go up to, if I
7 remember right, 13 years depending on the combination of
8 inserts and fuel that we end up with in the last cycle.
9 So it increases our flexibility in our long-term
10 planning.

11 MR. ANDERS: Okay. Scott.

12 MR. LATHROP: Next? Okay. Great. I was kind
13 of wondering about the pool itself, the number of
14 assemblies that actually can be in the pool at one time
15 and I was kind of curious about whenever you load the
16 pools for the last time, how many assemblies would
17 actually be in the pool at that time.

18 MR. MAYER: So I'd have to dig up the numbers
19 for that, but the pools are licensed for 1,324
20 assemblies. The final estimate -- and this is me
21 remembering off the top of my head -- there will be
22 roughly 40 or 50 empty spaces in the pool when we
23 finally offload that last pool.

24 MR. LATHROP: So pretty much --

25 MR. MAYER: So somewhere around 1,280 or

1 thereabouts.

2 MR. LATHROP: Okay.

3 MR. JONES: And I would just add that's if the
4 RFP doesn't give us a cask that's with a licensing path
5 where we can still load in the 2024-2025 period. So
6 when Mark talked about that area of opportunity -- if
7 Adam can bring back up Slide 14 -- this doesn't
8 necessarily preclude loading. What we've just
9 forecasted is moving the entire bookend from ten to
10 seven years, and depending on the speed with which we
11 can license and acquire technology, an existing
12 technology and existing Certificate of Compliance, there
13 could be the opportunity for some activity prior to
14 2025. It's that blend he has to come up with.

15 MR. LATHROP: Yeah. I think I understand.
16 What I was kind of interested in is that whenever you
17 load the pool for the very last time, if the hot fuel,
18 the new fuel has to stay in a certain amount of time,
19 five years, seven years, whatever it is, I was just
20 curious about how many other assemblies need to be in
21 the pool at the same time because that kind of addresses
22 the issue of risk as far as the numbers at least in the
23 pool.

24 MR. MAYER: Okay. So as far as what has to
25 remain in the pool, after a year of cooling, we don't

1 have any decay heat disbursal requirements for the B5
2 Bravo. In the first 120 days, we have to have four cold
3 assemblies for every hot one discharged. It forms like
4 a plus, a plus sign, and you can't share heat sinks.

5 MR. LATHROP: So after a certain amount of
6 time, you can start taking assemblies out, is what
7 you're saying?

8 MR. MAYER: Right.

9 MR. LATHROP: And they don't have to stay in
10 there for that whole period of time of five years or
11 something like that?

12 MR. MAYER: That's correct. So at 120 days, we
13 have to be in the plus. After 120 days out to a year,
14 then we have to -- we can share more. So at that point
15 in time, we could start reducing the number of
16 assemblies.

17 MR. LATHROP: And that's just a matter of
18 schedule how many you can take out at a time safely?

19 MR. MAYER: Right. How many you can take out
20 safely and there would be, also, project logistics. It
21 would be tough to load three casks down and stand down
22 and then a year later start up and load another ten
23 casks and then stand down and then five years start this
24 big campaign.

25 MR. LATHROP: Sure. Understood. Thanks.

1 MR. ANDERS: Thank you, Scott. Frank and then
2 Alex, Nancy, Kara, Linda. Did I miss anybody? Okay.
3 David.

4 MR. MECHAM: Just quickly. If -- and it's a
5 great big if -- a consolidated site was established,
6 let's say Yucca Mountain didn't get going, are the casks
7 that are currently there, are they capable of transport,
8 and the casks that you're going to be going out for an
9 RFP, will they be designed for transport?

10 MR. MAYER: So I'd have to dig out some
11 information for you on that one, Frank, but what I
12 remember is our current cask, we would have to go to a
13 new cask using our NPC as a core and use that for
14 shipping. The newer ones, I think, have shipping
15 modules, or whatever, that go with them that are already
16 qualified. I can find out and I will get back to you on
17 what the current --

18 MR. MECHAM: Thank you.

19 MR. MAYER: -- shipping requirements.

20 MR. MECHAM: Appreciate it. One other
21 question, if I could. If, for some reason, we had a
22 problem with one of the dry casks that are already up
23 there, what's the procedure for removing that and
24 getting it back into a spent pool?

25 MR. MAYER: So that would require some writing

1 of new procedures, basically. We don't have an active
2 procedure that allows us to just go in and immediately
3 execute it. We would have to work out the details and
4 get --

5 MR. MECHAM: I guess it would be dependent on
6 what the problem was?

7 MR. MAYER: Right. So we don't have a canned
8 procedure on the shelf that we could just go and pick it
9 up.

10 MR. MECHAM: Okay. Thank you, Mark.

11 MR. ANDERS: Thank you, Frank. Alex.

12 MR. KARLIN: Yeah. Thank you. Thank you,
13 Mark. I just think the public ought to sort of --
14 here's my synopsis of, I think, what has occurred and I
15 think it's worth recognizing. From 2009 to the present,
16 PG&E has offloaded 58 casks onto the ISFSI in seven
17 separate campaigns. So that averages, you know, 5.8
18 casks a year over the last ten years. They've offloaded
19 already and this is good because you have a pool with
20 casks in it and they're trying to remove casks and get
21 the total amount in the pool less. Also, there are
22 additional casks being added as the plant operates.

23 PG&E, as I understand it, has unilaterally
24 decided to halt that offloading campaign and they are no
25 longer doing that and, instead, they are proposing, it

1 seems to me, in their triennial submission to let the
2 cask -- instead of continuing to offload regularly, let
3 them build up and stay there until the closure when you
4 get, like, 1,300 casks in each one of those pools,
5 1,285, and then leave all of those casks there for
6 another seven years.

7 So I don't understand why PG&E unilaterally
8 decided to halt its offloading campaign that was working
9 and was reducing risks, but they will tell us, as they
10 just did, that there are heat issues that make it
11 difficult, but it's worth noting that high bridge
12 associates, who is an independent consultant that PG&E
13 hired for its decommissioning estimate, had four major
14 issues with what PG&E is proposing and one of the top
15 ones was they were keeping the spent fuel in the pool
16 considerably longer than industry averages and I think
17 this is a problem.

18 MR. ANDERS: Thank you, Alex. Nancy.

19 MS. O'MALLEY: Thank you. I have a question
20 about the final -- the full core offload. So that last
21 offloading, is that going to be some of the hottest fuel
22 that you've ever offloaded?

23 MR. MAYER: The fuel that we will be offloading
24 at the end of life would be very similar to anything
25 else that we've discharged.

1 MS. O'MALLEY: Okay. And so -- and you
2 mentioned that you need -- 772 assemblies will be needed
3 for that, older fuel assemblies will be needed to match
4 that?

5 MR. MAYER: That's correct.

6 MS. O'MALLEY: Okay. And if you use the
7 current cask systems, suppose that you don't get a
8 license or, you know, the -- you know, it's not -- the
9 new casks aren't approved and you have to use your
10 current system, how long would it take to use -- to be
11 able to offload or to be able to put these into dry
12 storage, your final offload?

13 MR. MAYER: If we were to stick with our
14 current license as it's written right now, it would
15 probably take a little over ten years.

16 MS. O'MALLEY: A little over ten years. So
17 this is really the rate-limiting step for beginning your
18 decommissioning, is that right, or to be able to...

19 MR. JONES: Can you ask that a different way,
20 please?

21 MS. O'MALLEY: I don't know. Is this a step
22 that could slow down the whole decommissioning process?

23 MR. JONES: It is. So one of the things we can
24 do while there's fuel in the pool, regardless if it's,
25 say, two years, five years, ten years, we can remove

1 large components from the containment domes, like steam
2 generators, things like that, but because of the
3 commonality of the buildings, we can't start the
4 demolition around those associated structures because
5 they're adjacent to the spent fuel pools. That's a risk
6 we wouldn't take. So that's one of the key drivers for
7 the overall project schedule is that there's still any
8 spent fuel in the spent fuel pool.

