

**NUCLEAR WASTE MANAGEMENT ORGANIZATION (NWMO)**

**BOARD OF DIRECTORS  
MEETING**

**June 15, 2011**

**AGENDA**

1. Constitution of Meeting and Approval of Agenda
2. Minutes of Previous Meeting
3. Business Arising from the Previous Minutes
4. *In Camera* Session
5. President's Report
6. Report from the Siting Committee
7. Report from the Audit, Finance & Risk Committee
8. Report from the DGR Committee
9. Report from the Advisory Council
10. Update on the APM Siting Process
11. Preliminary 2012-2016 Business Planning
12. Used Fuel Transfer System Development
13. Strategic Board Discussions Over Next Five Years
14. APM Lifecycle Cost Estimate
15. Financial Risk Assessment
16. Pre-Project Submission of APM Design and Safety Assessment to CNSC
17. Completion of Review of Members Agreement
18. Provision of EPCM Services for the OPG DGR
19. Review of ITRG Terms of Reference / Membership
20. Advisory Council Membership
21. 2010 Annual Report of Directors
22. Management Reports
23. Report on Board of Directors' Visit to SKB / Posiva
24. Discussion of Need for Board Strategic Planning Session
25. 2012 Draft Board and Committee Meeting Calendar
26. Next Meeting of the Board
27. *In Camera* Session

Conclusion of Meeting

**MINUTES**  
**OF THE MEETING**  
**OF THE BOARD OF DIRECTORS OF THE**  
**NUCLEAR WASTE MANAGEMENT ORGANIZATION (NWMO) /**  
**SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES (SGDN)**

**convened in Fredericton, NB**  
**on June 15, 2011**  
**commencing at 8:30 a.m. ADT**

Present

Gary Kugler	Director, Chair
Pierre Charlebois	Director
Donn Hanbidge	Director
Ron Jamieson	Director
Ken Nash	Director, President & CEO
Josée Pilon	Director
Deborah Poff	Director
Ian Ross	Director
Darren Murphy	Director

Guests:

Albert Sweetnam	OPG, Executive Vice President
-----------------	-------------------------------

Staff in attendance:

Angelo Castellan	VP Environmental Assessment & Corporate Support (via teleconference)
Steve Cavan	VP Finance, Chief Financial Officer
Chris Hatton	Director, APM Repository Design Development
Pat Moran	General Counsel and Corporate Secretary
Gillian Morris	Assistant Board Secretary
Sean O'Dwyer	VP, Human Resources
Sean Russell	Director, Repository Engineering
Kathryn Shaver	VP, APM Engagement and Site Selection
Derek Wilson	Project Manager, OPG DGR, EPCM (via teleconference)

1. Constitution of Meeting and Approval of Agenda

Notice of the meeting having been given to all of the Directors of the Company in accordance with the by-laws and a quorum being present, the Chair declared the meeting duly constituted for the transaction of business and called the meeting to order at 8:30 a.m.

The agenda for the June 15, 2011 meeting was approved.

2. Minutes of Previous Meeting

The minutes of the meeting of the Board of Directors held on February 16, 2011, copies having been sent to each member of the Board, were approved.

3. Business Arising from the Previous Minutes

Mr. Nash reviewed the outstanding request from the Advisory Council to receive minutes of Board Committee meetings. The Board asked management to explain to the Council that anything relevant from those meetings is passed on through reports and updates during the Council meeting.

4. In Camera Session

The Board convened an *in camera* session to discuss the report from the Chair of the Human Resources and Compensation (HRC) Committee.

5. President's Report

Mr. Nash updated the Board on developments since the last Board meeting. He discussed the following:

- nine communities have publicly entered the siting process;
- the APM technical program which included the first draft of a plan for designing the system for transferring used fuel from interim storage to repository containers and to the repository;
- completion of the updated cost estimate for APM;
- milestones in the OPG DGR project and other developments on the national waste management scene;
- staffing update; and
- international developments which included:
  - SKB filing a submission in March with its regulator for construction of its used fuel DGR; and
  - draft reports from the Blue Ribbon Panel in the U.S.

