

DARLINGTON NEW NUCLEAR POWER PLANT PROJECT

JOINT REVIEW PANEL

PROJET DE NOUVELLE CENTRALE NUCLÉAIRE DE DARLINGTON

LA COMMISSION D'EXAMEN CONJOINT

HEARING HELD AT

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Tuesday, March 29, 2011

**Volume 8
REVISED**

JOINT REVIEW PANEL

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(ii)

ERRATA

Transcript :

Page 107, lines 18, 20 and 22

15 The transportation of used fuel to
16 a long-term management facility is as well part of
17 the NWMO project, and as such, they will define
18 the type of transportation costs, which will have
19 to meet all the regulatory requirements that
20 transportation costs of used fuel will have to
21 meet.
22 Until that transportation costs has
23 not been designed, we'll have to go through all
24 the proper design for a specific safety
25 requirements as well as the specific location of
1 the deep geological repository for the used fuel.

Should have read:

15 The transportation of used fuel to
16 a long-term management facility is as well part of
17 the NWMO project, and as such, they will define
18 the type of transportation **casks**, which will have
19 to meet all the regulatory requirements that
20 transportation **casks** of used fuel will have to
21 meet.
22 Until that transportation **casks** has
23 not been designed, we'll have to go through all
24 the proper design for a specific safety
25 requirements as well as the specific location of
1 the deep geological repository for the used fuel.

Page 152, line 2

2 for any corrosion or pane degradation. We would

Should have read:

2 for any corrosion or **plain** degradation. We would

Page 152, 22

22 standards into '86 for production and design.

Should have read:

22 standards **N286** for production and design.

Page 160, line 20

20

MS. SWAMI: Gloria Swami for the

Should have read:

20

MS. SWAMI: Laurie Swami for the

Page 237, line 16

16

the last C-6 was built in China in Tianjin and this

Should have read:

16

the last C-6 was built in China in Qinshan and this

(iii)
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1 Courtice, Ontario

2

3 --- Upon commencing at 8:59 a.m. /

4 L'audience débute à 8h59

5 --- OPENING REMARKS:

6 MS. MCGEE: Good morning. Mon nom
7 est Kelly McGee.

8 Welcome to the public hearing of
9 the Joint Review Panel for the Darlington New
10 Nuclear Power Plant Project.

11 Je suis la co-gestionnaire de la
12 Commission d'examen conjoint du Projet de nouvelle
13 centrale nucléaire de Darlington.

14 Secretariat staff are available at
15 the back of the room. Please speak with Julie
16 Bouchard if you are scheduled to make a
17 presentation at this session, if you are a
18 registered intervenor and want the permission of
19 the Chair to have a question put to a presenter, or
20 if you are not registered to participate but now
21 wish to make a brief statement.

22 Any requests to address the panel
23 must be discussed with panel Secretariat staff
24 first. Opportunities for either questions to a
25 presenter or a brief statement at the end of a

1 session will be provided, time permitting.

2 We have simultaneous translation.
3 The headsets are available at the back of the room.
4 English is on channel 1. La version française est
5 au poste 2.

6 A written transcript of these
7 proceedings will reflect the language of the
8 speaker. Please identify yourself each time you
9 speak in order to make the transcripts as accurate
10 as possible.

11 Written transcripts are stored on
12 the Canadian Environmental Assessment Agency
13 website for the project. The live webcast can be
14 accessed through a link on the Canadian Nuclear
15 Safety Commission website and archived webcast and
16 archived audio files are also stored on the CNSC
17 site.

18 As a courtesy to others in the
19 room, please silence your cell phones and any other
20 electronic devices.

21 Thank you.

22 CHAIRPERSON GRAHAM: Thank you
23 very much, Kelly, and good morning everyone.
24 Welcome to everyone joining us in person here this
25 morning, through the live audio link or on the

1 internet.

2 My name is Alan Graham. I am the
3 Chair of the Joint Review Panel and the other panel
4 members with me today are Madam Jocelyne Beaudet to
5 my right and Mr. Ken Pereira to my left.

6 We will start today's session with
7 a presentation by OPG on the management of
8 conventional and nuclear waste. It is covered
9 under PMD 11-P1.1H.

10 We will then move directly into
11 presentations by Northwatch, Nuclear Waste Watch
12 Advisory Association, Beyond Nuclear, and Citizens'
13 Clearing House on Waste Management before we open
14 the floor for questions.

15 So we will start this morning with
16 Mr. Sweetnam and the floor is yours, sir.

17 --- PRESENTATION BY MR. SWEETNAM:

18 MR. SWEETNAM: Good morning and
19 thank you, Mr. Chair.

20 For the record, my name is Albert
21 Sweetnam. With me today are Laurie Swami, Director
22 of Licensing and Environment, Dr. Herminia Roman,
23 Manager of Safety Assessment and Licensing, and Mr.
24 Harland Wake, Director, Used Fuel Operations, both
25 from OPG's Nuclear Waste Management Division.

1 Other representatives of OPG are
2 also here today to respond to your questions.

3 Today's presentation and
4 discussion will focus on the management of nuclear
5 and conventional waste.

6 OPG has conducted a comprehensive
7 assessment that considered the waste
8 characteristics and volume forecast for each
9 reactor type. Each reactor will require a design-
10 specific used fuel management system to store the
11 fuel bundles.

12 Alternatives for these systems
13 were considered in the EA. OPG's preference is for
14 the on-site storage until long-term waste
15 management facility is operational.

16 OPG will manage the low and
17 intermediate level waste in a manner that's similar
18 to current proven practices at its nuclear
19 facilities.

20 OPG's preference is to transport
21 this waste off site to the Western Waste Management
22 Facility.

23 Mr. Chair, if we could request
24 that the presentation be put on the screen?

25 (SHORT PAUSE/COURTE PAUSE)

1 CHAIRPERSON GRAHAM: It's coming;
2 just one moment. There it is, okay.

3 MR. SWEETMAN: The EA has
4 determined that all nuclear waste associated with
5 the new nuclear plant can be safely managed with no
6 residual adverse environmental effects.

7 OPG recognizes that the cost of
8 long-term nuclear waste management must not be
9 passed on to future generations.

10 To ensure that money will be
11 available when needed, OPG makes annual
12 contributions to the segregated funds and provides
13 a financial guarantee to the CNSC as required by
14 the federal regulations. Similar financial
15 contributions will be made for the new nuclear
16 plant.

17 OPG has a well-established and
18 mature program for the management of nuclear waste
19 as demonstrated by the multi-decade safe operation
20 of its nuclear waste management facilities.

21 The transportation of radioactive
22 material is highly regulated with robust programs
23 for procurement, maintenance, documentation, staff
24 training and oversight requirements.

25 In the more than 35 years that OPG

1 has been transporting radioactive materials and the
2 more than 11.5 million kilometres travelled, only
3 five shipments have been involved in traffic
4 accidents. In these accidents, there was no damage
5 to any of the packages, no release to the
6 environment, no personal injury and only minimal
7 damage to the vehicles in all cases.

8 OPG also has a comprehensive
9 Transportation Emergency Response Plan that is
10 audited internally and externally by authorities
11 including Transport Canada and the CNSC.

12 The existing Darlington Waste
13 Management Facility would be expanded to include
14 one to three additional storage buildings and one
15 processing building depending on the technology
16 selected.

17 OPG has determined that sufficient
18 space is available on the Darlington site for this
19 expansion.

20 Each reactor design involves on-
21 site storage of used fuel. The New Nuclear Project
22 will provide transfer systems to carry the used
23 fuel from the reactor to the irradiated fuel bay
24 where it will be stored and cooled for
25 approximately 10 years before it's taken to dry

1 storage.

2 Regardless of the reactor
3 technology, the used fuel will be stored on site
4 until the federally mandated Nuclear Waste
5 Management Organization takes over the
6 responsibility for the long-term management of the
7 used fuel.

8 The date at which a long-term
9 management facility for all used fuel in Canada
10 would be available has not yet been determined.
11 However, for financial planning purposes, it's
12 assumed to be 2035.

13 Radioactive low and intermediate
14 waste produced during operations and maintenance of
15 the reactors will be managed in a similar manner
16 regardless of the reactor design.

17 The waste is expected to have
18 physical and radiological characteristics similar
19 to the waste from OPG's existing reactors.

20 For the purpose of this project,
21 two alternate means of managing low and
22 intermediate level waste were considered: one, on-
23 site storage; and two, transportation of the waste
24 offsite to a licensed facility such as the Western
25 Waste Management Facility at the Bruce nuclear

1 site.

2 The bounding on-site storage
3 requirements for this type of waste is three
4 storage buildings for operational waste, plus two
5 additional storage buildings for refurbishment
6 waste.

7 Low and intermediate level waste
8 will remain at the Darlington Waste Management
9 Facility or at the Western Waste Management
10 Facility until a suitable deep geological
11 repository is available for the long-term
12 management of this waste.

13 OPG's deep geological repository
14 for low and intermediate level waste is progressing
15 through the regulatory framework.

16 In determining the bounding
17 radiological malfunction and accident scenarios a
18 comprehensive review of waste management activities
19 with the potential for an accident was identified
20 for low and intermediate level waste, refurbishment
21 waste, used fuel processing and dry storage.

22 Accident scenarios were developed
23 through a consideration of potential internal and
24 external initiating events that could result in an
25 abnormal release of radioactivity to the

1 environment during waste management activities.

2 These scenarios were evaluated
3 qualitatively to select a bounding scenario and the
4 bounding scenarios were assessed for potential
5 effects on the environment.

6 For all three reactor technologies
7 the bounding accident case for used fuel is
8 postulated to be the drop of a loaded used fuel dry
9 storage canister causing damage to 30 percent of
10 the fuel elements.

11 For low and intermediate level
12 waste the bounding malfunction or accident scenario
13 is a fire due to a spill of gasoline or diesel fuel
14 from the handling vehicle during the placement of
15 the waste container.

16 The results of these accident
17 scenario evaluations were calculated and the
18 radiation doses to nuclear energy workers or
19 members of the public were found to be within
20 regulatory limits.

21 Conventional or non-radioactive
22 waste will be minimized through reuse and recycling
23 programs. As of 2008 OPG's aggressive recycling
24 efforts at its existing facilities, but more
25 specifically at the Darlington nuclear generation

1 station, have resulted in almost a 70 percent
2 diversion of waste not going into landfills.

3 Hazardous non-radioactive waste
4 will be handled in accordance with applicable
5 regulations, including regulations under the
6 *Environmental Protection Act* and will be
7 transferred to offsite licence disposal facilities.
8 Operational conventional waste will be tested for
9 radioactivity prior to its release.

10 In conclusion, there is sufficient
11 space available at the Darlington site for the safe
12 management of the nuclear waste over the life of
13 the new reactors.

14 OPG has a strong safety record in
15 the management of nuclear waste. OPG has shown
16 that all nuclear waste associated with the new
17 plants can be safely managed with no residual
18 adverse effects.

19 This concludes our presentation
20 and we're prepared to answer any questions the
21 panel may have.

22 CHAIRPERSON GRAHAM: Thank you
23 very much, Mr. Sweetnam.

24 Next on the agenda we will go
25 directly into Northwatch.

1 But at the introduction this
2 morning I said Northwatch and I said Nuclear Waste
3 Watch Advisory Association. It's Associates. And
4 I apologize for introducing you that way.

5 So we will start off and move into
6 the intervenor, Northwatch, and that's covered
7 under PMD 11P1.139 and PMD 1.139D.

8 I guess we're not doing the
9 telephone conference now so it's just Brennain
10 Lloyd, the Project Coordinator.

11 Welcome. The floor is yours.

12 --- PRESENTATION FROM BY MS. LLOYD:

13 MS. LLOYD: Thank you and good
14 morning Mr. Graham and panel members.

15 I'm going to see if I can manage
16 all this technology at once.

17 You've been introduced to my
18 timer, which I'll now start.

19 My name is Brennain Lloyd and I
20 work with Northwatch. We're a regional coalition
21 of environmental and social development
22 organizations in Northeastern Ontario.

23 I want to thank the panel members
24 and panel support staff for their graciousness and
25 their persistence during the week and two days so

1 far of this hearing. I know it's been demanding as
2 a public participant. It's demanding to be away
3 from home and other duties. And I'm sure it's the
4 same for each of you. So I want to thank you for
5 your commitment to this process.

6 Today is, I believe, day 18 of the
7 continuing crisis at Fukushima Daiichi, and
8 everyday as we sit in this hearing room I'm
9 reminded again of how our discussions relate to
10 that situation as it continues to unfold and
11 continues to deteriorate and I think that it's
12 important that we acknowledge that at each step.

13 And certainly the news reports of
14 today make it even clearer that the situation is
15 continuing to deteriorate. There is water moving
16 out of the reactors. By my assessment, which is a
17 lay person's assessment, the situation continues to
18 become more complex and continues to deteriorate
19 with each day.

20 And I thank you for incorporating
21 it to the limited degree that we have been able to
22 do, but I again want to share with the panel our
23 view that this is a matter of utmost relevancy.

24 Our comments today are going to
25 focus on nuclear waste and the management of

1 nuclear waste as presented by Ontario Power
2 Generation in their environmental impact statement.

3 We'll be taking an approach based
4 very much on our written submissions. We'll be
5 reviewing each of the four main areas that we
6 evaluated, low and intermediate level waste and its
7 transportation, used fuel waste and its
8 transportation, and then speak briefly to some
9 other key issues.

10 Northwatch is a public interest
11 group, as I've said, and our interest is focused on
12 nuclear waste and its management in this review, in
13 part because of the long history the nuclear
14 industry has of looking to our region as a possible
15 end site for all of Canada's nuclear fuel waste.

16 We were founded in the late '80s
17 and our founding was, in fact, hastened by the
18 announcement of the federal review of Atomic Energy
19 of Canada Limited geological disposal concept,
20 which went through a 10-year review and failed to
21 receive an approval at the end of that review, and
22 now 20-some years later the discussion is still
23 very much the same as it was when we were founded
24 in 1988.

25 The Darlington project is of

1 interest to us because of its place in the nuclear
2 fuel chain and because of the potential impacts on
3 particularly our area of concern but even more for
4 all people of Ontario.

5 We have based our review on the
6 directions provided in the environmental impact
7 statement guidelines, and they did provide
8 considerable direction to the Proponent in terms of
9 how they should address matters related to nuclear
10 waste and its management.

11 In our view, the Proponent has
12 clearly not met those guidelines. They have not
13 met the test. They were directed to provide
14 considerable discussion, and I'm not going to read
15 you back the guidelines, certainly not in the fine
16 print we have on the screen, but I restate it
17 simply to remind us all of the considerable
18 direction that the Proponent was provided. And I
19 think that it's a fairly clear case of a job left
20 undone.

21 They were directed to, in
22 particular, in Section 8.7, to present the proposed
23 plan for the disposition of all radioactive and
24 hazardous waste and used fuel. And in Section 8.7
25 the guidelines give specific direction that even if

1 the Proponent is going to rely on some third party,
2 perhaps another organization, for some of their
3 waste management, some management of the waste that
4 they will generate through the Darlington new
5 nuclear, they are to provide a description of that
6 in their environmental impact statement, and I
7 think that's important in its absence.

8 So our comments -- our general
9 comments are that the environmental impact
10 statement and the technical support documents they
11 lack the specificity and the substance required to
12 give you the confidence you would need to actually
13 approve this project.

14 The document makes frequent use of
15 possible and potential adjectives that refuse
16 definition.

17 There are, particularly in the
18 technical support document, some tables which
19 summarize both characteristics and quantities of
20 waste. We found that absent from the environmental
21 impact statement. And even the tables that are
22 provided were not of the nature that we felt
23 confident that they really depicted an
24 understanding of the waste and it's characteristics
25 and the hazards it represents.

1 And this is, in part, bringing us
2 back to an issue that we've touched on, I think
3 several times over the last seven days -- eights
4 days of hearings, in part because as we understand
5 it, the proponent has relied solely -- and solely
6 on the information provided by the vendors and that
7 is a -- a point of some concern.

8 By extension, the risks, what can
9 be predicted; what can be judged to be a potential
10 risk can only be very general. And we think this
11 undermines your review process and -- and again
12 lacks the confidence and the rigor that should be
13 in documents that are before you asking for
14 approval.

15 So I'm going to very quickly, with
16 my timer in front of me, walk through our four main
17 areas of our review. And my presentation, my
18 remarks are very general in nature. I'll be
19 followed by three other presenters who have brought
20 reports to you as part of Northwatch's work in this
21 review and I will be followed by Mr. Jackson and
22 Mr. Roche (phonetic) who will be next on the
23 telephone.

24 So in the discussion of low and
25 intermediate level waste, I think the -- we heard

1 some from the Saugeen Ojibwa Nation yesterday on
2 some of the difficulties with this part of Ontario
3 Power Generation's application. And Ontario Power
4 Generation holds this notion that storage at an
5 off-site facility, processing and storage of the
6 waste at that facility is not an element of this
7 project since that facility will have been subject
8 to its own approval process because, for example,
9 the low and intermediate level wastes to be stored
10 at Ontario Power Generation's Western Waste
11 Management facility, that facility is currently
12 approved to store OPG's low and intermediate level
13 waste. Well, that's true, it is currently licenced
14 to store waste that is coming from the existing
15 Darlington reactor at Pickering as well as the
16 waste -- low and intermediate level waste coming
17 from Bruce, but I think it's taking quite a leap to
18 say that it is approved for all and any wastes that
19 may come and exempts the waste -- and exempts the
20 -- this review from the discussion of waste.

21 For one, the environmental impact
22 statement guidelines clearly state that the storage
23 of low and intermediate level waste must be
24 addressed, must be described. The waste stream
25 coming from the new nuclear build will be different

1 from the existing waste and I haven't gone back and
2 looked at the licence for the Western Waste
3 Management facility to determine whether or not new
4 build waste is captured. Whether it is or it
5 isn't, this will be a different waste stream
6 because it will be a different generation of
7 reactors.

8 The waste will also increase the
9 volume, but I think perhaps even more significantly
10 OPG's reliance on the Western Waste Management
11 facility is built on their assumptions around the
12 deep geological repository which is yet to be
13 reviewed, certainly yet -- yet to be built and it
14 is far from operational. So that difference in
15 waste stream will have to be considered in that
16 review, but there are other issues which I'll come
17 to in a moment.

18 I think another key concern --
19 I'll come back to the DGR in a moment, but another
20 key concern with OPG's address of low and
21 intermediate level waste is, again, in what's not
22 addressed. And I'll bring to you just one example
23 and that is the -- with respect to ion resin
24 exchanges. The documents refer to ion resin
25 exchanges almost as if in passing and I pulled this

1 out just as one example. With the resources and
2 capacity we were able to bring to this review, I
3 was not able to do that for each element of the
4 waste stream.

5 I would put to you that perhaps if
6 we did have the resources to do that with each
7 element of the waste stream, we might have many
8 more examples to bring to you. I bring to you
9 today the example of the ion resin exchanges. OPG
10 addresses this as if in passing. The Section
11 provides a very brief description, but does not
12 discuss, I think the key concerns with the ion
13 exchange resins. These spent ion exchange resins
14 are often incinerated and you may be aware that
15 there is a level of concern with the continued
16 practice of incineration of radioactive waste at
17 the Bruce facility and the ion exchange resins are
18 central part and parcel of that concern.

19 The ion exchange resins are known
20 to capture a large inventory of carbon 14 and when
21 the resins are stored for an extended period of
22 time, without special engineering treatment, and
23 we're not given any details of what that engineered
24 treatment will be; what the containment will be;
25 how they would be kept isolated from the

1 environment. There is a concern because the
2 radioactive and hazardous waste are not retained
3 and certainly through incineration they are
4 released.

5 The literature on this notes there
6 are additional issues such as the generation of
7 sulphur-dioxide as a primary pollutant with respect
8 to incineration. This is all part and parcel of
9 the package that OPG has presented to you, but has
10 not discussed or described in any detail. Carbon
11 14 is one example; has a very long half life and as
12 a result it's recognized as a potential health and
13 environment effect. And they are often more fully
14 experienced by future generations because of that
15 long half life, and they are known to be -- there
16 are genetic effects known to be associated with
17 exposure to carbon 14.

18 And again, I would say the
19 discussion of carbon 14, which is a key contaminant
20 on the ion exchange resins, would form a
21 significant portion of the low and intermediate
22 level waste stream and it's presented both for
23 substantive reasons and also for illustrative
24 purposes. Again, our concern that this is just one
25 of the many significant issues that Ontario Power

1 Generation has simply not addressed.

2 Returning to the conversation
3 about the deep geological repository, we heard from
4 the Saugeen Ojibwa Nation yesterday some of their
5 concerns. We have before you -- you have before
6 you as a panel, a proposal which relies on, for the
7 off-site storage option, the Western Waste
8 Management facility which in turn relies on the
9 deep geological repository. The review of that
10 project has just commenced with the announcement of
11 participant funding. I don't believe the panel has
12 been announced, the EIS has -- the review has not
13 yet commenced, although what's happened in the last
14 week may be unknown to me, but some documents are
15 available on Ontario Power Generation's website
16 about the DGR and their intentions.

17 And what I found of particular
18 significance to this panel, given OPG's reliance on
19 the deep geological repository to accommodate the
20 waste from this project, is that Ontario Power
21 Generation has provided an end-of-service date for
22 the DGR of 2062, which is only approximately mid-
23 point in the operating life of the Darlington New
24 Nuclear.

25 And the document provided by OPG

1 indicates that the waste projections from any
2 proposed new build reactors in Ontario are not
3 included in the reference documents that they have
4 been working from to date. There may be additional
5 documents; they may have been revised, but the
6 documents that were available to us at this point
7 are fairly clear that that document -- and that is
8 the reference for low and intermediate level waste
9 inventory for the deep geological repository
10 prepared by Ontario Power Generation in 2008. And
11 they certainly knew the new build was coming and
12 they didn't choose to include it in that referenced
13 document, so we have a scenario with the DGR where
14 we've got with low and intermediate level waste
15 where the waste has been designated, delegated to
16 the Western Waste Management facility.

17 The Western Waste Management
18 facility says it will go to the DGR, but the DGR is
19 going to close midpoint through the project and
20 doesn't have -- and has not looked at new waste and
21 is unlikely to have the capacity to accommodate all
22 of the waste that will be generated.

23 Transportation of low-end
24 intermediate level waste was given very brief
25 accommodation in the work done by OPG. They had a

1 very brief section in which they basically said,
2 they ship lots of waste. They never have any
3 problems. They are very experienced. They do
4 acknowledge a small number of accidents within
5 their 35 years of experience. And they basically
6 say we're okay, we can do it.

7 And while OPG may be able at this
8 point to refer to a release-free track record with
9 the shipping of low and intermediate level waste,
10 that's not the case internationally.

11 International experience is that
12 there are accidents. There are problems. There
13 are releases.

14 For example, in the operation of
15 one low and intermediate level waste repository in
16 Sweden, there are repeated incidents of broken lids
17 or containers themselves with an average of two to
18 three incidents per year. And whether the
19 experience of one operating repository with
20 accidents of releases -- two to three releases a
21 year is more telling than Ontario Power Generations
22 estimate of no accidents is -- which one we go
23 with? I don't know, but I would like to have a
24 much more detailed discussion. And I think that
25 the international experience where they have

1 actually been handling the waste and transferring
2 into a low and intermediate level waste repository
3 is of direct relevance here.

4 The OPG has provided very minimal
5 treatment of this. And we've had in the recent
6 controversies over the proposed shipping of
7 refurbishment waste, the 16 steam generators from
8 Bruce Nuclear Generation on Lake Huron to Studsvik
9 in Sweden for recycling. We've certainly had a lot
10 of discussion and a lot of concern raised about the
11 dose associated with the transport of radioactive
12 waste. And that dose is as acknowledged through
13 those discussions a combination of source distance
14 and length of time exposed. And it simply cannot
15 be said that that dose is not a reality and a
16 concern.

17 And OPG says they will meet the
18 regulations and I think that we're also more
19 familiar following the steam generating shipment
20 controversies that there is a great variability in
21 regulations and questions in the public as to
22 whether those regulations are adequate.

23 I know those aren't issues that
24 this Panel can deal with, but I think that you can
25 require OPG to do -- provide a much more thorough

1 treatment of the shipment of the transportation of
2 low and intermediate level waste.

3 Used fuel waste suffers from, I
4 think, some of the same failures as the low and
5 intermediate level waste. And in particular this
6 reliance OPG is wanting you to adopt of a
7 third-party management without adequate discussion
8 or description.

9 And, again, Section 8.7 of the
10 Guidelines directs that when a plan is identified
11 that radioactive or hazardous wastes are going to
12 be managed by an organization other than the
13 proponent. The EIS must describe at a conceptual
14 level the methods to be used, et cetera. And in
15 our assessment OPG has simply not done that.

16 OPG puts forward its assumption
17 that the long-term management of nuclear fuel waste
18 will be handled by a third party. That's implied
19 in a few places and stated directly in the EIS
20 where they provide a very brief description. A
21 single sentence describes that the waste will be
22 managed -- will be transferred to interim dry
23 storage or to a suitable licenced off-site facility
24 and even the on-site is always characterized as
25 interim.

1 OPG clearly is relying on their
2 other persona, the Nuclear Waste Management
3 Organization to provide their -- their long-term
4 management of the waste that Ontario Power
5 Generation will generate through this project.

6 There are assumptions built in
7 there that I think that this Panel cannot rely on.
8 There is a long history of organizations, nuclear
9 industry or Federal Government organizations around
10 the world attempting to develop a repository
11 similar to the one that the Nuclear Waste
12 Management Organization is attempting to develop.
13 And whether they are successful is many, many,
14 many, many, many years down the road in terms of
15 whether they're even able to identify a community
16 than whether they're actually able to make the
17 technical case for geological repository is another
18 entire discussion.

19 I will point out one item in the
20 Nuclear Waste -- in the OPG documents that I want
21 the Panel to be perfectly clear on. The Nuclear
22 Waste Management Organization is described in the
23 EIS and in some of the technical support documents
24 and perhaps in other documents brought to you by
25 other parties to this review as being responsible

1 for the long-term management of the waste. And as
2 in some cases referred to as almost as if they are
3 to become the owners of the waste.

4 The Nuclear Waste Management
5 Organization is as set out in the *Nuclear Fuel*
6 *Waste Act* responsible for proposing the approaches
7 to management of fuel waste and to implement the
8 approach that is selected under sections of the
9 *Act*.

10 Ontario Power Generation remains
11 the owner of the waste and remains responsible for
12 the long-term management of the waste. The Nuclear
13 Waste Management Organization however intricately
14 and intimately they may overlap and be involved
15 with OPG, does not become responsible for the
16 waste, for the foreseeable future.

17 The technical case for long-term
18 storage has not yet been made through geological
19 disposal and we're going to hear more from that
20 today from Mr. Roche from Nuclear Waste Advisory
21 Associates.

22 And the social case has also not
23 been made. We went through a ten-year
24 environmental assessment review for a AECL, Atomic
25 Energy of Canada Limited, geological disposal case

1 and it failed on both technical and social grounds
2 and I think that Panel Report spoke at length about
3 the social failings of the ACL approach. And the
4 adoptive phase management approach that has been
5 brought forward by the Nuclear Waste Management
6 Organization is very much the same.

7 There is some -- the graphics are
8 different. Some adjustments to the -- to the
9 presentation, but it's fundamentally the same
10 proposal.

11 Transportation of used fuel waste
12 despite Ontario Power Generations' repeated
13 assumptions that it will be moved off-site at some
14 point, they simply don't address the transportation
15 of fuel waste in an adequate manner.

16 Again, they have references to
17 their 35 years of experience and no accidents that
18 resulted in releases and so on, but we found
19 nothing in the Environmental Impact Statement and
20 not even in the nuclear waste management document,
21 technical support document or in the transportation
22 technical support document that exemplified the
23 potential for exposure to radiation as a release of
24 the transportation of nuclear fuel waste.

25 There's been extensive work done

1 on this by the state of Nevada and that work
2 demonstrates clearly that there are hazards that
3 there are exposures as a result of routine
4 emissions, even if everything goes well, there will
5 be exposures as a result of routine emissions,
6 which are a matter of concern.

7 There is also potential for
8 catastrophic releases in the event of accidents.
9 OPG likes to rely on the NWMO for this work. We
10 should then be able to go back and look at the
11 NWMO. If that was a reasonable course, you could
12 go back and look at the NWMO's work on the
13 transport of used fuel waste. And we did that, not
14 for this proceeding, but for other work, and we
15 have reviewed all of the transportation documents
16 that have been developed by the Nuclear Waste
17 Management Organization, both up to their 2005
18 report, there were four reports prepared between
19 2002 and 2005, and two reports since, and there is
20 no analysis of radioactive releases during routine
21 transportation operations or as a result of
22 transportation accidents discussed in any of those
23 documents.

24 Other key issues, and I'll be very
25 brief on these. The bounding scenarios, we've had

1 some discussion of this already. The bounding
2 scenarios and plant parameter envelopes are simply
3 not credible, to use a word that the proponent
4 likes to use. And I have some examples of that,
5 but for lack of time, I'll leave them to a
6 question, if you're interested.

7 The reactor design selection, OPG
8 has acknowledged in a number of points in their
9 document the difficulties in preparing an
10 environmental impact statement where they don't
11 know what reactor they are actually going to be
12 building. And that continues to be, I think, an
13 issue which will plague this review. And then the
14 question of need and policy and reliance on
15 provincial policy, I think we've had some good
16 discussion on that the day the Ministry of Energy
17 was here.

18 Conclusions and recommendations:
19 We have concluded that the OPG documents
20 consistently failed to provide the information that
21 required to meet the environmental impact statement
22 guidelines, and the information that we think is
23 required by you as a panel to ever approve a
24 project such as OPG has put before you.

25 It doesn't -- in our estimation

1 OPG failed to adequately respond to many of the
2 information requests put forward by the panel.
3 They don't describe in a substantive way the
4 management of low and intermediate level waste, its
5 transportation, the management of used fuel waste,
6 and any potential transportation of that. And as
7 I've just outlined, they don't address matters
8 related to exposure during transportation.

9 Our recommendations -- our first
10 recommendation would be that you refuse OPG's
11 application. Failing that, I would ask that you
12 suspend the review and direct OPG to bring back
13 those missing pieces of information, and then
14 reconvene at an appropriate time and evaluate the
15 project with additional information.

16 And thirdly, and I hope you
17 wouldn't go this far down my list, thirdly, I
18 recommend to the federal government, if you should
19 approve this project, which I would counsel you
20 again, include in the conditions of any approval,
21 recommendations to the federal government that the
22 licensing exercise be much more thorough, rigorous
23 than we've seen licensing exercises to be in the
24 past. And that would have to include opportunities
25 to bring technical evidence from public

1 participants to ask questions of the proponent and
2 their experts, and other areas that would provide
3 that kind of rigour.

4 So thank you for your time, both
5 this morning and throughout this review. And I
6 look forward to your questions after we've heard
7 from our other presenters. Thank you.

8 CHAIRPERSON GRAHAM: Thank you.
9 Thank you very much, Ms. Lloyd, for your
10 presentation this morning.

11 And now, we will proceed to, I
12 believe it's a telephone conference from Mr. Roche.
13 And we're going -- that's going to be covered under
14 intervention from Nuclear Waste Watch Advisory
15 Associates, under PMD 11-P1.139C, and PMD 11-P1-
16 139E.

17 Mr. Roche, are you there?

18 MR. ROCHE: I'm here, good
19 morning.

20 CHAIRPERSON GRAHAM: Good morning.
21 The floor is yours, sir.

22 MR. ROCHE: I don't know if my
23 slides are available. I think Brennain said she
24 would make them all ---

25 MS. LLOYD: Yes, I

1 think ---

2 MR. ROCHE: I'll tell you which
3 slide I'm talking to.

4 MS. LLOYD: Thank you. Good
5 morning, Pete.

6 CHAIRPERSON GRAHAM: Go ahead, Ms.
7 Lloyd.

8 MS. LLOYD: If you could wait, Mr.
9 Roche, we don't have your slides up yet. Or maybe
10 we do and I just --

11 MR. ROCHE: Well, I'll just --
12 I'll just introduce myself then.

13 MS. LLOYD: Good to go.

14 CHAIRPERSON GRAHAM: Please do.

15 --- PRESENTATION BY MR. ROCHE:

16 MR. ROCHE: My name is Peter
17 Roche, as you've said. I have a degree in
18 ecological science. I worked for Greenpeace in the
19 U.K. from 1991 to 2004, as a nuclear campaigner,
20 and during that time I worked on what we call the
21 Nirex Planning Inquiry, into whether the U.K.
22 nuclear industry's radioactive waste disposal body
23 called Nirex should be allowed to begin excavation
24 work at their plant's nuclear waste facility near
25 Sellafield, in the north of England.

1 Permission for this so-called rock
2 characterization facility was refused in 1997.

3 As an independent consultant, I've
4 acted occasionally as a consultant to the U.K.
5 Government's Committee on Radioactive Waste
6 Management, and I was a member of the Government's
7 Committee Examining Radiation Risks of Internal
8 Emitters, or CERRIE for short.

9 I want to examine -- give my
10 views, really, on OPG's nuclear waste management
11 proposals for the Darlington facility, and
12 hopefully bring you some insights from over here in
13 the United Kingdom.

14 Since Brennain has already
15 mentioned Fukushima, the panel might be interested
16 to know that iodine -- radioactive iodine from
17 Fukushima was detected in Glasgow on the west coast
18 of Scotland this morning. So that's a worry for us
19 all over here. It must have come via Ontario, I
20 suspect.

21 Are those slides ready now?

22 MS. LLOYD: They are.

23 MR. ROCHE: Maybe onto slide
24 number 3 -- oh, first of all, I should acknowledge
25 the help, obviously, for this presentation, from my

1 colleague, Dr. Rachel Western, who did a similar
2 job to the one I did at Greenpeace, as she was with
3 Friends of the Earth in England, Wales and Northern
4 Ireland during the same period of time and then
5 went onto actually act as a consultant for Nirex
6 between the year 2001 and 2006.

7 So slide number 3: The crucial
8 question which underlines my whole presentation is,
9 is it right to produce additional radioactive waste
10 when there's no current long-term management
11 solution for the wastes we already have in
12 existence?

13 In the United Kingdom, the
14 Government's Committee on Radioactive Waste
15 Management, which made its recommendations in the
16 year 2006, said wastes from new reactors should be
17 subject to a whole separate assessment to the one
18 carried out for old legacy waste, because the
19 political and ethical issues raised by the creation
20 of more wastes are quite different from those
21 related to committed and therefore unavoidable
22 wastes.

23 Although the Committee, or CoRWM
24 for short, was recommending geological disposal as
25 the best available option for existing waste, the

1 Committee recognized that there were huge
2 uncertainties surrounding its implementation.

3 So what the Committee was saying
4 basically was that, in its view, geological
5 disposal was the least worst option for unavoidable
6 waste, but deliberate decisions to create yet more
7 waste is a whole new ball game.

8 In addition, new build waste will
9 extend the time spells for implementing the
10 geological disposal, possibly by very long or
11 essentially unknown future periods of time.

12 And as we'll see later in my
13 presentation, used fuel from some of the new
14 reactor types proposed at Darlington is liable to
15 be of a much higher burn-up than legacy waste. In
16 other words, it will be hotter and more
17 radioactive.

18 So next slide. In Canada, the
19 first independent assessment, as you'll probably
20 know, of the nuclear waste problem was published in
21 1978.

