THE ROLE OF THE PEER REVIEW PROCESS IN THE CLEAN UP OF LOW-LEVEL AND HISTORIC RADIOACTIVE WASTE IN THE MUNICIPALITIES OF PORT HOPE AND CLARINGTON, ONTARIO, CANADA*

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ABSTRACT

This paper describes the role of the Municipal Peer Review Team (MPRT) for the Municipalities of Port Hope (Port Hope Project) and Clarington (Port Granby Project) for the clean-up of low level and historic radioactive waste. The purpose of the MPRT is to provide the municipalities with a team of experts to help assist their participation in the cleanup process.

The peer review process has enabled the Municipalities of Port Hope and Clarington to participate in the decision-making processes as equal parties with the Port Hope Area Initiative Management Office and the Regulatory Authorities. Furthermore, the peer review process has stressed the need for a proactive management approach for low-level radioactive waste and marginally contaminated soil clean-ups.

With the work of the MPRT, the Port Hope Project has been granted a facility licence (August, 2009). Both Projects have completed the detailed design phase, where the MPRT played a major role in the review of design documentation.

The MPRT has developed an excellent working relationship with the Municipal staff and Mayors of Port Hope and Clarington. The MPRT effectively manages the 'people aspects' of the Port Hope and Port Granby Projects for the municipalities and assists in building transparency and trust in all Project activities. Collaborative, multi-disciplinary dialogue has been a key element to project success. Furthermore, the MPRT has become familiar with the local residents from attending community events and public meetings and has become a trusted source on all things Project related.

* Please note that this paper is based on an earlier paper presented to the CNS in 2004 by Dave Hardy, Principal of Hardy Stevenson and Associates Limited.

1.0 INTRODUCTION AND PURPOSE OF THE WORK

Peer review processes are increasingly forming an essential part of a successful radioactive waste management projects. This paper describes the role of the Municipal Peer Review Team (MPRT) for the Municipalities of Port Hope (Port Hope Project) and Clarington (Port Granby Project) for the clean-up of low-level and historic radioactive waste.

The Municipalities of Port Hope and Clarington and Government of Canada are committed to leading the clean-up and safe long-term management of historic low-level radioactive and hazardous wastes deposited in Port Granby and several locations in the Municipality of Port Hope. They are supported by Atomic Energy of Canada Limited's (AECL) Port Hope Area Initiative Management Office (PHAI MO). The wastes are the result of radium and uranium processing in Port Hope by Eldorado since the 1930s.

The peer review process is required to enable the municipalities to fulfill their roles as equal parties (with the Government of Canada) in the Environmental Assessment (EA), facility licensing, facility design, facility construction and remediation processes. To establish the parameters of the clean-up and comment on the process, the local municipalities negotiated and signed a Legal Agreement with the Government of Canada in 2001. As a Responsible Authority, Natural Resources Canada has defined and approved the scope of the two projects. The PHAI MO is designated as the proponent.

The Legal Agreement specified that both municipalities would have funded staff to work together to coordinate and expedite the project. Janice Szwarz is the staff person assigned by the Municipality of Clarington and Anthony Hobbs holds the staff position for the Municipality of Port Hope. Under the Legal Agreement, a Municipal Peer Review Team (MPRT) would be retained by the municipalities and funded by the Government of Canada. The MPRT is made up of experienced professionals from a variety of disciplines related to nuclear waste clean up processes and are led by Hardy Stevenson and Associates Limited (HSAL).

The peer review process has stressed the need for a proactive management approach for low-level radioactive waste and marginally contaminated soil clean-ups. It is important to note is that the clean-up process will be occurring in an urban setting (Port Hope) and a populated rural setting (the Port Granby community in Clarington). Therefore, due to the 'people' element, there is a need to anticipate the project effects (e.g. emissions and dust effects) before they affect the local population and environment.

2.0 WHAT IS THE FUNCTION OF A MUNICIPAL PEER REVIEW?

A professional peer review focuses on the performance of professionals, with a view to improving quality, upholding standards, or providing certification. A professional peer review should not to be confused with a scholarly peer review, which is conducted in an academic or research based setting. Rather, professional peer reviews are common with large engineering processes and HSAL have completed several for a variety of different clients in a range of different fields.

The purpose of the municipal peer review process is to instil confidence and accuracy in the scientific findings over the course of the Port Hope and Port Granby Projects. Independent research is not conducted. Instead, the MPRT indicates where there are studies missing or if there are significant gaps in the analysis.