6. Report from the Siting Committee

Mr. Jamieson provided a report to the Board on the June 14, 2011 Siting Committee meeting. Siting Committee topics included:

- a review of the status of the communities that have expressed interest in learning more about the APM project;
- results of the initial screenings conducted at the request of the communities;
- the activities being held in the interested communities as they learn about the APM project;

- an engagement activity update; and
- a review of activities planned in support of initiating feasibility studies in 2012.

7. Report from the Audit, Finance & Risk Committee

Mr. Ross provided a report from the Audit, Finance and Risk Committee meetings held on June 14, 2011. Mr. Ross reported that the Committee discussed the following topics:

- a Project Authority Register setting out accountabilities and financial controls for work related to the OPG L&ILW DGR, which the Committee found to be satisfactory;
- discussion of the APM Lifecycle cost estimate and financial risk assessment;
- response to the Minister's request regarding adjustment of the funding formula to account for possible new waste owners;
- ONFA reference plan update;
- preliminary 2012-2016 NWMO business planning;
- a discussion of the APM engagement plan audit. The Committee recommended that NWMO pursue a process that would identify qualified suppliers using an RFQ (Request for Qualifications) with the Request for Proposal to ensure vendors meet certain qualifications;
- a review of the audited NWMO pension fund statements;
- regular management reports related to performance objectives and financial reporting; and
- a recommendation for appointment of auditors at the Annual General meeting of members.

The Committee Chair reported that the Audit, Finance & Risk Committee recommends to the Board of Directors approval of the 2010 NWMO Pension Plan Fund Financial Statements, as updated to reflect the recently received valuation report setting out the valuation as of December 31, 2010.

**IT IS HEREBY RESOLVED THAT:**

Further to the recommendation of the Audit, Finance & Risk Committee, the Board approves the 2010 Financial Statements for the NWMO Pension Fund for the fiscal year ended December 31, 2010 as audited by Deloitte and Touche LLP, subject to being updated to reflect the January 1, 2011 valuation.

The motion was made, seconded and unanimously passed.

8. Report from the June 1 DGR Committee Meeting

Dr. Kugler provided the Board with a report from the L&ILW DGR Oversight Committee Meeting on June 1<sup>st</sup> held at the Bruce Power site in Kincardine.

The Committee considered the following items:

- an overview on occupational health, safety and environment policy and procedure for the DGR project and site activities, a tour of the site and review of current work underway;
- a briefing on the progress on the Regulatory Review Phase of work;
- a report on the progress on the Detailed Design Phase for the project;

- a draft contracting plan for the construction phase, including the proposal to hire a shaft sinking contractor to start detailed design work and to ensure resources are available when needed. Committee members offered advice on the contracting plan;
- the proposed integrated EPCM delivery model on which the Committee members provided a number of comments. It was proposed that there be further discussion between NWMO and OPG regarding the EPCM delivery model; and
- at the Committee's request a proposal was put forth to change the name of the Committee for clarity. Committee members agreed on the name "Low and Intermediate Level Waste DGR Oversight Committee".

In response to the Committee report, Directors discussed whether an independent assessment of readiness and controls review was required for the DGR Project. It was agreed this would be brought forward for discussion at the DGR Committee's September meeting (\*). Directors also discussed safety targets for the project and the importance of aiming for zero injuries on the DGR project. Derek Wilson confirmed that NWMO had adopted OPG's safety targets for the project.

#### 9. Report from the Advisory Council

At the request of David Crombie, Chair of the NWMO Advisory Council, Kathryn Shaver delivered the Chair's report to the Board. The report addressed the Council's discussion during its May 9 Advisory Council meeting:

- reports on NWMO's recent activities. Council members discussed the recent changes in the political landscape and its possible impacts on the nuclear industry in general;
- the recent developments in Japan. Council supported NWMO's review of the lessons learned as part of NWMO's ongoing process;
- an in-depth report on the activities in the communities involved in the APM site selection process;
- information regarding NWMO's approach to feasibility studies for discussion and input;
- plans for re-development of the Elders Forum. Council had an extensive discussion on the topic and provided management with helpful advice;
- NWMO's work supporting OPG's low and intermediate level waste DGR;
- the updated APM cost estimates;
- the process of reviewing the Advisory Council membership, as members' terms conclude at the end of 2011. Council provided suggestions to the Board on areas of expertise that might be useful for Council.