9 Additionally, that changes a lot of the costs.
10 So the security parameters from our steam don't change
11 if there's one assembly or 200 assemblies or a thousand
12 assemblies. You have to have that profile until that
13 transfer is complete and where it what we call
14 ISFSI-only fuel. So if the pool is empty from the fuel,
15 then that changes a lot of other things and allows us to
16 move ahead with the demolition.

17 MS. O'MALLEY: Okay. So it's definitely in
18 PG&E's best interest to get the fuel out of the spent
19 fuel pools quickly because it's more costly to keep it
20 in the pools, as well as it will slow decommissioning?

21 MR. JONES: That's part of the analysis. In
22 addition, that's a consumer benefit because the
23 decommissioning cost is a direct pass-through. There's
24 not a profit margin in this instance. So that's one of
25 the reasons we're looking at this, is how does it change

1 the overall scope of the project and change the project
2 schedule.

3 MS. O'MALLEY: Okay. And then my last question
4 has to do with licensing. So it seems like kind of a
5 tight time frame. So you have four years -- so it
6 sounds like you put in the purchase order before you
7 know if you have the license or not; is that correct?

8 It said PO. I assume that meant purchase
9 order. Do you put in the purchase order and then you
10 submit your paperwork for licensing and so then there's
11 four years for them to come up with the design and
12 licensing, as well as fabricate these?

13 Is that kind of a tight time frame? What do
14 you think the odds are of achieving this?

15 MR. JONES: We don't offer odds that way. So
16 I'm not going to give you a one and two number, for
17 instance. What I will tell you is the RFP -- I don't
18 think there's going to be some new technology just
19 invented for PG&E and Diablo Canyon. There's an
20 evolution of these casks. Think like going out for a
21 new fleet purchase of vehicles. There might be a 2019
22 model, but it might have been around for ten years and
23 be updated and licensed.

24 So if there's -- Mark had mentioned a
25 Certificate of Compliance. If there's one that already

1 meets our technical specifications, then that can be
2 kind of an off-the-shelf purchase and then you're really
3 down to that fabrication time, which is typically about
4 two, two and a half years for both the contracting
5 procurement and lead time.

6 That's roughly what they are today, correct,
7 Mark?

8 MR. MAYER: It's about a year once we decide to
9 order.

10 MR. JONES: Once we decide to order. Okay. So
11 the fabrication is a long lead time, but it's not a
12 duration of four years. So that's part of what's going
13 to go into the RFP. We're going to balance all those
14 things, what's the deliverability, what's the ongoing
15 support from the vendor and then what's the regulatory
16 path. So all of these things are going to be
17 contemplated on top of how it handles the heat loading
18 and radiation shielding.

19 MR. ANDERS: Okay.

20 MS. O'MALLEY: Just one last thing. It is a
21 site-specific license; is that correct?

22 Plus, all the seismic constraints, you don't
23 think licensing will be a problem?

24 MR. MAYER: Our current license is
25 site-specific. We don't know if the suppliers will be

1 able to give us a Certificate of Compliance design that
2 would meet our seismic. That would be part of the
3 engineering review and assessment. That would determine
4 whether or not we needed to have a site-specific
5 license.

6 MR. ANDERS: Thank you, Nancy. Before we go on
7 with further questions, we're going to have a quick
8 break in a few minutes and after that we'll have the
9 opportunity for public comment. I want to make sure
10 that anyone who would like to comment fills out a blue
11 card and gives it to Michael over here so that we have
12 those cards that we can compile the list at the break
13 and be ready to go after the break.

14 So, Kara, question.

15 MS. WOODRUFF: Thank you for your presentation.
16 As usual, it was very informative.

17 So Alex brought up, I think, a very provocative
18 issue, that a third party commented that PG&E had
19 unilaterally made some decisions to slow the transfer of
20 spent fuel from the pool to the cask and it seems to me
21 that it warrants a response from you because there's a
22 lot of people in the audience today. Can you respond to
23 what...

24 MR. JONES: Yes. This came up at our workshops
25 and I think we heard from many of the vendors, too, is

1 every one of those older assemblies is an opportunity to
2 complete the overall campaign quicker. So we know we
3 have that base inventory of 772, approximately, to
4 accommodate the full core offload, and, again, we talk
5 about that area of opportunity. Depending on which
6 technology we pick and what licensing path we have, it
7 doesn't necessarily preclude future operations. What
8 that green line does is that sets the outside limit of
9 how we would handle fuel in the pool and achieve
10 complete offload seven years as encouraged and specified
11 by the Utilities Commission. So that whole shaded area
12 is what the RFP will give us back. So that's why we've
13 made that decision and that's how we're pursuing these
14 other things.

15 If we didn't change our loading strategies in
16 our system to some degree, we couldn't achieve the seven
17 years, as Mark talked about. So these are some of the
18 steps we feel are necessary and puts us in the best
19 position to handle our fuel strategy.

20 MS. WOODRUFF: So a big part of your strategy
21 is this checkerboard design where you're matching up
22 cooler assemblies to hotter assemblies, and as I
23 understand it, that comes into play in two ways. Number
24 one, if you have this combination of cool and hot
25 assemblies in the pool and if there should be a

1 disaster, it gives you greater response time to provide
2 extra water if the water should drain out, and then the
3 second benefit of the checkerboard is that you could
4 possibly contain more assemblies in every canister
5 because you have the hot and the cold doesn't exceed
6 those limits that are prohibited by your license; is
7 that correct, or did I say that wrong?

8 In other words, the checkerboard isn't just for
9 the pools, it's also for the cask design and storage, as
10 well, correct?

11 MR. MAYER: The purpose of the checkerboards,
12 really, the B5 Bravo dispersal requirements is to give
13 us a longer coping time. So it also does have a side
14 benefit of us having to maintain some additional
15 assemblies in the pool, but it doesn't require us to
16 keep as many as all of them to the last day.

17 MS. WOODRUFF: So the core reason to have this
18 blend of hot and cool assemblies is if there is a
19 disaster, you have more time to respond before
20 catastrophic conditions result; is that right?

21 MR. MAYER: That would be the purpose of the B5
22 Bravo requirement, the dispersal, but like we talked
23 about in -- I think it was Scott's question, that only
24 really applies for a year. After that, we would be able
25 to start offloading.

1 MR. JONES: Adam, if you bring up Slide 15, I
2 think I know where Kara is headed with this. I think
3 the visual is going to help us here. Can you see it?

4 MS. WOODRUFF: I'm looking at the visual. So
5 this is a canister containing the assemblies, correct?

6 MR. MAYER: That's correct.

7 MS. WOODRUFF: And under the top -- in the top
8 canister, you have the hot and cool assemblies, which is
9 permissible because it's under the limits for the
10 license?

11 MR. MAYER: Correct.

12 MS. WOODRUFF: And describe the second one for
13 me.

14 MR. MAYER: So the second one is basically not
15 having any specific regional aspects. So if I wanted to
16 put in, basically, an average assembly where they're all
17 the same, if they had to meet the same requirements,
18 then I'd get what's in purple. So none of them have any
19 higher or lower requirements for decay heat than any
20 other assembly in that cask.

21 MS. WOODRUFF: Okay. I think I'm going to take
22 some time to ask you more about this later --

23 MR. MAYER: Certainly.

24 MS. WOODRUFF: -- but I will ask you what
25 happens if you did exceed the limit? I know you won't

1 and you can't, but what would happen if you did?

2 MR. MAYER: If we exceed the limit, that's
3 basically a tech spec violation on our license. So you
4 would --

5 MS. WOODRUFF: Yeah. I understand. I'm just
6 curious. So there's a limit for a reason. It's not
7 only just to comply with your license, but what would
8 happen? What would be the physical result if you had
9 above the wattage limit?