22 One of the principal findings of
23 this Porter Report, as it's known, was that it
24 would be wise to stop building anymore nuclear
25 reactors until the waste problem has been solved.

1 That idea still holds true today.

2 The public needs assurance that an
3 adequate safety case can be made for dealing with
4 radioactive waste before the Darlington Project is
5 given the go-ahead.

6 So attempting to curtail
7 discussions of the point at which nuclear waste
8 leaves the Darlington site, as the Proponent has
9 suggested, will not achieve this.

10 The adequacy of plans for nuclear
11 waste management is clearly crucial to decisions
12 about whether the Darlington Project should go
13 ahead or not.

14 Next slide: Low and intermediate
15 level waste, the Proponent suggests offsite storage
16 need not be considered because it would be subject
17 to its own process.

18 This fails to allow for the
19 political and ethical examination of whether or not
20 new waste should be created in the first place, and
21 sets a very bad precedent in terms of working with
22 potential host communities in a transparent and
23 accountable way.

24 And as has already been mentioned,
25 Section 8.7 of the EIS guidelines say that the

1 waste management methods should be described at a
2 conceptual level.

3 Next slide: OPG's waste
4 management technical support document assumes that
5 the low and intermediate level waste deep
6 geological repository like the Western Waste
7 Management Facility will be in operation in just
8 seven years time.

9 So as existing storage buildings
10 are emptied and the contents transferred to the
11 deep geological repository the freed up space is
12 meant to be used to store the waste from new build
13 reactors.

14 Therefore, it's assumed that no
15 extra storage facilities will be required; that the
16 Western Waste Management Facility and the
17 facilities at Darlington are based on the
18 assumption that the deep geological repository will
19 be accepting waste by 2019.

20 Just a cursory glance at the
21 safety assessment for the deep geological
22 repository, there's still a great deal of
23 uncertainty concerning, for example, the water flow
24 system at the Bruce site.

25 So what happens if there's a delay

1 in opening the deep geological repository? It's
2 not clear how much of a delay OPG can accommodate.
3 And what happens if the deep geological repository
4 fails to produce an acceptable safety case at all?
5 These questions aren't answered in the OPG
6 documentation.

7 The next slide: Paragraph 4.3 of
8 the nuclear waste technical support document
9 suggests that even if the deep geological
10 repository opens according to plan there may not be
11 sufficient capacity for low and intermediate level
12 waste from Darlington.

13 A further environmental assessment
14 will need to be carried out to extend its capacity
15 unless some of the existing reactors are not
16 refurbished and life extended thus freeing up some
17 space.

18 The technical support document
19 suggests an alternative might be to use a
20 theoretical decommissioning waste repository.
21 We've yet to find a suitable site let alone be
22 built to accommodate the extra waste from
23 Darlington.

24 So OPG has some ways to go yet
25 before the public can be assured that he knows what

1 to do with low and intermediate level waste created
2 by the new reactors at Darlington.

3 Next slide: Moving onto used fuel
4 waste. It's not anticipated that used fuel dry
5 storage facilities would be required until about
6 2025 at Darlington, because when the fuel is
7 initially removed from the reactor it would be
8 placed in water filled storage pools for a period
9 of decay and cooling. After the used fuel is
10 cooled sufficiently, which it's claimed would take
11 about 10 years, it will be transferred into dry
12 storage containers and further stored onsite in a
13 purpose built used fuel storage facility.

14 The environmental impact statement
15 assumes that a long-term used fuel management
16 facility will be in service by 2035 and able to
17 accept used fuel from new reactors. As a
18 consequence, the EIS assumes that only 50 percent
19 of the used fuel produced during the reactors life
20 time will require onsite dry storage.

21 This suggests that OPG is relying
22 on the nuclear waste disposal facility being able
23 to accept its waste from about 2047 onwards if you
24 assume that the new reactors at Darlington will
25 have a 60-year life.

1 The EIS doesn't make clear what
2 alternative arrangements will be made if this isn't
3 possible.

4 Over here in the United Kingdom
5 the geological disposal facility, which is
6 proposed, is not expecting to accept new build
7 waste until it's been open for 90 years because of
8 the old waste that needs to be emplaced first.

9 Has OPG allowed for the time it
10 will take to emplace existing waste in the
11 repository?

12 Next slide: The nuclear waste
13 management organization suggests that emplacing
14 existing used fuel in a deep geological repository
15 could take until 2065. So the question is what's
16 going to happen to the waste fuel from the new
17 Darlington reactors between 2047 and 2065? This
18 question's not answered by OPG in any of the
19 documentation.

20 Next slide: Some of the reactor
21 types proposed for Darlington are reactor types
22 that are also proposed for over here in the U.K.,
23 the EPR and the AP1000. These are both expected to
24 use high burn-up fuel. This means the waste used
25 fuel will be twice as radioactive and twice as hot

1 compared with conventional used fuel.

2 In the United Kingdom the
3 government here started out suggesting that used
4 high burn-up fuel might need as much as 100 years
5 to cool down in storage before it could be emplaced
6 in a deep repository. You add to that the proposed
7 life of the new reactors the used fuel would be
8 stored at the new reactor site for up to 160 years.

9 The government's now modified that
10 view and says that by mixing used fuel from the
11 early part of the reactor's life with that produced
12 near the end of the reactor's life they might be
13 able to reduce the storage period 10 to 15 years,
14 but again you need to add the 60 year life of the
15 reactor so used fuel might be stored on the new
16 reactor site for up to 110 years.

17 There's almost no discussion at
18 all of the problems created by the long cooling
19 times required by this high burn-up fuel in the EIS
20 documentation provided by OPG.

21 For example, it's likely to mean
22 that the life of the new deep geological repository
23 for used fuel has to be extended to 2127, that's
24 110 years after the new Darlington reactors are
25 scheduled to open.

1 OPG's storage containers, for
2 example, have a design life of only 50 years. So
3 what happens if the used fuel does need to be
4 stored for 100 years?

5 In addition, the long-term storage
6 of used high burn-up fuel is expected to result in
7 greater cladding failure with the consequent higher
8 risk of radiation exposure for the generation of
9 people attempting to retrieve and condition the
10 failed fuel elements.

11 Next slide: Malevolent acts on
12 used fuel stores don't appear to have been fully
13 examined in the documentation. Used waste fuel
14 recently discharged from a PWR reactor could heat
15 up relatively rapidly if the storage pond were to
16 lose water reaching temperatures high enough for
17 the Zircaloy fuel cladding to catch fire and for
18 the fuel's volatile fission products be released.

19 I wrote that sentence, by the way,
20 before the Fukushima incident where a similar thing
21 is thought to be happening or has thought to have
22 happened.

23 Nor does the malfunctions,
24 accidents and malevolent acts technical support
25 document appear to have considered used waste fuel

1 transportation. A severely damaged flask by some
2 sort of malevolent act could allow the release of
3 radioactivity with a corresponding health risk.

4 Next slide: As with the low and
5 intermediate level waste facilities offsite, the
6 Proponent say that long-term used fuel management
7 facilities will be the subject of its own separate
8 environmental assessment process, suggesting
9 there's no need for further discussion here.

10 But no alternative waste
11 management techniques, which might be implemented
12 if it proves impossible to make a credible safety
13 case for a used fuel deep geological repository,
14 are outlined or discussed and it certainly doesn't
15 give the public the confidence that OPG has a plan
16 for its future waste management.

17 Next slide: There are a large
18 number of uncertainties associated with geological
19 disposal.

20 At Nuclear Waste Advisory
21 Associates, of which I am a member, we have
22 produced what we call an Issues Register which
23 lists 101 astounding scientific and technical
24 issues associated with deep geological disposal.

25 It's also clear that further

1 research may actually increase the uncertainties
2 rather than reduce them. As the Environment Agency
3 in England and Wales has said,

4 "Work may or may not indicate
5 that an acceptable safety
6 case can be made."

7 And in September 2010, a review of
8 the scientific literature which was carried out for
9 Greenpeace International called "Rock Solid?"
10 identified a number of phenomena that could
11 compromise the containment barriers, potentially
12 leading to significant releases of radioactivity.

13 Next slide. The kinds of issues
14 that we're talking about that have come up in both
15 the Issues Register and in "Rock Solid?" include
16 the following.

17 CHAIRPERSON GRAHAM: Are you
18 there, Mr. Roche?

19 I believe we just lost Mr. Roche.
20 So we'll take a moment to see how we get this
21 technology back in order.

22 (SHORT PAUSE/COURTE PAUSE)

23 CHAIRPERSON GRAHAM: I'm not sure
24 what you're saying. We have to wait for him to
25 call back, okay. Hopefully he's watching the

1 videocast. Mr. Roche, if you're listening, would
2 you please call us?

3 (LAUGHTER/RIRES)

4 CHAIRPERSON GRAHAM: He has the
5 call-in numbers I presume. We didn't call him. He
6 has the call-in numbers.

7 Okay. We'll just stand by for a
8 moment and see.

9 (SHORT PAUSE/COURTE PAUSE)

10 MR. ROCHE: Hello.

11 CHAIRPERSON GRAHAM: Are you
12 there, Mr. Roche?

13 MR. ROCHE: Yes, sorry. The phone
14 went dead. I don't know what's happened.

15 CHAIRPERSON GRAHAM: Very good.
16 You're on the slide on uncertainties, bracket 2,
17 and you were speaking to that. So would you please
18 carry on?

19 MR. ROCHE: Yes. The kinds of
20 issues covered by the Nuclear Waste Advisory
21 Associates' Issues Register and "Rock Solid?" are:

22 Corrosion: experimental data
23 indicates the mechanisms for corrosion are not
24 fully understood. For example, the Swedish safety
25 case assumes that 5-centimetre thick copper

1 canisters will contain nuclear waste for 100,000
2 years, but there are some serious question marks
3 about the assumptions that have been made regarding
4 the low rates of corrosion for copper.

5 Backfill: intense heat could
6 compromise the ability of the clay backfill to trap
7 radionuclides, the intense heat from spent fuel.

8 The gas problem: on the one hand,
9 there's a need to allow the release of hydrogen
10 from the repository to prevent the build-up of
11 pressure which could open up fissures in the
12 surrounding rock, but on the other hand it's
13 necessary to retain radioactive carbon dioxide and
14 methane because of the radiation dose on the
15 surface likely to breach safety limits in quite a
16 short space of time if it isn't. This presents a
17 conundrum.

18 And chemistry: the chemical
19 processes in a deep disposal facility are poorly
20 understood; for example, absorption, the process
21 where radionuclides are taken up by solid surfaces.

22 All the preliminary safety
23 assessments so far have assumed their constant
24 chemical retardation factor K_d can be used for all
25 chemicals, whereas a much more complex computer

1 modelling is likely to be required.

2 And bedrock: unidentified
3 fractures and faults or a poor understanding of how
4 water and gas will flow through faults could lead
5 to a much faster release of radionuclides than
6 expected.

7 Next slide. The EIS tends to
8 suggest that the disposal of used fuel in Sweden is
9 much more advanced than it actually is. In fact,
10 no one in the world has built a repository for used
11 fuel waste or vitrified high level waste.

12 Dr. Johan Swahn, the Director of
13 MKG, the Swedish NGO Office for Nuclear Waste
14 Review, wrote in December 2009:

15 "The final test of the
16 Swedish safety case will not
17 be done until the Swedish
18 Radiation Safety Authority
19 gives an approval of the
20 safety analysis. This will
21 not be the case before 2013
22 or 2014. Already there is
23 concern from the authority
24 about the barrier systems of
25 copper and clay and it is not

1 clear if all relevant copper
2 corrosion processes are known
3 and the risk for clay erosion
4 is still not understood. So
5 an approval is not at all
6 certain and nothing can today
7 be claimed to be robust."

8 Next slide. The International
9 Commission on Radiological Protection has set a
10 dose constrain for prolonged exposure to gradually
11 accumulating long lived radionuclides from a deep
12 underground repository of 100 microSieverts per
13 year.

14 In the U.K., the figure we use is
15 around 20 microSieverts per year, but the only dose
16 criterion given for the deep geological repository
17 for used fuel in Canada appears to be the much
18 laxer need to meet the CNSC's regulatory dose limit
19 of a 1,000 microSieverts per year.

20 In conclusion, the adequacy of
21 nuclear waste management plans is crucial to
22 decisions about whether the Darlington Project
23 should or should not go ahead.

24 The low and intermediate level
25 waste deep geological repository is assumed to be

1 in operation by 2018. Yet, a cursory glance of the
2 safety assessments suggests there's still a great
3 deal of uncertainty about that.

4 The long-term used fuel management
5 facility assumed to be in service by 2035 and able
6 to accept used fuel from new reactors. Yet, high
7 burn-up fuel might need to be cooled for 50 to 100
8 years after reactor closure and there seems to be a
9 question mark about what would happen to the used
10 fuel waste between 2047 and 2065.

11 And finally, the final slide,
12 there are huge uncertainties associated with the
13 safety case of deep disposal of higher activity
14 waste. It's quite possible that further research
15 might indicate a safety case just isn't feasible.

16 Potential accidents and malevolent
17 acts that could severely damage the used transport
18 flask and enable the release of radioactivity also
19 need to be considered.

20 Under these circumstances, I
21 believe it would be unethical to start producing
22 yet more nuclear waste and OPG has not provided the
23 Joint Review Panel with sufficient grounds for
24 approval.

25 Thank you.

1 CHAIRPERSON GRAHAM: Thank you
2 very much, Mr. Roche.

3 We have two more presenters on
4 this topic. If you'll just stand by, then we will
5 be going into questions and there may be questions
6 for you. So you'll stand by for the other group
7 presenters.

8 MR. ROCHE: Okay.

9 CHAIRPERSON GRAHAM: Thank you
10 very much for yours.

11 We will now move to the next
12 intervenor, Beyond Nuclear, which is PMD 11-
13 P1.139B, and I believe it's Mr. Kamps and, Mr.
14 Kamps, the floor is yours.

15 --- PRESENTATION BY MR. KAMPS:

16 MR. KAMPS: Thank you. Thank you
17 very much, Mr. Chairman and Members. My name is
18 Kevin Kamps and I am a radioactive waste specialist
19 at Beyond Nuclear. We are a non-profit
20 environmental group based in Takoma Park, Maryland,
21 just outside of Washington, D.C.

22 And I don't have a PowerPoint, so
23 I'll simply be giving a few minutes of summary and
24 highlight to each of the points I raised in my
25 written submission of February -- late February.

1 And just by way of an
2 introduction, I wanted to share my experience from
3 last August of visiting the Fukushima site. I was
4 invited there by Green Action Japan and the local
5 environmental groups at various nuclear power
6 plants around the country, but my first stop after
7 a short stay in Tokyo was the Fukushima Daiichi and
8 Daiini Nuclear Power Plants.

9 And the reason for my invitation
10 was to share with the local groups -- the local
11 concerned citizens our experiences in the United
12 States of problems with pool storage of high-level
13 radioactive waste. And specifically in their -- in
14 their case, it was a decade-long effort on their
15 part to prevent the loading of mixed oxide
16 plutonium fuel into various nuclear power plants.
17 So at Daiichi, it was unit 3, and, unfortunately,
18 that fuel was loaded in September, so certainly
19 contributed to the overheating of that reactor
20 core. And also the -- the pool fire at unit 4 is
21 of tremendous concern because of its location
22 outside of containment, so those releases are
23 directly into the environment.

24 So whereas my written submissions
25 were largely focused on security issues with some

1 mention of safety issues, I would perhaps reverse
2 that today in my -- in my comments. So I'll just
3 go right down the list as they appeared in the
4 written submission.

5 I -- I spoke about risks
6 associated with on-site wet pool storage. So as
7 we're seeing in Japan with not only the unit 4 pool
8 losing its cooling water supply over the course of
9 some days due to a boil off due to a lack of
10 electricity to run water circulation pumps, but
11 also the -- the overheating of perhaps all of the
12 pools on the site at units 1 through 6 -- and that
13 should not be dismissed as impossible in North
14 America.

15 Granted, earthquakes are more
16 common in places like California and so tsunamis
17 and earthquakes in combination would not be
18 expected in a place like Darlington, but any
19 accident scenario that could plunge a nuclear power
20 plant into station blackout could begin the burning
21 of this fuse that we've seen reach the ignition
22 point at Fukushima. So such disasters could
23 include severe weather incidents, whether it be ice
24 storms or tornadoes or hurricanes.

25 We have examples in the United

1 States of a direct hit by a tornado on a reactor
2 near Toledo, Ohio, in June of 1998. That's the
3 Davis-Besse Reactor. The -- the power grid was
4 destroyed, just as the earthquake destroyed the
5 power grid in Japan. And when the emergency
6 diesels were looked to at Davis-Besse, the -- the
7 two diesel generators on site, the first one failed
8 to operate at all and the second one continued to
9 break down for two days, so it was a very dicey two
10 days where the plant personnel had to continually
11 repair the -- the failing second diesel generator.
12 So every time it failed, the core would begin to
13 heat up. But I'm -- I'm focusing on the
14 radioactive waste issues. The pool would also
15 begin to heat up.

16 So as we've seen at Fukushima, if
17 you lose cooling to the pools for just a couple or
18 a few days at most, you could boil away all the
19 water and you could have a zirconium cladding fire
20 as Mr. Roche discussed. Once the fuel is exposed
21 to the air, it can very quickly heat to the
22 ignition point.

23 And the Nuclear Regulatory
24 Commission warned about the risks of pool fires.
25 Their focus, back in early 2001, before the

1 September 11 attacks, was actually on
2 decommissioning reactors, not operating reactors.
3 And their concern -- the accident scenario they
4 considered was the dropping of a heavy load,
5 although they did consider briefly an aircraft
6 crash, an accidental aircraft crash.

7 So the dropping of a heavy load is
8 a -- is another scenario, as would be a terrorist
9 attack where the -- the wet storage -- the pool
10 could lose its cooling water supply, not in the
11 course of two days, but in the course of an instant
12 -- relatively quickly and the fire could then
13 commence within a matter of hours. And as we're
14 seeing at unit 4, Fukushima Daiichi, once the --
15 the pool water is lost, that means not only is the
16 cooling lost for the thermally hot waste, but the
17 radiation shielding is lost.

18 And so in that Nuclear Regulatory
19 Commission report from 2001, the dose rates given
20 in the area of a pool that has lost its water
21 shielding is in the range of 10,000 rem per hour,
22 so it would be a matter of seconds or minutes of
23 exposure at short distance to -- to receive a fatal
24 dose, which makes contingency planning impossible
25 or suicidal, even to try to restore water to such a

1 pool. And we've seen that at Fukushima as well
2 with desperate efforts to refill the empty pool by
3 helicopter drops while trying to avoid getting too
4 close, by firing water cannon and hoses from a
5 great distance to avoid radiation exposure, it
6 greatly complicates or makes impossible any
7 contingency to cover that pool again.

8 I'd also like to mention about wet
9 pool storage risks, a study that's mentioned in my
10 written submission by Alvarez and others from
11 January 2003. It appeared in a Princeton
12 publication, Princeton University. So this was
13 after September 11. And the author is a team of
14 about a dozen eminent authors of that study -- were
15 looking at the risk of the sudden loss of -- of
16 water from a pool due to a terrorist attack.

17 And one of those authors, Dr. Ed
18 Lyman with the Union of Concerned Scientists, a
19 senior scientist there, has made an important
20 observation in the context of the licence extension
21 at Indian Point Nuclear Power Plant near New York
22 City; that in the event of a terrorist attack, the
23 intention would be to disable any redundant safety
24 systems. So he points out the difference between
25 an accident, with the random nature of an accident

1 lining up, versus the intention.

2 And that's one thing I would like
3 to commend this proceeding for is the consideration
4 of malevolent acts because the Nuclear Regulatory
5 Commission in the United States has largely ruled
6 such acts out of scope and, of course, that's an
7 absurd -- absurd position to take.

8 Another study I wanted to mention
9 that bolsters this concern about security risks and
10 -- and related safety risks of pool storage is the
11 National Academy of Science, a classified version
12 in 2004, but a publicly redacted version in 2005,
13 which largely affirmed the concerns of Alvarez and
14 others in their 2003 report. And the -- the scale
15 of the disaster that could unfold if a pool were to
16 go up in flames is what's so remarkable. It could
17 easily surpass the Chernobyl catastrophe in
18 magnitude given how densely packed the pools in the
19 United States are at least.

20 So I'd like to move on to the
21 risks associated with on-site dry cask storage
22 since, as Mr. Roche indicated, that's part and
23 parcel of this proposal at the Darlington new
24 build. And as I indicated in my written
25 submission, the dry casks in the United States, and

1 I would say in Canada, were not designed with
2 terrorist attacks in mind. The -- the thick
3 concrete or metal is in place for radiation
4 shielding purposes only for the workers who have to
5 inspect these containers or load them. It was not
6 designed to withstand various scenarios of
7 terrorist attack.

8 The scenario that I described in
9 my written submission was a test carried out by the
10 U.S. Army at Aberdeen Proving Ground in Maryland in
11 June of 1998, in which a toe anti-tank missile
12 designed to penetrate very thick tank armour was
13 fired at a German castor cask, which is considered
14 the Cadillac of dry cask storage because it's 15
15 inches of metal, and a -- a hole was blown clean
16 through the wall of that container, so if combined
17 with an incendiary that would provide the pathway
18 for the escape of volatile radioactive isotopes.
19 And I should have mentioned with the pool storage
20 that if there is a strong enough fire that an
21 isotope like Caesium-137 which was one of the main
22 culprits downwind of Chernobyl, over vast regions,
23 could escape to a 100 percent extent.

24 In addition to security risks like
25 that with dry cask storage, there's also the risks

1 of eventual degradation of these containers. We've
2 seen that with the oldest containers in the United
3 States at Surry Nuclear Power Plant in Virginia.
4 Inner seals have failed on those containers.
5 Studies on the fuel integrity have been aborted
6 after just a few years so we're concerned that if
7 all -- all seals on these containers fail and the
8 inerting gas is lost that oxidation of the
9 thermally hot nuclear fuel rods could commence and
10 of course, this will be a segway into the next
11 area, which is transportation.

12 If there is degradation of the
13 fuel rods as with oxidation then that makes all
14 future handling, all future repackaging and
15 especially transportation much more risky for the
16 people that have to carry that out. I attended the
17 packaging and transportation of radioactive
18 materials conference in Chicago in 2001 and
19 attended a session conducted by the U.S. Department
20 of Energy in which they discussed their concerns
21 about the future need to transport damaged and
22 failed fuel and the -- the safety and the health
23 risks that that will entail.

24 So moving on into the
25 transportation risks, I'll just echo what was said

1 train routes in the United States pass through our
2 largest cities and Chicago is a case in point where
3 some of these rail routes go right through downtown
4 Chicago within a quarter mile of the Art Institute,
5 as one example. And they're very vulnerable as I
6 mentioned about the dry cask test at Aberdeen
7 Proving Ground, even these transport containers
8 were not designed with terrorism in mind. They
9 were designed with radiation shielding in mind.

10 So I wanted to move on to the
11 risks, as I called it, of de facto permanent on-
12 site storage. And this gets to the issue of the
13 year 2035 being assumed as an opening date for a
14 repository of some sort in Canada that would take
15 this material from various sites across the
16 country. And our experience in the United States
17 has been that Yucca Mountain was looked to in
18 Nevada as that place for a very long, beginning
19 even as early as 1987 when it was singled out as
20 the only site to be studied. And so assurances
21 were often given that -- and as another thing I'd
22 like to commend this panel for, is for considering
23 high-level radioactive waste issues because again
24 in the United States they have often been ruled out
25 of scope and Yucca Mountain was held up as the

1 reason for that.

2 Well, a year ago, the scientific
3 unsuitability of the site caught up to it and the
4 project is now cancelled. President Obama has
5 zeroed out the funding; he's moved -- his Energy
6 Secretary has moved to withdraw the licence
7 application and the -- just some words about the
8 geologic unsuitability. The site is an earthquake
9 zone; it has volcanic activity. It is an oxidating
10 environment and so the containers, as Mr. Roche
11 indicated in his presentation would be subject to
12 corrosion failure and then release of massive
13 amounts of radioactivity.

14 And finally there is a drinking
15 water aquifer under Yucca Mountain that has
16 downstream a large agricultural community, a Native
17 American reservation, a National Park and an
18 national wildlife refuge. So if waste is every
19 buried there, it will become a nuclear sacrifice
20 zone over a long region with high radiation doses
21 downstream.

22 So in addition to the cancellation
23 of Yucca Mountain, just an indication of what the
24 risks could be at this site, and so to keep in mind
25 that any assumption of a date certain is very

1 block public interventions on radioactive wastes --
2 high level radioactive wastes, but the reality is
3 that Yucca Mountain, if it had opened or even if it
4 would still open, which is not the case, would have
5 reached its capacity a year ago. The spring of
6 2010 there was enough high level radioactive waste
7 in the United States to fill Yucca to its capacity,
8 63,000 metric tons.

9 Although, under the law, if a
10 second repository were opened, then the capacity at
11 Yucca could be increased. But given that it took
12 so many decades to get Yucca as close as it came to
13 moving forward, such a second repository would very
14 likely be many decades off into the future.

15 And I think I'd like to move in my
16 -- in my last ten minutes here to expert
17 recommendations that I cited in my written
18 submission, some proposed solutions to these risks.
19 Back in April of 2002, a large gathering was held
20 in the state of Connecticut. This was on the very
21 eve of the big votes in the U.S. Congress on Yucca
22 Mountain. And one of the keynote speakers there
23 was Dr. Arjun Makhijani of Tacoma Park, Maryland,
24 which is where we're based as well. His
25 organization is called Institute for Energy and

1 Environmental Research. And so he coined the
2 phrase at this gathering, hardened on-site storage,
3 as an alternative at that time to Yucca Mountain.
4 It was a recognition that the waste would be on the
5 reactor sites for many decades into the future even
6 if Congress voted to open Yucca Mountain.

7 And that was documented in the
8 U.S. Department of Energy as Yucca Mountain plan,
9 the final environmental impact statement which was
10 dated February, 2002, where they admitted that
11 simply to move that first 63,000 metric tons of
12 commercial, high level radioactive waste to Yucca
13 would take 24 to 38 years to accomplish. And of
14 course, the reactors are still operating. So as
15 waste is moved out, it's quickly replaced, first in
16 the pools and then in the dry casks with more
17 waste. And ironically enough, once Yucca was full,
18 there would be nearly as much waste on the reactor
19 sites as when the transport campaign began.

20 So the recognition was that these
21 pool risks and these dry-cask storage risks would
22 persist for many decades into the future.

23 And given the recent -- at that
24 time, this was April 2002, the recent terrorist
25 attacks of September 11th, there was concern that we

1 needed to store this waste as safely as possible
2 right where it was at for decades to come.

3 So since that time, the concept of
4 hardened onsite storage has been further fleshed
5 out.

6 In January 2003, Dr. Gordon
7 Thompson issued a report that he entitled Robust
8 Storage of Spent Nuclear Fuel Onsite. And then in
9 -- and I gave the citation in the written
10 submission.

11 In September of 2006, a statement
12 was unveiled at a US Congressional hearing by a
13 colleague of mine, a public citizen, Michelle Boyd,
14 and the title of that was Safeguarding Nuclear
15 Waste at Reactors, Principles for Safeguarding
16 Nuclear Waste at Reactors.

17 At that time, 150 environmental
18 groups across the United States had endorsed this,
19 and it described what hardened onsite storage would
20 look like.

21 One of its main calls was for the
22 pools to be returned to their low-density
23 configuration, which was the original design,
24 because when these plants were built, the
25 assumption was that the waste would be taken away

1 somewhere.

2 In the early years, it was to re-
3 processing facilities, but that re-processing, for
4 various reasons, is a very bad idea. It failed in
5 the early 1970s in the United States.

6 And then Yucca Mountain was held
7 up as the illusion of a solution.

8 But that waste has not moved. The
9 pools are filled to capacity in the United States.
10 They are densely configured almost to the same
11 extent as an operating reactor core.

12 And so precautions need to be
13 inserted into the pools, boric acid, sleeves of
14 boron metal, to prevent neutron interaction because
15 chain reactions could take place in the pools.

16 So the low-density configuration
17 would allow -- and this was indicated back in that
18 January 2003 study by Alvarez. At a low-density
19 configuration, a sudden loss of water in the pool
20 could still allow for air circulation between the
21 high-level radioactive waste fuel assemblies. So
22 perhaps it would not catch on fire, or there would
23 be more time to react.

24 And in addition to that, the call
25 in this statement of principles was for

1 fortifications on the dry casks to prevent the
2 current situation, which is a concentration of dry
3 casks not designed to withstand terrorist attack.
4 And this would make the dry-cask storage itself,
5 just like the pool, a less-attractive target for
6 terrorists.

7 And, finally, the call in the
8 statement of principles is for quality assurance on
9 the dry casks. That's another big problem that we
10 have in the United States. There is tremendous
11 lack of quality assurance on the design and the
12 manufacture of these containers, which -- Mr. Roche
13 brought up the concept of these containers having
14 only a 50-year longevity by design. And as the US
15 general accounting office has recognized, the
16 wastes will likely stay on the reactor sites for
17 much longer.

18 In fact, recently in December of
19 2010, the US Nuclear Regulatory Commission revised,
20 revalidated its Nuclear Waste Confidence decision,
21 which was first promulgated in 1984.

22 Back in 1984, NRC assumed that by
23 the year 2007, or at the latest 2009, at least one
24 repository would open in the United States, but
25 that quickly faded from being believable.

1 And so by 1990, the NRC actually
2 revised its date to 2025, and it also said at least
3 one.

4 So we went from the potential for
5 multiple repositories by the year 2010 to one
6 repository by 2025.

7 In this most recent update to the
8 Nuclear Waste Confidence decision any date certain
9 has been removed.

10 And, in fact, now what they're
11 saying is that the wastes will stay onsite for 60
12 years of operations and 60 years post operations,
13 so 120 years altogether, which really raises the
14 question about the replacement of these dry casks,
15 which becomes very problematic in places that have
16 been decommissioned.

17 We have a number of sites in the
18 United States that are entirely dismantled. All of
19 the physical facilities are gone, except for the
20 dry-cask storage. And so how that transfer will
21 take place from old, degraded dry casks into new
22 ones is very dubious at this point.

23 And in addition to that 120-year
24 duration, the Nuclear Regulatory Commission has
25 asked its staff to look at much longer time

1 periods, centuries into the future, for onsite
2 storage.

3 I think it's a real recognition
4 that any date certain, especially one as close as
5 2035, is very questionable.

6 And so just to summarize, the
7 risks of high-level radioactive waste are very
8 real. This is, unfortunately, all too clear now
9 that the Fukushima Unit 4 pool is very likely on
10 fire as we speak releasing hazardous radioactivity
11 in large quantities into the environment directly.

12 And so to address these risks,
13 pools must be kept at low density.

14 Dry casks are also vulnerable.
15 The risks don't go away once fuel is moved into dry
16 casks. Dry casks need to be fortified. They need
17 to be well built. They need to be monitored.

18 That's something I didn't mention.
19 Dry-cask storage in the United States lacks direct
20 radiation monitoring and direct -- lacks direct
21 heat monitoring. So, of course, that's basic.
22 Dry-cask storage needs to have that.

23 And these risks continue for a
24 very long time into the future, hundreds of
25 thousands of years, and this is due to the alpha-

1 omitting particles in the wastes, things like
2 plutonium, which has a hazardous persistence of
3 240,000 years.

4 So thank you very much for this
5 opportunity. It's been an honour to present to
6 you. Thank you.

7 CHAIRPERSON GRAHAM: Thank you
8 very much, Mr. Kamps, for coming today and giving
9 us your presentation.

10 The last intervener on this -- on
11 this subject is Citizens Clearinghouse on Waste
12 Management under PMD11P1.139A.

13 And, Mr. Jackson, the floor is
14 yours. Thank you very much.

15 --- PRESENTATION BY MR. JACKSON:

16 MR. JACKSON: Okay. Thank you.
17 And I'm pleased to be here today.

18 To give you a bit more of a sense
19 of the experience that I bring to this is that I've
20 worked with citizens groups on waste issues and on
21 Great Lakes water quality and quantity issues for
22 the past 30 years.

23 I also have been teaching waste
24 management at Trent University for the past 15
25 years. And I'm an occasional teacher, which means

1 when people are on sabbatical, teaching
2 environmental assessment at the University of
3 Waterloo.

4 What I'm going to be talking about
5 is much less technical because the detail of
6 radioactive waste is not my great expertise, but to
7 be looking at the principles that we apply, what
8 we've learned in other forms of waste, and how we
9 manage those wastes, the lessons we have learned,
10 and comparing that with how we make our decisions
11 about how to deal with high-level radioactive
12 waste.

13 And I'm talking only in my
14 presentation today about the high-level, the
15 nuclear fuel bundles.

16 And to give you an example off the
17 top is PCBs. I'm sure we've all heard about the
18 negative impacts they've had.

19 When we started using PCBs in
20 electrical equipment -- and all of the equipment in
21 this room would have had PCBs in them in past -- we
22 saw this as a magical solution to dealing with the
23 problem of fires in terms of electrical equipment
24 because they didn't burn except at very high
25 temperatures.

1 What we didn't realize, of course,
2 and didn't take into account is how do we destroy
3 them, how do we get rid of them when they become
4 waste, and hadn't even thought about that when we
5 decided to be using these.

6 And, of course, now we know the
7 pollution problems we have.

8 As I said, I work a lot in Great
9 Lakes issues, and all the scientific studies in
10 terms of the impacts of PCBs on fish, on wildlife,
11 on humans are outrageously dramatic.

12 What we've been learning from
13 these situations, and unfortunately don't do a
14 great job of even now, is that when we decide to
15 use a technology, when we decide to use a
16 particular type of substance, that what we have to
17 make sure we do is that we also know what we are
18 going to do in terms of dealing with it when it
19 becomes waste and that that is the critical
20 problem.

21 And until we have -- know that we
22 have a solution to the waste issue, that it's not
23 appropriate to start using the technology.

24 That's the fundamental thing that
25 we have learned, or as I said we have -- know that

1 we have a solution to the waste issue. That it's
2 not appropriate to start using the technology.
3 That's the fundamental thing that we have learned
4 or, as I said, to varying degrees have learned over
5 the past couple of decades with our experience in
6 dealing with waste.

7 So I'm going to talk with you
8 today about, first of all, is a couple of the
9 examples of the principles that we now apply in
10 terms of other wastes and later I'm going to talk
11 about the certainty principle and the
12 uncertainties, which you've heard references to
13 today, so I'll be able to do that one fairly
14 quickly.

15 The given here, an unfortunate
16 given is that the Nuclear Waste Management
17 Organization is seen as having -- you know, taking
18 responsibility for finding the solution, the
19 long-term solution. And that therefore somehow
20 that whole issue doesn't get brought forward by OPG
21 here in terms of what are the failings with that?
22 What's the potential, et cetera, in terms of that
23 and the issues around it? And that's why on this
24 Panel today, we really wanted to bring that forward
25 to you.

1 But the Nuclear Waste Management
2 Organization very clearly says that these materials
3 have to be isolated from the environment. The
4 million year number was used and then they say, but
5 our guiding principle is going to be indefinitely,
6 forever in effect, so they accept that. They
7 accept that these -- and know that these wastes are
8 something that we cannot allow to be in contact
9 with the environment.

10 So let's look then in terms of
11 other types of substances in terms of how we deal
12 with waste management decisions and see if the
13 direction that they're going meshes with those
14 principles. I think it comes clear pretty quickly
15 that it doesn't.