The Board discussed the Council report.

With respect to Board and Council participation in the upcoming Elders Forum, Directors attending the July Elders Forum requested that a briefing be provided in advance of the meeting (\*). Directors discussed the process for re-developing the Elders Forum and were supportive of the process proposed.

10. Update on APM Siting Process

Ms. Shaver provided the Board with an update on developments in the APM site selection process and activities initiated at the request of communities interested in learning more about the APM project. She reported that staff had been very active in working with individual communities with events such as open houses and other activities that engage community members in asking questions and learning about the project. As part of this learning, the NWMO had arranged an opportunity at the Federation of Canadian Municipalities conference in Halifax for the communities involved in the Learn More program to hear from Swedish municipal officials who shared their experiences in site selection and community-based decision making. The Board was updated on activities planned for Fall 2011, and the nature of work planned for 2012 with communities that choose to continue on into the feasibility study phase.

In the discussion that followed, Directors inquired as to the nature of questions and discussions initiated by communities to date.

11. Preliminary 2012-2016 Business Planning

Mr. Nash discussed preliminary 2012-2016 business planning considerations. He noted that management held a strategic planning session where external factors were considered. The conclusion was that there were no reasons to change NWMO's existing strategy for implementing APM. Mr. Nash reported that refined planning assumptions and cost estimates have now been developed for both the site selection process and the technical development program.

Kathryn Shaver and Sean Russell provided more in-depth detail on both the APM siting program and APM technical program respectively.

The Board discussed the preliminary 2012-2016 business plan and were in agreement with its direction.

Mr. Nash pointed out that the work program for the OPG DGR would be developed under the direction of OPG.

Directors discussed how NWMO determines when enough technical research has been done and what level of research is necessary at this point in the process. The Board was satisfied with the approach in the draft business plan.

12. Used Fuel Transfer System Development Plan

Ken Nash outlined a plan for the development and demonstration of a system for transferring used fuel from interim reactor site storage to long-lived repository containers and emplacement into the repository. He discussed the importance of completing testing for the used fuel transfer system by the 2018 licence submission and the differences in containers for crystalline or sedimentary rock. He also described how NWMO would be benefiting and learning from the experience of SKB.

Chris Hatton discussed the technical challenges involved in transferring used fuel, new technologies under development and research underway internationally. He described

the research and development details of the plan to demonstrate and prove the technology needed for the transfer of used fuel, including the goal of having a production quality container by 2018 for use in the repository.

Directors discussed the timing of this research program, its expected length and the difference in the program for sites that have crystalline versus sedimentary rock. Directors asked management to leverage other international research underway as much as possible. Directors also discussed manufacturing of containers and the benefits associated with domestic manufacturing, while recognizing that cost was an important factor. A Director asked if the NWMO would be seeking input of members on the transportation and packaging of existing fuel. Management confirmed the need for full coordination with the waste owners on the transfer of used fuel from the current storage sites to the repository. Directors generally agreed that the NWMO's proposed program was appropriate.

13. Strategic Board Discussions and Decisions Over the Next Five Years

Ken Nash discussed with the Board items of significance that are expected to be reviewed with the NWMO Board over the next five years. Mr. Nash outlined the decisions that will be brought to the Board with respect to the APM Site Selection Process, the APM Repository Design and Safety case, Financial Surety, Adapting to Change, Governance and the work on OPG's L&ILW DGR.

14. APM Lifecycle Cost Estimate

Sean Russell discussed the updated lifecycle cost estimate for the APM program that has been prepared for financial planning purposes.

Mr. Russell discussed the earlier cost estimate completed in 2003 and the variance analysis of the two cost estimates. The present value of the new cost estimate is very similar to the present value of the previous cost estimate.

The Board discussed the discount rates and escalation rates used and the level of contingency contained within the estimate. After further review with members and NRCAN, it is planned to bring the estimate to the Board for approval in September.