10 MR. MAYER: Right.

11 MS. WOODRUFF: What happens? Does the can
12 crack? What happens?

13 MR. MAYER: No. You end up with probably just
14 high pressure inside the cask. So what you end up with
15 is more heat. So the gas in it gets hotter and the
16 pressure goes up. Realistically, I wouldn't expect that
17 it would result in a catastrophic failure, but it would
18 put us outside of what we had been analyzed for.

19 MS. WOODRUFF: Thank you.

20 MR. ANDERS: Thank you, Kara. We have Linda,
21 David and Nancy. We have just a few minutes before our
22 scheduled break and then our public testimony after
23 that. So out of respect for the public, who has been
24 waiting to talk, I'd request that you make -- we make
25 our questions and responses very concise. So Linda.

1 MS. SEELEY: Thank you for your presentation.
2 Three -- I have three questions. One, of the B5 Bravo,
3 when did that start? That's the first thing. Is that
4 new?

5 MR. MAYER: So B5 Bravo actually came out of
6 the 9/11 incident where they had an airplane fly into
7 the World Trade Center. So the NRC ended up with
8 interim security order B5 Bravo. So it's part of an
9 interim security order that became part of the licensing
10 requirements.

11 MS. SEELEY: Okay. And then do you think that
12 maybe that the new casks that you're going to get, that
13 they might have a higher whatever that's called, like
14 fuel heat capacity and that's why you think maybe you
15 can offload sooner?

16 MR. MAYER: So the -- if you look at the
17 current offerings from the three vendors, they have peak
18 decay heat allowables for their hot region, the red
19 region in our design, on the order of 1.7 kilowatts
20 instead of 1.1. So there's about a 50 percent
21 improvement in the peak decay heat. They still have
22 that ring of colder assemblies or regions of colder
23 assemblies that need to go in there. So you still need
24 cold assemblies, but you can put a hotter one in, which
25 means it can be taken out of the pool sooner.

1 MS. SEELEY: Okay. That's what I thought. And
2 then the third one is when you talked about Greater Than
3 Class C Waste, it seemed you referred to it as being
4 problematic and I wonder -- I think maybe we haven't
5 paid much attention to it because it sounds so benign,
6 Greater Than Class C Waste. What's the problem with it?

7 MR. MAYER: So, basically, Greater Than Class C
8 Waste is material that's been highly, highly irradiated.
9 It's beyond what you can normally dispose of. So it has
10 to be stored in something like a dry cask.

11 So like at Humboldt, we have one cask with
12 Greater Than Class C Waste. Here at Diablo, our
13 estimates are -- I think it's four per unit right now,
14 plus a little bit of extra for miscellaneous.

15 So the question is where do you put those
16 casks, and right now with our current license system, we
17 need all of the spaces on the pad that we have right
18 now.

19 MS. SEELEY: Okay. And then just one quick
20 comment. I hope that in your request for proposal to
21 RFP that you'll ask for the very finest cask that
22 possibly could be made in the whole world and the
23 ratepayers will be happy to pay for it.

24 MR. ANDERS: Thank you, Linda. David, then
25 Nancy and then Jim.

1 MR. BALDWIN: You mentioned one of the major
2 drivers was a more -- I think you called it a more
3 capable cask design for -- I guess for your -- the
4 changes that you want to make to the loading campaigns
5 going forward.

6 Do the workers that load, they're involved in
7 these loading campaigns both -- I guess they must spend
8 a large amount of time in the fuel-handling building and
9 then on their way up to the ISFSI. Do those workers
10 regularly receive a dose of radiation for that work?

11 MR. MAYER: So all of the key players in that
12 would be radiation workers. So they follow all the
13 rules and all the requirements that we have for our
14 radiation.

15 MR. BALDWIN: I understand there's within the
16 limits, I guess should have been part of my question.
17 I'm not suggesting that they would be outside the NRC's
18 limits, but I know, as a former radiation worker, you
19 are allowed to receive certain amount of dose per the
20 job you're doing as long as it's within the limits and
21 what is expected.

22 So do the workers involved in the loading
23 campaigns receive some dose?

24 MR. MAYER: Yes, they do.

25 MR. BALDWIN: And so then my next question is

1 will any new canister design take into account reducing
2 that dose or the potential for higher dose should there
3 be a mishap in a loading campaign?

4 MR. MAYER: So all of the cask vendors include
5 in their design any kind of measures that they can put
6 in to mitigate radiation. So they're designed to shield
7 the workers the best they can from handling. There is
8 only so much shielding you can put in before it becomes
9 too difficult to move or requires a bigger crane to pick
10 it up. So we have limitations based on our current
11 plant infrastructure. We'd have to work all of that in
12 with it, but they will do what they can to reduce
13 occupational exposure.

14 MR. BALDWIN: Okay. I hope that will be part
15 of it. We talk a lot here about the public's safety as
16 far as dose rates or should there be some mishap, but
17 there's a whole 'nother group and that's people that
18 actually work at the power plant that are involved in
19 this. There's obviously controls in place to make sure
20 those workers are safe, but if we can do it safer and
21 there's less dose, that's always the goal, and I would
22 think if we're going to redesign and go through what's a
23 huge process, I would imagine, to redesign a cask
24 system, why would we not make a cask that has less
25 potential for higher doses for the workers, you know,

1 and why not make something that's safer for the loading
2 campaign so that the workers receive less dose. If
3 we're going to go through all this trouble of
4 redesigning the whole setup in the first place, that
5 seems like -- as a layman, that seems like it would make
6 good sense to me. If I were loading those casks, I
7 would want to know that that's being done.

8 MR. MAYER: And that will be a factor in what
9 we evaluate.

10 MR. BALDWIN: And the second part, I just had
11 more -- I guess it's more of a comment because it's not
12 to do with Diablo, but when I was listening to the
13 video, the narrator mentioned that the ISFSI facility
14 was constructed some 300 some odd feet above sea level,
15 I think, and then they mentioned because of sea level
16 rise or climate change. I can't remember exactly how
17 they worded it. This panel went on a tour of the ISFSI
18 facility down at San Onofre and one of the things I
19 remember is it seemed to be right at sea level or
20 thereabouts.

21 Does the NRC not require an ISFSI to be built a
22 certain number of feet above sea level?

23 MR. MAYER: There aren't any requirements that
24 I'm aware of for elevation above sea level. From our
25 perspective, there were distinct structural and seismic

1 advantages putting it up above our plant.

2 MR. JONES: And with the San Onofre project,
3 the Coastal Commission gave them an expiration date
4 because of sea level rise analysis. So they have to
5 come back to the commission and monitor the sea level
6 rise and show that if they need a license extension,
7 that they could accommodate those things, but right now
8 they have expiration date on their coastal development
9 permit at that location because of that issue.

10 MR. BALDWIN: Okay. Thank you.

11 MR. ANDERS: Thank you, David. Nancy and then
12 final comments by Jim.

13 MS. O'MALLEY: I have a question about
14 transparency. So it sounds like there are a lot of
15 unknowns and there will be these calculations that will
16 be done to determine, is that correct, when the next
17 offloading will be and the density in the pools and that
18 will all depend on a series of elaborate calculations
19 with many variables. I know that was alluded to in our
20 workshops.

21 So my question is who provides oversight for
22 that and who do you collaborate with when you do that?
23 Is it the cask vendors? Is it the California Energy
24 Commission? What is the method for transparency and
25 oversight in those calculations?

1 MR. JONES: So the licensing process will be
2 overseen and administered by the Nuclear Regulatory
3 Commission. They have exclusive jurisdiction over
4 nuclear health and safety. That said, we will
5 collaborate with the Energy Commission and other folks
6 as we inform the RFP, but I see the former judge nodding
7 that the NRC does have that exclusive jurisdiction and
8 at the end of the day the company has to make its best
9 informed decision on how it wants to handle this risk.
10 Some of these things aren't delegable. They can't be
11 given to anyone else. We have to make and accept that
12 decision as a licensee and go through that public
13 process.