16 One of the guiding principles that
17 we have started to use of waste now is that
18 focusing on waste is only focusing on a symptom.
19 That instead we should be looking at what is the
20 cause? What is the source of those?

21 Paul Hawken who wrote *The Ecology*
22 *of Commerce*, which has affected a lot of our
23 industrial and government leaders as a really
24 leading edge book when he first came out with that,
25 which is now 1994. It's over -- it's almost --

1 it's 17 years old.

2 And his fundamental principle in
3 that book was, "Nothing is more basic to the
4 argument of this book than the proposition. That
5 disposal of hazardous waste is not the root
6 problem, rather it is the root symptom. The
7 critical issue is the creation of toxic wastes."

8 And surely that same principle
9 needs to be applied in the case of these wastes
10 that NWMO says have to be separated forever, are
11 incredibly toxic. To be looking instead of what we
12 can do to reduce and avoid the creation of those
13 wastes in the first place instead of continuing to
14 create ever more wastes.

15 And what that means is that one
16 needs to step back and look at the alternatives.
17 Are there alternative ways to avoid the creation of
18 the waste in the first place? Can we get the same
19 service that we're after without creating ever more
20 of these wastes?

21 It's not to sit back and say, are
22 there alternative disposal methods? Because in
23 line with what Hawken (sic) is saying, it's to
24 avoid creating the waste in the first place.

25 Another one, and I'm sure all of

1 you have heard the cradle to cradle approach, which
2 is this idea that we need to be recycling items
3 through the system instead of seeing that there is
4 a disposal at the end at all.

5 And McDonough is one of the
6 leading thinkers on this. And he talks about that
7 we have to look at the so-called waste from our
8 processes as nutrients. By that, what he means is
9 that they have to have a useful value and a use
10 after they have gone from the process.

11 He talks about two kinds of
12 nutrients. One is a biological nutrient, which
13 means basically you're -- it can naturally
14 reintegrate into the environment. It can become
15 food for all those microorganisms in the earth and
16 so on.

17 And clearly the NWMO knows this
18 cannot become food when they say it has to be
19 separated from the environment forever.

20 The other type of technical is
21 technical nutrient that he talks about and this
22 really means closed, loop, recycling, reuse
23 constantly, so that the material goes back into the
24 same process again and can do that indefinitely
25 forever.

1 And again, NWMO does not accept
2 that they think they have the methods to do that.
3 They've been quite clear in their documents that,
4 yes, they're sort of doing a watching case on that,
5 but they certainly have said that in no way they
6 expect that to work out except as a watching brief.

7 Another common principle that we
8 see talked about by a lot of industries is
9 something called the natural step and the natural
10 step is something that actually was developed in
11 Sweden, but now has spread worldwide where again
12 the principles I'm talking about are ones that
13 industries have very heavily adopted.

14 And one of the -- they have four
15 system conditions in order for the planet and life
16 and our life on it to survive for the long term to
17 be sustainable.

18 And the first principle in that,
19 in a sustainable society, nature is not subject to
20 systematically increasing concentrations of
21 substances extracted from the earth's crust.

22 And certainly the high level
23 radioactive waste are concentrations of substances
24 naturally there, but when they go back, they are no
25 longer something that nature can handle and deal

1 with.

2 So the NWO's examples in terms of
3 the approach of the type of solution they're
4 talking about are very far from being consistent
5 with what we see as the leading edge ways in which
6 we may deal with things.

7 And I use the leading edge way and
8 sometimes people look at that and they think that
9 means rarely being used, but the reality is that
10 these are principles now that are being applied
11 everywhere, far and wide and by industries.

12 Nothing that I've said here is
13 something that in an industrial association would
14 not agree with in terms of the principles that they
15 think have to guide them as they make decisions.

16 So from the perspective of what's
17 happening here to say that the NWMO approach is one
18 that is acceptable, that therefore it's okay to be
19 generating more of those types of wastes does not
20 fit in with what is seen as good waste management
21 processes elsewhere.

22 And therefore it should not be
23 seen as acceptable to be generating more of those
24 types of wastes and building facilities that will
25 create more of that kind of waste.

1 I want to talk now quickly about
2 some of the legislative basis that we have in
3 Canada and how these types of wastes, radioactive
4 wastes are used quite differently from the other
5 types of hazardous wastes that we have in our
6 society and what possible good reason could there
7 be for that?

8 We have the *Canadian Environmental*
9 *Protection Act*, CEPA, which I'm sure you're all
10 aware of. And it calls for virtual elimination for
11 what they call track 1 substances under the Toxic
12 Substance Management Policy.

13 And virtual elimination means that
14 you have to get the toxic substance. It cannot be
15 released in the environment as a result of human
16 activity or -- and the ultimate reduction of it
17 below the level of quantification, so we can't
18 measure it or at least in a technically accepted
19 method of measurement.

20 The track 1 substances are what
21 they call persistent and bioaccumulative. And
22 radioactive substances, high level radioactive
23 substances are not included on Canada's track 1
24 substance for virtual elimination.

25 What's the reason for that? The

1 those types of wastes; pollution prevention,
2 avoiding creating them in the first place.

3 The other issue that I wanted to
4 raise was the question around uncertainty. And in
5 federal environmental assessment uncertainty is an
6 aspect that the Proponent is supposed to review and
7 assess and look at.

8 What is more uncertain -- and
9 you've heard examples of it already, what is more
10 uncertain than whether the proposed NWMO facility
11 for long-term disposal will ever be built.

12 The Auditor General, back in 1995
13 listed dates that in that period had already been
14 given -- and I have that in the report that you
15 have in front of you -- dates that have already
16 been given and broken by which the federal
17 government which said we will have that facility up
18 and running and operating.

19 And it's still not there and those
20 dates have repeatedly been broken and we have no
21 way to assume in any way that what's being proposed
22 now will be built at that time.

23 The other huge uncertainty around
24 of course is no one knows that even if we built
25 that facility that it would be safe and that it

1 would be reasonable to be used in that kind of
2 facility. And that's the even greater uncertainty
3 that lies here.

4 So in terms of environmental
5 assessments what one is supposed to do when one
6 sees uncertainty, especially uncertainties that are
7 so huge as they are in this case, is when then is
8 supposed to step back and say "Are there
9 alternative ways to provide the service that we are
10 trying to provide with the building of this type of
11 facility".

12 Are there ways, in which in this
13 case to get energy, are there ways in which we can
14 get energy by reducing energy or other methods of
15 creating energy that are alternative ways to
16 provide the service without creating the huge
17 uncertainties with something that is so incredibly
18 hazardous as we are talking about here today in
19 terms of the waste that are generated.

20 So I urge you on the basis of the
21 way in which the proposals for the long-term
22 disposal of the high-level radioactive waste are
23 contrary to the principles that we use in dealing
24 in dealing with other wastes, the principles that
25 are in Canadian legislation, in CEPA, as well as

1 the huge uncertainty in terms of whether that
2 facility that is proposed to be built would be
3 reasonably safe and whether it will even get built.

4 To find that the environmental
5 assessment is inadequate because this critical
6 component of it simply -- has only been addressed
7 by saying someone else will take care of it and
8 therefore it's not really up for discussion here.

9 So thank you for your time and I,
10 as I'm sure the rest of the panel, will be pleased
11 to take any questions

12 CHAIRPERSON GRAHAM: Thank you
13 very much for your presentation, Mr. Jackson.

14 I think with that we will call a
15 15-minute break and the chair will resume at 11:05.

16 Thank you very much for your
17 presentations and we'll go into then questions from
18 the panel.

19 --- Upon recessing at 10:52 a.m./

20 L'audience est suspendue à 10h52

21 --- Upon resuming at 11:07 a.m./

22 L'audience est reprise à 11h07

23 CHAIRPERSON GRAHAM: Mr. Roche are
24 you online, are you there?

25 MR. ROCHE: I'm here, yes.

1 CHAIRPERSON GRAHAM: Just a little
2 closer to the mic, perhaps, we heard you in the
3 background.

4 So we're going to resume and we're
5 going to questions from panel members first, then a
6 series of OPG, CNSC and government officials and
7 then the general public intervenors.

8 So with that, everyone's ready, we
9 will start with Mr. Pereira.

10 --- QUESTIONS BY THE PANEL:

11 MEMBER PEREIRA: Thank you, Mr.
12 Chairman.

13 My first question is to Ontario
14 Power Generation. We have heard from you in
15 previous exchanges and your presentations that you
16 plan to have onsite storage capacity from low and
17 intermediate to -- low level and intermediate level
18 waste and for used fuel to store all of the waste
19 generated for the entire lifetime of the station.

20 You could confirm that that is
21 fact the case? That is assuming that the used fuel
22 repository is not available over the lifetime of
23 the station and that fuel -- that the other waste
24 cannot be transferred to the deep geological
25 repository.

1 I'd like you to confirm that but
2 further than that, could you talk about what
3 challenges OPG will have to address in storing
4 these wastes onsite and how will aging issues be
5 managed over the lifetime of storage and how about
6 aging of the fuel?

7 Thank you.

8 CHAIRPERSON GRAHAM: That question
9 is to OPG.

10 MR. SWEETNAM: Albert Sweetnam,
11 for the record.

12 The answer to the first question
13 is yes, we will have enough space onsite to store
14 all of the low and intermediate waste and all of
15 the fuel waste for the full life of the new
16 facility.

17 I will ask Dr. Roman to address
18 the aging question.

19 DR. ROMAN: Hermina Roman, for the
20 record.

21 In terms of used fuel, aging
22 management, inspection management of the
23 containers, we would keep inspecting as our program
24 follows presently and any other new cask that we
25 may use for the other type of reactor, depending on

1 the type of technology chosen.

2 Inspection and maintenance, as
3 well of aging management, will prevent and give us
4 the assurance that any degradation -- prevent
5 degradation of the containers in advance and
6 therefore we could either -- ultimately we can
7 always retrieve and change the fuel into another
8 cask.

9 The process to do that, it will be
10 exactly as we do the loading; we would completely
11 reverse the process.

12 For low and intermediate level
13 waste, again, we do have inspection and maintenance
14 program and aging management plan that will prevent
15 and provide us advance notice of any indication of
16 degradation of the containers and will provide us
17 with indications that we need to repair or replace
18 containers, as we have done presently in our
19 Western Waste Management Facility.

20 MEMBER PEREIRA: And that is fine
21 for the period of operation but what we're talking
22 about conceptually is that some of the -- if these
23 other storage repositories are not available this
24 activity would have to be carried on for -- well
25 beyond the life of the station, maybe, you know

1 100, 1,000 years or something of that sort.

2 So whoever is the owner of these
3 wastes, and I presume it will continue to be
4 Ontario Power Generation -- perhaps you can confirm
5 that in your next response -- would have to
6 maintain the capacity to manage those wastes,
7 including the aging, not only of the containers but
8 of the waste itself, like fuel sheaths and so on
9 will probably go to some form of degradation, in
10 proposing to construct these reactors.

11 Has Ontario Power Generation
12 examined the challenges that will likely arise with
13 onsite storage, storage on Ontario Hydro property
14 -- Ontario Power Generation property -- sorry --
15 old habits -- for a very long time, well beyond the
16 life of the generating station?

17 But certainly the storage
18 facilities will have to be maintained and the fuel
19 waste and things like the iron exchange resins will
20 have to be managed so that there is no impact on
21 the environment over a period of time.

22 This is a sustainability challenge
23 that we face, is that no adverse impacts -- no
24 significant adverse impacts for the duration that
25 the material is held onsite.

1 So could you expand on that,
2 looking beyond the life of the station, looking at
3 a time when the rest of the station may be
4 decommissioned but the waste still has a life in
5 which it remains hazardous to the environment and
6 to the public around it?

7 MR. SWEETNAM: Albert Sweetnam,
8 for the record.

9 To the first question, the waste
10 remains in the ownership of OPG. So long as it
11 exists the waste from a nuclear reactor remains
12 with the generator of the waste.

13 Secondly, in terms of the long-
14 term view, if it remains onsite the segregated
15 funds are established specifically to deal with
16 used fuel waste.

17 And if there is not the
18 possibility of a repository being located anywhere
19 in Canada, that fund would be utilized to maintain
20 the waste onsite.

21 And whatever is required to make
22 sure that this waste -- the integrity of that waste
23 is maintained and the securities and protection
24 around that waste is maintained, would be funded
25 out of that fund on a long-term basis if there were

1 no repository available, because the money is
2 intended to go towards the repository.

3 But if the repository's not built
4 then the money would go towards ensuring that the
5 waste is stored in a safe and secure manner at the
6 site.

7 MEMBER PEREIRA: Before I go to my
8 next question I'd like to turn to the CNSC for
9 their comments on this hypothetical situation and
10 on the regulatory controls that would apply should
11 the waste have to remain onsite for a very long
12 period time, meaning well beyond the life of the
13 station, meaning for as long as we need control
14 over those wastes to ensure there's no impact on
15 the environment and the public.

16 MR. HOWDEN: Barclay Howden
17 speaking.

18 I'm just going to provide an
19 introduction, then ask Julie McKee to provide a few
20 more details.

21 But, yes, if the waste has to be
22 maintained onsite for a very long time it would
23 remain under the regulatory control of the CNSC and
24 under an appropriate licence.

25 I'll just ask Ms. McKee to provide

1 a few details of what we would expect.

2 MS. McKEE: Julie McKee.

3 Again, dry storage facilities are
4 licensed for a limited period and the licences
5 issued by the CNSC are generally valid from five to
6 10 years. And at the time of licence renewal CNSC
7 staff examine the operational performance of the
8 dry storage facility to determine whether it can
9 continue to operate safely for another licensing
10 term. So this will continue onwards.

11 So examples of areas that we would
12 look at are containment, shielding, dissipation of
13 decay heat, prevention of criticality, again the
14 assurance of fuel integrity, and that would have to
15 be reaffirmed at each stage, the allowance for
16 safeguards and security provisions and the physical
17 stability and resistant to extreme site conditions.

18 So again, as Mr. Howden has said,
19 they will be licensed until the appropriate long-
20 term waste management facility is available.

21 MEMBER PEREIRA: Thank you.

22 I'll go onto my next question.

23 Could OPG describe the conceptual design of the
24 adaptive phase management approach for used fuel?

25 And what other -- discuss what are

1 the storage concepts that will serve -- proposed to
2 serve to isolate the used fuel for the required
3 period of storage life, for the start life over
4 which the fuel would continue to remain hazardous.

5 MR. SWEETNAM: Albert Sweetnam,
6 for the record.

7 The adaptive phase management
8 program has been developed nationally by the NWMO
9 organization and it's being managed by the NWMO
10 organization.

11 Through the Chair, I would suggest
12 that maybe this question be directed directly to
13 them. I understand today the President of the NWMO
14 organization is in the room. Perhaps he could
15 answer this question directly.

16 CHAIRPERSON GRAHAM: Thank you.

17 I understand that we do have Mr.
18 Nash here, along with some of his staff.

19 So if there are a couple -- if
20 there are some questions that might enlighten the
21 panel -- get Mr. Nash to a microphone somewhere.

22 Okay, Mr. Nash, if you would take
23 the -- and you've been before us in your capacity
24 on other things. So all I ask is when you speak to
25 introduce your name.

1 So do you want to proceed, Mr.
2 Pereira, or do you have -- you have the question
3 right off -- you got the question, did you?

4 MR. NASH: Good morning, Mr.
5 Chairman, Members of the panel.

6 I'm Ken Nash of the Nuclear Waste
7 Management Organization.

8 In answering the question, I just
9 would like to provide a little bit of history here
10 that the work on long-term management of used fuel
11 in Canada did begin in about 1980 when the
12 governments of Canada and Ontario initiated the
13 Canadian Nuclear Fuel Waste Management Program.

14 In 1989 the concept of geologic
15 disposal was referred to an environmental
16 assessment panel that reported its findings in
17 1998, and I think one of the presenters mentioned
18 this.

19 The panel did find that geologic
20 disposal was technically safe at a conceptual level
21 but public acceptance had not been demonstrated.

22 The panel recommendations were
23 largely incorporated into the 2002 *Nuclear Fuel*
24 *Waste Act*, which, amongst other things, required
25 the formation of our organization.

1 For the first three years the NWMO
2 reviewed alternative approaches to the long-term
3 management of used fuel and in doing that we
4 engaged over 18,000 Canadians, including 2,500
5 Aboriginal people, and we received contributions
6 from over 500 experts.

7 Canadians did tell us consistently
8 that safety and security was a top priority. They
9 also told us firmly that this generation must take
10 action now and not simply leave a legacy for future
11 generations.

12 It was important to be consistent
13 with international practice and the approach must
14 be adaptable to advances in technology and changes
15 in the expectations of Canadians.

16 Adaptive phase management emerged
17 as the approach that best met the values and
18 priorities of Canadians. Adaptive phase management
19 is both a technical method and a management system.

20 The technical method is consistent
21 with best international practice. It requires
22 centralized containment and isolation of used fuel
23 in a deep geologic repository where there will be
24 continuous monitoring and the ability to retrieve
25 if necessary.

1 The management system is uniquely
2 Canadian. It includes flexibility in the pace and
3 the manner of implementation, phased and adaptive
4 decision making and the incorporation of
5 traditional Aboriginal knowledge. It also requires
6 an open, inclusive, transparent, fair siting
7 process to seek an informed and willing host
8 community.

9 Adaptive phase management was
10 approved by the Government of Canada in June 2007.

11 Progress since 2007 by the NWMO
12 has included annually issuing an implementation
13 plan for adaptive phase management after public
14 consultation.

15 NWMO has conducted additional
16 technological development in 11 universities and
17 through multiple international partnerships. We
18 have received approval for a funding formula that
19 ensures that financial burdens are not passed to
20 future generations.

21 We've initiated a site selection
22 process in 2010 after an extensive two-year public
23 dialogue to design the process and there are now
24 eight communities that have made public their
25 interest in learning about adaptive phase

1 management and the site selection process.

2 CHAIRPERSON GRAHAM: Thank you
3 very much, Mr. Nash.

4 I'm going to continue with
5 questions from our panel members and if Ms. Lloyd
6 doesn't mind, even though Mr. Nash is not a
7 presenter, there might be a question. If he could
8 remain there instead of coming back and forth, but
9 you will have the first question. So...

10 MS. LLOYD: (Off mic).

11 CHAIRPERSON GRAHAM: No, that's
12 correct because Mr. Nash is not a presenter and as
13 such but just in case there might be a question,
14 then we can do that if that's satisfactory.

15 So Mr. Pereira, would you
16 continue.

17 MEMBER PEREIRA: Thank you, Mr.
18 Chairman, and my next question I will direct to
19 perhaps Mr. Nash.

20 Mr. Nash, what are the challenges
21 that remain to be resolved for long-term storage of
22 used fuel in a repository?

23 MR. NASH: Okay, thank you.

24 I think there's quite an
25 international consensus that the technical aspects

1 of a deep geological repository are well known and
2 can be solved.

3 Someone made reference to a "Rock
4 Solid" report earlier today and all those
5 mechanisms in fact have been studied over and over
6 again by the international community and
7 organizations like the -- and have been proved that
8 those challenges can be met.

9 The International Atomic Energy
10 Agency has endorsed the concept of a geological
11 repository. The Economic Union has endorsed it.
12 The NEA of the OECD has endorsed it.

13 I think the challenges that remain
14 are probably gaining the social acceptance for and
15 the concept of a willing host community, and that's
16 a challenge that we are now undertaking.

17 MEMBER PEREIRA: Thank you.

18 I'll turn to the CNSC. I know the
19 CNSC is not as yet engaged in regulatory oversight
20 of the DGR, the used fuel waste repository
21 proposal.

22 But in your assessment, what is
23 your position on the capacity of the designs being
24 considered to isolate the used fuel for the
25 extended period of time being talked about as being

1 needed, like 100,000 years or 200,000 years?

2 What sort of challenges do we face
3 in assuring the public that this waste can be kept
4 isolated from the environment for that period of
5 time, given the concepts being considered?

6 MR. HOWDEN: Barclay Howden, for
7 the record.

8 I am going to ask Julie McKee to
9 respond. I'd just like to make it clear and I
10 think you tried to make it clear, Mr. Pereira, that
11 the regulatory process has not started on this
12 project.

13 However, we've had early
14 involvement with the Nuclear Waste Management
15 Organization and Ms. McKee will give you an
16 overview of that.

17 MS. MCKEE: Julie McKee.

18 As Mr. Howden has stated that the
19 CNSC is involved at the early beginnings of the
20 NWMO project and this is seen as an international
21 best practice to have the regulator involved.

22 So we're there at two capacities.
23 Four is outreach activities reviewing NWMO material
24 and just commenting on our regulatory role, and
25 also providing information on our website and to

1 communities of interest and people of the public
2 who are interested in learning more on our
3 regulatory role.

4 Our second area is to conduct a
5 pre-conceptual review of two hypothetical sites and
6 since it's not known where the site will be located
7 in Canada if one -- if a host community does come
8 forward, the NWMO has proposed to us two kinds of
9 hypothetical situations in two different rock types
10 that could be representative of somewhere in Canada
11 and we are conducting a review of those two
12 reports.

13 The first report will be submitted
14 in August of 2011 and we will review those reports
15 to our Regulatory Guide G320 which is on the long-
16 term management of radioactive waste and we will
17 review the assessment and methodology being used
18 for the NWMO for their case studies. And this will
19 give us a good idea if they are on the right track.

20 Dr. Newland talked about these pre
21 I guess -- pre-project conceptual designs for
22 reactors and this is what we're doing again for the
23 deep geological repository aspects.

24 MEMBER PEREIRA: Thank you for
25 that response but I was looking for a bit more than

1 that. I was looking for the barriers between the
2 fuel and the environment barriers that would stand
3 the test of time in terms of resisting corrosion or
4 whatever breakdown mechanisms containing
5 radioactive elements that are in the fuel.

6 Has the CNSC looked at that in the
7 research that the CNSC has examined to assure us
8 that these radioactive materials can be contained
9 for the period of time being talked about?

10 MR. HOWARD: Don Howard, Director
11 of the Waste and Decommissioning Division at the
12 Canadian Nuclear Safety Commission.

13 The CNSC participates extensively
14 in international groups that are examining deep
15 geological disposal. There are a lot of issues
16 around the integrity of the fuel when it's placed
17 into a repository, the backfilling that will be
18 used, how it's going to interact over decades or
19 centuries or, you know, beyond that.

20 So we are looking at those issues
21 right now and recognized that there are certain
22 aspects which the Proponent when they do forward to
23 present their safety case envelope will have to
24 address and demonstrate that the material can be
25 contained over long periods of time and that they

1 are basically containing the material.

2 So, again, we are looking at
3 issues such as the container that the fuel will be
4 in, what type of container, how is it corrosion
5 resistant, things of that nature. We look at the
6 bedrock, the geology of the area, faults. So all
7 of those things are what we're concerned -- or not
8 concerned but, you know, wanting to see in a
9 particular safety case.

10 And basically, our involvement
11 internationally through the IEA and the NEA is that
12 they are also working on these issues and we're
13 participating in that and we're learning as we're
14 going along as well; so all of these issues are on
15 the table.

16 MR. HOWDEN: Barclay Howden
17 speaking.

18 Mr. Pereira, just to put a little
19 bit more point on that, we have been doing research
20 work to demonstrate that the barriers can work and
21 I'd like Ms. McKee to provide a bit more
22 information on that.

23 MS. MCKEE: And just to add to
24 that, I guess CNSC, the former AECS, has been
25 involved in the research of geological repositories

1 since about 1978. So we have a fairly good basis
2 on what we're working with.

3 But in 1978 we were looking at
4 granitic rock. So we have a lot of experience in
5 that. But to provide sufficient independent
6 knowledge for assessing future proposals, we're
7 expanding our expertise from granitic rock and also
8 looking at sedimentary rock.

9 And as Mr. Howard has pointed out,
10 we do participate on international working groups
11 and one of the working groups is the Geosafe
12 through the International Atomic Energy Agency and
13 this is a three-year project to develop
14 international practices and standards for
15 demonstrating geological repository safety.

16 And this is again, as Mr. Howard
17 has said, to harmonize member countries' approach
18 to develop the safety case and how the regulator
19 will plan and perform assessments of this.

20 The other group is the IGSC which
21 is through the Nuclear Energy Agency, and this is
22 to monitor scientific advancements related to
23 developing a safety case, and it covers a wide
24 range of topics from gas generation to geosciences
25 and, again, how these can be integrated and

1 developed to building the safety case.

2 MEMBER PEREIRA: Thank you very
3 much.

4 And clearly it appears from what
5 you're saying that a number of challenges still to
6 be fully addressed, but I guess this panel can draw
7 comfort from the fact that if these challenges are
8 not addressed to the satisfaction of the CNSC, the
9 solution will be, above-ground storage of the waste
10 can be monitored.

11 And as OPG has indicated, the fuel
12 and -- and the other wastes can be moved into new
13 containers for the period of time required, which
14 may be 100,000 years or 200,000 years, whatever the
15 duration of the activity of the fuel and the waste
16 is as a -- as a hazardous material.

17 So is that -- is that the way you,
18 the regulators, see this going, that failing the
19 development of an underground system for isolation
20 of the waste, the regulator will require above-
21 ground storage where it can be monitored under
22 regulatory control for as long as it needs to be;
23 is that the way you would go?

24 MS. McKEE: Julie McKee.

25 Right now the proposal is to move

1 forward, I guess, with the Nuclear Waste Management
2 Organization's proposal. And, again, I discussed
3 our early in involvement in that.

4 If that did not go forward, I
5 guess -- I guess if it would be up to the
6 Government of Canada to make that decision on how
7 to move forward, but in the interim it would be to
8 continue with the long-term management on the
9 sites.

10 MEMBER PEREIRA: Thank you for
11 that clarification because a number of intervenors
12 have expressed concerns about waste as an issue,
13 high-level waste, used-fuel waste, and the other
14 waste, and so this is something this panel needs
15 clarity on as to what would be the strategies if
16 the -- the proposed approach of developing deep
17 geological repositories does not -- cannot be
18 demonstrated to be scientifically and technically
19 implementable because of the challenge of isolating
20 the waste.

21 Just another point of
22 clarification, can I go back to Mr. Nash again on
23 one point?

24 CHAIRPERSON GRAHAM: Yes, you can
25 on another point.

1 As I say, to be fair, though, to
2 the intervenors and where Mr. Nash did not have a
3 presentation, keep it to the -- to the point that
4 you may have a question on.

5 MEMBER PEREIRA: Thank you.

6 Mr. Nash, in your response, you
7 made a reference to retrieval of waste. What
8 exactly is that about, and what would be the
9 purpose of retrieval and safe retrieval obviously?

10 MR. NASH: Thank you. Ken Nash.

11 When we consulted with Canadians,
12 it was very apparent that there was a significant
13 desire there to continuously monitor the material
14 and to have the ability to retrieve it from the
15 repository, if, for instance, new technology
16 emerges that provides a better solution, such as
17 reprocessing or recycling or other alternatives
18 were available in the future that the future
19 generation may develop that.

20 MEMBER PEREIRA: Thank you.

21 I'll go back to Ontario Power
22 Generation.

23 The environmental impact statement
24 that OPG has issued states that used fuel will
25 eventually be transferred to a licensed offsite

1 facility.

2 Could OPG describe the approach
3 required for transferring of the used fuel to the
4 offsite licensed facilities?

5 And I'm talking here about the
6 transportation measures, the type of fuel transport
7 containers that would be used, and the safety
8 measures that would be required to move the fuel
9 from the Darlington site to a used-fuel facility.

10 What assurances would the public
11 have that this can be done safely in a secure
12 manner?

13 DR. ROMAN: Herminia Roman, for
14 the record.

15 The transportation of used fuel to
16 a long-term management facility is as well part of
17 the NWMO project, and as such, they will define the
18 type of transportation casks, which will have to
19 meet all the regulatory requirements that
20 transportation casks of used fuel will have to
21 meet.

22 Until that transportation casks
23 has not been designed, we'll have to go through all
24 the proper design for a specific safety
25 requirements as well as the specific location of

1 the deep geological repository for the used fuel.
2 It's known. Then we can make the proper assessment
3 of the full process of the transportation of the
4 used fuel.

5 So at that time, and part of that
6 project defined by the NWMO, deep geological
7 repository, then we can make more detailed
8 assessment of the transportation.

9 MEMBER PEREIRA: So as things
10 stand at the moment, we, the panel, do not have
11 clear information on how this used fuel would be
12 moved offsite, other than ideas, which, again,
13 stresses the importance of knowing that the fuel
14 can be stored onsite because it may not be feasible
15 to have an acceptable approach and meeting public
16 acceptability as well to move the fuel from the
17 licensed -- from the Darlington site to a licensed
18 facility.

19 If you have no further comments on
20 that, I'd like to go to the CNSC to obtain their
21 perspective.

22 DR. ROMAN: Herminia Roman, for
23 the record.

24 We do have experience -- OPG has
25 experience on transportation of -- mostly of low

1 and intermediate-level waste, and a sporadic, maybe
2 once or twice a year, we do transportation of used
3 fuel for testing purposes to the Chalk River
4 facility. So we do have experience on -- of what
5 we do in terms of transportation. And I can speak
6 to that if you wish.

7 MEMBER PEREIRA: Please do.

8 DR. ROMAN: And the transportation
9 -- and I think we mentioned that in our
10 presentation -- is a highly-regulated environment
11 and under the Canadian Nuclear Safety Commission
12 Regulations on packages and transportation
13 regulations, that's very prescribed environment
14 where we are required to meet specific conditions
15 all the way from manufacturing a container to use,
16 the way the container is used, the way the
17 container is loaded, the way the container is
18 unloaded, the way the container is labelled. So
19 all that is a very prescribed process that in
20 container that is put on the road, either for low
21 and intermediate-level waste or used fuel, has to -
22 - has to meet, and in this case, will also have to
23 be certified -- they are certified containers, all
24 licensed containers, as the used-fuel container
25 will have to -- to be licensed.

1 In addition to that, I can speak
2 to OPG's experience.

3 As we have mentioned, we have --
4 our safety record on this area is well proven to --
5 with over 35 years of transporting waste and more
6 than 11 million kilometre, we only have five
7 accidents where there was no release, radiological
8 release. They were accidents actually that -- they
9 did mostly mid-70s and mid-80s.

10 From that, we have learned, and we
11 have improved our record in the last decades.

12 We always are trying to improve
13 our operations in transportations, so we have just
14 -- have a set of -- a way that we can control where
15 all our transport packages and vehicles are at any
16 given time. So it's another quality assurance to
17 our transportation. Documentation of what we are
18 transporting is set.

19 We have as well the transportation
20 emergency plan that we have in place as well, that
21 we provide community advice to -- on a yearly
22 basis, we meet with the community that our trucks
23 go through and to keep them informed of this
24 activity as well.

25 And our emergency preparedness

1 plans are audited by Transport Canada and CNSC as
2 well. So that's the same regime that any
3 transportation of used fuel as well will have to go
4 through.

5 CHAIRPERSON GRAHAM: Thank you
6 very much for that clarification. That was good.
7 I turn to the CNSC for comments on the regulatory
8 requirements in the assurance you will be able to
9 give the public on the safety of the transport of
10 used fuel -- the safety and security of your
11 transport of used fuel from an OPG site to a
12 repository?

13 MR. HOWDEN: Thank you, Barclay
14 Howden speaking. I'm just going to give a quick
15 introduction and then I'm going to ask Karine
16 Glenn, our transport specialist to fill in the
17 details.

18 The movement of any quantity of
19 used fuel to another site is a potential future
20 state. However, transport of used fuel is done on
21 a rare occasion, about five times in Canada in any
22 given year and being individual bundles going up to
23 the Chalk River site for a post-radiation
24 examination and that goes in a certified flask.
25 There are other flasks that can handle more

1 bundles, but to our knowledge have never been used
2 because there's only been single bundles. So I'll
3 ask Ms. Glenn to provide the details of the review
4 process and why we have good assurance of the
5 safety of the fuel in transport.

6 MS. GLENN: Good morning. My name
7 is Karine Glenn and I'm a transport specialist with
8 the Canadian Nuclear Safety Commission.

9 I may begin by saying that the
10 transport of used nuclear fuel as far as
11 transportation is concerned, is no different than
12 the transport of any other radioactive materials.
13 Transportation safety relies basically on the
14 transport packaging and then less so on operational
15 constraints.

16 And so in Canada transport is
17 regulated by the Transport Canada's Transportation
18 of Dangerous Goods Regulations. The packaging and
19 Transport of Nuclear Substances Regulations, which
20 are the Canadian Nuclear Safety Commission's
21 regulations, which incorporate the International
22 Atomic Energy Agency's regulations for the Safe
23 Transport of Radioactive Materials.

24 The IEA regulations have been in
25 existence for 50 years. The track record is

1 excellent. There has never been an accident
2 involving radioactive materials which has resulted
3 in a serious radiological consequence in the 50
4 years, including transport of used nuclear fuel.

5 While it's not common in Canada
6 between 1964 and 1997 over 3,000 shipments of used
7 nuclear fuel were performed in the U.S. alone. Of
8 those, only eight shipments were involved in
9 accidents; only one of those flasks was damaged and
10 there was no structural damage and no containment
11 breach, so no release of radioactive material in
12 that particular accident.

13 The packages used for used nuclear
14 fuel have to be certified by the CNSC. As part of
15 the certification process, the transport
16 specialists, who are all licensed professional
17 engineers, will look at a number of different
18 criterias. We look at structural performance,
19 thermal performance, shielding, containment,
20 criticality, operation and maintenance, quality
21 assurance of the packages. We look at all those
22 different areas.

23 The packages are designed to
24 withstand a number of tests. They're designed to
25 withstand both normal conditions of transport and

1 accident condition of transport.

2 We look at the cumulative effects
3 of drop testing, puncture testing, crush testing
4 and then after that, they undergo fire testing.
5 Through all of that, containment of the material
6 has to be maintained and if the material involves
7 fissile materials, criticality has to be prevented
8 in all instances.

9 So when we're looking -- when we
10 certify a package, we examine all those things and
11 so we design for accidents. We don't assume that
12 accidents will not happen.

13 In the case also of used nuclear
14 fuel, in most cases it will fall under category
15 one, two or three nuclear material and will require
16 a transportation licence for their transport, and
17 that's from a security perspective. So as part of
18 that, they would have to submit a security plan and
19 the proposed route.

20 All of that, however, is
21 prescribed equipment and if the Commission members
22 would require additional information, it would have
23 to go in-camera for that.

24 When we look at quality assurance,
25 it's through the entire process. We look at

1 quality assurance for the design, the testing, the
2 manufacturing, the transport activities, the
3 documentation as well as the maintenance of the
4 packages throughout their lifespan.

5 MEMBER PEREIRA: Thank you very
6 much for that answer. Thank you, Mr. Chairman.

7 CHAIRPERSON GRAHAM: Thank you,
8 Mr. Pereira. Madam Beaudet, you have the floor.

9 MEMBER BEAUDET: Thank you, Mr.
10 Chairman. I'd like to check with Mrs. Lloyd and
11 her presentation, her written submission on page 21
12 at paragraph three. You mention here that there
13 was only a 13-line discussion of used fuel disposal
14 and you feel that the EIS fails the test in
15 providing complete information. And we've just
16 discovered that for transportation, OPG would have
17 to wait for the Nuclear Waste Management
18 Organization to give them indications as to what
19 would be required. I would like to know from you
20 what are the technical details? Maybe you haven't
21 made the list yet, but what would be the technical
22 details that you anticipate to find in the EIS
23 regarding management of waste transportation and
24 storage?