15. Financial Risk Assessment

Steve Cavan presented the updated results of a financial risk assessment (FRA) on the APM cost estimate. As reported to the Audit, Finance & Risk Committee and Board in February, the FRA assesses the confidence in the cost estimate in present value terms that will be used as part of the funding formula to determine contribution to the NFWA trust fund. The present value also forms the basis of the liability on the financial statements of member companies, CNSC financial guarantees and OPG contribution to the ONFA fund.

16. Pre-Project Submission of APM Design and Safety Assessment to CNSC

Ken Nash discussed with the Board NWMO's August 2011 submission of the APM conceptual design and post-closure safety assessment of a used fuel deep geological repository in crystalline rock for a pre-project review by the CNSC.

Sean Russell discussed the history of the development of the safety cases and the preparation of the "Fourth Case Study" noting the similarities to SKB's recently submitted safety case for a used fuel repository in Forsmark, Sweden.

Directors discuss the safety case, in particular:

- the reasoning for ramp versus shaft access; and
- the appropriate peak doses calculations for the safety case.

Directors had a lengthy discussion around peak dose calculations and the principles surrounding these calculations. Management agreed to review these in the post-closure safety assessment prior to submission to the CNSC (\*).

17. Completion of Review of Members Agreement

Pat Moran reported on the outcome of the review of the member cost shares and the governance structure that was carried out in accordance with the plan reviewed at the 2010 annual general meeting.

There were proposals received relating to the number of directors on the Board and the member cost shares.

Mr. Moran noted that unanimous agreement of the members would be required to make any changes to the governance structure or member cost shares and that the status quo would remain in the absence of such agreement. NWMO will offer to facilitate a meeting of Members to consider a path forward (\*).

18. Provision of EPCM Services for the OPG DGR

NWMO is providing regulatory approvals and EPCM services to OPG for the OPG L&ILW DGR project. Mr. Nash reported that, in accordance with the EPCM agreement, a decision will need to be made on whether NWMO continues to provide EPCM services in the construction phase of the project.

Mr. Nash discussed the challenges related to NWMO providing EPCM services. A major challenge to NWMO is retaining staff in the competitive mining industry labour market. This challenge necessitates NWMO considering changing how it would operate as an EPCM provider. Following discussion with the Board, further data gathering, analysis and discussion with OPG, management will bring a recommendation to the Board in September.

Mr. Nash reviewed the four options for providing EPCM services favouring the integrated EPCM model. He noted that in order to proceed with the integrated EPCM model, NWMO needs to develop a viable plan to build and retain the EPCM team.

The Board discussed the various options for providing EPCM services and the value of NWMO taking on the role of EPCM provider to gain experience building a DGR. A

Director noted that NWMO was asked to be the EPCM provider in order to reduce extra layers of oversight to operate more efficiently. A Director also suggested that NWMO must consider the expectations of the CNSC in making the decision.

19. Review of ITRG Terms of Reference / Membership

Sean Russell reviewed the Terms of Reference and the membership of the Independent Technical Review Group (ITRG) with the Board. He reminded the Board that the role of the ITRG is to provide the Board with independent advice on NWMO's technical program. The ITRG has been in place for three years with four members. Mr. Russell asked the Board to consider:

- whether the current terms of reference are appropriate;
- are the members still relevant to the work being conducted; and
- should additional members be considered to advise on new areas of the technical program

Directors reviewed the current expertise of the members of the ITRG. A Director suggested strengthening the expertise in container development. Mr. Nash noted that NWMO will be engaging other international nuclear waste management organizations regularly for their expertise in container design and development. The Board of Directors supported inviting the existing members of the ITRG to extend their membership on the ITRG, as well as the continuation of the group under its current terms of reference. The Board indicated that management should proceed on the basis of asking the current members to continue if they are interested in doing so. Vacancies should be filled as required by other experts of comparable expertise.

20. Advisory Council Membership

Kathryn Shaver reviewed the current status of Advisory Council membership with the Board and invited discussion on a path forward for addressing the appointments to the Advisory Council. Ms. Shaver sought advice from the Board on the Advisory Council appointments. The Board discussed new areas of expertise that would be important for the next phase.