14 MR. ANDERS: Did that answer your question,
15 Nancy?

16 MS. O'MALLEY: Thank you.

17 MR. ANDERS: Great. Thank you. Jim, final
18 comments before our break?

19 MR. WELSCH: Thank you, Chuck. I just -- you
20 know, the little alternative perspective on the
21 unilateral decision --

22 MR. ANDERS: Stay close to the microphone.

23 MR. WELSCH: -- I think what's important to
24 know, is we need to make a filing and we also had our
25 engagement panel process and input from officials, et

1 cetera, trying to make the most informed decision. By
2 making the unilateral decision not to continue loading,
3 it left the option on the table. If we made the
4 unilateral decision to proceed with cask loading, it
5 would take off the table the option of a shorter
6 duration once we shut down.

7 So from a different view, the decision not to
8 continue with cask loading has left both options on the
9 table. It's giving us time to have this dialogue, seek
10 to understand, build, hopefully, alignment with our
11 community on which path to take.

12 As Dr. Budnitz pointed out, you know,
13 there's -- I mean, I've said it in private session.
14 Both avenues are safe. There's degrees of safety, but
15 they're both very safe. So we're willing to revisit, we
16 just need the time to gather input and make a more
17 informed decision. I just wanted to be clear that, yes,
18 it was -- you're right, it was a unilateral decision,
19 but we've kept both options on the table by making that
20 decision because we could resume cask loading this year,
21 next year or in 2021 and pick the pace back up and move
22 forward with a plan that reduces overall inventory, but
23 it would take, you know, some number of years longer to
24 actually empty the pool. So that's part of the reason
25 for this dialogue.

1 MR. ANDERS: Thank you. It is 8:45 and let's
2 take a ten-minute break and reconvene at 8:55, at which
3 time, we'll hear public testimony and comment.

4 (Recess.)

5 MR. ANDERS: Great. Well, welcome back,
6 everyone. We have the opportunity to hear from the
7 public now. So if -- I think we've got four people who
8 would like to speak. So if -- if those -- we're going
9 to put up some -- five people. All right. Before we
10 do, I'm going to go over a little bit of information on
11 the metrics we've received so far. We've almost
12 received a thousand public comments through a variety of
13 issues and on a variety of topics. This chart's a
14 little busy, but we've received the most public
15 comments, actually, on the strategic vision plan that
16 was developed late last year and we also received a
17 large number of public comments on public lands and
18 repurposing.

19 So the opportunity is ongoing for the public to
20 submit comments through a variety of pathways. Comments
21 can be submitted through the online form, which can be
22 accessed at the panel website. It's
23 PG&E.com/EngagementPanel. We've also received comments
24 by email and we've received many comments directly
25 through the panel members where citizens and public

1 members have talked with panel members and the panel
2 members have passed those comments on. Those are all
3 documented and all part of the record, so -- along with
4 comments that are submitted at your public meeting.

5 So we want to move forward and hear from the
6 public. So let's go to the next slide. What I'd like
7 is for the people that see their name up here, come on
8 up to the podium. Everyone will have three minutes for
9 comment. So first from Carol.

10 CAROL: Good evening. Thank you for being here
11 tonight and thank you for this opportunity. We're going
12 to have enormous amount of extremely radioactive nuclear
13 waste by the time both reactors shut down at Diablo
14 Canyon and this is probably the most lethal stuff on the
15 planet, most likely to stay where it is for my lifetime
16 and probably beyond for several generations. This is
17 and will continue to be the biggest problem at San
18 Onofre in Southern California.

19 So why were there so few residents at the
20 decommissioning workshop in late February, or
21 governmental officials or workers? I was very
22 disappointed and distressed to see there were no elected
23 officials in attendance, either. Congressman Carbajal
24 came to deliver a statement about a bill he co-sponsored
25 to move the waste to interim storage and he didn't stay

1 for the workshop, nor did Adam Hill, who accompanied
2 Mr. Carbajal. I wish they had.

3 Not enough people are paying attention and
4 trying to educate themselves, given that we'll be living
5 with this for decades, maybe generations to come. The
6 workshops that were held in late February have been
7 taped so you can watch it online and I urge you to do
8 so. If I sound agitated, well, I am. It's only been
9 days after the eighth anniversary of the Fukushima
10 disaster. Fukushima might never have happened if the
11 community were more engaged, if they had had a citizens'
12 watchdog group making sure TEPCO was doing the right
13 thing. If the locals, the residents and the government
14 were not complacently living with blinders or believing
15 everything the utility told them, ooh, economic
16 benefits, ooh, jobs, and now they're paying for their
17 lack of involvement and engagement big time with their
18 livelihood, their homes and ranches and farms, their
19 children's health, their own health, the nation's and
20 the world's health.

21 If you'd kept up with the flow of new
22 information from Fukushima, you would know that the
23 power plant did have earthquake damage before the
24 tsunami, but it was covered up for the benefit of the
25 nuclear industry. More disturbing, the government

1 issued new data on tsunamis in 2008 and the workers at
2 Fukushima, they did their own analysis and found out
3 that they needed a bigger, better protective wall and
4 they asked their bosses if they could start a plan for
5 better protection, and in the beginning, TEPCO
6 executives said, okay, go ahead, but then abruptly
7 stopped them and they never resumed. The government
8 didn't find out until days before March 11th. The
9 executives claimed they never had any knowledge of the
10 new analysis or the new plans. They're being tried now
11 for criminal negligence, but it's too late for Japan.

12 If something like that were to happen here, who
13 would compensate for the loss of homes? Avila has
14 mighty expensive real estate. What about the farmers
15 and ranchers, the wineries, their land, investment,
16 operation? TEPCO can't compensate all its victims and I
17 seriously doubt that PG&E will be able to, either. We
18 need to be involved and stay involved, both the
19 residents and their elected representatives. We need to
20 keep probing, not taking what the nuclear industry tells
21 us at face value. We need to be skeptics. This waste
22 is going to be toxic for hundreds and thousands of
23 years. We need to learn the facts and make sure PG&E
24 makes the right decisions or, since using radioactive
25 fuel in the first place to boil water I think is a

1 terrible decision, at least the best decisions. We all
2 need to care before it's too late. Thank you.

3 MR. ANDERS: Thank you. Next speaker is Marty
4 W., and when you come up to the podium, please state
5 your name and your residence and any organizational
6 affiliation.

7 MR. PASION: Jane Swanson is the next speaker.

8 MS. SWANSON: Yes. I'm Jane Swanson,
9 spokesperson for San Luis Obispo Mothers For Peace and I
10 1,000 percent endorse every word that Carol just said,
11 very much worth thinking of and it ties into the one
12 topic I want to bring up.

13 At the two days of workshops in February, there
14 were extensive presentations comparing different types
15 of casks and canisters for storing that spent fuel. The
16 information was well-presented and it was valuable. I
17 learned a lot, but the conclusion I drew was that
18 there's no such thing as the perfect canister or the
19 perfect cask. There are issues with all of them related
20 to monitoring, inspections, leaks, corrosion, blah,
21 blah, or how thick the walls of a canister should be.
22 The ones currently used at Diablo are less than a half
23 inch thick; whereas, in Germany and Japan, they are nine
24 inches or more. Lots to think about and debate there.

25 So I'm asking this panel, and especially

1 Pacific Gas and Electric Company, to seriously ponder
2 the concept of hardened on-site storage. At that point,
3 you're quibbling over which kind of canister or cask.
4 You do the best you can, but you don't count on them for
5 your total package of protection.

6 Given that spent fuel is a million times more
7 radioactive when it comes out of the reactor than when
8 it goes into the reactor, it's crucial that this spent
9 fuel be protected from a possible terrorist attack.
10 It's something we cannot rule out in this day and age.

11 Hardened on-site storage requires that the
12 spent fuel be surrounded by earthen berms or concrete or
13 gravel or something to make them less visible to
14 possible attackers and also sheltered from such an
15 attack.

16 Given that there is not presently any long-term
17 underground storage for radioactive waste, given that if
18 eventually a repository even the size of a Yucca
19 Mountain one should open, it will only be able to take a
20 fraction of the radioactive waste that's already stored
21 at various reactors.