25 MS. LLOYD: I'm wondering, Mr.

1 Graham, when I would have an opportunity to comment
2 back on Mr. Pereira's question. I do want to speak
3 to Madam Beaudet, but I don't want to lose his.
4 How should we deal with this? Should I comment on
5 Mr. Pereira's question first or respond to Madam
6 Beaudet?

7 CHAIRPERSON GRAHAM: I think
8 perhaps I'll get you to do Madam Beaudet first
9 because she just asked the question then I'll
10 revert back. Okay?

11 MS. LLOYD: Okay. Very good. I
12 think that some of the things that -- I -- I think
13 throughout our submission we've noted a number of
14 areas that were absent and I think that what we
15 would like -- what we expected to see; what you
16 should have expected to see was a very thorough
17 treatment and that's not what you have. You have
18 that, you know, paragraph or so, general
19 description and then there's some other references,
20 but there is, for example, in one of your
21 questions, there was a question raised about having
22 to return the fuel. This was raised by the panel
23 in the June, I think, technical session and again
24 in the information responses.

25 There was a question quite -- you

1 know, quite rightly raised by the panel. It was a
2 conversation and then became an IR about if the
3 fuel had to be returned to the cooling pool or
4 retrieved from the dry storage containers, how
5 would that take place? Ontario Power Generation's
6 response was, well, "*We do it in the reverse of the*
7 *way we put it in.*" That was their response.

8 What that response should have --
9 well, first of all, I think that should have been
10 included in the environmental impact statement, a
11 discussion -- a contingency planning discussion at
12 each stage of the fuel waste management should have
13 been included in the environmental impact
14 statement. And that contingency discussion would
15 have then addressed the questions that the panel
16 had to raise, first in the technical session and
17 then through an information request.

18 And in that discussion, Ontario
19 Power Generation should have been describing things
20 like the monitoring regime which would provide them
21 the information that would say it would have to be
22 retrieved or returned to the fueling pool.

23 It should have included the
24 discussion of what are the triggers? Are there
25 thresholds? It should have included a discussion

1 of their experience in this regard. Have they done
2 this before? I don't know if they have. They
3 certainly don't hear that in the EIS.

4 A discussion, what are the
5 likelihood of the containers having been degraded,
6 become degraded in the storage? I make a
7 speculation that if the fuel is being retrieved
8 from the dry storage container and returned to the
9 fuel pool, there is a reason. There should be a
10 discussion about that reason.

11 And I further speculate that the
12 reason might include a loss of containment within
13 the dry storage container, some kind of a failure
14 with the fuel bundle, some kind of radiological
15 release. I don't know because they don't include
16 that.

17 Not only do they not include it in
18 the EIS, they don't include it in their response to
19 the information request, so there should have been
20 a discussion there about what's the -- what is the
21 likelihood of a container having degraded? What is
22 the response to that? How does that then fit with
23 this notion of, well, we'll just put it back in the
24 way we took it out.

25 And there is also a real

1 possibility I think that there might not be
2 operating room left in the fuel pool. There is no
3 discussion of that. I don't recall any discussion
4 of fuel placement within the pool. I don't recall
5 any discussion about their sequencing. What's
6 their time trigger for when they remove the fuel
7 from the pool to the dry storage containers? I
8 have an impression as a member of the public with
9 an interest in this. I have an impression that
10 it's when the pool gets crowded, they move some out
11 to a dry storage container. I don't know that, but
12 that should have been discussed in the
13 Environmental Impact Statement.

14 So step by step by step from the
15 pool -- the fuel going into the pool, from the pool
16 to the dry storage, from the dry storage to longer
17 term storage in -- I think in most, if not all
18 instances, they refer to the dry storage containers
19 as interim.

20 So there is no discussion about
21 transfer of the waste from the dry storage
22 container into a transportation system, including
23 none of the discussion about the transportation
24 system.

25 Those are all I think high risk

1 to include off-site storage in the project, it
2 should be in the EIS and it was not.

3 MEMBER BEAUDET: Thank you, I
4 understand more now your -- your thoughts. On
5 this -- on the next page, you mention in the last
6 paragraph that the responsibility for the waste
7 remains with the waste owners, generators, such as
8 Ontario Power Generation. And you give here the
9 reference as the *Nuclear Fuel Waste Act*.

10 Is there a particular article that
11 you're referring to here? Because I've tried to go
12 through the Act and it's not clearly defined, so
13 maybe I overlooked something.

14 MS. LLOYD: It's not clearly
15 defined that the waste remains the responsibility
16 of the owners. I can -- I can review the Act and
17 give you a particular section, but the Act says
18 that the nuclear waste, fuel waste -- the *Nuclear
19 Fuel Waste Act* creates the Nuclear Waste Management
20 Organization for two functions.

21 One, is to develop as a
22 recommendation to the Federal Government a
23 long-term approach to the management of nuclear
24 fuel waste. And the second is to implement that
25 report -- implement that recommendation. It does

1 not say that ownership of the waste transfers to
2 the NWMO.

3 I believe OPG confirmed that this
4 morning, but I can certainly look for the section.
5 I don't have the entire Act.

6 MEMBER BEAUDET: I don't think
7 it's that clearly stated and I would like to know
8 from OPG, I know you've confirmed it this morning,
9 but is it in a contract? Like, what would be the
10 arrangement? Would you rent space from Nuclear
11 Waste Management Organization? How exactly would
12 it be defined, I presume, in a contract?

13 MR. SWEETNAM: Albert Sweetnam,
14 for the record.

15 The way the NWMO has been set up
16 is that the waste -- the operators are responsible
17 for their waste. And they're responsible to
18 contribute to the storage of that waste and the
19 development of the storage of that waste in a
20 certain proportion, which is -- which
21 is -- it's a complex formula that actually defines
22 how many waste bundles that you have that you tend
23 to store over the period of your reactors.

24 And this gives a formula for
25 funding of the NWMO. This formula has been in

1 place since NWMO has started and will continue to
2 be funded in the same manner.

3 However, they have -- I can't
4 point you to the direct clause in the *Act* that
5 actually says that the ownership remains with the
6 generator of the waste.

7 Perhaps Mr. Nash can -- he's a lot
8 more familiar with the *Act* than I am.

9 MEMBER BEAUDET: Yes, please, Mr.
10 Nash?

11 MR. NASH: Thank you, Ken Nash.
12 It's our understanding that until other
13 arrangements are made, the ownership of the waste
14 remains with the waste owner.

15 There is no defined period when
16 that may change. That would have to be in
17 agreement between the waste owners and NWMO and
18 potentially the Government of Canada.

19 MS. LLOYD: Madam Beaudet, if I
20 could add, I think another reference for you might
21 be the -- and I'm wondering, is it the Radioactive
22 Waste Policy framework or the Nuclear Waste Policy
23 framework? I think it's the Radioactive Waste
24 Policy framework. Perhaps CNSC can help me out on
25 that.

1 That policy framework was
2 developed in the summer of 1997, I believe, or '96
3 and it was introduced into the environmental
4 assessment review of Atomic Energy of Canada
5 Limited, geological disposal concept.

6 And I think by all evaluation I
7 think very much drive -- drives -- or drove the
8 *Nuclear Fuel Waste Act* and its writing. And the
9 nuclear -- the policy framework states very clearly
10 that the owners are responsible for the waste
11 including for the payment of the waste, so that
12 might be a helpful reference as well.

13 MEMBER BEAUDET: I understand
14 about the storage and the ownership of the waste,
15 but we've discussed earlier as well about
16 consequences, long-term consequences.

17 And I can believe that the
18 agreement is probably a very complex document, but
19 if you look, for instance, at the host agreement
20 for municipalities, it covers not just the plain
21 storage.

22 I mean, I would presume, and
23 that's what I'm getting at, that if there is an
24 accident, if there are leakages, if there are
25 release, how is the shared responsibilities?

1 Because how can you prove it's
2 coming from which waste?

3 Can OPG answer that please?

4 MR. SWEETNAM: Albert Sweetnam,
5 for the record.

6 I would assume that your question
7 relates to if there is a release of some sort in
8 the future fuel DGR.

9 The way the -- and NWMO can
10 address this in more detail, but my understanding
11 of the way the DGR is going to be designed and
12 constructed, is that you will be able to track
13 every single bundle from source to where it's
14 stored.

15 So the location of the incident
16 would clearly indicate which package created the
17 incident so it would be attributable to a certain
18 operator.

19 But perhaps NWMO can add more to
20 this.

21 MEMBER BEAUDET: Mr. Nash, please.

22 MR. NASH: Ken Nash.

23 I'll just go back to what I said
24 before, that the waste remains the ownership of the
25 waste owner until such other arrangements are made.

1 In the event that the waste
2 remains with the owner, even when the fuel is in
3 the repository, I think that will be the situation
4 of assigning responsibility.

5 And, presumably, before that
6 occurs you would have to either transfer the waste
7 to NWMO and NWMO be responsible, or there would
8 have to be some formula for shared responsibility.
9 And perhaps, as Mr. Sweetnam has mentioned, it
10 could be perhaps ways of tracking waste.

11 But those things have certainly
12 not been decided and would have to be the subject
13 of future discussions.

14 MS. LLOYD: But, Madam Beaudet, if
15 I could just add, we can be fairly certain that if
16 there's a problem with the waste it will be OPG's
17 waste that is causing the problem, because well
18 over 90 percent of the waste is OPG's waste,
19 including the waste generated from the Bruce
20 reactors being operated by Bruce Power.

21 Ontario Power Generation continues
22 to own the waste. Quebec has, I think at most
23 recent statement, said they will not be
24 participating in the program. So there's a very
25 small volume of waste in New Brunswick. The rest

1 of the waste is OPG's.

2 MEMBER BEAUDET: Yes, I know that.

3 Thank you.

4 CHAIRPERSON GRAHAM: Mr. Howden?

5 MR. HOWDEN: Madam Beaudet, may I

6 just make a commentary from a regulatory

7 perspective?

8 Ultimately the group that is

9 responsible for the safety of the waste is the

10 licensee, regardless of who owns it. The licensee

11 may have to have agreements with the owners in

12 terms of how they handle things and how they pay

13 things, but under the regulatory regime, under the

14 NSCA the licensee, whoever is licensed, will be the

15 one responsible for the safety of that particular

16 facility.

17 I just wanted to make that very

18 clear.

19 MS. LLOYD: But if I could add as

20 well, that again still really in practical terms

21 means Ontario Power Generation because they have

22 majority control of the NWMO. In many respects

23 they are the same organization with different

24 corporate descriptions.

25 So in practical terms it's ---

1 MR. SWEETNAM: Mr. Chair, may I?

2 CHAIRPERSON GRAHAM: Yes.

3 MR. SWEETNAM: Albert Sweetnam,
4 for the record.

5 It's very, very important to note
6 that OPG does not have control of NWMO. NWMO is
7 being set up on a separate federal statute. They
8 have their own board of directors. They have their
9 own management and they operate completely
10 independently of OPG.

11 It also should be noted that the
12 financing for NWMO comes from the operators but
13 this does not mean that we have control of NWMO.

14 CHAIRPERSON GRAHAM: Look, I think
15 we're getting into a debate here that ---

16 MS. LLOYD: That we don't need.

17 CHAIRPERSON GRAHAM: I accept the
18 statement by Mr. Howden that the ultimate
19 responsibility of the waste is OPG. Under that
20 premise, no matter where it is, it's the ultimate
21 responsibility is going to be OPG.

22 So I think that that was perfectly
23 clear and I hope that now we can go on.

24 Madam Beaudet, you have other
25 questions, and you may have something to follow-up

1 on this, but Mr. Howden's question -- you're
2 shaking your head.

3 MR. HOWDEN: Barclay Howden.
4 I'm saying the ultimate
5 responsibility is with the licensee, whoever it
6 happens to be. In this case it may not be OPG, it
7 may be the NWMO. But the one who has control over
8 the oversight, the organizational control,
9 management control, physical controls is the
10 licensee and they're responsible. So whoever that
11 entity is, is the one.

12 And just regulatory standpoint,
13 how they sort themselves out, our view is who's the
14 licensee and that's the one we're going to hold.

15 MEMBER BEAUDET: Thank you for
16 this clarification.

17 I'd like to know another point --
18 go to another point also about the capacity of the
19 DGR.

20 You have an EIS. You were saying
21 -- sorry -- Northwatch has brought up the
22 possibility that the DGR could not possibly have
23 the capacity to accommodate all the new waste
24 produced from Darlington.

25 I'd like OPG to comment on that.

1 And I would also ask CNSC in terms
2 of refurbishment waste, do you consider that this
3 panel includes the review of refurbishment waste?

4 MR. SWEETAM: Albert Sweetnam, for
5 the record.

6 In terms of the capacity of the
7 DGR's, I speak first about the DGR for fuel waste
8 that's being done by NWMO. This would have the
9 capacity to hold all of the fuel from the new
10 reactors as it's a requirement under the Act.

11 Actually the Act mandates that
12 NWMO provides long-term management of used fuel
13 from all reactors in Canada. So that's the
14 intention under the used fuel.

15 On the low and intermediate fuel
16 the DGR that's intended to be placed on the Bruce
17 site it has the capacity for all of the low and
18 intermediate waste from the new reactors.

19 It should also be noted that when
20 the first volumes were calculated, which is what is
21 in the public record at the moment, it included the
22 refurbishment of Pickering. Pickering is no longer
23 being refurbished, it's being shutdown in 2020, and
24 that frees up additional space in that DGR.

25 Thank you.

1 MEMBER BEAUDET: CNSC, please.

2 MR. HOWDEN: Yes, Barclay Howden
3 speaking.

4 I'm going to ask Julie McKee to
5 speak to the issue of the refurbishment waste on
6 the site.

7 MS. McKEE: Julie McKee.

8 The low and intermediate level
9 waste from refurbishment is included in the
10 environmental assessment, the scope of it, and it
11 is anticipated to be stored onsite until the site
12 is decommissioned.

13 MEMBER BEAUDET: Thank you.

14 Another point is something we've
15 touched on a bit this morning, is about research
16 for used fuel storage.

17 Maybe Dr. Roche -- I don't know if
18 he's still on the phone -- are you still there, Dr.
19 Roche?

20 DR. ROCHE: Yes.

21 MEMBER BEAUDET: From the European
22 experience -- we have here European experience and
23 American experience. Are you aware if in Europe
24 that they would use, for instance, water curtains,
25 like they do to store in underground cavities

1 liquid natural gas?

2 DR. ROCHE: I don't know anything
3 about that I'm afraid.

4 MEMBER BEAUDET: How about in the
5 States, Dr. Kamps?

6 DR. KAMPS: Could you rephrase the
7 question? I didn't understand it.

8 MEMBER BEAUDET: Maybe I should
9 have started with CNSC, if they have looked into
10 other industries in their research in trying to set
11 up criteria or mechanisms to avoid having leakages
12 -- I mean, to avoid having emissions from the deep
13 geological repository.

14 Because other industries have used
15 different methods to try to avoid emissions and so
16 I'd like to hear if you have looked into that, such
17 as water curtains for liquefied natural gas?

18 MR. HOWDEN: Barclay Howden,
19 speaking.

20 From the standpoint of research
21 we've been involved in quite a bit of research. In
22 response to your particular question we don't have
23 a response at hand so we would have to obtain that
24 information from the people who have been working
25 on that.

1 MEMBER BEAUDET: Yes, please.

2 MR. HOWDEN: Okay.

3 Mr. Graham, would you want that as
4 an undertaking then?

5 CHAIRPERSON GRAHAM: What number
6 will we give that?

7 Number 37, if you would do that,
8 Mr. Howden. And could you give us a time?

9 MR. HOWDEN: I'll get back to you
10 tomorrow morning with a time in terms of how long
11 we can pull that information together.

12 CHAIRPERSON GRAHAM: Are we clear
13 on the undertaking, maybe just ---

14 MR. HOWDEN: My understanding is
15 the undertaking is other industries have sought
16 ways in which to contain waste or things such as
17 liquid natural gas and Madam Beaudet would like to
18 know if we've drawn any information from the
19 research from the experiences from other industries
20 to be able to apply that knowledge to nuclear
21 waste.

22 MEMBER BEAUDET: Yes, that's
23 exactly what I want.

24 CHAIRPERSON GRAHAM: That's
25 correct.

1 So Undertaking 37.

2 MR. KAMPS: Could I just respond
3 briefly now that I better understand the question.

4 CHAIRPERSON GRAHAM: Mr. Kamps?

5 MR. KAMPS: Kevin Kamps, for the
6 record.

7 So I just wanted to -- it's
8 actually one of these points was raised in my
9 written submission. It has to do with -- before
10 the Yucca Mountain site in Nevada was under
11 consideration there was a site in Kansas that was
12 also under consideration by the Atomic Energy
13 Commission for geologic disposal, it was a salt
14 formation.

15 And back in the 1950s and 1960s
16 salt formations were regarded as the best geologic
17 medium for disposal of high-level radioactive
18 waste.

19 And that project came to an abrupt
20 halt because of other mining activities in that
21 area that the Atomic Energy Commission had
22 disregarded, had not done the research to discover.

23 And this point is not directly
24 raised in my submission but the water solubility of
25 plutonium was another abrupt discovery by the

1 Department of Energy, this time at the Nevada
2 Nuclear Weapons Test Site.

3 And so I guess my point is that
4 there was an overconfidence by the predecessor of
5 the Nuclear Regulatory Commission, the predecessor
6 of the Department of Energy that it knew the
7 geology, its characteristics, and also that it knew
8 the hazards and the water solubility even, such
9 basic elements as plutonium.

10 And that latter point, the water
11 solubility of plutonium was unknown until the late
12 1990s. But when it was discovered it explained why
13 plutonium had moved so far at the Nevada Test Site
14 in just several decades when the predictions were
15 for very little to no movement whatsoever of
16 plutonium.

17 MEMBER BEAUDET: Thank you.

18 I'd like to move to Mrs. Lloyd's
19 presentation, at page 41.

20 The last paragraph, your
21 recommendation says that you would like proper
22 consultation -- I presume I understand the future
23 phases of licences from CNSC and I believe CNSC now
24 will have a proper funding program for participants
25 to come to hearings of the CNSC.

1 I'd like to hear you a bit more
2 about what you expect from these future public
3 consultations.

4 MS. LLOYD: Thank you, Madam
5 Beaudet.

6 Brennain Lloyd, for Northwatch.

7 Again, paragraph -- Recommendation
8 3 is not our preferred outcome. We would really
9 encourage you to refuse the application.

10 If this project was to go to
11 licensing I think there have been so many very
12 central issues that have been deferred to
13 licensing. We've heard that many, many times over
14 the last eight days and what we would really need
15 to see at a licensing hearing then would be the
16 ability to really test the proposal that's being
17 brought forward by Ontario Power Generation.

18 So I would assume that if it was
19 going to licensing they would have selected a
20 reactor design and I would hope that they would
21 have responded to the many information deficiencies
22 that have been identified in the course of this
23 review.

24 And what then I would think we
25 would need to see at a licensing hearing would be

1 an opportunity to look at all of their proposal,
2 their environmental impact statement it may be
3 called -- I guess it would be a licensing
4 application rather than an EIS -- look at that in
5 detail with sufficient time and resources.

6 The ability to retain technical
7 experts to assist in the review and the ability to
8 then, at the licensing hearing, make presentations,
9 have additional experts make presentations and not
10 for just the 10 minutes which is currently the
11 practice at a CNSC licensing hearing.

12 My experience at CNSC licensing
13 hearings is you have 10 minutes and then there's
14 questions -- discussion between the Commission
15 Members, the Proponent and the regulator but
16 there's no opportunity, for example, an intervenor
17 doesn't have the opportunity to ask a question in
18 follow-up to a statement that's been made by the
19 Proponent or a consultant of the Proponent and we
20 don't have the opportunity to ask questions of them
21 directly on their evidence, on their application.

22 So I think something more in the
23 nature of a tribunal hearing like you are part of
24 today, rather than a licensing hearing.

25 We would also like to see some

1 additions to that, the opportunity to cross-
2 examine, to ask questions directly, and the
3 opportunity to really test the application.

4 That, in summary, is what I think
5 would be necessary if this was ever to go to
6 licensing.

7 MEMBER BEAUDET: Thank you.

8 I'd like to check on a point now
9 that Mr. Jackson has raised in his written
10 submission, on page 9.

11 And I wonder if you may, Mr.
12 Chairman, allow Environment Canada to comment on
13 that. I don't know if they're here.

14 About Canada that has not listed
15 radionuclides under Schedule 1, despite the fact
16 that the International Joint Commission has twice
17 urged it to do so.

18 I'd like to have a bit of a
19 background on that history, reasons why, et cetera,
20 please.

21 MR. LEONARDELLI: Sandro
22 Leonardelli, for the record.

23 Dr. Patsy Thompson has a lot more
24 history on this and so I'll ask her to answer the
25 question.

1 If anything remains unresolved in
2 terms of information that you'd like we'll do that
3 as an undertaking.

4 MEMBER BEAUDET: Thank you.

5 CHAIRPERSON GRAHAM: Is that
6 satisfactory, Madam Beaudet?

7 MEMBER BEAUDET: Yes, if we can
8 hear from Dr. Thompson, please.

9 CHAIRPERSON GRAHAM: Dr. Thompson?

10 DR. THOMPSON: Patsy Thompson, for
11 the record.

12 In 1996 Environment Canada started
13 an assessment of whether releases of radionuclides
14 from nuclear facilities was toxic under the
15 *Canadian Environmental Protection Act* and at that
16 time AECB staff was on assignment to Environment
17 Canada to provide the expertise to do that
18 assessment.

19 The assessment looked at releases
20 of radionuclides from all licensed nuclear
21 facilities for both the radiological aspects and
22 for example, in uranium mining, the chemical
23 toxicity of uranium.

24 The conclusions from that
25 assessment was that releases of radionuclides from

1 reactors and waste management facilities on the
2 sites of nuclear reactors were not toxic as
3 toxicity is defined in the *Canadian Environmental*
4 *Protection Act* in Section 64.

5 The two International Joint
6 Commission reports that made recommendations that
7 radionuclides be considered and dealt with as toxic
8 substances, the Canadian government responded, did
9 not ignore those recommendations but responded to
10 the recommendation of the International Joint
11 Commission with providing the evidence that
12 releases the radionuclides from nuclear facilities
13 in the Great Lakes were not CEPA toxic and were
14 thus not meeting the definitions of a toxic
15 substance that would need to be virtually
16 eliminated.

17 The CNSC -- the assessment of
18 radionuclides was started before the *Nuclear Safety*
19 *and Control Act* came into force and before the CNSC
20 was created and had a mandate to protect the
21 environment.

22 The assessment was finished after
23 the *Nuclear Safety and Control Act* came into force,
24 and the CNSC drafted, shortly after the coming into
25 force of the Act, our policy on protection of the

1 environment that makes a commitment that the CNSC
2 will deal with environmental protection in
3 accordance with federal policies and Acts and
4 regulations.

5 And we have used the federal toxic
6 management policy as a basis for making
7 recommendations to the Commission on how to manage
8 releases and substances that are created through
9 nuclear facilities.

10 Our assessment is that there are
11 no substances released by nuclear facilities that
12 would meet the definition of Track 1 under the
13 federal toxic management policy. So there are no
14 substances that would fall in the definition of
15 virtual elimination.

16 CHAIRPERSON GRAHAM: Thank you,
17 Dr. Thompson.

18 Madame Beaudet?

19 Mr. Jackson?

20 MR. JACKSON: This is pointing out
21 the problem with the definition of toxic in CEPA,
22 in that it is in no way preventive. Toxic is not
23 simply the nature of the substance but also is it
24 already being released at a level of concern.

25 And the problem is that the sort

1 of facilities we're talking about, in terms of
2 high-level radioactive facilities, aren't there to
3 be releasing out those levels yet. We don't know
4 that at those levels.

5 And the fundamental problem here
6 with toxic is it's not preventive. They're already
7 getting out into the environment and now we have to
8 try to pull them back.

9 So in terms of the legal
10 definition of toxic in CEPA, that's correct, but
11 it's a fundamental flaw in the system and the
12 principle still of virtual elimination and
13 pollution prevention should apply in terms of us
14 not trying to get in -- avoiding getting into
15 problems in the future, even though legally, yes,
16 there's -- that that's the problem with toxic
17 definition now.

18 MEMBER BEAUDET: Thank you.

19 I think I would have also some
20 questions about security but I believe, Mr.
21 Chairman, you should advise us how we should go
22 about those concerns of Northwatch.

23 CHAIRPERSON GRAHAM: First, we'll
24 go to Ms. Lloyd, to Mr. Pereira to respond.

25 MS. LLOYD: Thank you, Mr. Chair,

1 and thank you, Mr. Pereira, for your questions.
2 You ask very good questions and very persistent in
3 the practice.

4 I do want to though add a few
5 words to some of the responses by the Proponent and
6 the Nuclear Waste Management Organization and CNSC.

7 And I'll begin with the discussion
8 of funds. I believe Mr. Pereira asked if there
9 would be funds available if the waste were to
10 remain on site into perpetuity and I believe it was
11 OPG who responded to say yes, there is, there's a
12 segregated fund and the funds will be adequate.

13 I think it would be worth a closer
14 look at that. The numbers we hear from the NWMO on
15 their project is 16 to \$24 billion for one site --
16 transportation to one site. I think it's worth
17 hearing in more detail how has OPG costed that out;
18 on what basis do they make that statement.

19 And I think the panel having a
20 better understanding of the segregated funds, the
21 way they're calculated to go from the amount they
22 are now to the amount they need to continue to have
23 in the bank in perpetuity, I think would be very
24 relevant.

25 My second -- I don't know if you

1 want to deal with that or if you want me to just
2 ---

3 CHAIRPERSON GRAHAM: I think it
4 would be better one at a time.

5 Mr. Pereira, do you want anything
6 further on that?

7 MEMBER PEREIRA: Well, I think
8 it's a question that Ms. Lloyd is putting forward
9 to the panel and for perhaps redirection to Ontario
10 Power Generation on whether the funding in the
11 segregated fund would be adequate to manage the on-
12 site storage of used fuel for whatever duration is
13 needed, which is a bit different from putting it in
14 a repository.

15 So maybe that's an undertaking we
16 need to get from them.

17 MS. LLOYD: If I could, Mr.
18 Pereira, OPG has said yes, it will be adequate, but
19 I think what would be helpful to the panel is,
20 what's the basis of that statement, have they
21 calculated the comparison of having several sites
22 versus one and so on.

23 CHAIRPERSON GRAHAM: OPG, would
24 you care to respond?

25 MR. SWEETNAM: Albert Sweetnam,

1 for the record.

2 We think this question was asked
3 and answered before but I will repeat the answer.
4 It was also addressed by the Ministry of Energy
5 when they were here.

6 Basically these funds -- OPG puts
7 aside money on a regular basis to complete -- to
8 contribute to these funds. These funds are co-
9 managed between OPG and the Ministry of Finance
10 through the OFA.

11 Every five years, the value of the
12 funds are readdressed and these are readdressed by
13 a full redo of the estimates associated with the
14 decommissioning and the long-term storage of fuel
15 waste. These estimates are done by a third-party
16 consultant whose report is in turn reviewed by the
17 Ministry of Finance and ourselves before it's
18 incorporated into the five-year plan.

19 And then the five-year plan is
20 financed -- if there's an increase in the cost of
21 the decommissioning and storage, the five-year plan
22 is then -- has to have additional contributions
23 from OPG and this is done on a five-year cycle.

24 CHAIRPERSON GRAHAM: Madam Lloyd,
25 one other question -- another point on Mr. Pereira?

1 MS. LLOYD: Thank you, Mr. Graham.
2 Brennain Lloyd from Northwatch.

3 There was an exchange between Mr.
4 Pereira and Mr. Nash with respect to the NWMO and
5 its origins and so on and I'd like to clarify a few
6 points.

7 One is Mr. Nash made the same
8 short form statement that I've heard from the
9 industry before and that is that the Seaborn Panel,
10 the panel that reviewed the Atomic Energy of Canada
11 Limited geological disposal concept form '89 to
12 '98, said that it was found to be technically safe.

13 In fact, the panel made a very,
14 very careful conclusion on the points of technical
15 safety, and I don't have it in front of me but the
16 language was on balance at a conceptual stage of
17 development the AECL concept has been demonstrated
18 to be technically feasible. That's very different
19 then saying it was found to be technically safe.

20 And the Scientific Review Group,
21 established to assist that panel, identified it was
22 in the range of 60-some technical deficiencies at
23 the conclusion of that review.

24 So it's simply not an accurate
25 statement to describe the Seaborn Panel conclusion

1 in that way.

2 Another one of the Seaborn Panel
3 recommendations was that an independent agency be
4 created for future work with respect to nuclear
5 waste management.

6 Mr. Nash tells you that the
7 Nuclear Waste Management Organization -- and I
8 don't -- my writing isn't good enough to tell you
9 exactly how he stated it but he indicated to you
10 that the Nuclear Waste Management Organization
11 comes from that process.

12 In fact, the Seaborn Panel
13 recommended almost the opposite to the NWMO, an
14 independent arm's length agency that is separate
15 from the industry. The NWMO is the industry.

16 The third comment I want to make
17 with respect to Mr. Nash's comments is around this
18 notion of an international consensus and perhaps we
19 could hear from Mr. Roche further on this.

20 In the Rock Solid report, one of
21 the issues identified was the lack of rigour around
22 that international consensus, what the industry
23 describes as an international consensus.

24 There is a very small -- it's a
25 smaller group than I think is usually implied,

1 comes to that consensus and there are real issues
2 around the lack of peer review and independent
3 examination of the conclusions that allow the
4 industry to describe this international consensus.

5 So we might want to come back to
6 Mr. Roche and hear briefly about that. I do have
7 one other comment with respect to CNSC's remarks.

8 CHAIRPERSON GRAHAM: I was going
9 to allow you closing remarks, and I guess these are
10 really part of them. You want to make your other
11 point?

12 MS. LLOYD: Yes. I just note CNSC
13 refers to their regulatory oversight with respect
14 to used fuel management and the proposal that has
15 been developed and is being brought forward by
16 Nuclear Waste Management Organization for
17 geological disposal.

18 CNSC didn't refer exactly to the
19 memorandum of understanding that they have
20 developed with the Nuclear Waste Management
21 Organization, and I would say while regulatory
22 oversight is a good thing, it is more a cause for
23 concern than a cause of comfort that the NWMO and
24 the Canadian Nuclear Safety Commission have
25 developed a memorandum of understanding, some of

1 for the life of the plant plus onward, until such
2 time is found, and hopefully there will be time to
3 find the storage of fuel within the next 100 years
4 or the next 50 years or so on, and I don't think
5 anybody can answer that question today, is have you
6 -- are you satisfied or have you provided the
7 science to make sure that the storage of that fuel
8 can be maintained in a safe manner?

9 If a cask and in our -- my life as
10 a regular -- on the CNSC Commission we've heard
11 about the life of those storage casks for 50 years
12 or whatever it is, and so on, with no problem.

13 But if they had to go to 75 or 100
14 years, and they started to break down because of
15 maybe something would cause that regardless of
16 those effects, are you able to take the fuel out,
17 put it back in a pool, put it in a new cask or all
18 those other things.

19 Have you the science and are you -
20 - is the science available to know that you will be
21 able to do that safely and store that fuel in --
22 for 100s of years, it might be. It might be
23 needed, so that's the question that I feel that
24 needs to be answered is, is not it's going to go to
25 NWMO, it's going to go to another site somewhere

1 else, but if it stays. And could you answer that,
2 Mr. Sweetnam?

3 MR. SWEETNAM: Albert Sweetnam,
4 for the record.

5 If the Chair might allow me, I'd
6 like to correct something that I think I put on the
7 record inadvertently.

8 My colleagues told me that when I
9 was answering a question associated with the size
10 of the DGR, I actually said, low level fuel when I
11 actually meant to say low level waste. So I'd like
12 to have that corrected.

13 The other comment before we
14 address your question is that I'd like to state
15 that the nuclear industry is the only industry that
16 is actually taking care of their future wastes and
17 their future decommissioning. This is a decision
18 that has been made a while back. It was a wise
19 decision.

20 We are actually taking care of any
21 issues that we are creating in this generation, and
22 I ask Dr. Roman to address specifically your
23 question with regards to the containers.

24 However, the understanding on the
25 containers, before she gives you the details, is

1 that we would continue to monitor these containers
2 for any corrosion or plain degradation. We would
3 install internal monitoring with the DSC's for
4 corrosion monitoring. We would collect this
5 internal corrosion data for a period of years so we
6 can understand the true life of these DSCs, and do
7 an analysis to determine the correct life limits.
8 And if we have to actually change out the DSC
9 because of degradation of some sort, I'll let Dr.
10 Roman address that.

11 DR. ROMAN: Herminia Roman, for
12 the record.

13 Maybe I can start talking a bit
14 about the starting of production of a dry storage
15 container that we presently use, but any other
16 container that we will use for this facility will
17 have to have the same quality requirements as we
18 expect from the ones that we are using.

19 The manufacturer that provides us
20 the service has been carefully chosen, and the
21 design of this container meets the Canadian
22 standards N286 for production and design.

23 As well as it's not just only
24 design for radiological purposes, but we also have
25 addressed situations like blasts, tornadoes,

1 missiles on these containers, that they are being
2 analyzed to survive not even when they are welded,
3 but prior welding, when they just have the clamp
4 during transfer from the station to our facility --
5 waste management facility.

6 In terms of durability, we do have
7 assessed them as life for 50 years, designed life
8 for 50 years, however, we also have made
9 assessments, third-party assessments that have
10 provided indications that these containers could
11 last 100 years or even longer with the type of
12 maintenance and aging plans, management plans that
13 we have in place for these containers.

14 In terms of aging management
15 plans, we have in place and we periodically submit
16 the results in the plans, if they're changed, to
17 the Canadian Nuclear Safety Commission, as required
18 for our licence. And with that those results have
19 been coming all the way -- pretty soon after we
20 have a new facility we start identifying containers
21 that we keep track of their development.

22 As well, we have plans in terms of
23 corrosion monitoring. As well, we already have had
24 the process to put some corrosion monitors in a
25 container so we can keep track of these conditions.

1 We have done it prior to this time also, in terms
2 of thermal analysis, so we understand the process
3 that is inside of the container, and what is
4 happening to the fuel and the components inside the
5 container.

6 So in terms of how we're going to
7 manage for longer, we are already doing it. We
8 don't wait for 50 years before we start taking
9 plans for aging management plan, as I say. A year
10 after the Darlington facility started in place, we
11 already identify containers that were already in
12 our aging management plan from day one, to be able
13 to keep that assurance that the containers are
14 doing. We have those base inspections where we do
15 the base inspection of this container so we know
16 what is happening, so that's the ongoing. And
17 that's something that -- we will keep doing it for
18 as long as we need to do.

19 CHAIRPERSON GRAHAM: Thank you.
20 The only part that I did not get an answer, I do
21 not think, and maybe you did -- if you would just
22 reiterate a little better -- or a little more on
23 aging management. If you find that -- that a
24 canister or container needs to be -- the contents
25 needs to be transferred either into -- back into

1 the pool or -- or somewhere else, or into a new
2 container and so on, has that analysis been done?