The peer review process is conducted to enable the municipalities to be involved in the decision making process as an equal party by providing them with a team of experts who understand the complex issues involved in a clean up process. Issues involving nuclear and health physics, air quality, hydrogeological engineering cannot easily be addressed by most municipalities because they do not necessarily have the staff and resources to deal with them. Even the largest Canadian municipalities do not have the highly specialised experts of atmospheric scientists or health physicists on staff.

3.0 PEER REVIEW FOR THE PORT HOPE AND PORT GRANBY PROJECTS

Both the Municipality of Clarington and Municipality of Port Hope requested that a peer review team be retained by the municipalities during the environmental assessment studies, detailed design phase for new facility construction, licensing and clean-up of contaminated sites.

HSAL was retained by both municipalities to conduct the peer review processes. Both Municipalities agreed upon benefits of hiring one firm to conduct the peer review for both Projects. By hiring one firm, each municipality would have the understanding of the clean up processes as a whole. This has been extremely helpful during the detailed design phase and project licensing phase where coordination on many aspects of project management has been required. It has also been helpful in anticipating project effects or processes because each separate project functions to inform the other on particular project activities or issues. Additionally, the overall peer review costs can be reduced and consistency achieved because there is no duplication of peer review expertise.

The MPRT for the Port Hope and Port Granby projects is:

- Is independent of the PHAI MO and the Municipalities. It is crucial to the process that the MPRT is neutral. The MPRT provides well researched and objective professional advice.

- Has an extensive track record and good reputation of working with citizen groups and environmental groups.

To support the independence, the MPRT is paid directly through the Municipalities of Clarington and Port Hope. The Municipalities recapture the costs from the PHAI MO in accordance with the Legal Agreement.

3.1 How is the MPRT Organized?

The MPRT is comprised of a range of professionals with expertise in nuclear engineering, air quality assessment, hydrogeology, geology and soils science, land-use planning, shoreline and harbour engineering, social science and natural environmental sciences.

The team is a private sector consultancy, not an academic team. The advantage of a private sector firm is that it brings a depth of experience, focus and discipline to the peer review. Furthermore, members of the team have worked on similar projects for various clients in the private sector.

The team includes dedicated Project Managers. As mentioned previously, Anthony Hobbs fills this role for the Municipality of Port Hope and works full time at the municipal offices. The Municipality of Clarington already had a long time highly skilled person with a sciences background on staff - Janice Szwarz.

The MPRT has enough flexibility to add additional members as the PHAI MO studies and proposed activities require. Recently, when we entered the detailed design phase, we added highly skilled civil engineers from consulting firms that conduct large infrastructure projects all over North America.

4.0 PEER REVIEW PROCESS SCOPE OF WORK

As mentioned previously, the MPRT does not conduct original and independent research. Instead, the MPRT indicates where there are studies missing, provides practical technical comments and identifies whether there are significant gaps in the analysis. It is up to the PHAI MO to decide whether, and how, to address the research gaps noted by the MPRT.

There are instances where the MPRT and PHAI MO many not agree. However, we work together to come to a resolution. The PHAI MO provides the MPRT with open access to information, studies and design supporting the project. This allows the MPRT to be thorough and request additional information when necessary.

The normal peer review process involves a number of steps. The MPRT:

1. Receives and reviews reports, designs and procedures;

2. Submits comments on reports and other material reviewed using disposition forms or summary reports;

3. Reports to municipal staff;

4. Presents to council or residents (as necessary), and listen to public comments and suggestions; and

5. Agrees or disagrees, and reports accordingly.

5.0 METHODOLOGY FOR REVIEWING DOCUMENTATION

To date, the peer review has involved a detailed technical review of reports and studies prepared as part of the federal EA and licensing process as well as facility design documentation. These

matters largely comprise engineering design and policy concerns although significant financial, health and socio-economic analysis have also been conducted. Specific responsibilities in the peer review process include monitoring the progress of assessments and designs and critically assessing any resulting findings or recommendations.