22 Given that the proposal for consolidated
23 interim storage is currently merely an idea and it is
24 definitely contrary to federal law because federal law
25 says no fair doing interim storage unless you have a

1 permanent repository already in place, which we don't,
2 we have to assume that the waste will be stored at
3 Diablo Canyon for decades or hundreds of years or more,
4 we don't know, and given that length of storage, it only
5 makes sense to seriously consider hardened on-site
6 storage.

7 It would be most -- much preferable to the
8 current reality with the casks grouped together all
9 nice, neat rows and totally visible from the ground, the
10 ocean or the air. Yes, hardened on-site storage would
11 be an additional expense, but given the possible
12 consequences of a terrorist attack, it seems a very
13 worthwhile investment. Thank you.

14 MR. ANDERS: Thank you. Our next speaker this
15 time is Marty. Marty? Adam, is that the right...

16 MR. PASION: Yes. So we can proceed with
17 Carolina.

18 MR. ANDERS: Okay. Who is next?

19 MR. PASION: Carolina.

20 MS. VAN STONE: Hi. My name's Carolina Van
21 Stone and I had a question about the little videos. I
22 guess it's from PG&E. I'm trying to understand all of
23 the spent fuel and in the pools and the cask, but when
24 the video was showing how you would load the spent fuel
25 into those square -- the square grid and then it came

1 above and then it -- you take the water out and then it
2 looked like they have pipes. They said that there were
3 pipes going to these canisters loading fuel into those.
4 Did I totally misunderstand that? I mean, I thought,
5 wait a minute, I am sleepy, but I don't think I got it
6 that wrong. So that's a question I have for you, and
7 that video's not on the little thing out in the front,
8 is it, the new three-minute one that you made?

9 MR. JONES: Yeah, it is.

10 MS. VAN STONE: Okay. I should probably watch
11 that again.

12 And then the other thing about seismic safety
13 and the plant being able to withstand earthquake, that's
14 one thing, but he -- Dr. Budnitz was talking about the
15 tsunami. Well, what's to say if we had an earthquake
16 here that we wouldn't have a subsequent tsunami? That's
17 just a consideration that I had.

18 And then the third thing I think that given all
19 of the controversy with the credibility of casks and if
20 they're corrosive or this or that, I agree with if --
21 the hardened on-site storage would be what I would
22 propose as a public person. Thank you.

23 MR. ANDERS: Thank you. Adam, who is our next
24 speaker?

25 MR. PASION: Is Marty in the room, or no?

1 Okay. So we did have one comment where the commenter
2 had suggested that their comment be read and that's Bill
3 Woodson from Morro Bay speaking as a private citizen and
4 his three questions is a comment.

5 So question number one is when and where will
6 security at Diablo Canyon spent fuel be discussed by the
7 panel. Second question is what are the specifics of the
8 San Onofre offloading, time strategy of hot and cold
9 rods, what kind of casks are they using and can they be
10 transported, and then the third question is why is money
11 an issue since the cost of offloading is passed on to
12 the consumer, and that's the end.

13 MR. ANDERS: Thank you. Any other speakers?
14 Okay. Thank you very much.

15 Before we go into our discussion period, Tom
16 wanted to make an announcement.

17 MR. MECHAM: Excuse me. Are you going to
18 answer the questions that was asked?

19 MR. ANDERS: Pardon? I'm sorry?

20 MR. MECHAM: There was some questions. Is PG&E
21 going to respond to those?

22 MR. JONES: If you're asking us to, typically
23 we don't respond to the questions in public comment.
24 Depends on -- so, Adam, repeat them and we'll go through
25 them.

1 So I know we're arranging right now to show one
2 of our speakers the video to go over those dynamics in
3 what she thought was a pipe. So we'll take care of that
4 outside the room. Adam, what were the other questions?

5 MR. PASION: So when and where will security at
6 Diablo Canyon spent fuel be discussed by the panel?

7 MR. JONES: It's been discussed, but we don't
8 typically discuss a lot about security in public forums
9 and some of it is restricted. It's known as safeguards,
10 and so the Nuclear Regulatory Commission examines the
11 licensee, in this case PG&E, about their security plans
12 and that's done, again, through this process called
13 safeguard. So it's not readily publicly available.

14 MR. PASION: The second question is specific to
15 SONGS' spent fuel strategies. So specific question was
16 what is their offloading strategy, the time, their
17 combination of hot and cold rods, what kind of casks are
18 they using and can those casks be transported?

19 MR. JONES: We don't speak for other operators.
20 I do know they employ the whole tech system. I don't
21 know their transportation strategy or their blending,
22 but it's part of their license. We can take a look up
23 and get that back to the panel, but it's inappropriate
24 for me to speak on their behalf this evening.

25 MR. PASION: The third question is why is money

1 an issue since the cost of offloading is passed on to
2 the customer?

3 MR. JONES: It's still subject to ongoing
4 issues with the Public Utilities Commission. If, in
5 fact, it is funded, it still has to be a prudent
6 expenditure and then there is also the cost recovery on
7 behalf of customers through the Department of Energy
8 through the litigation process.

9 So it's not the top priority, but it's an
10 important priority, but the safety issues come first,
11 but funding always matters. You've got to be able to
12 execute your strategies.

13 MR. MECHAM: Thanks, Tom. I think it's just
14 important that questions are answered because if they're
15 not, then I don't want the public to feel like they're
16 being ignored. So I appreciate you doing that. Thank
17 you.

18 MR. ANDERS: Just a reminder that the process
19 that we have, we don't get into a dialogue with the
20 commenters, but if the panel would like to ask follow-up
21 questions, that's very appropriate.

22 Okay. Tom, you had an announcement.

23 MR. JONES: Yes. So since later this
24 afternoon, the Public Utilities Commission docket
25 officially reflects the vision panel -- the vision

1 document from the panel. So I just want to make sure
2 you note that it was received and docketed by the
3 commission.

4 MR. ANDERS: Mark, did you want to clarify a
5 comment or follow up on a statement?

6 MR. MAYER: So I just needed to fess up here.
7 Some of our staff pointed out to me that we really do
8 have procedures for taking a cask from the ISFSI back
9 into the pool and that we have dry run that. So we do
10 have a procedure to allow us to do that. Thank you.

11 MR. ANDERS: Thank you. We have some time now
12 for the panel to have a discussion amongst themselves
13 and I just wanted to summarize -- and that discussion
14 can address anything you've heard here or anything at
15 the workshops or any other topic you want specific to
16 spent fuel storage.

17 Just a quick summary of the workshops, they
18 were held in February and we had 13 formal presentations
19 each with a substantial presentation and question and
20 answer. We heard from PG&E on their spent fuel storage
21 strategy, we heard from the NRC, from the California
22 Energy Commission, three vendors, one from Germany that
23 I understand, according to Linda, is now proceeding with
24 the NRC to get their cask licensed and Congressman
25 Carbajal spoke to the panel and we also had six

1 community organizations and experts, one expert that was
2 brought in from Germany that offered his perspective.
3 So we had a lot of activity, a lot of conversation and
4 discussion.

5 Again, I just want to recognize the spent fuel
6 subcommittee and Linda's role in leading that, and
7 before we get into any discussion, Linda, do you have
8 any comments? You can first kick us off.

9 MS. SEELEY: Okay. Thank you. I want to thank
10 PG&E for -- for that week, those two day-long meetings,
11 and, Chuck, you for being an excellent facilitator. I
12 learned a lot at those meetings. I do -- I hope people
13 will watch online. I know it's kind of technical, a lot
14 of the things in there, but, you know, this is our
15 future that we're talking about and so I think it's
16 really -- if people can just, you know, even listen to
17 it, it's an important thing for the public to know.