3 MS. ROMAN: Herminia Roman for the
4 record. That's the -- the signed requirement of
5 the containers to be retrieval, so there is that
6 procedure in place. We haven't done it. We
7 haven't needed to -- to do this thing, to retrieve
8 the fuel, but it's something that -- the process is
9 in place of what we will need to do, step-by-step
10 what we will need to do to retrieve the fuel and
11 place it into a new cask, the same type of cask or
12 another cask, depending on what time in the future
13 this happened. And this could be done in a fuel
14 bay or in another type of facility, depending again
15 what timeframe we are talking about.

16 CHAIRPERSON GRAHAM: Thank you.
17 Mr. Pereira, do you have any other questions?
18 Madame Beaudet? That is fine.

19 We will then now proceed --

20 MS. LLOYD: Excuse me, Mr. Graham.
21 Mr. Graham, I think if we could, Mr. Kamps wanted
22 to add to that response from OPG, to your last
23 question --

24 CHAIRPERSON GRAHAM: If you could
25 be --

1 MS. LLOYD: -- briefly.

2 CHAIRPERSON GRAHAM: -- brief.

3 MR. KAMPS: Sure, I'll just be
4 brief for now. Just to respond to some of what was
5 said by OPG, as well as CNSE.

6 In the United States, there has,
7 to the best of my knowledge, never been a dry cask
8 unloaded and this is despite similar assurances
9 that we've heard from the nuclear industry that if
10 there were a problem, well, the dry cask would
11 simply be unloaded through a reversal of the
12 loading procedure back into the storage pool.

13 One stark example of this is from
14 Michigan. Palisades Nuclear Power Plant discovered
15 that the -- the fourth cask to be loaded there, dry
16 cask, in June of 1994 had defective welding and
17 remarkably the company announced publicly that it
18 would stand by its word, unload that cask back into
19 the storage pool.

20 And it was only at that point that
21 weeks and months passed and it was admitted that
22 technical challenges existed, one of which was a
23 50-hour window of time that the cask would have to
24 be opened up and the waste transported back to the
25 pool because the cooling is disrupted and so an

1 overheating of the fuel would take place if they
2 didn't make it in that amount of time, and so they
3 were challenged to make that amount of time.

4 And also once they got to the edge
5 of the pool, they would have to put the waste back
6 in, which is now several hundred degrees Fahrenheit
7 -- into a pool that's maintained at 100 degrees.
8 So there were concerns about the thermal shock to
9 the canister, the fuel, as well as a radioactive
10 steam flash because the pool water is contaminated
11 with radioactivity.

12 Long story short, here we are in
13 the year 2011. They have never unloaded that cask,
14 so that's one example.

15 I mentioned previously the Surry,
16 Virginia nuclear power plant having inner seals
17 fail. Not all three seals have failed, but it
18 showed that these casks are deteriorating with age
19 that may be due to severe quality assurance
20 violations in the United States. We have industry
21 whistleblowers. We have NRC whistleblowers who
22 have documented serious problems with the design
23 and the manufacture of these containers that are
24 supposed to last so long into the future.

25 And I also wanted to speak on the

1 -- the transport issue. CNSC made the claim that
2 zero release has occurred in international
3 experience. I believe they made that claim.
4 Actually, I mentioned Robert Halstead, State of
5 Nevada, consultant on transportation. He has a
6 report from the mid-1990s that documents four
7 releases of radioactivity beyond the package during
8 transportation of high-level radioactive waste.

9 And another -- another category in
10 his report were contamination incidents on the
11 exterior of the transport container and he
12 documented dozens of those.

13 And even worse than the United
14 States' experience is the experience in France.
15 Areva, with its reprocessing facility, which has
16 received hundreds or thousands of shipments of
17 high-level radioactive waste, had a very serious
18 problem with the contamination of these shipments
19 externally; sometimes 500 times above permissible
20 levels, in one instance 3,000 times above
21 permissible levels. It had to do with the loading
22 of these containers in the first place in pools
23 because the water is contaminated. So there's been
24 a lot of problems with transportation.

25 CHAIRPERSON GRAHAM: Thank you

1 very much for that information. The agenda goes as
2 such. OPG, do you have any questions to the
3 intervener?

4 MR. SWEETNAM: Albert Sweetnam for
5 the record. No questions.

6 CHAIRPERSON GRAHAM: CNSC?

7 MR. HOWDEN: Barclay Howden. We'd
8 have one comment.

9 CHAIRPERSON GRAHAM: Go ahead.

10 MS. GLENN: Karine Glenn to
11 clarify. My point was there were no significant
12 radiological consequences from any transport
13 accidents. So I didn't say there was no
14 contamination at any point with any given package.
15 I said there was no accident resulting in serious
16 radiological consequences.

17 CHAIRPERSON GRAHAM: Is that all,
18 Mr. Howden?

19 MR. HOWDEN: Yeah, no questions.
20 Thank --

21 CHAIRPERSON GRAHAM: Government
22 agencies. Environment Canada, you are here.
23 Anything? If not, we will go to the interveners,
24 allow four -- or three, I guess, they have right
25 now because we do want to try and get on schedule

1 for this afternoon.

2 So Mr. Roy Bradey, Safe and Green
3 Energy. Mr. Bradey?

4 --- QUESTIONS BY THE INTERVENORS:

5 MR. BRADEY: Thank you. Thank
6 you. This is to -- this question is to OPG from
7 Safe and Green Energy, Peterborough.

8 Referring to the Northwatch
9 presentation earlier this morning and the question
10 and answer we've just gone through, and also
11 actually through this entire proceedings, this
12 entire hearing, there have been allegations that
13 OPG has not been presenting very essential
14 information, whether it's intentional or
15 unintentional. So, really, my question is a very
16 important question -- is why have you not provided
17 all of this considerable amount of -- of
18 information at this particular hearing?

19 CHAIRPERSON GRAHAM: OPG?

20 MS. SWAMI: Laurie Swami for the
21 record. OPG believes that it has provided a
22 significant amount of information. We used a
23 bounding approach for our environmental assessment.
24 This approach was designed to look at the potential
25 of environmental effects associated with any of the

1 technologies that are presented. And it was to
2 provide an understanding of what the environmental
3 effects would be should any of the technologies
4 selected -- or considered be selected in future by
5 the Ontario government.

6 We believe that the bounding
7 approach is a conservative approach for this
8 project as it takes into consideration essentially
9 the ultimate bounds for the project. And as such,
10 we believe that any environmental impact, should
11 this project proceed, would be within those bounds
12 and would be lower than those considered in this
13 environmental assessment.

14 CHAIRPERSON GRAHAM: Thank you.
15 Theresa McClenaghan with CELA.

16 MS. McCLENAGHAN: Thank you, Mr.
17 Chairman. My question has to do with the -- the
18 question Mr. Pereira was asking about the ability
19 to provide barriers between the fuel and the
20 environment over very long timeframes, a hundred
21 thousand to 200,000 years. And the answer from OPG
22 was that, yes, they could -- they could do that.

23 And my question, Mr. Chair,
24 through you to OPG, is whether OPG has considered,
25 for example, a paper that I read with great

1 interest early in the nuclear waste management
2 organization process dealing with a concept or a --
3 an exploration of the clock with the long now. And
4 I'll just take one moment.

5 This -- this was a -- a conceptual
6 exploration of whether we can take a relatively
7 simple technology, a clock, and design it in that
8 case to last 10,000 years, not a hundred thousand
9 or 20,000 years, and they chose 10,000 because it's
10 the period of time equal to our -- according to the
11 summary on the NWMO website -- equal to our lives
12 on earth since the last Ice Age.

13 And we've been hearing about, yes,
14 we can meet these barriers for a hundred thousand,
15 200,000 years.

16 OPG has been operating nuclear
17 plants for around 40 years. We've had a country
18 for a little under 150 years.

19 I'd like to know whether they've
20 considered the specific types of issues that arise
21 with designing technology for that length of time
22 around things like maintainability, transparency,
23 scalability, evolvability, and the technology.

24 And they discuss, for example, can
25 you even predict whether you can communicate with

1 future generations from today to then.

2 How would you fund and finance
3 that?

4 How would you ensure -- we've been
5 talking -- all the answers with respect to the
6 questions that the Chair has provided have been --
7 and I'll wrap up -- have been dealing with really
8 40, 50, 100-year time frames. I haven't heard any
9 actual responses dealing with the 100 to 200,000-
10 year time frames.

11 CHAIRPERSON GRAHAM: OPG, would
12 you care to respond?

13 MR. SWEETNAM: Albert Sweetnam,
14 for the record.

15 The record will show actually that
16 this question was addressed by Mr. Nash of the
17 NWMO.

18 The NWMO's program actually deals
19 with all of the issues that were raised by the
20 intervenors.

21 So I would suggest that the
22 question be re-directed to Mr. Nash.

23 MS. McCLENAGHAN: Mr. Chairman, if
24 I may, this is about OPG's assurance to Mr. Pereira
25 that if the material needs to stay onsite, it can

1 be maintained over that 100,000 to 200,000-year
2 time frame.

3 CHAIRPERSON GRAHAM: Mr. Sweetnam?

4 MR. SWEETNAM: Albert Sweetnam for
5 the record.

6 I'm sorry that I misinterpreted
7 the question. When you were talking about
8 barriers, I assumed you were talking about the
9 barriers associated with the DGR.

10 If you're talking about the
11 barriers associated with our normal storage of fuel
12 waste in the DSC containers, I'll ask Dr. Roman to
13 address this.

14 DR. ROMAN: Herminia Roman, for
15 the record.

16 I think that's a question that we
17 were talking about earlier in terms of what we do
18 to maintain and what we have in place to study the
19 development and -- of the fuel, including, I
20 understand, the period of time.

21 However, for the long-term
22 management when we are talking about hundred,
23 thousands of year, that's what the Government of
24 Canada has mandated the Nuclear Waste Management
25 Organization to study, that type of conditions and

1 how to communicate.

2 For example, all those type of
3 studies are the ones that the Nuclear Waste
4 Management Organization has been doing, and we will
5 learn from that type of studies all the
6 organizations to be able to put in place what is
7 the best process for the long-term management of
8 the used fuel.

9 If we are looking at how we are
10 going to manage in the meantime, that's what we
11 were talking about. We have in place all these
12 inspections, maintenance, and aging management
13 programs that will help us to keep safely our used
14 fuel in our facilities until there is such a
15 facility in place.

16 CHAIRPERSON GRAHAM: Thank you.

17 I had said that I'd allow three,
18 and -- but I am going to allow Anna Tilman, who is
19 the third one, and I am going to allow Ms. Lawson.
20 She was here this morning for quite a while. And I
21 am going to allow her.

22 Mr. Kalevar is here waving your
23 hand. You are on this afternoon for an hour or
24 half hour and -- if we're ever going to get back on
25 schedule.

1 Ms. Tilman first, then Mrs.
2 Lawson, and then that will be it, and we will be
3 recessing for lunch.

4 MS. TILMAN: Thank you from the
5 International Institute of Concern for Public
6 Health.

7 My question goes to the
8 intervenors, if they can help me out on this, in
9 terms -- and it deals with containment of spent
10 fuel, whether it is onsite or in a deep geological
11 repository.

12 First of all, do you know if
13 there's been any consideration of the potential of
14 having enriched fuel as what might -- according to
15 the proponent, a possibility might be to have
16 enriched fuel, and what that might -- and how that
17 might affect containment?

18 And, secondly, are you are aware
19 of any material that is impervious to radiological
20 and chemical assaults for a million-plus years?

21 MR. KAMPS: Kevin Kamps for the
22 record.

23 That has been a serious issue in
24 the United States. Again, the State of Nevada
25 adamantly opposed to the siting of the Yucca

1 levels, but also the thermal heat.

2 And the thermal heat especially at
3 the Yucca Mountain site was a driver of corrosion
4 and degradation and failure of these containers.

5 To space those containers out, to
6 provide enough space for the heat levels to
7 dissipate dramatically increased the price tag on
8 the Yucca Mountain proposal.

9 The most recent price tag trying
10 to accommodate higher and higher heat levels was
11 close to \$100 billion, and actually that was
12 probably a low-ball estimate.

13 CHAIRPERSON GRAHAM: Thank you.

14 Ms. Lawson?

15 MS. LAWSON: I -- some of us have
16 been occupied for a long time with a big problem of
17 waste called steam generators that are proposed to
18 go from Owens Sound through the Georgian Bay around
19 Tobermory and through the Great Lake system.

20 And I would like to ask the
21 transportation expert here from CNSC if she applies
22 her rules and parameters to the steam generators.

23 CHAIRPERSON GRAHAM: Madam Lawson,
24 that case is before the Court, and I believe
25 legally I can't allow it because of the fact that

1 it is before the Courts and what evidence that
2 might be given might be seen as prejudicing the
3 case.

4 So, I'm sorry, I can't.

5 Also, maybe you're aware of the
6 delay announced yesterday by Bruce energy with
7 regard to -- Bruce Power with regard to the
8 shipments going to further consultation. So that
9 was announced yesterday.

10 I'd love to take your question,
11 but just because it's before the Courts, I really
12 can't.

13 Thank you very much.

14 MS. LAWSON: Well, thanks a lot.
15 I didn't know about the last bit of information.
16 Thanks.

17 CHAIRPERSON GRAHAM: Well, it has
18 been delayed because of that. So thank you very
19 much for your question.

20 Madam Co-Chair, do you have
21 anything else?

22 With that, I want to thank Ms.
23 Lloyd for, not only your participation today, but
24 your participation over the last number of days.

25 Thank you for your team, for the

1 information you've brought forward this morning.

2 And thank you for Mr. Roche's
3 participation online.

4 And we will adjourn the meeting
5 for one hour at 2:00 of which the first on the
6 agenda, I believe, is Greenpeace, if I remember
7 right. Yes, Greenpeace is on at 2:00.

8 So thank you very much, Ms. Lloyd.

9 MS. LLOYD: Thank you, Mr. Graham.

10 CHAIRPERSON GRAHAM: And safe
11 travel to everyone.

12 --- Upon recessing at 1:01 p.m. /

13 L'audience est suspendue à 13h01

14 --- Upon resuming at 1:58 p.m. /

15 L'audience est reprise à 13h58

16 MS. MYLES: Good afternoon,
17 everyone. My name is Debra Myles. I am the panel
18 Co-Manager.

19 Welcome back to today's public
20 hearing of the Darlington New Nuclear Power Plant
21 Project Joint Review Panel.

22 Panel Secretariat staff are
23 available at the back of the room. Please speak to
24 Julie Bouchard if you are scheduled to make a
25 presentation at this session, if you want the

1 permission of the Chair to put a question to a
2 presenter, or if you were not previously registered
3 and would now like to address the panel.

4 Opportunities for questions or to
5 make a brief oral statement are subject to the
6 availability of time.

7 As a courtesy to everyone in the
8 room, please silence your electronic devices.

9 Mr. Chair?

10 CHAIRPERSON GRAHAM: Thank you
11 very much, Debra.

12 Before we start this afternoon.,
13 this morning I failed to mention that safety issues
14 are being considered by the Commission and they
15 were brought up in several of the interventions
16 this morning, not on record but in the written
17 interventions, and the panel is and will consider
18 those in in-camera sessions because of the nature
19 of how they are and that is how they're dealt with.

20 With that, it's good afternoon,
21 and this afternoon's agenda will begin with
22 Greenpeace under PMD 11-P1.221 and PMD 11-P1.221A.

23 We have Mr. Stensil here this
24 afternoon. Welcome to the hearings. The floor is
25 yours, sir.

1 --- PRESENTATION BY MR. STENSIL:

2 MR. STENSIL: Thank you, Chair
3 Graham. Thank you for this opportunity to present
4 today.

5 Notre présentation va être en
6 anglais mais on est prêt à prendre des questions en
7 français si vous voulez.

8 My name is Shawn-Patrick Stensil
9 and I specialize in nuclear policy issues for
10 Greenpeace Canada.

11 Greenpeace was founded in Canada
12 40 years ago in response to the environmental
13 threats of atomic bomb testing in the Pacific.

14 Today, Greenpeace is a global
15 organization and in Canada alone has 86,000
16 supporters.

17 Greenpeace is an independent
18 organization and does not take money from
19 government or corporations.

20 Our goal is to ensure the ability
21 of the earth to nurture life in all of its
22 diversity and to do this we challenge government
23 and industry to halt harmful practices by
24 negotiating solutions.

25 We conduct scientific research.

1 We introduce clean alternatives. We educate and
2 engage the public and, as the panel is aware, we
3 carry out peaceful acts of civil disobedience.

4 Greenpeace is very concerned by
5 the adverse environmental effects created by
6 building new reactors at Darlington. We are also
7 very concerned that new reactors will prevent the
8 continued development of safe and sustainable
9 energy options in Ontario. That's why I'm here
10 before you today.

11 In this presentation I want to
12 walk you through four high level issues.

13 First of all, does this project
14 move us towards sustainability or move us away from
15 sustainability in Canada? Our assessment is it
16 will actually harm Canada's progress towards
17 sustainable development.

18 Two, why are politics trumping
19 precaution in this environmental assessment? We
20 see this in particular in the scoping of this
21 environmental review.

22 To answer this, I will address how
23 we got here and why the panel should confront the
24 elephant in the room, why there has been no public
25 assessments of alternatives to this project.

1 And in doing so I will make the
2 following assertion; this project is not about
3 providing cost effective clean electricity supply.
4 It is a desperate attempt to save Canada's nuclear
5 industry.

6 And finally, I want to talk about
7 two important adverse environmental effects that
8 would accompany this project if it was allowed;
9 one, radioactive waste, which you discussed quite a
10 bit this morning, and secondly, accidents and
11 terrorist events.

12 And here we'll be making a number
13 of suggestions on how the panel, if it decides to
14 proceed with this project or allow it, should look
15 at applying both the precautionary principle and
16 the "polluter pays" principle to these two issues.

17 Requested ruling: Modern
18 environmental reviews require the following
19 question to be answered. Does the proposed project
20 create momentum towards a more sustainable society?

21 If the answer is yes, the project
22 can proceed. If the answer is no, the project
23 should be rejected or significantly modified.

24 In Greenpeace's view, OPG's
25 proposal to build new reactors at Darlington fails

1 this test. Greenpeace is requesting the panel
2 reject the project.

3 If the panel is unwilling to say
4 no outright, however, Greenpeace requests the panel
5 require specified conditions be attached to the
6 project to ensure that it does not violate the
7 principles of sustainability, specifically the
8 precautionary principle and the "polluter pays"
9 principle. These are legal tenants of Canadian
10 law.

11 Here I would also like to state
12 for the record Greenpeace Canada's opposition to
13 the inclusion of the CANDU 6 within the scope of
14 this review. The manner in which this was done has
15 undermined the ability of the public to
16 meaningfully comment on this project.

17 At the stage of guidelines
18 development, Greenpeace hired experts to provide
19 advice and comments on the three Generation III
20 reactor designs that were in the initial scope, not
21 on the CANDU 6. The same thing during the public
22 comment period, the CANDU 6 was added later after
23 we hired our experts.

24 It should also be noted that in
25 2009 Greenpeace first heard rumours that OPG, to my

1 left, was abandoning hope of building the advanced
2 CANDU reactor and would opt for the CANDU 6. At
3 that point, Greenpeace sent a letter requesting
4 clarification from Ontario Power Generation. OPG
5 provided an evasive response.

6 To put it bluntly, Greenpeace
7 believes something stinks in regard to the
8 inclusion of the CANDU 6 within this review.

9 Greenpeace is deeply concerned
10 that the drive to bolster the economics of this
11 project's safety standards will be eroded. The
12 inclusion of the CANDU 6, we think, points to such
13 an erosion of safety standards we believe. Eroding
14 safety requirements to reduce cost is unacceptable
15 and I'll come back to this later in my
16 presentation.

17 Sustainability: Environmental
18 assessments are evolving from simply identifying
19 and mitigating potential adverse environmental
20 impacts of an undertaking to instead ensuring that
21 a project makes a positive and enduring
22 contribution towards Canada's goals of sustainable
23 development. That is, does it leave a positive
24 legacy?

25 Former projects -- or former panel

1 reviews have rejected projects because they would
2 have undermined progress towards sustainability.
3 Other panels, such as the Voisey's Bay Project,
4 stipulated that projects could only proceed if
5 certain conditions were met.

6 Given the scale and magnitude of
7 this project, Greenpeace urges the panel to take
8 sustainability assessment seriously.

9 To its credit, OPG has attempted a
10 sustainability assessment. Unfortunately, however,
11 Ontario Power Generation's assessment, we believe,
12 is flawed. OPG's sustainability assessment
13 concludes new reactors at Darlington would make a
14 positive contribution to sustainability but it is
15 difficult to discern the methodology used by OPG to
16 come to this conclusion.

17 Indeed, Ontario Power Generation's
18 environmental impact statement is only able to
19 conclude building new reactors will make a positive
20 contribution to sustainability by the omission and
21 minimization of the project's significant costs and
22 risks; in particular, the costs and risks that will
23 be transferred to future generations.

24 As Greenpeace noted during the
25 comment period on the EIS, OPG has excluded the

1 negative back-end cost of the project; that is the
2 production of radioactive waste and decommissioning
3 waste from its sustainability assessment.

4 We thank the panel for
5 acknowledging this and forwarding some of those
6 questions onto OPG.

7 That is to say, it included the
8 economic benefits to the community but it excluded
9 the negative impacts for future generations from
10 its sustainability assessment. We believe this is
11 antithetical to sustainability.

12 For example, new reactors will
13 transfer significant harm in the form of
14 radioactive waste to future generations. New
15 reactors will also needlessly impose the risks of
16 Fukushima scale accidents on future generations.

17 It will be Canadian society, not
18 OPG, the polluter, that would be held responsible
19 in the case of such an accident, and these risks
20 remain unexplored.

21 Worse, this project would lock
22 Ontario into nuclear reliance into the next
23 century. It will limit the flexibility of future
24 generations to continue expanding safer energy
25 options. This is fundamental to Green Peace's

1 opposition to this project.

2 A flaw of OPG's sustainability
3 assessment is its failure to evaluate the need for
4 the project and assess non-nuclear options. I will
5 not turn to a discussion of why no such public
6 alternative assessment has taken place.

7 So why are we here in the first
8 place? Green Peace believed politics are trumping
9 precaution in this environmental review. This is
10 why a cornerstone of environmental assessment
11 alternatives assessment has been scoped out at the
12 request of the province. This proposal to build
13 new reactors at Darlington is a last-ditch attempt
14 by Canada's nuclear establishment to survive. If
15 the industry doesn't secure new reactors at
16 Darlington it will be displaced in Ontario by green
17 technologies. We believe that's a good thing.

18 About a decade ago, the industry
19 realized this. Its fleet of reactors were reaching
20 the end of their operational lives and needed to be
21 either rebuilt, replaced with new reactors or be
22 displaced by other energy options. This is a big
23 concern for a very powerful industry in Ontario.
24 Ten years later, even before Fukushima, I think
25 desperation is the best word to describe the state

1 of the Canadian nuclear industry. Take, for
2 example, the last-minute and we would argue, less
3 than transparent inclusion of ACL's 1960's-era
4 CANDU 6 design within the scope of this
5 environmental review. This is an admission that
6 even the industry may have thrown in the towel on
7 ever building its next generation advanced CANDU
8 reactor given the prohibitive costs of building a
9 prototype.

10 I doubt anyone on my left or on my
11 right, wants to admit this, but the CANDU design is
12 at a dead end. Rather than allow nuclear to be
13 displaced by other modern, clean sources of energy,
14 desperation has set in. The Canadian nuclear
15 establishment, which is supported by the federal
16 government and the provincial government, wants to
17 fall back on a pre-Chernobyl, pre-September 11th
18 reactor design. Anything to get shovels in the
19 ground.

20 Green Peace is very concerned that
21 this will come at the expense of safety, but I will
22 get to this later. And as I mentioned, we are also
23 very concerned that this will block the development
24 of green energy.

25 So let's face some facts. The

1 proponent for this project is not actually Ontario
2 Power Generation. It is the Ontario Government
3 which owns and controls OPG, sets its mandate and
4 tell it what it can develop. In 2006, based on
5 low-balled nuclear refurbishment and new build
6 estimates, the Ontario Government committed to
7 maintaining nuclear capacity at historic levels of
8 50 percent of supply. The same day this directive
9 came out, Ontario, the proponent of this project
10 commenced a pattern of avoiding any public review
11 or scrutiny of its nuclear plants.

12 Ontario rewrote its regulations to
13 exempt its electricity plan from an environmental
14 assessment. So at the high level of doing
15 sustainability assessment, you usually start with
16 plans. We weren't allowed to do that in this --
17 with this project.

18 Ontario also decided, and this is
19 notable, against participating as a member on this
20 panel to avoid the scope of this environmental
21 assessment to be enlarged to include alternatives.
22 We learned this through access to information
23 requests.

24 This pattern has continued to the
25 present day and I think it was again highlighted by

1 some of the evasive answer the Ministry of Energy
2 provided last week. Alternatives, as the panel
3 noted last week, and thank you for acknowledging
4 that, is a key concern of the public and we have
5 not had that with this project.

6 Green Peace requests the panel
7 deny OPG's proposal and allow some sort of public
8 evaluation of alternatives. Because the flip side
9 of the government's nuclear directive was that it
10 also capped the long-term development of modern,
11 renewable energy options at about ten percent of
12 supply. There are similar limits are conservation
13 and combined heating power.

14 If you look to the government's
15 revised 2011 electricity directive, green energy is
16 still capped at about ten percent of supply in
17 2018, about the same time these reactors are
18 supposed to go online. The government has never
19 put in question keeping nuclear generation at 50
20 percent of supply. And I believe, Commissioner
21 Pereira, last week you asked a question about 50
22 percent of supply and how that was determined.
23 It's notable in the last consultation period in the
24 fall, the day they launched the consultation
25 period, the Minister of Energy said the 50 percent

1 number is not in question.

2 So in political science terms, you
3 would call some of the consultations taking place a
4 legitimizing process. It's a checkbox; it's not a
5 meaningful consultation. And I think that's why
6 the panel is getting a lot of comments about the
7 need for looking at alternatives.

8 I would now like to take the panel
9 through a cautionary history of electricity
10 planning. Last week the Ministry of Energy
11 presented to you the need for these reactors in
12 terms of its long-term demand forecasts. The
13 public isn't really keen on nuclear power plants.
14 The industry has always had a trust issue and to
15 make such propositions more palatable to the
16 public, such claims are usually based on two
17 projects; overestimates of electricity growth,
18 meaning the lights will go out if we don't build
19 more reactors so scaring you into it, and low-
20 balling reactor cost estimates. On screen you'll
21 see a graph from the dates from an electricity plan
22 from the 1970s, that significantly overestimated
23 electricity demand, at the time they were proposing
24 to build tens more reactors. Thankfully this
25 hasn't happened.

1 But this pattern set in the 70s
2 continued; see electricity demand has gone up and
3 in the early 1990s there was something called a
4 demand/supply plan and at the time it projected
5 electricity demand would go up following the red
6 line and many more reactors would have to be built.
7 Luckily, at that point, the province had an
8 environmental assessment on its electricity plan
9 where we could look at alternatives.

10 By the time that process got
11 underway, it was clear that the actual demand for
12 electricity that was being projected wasn't
13 materializing. So the plan was abandoned and thank
14 God we didn't lock into building reactors we didn't
15 need or producing more radioactive waste.

16 But history repeats itself. In
17 2005, the OPG gave advice to the government saying
18 electricity demand would go up; we'd need to build
19 reactors in addition to Pickering, and it has not
20 gone up just five years later. And this is not
21 just about the economic downturn, it's about over-
22 forecasting. It's also about things like natural
23 conservation is working in the economy and we're
24 starting to develop decentralized sources of
25 energy.

1 But even five years later, we're
2 starting to see that the government -- so here's
3 the graph on screen now, is showing projections
4 versus where it's gone. But last week the deputy
5 minister presented this graph to you and while
6 electricity demand informally public demand
7 forecasts now is expected to go down to at least
8 2020, the government has turned around and said,
9 it'll start going back up again post-2020. So we
10 need these -- we need more reactors.

11 Again, this is repeating mistakes
12 over and over again. I believe you can see the top
13 dash up there about, about 200 terawatt hours.
14 That was actually the projection from the 1990s.
15 so look how far off they were.

16 So this is a cautionary tale
17 again, because I think the panel should be wary of
18 taking the government's request that alternatives
19 and justification not be questioned. You have good
20 reason to question that and I think the public is
21 looking for that as well. The other issue where
22 they low-ball things, this graph is by a university
23 professor from Vermont, is by low-balling reactors
24 costs. And to the left of the screen, you will see
25 how costs for new reactors went up and at the top

1 point, that's 1986 when Chernobyl happened. You'll
2 then see in the early 2000s when the industry was
3 trying to reinvigorate itself, as I mentioned about
4 ten years ago they realized things are going badly.
5 We see similar low-balled cost estimates. And this
6 is what the industry went to the government with
7 saying, we can build you cheap reactors; it'll be
8 cheaper than green alternatives. And as we've seen
9 over the past decade, those cost estimates have
10 gone up and up and up.

11 Despite the facts changing,
12 however, this government hasn't re-evaluated the --
13 it's proposal to maintain nuclear at 50 percent of
14 supply. And this graph actually shows you the
15 escalation with Ontario prices. The red bar was
16 what was used by the Ontario Power Authority in
17 2006 to rationalizing building new reactors. The
18 bar to the right is the reported cost of building
19 the advanced CANDU reactor. We're above 10,000
20 kilowatt. That's the report cost, but we have had
21 no publication of what those costs are. Green
22 Peace is currently trying to get a hold of some of
23 these valuations through freedom of information,
24 but we're being denied.

25 This brings us to justification

1 and alternatives. Based on the request of the
2 Ontario government the guidelines to this
3 environmental review have excluded any discussion
4 of non-nuclear alternatives.

5 The assumption used to justify
6 Ontario's 2006 directive initiating the present
7 review, whether in regard to nuclear cost, demand
8 growth or the viability of other options has been
9 shown to be wrong we believe.

10 While Ontario may argue
11 alternatives shouldn't be assessed in this review,
12 you the panel have -- aren't obligated to listen to
13 that, you have the discretion to look at other
14 options.

15 Unlike the 1970s and eighties
16 clean technologies are ready and able to displace
17 existing nuclear capacity, we just haven't been
18 allowed to consider it.

19 The province current proposal
20 would be simply to replace the Pickering nuclear
21 station when it closes in 2020. This could be done
22 by removing the cap on green energy in 2018 and
23 allowing it to continue expanding without
24 radioactive waste, without accident risks.

25 It would mean lowering the 50

1 percent number but the lights would not go off and
2 arguably we'd be moving to a more sustainable
3 society.

4 Greenpeace, the Pembina Institute
5 and the Canadian Environmental Law Association
6 released a report last summer which is on the
7 screen, that shows it would cheaper to replace both
8 the Pickering A and B stations with the portfolio
9 of green energy options than build new reactors at
10 reported prices.

11 Greenpeace requests that the panel
12 be mindful that the real Proponent, Ontario, has
13 acted to avoid consideration of alternatives
14 repeatedly.

15 Public concern that you've
16 acknowledged and the irreversible effects of this
17 project should require a review of alternatives.
18 Politics should not trump precaution.

19 Based on the Ministry of Energy's
20 responses to our questions last week Greenpeace
21 fears Ontario will again continue to avoid
22 consideration of alternatives.

23 If the panel decides to approve
24 the project Greenpeace request the panel not give
25 Ontario a blank cheque.

1 Greenpeace requests the panel be
2 mindful that such a blank cheque approval would
3 have on the ability and flexibility of future
4 generations to develop more sustainable energy
5 sources.

6 At a minimum, Greenpeace requests
7 that the project not be approved before there is a
8 public and transparent assessment of the project
9 against other energy options.

10 Whether you are pro-nuclear or
11 anti-nuclear we believe this is a fair request. We
12 see no reason why Ontario must maintain nuclear at
13 50 percent of supply, other than protecting the
14 status quo.

15 I will now move to discussion of
16 radioactive wastes that I think you delved into in
17 great depth this morning.

18 Greenpeace believes OPG's proposal
19 to build new reactors at Darlington should be
20 rejected based solely on the production of
21 radioactive waste.

22 New reactors at Darlington will
23 transfer the risks and burdens of radioactive waste
24 management onto future generations. This is
25 unacceptable.

1 The impacts of radioactive waste
2 shouldn't be simply mitigated, they should be
3 eliminated.

4 OPG asserts that new fuel waste
5 will simply be handled by the nuclear waste
6 management organization, this is simply another
7 dodge at looking at the back-end cause of nuclear
8 power upfront.

9 I would like to underline to the
10 panel today that the NWMO in its consultations with
11 the public between 2003 and 2005 did not consider
12 the continued production of radioactive waste. Its
13 risk studies only looked at a finite amount of
14 waste.

15 At consultations, I think, in
16 2004, I told the NWMO the credibility of your
17 process will be undermined if you attempt a bait
18 and switch. That is, consult on a finite amount of
19 waste and then use the conclusions to justify the
20 expansion of nuclear. OPG now appears to be
21 attempting such a bait and switch.

22 There is also no safe-fail means
23 of managing radioactive waste which I think was
24 discussed this morning. So it is a transfer of
25 cost onto future generations.

1 Greenpeace requests the panel deny
2 OPG's proposal on the production of radioactive
3 waste -- based on the production of radioactive
4 waste.

5 If you decide to allow the project
6 to proceed we request the panel acknowledge in its
7 ruling that new reactors will invalidate the
8 assumptions used to develop the nuclear waste
9 management organization's adaptive phase management
10 plan. That'll need to be re-evaluated then which
11 would call for more public consultations. That is
12 fair however.

13 New fuel waste; as I mentioned,
14 we, Greenpeace commissioned experts to comment
15 during the comment period and we did one such study
16 that looked at fuel wastes for the Generation-3
17 reactors. We are unaware that the CANDU 6 was
18 involved at that point therefore we don't have
19 research to present to you today.

20 Last week, Chair Graham, you asked
21 the Ministry of Energy for what the total levelized
22 unit cost of new reactors would be.

23 It's a good question; I ask that
24 too all the time.

25 The radioactive wastes created by

1 Generation 3 reactors in this review were not
2 assessed by the NWMO and this acknowledged by their
3 Advisory Committee.

4 They're higher toxicity and the
5 lifespan will have a significant effect on the
6 management approach for these wastes.

7 These higher costs should be
8 factored into the upfront costs of new reactors
9 before they're allowed to proceed.

10 If no such assessment is carried
11 out it would act as a de facto subsidy to new
12 reactor construction.

13 Greenpeace does request no
14 approval be given for the new reactors before OPG
15 has assessed and internalized the costs of managing
16 these types of wastes by Generation 3 reactors.
17 This information must be made public and
18 scrutinized.

19 Finally I'd like to discuss
20 nuclear safety. This is one of the many issues
21 during this review that is being referred to a
22 future process and an in camera session.

23 This limits the panel's ability to
24 assess the environmental impacts of these reactors.

25 Given the potential for

1 irreversible harm and the uncertainties of reactor
2 safety highlighted by Fukushima, Greenpeace
3 believes precaution should lead the panel to reject
4 the current proposal.

5 If the panel is unwilling to
6 reject the project outright Greenpeace ask the
7 panel require three significant changes to Canada's
8 legislative and regulatory approach to nuclear
9 safety before the project can proceed.

10 This would be aligning this
11 approach with sustainability principles which you
12 are mandated to look at. This would require; one,
13 changing nuclear liability legislation; two,
14 requiring public participation in the development
15 of post-September 11 safety requirements; and
16 three, requiring OPG and the CNSC to meet higher
17 levels of public transparency.