Further to discussion, Directors agreed with the path forward as proposed:

- NWMO Board Chairman and President to meet with Advisory Council Chair to review current Council members' interest in continuing;
- Management to initiate work under guidance of Board Chairman on review of skills requirements and operational considerations for next phase; and
- Engagement of search firm to assist with recruitment of new members as may be required.

Management undertook to provide the Board with a status update of this work at its September meeting, and to confirm remuneration structure at that time. Appointments would be brought forward to the Board for approval at its December meeting.

21. 2010 Annual Report of Directors (Triennial Report)

Pat Moran presented the Triennial Report Summary which will be submitted to the Members at the Annual General Meeting. At each annual general meeting, the annual report, the approved, audited financial statements, and the report of the auditor for the preceding fiscal year are presented. For 2010, the annual report is an expanded

version, reflecting the additional reporting requirements that must be met by the NWMO every three years, as set out in the *Nuclear Fuel Waste Act*.

22. Management Reports

a) APM Technical Report

Sean Russell provided an update to the Board on the APM technical program. Mr. Russell reviewed work completed in the areas of:

- international cooperation on research and development;
- APM repository design, development and safety case;
- regulatory interface;
- technical presentations and support to the engagement program; and
- peer reviews.

Mr. Nash noted he was very encouraged by the quality of papers presented by NWMO junior staff at the 13<sup>th</sup> International High-Level Radioactive Waste Management Conference in Albuquerque in April.

b) Legal / Corporate Secretary Report

Pat Moran provided an update on the status of the Mushkegowuk judicial review application.

An update was provided on the status of the Canada Revenue Agency ruling and the requirement for Canada Pension Plan contributions for Advisory Council members.

Mr. Moran also reported that the Health and Safety Policy was revised as requested by the Board. It was circulated electronically to Directors and unanimously approved.

23. Report on Visit to SKB / Posiva

Pat Moran provided a report to the Board on the visit by Directors to SKB and Posiva on May 1 – 6.

As part of the Board's due diligence to understand international best practices in used fuel management, Directors visited with SKB and Posiva, NWMO's sister organizations in Sweden and Finland. The goal of the visit was to reach a more detailed understanding of the Swedish and Finnish programs and how they compare to NWMO's program.

Highlights of the visit included tours of the following facilities in Sweden:

- Forsmark, Sweden where SKB's used fuel DGR will be located;
- SKB's final repository for low and intermediate level waste;
- Sweden's Central Interim Storage for Spent Nuclear Fuel (Clab);
- Äspö Hard Rock Laboratory – a research facility to investigate the properties of the bedrock and to confirm earlier research, and to carry out full-scale research on the performance of copper containers. NWMO participates in some of the experiments performed at the facility; and
- the SKB Canister lab which focuses on canister development and handling equipment for the canisters.

Board members also had the opportunity to meet with SKB officials to learn more about the SKB program. Topics of discussion included SKB's siting process, feasibility studies, and community benefits.

Board members then visited Posiva where they toured the following facilities:

- the repository for low and intermediate radioactive waste located at Olkiluoto; and
- Onkalo, where Posiva is constructing an underground characterization facility similar to the Äspö Hard Rock Laboratory in Sweden.

Directors met with senior Posiva officials to learn about their program. The Board had extensive discussions about Posiva's siting process and lessons learned throughout the process.

24. Discussion of Need for Board Strategic Planning Session

The Board discussed whether there was a need for a separate Board strategic planning session in September. Directors agreed with the current direction set by management and while a strategic planning session was not considered necessary at this point, they asked to have a specific item on the next Board meeting agenda to receive a briefing on the re-development of the Elders Forum (\*).

25. Draft 2012 NWMO Board and Committee Meeting Calendar

Directors were asked to identify any conflicts with the 2012 scheduled Board and Committee meetings. No conflicts were identified.

26. Upcoming Meetings

Next meeting of the Board of Directors:

Committee Meetings – September 27 & 28, 2011

Board of Directors Meeting – September 29

27. In Camera Session

It was agreed that an additional *in camera* session was not required.

Conclusion of Meeting

There being no other business, the Chair declared the meeting adjourned at 2:05 p.m.

(\*) Denotes actions to be taken.

---

Pat Moran  
Corporate Secretary

---

Dr. Gary Kugler  
Chair