18 I wanted to say that GNS, the vendor who
19 makes -- that makes the cask door -- cask, that they met
20 with the Nuclear Regulatory Commission on February 21st
21 and they're applying for -- I think it's called a
22 Certificate of Compliance to have their cask used in the
23 U.S. now. I personally was very impressed with that
24 storage system because it's, according to our expert
25 from Germany, Klaus Janberg, who came here, he said

1 they've been using that cask in Germany since 1983. It
2 hasn't changed and the reason that it's good is because
3 it's die cast, which means that they take this molten
4 iron and pour it into a mold and there aren't any seams
5 in it and so it is much less likely -- I mean, it rusts
6 on the outside and stuff, but the oxidation and the rust
7 on the outside actually provides a protective cover for
8 it and it has a double-lidded system so that you can go
9 in there and look around, it is pressure-monitored. It
10 has a lot of attributes that I think the others don't
11 have. I don't want to be too prejudice, but I was
12 super-impressed because it's been used since 1983 and
13 they've never had a problem with one of them and that's
14 longer than we've been using them.

15 So, anyway, and that's all I want to say,
16 but -- no. Thank you very much for making this happen
17 for us. I think it's allowing our community to go into
18 a process that is different from anything that's
19 happened in the whole country where it's been, like, out
20 in the air, out in the open, we're asking questions,
21 people are getting -- we're getting answers, your --
22 PG&E, you've taken us to so many different places to see
23 how they do it and it's extremely been really, really
24 informative to us. So I am -- I thank you very much.

25 MR. JONES: Thank you.

1 MR. ANDERS: Thank you, Linda. Any other
2 comments, questions? Kara.

3 MS. WOODRUFF: I think the questions that we're
4 looking at are profound. It's -- it's hard to imagine
5 that we're making decisions that could affect how
6 something is stored for tens of thousands of years
7 because it poses risks to many, many future generations,
8 but I think the task is a little bit easier when I break
9 down what it is that we are trying to provide or shed
10 some light on and here's a short list and it summarizes
11 what all of you have said.

12 When you consider when and how to move the
13 spent fuel from the pools to the dry casks, we need to
14 understand what type of cask is best in this situation
15 and what kind of facility those casks may or may not be
16 placed into. We need to think about inspection, should
17 the NRC be inspecting this, for how long shall they
18 remain on site well after decommissioning, what does the
19 aging management plan look like, how do we monitor
20 corrosion and other issues, how do we feel about interim
21 consolidated storage proposals that are being made to
22 possibly move casks locally from California to Texas or
23 New Mexico, how do we feel about a permanent storage
24 facility.

25 We recently learned that although Yucca

1 Mountain is off the table, it appears that there is new
2 possible federal funding to put it back on the table
3 with this administration. How do we feel about that?
4 And, finally, how do we feel about the potential sale of
5 Diablo Canyon from PG&E? We've been told it's not
6 possible, there's no plans on the table, but maybe we
7 also want to take a stand on that, as well.

8 So I don't -- it's very difficult for all of us
9 to make these decisions. None of us are nuclear
10 scientists. We'll rely on a lot of expertise, but I
11 think if we break it down, we can perhaps provide some
12 recommendations in areas where we're suited to do so and
13 I look forward to that. Thank you.

14 MR. ANDERS: Thank you, Kara. Alex and then
15 Lauren.

16 MR. KARLIN: Yeah. Thank you. My thoughts are
17 similar to what I've mentioned at other panel meetings
18 is to try to put this into some context, I think, to
19 back off and put it into a broader context, the concept,
20 the issue tonight, spent nuclear fuel, how to handle it
21 in the pools, in the casks, in centralized interim
22 storage, in temporary storage on site, and the context
23 is that this -- these issues, environmental safety, have
24 been debated for 40 years by, literally, a thousand
25 experts have spent much of their career on these issues.

1 Billions of dollars have been spent. Yucca Mountain,
2 the federal government, the Department of Energy and all
3 sorts of people spent 15 billion dollars and Yucca
4 Mountain is designed to handle spent nuclear fuel.

5 So we have scratched a very tiny scratch on the
6 surface of this issue and Linda Seeley had heard about
7 spent nuclear fuel many years, David Baldwin, he worked
8 there, he knows spent nuclear fuel, I've had the
9 opportunity to work, but this panel is grappling with an
10 issue -- with issues that are been plaguing the industry
11 and the country for years, and other countries, as well.

12 I think one thing I come away with is the
13 universal advice Dr. Budnitz -- that get it out of the
14 pool as soon as possible, up on that ISFSI -- let me see
15 if I've got his words right. It's a whole lot more
16 safe -- safer and stronger against terrorist attack if
17 it's in that ISFSI and out of the pool, much more
18 secure, much more safe. That's one basic proposition
19 that I think everyone in the room would agree with and
20 Dr. Budnitz, I think, expressed it that way. It's
21 universal.

22 Now we're confronted with fancy diagrams that
23 show a cask and a circle and a red cross and blue and
24 purple and we are told by PG&E, well, we have to keep it
25 in the pool longer, this provides more options and, oh,

1 it will get it all out of the pool sooner and this is a
2 better risk analysis and we asked Dr. Budnitz a little
3 bit about that and he said, well, you know, there's pros
4 and cons, we'll look at it, and even Dr. Budnitz, who is
5 an expert in nuclear safety, said the Diablo Canyon
6 Independent Safety Committee, if it was going to deal
7 with spent nuclear fuel and continue after 2025, would
8 probably need different members who are spent nuclear
9 fuel experts and I think that's probably right. We
10 don't have any spent nuclear fuel experts on this panel.
11 In fact, we don't even have any hired. The Diablo
12 Canyon Independent Safety Committee hires separate
13 experts that they need. We don't have that ability. We
14 have utterly no -- this panel has utterly no basis,
15 competence to evaluate whether what PG&E is telling us
16 is right or wrong. All we can either trust them or we
17 can distrust them, but we really don't have the
18 competence to analyze that. So I just think there's a
19 problem here.

20 I do know that in the Public Utilities
21 Commission, this issue is being litigated. Alliance for
22 Nuclear has raised the issue of the failure of the
23 company to -- alleged failure to get an offloading
24 campaign that's expedited and so that will be litigated
25 and I think we should all watch that and maybe we can

1 learn something, but this panel, we can opine and feel
2 as we want, but whether Yucca gets permitted, whether
3 centralized interim storage gets permitted, whether
4 hardened on-site storage is imposed, we can say whatever
5 we want. It's going to make that much difference as to
6 what NRC does in terms of regulating that or not and
7 they are the ones that make that decision.

8 MR. ANDERS: Thank you, Alex. Lauren and then
9 Kara.

10 MR. BROWN: I think you mentioned that you're
11 anticipating sending out the request for proposal to
12 three companies; is that right? And which are they?

13 MR. JONES: I'll have Mark come up and address
14 that, but I think that's the shorthand for the three
15 that have active licenses, but I know one would be
16 Holtec, one would be ORANO, and, Mark, you want to come
17 up here and close that out?

18 MR. MAYER: So the third supplier that we would
19 be looking at would be the MAGNASTOR from NAC
20 International, N-A-C.

21 MR. BROWN: And if GNS succeeds in getting
22 qualification by the NRC, will you also include them in
23 your --

24 MR. KARLIN: 50 years.

25 MR. MAYER: So like Alex just said, it would

1 take them a long time for them to get their C of C --
2 their Certificate of Compliance through the system. So
3 it's unlikely.

4 MR. KARLIN: You're putting that on RFP now,
5 this year? There's no way you've got an RFP for people
6 who can actually --

7 MR. JONES: Mr. Karlin, you're microphone.

8 MR. KARLIN: As you're saying, an RFP goes out
9 to people who have licenses to provide you the product
10 you require now and GNS doesn't have that and it will
11 take several years at least for them to get it. They
12 haven't even applied. They just had a preliminary
13 meeting. So I think it is correct. Maybe the next
14 time, maybe three years from now, maybe ten years from
15 now, but until GNS gets a COC, Certificate of
16 Compliance, you can't even ask an RFP for them. Right?