18 The events at Fukushima should
19 compel us to question the exclusion of significant
20 nuclear accidents from this review.

21 I believe, Madam Beaudet, you were
22 asking some interesting questions on this last
23 week, about the use of probabilities to exclude
24 such events. I think it's a good line of
25 questioning.

1 Indeed, Three Mile Island,
2 Chernobyl, and Fukushima show us that accidents
3 leading to radioactive release are credible.

4 This should also compel us to
5 reassess the federal government's approach to
6 legislating and regulating nuclear safety before
7 any approval for new reactors is made. This
8 assessment of how we change this approach should
9 not be exclusive to the OPG and CNSC as it is right
10 now.

11 Given what we're seeing at
12 Fukushima Greenpeace believes excluding such
13 accidents from OPG's environmental impact statement
14 misleads Canadians about the potential
15 environmental impacts of reactors at Darlington.

16 At each step of this review
17 Greenpeace has requested such accidents be included
18 within the scope.

19 We've also asked that the safety
20 studies used by OPG and the CNSC to dismiss such
21 accidents be made publicly available. If it is
22 indeed safe, show us the goods. We've been denied
23 each time.

24 The regulatory approach used by
25 the CNSC, to my right, claims that Fukushima scale

1 accidents are improbable and therefore don't merit
2 consideration environmental reviews. This is
3 partly because we built the reactors and then we
4 had to find a way to rationalize it back, which I
5 think you were asking about last week, Madam
6 Beaudet.

7 The Japanese regulatory regulator
8 probably said the same thing two weeks ago.

9 This claim about reactor safety
10 made by the CNSC however doesn't jive with OPG's
11 actions, to my left, which believe such accidents
12 are a realistic possibility.

13 The proof; OPG has asked the
14 federal government for a piece of legislation, it's
15 called the *Nuclear Liability Act*, to protect it
16 from paying full compensation to victims in the
17 event of a nuclear accident.

18 In layman's terms, OPG believes
19 accidents are a realistic possibility at its
20 reactors old and new and so should we.

21 So while the CNSC says such events
22 are improbable and don't merit consideration within
23 this review OPG believes such events are realistic
24 enough to demand special liability protection.

25 In between Canadians assume the

1 risks of such accidents but we've been denied any
2 opportunity to fully understand their consequences
3 in this review or consider alternatives to this
4 project.

5 Greenpeace asked the panel to
6 address this contradiction between OPG's actions
7 and the CNSC's regulatory approach in its
8 recommendations.

9 If you decide to allow this
10 project we request a requirement be made that
11 Canada's out-of-date nuclear liability legislation
12 that protects OPG be aligned with the polluter pays
13 principle. Liability legislation dates from the
14 1970s before we started developing the
15 sustainability principles. This is part of your
16 mandate.

17 OPG, potentially vendors and
18 suppliers should be held responsible for damages it
19 causes in the case of an accident. Making
20 institutions responsible for their actions is one
21 of the best incentives for good behaviour and
22 safety.

23 Number 2, Green Peace requests the
24 Panel require public participation in the
25 development of post-September 11th safety standards.

1 And this is where I'm going to go back to what I
2 said about the inclusion of the Candu 6 stinks and
3 I would like to ask the Panel to clear the air a
4 little bit.

5 I have it on good authority that
6 here has been a lot of pressure exerted on the CNSC
7 in regard to the post-September 11th safety
8 standards it will impose on new reactors.

9 In particular, and of great
10 concern to Green Peace, the rigor of such standards
11 will have an impact on the licence ability of the
12 Candu 6. The Candu 6, the design of the Candu 6
13 was set in the 1960s and '70s before Chernobyl,
14 before September 11th and before Fukushima.

15 Like, its approach to accidents,
16 the CNSC has been in the process of establishing
17 terrorist resistant design events it deems
18 credible. What it calls design-basis threats.
19 This category of events, new reactors will be
20 expected to withstand.

21 It is also establishing what types
22 of terrorist events it considers improbable or
23 beyond design-basis threats. I don't know how they
24 calculate that probability by the way.

25 It is the establishments of these

1 standards, however, is going on behind closed
2 doors. Canadians have been excluded from the
3 development of these standards.

4 In light of the prohibitive -- the
5 reported prohibitive cost of building a prototype
6 generation 3 advanced Candu reactor, post-September
7 11th design, Green Peace is very concerned that
8 desperation on the part of Canada's nuclear
9 establishment will push it to build a generation 2
10 pre-September 11th design and this would require
11 probably lowering safety standards, but we have no
12 proof of it, we just have rumours.

13 Something stinks here and I would
14 like to ask the Panel to clear the air and address
15 this in its recommendations. If reactors aren't
16 cost effective, we shouldn't -- we should be
17 looking at affordable and safer green energy
18 options. We should not be compromising safety
19 standards behind closed doors to prop up this
20 project.

21 We thus request a recommendation
22 in your report that Canadians participate in the
23 development of post-September 11th safety standards.
24 We'll be assuming the risks.

25 Something again, as I said about

1 the Candu 6 is inclusion smells and I think it's
2 desperation and this is a very important issue that
3 I would ask you to address.

4 Finally, I think I'm almost out of
5 time, Chair Graham. Green Peace would like to ask
6 the Panel to require higher levels of transparency
7 from both OPG and the CNSC if this project were to
8 proceed.

9 Take the example of pre-licensing
10 of the reactors being considered in this review.
11 None of the information is publicly available.
12 Green Peace has tried to access information via
13 accessed information and the CNSC has signed
14 Confidentiality Agreements with ACL, so the
15 information is being withheld.

16 Instead every four months or so,
17 the CNSC publishes a press release announcing how
18 the design has passed the next phase of approval.
19 Everything is fine.

20 The CNSC's backroom approach to
21 reactor licencing is unacceptable. And given the
22 firing of Linda Keen, I fear politicized.

23 Green Peace believes that a
24 precautionary approach to safety uses public
25 transparency, scrutiny and participation to

1 establish safety standards and the claims
2 made -- and verify the claims made by OPG and the
3 CNSC.

4 What's more, the knowledge that
5 their claims will be subject to public scrutiny is
6 one of the best motivators for OPG and the CNSC
7 staff to do due diligence.

8 In this regard, Green Peace asks
9 the Panel's assistance. OPG does not release the
10 probabilistic risk assessments used to claim its
11 reactors are safe. I asked this last week.

12 We currently have an appeal in
13 front of the Provincial Information Commissioner to
14 gain access to just some of this information. It's
15 been ongoing for three years now.

16 Such scrutiny can help identify
17 uncertainties and emissions that require further
18 study.

19 In this regard, Green Peace
20 requests the Panel's assistance. As I mentioned,
21 we request the Panel make recommendations in regard
22 to greater public transparency and public
23 participation in the licencing of any future
24 nuclear station.

25 Otherwise put, if this project

1 were to proceed, Canada's legislative and
2 regulatory approach to nuclear safety needs to be
3 modernized and aligned with the Polluter Pays
4 principle and the precautionary principles. Thank
5 you.

6 This will require OPG to be held
7 responsible for its actions, an incentive to
8 behaving well. And precaution would require safety
9 analysis be done in a more transparent manner.

10 And on that, Chair Graham, to
11 conclude, a quote, "Any fool can make things
12 bigger, more complex and more violent. It takes a
13 touch of genius and a lot of courage to move in the
14 opposite direction. Albert Einstein."

15 I don't think we talked about
16 sustainability assessment when Albert Einstein was
17 around, but I think he's pointing to something here
18 that the Panel will be confronted with.

19 Green Peace is requesting the
20 Panel show some courage and reject this project.
21 If the Panel is unwilling to say no outright, Green
22 Peace requests, as we've outlined, specified
23 conditions be attached to the project to ensure
24 that it does not violate the principles of
25 sustainability, which you're mandated to uphold,

1 specifically precaution and the Polluter Pays
2 principle.

3 With that thank you, Chair Graham.

4 CHAIRPERSON GRAHAM: Thank you
5 very much, Mr. Stensil, for your presentation.
6 We'll move right into questions by the Panel. My
7 colleague, Panel members and I'll start off with
8 Madam Beaudet.

9 --- QUESTIONS BY THE PANEL:

10 MEMBER BEAUDET: Thank you, Mr.
11 Chair. I would like to go first on page 5 of your
12 written submission -- sorry, page 3, and possibly
13 it goes on other pages, but I'm sure you are aware
14 of what you have written.

15 MR. STENSIL: I hope so.

16 MEMBER BEAUDET: First, there is
17 just a small remark. You refer on page 3 to some
18 articles, and I believe the last one is from the
19 journal of IAIA. I was wondering if you could
20 provide copies of these and then we have a
21 protocol.

22 I think we have to go through the
23 author and ask permission to put it on the
24 registry, but I think it would make it easier
25 if -- if you do provide these articles because it

1 seems to be the spirit that has gone through the
2 writing of this presentation, and I think it would
3 be helpful to have exactly what is mentioned in
4 these articles.

5 The other thing is, you mentioned
6 somewhere that CEAA panels have used the
7 sustainable development assessment. What was done
8 -- what has been done so far is we do write a
9 section or a chapter in the report, but there has
10 never been yet a report that would look at the
11 project and analyze it completely with respect to
12 sustainable development principles.

13 And for all that, whether at the
14 federal or provincial level, and I know in Quebec
15 we've been fighting for that because you cannot
16 write a report if the developer did not write his
17 environmental assessment according to those
18 principles all the way.

19 If you're having a guideline, a
20 small section that say you have to respect the
21 sustainable development principles, it's quite
22 different than having guidelines that are definite
23 according to those principles.

24 And in Quebec, I know the Minister
25 of the Environment who did prepare examples of

1 guidelines for different type of projects and
2 different industries, we ask them to review them
3 and include this type of analysis.

4 They had a committee, they started
5 working on it and finally they didn't have the
6 funding anymore, so for me, I -- I agree with what
7 you're asking, but it goes much further back.

8 I mean, the guidelines have to be
9 prepared, not just as I said with a paragraph on
10 sustainable development, but have to be prepared
11 with the -- with the principles at each phase of
12 the project, that sustainable has to be respected.

13 CHAIRPERSON GRAHAM: Madam
14 Beaudet, just -- just, pardon me, Mr. Stensil.
15 Your very first question was looking for some
16 information and I would like to deal with that and
17 do give that an Undertaking number 38. I think
18 that's the next number, is it?

19 Number 38; so if you could -- Mr.
20 Stensil, if you could provide that to the
21 Commission.

22 UNIDENTIFIED SPEAKER: Do we know
23 which study?

24 CHAIRPERSON GRAHAM: It's of the
25 study --

1 UNIDENTIFIED SPEAKER: Of the
2 whole list? On page 3 there's --

3 CHAIRPERSON GRAHAM: It's on page
4 3. I think you -- there are three studies, I
5 believe. It's Gibson, Pope and there's two -- and
6 R.B. Gibson. Gibson's 2000, Pope and Gibson 2006.
7 Are those the three, Madam Beaudet?

8 MEMBER BEAUDET: Yes. Because the
9 first one, they don't have a website, the Journal
10 of Environmental Law and Practice, so it's
11 impossible for the public to access this article.

12 And the third one, the Journal of
13 IAIA, you have to be a member of IAIA to access the
14 articles.

15 CHAIRPERSON GRAHAM: And in view
16 of the fact that it may take a little time for you
17 to get permission to make those public or make
18 those available, when could you say, by next
19 Monday?

20 MR. STENSIL: I will ask the
21 author tonight.

22 CHAIRPERSON GRAHAM: Then would
23 you --

24 MR. STENSIL: So, yes.

25 CHAIRPERSON GRAHAM: -- report

1 back to our secretary by next Monday of a yes, no
2 or -- or when?

3 MR. STENSIL: Yeah.

4 CHAIRPERSON GRAHAM: Thank you
5 very much. April -- give that Undertaking 38 for
6 April 4th.

7 And Madam Beaudet, pardon me for
8 interrupting, but I just wanted to get that sorted
9 out. So now you can proceed.

10 MEMBER BEAUDET: Thank you, Mr.
11 Chairman. The other thing that we have now from
12 different type of industries and banks and -- and
13 other companies, we -- we get the sustainability
14 reporting, and we did address with OPG certain
15 aspects of that. And as you know it started from
16 Shell in Nigeria being in deep trouble, and they've
17 started to have this triple bill reporting, which I
18 think has had some effects, especially in terms of
19 the social commitments that they have to take now.

20 We did get, from OPG and I believe
21 it's not on the registry yet, but it will be, an
22 evaluation of the 2009 sustainable development
23 report from OPG, and what I've noticed is the rate
24 -- the score, although it is still high, and within
25 what we call high achievement, it has however gone

1 down from 2009 to 2010. And I was wondering if OPG
2 can tell us -- most probably you have discussed
3 this undertaking that you take every year from a
4 great number of years now, and you must have some
5 knowledge also from your peers. Are we considering
6 here that there's some fatigue in doing this
7 exercise and therefore we are not as enthusiastic
8 as we were ten years ago in meeting the targets
9 that you set out. Do you always have to prump up
10 your team to -- in order to be able to maintain
11 this ranking between one and three?

12 MS. SWAMI: Laurie Swami, for the
13 record. I can't speak specifically to 2009 and
14 2010, but what I can talk about is the
15 environmental management system that OPG has as one
16 of the tenants of our work. And we use that to
17 drive a continuous improvement program within our
18 facilities, whether they're thermal, hydroelectric
19 or nuclear facilities. We are registered across
20 the company, and that program has us strive for
21 always looking for an opportunity to make
22 improvements.

23 Part of that program includes
24 assessments and audits and various looks at our
25 business to identify where there may be ways to be

1 even more proactive or better in our performance.
2 So we're -- while an assessment may come back with
3 something that has areas for improvement, it's
4 through those processes, not only our internal
5 processes, but external audits and assessments that
6 help us to drive our performance to an even higher
7 level.

8 So while there may be a year where
9 there may be something that we need to make
10 improvements on, that's all part of our program for
11 driving continuous improvement in our operations,
12 whether it's through environmental management,
13 health management, whatever the program may be.

14 MEMBER BEAUDET: Thank you. Just
15 one thing. When you said you were -- last week
16 that you were not complying anymore with the GRI,
17 some companies do have to comply if they want to
18 get contracts internationally. And so you're
19 always more or less on your toes in order, you
20 know, to perform and get high ranking.

21 You were saying that for you, you
22 don't feel that pressure anymore. And I was just
23 wondering, although you do have some requirements
24 -- international requirements, if -- how that
25 aspect would fare?

1 MS. SWAMI: Laurie Swami. We
2 don't actually -- our business is in Ontario, and
3 so we are very -- and strive to be open and
4 transparent with the Ontario public. We go through
5 a number of various medium to do that, whether it's
6 through the Ontario Energy Board rate hearing
7 process, OPG is subject to that open process. We
8 are open with our reporting programs. We provide
9 -- I think you've seen some of those reports posted
10 on our website. So there's a number of ways that
11 we try to keep ourselves to a high standard within
12 the business area that we're working within.

13 MEMBER BEAUDET: I was referring
14 here with the International Atomic Agency that you
15 have to report. So you do have a window within the
16 international community; it was more in that
17 respect.

18 MS. SWAMI: Laurie Swami. We have
19 a number of different reporting mechanisms. I
20 think that what perhaps you're referring to is the
21 World Association of Nuclear Operators, that we are
22 subject to audits and assessments through that
23 program. We're a member through the Atlanta
24 Centre. And that would -- establishes review
25 processes, establish a standard for operation of

1 our facilities. OPG's nuclear plants are reviewed
2 and assessed on a routine basis as per the schedule
3 that's established through WANO, and that program
4 continues. The IAEA reference that you have is the
5 CNSC has programs where they report through to the
6 International Atomic Agency. And I believe that's
7 perhaps what you're referring to, although our
8 information, of course, is provided to the CNSC so
9 that they can make those adequate reports through
10 the various mechanisms that are available to them.

11 CHAIRPERSON GRAHAM: Madam
12 Beaudet, I think Mr. Stensil would like to comment
13 also.

14 MR. STENSIL: It was just in
15 regard to your first comments. Thank you for
16 those. I think I had mentioned in my presentation
17 that environmental assessment is evolving, as you
18 well know, and the move towards the contribution to
19 sustainability test is not a fixed thing, and it's
20 still developing. And what I would like to urge
21 the panel is to continue pushing in that direction,
22 given the scale of this project. And I know you've
23 mentioned a number of times, this project is going
24 to have an impact for decades, potentially into the
25 next century. So we need to be looking very

1 legacy of the project, and also knowing that it's
2 been evaded at the provincial level. It's -- I
3 think that's very to important ask of you.

4 MEMBER BEAUDET: That's well
5 noted. Thank you.

6 I'd like to go now on page 9 of
7 your submission and your last paragraph. I'd like
8 to give you the opportunity of what exactly you
9 mean here because the -- the guidelines and the
10 agreement, there was one -- actually the guidelines
11 and the agreement, the drafts came out, I think,
12 the 9th of April, 2008 and then the final drafts
13 were the 12th of March 2009 and you did comment --
14 you did send some comments on your draft agreement
15 and so I'd like to understand why you say that the
16 -- well first of all, do you refer here to the
17 agreement or the guidelines or both? And why you
18 say it was done behind closed doors since you were
19 allowed to comment on both documents, both draft
20 documents?

21 MR. STENSIL: My understanding,
22 and correct me if I'm wrong, is typically panels
23 are appointed and panels consider guidelines before
24 the project moves forward.

25 In this case it's my

1 understanding. In this case it was -- the panel
2 was appointed after guidelines were developed and
3 the guidelines -- the dispositioning of comments on
4 the guidelines was done by staff from the CNSC and
5 CEAA.

6 I had to fight to get the
7 dispositioning of those comments from both the CNSC
8 and CEAA. We were just given, here are the
9 guidelines at the end.

10 And I have to say it perpetuated a
11 bunch of the issues around scoping, such as
12 significant accidents, the probabilistic approach
13 used by the CNSC that's taken as a given. That was
14 supported in that decision making process.

15 And I think that's what I'm
16 getting at "behind closed doors" is it was done by
17 bureaucrats from the CNSC and CEAA without
18 necessarily the panel taking a look at that of what
19 broader issues should be looked at in reaction to
20 the public.

21 MEMBER BEAUDET: I believe the
22 panel used to comment many years ago. In recent
23 years, I know at least since probably 2004, I may
24 be corrected here, the panel is formed when the EIS
25 is finished.

1 So the panel doesn't have any
2 input in the guidelines, not anymore.

3 There could be some reasons for
4 doing that but to my knowledge we are not involved
5 anymore.

6 MR. STENSIL: Okay. Well that was
7 -- again, as I stated to my understanding, so maybe
8 my understanding is from a past time.

9 But I would also note there were
10 specific issues, for example, that were raised
11 around waste, how waste was dealt with. And I
12 remember raising this with the CNSC when Linda Keen
13 was there, when there was the first public
14 discussion on waste.

15 You know, these things should not
16 be just sidelined and give to the NWMO.

17 Those decisions, again, I can show
18 you the dispositioning spreadsheet that given to
19 me, but a lot of it's pretty thin, I think. It was
20 basically the status quo in terms of how we
21 approach accidents and safety and waste.

22 MEMBER BEAUDET: Thank you.

23 The other point I'd like to touch
24 is the *Liability Act*. Now you have five documents
25 in annex -- annex to your presentation and you have

1 presented in a different order than I have, so I
2 think I better give the exact title instead of what
3 I thought was the order.

4 The *Nuclear Liability and*
5 *Compensation Act*, now this has been in Parliament
6 and has gone to the "feuilleton", as we say in
7 French, for the third time.

8 I'd like to have some comments
9 from CNSC on this, please.

10 MR. HOWDEN: Barclay Howden
11 speaking.

12 So currently what's in place is
13 the *Nuclear Liability Act* which was put in place in
14 1976. And the focus of that was to provide
15 compensation in the event of an accident, up to 75
16 million with the federal government having a re-
17 insurance agreement with the insurance industry to
18 provide the extra coverage, not covered accidents
19 that could occur from sustained chain reactions.

20 The government has been trying to
21 put through this new Act called the *Nuclear*
22 *Liability and Compensation Act* which would
23 substantially increase the compensation available
24 or the liability onto the operator for the events.

25 It also expands the original --

1 the current Act talks about the sustained
2 uncontrolled sustained chain reaction, so it's to
3 do with fissile material whereas the new Act talks
4 about damage from any ionizing radiation and from
5 any initiating event because there was some
6 limitations there.

7 So that went through Second
8 Reading in the last Parliament and unfortunately
9 died on the Order Paper, so that's where we stand
10 today.

11 I can answer any specific
12 questions you may have.

13 MEMBER BEAUDET: Small question
14 I'd like to address to Greenpeace in that document,
15 in the Executive Summary you referred to offsite
16 impacts and onsite impacts.

17 And when you mean offsite impacts
18 do you include -- what we would include for
19 instance when we do the evaluation of hydro
20 project, what we used to refer to as externalities
21 which would include health cost, et cetera?

22 MR. STENSIL: As I recall -- I did
23 not write this report -- offsite impacts, the way
24 the nuclear liability legislation is written and
25 CNSC can correct me if I'm wrong -- is the \$75

1 million number is for offsite impacts, so
2 compensating victims.

3 It doesn't deal with what
4 insurance needs OPG may need for onsite impacts, so
5 damage to its own facilities.

6 There are some questions of
7 whether the industry should be insuring itself for
8 that as well.

9 So it is for when it goes over the
10 fence and impacting victims, that's what it refers
11 to, that's my understanding.

12 MEMBER BEAUDET: I'll get back to
13 CNSC then.

14 We believe -- I may be wrong --
15 that there's no cap for Japan. We have here 650
16 million proposed, what would these offsite impacts
17 -- what would be covered under the *Liability Act*?

18 MR. HOWDEN: For the Canadian
19 situation ---

20 CHAIRPERSON GRAHAM: Mr. Howden,
21 would you identify yourself?

22 MR. HOWDEN: Sorry. Barclay Howden
23 speaking.

24 For the Canadian situation the
25 liability is on to the operator would be up for 650

1 million, after that there would be the re-insurance
2 with the federal government.

3 The new Act does not address the
4 levels of compensation, so that would have to be
5 discussed but it establishes a clear process for
6 providing the compensation if needed.

7 The intention of it is not to
8 establish liability in terms of negligence, it's to
9 basically say that people are able to -- if they
10 were impacted, they're able to claim for the
11 compensation, they don't have to prove whether the
12 operator was negligent or not. So that's the case
13 in Canada.

14 In Japan, the liability does not
15 have a number, although the Japanese government
16 does require the operators to have a financial
17 security up to \$1.2 billion.

18 The last thing I wanted to say is
19 Mr. Stensil was correct in that the liability
20 insurance only applies to impacts offsite, it
21 doesn't apply to impacts onsite. So it's up to the
22 operators to obtain whatever coverage they need for
23 damage to their own facilities.

24 MEMBER BEAUDET: Can OPG educate
25 us on what the insurance would cover for the onsite

1 impacts?

2 MR. SWEETNAM: Albert Sweetnam,
3 for the record.

4 CNSC is correct in that the Act
5 covers the offsite liabilities and we have an
6 extensive insurance program that covers the onsite
7 liabilities, including damage to our facilities.

8 MEMBER BEAUDET: Thank you.

9 My other point was you study --
10 you've submitted -- excuse me a minute. You
11 presented in a different way than I expected.

12 It's the review of the Ontario
13 load forecast. It wasn't clear by reading this --
14 it's very detailed, it seems to be that it wants to
15 prove that the demand for electricity has gone
16 down, and as you say there's always an over-
17 forecasting.

18 You heard most probably the Deputy
19 Minister, Minister of Energy last week talking
20 about the different technical constrains in order
21 to transfer to a greener energy.

22 I was wondering also if you have
23 considered the margin that any electrical utility
24 would have to use in order to always be ready to
25 have the power that is needed with normal operation

1 or peak operation.

2 MR. STENSIL: Are you talking at
3 the grid level or for utility?

4 MEMBER BEAUDET: Adequate level.

5 MR. STENSIL: There at the
6 document that I provided on the load forecast,
7 Greenpeace is a member of the Green Energy
8 Coalition, and we intervene at the Ontario Energy
9 Board.

10 That was a submission made in 2007
11 to the Ontario Energy Board, which was rather
12 prescient three years later around load forecasts.

13 As part of our submission to the
14 Ontario Energy Board, we also provided submissions
15 on how -- other energies scenarios that the
16 province could go to without using nuclear while
17 maintaining the balance between demand and supply,
18 if that answers your question specifically.

19 MEMBER BEAUDET: Do we have this
20 document?

21 MR. STENSIL: No. I could provide
22 it.

23 There's been a number of studies.

24 I could -- I will undertake to
25 provide a number, if the panel is interested in

1 reading them. It's a lot of paper.

2 But we've provided documents from
3 the Ontario Energy Board.

4 There's also been reports done. I
5 believe The Pembina Institute in 2005 did a fairly
6 detailed study on how Ontario in the long term
7 could be phasing out plants at the end of their
8 life span.

9 Greenpeace International has also
10 done a very interesting and innovative work applied
11 to Europe, it's called Green Energy 24/7, where --
12 I believe the minister last week discussed a lot
13 about the need for base-load power.

14 And to bring up one issue, I've
15 never been able to determine how this province
16 determines base-load power.

17 Right now we have surplus base-
18 load supply.

19 They use a number of 72 percent of
20 supply. The only reference I've ever been able to
21 find for this is actually I read through the
22 transcripts of the demand supply plan from 1990,
23 and it was in the interrogations at that point but
24 it wasn't substantiated by any point, but we're
25 still using that number.

1 What we're seeing take place in
2 Europe, they're moving away from talking about base
3 load to residual supply and different ways of
4 balancing supply.

5 So the report that I mentioned,
6 Green Energy 24/7, is how we could build a green
7 energy grid. I think it's 95 percent green energy
8 over the next 50 years.

9 And it looks at those technical
10 issues of how to balance supply and demand when you
11 have variable sources of supply, like renewable,
12 and how to balance that.

13 So I can endeavour to supply that
14 for the panel, if you wish.

15 CHAIRPERSON GRAHAM: I was just
16 going to say, is that essential? Would you like to
17 have that or -- all right. We'll give an
18 Undertaking number 39.

19 UNKNOWN SPEAKER: That's documents
20 presented to the OEB in 2007?

21 CHAIRPERSON GRAHAM: I think so.
22 2007, is it, the OEB documents?

23 MR. STENSIL: I'll supply the
24 Green Energy Coalition's submissions to the Ontario
25 Energy Board ---

1 CHAIRPERSON GRAHAM: In 2007?

2 MR. STENSIL: -- in regard to
3 supply. Yeah.

4 CHAIRPERSON GRAHAM: Yes.

5 And by when, Mr. Stensil?

6 MR. STENSIL: I could do that by
7 Friday.

8 CHAIRPERSON GRAHAM: By Friday,
9 thank you.

10 MEMBER BEAUDET: My last question
11 is to OPG.

12 We've received, as you are aware
13 -- I'm sure people like you at OPG are reading also
14 the written submissions -- a great deal of comments
15 with respect to ethics. And also, I think, the
16 submission of Greenpeace has called upon that
17 principle.

18 In the sustainable reporting
19 reports, you do take into account ethics, but it's
20 more in terms of business management and operation.
21 And you do bring this forward as OPG, and I can
22 understand following these principles.

23 With respect to what has been
24 presented here so far about nuclear energy, I was
25 wondering if you did have some reflection or

1 discussion as to how ethical principles would be
2 built in your operation for nuclear energy.

3 MR. SWEETNAM: Albert Sweetnam for
4 the record.

5 Can we have a moment to confer?

6 CHAIRPERSON GRAHAM: Certainly.

7 Ms. Swami?

8 MS. SWAMI: Laurie Swami.

9 I think that when we consider
10 ethical performance in our -- in our business, we
11 look to the safety culture of our organization.
12 And it's something that the nuclear business is
13 moving towards and developing means and ways of
14 measuring and monitoring the safety culture.

15 It looks at ensuring that
16 employees can raise issues and concerns, that those
17 get addressed appropriately within our business.

18 We participate in international
19 assessments. We participate in all the
20 international assessments to ensure that our
21 programs meet the international expectations for
22 operation of nuclear power.

23 Within OPG, we also have policies
24 and expectations for our staff in terms of code of
25 business conducts and expectations for performance

1 within our business, across our business as well as
2 within nuclear.

3 MEMBER BEAUDET: Thank you.

4 Thank you, Mr. Chairman.

5 CHAIRPERSON GRAHAM: Thank you,
6 Madam Beaudet.

7 Mr. Pereira?

8 MEMBER PEREIRA: Thank you, Mr.
9 Chairman.

10 My first question is for Ontario
11 Power Generation.

12 Mr. Stensil has raised a number of
13 questions about sustainability of this entire
14 proposal to build new nuclear reactors.

15 And he has talked at great length
16 about nuclear waste.

17 So my question, in OPG's
18 sustainability assessment, how has the question of
19 the generation of long-lived radioactive waste been
20 addressed and accepted?

21 I'm asking this at a fairly high
22 level, so the principle that you used in -- from
23 sustainability point of view to accept the
24 generation of long-lived radioactive waste.

25 Thank you.

1 MS. SWAMI: Laurie Swami.

2 I'll start a little bit of the
3 discussion, and then I'll ask John Peters to also
4 add to the work that's been done.

5 In our sustainability assessment,
6 we looked to what the guideline requirements were.

7 We performed our assessment based
8 on what the community around us considered from an
9 overall perspective on their sustainable
10 development.

11 And we used those principles in
12 assessing the sustainability of this particular
13 project.

14 There are some things that were
15 outside of the guidelines, such as energy policy
16 decisions and energy policy in terms of whether
17 it's a nuclear power plant.

18 Whether it's green energy is
19 something that's assessed by the province.

20 And OPG is directed to implement
21 some of those policy decisions.

22 And so for our consideration, our
23 direction was to complete an environmental
24 assessment for a new nuclear facility and not to
25 consider some of those other alternative means of

1 generation, as they'll be considered by others that
2 will receive similar direction beyond OPG.

3 With that and specifics, I'll ask
4 John Peters to continue the dialogue.

5 MR. PETERS: John Peters for the
6 record.

7 I wanted to share how we managed
8 this work as part of the environmental assessment
9 process, and I think it answers your question with
10 regard to the way the community looked at this and
11 responded to us.

12 We developed this framework
13 recognizing the guidelines was looking for an
14 appreciation of how sustainability of our project
15 would be grounded in shared values and community
16 interests in Durham region.

17 And so we approached both the
18 planning departments in Durham and in Clarington
19 and Oshawa and met with them on the approach that
20 they had developed fairly recently and were
21 promoting in their community planning processes.

22 So we built on that and developed
23 a very clear set of measures using the framework
24 that was provided by each of those municipalities
25 and the region.

1 The framework includes specific
2 indicators for biological diversity.

3 It looks at present and future
4 generations considering both our construction and
5 the operation phase of the project, and also
6 included decommissioning abandonment to try and
7 give this very long view and to create a framework
8 that considered economics. It considered social
9 measures and it considered the biodiversity of the
10 values associated with the project.

11 Our results were tested because we
12 provided them in draft to the municipalities as
13 part of their independent peer review, and they
14 gave us specific feedback and comments and what you
15 see in our EIS is a result of that input, and
16 they've spoken to it directly in their own work.

17 The framework is a very useful
18 tool and from our perspective it will be something
19 that we can continue to measure our performance
20 against.

21 So that was how we developed this.

22 And then I must remind the panel
23 that there's a very neat summary of the public
24 communication. We actually took the framework in
25 draft and described it to the community in a round

1 of public open houses that we had prior to the
2 finalization of the EIS, and we had numerous
3 comments on its value and some inputs as to what
4 was important to the community, which is recorded
5 in our public communications extensive TSD that we
6 filed with the panel.

7 MEMBER PEREIRA: Thank you.

8 So in a sense you're dealing with
9 the economic and social benefits.

10 And in terms of the ecological
11 aspect, would that, in your view, be covered by
12 funding of decommissioning and management of waste?
13 Would that be how you'd address it?

14 MR. PETERS: John Peters, for the
15 record.

16 The biodiversity component was
17 trying to look at from the point of view of the
18 start of the project we benchmarked ourselves about
19 the progress and the quality of the site and our
20 effects in the local and regional study area, and
21 then asked ourselves to examine changes that we
22 would be making through the work in construction,
23 which we acknowledged would be substantive
24 specifically on our property.

25 And then we demonstrated how

1 through the beginning -- the end of construction
2 and operations we would restore health and continue
3 down this path of a very biodiverse and rich site.
4 And we committed to the community through the
5 discussions we were having, a continued performance
6 as a company against these broader interests in
7 sustainable biodiversity in the community.

8 The long-term management of
9 radwaste is obviously something we also recognize
10 and we're very responsive on an ongoing basis with
11 the community. However, we don't see that our
12 management process and radwaste affects
13 biodiversity in a specific way at this time because
14 it's so contained and controlled.

15 MEMBER PEREIRA: Thank you.

16 I'll now turn to the CNSC. Mr.
17 Stensil has made some comments and assertions about
18 a new standard you have for the design of reactors.

19 I'd like you to speak about that,
20 and in particular how the standard compares with
21 international practice, where other countries are
22 going, in terms of requirements for the design of
23 reactors.

24 And also I'd like to hear as to
25 how you engaged the public in the development, and

1 if you did engage the public in the development of
2 this new standard and what was your process and
3 timelines for developing the standard.

4 MR. HOWDEN: Thank you.

5 Barclay Howden, speaking.

6 I'm going to provide some
7 introductory remarks on the process and then ask
8 Dave Newland to provide the details on the
9 standard.

10 First of all, I would like to talk
11 about two things, because we keep talking post-9/11
12 and I'd like to sort of point out two things that
13 we've done; one regarding nuclear security and one
14 regarding nuclear safety, and Dr. Newland will talk
15 about nuclear safety.

16 But nuclear security, I just want
17 to be clear that following the 9/11 events and
18 after the Commission put in an emergency order the
19 Commission did amend the nuclear security
20 regulations and that was done through a public
21 amendment process where the public was able to
22 participate through Gazette I and II of this and
23 those regulations are available on our website and
24 are open to everyone.

25 With regards to nuclear safety,

1 one of our key documents is RD-337, which is the
2 design requirements for new NPP's. From the terms
3 of the process, the way it was developed was we
4 pulled together an internal team to start off and
5 they put together a draft, what we call a "straw
6 man document". Then it was put through internal
7 comments where we opened these documents up to all
8 staff of the CNSC, anyone can comment at any time,
9 and then all comments must be dispositioned and the
10 disposition made available back to the staff
11 members so they know how their comments were
12 dispositioned.

13 Once we got the document to that
14 point we brought it to the Commission and sought
15 permission from the Commission to go out and get
16 public comment, which was done. And we went
17 through a round one of comments. I don't recall if
18 we went through a round two. Dr. Newland can speak
19 to that. But our process now is when people submit
20 comments we put them out there for people to
21 comment on the comments.

22 So if a member of the public
23 comments they can actually comment on someone
24 else's comments and provide feedback. Although,
25 those are then dispositioned and made available

1 publicly and then the decision to approve the
2 document comes to the Commission in a public
3 meeting where the document is reviewed as well as
4 the dispositioning.

5 In terms of the development of
6 this document -- so that's the iterative process
7 that it's gone through and it's very much focused
8 on being a technology neutral document.