The MPRT uses a specific methodology for evaluating reports. The methodology reinforces the principle of a fair and transparent process. The following questions reflect the MPRT methodology:

- Is the purpose of the work clearly stated and are all issues and impacts encompassed through the stated purpose?
- Is the methodology sound enough to permit the MPRT's objective review of the issues, data and facts?
- Are relevant data and facts clearly and consistently used in the reports?
- Have cumulative effects been thoroughly understood?
- Are certainties and uncertainties of the studies openly and objectively stated?
- Can the MPRT trust the data?
- Are the conclusions supported by the data and research undertaken?
- If the MPRT examined the data would it reach the same conclusions?
- Are realistic mitigation measures or designs proposed?
- Will the mitigation measures function to address effects over the life of the project?
- Are there gaps arising from the MPRT's examination of the issues?
- Are there areas where the MPRT and PHAI MO consultants completely disagree?
- Have significant issues been overlooked during the EA process or detailed design process?
- Are gaps addressed to the point where the project can move forward?
- Are there Federal, Provincial and local standards, regulations and guidelines that are overlooked?
- What are the conclusions of the MPRT?
- What is the MPRT recommendation to the Municipalities of Port Hope and Clarington?

6.0 ADDITIONAL DUTIES

In addition to EA, design phase and licensing document review, the MPRT's mandate includes a variety of additional duties that are performed on a regular basis:

- Representing the Municipalities at informal and formal Project meetings and public forums arranged by the PHAI MO or at CNSC hearings;
- Participating in various Project related committees established by the Municipalities as well as the PHAI MO;
- Tracking and reporting on Project related milestones and programs;
- Ensuring that the PHAI MO fulfills its responsibilities on Project-related programs;
- Administering the Municipalities' responsibilities under PHAI MO's Project-related programs;
- Identifying, developing, implementing and monitoring Project-related policies, procedures or controls; and
- Advising and assisting Municipal staff on all aspects of Project implementation.

To attain the highest level of success in the completion of the Project, the MPRT ensures that the Municipalities of Port Hope and Clarington maintain excellent communications with the PHAI MO, the local and national media, the general public, and other parties that may become involved in the process. When required, the MPRT has managed or assisted with the following communications-related responsibilities:

- Ensuring continual and effective communication between the Municipalities, the PHAI MO, and all other parties involved in the Projects;
- Ensuring that Municipal Councils and Municipal staff are consulted and kept informed of the status of any the Projects' initiative that may affect them;
- Managing or assisting with any public inquiries regarding the Projects and their undertakings; and
- Establishing and managing processes for soliciting, evaluating, and responding to public input and complaints regarding the Projects.

7.0 THE PEER REVIEW PROCESS, SOCIAL SCIENCES AND PROJECT MANAGEMENT

For potentially controversial radioactive waste management projects, the social sciences dictate that there needs to be as much emphasis on dialogue about values and the 'people aspects' as is

commonly conducted with technical and scientific data. Equally important are the communications and public consultation processes that develop and maintain public trust.

The MPRT brings a unique corporate approach to the Port Hope and Port Granby peer review process. The MPRT is headed by project managers, planners and social scientists trained to be sensitive to the 'people aspects' of the project as a major priority. The MPRT is supported by engineers and technical specialists as sub-contractors.

Effectively dealing with the 'people aspects' of a project is often just as complex as the engineering associated with a technical peer review exercise. It is important to get the 'people-aspects' of potentially controversial projects right. This involves communications and public interactions informed by sound social science.

The MPRT looks at all aspects of the Projects including technical considerations. Broad dialogue between the technical and non-technical disciplines in a peer review team setting is as important as receiving individual advice from scientific and technical experts. Thus, on radiation related projects that may promote public fears and risk, it is more beneficial to have a multi-disciplinary team (social sciences, natural sciences, communications, engineering and health physics) than a team comprised solely of technical experts.

7.1 Transparency and Trust

Transparency and traceability has helped to build trust in the Municipalities of Port Hope and Clarington. Trust can be divided into two categories – fiduciary trust and technical competence. Fiduciary trust refers to the trust in the decision makers, while technical competence refers to the trust in the technology and scientific data. Both are integral to the success of any nuclear waste management project and are especially important in Port Hope and Clarington.

In regards to the development of fiduciary trust for the Port Hope and Port Granby Projects, the PHAI MO has provided the MPRT with open access to project documentation and supporting studies and has been responsive in addressing questions or concerns raised by the peer reviewers. The MPRT clearly states where they agree and disagree with PHAI MO conclusions. Differences are discussed between professionals before final conclusions are drawn. As a result, the MPRT is able to speak openly about the integrity of the proponent.