17 MR. MAYER: Okay. I think that's correct.

18 MR. ANDERS: Okay. Next comment from Scott.

19 MR. LATHROP: I'm just kind of sitting here
20 listening to everybody and I would like to try to bring
21 everybody back -- I want to say focus back as far as I
22 think what the panel is all about. You know, we're
23 supposed to be here getting the public input and we've
24 heard a lot of technical information over the last three
25 times that we have met and I believe probably we have

1 received enough information to be able to put something
2 forward as far as what I think the local community would
3 like to see. There's been a lot of comments come up as
4 far as a shorter time in the pool, get it -- you know,
5 get it into dry storage as fast as possible. I think we
6 had a lot of discussion here that is really above us,
7 meaning that once you lay out certain technical
8 requirements for new casks for certain applications, I
9 have a lot of confidence in what I've heard so far over
10 a period of time that there's a strong expertise out
11 there to be able to try to meet that goal. I think our
12 position here is more to set what we would like to see
13 as a community. There's people on the panel here that
14 maybe doesn't have a problem with having stuff in the
15 pool for 20 years, others may say, you know, get it out
16 as fast as you can. We can argue all day long about,
17 you know, who is saying what. I think our goal is to
18 set that overall parameter to give feedback to PG&E this
19 is what we'd like to see happen.

20 So, you know, I sit here and I listen to all
21 this and it's not going to be solved here, it's going to
22 be solved with the experts and we all -- I also would
23 like to focus people in on the whole idea of risk
24 assessment. I think we have a whole range in the panel
25 right here. Some are not very risk-tolerant. They want

1 guarantees that it's never -- never going to be a
2 problem, there's others on the panel that maybe
3 understand a risk and may be willing to take more risk,
4 maybe tie it closer to the economics and all. We're not
5 going to be the ones solving those problems. We can
6 only kind of set out kind of like a vision of how we
7 would like to see something go forward, and whatever
8 that recommendation is, it's going to have a certain
9 requirement as far as what PG&E purchases in the way of
10 a cask, it's going to take a certain amount of time,
11 it's going to cost a certain amount of money and someone
12 else is going to make that decision if that's
13 appropriate or not, but I think our goal is primarily to
14 set that. We're not going to -- I'm sorry to say, you
15 know, we can make a recommendation to buy this cask,
16 that's not going to happen, but we would say that we
17 would like to have a cask that will be able to meet the
18 timeline. And what company is that going to be? I
19 don't know. It has to meet all the requirements and be
20 approved by everyone.

21 So I don't know. I would just like to focus
22 the panel back to, I think, what our mission or our goal
23 is and try to -- and don't get into the weeds so much.
24 I think a lot of experts -- even tonight, I learned a
25 lot tonight. I appreciate the presentations and, I

1 don't know, I think that's where we need to focus.

2 MR. ANDERS: Thank you. Nancy.

3 MS. O'MALLEY: Well, as I have been speaking
4 with people in the public, I want to point out that I
5 have spoken to a fair number of people that actually
6 aren't even aware that the spent fuel will be stored out
7 at Diablo Canyon. So I think it's really good that
8 we're having these discussions now and that the public
9 becomes aware that there will be what's called an ISFSI.
10 That's hard to say, but that's where the older spent
11 fuel will be stored, and, also, I want to just emphasize
12 that from what I've learned is that there's a world of
13 difference between fuel in the spent fuel pools versus
14 being in the ISFSI and that once it gets out to the
15 ISFSI, it's older fuel, it's at least minimum of two to
16 three years old and my understanding is that there is no
17 longer a risk for a zirconium fire, one of those
18 uncontrollable fires, in which case the radioactive
19 material would be aerosolized and there would be a plume
20 and it would affect the whole county. That is no longer
21 the case once it gets out to the ISFSI.

22 And I guess I would like maybe Dr. Budnitz and
23 PG&E to just clarify that that's the case because during
24 our workshop, we did have someone say on the record that
25 a zirconium fire was possible at an ISFSI, and, also, I

1 want to make sure that, you know, as we talk about
2 getting new casks that can tolerate higher burn-up
3 fuels, you know, is that still the case that a zirconium
4 fire won't be possible in the ISFSI.

5 MR. ANDERS: Thank you. I just want to take
6 the opportunity to remind the panel of the mission
7 statement for this group, for the panel, and that is to
8 inform the public about the issues and decisions that
9 are being made about the process, the timing, the
10 opportunities and the challenges and, also, provide a
11 mechanism for input for the public to PG&E and -- to and
12 through PG&E to the CPUC.

13 So I just want to bring us back to our mission
14 as we're having this discussion because as I'm looking
15 up here, I'm seeing a video that's being broadcast and
16 that's available for recording all of our workshops, all
17 of our meetings, all of the presentations are available
18 to the public for their information and education and we
19 have multiple pathways for public input, evidenced by
20 the fact that we have almost a thousand public comments
21 to date. So Frank, Alex.

22 MR. MECHAM: Just a couple of comments, if I
23 could. First of all, I want to thank Lauren. You sent
24 us some papers that were pretty technical. I read
25 through all of that and had to use my dictionary, but

1 the last one you sent explained an awful lot more in a
2 more simplistic basis.

3 My point is that the information that we've
4 received and all of the information that we have read, I
5 don't know that the public would -- one, would want to
6 do that and, two, would understand a lot of it either
7 because some of us don't. So I think Scott's right.
8 Our role is not to become a nuclear scientist; although,
9 I think maybe we've learned enough that we could apply,
10 but I think that our goal is to try to hear and, as you
11 mentioned, our goal is to talk to the public. Well,
12 that's very difficult to do, to try to talk about some
13 of this technical information that's out there. I've
14 learned a tremendous amount. Doctor that spoke tonight,
15 he did a lot more education tonight than I ever had on
16 the nuclear industry in itself.

17 So we've learned a lot, but I think, again, we
18 need to go back, like Scott says, back to what is our
19 purpose and our purpose is basically we don't make a
20 decision, we make a recommendation and that's all.

21 MR. ANDERS: Alex.

22 MR. KARLIN: I think that's the right approach,
23 what Scott has said, and Frank and Linda. Our mission
24 statement, the charter that we have, says we are to
25 serve as a conduit for public input and for PG&E's

1 output and exchange a conduit and so we're going to
2 leave this meeting and now we think what do we do with
3 everything we've heard. We want to write something up
4 and probably submit it to the PUC, hopefully.

5 There are two qualitatively different things we
6 can do. One is we can simply do our best to accurately
7 reflect the input that we have received from the public
8 on these issues. 23 percent of the people believe this
9 and 75 -- 2 percent believe that and 5 percent have said
10 such and such and that would be a good thing to do.
11 That's worthwhile right there to say we have gathered
12 public input and this is what the public seems to have
13 said to us and we'll convey that to the proper
14 authorities and I think that may be sufficient, quite
15 frankly.

16 The next step is we can say, and in addition to
17 what public input we've received, we have decided to
18 make some recommendations on these extraordinarily
19 difficult and highly technical issues that have been
20 litigated and contested for 40 years. We think Yucca
21 Mountain should not be built, we think consolidated
22 interim storage should not be pursued, we think a new
23 cask should -- I'm not sure -- I feel -- you know, we're
24 going to talk about that, but I think as we talk about
25 that in our -- I'm not sure -- I guess I'm conveying

1 that I feel very hesitant to think that we can
2 productively and legitimately make -- we can make all
3 the recommendations we want independently, public said
4 this, but in addition to that, we want to recommend X, Y
5 and Z. I have some concern that we have any -- that's
6 something we should be doing at this point.