9 And I'd like to ask Dr. Newland to
10 speak to the document himself because he was on the
11 team that led it.

12 DR. NEWLAND: Thank you, Mr.
13 Howden.

14 So Mr. Howden's really covered off
15 all of the public participation aspects.

16 When that particular document was
17 produced back in 2008 we didn't have in fact that
18 second iteration in place. That's something that
19 came in since then.

20 So if I can touch a little on how
21 we went about developing the document and how it
22 compares against international standards and
23 practices in other countries.

24 In putting together what Mr.
25 Howden referred to as a straw man document, we

1 looked to the International Atomic Energy Agency
2 standard on design of nuclear power plants --
3 safety of nuclear power plants design requirements,
4 NSR1, and that is a well-established document or
5 international standard at that time that we used as
6 a starting point in order to develop the design
7 requirements for new nuclear power plants in
8 Canada. So that was our starting point.

9 In addition to that, we looked at
10 other countries that we knew had new build
11 developing, such as the U.K., Finland, France, the
12 U.S., to see what else might be out there that
13 might be of interest to us.

14 And what we discovered was that
15 NSR1 was an excellent base that we could build and
16 improve. So, for example, we put in explicit
17 acceptance criteria for both design basis accidents
18 and beyond design basis accidents. We set explicit
19 requirements for the protection of the environment,
20 which was not included in the IAEA standard. And
21 we included explicit requirements for security
22 provisions, and I would say, in particular, not
23 only for physical security but also for malevolent
24 acts.

25 In addition to that, we looked at

1 whether we wanted to put in place more explicit
2 requirements for certain types of systems, safety
3 systems, and in certain areas we did.

4 So what we feel that we came up
5 with at the end of the day in 2008 is something
6 that is really a modern day requirement for the
7 design of nuclear power plants.

8 MEMBER PEREIRA: Thank you.

9 So I get the impression then it is
10 on par with practice in other well-developed
11 countries?

12 MR. NEWLAND: Dave Newland, for
13 the record.

14 Yes.

15 MEMBER PEREIRA: Thank you, Mr.
16 Chairman.

17 CHAIRPERSON GRAHAM: Thank you
18 very much, Mr. Pereira.

19 The schedule now is that we will
20 go onto questions from OPG to the intervenor.

21 Are there any questions from OPG?

22 MR. STENSIL: Mr. Graham, may I
23 respond to the CNSC offer?

24 CHAIRPERSON GRAHAM: Yeah, I allow
25 summarizing remarks, but if you want to do it now

1 with that response, go ahead.

2 MR. STENSIL: Well, what -- Green
3 Peace did not say that the CNSC has not developed
4 post-September safety requirements. We commented
5 on RD-337. I have the submission here. And I
6 think what we were saying though is there is a deep
7 concern that design basis threats versus beyond
8 design basis threats, how are those being
9 determined to be back fitted to existing designs?
10 So the designs that are being proposed. We have no
11 -- I've been doing access to information to try to
12 get this information for the past four years. It
13 is all censored. CNSC staff have actually asked
14 for their names to be censored from the documents
15 because they're scared of terrorists knowing who
16 they are.

17 So these design basis threats have
18 not been developed publicly so in terms of what is
19 the tolerable level of risk that the public is
20 willing to assume for certain sorts of terrorist
21 events. And just stepping back two steps, there's
22 about two metres of cement difference between the
23 advanced CANCU and the CANDU 6 that will tell the
24 layman one is designed to a higher level of
25 terrorist resistance than the other. And what I'm

1 asking is that we have some further process where
2 this can be aired.

3 CHAIRPERSON GRAHAM: Thank you.
4 I'd made comments at the outset about certain
5 security issues, but I take your comments.
6 Procedure now is that I go to OPG if they have any
7 questions.

8 MR. SWEETNAM: Albert Sweetnam for
9 the record. No questions, but I'll make a comment.
10 Green Peace has inferred that the inclusion of the
11 CANDU product would be a reduction -- potentially a
12 reduction in safety and they expressed concerns for
13 public safety. I would like to clearly say on the
14 record that OPG is not proposing a C-6. We're
15 proposing an enhanced CANDU 6 which is a unit --
16 the last C-6 was built in China in Qinshan and this
17 design is now the -- going to become the enhanced
18 CANDU 6 which will be in full compliance with
19 RD-337 and as a result will provide all of the
20 safety features required in this day and age. So
21 OPG and the Ontario Government would not undertake
22 to provide a design that was not safe for the
23 public.

24 CHAIRPERSON GRAHAM: Thank you.
25 CNSC?

1 MR. HOWDEN: Barclay Howden
2 speaking. No question, I just wanted to provide a
3 clarification on the DBT. This is the design basis
4 threat and from a physical security perspective,
5 all the current stations do meet with the
6 requirements for that. They've had to set up their
7 physical security for that so I just wanted to make
8 it clear that those had been put in place.

9 CHAIRPERSON GRAHAM: Thank you.
10 Government participants; federal or provincial
11 government departments? Okay. If there are not,
12 then we'll proceed to intervenors' questions and I
13 only have one and we'll close the record with that,
14 and it's Mr. Kalevar.

15 MR. KALEVAR: Well, I really
16 enjoyed your presentation and I do tend to agree
17 with you. But I would like to know you mentioned
18 stink, stink, stink so many times I was wondering
19 if you found out some way of making nuclear waste
20 stink like they make the gas pipeline stink because
21 that would be very helpful.

22 CHAIRPERSON GRAHAM: Thank you,
23 Mr. Kalevar. Do you have any comments, Mr.
24 Stensil?

25 MR. STENSIL: I have thankfully

1 never approached nuclear waste that closely to be
2 able to develop any such plan.

3 CHAIRPERSON GRAHAM: Thank you
4 very much for your comments. And with that, I
5 would like to thank you for your presentation today
6 and as I have other intervenors, certainly the
7 panel certainly appreciates all of the comments
8 presented to us and we go over them very thoroughly
9 and yours is no exception. Thank you very much for
10 your presentation.

11 MR. STENSIL: Thank you.

12 CHAIRPERSON GRAHAM: With that, do
13 we want to recess right now or -- with that we'll
14 take a 15-minute recess and reconvene at 3:37;
15 that's according to the clock on the wall.

16 --- Upon recessing at 15:24 p.m.

17 --- Upon resuming at 15:39 p.m.

18 CHAIRPERSON GRAHAM: Good
19 afternoon, ladies and gentlemen, and welcome back.
20 I thank you for having this break. Now, we will
21 move to the next presenter on our agenda. This is
22 an intervention by Just One World, PMD 11-P1.158
23 and PMD 11-P1.158A. And I believe the intervenor
24 today is Mr. Kalevar. You have 30 minutes for your
25 presentation, sir, and the floor is yours. Your

1 microphone is not on.

2 --- PRESENTATION BY MR. KALEVAR:

3 MR. KALEVAR: My PowerPoint is not
4 on either. Is there something I should do there?

5 CHAIRPERSON GRAHAM: Just give us
6 a minute and we'll bring up your PowerPoint.

7 MR. KALEVAR: Okay. Meanwhile ---

8 CHAIRPERSON GRAHAM: If you just
9 want to wait, we're going to bring it up for you.

10 MR. KALEVAR: No, that's okay, I
11 can say a few things as introduction. I was very
12 impressed with some -- I think it's Mr. Roche in
13 the morning who brought out the issue about the
14 Porter Commission. I was the secretary of the
15 Ontario Coalition for Energy Planning with the
16 Porter Commission in the 70s. And I made my
17 technical presentation to Porter way back then as a
18 young engineer. And I think Professor Porter who
19 was a professor of engineering at U of T came to
20 the right conclusion technically speaking, that
21 nuclear power is great if you can do something
22 about nuclear waste. And obviously we haven't done
23 something about nuclear waste so nuclear power is
24 not great.

25 And unfortunately, of course, what

1 did happen after that wonderful conclusion by
2 Professor Porter was Premier William Davis gave a
3 green light to nuclear industry in Ontario. And
4 that is when I stopped making technical
5 presentations as such. I realized that it's not
6 just technical presentation that's going to decide
7 nuclear power or nuclear waste, but it's going to
8 be political dissonance. And as I saw it in my few
9 conversations with people in Premier Davis' office,
10 I realized that they're basically technology
11 illiterate and didn't have a clue, but they were
12 just making decision because it was going to be
13 popular and you're going to have more energy and so
14 on.

15 So anyway, I don't think in that
16 sense the politics of the situation has changed
17 very much. This is probably the second round of
18 what's going to -- what happened in 70s is going to
19 be depicted again and I really wish it doesn't
20 repeat itself. But anyway, let's start with what I
21 have here.

22 As the Native people say that we
23 are looking at seven generations, I think Native
24 people they catch on. They only caught on to
25 nuclear waste. You need to look at 70,000 plus

1 generations probably to get anywhere closer to --
2 how do I start this again? Here?

3 CHAIRPERSON GRAHAM: Secretariat
4 Julie is coming to help you out, sir.

5 MR. KALEVAR: Well, as we can see
6 that we haven't got yet the kind of nuclear station
7 we are going to get figured out. But they all
8 produce nuclear waste. And so in my terms they are
9 unacceptable for safety of the planet and future
10 generations.

11 We need to look at safe geothermal
12 wind, water and solar power. Again, it has been
13 said many times that these options are not really
14 been looked at seriously.

15 And we have a situation where
16 North America, we produce the most amount of -- CO2
17 but nuclear waste probably.

18 And the waste overload of North
19 America is -- well, is already sinking the planet
20 in terms of global warming but also in terms of
21 nuclear waste it could be a great problem in the
22 near future.

23 As you can see that we started the
24 nuclear age way back in '45 and it has been --
25 since then, the background radiation is creeping

1 up.

2 I really don't know if my
3 calculations of that are correct but they are based
4 on some data I found. I would really like to know
5 how much is the background radiation gone up since
6 '45 and how much has the nuclear industry
7 contributed to that increasing background radiation
8 because that is definitely happening.

9 The question is, we don't have the
10 numbers. I think it could be, at least if you
11 cannot get the whole world's contribution at least
12 you should consider getting it all from the AECL's
13 contribution which should be not that difficult now
14 for this Commission.

15 As people have said, if you cannot
16 safely store nuclear waste then why make it? I
17 mean that was what Porter said way back.

18 They will not disappear. It is
19 our legacy to the planet and future generations. I
20 mean they are here to stay.

21 As a matter of fact, one of the
22 questions I wanted to ask in the last panel was to
23 the person Beyond Nuclear. I said what do you mean
24 by beyond nuclear? This planet is not going to be
25 beyond nuclear, we are stuck with the nuclear waste

1 not produce nuclear waste.

2 I want to move it around. So
3 again, the question of the radioactive generators
4 being moved around, it just doesn't make sense. We
5 should just breathe in that and we should not allow
6 them to enter the metal stream so that they will
7 contaminate our consumer products.

8 Well, the Americans are burying it
9 -- I think I said this before CNSC in Ottawa last
10 fall, that the Americans are burying it, the
11 radioactive generators right at the site; why are
12 we talking the trouble of shipping it across the
13 oceans to Europe. I mean it just doesn't jive.

14 I mean can't we just understand
15 that the Americans are no fools. I think they have
16 a better solution here and we should definitely not
17 allow any movement of nuclear waste. That is
18 certainly -- I mean within our control and we
19 shouldn't allow it.

20 Now whatever we have produced we
21 are stuck with it, I'm sorry. And as I see it, we
22 should stop shipping problems outside of Canada
23 rather than just burying them here because it's not
24 going to be very useful to other countries, shall
25 we say, to have our waste hanging around.

1 Okay, let's look at Canada --
2 besides this, let's look at Canada's commercial
3 role. Well Saskatchewan is the biggest export of
4 uranium. Now Alberta is the biggest polluter of
5 CO2 and Quebec is the biggest supplier of asbestos.
6 I mean we are -- how shall I say -- number one
7 polluter nation of the world.

8 Just look at it this way; on these
9 three substantial polluting concerns of uranium,
10 carbon, and asbestos we are number one. Something
11 we shouldn't be proud of. We used to be proud of
12 being the number one peacekeeping country in the
13 world and now we are the number one polluter of the
14 world.

15 And I know these things are not
16 before you but I want you to, as Canadians, think
17 of these things that -- do you want to carry this
18 legacy that we are the number one polluters of the
19 world?

20 I mean our Canadian commerce is
21 just not taking planet seriously, that's what it
22 comes down to.

23 And perhaps our government is not
24 either. Anything that makes money is good, even if
25 it pollutes and kills other people or pollutes the

1 planet. I think we got to re-examine our role in
2 the context of the planet which I don't think we
3 are doing very well.

4 We started the nuclear age with
5 our uranium in Hiroshima and Nagasaki and as you
6 can see on the list that Saskatchewan can really
7 manage to live by its wheat and potash rather than
8 ship uranium and the Dene people, as far as I'm
9 told, they call uranium the death rock. I think
10 that is something we should learn from the native
11 people who know what trouble uranium can be.

12 And again, now we have -- as I
13 understand when moving of the radioactive
14 generators came about it was, I think Mohawks who
15 challenged it, they won't like it to pass through
16 their things, what are we going to do?

17 I mean if the Mohawks come to
18 block the ships passing through Lake Ontario are we
19 going to have a shootout? What's this? What kind
20 of situation we are creating? I mean this is
21 nuclear industry's response but you do not get into
22 this kind of violent situations.

23 And they're right in opposing any
24 waste like that going through there, as far as I'm
25 concerned.

1 But as you can see Canada has
2 developed a very poor regulation now globally. We
3 are getting fossil awards in Copenhagen, dodo
4 awards in Japan, and we are in the CO2 or the tar
5 sands mafia in Calgary is really dictating in many
6 ways the agenda of Canada and polluting there.

7 And yes, we even lost a UN
8 Security Council bid to Portugal. I mean look at
9 that.

10 Okay, CNSC has licensed the
11 shipment of this things. Well, what does that
12 mean? Does that mean that the shipment will not
13 have an accident or a terrorist attack or
14 earthquakes or storms, no, it doesn't. The risks
15 are still there. Your licensing doesn't change the
16 reality of the planet or the science.

17 Many mayors are opposed to it.
18 Mohawks are opposed to it. I definitely am opposed
19 to it and so are many others.

20 So you giving licence, CNSC giving
21 licence has not reduced any of the uncertainties.

22 It seems like some people have
23 this mindset that if you licence somebody, well,
24 things are taken care of. Well, they're not taken
25 care of. The planet doesn't listen to you. Your

1 licence is just a piece of paper. So the
2 whole -- okay, here. Now, yeah, that's right.

3 Here is a cartoon that sort of
4 tells you how some other species in the planet
5 might think. Now, fish perhaps, you might want to
6 think of once in a while because they occupy 70
7 percent of the planet. Not we; we are there only
8 in ships.

9 Seventy (70) percent of the planet
10 is fish and if you want to know, I'll think of them
11 and they are complaining too with all the junk we
12 are going. We are making our wonderful, free
13 ocean into what I call a global gutter.

14 Every year toxic waste goes into
15 our global gutter and it keeps on increasing
16 because from there, it doesn't have anywhere to go.

17 Okay. I am -- as I'm sure you
18 know, I am opposed to the nuclear cycle. Look at
19 the California law. It prohibits new nuclear power
20 plants until a solution to the problem of nuclear
21 waste is found.

22 Now, I think that is a pretty
23 reasonable law. I don't know why we cannot accept
24 it or get a law somewhere along those lines.

25 The Americans are blamed for

1 shooting first and ask questions later. We as
2 Canadians seem to be producing nuclear waste first
3 and looking for solutions after, which you haven't
4 yet found.

5 I mean, in that sense, I think we
6 beat the Americans hands-down. I mean, not
7 something to be proud of.

8 The question is, it's not a
9 question of just storage; it's a question of almost
10 like eternal storage. Now, who is working on
11 eternal storage? I haven't heard anybody saying
12 that they have a solution for eternal storage.
13 That's what we are looking at.

14 No statement came out of here
15 saying that this is going to keep it forever.
16 People are talking as if, oh, something, might --
17 this container leaked; so we'll get a new one to
18 put in there. As if putting it is a very easy job,
19 like turning water from one glass to another. It's
20 not.

21 Anyway, as far as I'm concerned,
22 no eternal storage is possible considering the
23 vagaries of the planet, the accidents, the
24 earthquakes, the hurricanes, whatever.

25 So what has nuclear power done?

1 As you can see from this cartoon, the cartoon has
2 got it very well. Nuclear power has given rise to
3 the other kind of nuclear power nations. They have
4 used nuclear power stuff to build nuclear bombs.

5 And that is another responsibility
6 of CANDU. As you can see, CANDU was donated to
7 India and Pakistan way back. I think it was in the
8 '50s or '60s and this is how they're grown up now.

9 And they are not very friendly
10 nations as it stands, unlike Canada and the United
11 States, for example. They are more like -- well,
12 considering cold war, more like Canada and the
13 USSR.

14 So here is one way in which
15 nuclear power is -- has made one part of the region
16 completely unstable part of the region in some
17 sense as we know from what is happening in
18 Afghanistan, Pakistan and all that, a very
19 dangerous place.

20 Here on the cartoon, it might tell
21 you something about it. It speaks for itself. I
22 mean now Iran wants to be in that game. There is
23 China, Pakistan, India and now Iran. I mean, none
24 of them are on friendly terms with each other more
25 or less.

1 This is what is happening and it's
2 beyond nuclear power. We are looking at nuclear
3 war scenarios, which is -- I mean, even if you have
4 good storage, let's say you have, one nuclear war
5 will spoil the planet forever.

6 Again, I mean I don't have to
7 explain this; this is obvious.

8 Okay. Again, I'm sure you've
9 heard of Murphy's Law. I mean Murphy's Law doesn't
10 stop because it's nuclear industry. Murphy's Law
11 applies to nuclear industry too. That's exactly
12 what is happening in Japan.

13 When nothing can go wrong, it
14 will. Even if licensed by CNSC or for this
15 Commission and nothing is as simple or safe as it
16 seems.

17 It is easier to get into a thing,
18 like we got into with nuclear power, than to get
19 out of it. See, it's very true. We can't get out
20 of it. We are stuck with that nuclear waste for
21 millions of years. Murphy's Law, it's something to
22 teach nuclear industry.

23 Again, it says if you fool around
24 with the thing long enough, it will eventually
25 break. And like it says, it has happened in Japan.

1 Canada has said no to nuclear
2 weapons. And that was one of the reasons I was
3 very proud of when I came new to Canada.

4 Now, maybe Canada can say no to
5 nuclear waste and nuclear power. I urge you to do
6 that. Here, we can't take this kind of cavalier
7 attitude, oh, we win a few, lose a few. I mean,
8 what? You are going to lose a few, what, of the
9 whole planet? It's ridiculous.

10 Well, I mean, we all heard so many
11 things about nuclear waste so I don't need to
12 repeat, but I will just say some of the nuclear
13 waste can be very lethal. I understand we have
14 40,000 tonnes of it right here in Darlington and
15 Pickering.

16 And in spite of engineering, at
17 one time I shared with my colleagues in the
18 engineering profession. I say we cannot defy the
19 laws of physics, chemistry and biology. We are
20 prone to human errors and they will come anyway.

21 Of course, laws of economics
22 cannot rewrite laws of ecology. That's another
23 issue we cannot forget.

24 So what's the fuss? The fuss is,
25 it is absurd science and hope to base energy policy

1 on the hope of a technological breakthrough.

2 I mean, as somebody I think said
3 today, I think it was John who said that, that our
4 waste should be -- we should think of the waste
5 first.

6 And what it comes down to, we are
7 still caught up in this transition from linear
8 logic of the industrial society to a circular logic
9 of the sustainable ecological society.

10 And if we cannot make that
11 transition, well, without some kind of a thing that
12 we regulate forever, we are in trouble.

13 I hope this Commission will make
14 that transition from linear logic to circular logic
15 and take waste as a thing you will think of before
16 you licence it or approve of it.

17 So we should shut down all nuclear
18 reactors and stop producing more nuclear waste.
19 Why are we risking global health and environment,
20 for what? Some fat ass conveniences conveniences
21 of some of the people? I mean, that's hardly the
22 reason to do that.

23 In the '70s, as I say, before pro
24 supporter, I was convinced there was no solution
25 with nuclear waste and I think it doesn't exist and

1 it can't be found. So it is really asking a thing
2 that what are the good points of nuclear waste is
3 like asking what are the good points of a poison.

4 Well, there are no good points
5 about a poison, is there, unless you happen to use
6 it to kill somebody you want to kill. I guess
7 that's the only good point. But you can't even do
8 that with nuclear waste because it spreads.

9 There are 500 nuclear stations
10 roughly in the world. How can we make sure
11 possibly that earthquakes, tsunamis, hurricanes,
12 meteorites, and terrorists will miss all of them?
13 We sure are giving the terrorists a lot of targets
14 every time we build one, that's for sure.

15 As I said, nuclear waste is
16 odourless, colourless and tasteless, but is a
17 deadly poison. And we haven't yet found anything
18 to make it smell or stink as my previous guy said
19 from Greenpeace. I wish we find something so that
20 we know of it from a far distance that it is
21 leaking.

22 Besides, then again, what is Japan
23 doing now? They are nationalizing TEPCO. When it
24 melts down and all the risk comes from the head of
25 the company, is that the time to take it over? I

1 mean that's ridiculous, but that's what we are
2 doing -- and \$75 million nuclear liability, my God.

3 Every car driver, as I understand,
4 has a liability of \$1 million roughly, every car
5 driver. Sometimes they even go for two million,
6 but let's say just one million.

7 So the risk of this nuclear power
8 station is same as 75 cars? I mean nuclear
9 industry is getting a free ride. If it cannot get
10 insurance from the insurance industry, shut it
11 down. The insurance industry knows its business,
12 the government doesn't. Why meddle with the
13 insurance industry?

14 So, as I say, our planet, plants
15 or animal world are not for sale or for -- or for
16 experimentation. I hope in your mind they are not
17 also.

18 Look at this guy. That's how I
19 see the politicians of today. They don't know
20 what's going on, but they want to make a decision.

21 So here again I know you are just
22 thinking about Darlington, but we are in Ontario
23 and we've got these three things to look at and any
24 leak from them is dangerous. And especially
25 Darlington and Pickering, they are situated right

1 next to Lake Ontario. As a matter of fact, I
2 should relate this.

3 Way back in the '70s, I was, you
4 know, a young guy and I used to ask all kinds of
5 questions. And one of the questions I asked was,
6 well, you know, you need a lot of water for cooling
7 the plants. Why don't you -- at that time, I said,
8 why don't you build them somewhere up north near
9 some lake? And things were a little more simple
10 then.

11 The guy from Ontario Hydro told
12 me, it's like this. In Lake Ontario, if anything
13 leaks, it will flow away. In the lake up north, it
14 will stay there.

15 I mean we are risking the water
16 supply of 10 million people or maybe more, I don't
17 know, but something like that, for that. This is
18 too much. Again, we can see -- okay, okay, that's
19 all. Okay, so we have come to that.

20 Let me make some comments on what
21 I heard. One is, of course, we heard from Helen
22 Caldicott and I do not accept the comment made by
23 Dr. Thompson that to keep the tritium from leaking,
24 we need to have something made of gold; it leaks
25 through everything else.

1 What it would suggest to me --
2 what, in effect, she said is we really have to gold
3 plate all these big domes that we build to keep the
4 tritium in. Just imagine the cost implication of
5 that. That should scare somebody, I hope.

6 Then we have a case of Mayor
7 Foster from Clarington saying that his people are
8 with him. Well, I say the only way to test that is
9 have a referendum and, personally, with such a big
10 issue, it cannot be just Clarington. It should be
11 perhaps at least Durham-wide, if not an Ontario-
12 wide referendum.

13 These issues are going to decide
14 the future of Ontario. If you ever get a big leak
15 in Lake Ontario and you start getting radioactive
16 water at your kitchen tap, that will be too late.

17 Again, I guess I really don't know
18 ---

19 CHAIRPERSON GRAHAM: Mr. Kalevar,
20 your time is up. But if you like, I can give you a
21 minute to sum up what you were going to -- in your
22 presentation, please.

23 MR. KALEVAR: Okay. Maybe I will
24 take a minute to read a poem of mine I have
25 written. I know you don't like to hear poems here,

1 but I'll sometimes dabble into that. So I would
2 like a poem, which would probably take a minute or
3 two. It's called "Bruce, Darlington and
4 Pickering"; that's the name of the poem.

5 Three Mile Island, Chernobyl and
6 Fukushima Daiichi, do we still need a bigger mess?
7 Nuclear power is not the answer. Are we going to
8 wait for Bruce, Darlington and Pickering? Can we
9 accept the limitations of our technology and our
10 fat-ass comfort conveniences? Will we leave our
11 planet as clean as we found it? Are we going to
12 wait for Bruce, Darlington and Pickering? There
13 are about 500 nuclear stations in the world. How
14 can we save them from human error, technical
15 glitches, terrorist and natural disasters?

16 CHAIRPERSON GRAHAM: Mr. Kalevar,
17 your time is up.

18 MR. KALEVAR: Let me just finish
19 this.

20 CHAIRPERSON GRAHAM: How long --
21 how much longer is your poem?

22 MR. KALEVAR: One minute.

23 CHAIRPERSON GRAHAM: Half a
24 minute.

25 MR. KALEVAR: Must we build more

1 or shut them down? Are we going to wait for Bruce,
2 Darlington and Pickering? Has anyone ideas for a
3 leak-proof container that doesn't leak for a
4 millennia? As an engineer, I say it is not
5 possible, is it? Are we going to wait for Bruce,
6 Darlington and Pickering? Live simply and think
7 highly is the old Indian way; or live highly and
8 think only after you're finished shopping, that is
9 another way. Will we end shopping for nuclear
10 stations? Are we going to wait for Bruce,
11 Darlington and Pickering now to blow up?

12 Thank you.

13 CHAIRPERSON GRAHAM: Thank you
14 very much for your intervention. We'll go right
15 now to questions.

16 Madame Beaudet, do you have any
17 questions?

18 --- QUESTIONS BY THE PANEL:

19 MEMBER BEAUDET: Thank you, Mr.
20 Chairman.

21 I have a question for CNSC with
22 respect to a few points that were brought up by Mr.
23 Kalevar and it concerns the radiation dose from
24 background sources.

25 In the Environmental Impact

1 Assessment, section 4.7 describes the emissions
2 from natural radiation backgrounds and also the
3 contribution that the -- the existing site at
4 Darlington and the new site will have. The
5 discussion in -- in this section is always in -- in
6 relation to whatever has been measured in the
7 natural environment. And whether it is caused
8 because of natural factors or anthropogenic
9 processes, it always -- always refers to whether it
10 is above or -- or below what is measured.

11 My question is -- this is the
12 baseline that we have now. In 40 years from now,
13 hopefully, the anthropogenic processes will have
14 reduced -- like the nuclear tests have -- there's
15 an indication that the quantities have already
16 reduced.

17 So what would be the benchmark
18 then for assessing operational activities from OPG
19 with CNSC?

20 DR. THOMPSON: Patsy Thompson, for
21 the record.

22 The CNSC does not consider natural
23 background or radioactivity left from weapons
24 testing as a benchmark to judge acceptability of
25 facilities that are licensed by the CNSC.

1 Our requirements are based on
2 meeting all regulatory limits and then keeping
3 doses through safety systems and procedures to
4 levels much lower than the public dose limit and
5 the public dose limit is one milliSievert.

6 So we don't rely on those
7 comparisons as a way of judging performance. The
8 performance is based -- is evaluated against the
9 public dose limit and the programs that are in
10 place to limit doses well below the public dose
11 limit.

12 MEMBER BEAUDET: I guess my
13 question referred also would there be a revision of
14 those standards?

15 DR. THOMSPON: Patsy Thompson, for
16 the record.

17 The CNSC dose limits were adopted
18 in 2000 when the radiation protection regulations
19 were adopted, and the current public dose limit of
20 one milliSievert was reduced from the dose limit
21 that existed prior to that which was five
22 milliSievert's.

23 And the dose limits were reduced
24 essentially, taking into consideration that nuclear
25 facilities should have -- should not pose a

1 measurable risk to members of the public and that
2 one milliSievert was within the range of natural
3 background radiation.

4 That's how the dose limit was set
5 by the recommendations from the International
6 Commission on Radiation Protection and the CNSC
7 adopted the dose limit of one milliSievert in our
8 regulations.

9 The most recent International
10 Commission on Radiation Protection recommendations
11 have not recommended a change in dose limit, but we
12 continue to review the work of international
13 agencies and review the scientific literature to
14 make sure that the CNSC regulatory framework is
15 appropriate and continues to be protective of
16 public health and of the environment.

17 MEMBER BEAUDET: Thank you.

18 Thank you, Mr. Chairman.

19 CHAIRPERSON GRAHAM: Mr. Pereira?

20 MEMBER PEREIRA: No questions, Mr.
21 Chairman. Thank you.

22 CHAIRPERSON GRAHAM: Thank you
23 very much, Mr. Pereira.

24 Now we go to OPG. Do you have any
25 questions?

1 MR. SWEETNAM: No questions, Mr.
2 Chair.

3 CHAIRPERSON GRAHAM: CNSC, do you
4 have any questions?

5 MR. HOWDEN: Barclay Howden,
6 speaking.

7 No questions from us.

8 CHAIRPERSON GRAHAM: Government
9 participants, any departmental government, any
10 questions? I see no one coming up.

11 Then from the floor -- I don't see
12 any. We have none.

13 So with that, I would like to
14 thank Mr. Kalevar for his presentation this
15 afternoon and wish him the best at the rest of the
16 hearings because I presume you'll be around.

17 Thank you very much for coming
18 today, sir.

19 MR. KALEVAR: Thanks.

20 CHAIRPERSON GRAHAM: I will now
21 move to the next two presentations, who are each
22 registered to make an oral statement ---

23 MR. SAUMURE: Are we doing the
24 undertakings before?

25 CHAIRPERSON GRAHAM: Yes. Okay, I

1 guess I'm rushing myself here. We're going to do
2 the undertakings, which we said we were going to do
3 this afternoon.

4 First, have your seat and we'll --
5 no, no, go ahead and take your place but we're
6 going to do the undertakings and I think DFO has a
7 couple of things that they want to bring up with
8 regard to those also.

9 So I'll turn the chair over to Mr.
10 Saumure.

11 --- UNDERTAKING STATUS:

12 MR. SAUMURE: Thank you very much,
13 Mr. Chairman.

14 I will first turn to OPG, if OPG
15 is ready to speak to Undertaking Number 23, which
16 dealt with the types of responders that are
17 included in the mutual aid agreement included
18 within the ERAP.

19 MS. SWAMI: Laurie Swami.

20 There is a number of responders
21 that are involved in a transportation emergency
22 response program. We have mutual aid agreements
23 with our industry partners, which would include
24 Bruce Power, New Brunswick Power, Hydro Quebec,
25 AECL, and each of those participants of that mutual

1 aid agreement would respond within a specific
2 jurisdiction close to the facilities that they
3 operate.

4 In addition to OPG or whoever the
5 industry responder would be, there's a number of
6 other responders involved, which would be the local
7 police, fire departments and emergency response
8 within a community, and so those response networks
9 are set up and are available to respond to a
10 transportation emergency.

11 As part of our program we have
12 training for our staff who would be responsible to
13 respond in the event of an emergency, whether it's
14 from any of the companies that I've already
15 mentioned, that program is in existence. It
16 includes not only training but drill programs to
17 ensure that staff understand their responsibilities
18 and know how to deal with an emergency response
19 should that event take place.

20 We also have a program of
21 notifying communities as transportation would take
22 place, and that information is also available.

23 CHAIRPERSON GRAHAM: Thank you.

24 Mr. Saumure, do you want to go to
25 the next one?

1 MR. SAUMURE: Yes.

2 CHAIRPERSON GRAHAM: First of all,
3 do either one of my panel colleagues have any
4 questions?

5 Then, Mr. Saumure, the next one
6 please.

7 MR. SAUMURE: I would ask OPG if
8 they can speak to Undertaking Number 24, which
9 dealt with volunteers as defined under the Canada
10 Labour Code, whether or not they're entitled to
11 compensation in the case of injury.

12 MR. SWEETNAM: Albert Sweetnam,
13 for the record.

14 To provide some context, the
15 annual effective dose limit for a nuclear energy
16 worker is established in the radiation protection
17 regulations and it's established at 50
18 microSievert's every 12 months.

19 In emergency circumstances the
20 annual effective dose limit is increased in the
21 regulations to 500 microSievert's.

22 If circumstances indicate a
23 potential for our workers to receive more than the
24 500 microSievert's, the workers may voluntarily
25 receive a higher effective dose in order to save or

1 protect life.

2 OPG would ensure that such
3 employee who acts to voluntarily be exposed to
4 greater personal harm for the benefit of the safety
5 of the public, their coworkers and their families
6 they would not suffer financially as a result of
7 their courage and bravery.

8 Such an employee would continue to
9 be eligible to receive coverage under OPG's benefit
10 programs. For example, they will remain eligible
11 for short-term and long-term employment benefits.
12 They would also remain eligible for other benefits
13 such as additional medical coverage, dental
14 coverage and prescriptions.

15 In terms of the workplace
16 compensation benefits, we also understand that
17 their actions would be considered to be within
18 their employment and thus they would also receive
19 the payments to which they would be entitled under
20 that legislation.

21 CHAIRPERSON GRAHAM: Thank you,
22 Mr. Sweetnam.

23 I was part of that question and I
24 guess I cover what you're saying, and you've
25 covered part of it, but I was also referring to

1 volunteers such as -- and I know you covered the
2 volunteers who volunteer in your employment.

3 But we heard the other day that,
4 say, there's a volunteer fire department and if one
5 of those volunteers as a volunteer fire department,
6 not an employee of the municipality, was there just
7 as a volunteer and he received this type of -- he
8 was in an accident or as you described, how does
9 that compensation work for them?

10 MR. SWEETNAM: Albert Sweetnam,
11 for the record.

12 First of all, I'd like to correct
13 myself. I said microSievert. It should be
14 milliSieverts.

15 In terms of volunteers that are
16 not OPG employees, they would be covered under the
17 Workman's Compensation benefits. In addition to
18 that, they would also be covered under the benefits
19 of either the municipality or the region that they
20 work for.

21 And if that were not the case then
22 there would be a special discussion with OPG in
23 terms of how we could deal with that specific
24 situation.

25 But our understanding is that

1 their insurance policies are similar to what OPG
2 has in place, both at the region and at the
3 municipality.

4 CHAIRPERSON GRAHAM: But as a last
5 resort OPG will cover it. Is that what the
6 understanding is? If that volunteer had no other
7 coverage and nothing to fall back on, if, say, the
8 volunteer was unemployed at the time, and so on, or
9 there wasn't coverage by a municipality OPG would
10 hold -- would be responsible for the liability; is
11 that what you're saying?

12 MR. SWEETNAM: Albert Sweetnam,
13 for the record. That's correct.

14 CHAIRPERSON GRAHAM: Thank you.
15 Mr. Saumure.

16 MR. SAUMURE: I will now turn to
17 CNSC. My understanding is that for Undertaking No.
18 20, which dealt with work at tritium, exposure,
19 monitoring methodologies in Canada and bio-analysis
20 results of tritium monitoring. The documents have
21 been received by the Secretariat and will be posted
22 shortly. So Undertaking 20 has been completed. So
23 has Undertaking No. 32, which was completed
24 yesterday.