In regards to technical competence, the peer review process strengthens trust in the clean up process as well as the proposed technology and scientific data due to the additional review of documentation by the experienced MPRT members. The practical advice provided further strengthens the project.

7.2 Objective Approach of the Peer Review Process

In order for a peer review process to provide an objective point of view, it should not function as an advocacy process. Whether the 'scope' of a peer review establishes a climate of advocacy or objectivity has an essential role to play in the success of the peer review process. A peer review process may in some cases be used as an advocacy process. Without 'objectivity' as the

fundamental core to the scope of the peer review work, there is little likelihood that a successful outcome will result.

Therefore, it is important for a peer review team to bring private sector discipline, objectivity and a depth of experience to the peer review. For the work in Port Hope and Clarington, the MPRT has adopted a thorough, non-advocacy approach to reviewing EA studies and detailed designs including ensuring that the EA studies and design documentation receive a critical review.

7.3 Visible Presence of the MPRT

In conducting peer reviews, it is important to define how visible and accessible members of a peer review team should be. With some projects, the nature of the work is such that peer review teams are provided explicit directions to complete a technical review and then issue a report without any presentation of results to the public. The public concerns are then examined and considered where appropriate.

In other instances there may be a public presentation of MPRT findings at a public meeting or forum or simply the release of a peer review report as a public document. At that point the work of the peer review team is complete. For contentious projects such as the clean-up processes in Port Hope and Clarington, it has been beneficial for the MPRT to have a visible presence in the community. This has enabled the MPRT to be responsive to questions and concerns raised by individual citizens and local community groups.

Through the Municipalities of Clarington and Port Hope, the MPRT reaches out to the community as an independent expert resource, even meeting with concerned citizens to discuss community concerns. A number of years ago, members of the MPRT met with residents and walked around portions of the study area of the Port Granby Project. The purpose of this meeting was to listen to local residents' concerns with haul routes and construction related traffic, etc. Ultimately, some of our subsequent recommendations to the PHAI MO were based on their concerns.

We often discuss our recommendations on reports, particularly on those dealing with socio-economic issues with local residents at discussion group meetings. Additionally, the MPRT presents their findings at the local council meetings.

8.0 ISSUES WITHIN THE PEER REVIEW PROCESS

There are many positive aspects of a peer review process that this paper has presented. However, there are also some areas that should be seen as a caution for any organization wishing to sponsor a peer review process.

The primary issue that faces a peer review process is cost. Peer reviews for most projects can be scoped to the review of certain reports at a specific period of time. In many cases it is easy to set a defined scope and corresponding budget. With the peer review process for the Port Hope and Port Granby projects, the process functions to provide an independent review of the PHAI MO activities. These activities date back to 2001, are ongoing and are expected to proceed for the

next six to 10 years or so. Therefore, the scope of the MPRT's work is considerable, with many reports and documents to review as well as project meetings and public meetings to attend.

Since peer review budgets reflect the scope of work completed, the costs for a peer review of this scale are also considerable. There is a need to note that there is a distinction between the scale of the work completed during the EA phase (mostly a review of documentation) and the detailed design phase where hundreds of drawings, specifications and documents were reviewed.

The second issue involves resident trust and credibility in the peer review process. While there appears to be a general acceptance of the peer review comments, not all residents agree with MPRT findings and recommendations. For these residents (which are few), additional information from the MPRT is not likely to be influential.

9.0 CONCLUSIONS AND RESULTS ACHIEVED

The peer review process has enabled the Municipalities of Port Hope and Clarington to participate in the decision-making processes as equal parties with the PHAI MO and the Regulatory Authorities. With the work of the MPRT, the Port Hope Project has been granted a facility licence (August, 2009). Both projects entered into the detailed design phase, where the MPRT played a major role in the review of design documentation.

The MPRT has developed an excellent working relationship with the Municipal staff and Mayors of Port Hope and Clarington. The MPRT effectively manages the 'people aspects' of the Port Hope and Port Granby Projects for the municipalities and assists in building transparency and trust in all Project activities. Collaborative, multi-disciplinary dialogue has been a key element to project success. Furthermore, the MPRT has become familiar with the local residents and their concerns from attending community events and public meetings and has become a trusted source on items Project related.

As the clean up process moves into the construction process for both projects, The MPRT will function as technical advisors to the municipalities. The MPRT will provide advice on the construction activities to ensure the municipalities that plans agreed upon in the EA and detailed design phase are implemented throughout the clean up process and construction of the new facilities.