7 MR. ANDERS: Thank you. Any other comments?
8 Linda and then Nancy.

9 MS. SEELEY: Very quickly. I think we can -- I
10 apologize for mentioning a cask vendor's name. I
11 shouldn't have done that, but I think, Alex, that, and
12 panel, I think we can make recommendations. I mean, we
13 spent, you know, those two whole days listening to
14 people and taking public input and all that stuff. I
15 think we could make recommendations about the attributes
16 that we would like to see in a dry cask, you know, that
17 generally -- like we want to be safe and we want to be
18 able to inspect it, we want to be able to monitor the
19 radiation, we want it to be -- you know, I can't think
20 of any right now, but I think that we have that capacity
21 to do that, along with the other things, like what has
22 the public said they want.

23 So I don't -- I think it would be a waste of
24 time for us to have spent all this time and energy and
25 thought in reading and pursuing all of this stuff that

1 we've done if we just go, well, we don't know, let's
2 leave it up to the experts. We know what we want.
3 We're people.

4 MR. ANDERS: Thank you. Nancy.

5 MS. O'MALLEY: Tying in with what Linda's
6 saying, I mean, I've been keeping my cask wish list here
7 for PG&E to hear. So one of them would be safety, but
8 safety trumps cost and I guess that would be number one,
9 but then, also, there are newer more corrosion-resistant
10 steel that can be used in the canisters. Also, they
11 have new canisters that are able to withstand -- to
12 handle increased heat load, they have improved welding
13 in some of the newer canisters. I'm sure there are
14 improvements in seismic safety. Also, there are new
15 designs that are designed for inspectability and there
16 are new technologies now, robots in some sort of a ring
17 that they can use with certain casks. So those are all
18 things -- and, also, you know, a cask vendor that,
19 hopefully, you can get through the license procedure in
20 a timely manner.

21 So those are all just some examples of general
22 suggestions that we can make. I don't think we can
23 really recommend a specific cask vendor. I think it
24 sounds like cask or casks system that we heard about at
25 our workshops, you know, you're not really able to get a

1 license and it can't really -- and there are also issues
2 there with production. I mean, he sounds -- it sounds
3 like there's a several-year lag in even producing those
4 casks. So I don't think that's really going to be a
5 viable option, unfortunately, but -- so aside from that,
6 I think we can make a number of generalized
7 recommendations.

8 MR. ANDERS: Any further comments before we
9 proceed? Lauren.

10 MR. BROWN: Just following up on that theme, I
11 think looking at our role in representing this
12 community, we have to be aware that the bottom line is
13 that our community wants to feel safe. That is the
14 single biggest issue with nuclear energy. It's been
15 that way ever since the idea of putting a nuclear power
16 plant in this area started to be talked about.

17 So we have a responsibility to learn enough
18 that we feel comfortable that the level of risk is
19 reasonable and acceptable, and if we can get ourselves
20 to that point, then we can legitimately represent to the
21 community, you know, we think that everything that could
22 be done to enhance the safety is being done, we're okay
23 with it, and I think if we handle our process of
24 collecting enough information to persuade ourselves of
25 that feeling, armed with facts that we get from experts,

1 armed with information that PG&E shares with us, we can
2 legitimately go to the community and say, you know,
3 here's -- here's the process, we feel confident.

4 Part of how we get there is for the community
5 to communicate with us so that we know what their issues
6 are because we got to take that into account. So I
7 really encourage the public to constantly think about
8 bringing their issues to us because we are here
9 representing the community.

10 MR. ANDERS: Thank you, Lauren. That's a good
11 segue to, again, encourage the community to provide
12 their comments now because the panel is going to
13 continue this dialogue and will develop some vision
14 statement, recommendations and goals similar to what
15 they've done for the other topics that you've discussed.

16 So thank you all very much for your time and
17 attention. I want to talk about our next topic, which
18 is going -- the next public meeting is going to take
19 place on June 12th and the topic of that meeting is the
20 panel's structure and the past -- the panel's
21 performance. These are opportunities for the panel to
22 serve the community in a more effective way, to create a
23 dialogue about that topic, to assess how the panel's
24 performance has been in their first year of existence
25 and looking for opportunities to improve that

1 performance, things that might be done that will make it
2 more effective for the community and for PG&E. So I'm
3 looking forward to that dialogue over the next few
4 months, culminating, again, in a public meeting on June
5 12th.

6 Consistent with continuous improvement, one of
7 the things that this panel has done is to take a look at
8 this meeting and identify the things that they like
9 about this meeting and things that we might be able to
10 improve in future meetings. Any comments? Any of the
11 panel members have any thoughts or comments of
12 opportunities for tweaking the meeting, the process?
13 Did you hear that? Dr. Budnitz said move the podium
14 over here so the speaker can hear the --

15 MR. KARLIN: Move the podium over here so
16 Dr. Budnitz can see. The Diabale Canyon Independent
17 Safety Committee has a podium situated in the same way,
18 that the people in the audience can't see that question.
19 So what's good for the goose is good for the gander,
20 Doctor.

21 MR. ANDERS: I want to share with the audience.
22 This is really an awkward situation because you're here.
23 It's not like anybody's ignoring you and the speakers
24 can't see you and the speakers want to communicate with
25 you, I know I do, and the problem is, the reality is the

1 cameras are there, and the folks doing the video, it
2 doesn't work if we turn or we wander away from the
3 podium. So we're complying -- we're trying to
4 accomplish two things and that is to make sure we have a
5 good record of the meeting so that the cameras are
6 seeing the speakers all the time and it's in no way any
7 intention to ignore the public. So appreciate your
8 understanding. Okay. Before we adjourn, Lauren.

9 MR. BROWN: I'd just like to say that I think
10 this meeting was greatly enhanced by having Dr. Budnitz
11 here to give an overview of the spent fuel issue. We
12 really appreciate it. I think you helped make this a
13 much more successful meeting. Thank you.

14 MR. ANDERS: Thank you. Jim, you had a couple
15 of closing comments?

16 MR. WELSCH: Well, being new to the panel,
17 first of all, I don't know that we have any of our
18 government center team here, but what an incredible
19 opportunity to use this facility and our Board of
20 Supervisors making this available. Although, it may
21 have a few shortcomings, it is really such a nice
22 facility and it makes it so easy to facilitate these
23 conversations. So my compliments to our Board of
24 Supervisors and our county government team.

25 I'll pass on to Jon this committee's -- I know,

1 Alex, you expressed earlier the gratitude to Jon Franke.
2 I'll pass that on personally. I'll do that, and I also
3 want to thank the panel. This is very informative. I
4 understand some of the restrictions some of you may
5 feel. The buck stops here. Okay? I signed the letter
6 under oath and affirmation. You know, I'm the one that
7 has to put my integrity on the line as we make decisions
8 and move forward and communicate with the regulator.
9 Our high responsibility, to put safety first.

10 You know, I was a -- I was a licensed operator
11 on crew. I know what it's like to have the
12 responsibility and this informed me tonight. I have a
13 much better sense for what the issues are and where your
14 questions are and what your concerns are and I look
15 forward to getting to -- I look forward to hearing from
16 this panel on collectively what your thoughts are and
17 making recommendations and I'll just say it moves me and
18 it will influence, but in the end, I've got to -- you
19 know, the PG&E team, we need to make these decisions.
20 We are very sincerely interested in understanding what
21 our community thinks about these very important
22 decisions and this panel is the conduit that we've set
23 up to help make sure we get that input.

24 So thank you very much. The beauty of America,
25 dialogue and diverse opinion, that's what makes the

1 process robust and I appreciate it. So thank you,
2 Chuck.

3 MR. ANDERS: Thank you, Jim. Thanks to all for
4 your participation and attention. Everyone travel
5 safely and we are adjourned.

6 (The proceedings adjourned at 9:49 p.m.)

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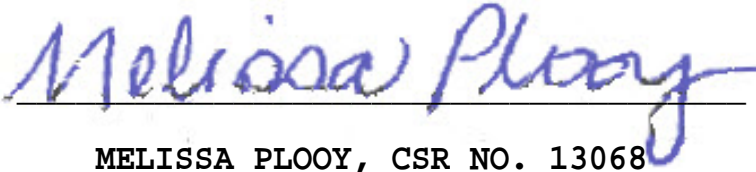
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