25 I will now ask CNSC if they can

1 speak to Undertaking No. 33, and I understand it is
2 to provide a specific timeline as to when that
3 information or document will be available.

4 DR. THOMPSON: Patsy Thompson for
5 the record. Just to confirm number 33 as the
6 groundwater monitoring data, as well as data --
7 tritium data for milk and other produce.

8 MR. SAUMURE: It is to provide a
9 measured range of concentrations of tritium in
10 groundwater and tritium levels in milk and produce
11 produced in areas near the plant.

12 DR. THOMPSON: We are proposing to
13 have this information back to the panel on Monday,
14 which would be, I think, April 4.

15 MR. SAUMURE: Thank you. I would
16 now just like to deal with Undertaking No. 31,
17 which was an undertaking by the Society of Energy
18 Professionals, which dealt with to define lifecycle
19 as depicted in Appendix 1 of their written
20 submission. Just to let intervenors and public
21 know that the document has been received and the
22 answer will be posted shortly on the registry.

23 I will now turn to Undertaking No.
24 35, with DFO. Undertaking 35 was asking for
25 example of a Section 36 -- subsection 36(2),

1 authorization under *The Fisheries Act*.

2 CHAIRPERSON GRAHAM: DFO, would
3 you identify yourself please.

4 MR. HOGGARTH: -- for the record.
5 My understanding it was actually Section 35(2) of
6 *The Fisheries Act*. And I have examples here for
7 the panel. I've also included in the package the
8 examples of authorizations. I've included our
9 Practitioner's Guide to Writing Authorizations.
10 And that will give you insight into the different
11 sections with an authorization and what staff do
12 with them.

13 I don't know if you've got down --
14 I've got an Undertaking 28 as well.

15 MR. SAUMURE: Yes, we do.

16 CHAIRPERSON GRAHAM: On the first
17 one are you prepared to -- is that in written form,
18 or are you prepared to read it into the record.
19 It's his written form? Thank you very much. Now
20 go to the next one.

21 MR. HOGGARTH: Yeah, and under --
22 again, Tom Hoggarth for the record. Undertaking 28
23 with question specifically around how does DFO as
24 an RA meet our needs for follow-up monitoring
25 program. There was a specific question about

1 species at risk and then beyond species at risk as
2 well.

3 So if it's an aquatic species at
4 risk that's not listed federally, but is listed
5 provincially, DFO will work with the province to
6 ensure that any conditions placed within our
7 authorization will be consistent with provincial
8 objective and guidance.

9 With respect to environmental
10 protection matters outside our mandate, DFO would
11 discuss these with other responsibilities, and in
12 this case, CNSC and Transport Canada to determine
13 which regulatory tool would most appropriate on an
14 issue -- which tool would be the most appropriate
15 on an issue-by-issue basis.

16 And for non-aquatic species at
17 risk as an example, we've already discussed at this
18 hearing that CNSC has identified their licensing as
19 a potential option for doing that. So DFO will be
20 working with CNSC and Transport Canada through the
21 follow-up monitoring to figure out which is the
22 best instrument for protecting or ensuring follow-
23 up monitoring.

24 And just as -- I've just got one
25 final comment as well. I didn't want -- yesterday

1 we had talked about compliance issues at the
2 existing Darlington with Section 32 of *The*
3 *Fisheries Act*, and I didn't want to leave the panel
4 with the impression that nothing's being done about
5 it. So in 2007 Fisheries and Oceans Canada
6 published our policy or our position statement on
7 how we will work with the industry to get existing
8 facilities in compliance with *The Fisheries Act*.

9 And through this process we have
10 been working with OPG, and part of it has included
11 a memorandum of understanding has been developed
12 between DFO and the Ontario Power Generation, and
13 through this memorandum of understanding senior
14 levels of both DFO and OPG meet regularly. One of
15 the issues that they are meeting regularly and
16 discussing is impingement entrainment issues. And
17 as well DFO will be using the refurbishment EA
18 process for the existing Darlington site, as well
19 as another avenue to be working with OPG through a
20 public forum to work on getting the compliance
21 issues dealt with. Thank you.

22 MR. SAUMURE: Thank you. And that
23 is all with regard to the undertakings for today,
24 Mr. Chairman.

25 CHAIRPERSON GRAHAM: Thank you

1 very much DFO, and thank you very much to OPG and
2 CNSC for providing us with that information. And
3 thank you for getting that procedural -- those
4 procedural matters out of the way today, Mr.
5 Saumure.

6 Now, I will move to the next two
7 presentations, and those -- each of these are oral
8 presentation. And this is how the oral
9 presentations work. Only members of the panel will
10 ask questions after each oral statement. And the
11 first oral statement we have today is Ms.
12 Fernandez. Ms. Fernandez, the floor is yours, the
13 button is right there. Thank you.

14 --- PRESENTATION BY MS. FERNANDEZ:

15 MS. FERNANDEZ: Thank you. Good
16 afternoon. I would like to begin by thanking the
17 panel for your consideration of my input into this
18 process. My name is Cecilia Fernandez, and I am
19 here on behalf of my group located in Sault Ste.
20 Marie, Ontario, called Clean North, which is also
21 known as the Sault and District Recycling
22 Association.

23 Clean North's goal is to promote
24 environmental protection through reduction, reuse,
25 and recycling of residential and industrial waste

1 in Sault Ste. Marie and the Algoma District. We
2 were established in 1989 and at last count we're
3 200 strong, all volunteers working mainly at the
4 community level, but also at provincial and federal
5 levels where we input on policy that is of interest
6 to our members, such as the topics of waste
7 diversion, mining, forestry, nuclear power
8 generation and fuel waste management. And so I
9 hope to share with the panel some insights or some
10 information from the citizens group's perspective.

11 Unfortunately the concern that we
12 are asking the panel to consider today is similar
13 to the concern that we brought to the Seaborn Panel
14 Hearings, now over ten years ago when we were
15 intervenors in Phase 3 of the community hearings
16 regarding the then concept of deep geological waste
17 disposal. And I'll focus all of my presentation on
18 the -- on the nuclear fuel waste.

19 Our concern at the time was that
20 the concept as it stood did not provide us with a
21 confidence level in terms of safety that
22 communities in northern Ontario, both Aboriginal
23 and non-Aboriginal deserve, and that it would be
24 northern Ontario communities that would be targeted
25 to take the waste in exchange for economic

1 incentives.

2 The scene is only slightly
3 different now. We are still being asked to comment
4 on a concept or what we see as a concept, because
5 of the uncertainty as to which of the three
6 possible reactor designs we will need to project
7 our scenarios from. However, added to this concept
8 is still the outstanding concept of dealing with
9 the nuclear fuel waste, which is funnily enough,
10 the only thing of which we are certain, that is
11 that nuclear fuel waste will still be produced, and
12 it will still need to be dealt with.

13 Unfortunately when we turn to the
14 nuclear waste management technical support
15 documents for some guidance on how nuclear fuel
16 waste will be dealt with, we find ourselves
17 rerouted to the original concept of deep geological
18 disposal, now termed to adapt a phase management,
19 which in its former life, as a concept was already
20 found -- and I quote from the Seaborn's findings,
21 "From a social perspective, safety of the ACL
22 concept has not been adequately demonstrated."

23 So in essence, this is how we
24 feel. That we are commenting on the approval of
25 licensing for a concept which in some partly lies

1 on another concept to deal with the waste whose
2 concept has already been deemed rejected -- has
3 been rejected as unacceptable, which coincides very
4 nicely with the fact that none of the above
5 technologies is currently operating anywhere in the
6 world.

7 As my first point, I hope that the
8 panel can emphasize that, as a citizen's group, we
9 are put in a strange position here.

10 We are respectful of the panel's
11 time and don't want to waste it in what we consider
12 a very important decision.

13 But at the same time, we fail to
14 see how we can proceed any further without
15 something solid for us to deal with.

16 Creating new waste before a
17 solution has been agreed to, or implemented even
18 for existing waste, is problematic. And we've
19 heard that a couple of times today, I think.

20 It is our opinion that new
21 reactors should no longer be constructed in the
22 absence of a safe means of dealing with the waste,
23 and this is a principle that we would like the
24 panel to retain or think about as you proceed
25 through your hearings.

1 Having said this, let's accept for
2 the basis of analysis that, in fact, the
3 responsibility for the long-term used fuel
4 management lies with the Nuclear Waste Management
5 Organization and its approved APM approach, which
6 is stated in the TSD.

7 Well, even with that statement,
8 there are inherent problems.

9 For instance, in addressing the
10 waste that would be produced from the new reactors,
11 we understand that the NWMO APM was originally
12 designed to include current and projected stocks of
13 nuclear fuel wastes from the existing inventory of
14 reactors and not for any more than that.

15 With respect to the waste
16 generated by new additions to the inventory, the
17 advisory committee of the NWMO made the following
18 statement to the government in 2005, and I'll just
19 read the quote:

20 "The advisory council would
21 be critical of an NWMO
22 recommendation of any
23 management approach that
24 makes provision for more
25 nuclear fuel waste than the

1 present generating plants are
2 expected to create, unless it
3 were linked to a clear
4 statement about the need for
5 broad public discussion of
6 Canadian energy policy prior
7 to a decision about future
8 nuclear energy development."

9 The potential role of nuclear
10 energy in addressing Canada's future electricity
11 requirements needs to be placed within a much
12 larger policy framework that examines the costs,
13 benefits, and hazards of all available forms of
14 electrical energy supply.

15 And that framework needs to be
16 made provision -- make provision for comprehensive
17 informed public participation.

18 And I was very happy to hear
19 earlier some questions brought up around energy
20 policy and looking at that in the -- in the bigger
21 picture.

22 The advisory council also
23 highlighted that new generation three reactors, the
24 reactors that are being proposed, would use also
25 enriched fuels, not natural uranium, unlike the

1 current can-dos, and that enriched fuels would
2 create additional hazards that have not been
3 assessed during the NWMO's consultations that took
4 place between the years 2002 and 2005.

5 And, again, the advisory council
6 elaborated by saying, A nuclear expansion scenario
7 would likely entail fuel enrichment and new reactor
8 technology with spent fuel possessing new
9 characteristics.

10 These could affect the performance
11 of the disposal technology and introduce a change
12 in the outlook on reprocessing.

13 Such technical aspects were not
14 considered by the NWMO in its study, which focused
15 on existing facilities using natural uranium fuel.

16 Any significant change in the
17 amount or type of used fuel to be managed, whether
18 due to phase out or expansion of the nuclear
19 program, should trigger a review of the work
20 undertaken by the NWMO to date.

21 So far we see no such review even
22 alluded to in the TSD.

23 So I'll be very short. This is --
24 this is the end.

25 So in the end, we would suggest to

1 the panel that OPG has not demonstrated that they
2 have dealt adequately, or even with any certainty,
3 what the issue of nuclear fuel waste produced from
4 the new generation or proposed reactors.

5 The confidence that NWMO will deal
6 with the waste is not satisfactory because of the
7 current unknowns of the hazardous product mix of
8 the waste and the fact that the NWMO has not
9 accounted for the additional volume in their APM
10 process.

11 There's so much uncertainty in
12 this proposal.

13 Even with a -- with a municipal
14 landfill, you would have to be able to characterize
15 the waste. And we don't even see that sort of
16 characterization in any of the documents, and we
17 would certainly welcome that information.

18 And we understand that this is
19 because there is no current technology in use of
20 these reactors, and so there's no data on what
21 waste they might produce.

22 We can speculate, though, that
23 they're going to be higher radioactivity and higher
24 thermal heat, as was stated by another presenter
25 this morning.

1 But other than that, we really
2 don't know the characteristics of the waste.

3 In conclusion, we have -- we have
4 one request for the panel, it's a big one, to
5 reject the request for a license to OPG.

6 There's just simply not enough
7 information, we feel, to proceed.

8 And we think it's within the
9 panel's duty, if they consider it possible, to
10 reject the proposal on that ground, that there's
11 just not enough information to proceed.

12 Failing this -- just like another
13 group this morning, we have a second option that we
14 hope that you'll consider that -- and that is based
15 on following the principle of due diligence.

16 We ask the panel to find some
17 certainty, among so much information left
18 unattended to, with respect to nuclear fuel waste
19 management.

20 For example, what risks might
21 these new wastes pose to the environment and human
22 health? How would these risks be mitigated by the
23 proposed APM? What are the expected additional
24 financial costs necessary to deal with these extra
25 hazardous wastes so that tax payers may be informed

1 of the full cost of this project and that this
2 information be available and reviewed by the public
3 through public consultation before OPG is allowed
4 to proceed?

5 We appeal to the panel to do this
6 now, rather than later, as we may find the risks
7 too high or the costs too exorbitant to proceed
8 further.

9 And with that, I just respectfully
10 submit these comments to the panel, and I thank you
11 for your attention.

12 CHAIRPERSON GRAHAM: Thank you
13 very much. You were right on 10 minutes, so we did
14 very well.

15 Open the floor. The procedure is
16 questions only from panel members.

17 So, Mr. Pereira, you're first.

18 --- QUESTIONS BY THE PANEL:

19 MR. PEREIRA: Thank you for your
20 presentation and the issues you raise.

21 I'll turn to OPG and ask for their
22 comments on two -- three of the issues actually.

23 One, the fact that the -- there's
24 no characterization in your TSDs on the -- on the
25 new -- on the fuel in the new -- that enriched fuel

1 used in the reactors included in the scope of your
2 plant parameter envelope.

3 Secondly, the observation that the
4 new fuel waste is not included in the NWMO original
5 scope, and yet in your -- in your EIS, you refer to
6 the waste being destined eventually to the used-
7 fuel repository.

8 And OPG has -- the claim that OPG
9 has not dealt with fuel waste from the new reactors
10 in its overall presentation in the EIS.

11 So, OPG, could you comment on
12 those three points?

13 CHAIRPERSON GRAHAM: OPG?

14 MR. SWEETNAM: Albert Sweetnam.

15 I'll ask Dr. Roman to address the
16 first part of this question.

17 DR. ROMAN: Herminia Roman, for
18 the record.

19 In terms of used-fuel
20 characterization for the reactors, proposed
21 reactors, we have provided a summary in the TSD.

22 But in addition to that, we have
23 submitted technical -- there was a reference in the
24 TSD that was requested that we provide it for
25 public post on the CEAA website where it has

1 various specific description of the
2 characterization of each of the fuels that we are
3 studying for the Darlington nuclear project.

4 So we do have information about
5 this fuel provided by the vendors. And we have
6 considered upper bounds for this fuel.

7 That's -- I think that's answered
8 your question.

9 MEMBER PEREIRA: No.

10 The point was the new fuel waste
11 was not included in the scope of the waste
12 repository proposal originally put forward by the
13 NWMO in their consultation.

14 So it was only for existing fuel
15 for the reactor that existed at that time.

16 MS. ROMAN: Hermina Roman for the
17 record. That's correct. However the APM allows,
18 and I believe that had been done, some assessments
19 already to -- looked at PWR type of reactors to be
20 included into the assessment on how they looked
21 into the assessment that they have been done for
22 CANDU reactors. But the intent is that the APM
23 will adapt to new type of reactors as they get
24 approved.

25 MEMBER PEREIRA: I think the point

1 was that it was not part of the public consultation
2 that was undertaken by the NWMO in bringing forward
3 the APM so I don't know whether OPG wants to
4 comment on that?

5 MR. SWEETNAM: Albert Sweetnam for
6 the record. The fuel from the light water reactors
7 that we are considering under this hearing are very
8 similar to the fuel that will be managed in the
9 geological repositories in both Sweden and Finland.
10 And at the conceptual level, the repository design
11 that NWMO is working on is very similar to the
12 designs that are under development in a lot of
13 countries with light water reactors. So NWMO has
14 indicated that the fuel that would come out of the
15 light water reactors that are under the bounding
16 envelope would be accepted in the APM.

17 CHAIRPERSON GRAHAM: Ms.
18 Fernandez, do you accept that response?

19 MS. FERNANDEZ: Well, I guess to
20 the first point, in terms of -- I thank you for the
21 reference in terms of the website on the specific
22 description and the characterization of the fuel.
23 I wonder if you've extended that characterization
24 to include health impacts on humans or the
25 environment and any of those inherent risks?

1 MS. ROMAN: Hermina Roman for the
2 record. Yes, and the TSD itself goes through
3 normal operation and accidental malfunctions
4 related to used fuel and any possible emissions or
5 any possible emissions through accidents at the
6 processing or during the storage of used fuel.

7 MS. FERNANDEZ: Sorry, and that
8 would be in the boundary conditions that you
9 defined?

10 MS. ROMAN: Correct for each --
11 for each reactor type.

12 MS. FERNANDEZ: Thank you. The
13 other question I just had, if I may, is in terms of
14 the work that you've done with the APM assessments
15 you were saying, that you have included the
16 enriched fuel waste assessment. I wonder if that
17 assessment -- perhaps it's being done by the end of
18 your -- I wasn't quite sure, but is that based on
19 modelling because I am not aware of any of these
20 reactors actually existing and that you can do that
21 kind of assessment.

22 CHAIRPERSON GRAHAM: CNSC, will
23 you comment on that?

24 MR. HOWDEN: Barclay Howden
25 speaking. I'm going to ask Dr. Newland to comment.

1 I think the -- the reactors being proposed are new
2 models that are being built, but they're based on
3 previous designs of PWR fuel and I'm not aware if
4 the fuel is different, but I'll ask Dr. Newland
5 whether he can confirm that.

6 DR. NEWLAND: For the record, Dr.
7 Newland. Could I get clarification of the
8 question? This is modelling of the fuel in the
9 reactors?

10 MS. FERNANDEZ: Yeah, I think
11 there was a comment from OPG stating that they have
12 been some assessments being done on the fuel that
13 is -- that is being or the by-products of the fuel
14 that is -- that are being used by the new proposed
15 reactors.

16 CHAIRPERSON GRAHAM: For the
17 record, that was Ms. Fernandez. I guess --

18 MS. FERNANDEZ: Sorry.

19 CHAIRPERSON GRAHAM: -- for the
20 transcripts --

21 MS. FERNANDEZ: Cecilia Fernandez
22 for Clean North.

23 CHAIRPERSON GRAHAM: Mr. Newland?

24 MR. NEWLAND: For the record, Dave
25 Newland. I'll guess I'll response in a rather

1 generic way. The fuel that is used in both the
2 AP1000 and the EPR is a very standard 17 by 17 fuel
3 assembly fuel that is -- has been around for
4 probably 20 years. So in terms of the basic
5 understanding of the fuel and the by-products of
6 the fuel and how it operates under normal and
7 accident conditions is well-understood and there is
8 data available. The extent to which that is in the
9 public domain, I don't know.

10 MEMBER PEREIRA: Thank you. And
11 one more question, Ms. Fernandez talked about the
12 concept for geological disposal was considered by
13 the Seaborn Panel and at that time the Seaborn
14 Panel concluded that safety had not been
15 demonstrated, and her concern is that we now have
16 basically the same concept coming forward again.
17 Has the CNSC considered the implications of the
18 conclusions of the Seaborn Panel and how that
19 applies to the concept being brought forward now?

20 MR. HOWDEN: Barclay Howden
21 speaking. I am going to ask Don Howard to speak to
22 that because he is fully aware of the implications
23 of the Seaborn Panel.

24 CHAIRPERSON GRAHAM: Mr. Howard?

25 MR. HOWARD: Don Howard. The

1 Seaborn Panel basically looked at the ACL concept
2 for deep geological disposal back in the 80s and
3 basically in 1998 the panel concluded that from a
4 technical perspective, the safety of the ACL
5 concept has been adequately demonstrated. It also
6 concluded that from a social perspective, the ACL
7 concept had not been demonstrated to have broad
8 public support. So that was the difference. So
9 now what the NWMO has done with the APM project is
10 to further the technical feasibility of the deep
11 geological repository as well as looking at the
12 social acceptability of a repository.

13 MEMBER PEREIRA: And you're
14 reading an extract from the Seaborn Panel report;
15 are you?

16 MR. HOWARD: Don Howard, no, these
17 are our own notes that we made up.

18 MEMBER PEREIRA: Your own notes.
19 Thank you.

20 CHAIRPERSON GRAHAM: Thank you,
21 Mr. Pereira. Madam Beaudet?

22 MEMBER BEAUDET: My questions have
23 already been answered. Thank you, Mr. Chairman.

24 CHAIRPERSON GRAHAM: Thank you
25 very much, Ms. Fernandez. Thank you very much for

1 coming and your oral presentation -- oral
2 statement. The rules say that we are allowed to
3 have oral statements, time permitting and as I
4 mentioned a minute ago we have one more. I am
5 informed we have two more. We have -- the next one
6 is Mr. Abernethy for an oral presentation. Mr.
7 Abernethy, would you take the podium please? Do
8 you have -- you don't have overheads so it's just a
9 presentation? Thank you very much.

10 --- PRESENTATION BY MR. ABERNETHY:

11 MR. ABERNETHY: Is this live?
12 Yes. Well, first of all, let me welcome you to
13 Clarington. Thank you, Mr. Chairman and Members of
14 the panel for this opportunity to speak to you
15 today about the Darlington New Nuclear project.

16 I speak to you today as an
17 individual who has held a number of roles in this
18 community, as a resident for the past 30 years and
19 as a local business person in this community during
20 that time and I also speak to you as a former
21 elected official.

22 I'm here today to share my
23 opinions about the new build project. I'm not here
24 officially representing any groups or any -- any
25 other residents. I believe that my past roles in

1 the community have allowed me to gauge the pulse
2 and opinions of our residents and I hope my
3 comments today may be of interest to you in your
4 deliberations and decisions.

5 First a little about myself. I've
6 been a resident of this community since 1981. In
7 1987 my family moved into our new home on Courtice
8 Road just up the street from where we're meeting
9 here today. I had just left my position as a
10 senior manager with Royal LePage Real Estate
11 Services to found the family business, the St.
12 Anne's Pure Spring Water Company which we began as
13 a cottage industry and grew into the fourth largest
14 bottled water company in the GTA. And in 1999 we
15 sold our family business to the Denon Group.

16 And in 1987 another interesting
17 thing was happening in our community and that was
18 the Darlington nuclear generating station was well
19 under construction and about to be commissioned.

20 I remember years earlier, as the
21 plant was being constructed, it was an exciting
22 time for our community. There was an influx into
23 our community of new people working with the
24 project and a definite buzz all around due to the
25 positive impact on local businesses.

1 My personal experience managing a
2 real estate agency was very positive.

3 It's true there were concerns
4 within the community and negative attention on the
5 project, even a couple of protests. I know one
6 person who climbed and chained herself to a hydro
7 tower. I think she's a little older and wiser
8 today, as are most people who live within our
9 community.

10 Much of that must be credited to
11 the OPG's consistent and thorough community
12 communications program and to their unblemished
13 record of safely operating the Darlington facility.

14 OPG staff are always present at
15 many, if not all, Board of Trade and community
16 events with information booths and staff available
17 to provide and answer questions about OPG
18 operations.

19 As well, many OPG employees live
20 right here in our community. It may be difficult
21 to find a street or a community that doesn't have a
22 resident that works for OPG or relative of an OPG
23 employee.

24 Their employees are great
25 ambassadors and that has helped to build the high

1 level of trust that our community has in the OPG
2 Darlington operation.

3 Perhaps my most personal
4 experience with OPG, and specifically the new
5 build, began in 2006 when two things happened.

6 One, I was elected to the Office
7 of Mayor of Clarington and the Government of
8 Ontario announced that two new nuclear units would
9 be built on an existing site in Ontario and OPG
10 began their public consultation on the
11 environmental assessment for the Darlington new
12 nuclear project.

13 I was the Mayor of Clarington for
14 four years, from 2006 to 2010, so the majority of
15 the new build EA public consultation took place
16 during my term. I learned a great deal about the
17 project and I was in a unique position that allowed
18 me to gain a very good understanding of how
19 residents were feeling about this project.

20 As an elected official and member
21 of the community I can confirm the public
22 consultation and communications done in support of
23 the EA process were very extensive. Every citizen
24 had numerous opportunities to participate in the
25 process, to receive information, to ask questions

1 and have their voice heard.

2 OPG's communications program
3 consisted of numerous community information
4 sessions, newsletters, advertisements in the local
5 paper, presentations to our municipal and regional
6 counsels, most of which were televised on local TV.

7 OPG also reached out to the
8 community. They didn't just expect that the
9 residents would come to them with questions. OPG
10 opened a community information kiosk in our indoor
11 mall to make it even more convenient for the
12 residents to find information and answers to their
13 questions.

14 During my four-year term I can
15 tell you that in my four years being an elected
16 official in Clarington OPG's operations and the
17 idea of a new build project were never an issue of
18 concern for the residents of our community. I
19 heard little to no negative comments or concerns
20 about OPG's current operations or the new build
21 project, and what negative comments I did hear, for
22 the most part, were from people residing outside of
23 Clarington and even outside of Durham Region.

24 The most common questions and/or
25 concerns had two themes, one was, when are you

1 going to build it, and the second was, why can't
2 the federal and provincial governments agree.

3 During my term in office our
4 community had another significant EA process
5 underway to determine how best to process our
6 municipal waste. You may have heard of this. I
7 will share with you what I commonly refer to as my
8 two fields over story, if I may.

9 At the same time OPG was
10 conducting the EA for the new build project the
11 regions of York and Durham were also conducting an
12 EA for a proposed energy from waste facility or
13 garbage incinerator located in Clarington just west
14 of the existing Darlington station.

15 It was a lengthy four-year
16 process. An enormous amount of time was spent
17 reviewing reports, listening to experts and
18 listening to public delegations made, for the most
19 part, by a very small but vocal group of anti-
20 incinerator protestors.

21 During my four-year term as Mayor
22 the EA for the incinerator dominated the council
23 and committee meetings of both the Municipality of
24 Clarington and the Durham Region councils and it
25 dominated the local newspapers.

1 I recall one council meeting
2 starting at 9:30 in the morning that finished at
3 3:00 a.m. the following day with only a few breaks.

4 While the EA to site an
5 incinerator in Clarington was ongoing there was
6 another, and in my opinion, a more significant EA
7 process being conducted within the Municipality of
8 Clarington, that being the EA to site two
9 additional nuclear reactors.

10 Believe it or not, there wasn't a
11 whisper of discontent by the members of our public
12 about building those reactors. No public
13 delegations at any of our local regional council
14 meetings, nor was there any reports of discontent
15 in our local newspapers about concerns that two
16 additional reactors could be built in our
17 community. And this was taking place just two
18 fields over from the proposed garbage incinerator
19 site.

20 The point of my story is that in
21 Clarington our citizens seem to believe that how we
22 process our garbage is more contentious than how we
23 generate our electricity. And Clarington Council
24 has documented well the history to prove that
25 point.

1 As former Mayor and real-estate
2 broker I wanted to touch on the issue of cooling
3 towers. In my opinion, cooling towers would not be
4 a welcomed addition to our local landscape.

5 Cooling towers emitting steam are
6 large features. Large features will always
7 dominate the landscape of any community. For
8 example, as big as Toronto is, the CN Tower is the
9 most dominant feature in the Toronto skyline and as
10 is a freight train travelling through the prairies
11 of Saskatchewan. Communities are known for the
12 significant features of their landscape. There is
13 no doubt that cooling towers would be a dominant
14 and significant feature of Clarington's landscape.

15 To the non-Durham residents
16 travelling Highway 401 or those who are considering
17 to purchase homes or businesses in Clarington and
18 perhaps even Durham Region, cooling towers will
19 present a negative impression to most people.

20 Although I don't claim to be an
21 expert on the technology it's my understanding that
22 a cooling tower plume would be visible from the Oak
23 Ridges Moraine some 10 to 15 kilometres north of
24 where we are today.

25 It is fair to say that most people

1 residing in Clarington do not live in fear of the
2 Darlington nuclear facility but most people living
3 outside of Clarington probably do.

4 People as a whole generally fear
5 the unknown. So why create an unnecessary
6 challenge for the people in the businesses of our
7 community?

8 I realize that there are
9 environmental pros and cons to both cooling towers
10 as well as the once-through cooling proposed by OPG
11 and I don't have the expertise to comment on those.
12 However, I do have the expertise to share what I
13 know to be true when it comes to buying property.

14 Cooling towers dominating our
15 local landscape will be an unwelcome addition to
16 our community.

17 So my suggestion to Members of the
18 panel is that you seriously consider options other
19 than large cooling towers emitting steam.

20 In conclusion, overall I believe
21 the project will be good for Ontario and good for
22 my community. This is a huge project. It could
23 very well be the largest infrastructure project in
24 Canada's history.

25 Of course there will be impacts.

1 They have been pointed out throughout the EA work.
2 An example, obviously, is the traffic impacts, and
3 there are others.

4 I have confidence and trust in OPG
5 that they will manage this project and minimize
6 those impacts.

7 I support the new build project. I
8 believe OPG is the right company for the job based
9 on their track record of safety, performance,
10 environmental support and good corporate
11 citizenship in the past, and trust this commitment
12 will continue into the future with the new build
13 project as well.

14 Throughout this hearing you will,
15 no doubt, be hearing from many people and
16 organizations offering their views and opinions
17 about the nuclear industry and this project.
18 That's a good thing. Having been a former elected
19 official I understand the value of public
20 consultation. There will no doubt be opinions both
21 for and against the project. However, I urge you
22 to listen to the views and the attitudes of the
23 people of my community, the people who will host
24 this facility, as they are the people who will be
25 most affected by this project.

1 And finally, a thought I would
2 like to leave you with, and that is I've often
3 wondered if the nuclear age started 50 to 100 years
4 ago, would global warming be a concern like it is
5 today. Thank you very much for your time.

6 CHAIRPERSON GRAHAM: Thank you
7 very much, Mr. Abernethy. Questions from the
8 panel, Madam Beaudet?

9 MEMBER BEAUDET: Thank you for
10 broadening our picture about -- with somebody who
11 has lived here 30 years. I have no questions, Mr.
12 Chairman.

13 CHAIRPERSON GRAHAM: Mr. Pereira?

14 MEMBER PEREIRA: I have no
15 questions.

16 CHAIRPERSON GRAHAM: And you
17 answered my question with regard to cooling towers.
18 I was going to ask, as a real estate developer and
19 a former mayor, what your opinion was, and we have
20 your opinion. I thank you very much.

21 So with that, thank you very much
22 for coming, sir. Thank you for your oral
23 statement. And I, as I said a minute ago, we will
24 entertain one more oral statement, and Mr.
25 Posthumus, the floor is yours, sir. Up front at

1 the table is your -- is your place. Welcome.

2 --- PRESENTATION BY MR. POSTHUMUS:

3 MR. POSTHUMUS: Thank you. For
4 the record, my name is Tienco Posthumus. I'm a
5 resident of Oshawa, have been since 1982.

6 I want to state that, like Mr.
7 Abernethy, I have full confidence in OPG's ability
8 to operate Darlington nuclear in the proposed new
9 build. Having said that, I'm somewhat amazed that
10 particularly last week I didn't see too many
11 members of the general public here. I have
12 personally found this to be very informational.
13 I've learned a lot. And I have seen more members
14 of the public here this year -- or this week.

15 I also want to state that, you
16 know, yesterday we heard an impassionate plea from
17 -- or presentation from Aborigines, and in it they
18 stated their relationship to the land or this good
19 earth, and that's very close to my Christian
20 beliefs of our relationship to God's creation and
21 our responsibilities to it. And one of those is
22 his commission to us or his command to us to be
23 stewards, good stewards of the earth. And I'm
24 pretty impressed with what I've heard, particularly
25 in the first week. The word mitigate came up a

1 CHAIRPERSON GRAHAM: Madam
2 Beaudet?

3 MEMBER BEAUDET: I don't have any
4 questions, thanks.

5 CHAIRPERSON GRAHAM: Well, thank
6 you very much for your comments and thank you very
7 much for your comments towards the panel. And we
8 are -- we are pleased to be in your community.

9 MR. POSTHUMUS: Thank you.

10 CHAIRPERSON GRAHAM: So thank you
11 very much. The next on the agenda is we have a
12 couple or a few written submissions. And we're
13 going to deal with those now. We will move into
14 the written submissions and my co-manager will
15 identify those written submissions by PMD number.
16 And then the panel members may have the opportunity
17 to ask questions.

18 And I think we'll do -- there's
19 four to do that were on the list, and then there's
20 two more. So Debra, would you please read the
21 first four, and then we'll go to questions, and
22 then we'll read the last two.

23 MS. MYLES: Thank you, Mr. Graham.
24 Debra Myles. So as Mr. Graham said, there's four
25 PMDs or panel member documents that are going to be

1 considered together. They are PMD 11-P1.33, Dr.
2 Richard Denton; PMD 11-P1.47, Neil Dobson; PMD 11-
3 P1.50, Phyllis Ketchardson; PMD 11-P1.52, Kurt
4 Costner, Burlington Green Environmental
5 Association. Mr. Graham.

6 CHAIRPERSON GRAHAM: Thank you
7 very much. I want to assure anyone that has
8 submitted a written presentation, written
9 submission, that we as panel members have read all
10 of them. We have a large number and we've been
11 spending the last few weeks reading them. And I
12 will now refer to Mr. Pereira. Do you have any
13 questions with regard to those first four written
14 submissions which were all on the same topic or
15 roughly on the same topic for the -- for any of the
16 -- for either the presenter or -- for either OPG or
17 CNSC?

18 MEMBER PEREIRA: Yeah, the --
19 thank you very much, Mr. Chairman. These
20 particular interventions all talk about the burden
21 of waste that is generated from nuclear power
22 generation, and I believe we've spent some time
23 today discussing the challenges with waste
24 management.

25 They also talk about the risk of

1 accidents and health effects. And to my mind those
2 -- we have addressed those questions. I have no
3 further questions on the topics -- on these
4 particular topics.

5 CHAIRPERSON GRAHAM: Thank you
6 very much, Mr. Pereira. Madam Beaudet, do you have
7 any questions?

8 MEMBER BEAUDET: I have no further
9 questions, Mr. Chairman.

10 CHAIRPERSON GRAHAM: Thank you
11 very much. Then we'll proceed to the other two
12 written submissions. And I'll ask Ms. Myles to
13 refer to those or read those.

14 MS. MYLES: Thank you, Mr. Graham.
15 These are two submissions. Panel member document
16 or PMD 11-P1.18 from Rob Evans -- sorry, 19. This
17 is a collection of a number of emails, and they've
18 been put together into one submission.

19 The second one is PMD 11-P1.46
20 from Mark Dewolf. Thank you.

21 CHAIRPERSON GRAHAM: Thank you
22 very much, Debra. Madam Beaudet, do you have any
23 questions on those?

24 MEMBER BEAUDET: I believe the
25 main concerns of these two PMDs were long-term

1 storage and cost overrun, and my questions have
2 been answered already. Thank you.

3 CHAIRPERSON GRAHAM: Thank you,
4 Madam Beaudet. Mr. Pereira.

5 MEMBER PEREIRA: No questions.
6 Thank you.

7 CHAIRPERSON GRAHAM: Thank you
8 very much, Debra, then, for presenting those
9 written submissions. And each day we will try and
10 deal with some of those as -- as time goes on
11 during the week.

12 So this completes our agenda for
13 today. I want to thank everyone for coming, and I
14 want to remind everyone that we're not sitting
15 tomorrow morning, we're sitting an afternoon and
16 evening session, so the Chair will resume here at
17 1:30 tomorrow afternoon. Thank you very much and
18 safe travels home everyone.

19 --- Upon adjourning at 5:12 p.m./L'audience est
20 ajournée à 17h12

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C E R T I F I C A T I O N

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