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Submission from the Canadian Environmental Law Association and the Conservation Council of New Brunswick

In the Matter of

Énergie NB Power - Point Lepreau Nuclear Generating Station

Application for a five-year renewal of its Nuclear Power Reactor Operating Licence for the Point Lepreau Nuclear Generating Station

Commission Public Hearing – Part 2

May 9, 10 and 11, 2017

Exposé oral

Mémoire de l'Association canadienne du droit de l'environnement et du Conseil de conservation du Nouveau-Brunswick

À l'égard de

Énergie NB Power - Centrale nucléaire de Point Lepreau

Demande de renouvellement, pour une période de cinq ans, de son permis d'exploitation d'un réacteur nucléaire de puissance à la centrale nucléaire de Point Lepreau

Audience publique de la Commission – Partie 2

Les 9, 10 et 11 mai 2017

Canada

Canadian Environmental Law Association
EQUITY. JUSTICE. HEALTH.

Submissions to the CNSC: Emergency Planning at the Point Lepreau Nuclear Generating Station

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SUMMARY OF RECOMMENDATIONS

RECOMMENDATION NO. 1: CELA submits that all CMDs for any CNSC hearings or meetings should be posted in their entirety on the Commission's website. Not only will this alleviate a burden on CNSC staff to respond to individual requests for documents, it will allow any interested party to access the documents immediately, without delay.

RECOMMENDATION NO. 2: The CNSC must revise its participant process to ensure the timely delivery of documents and require a minimum of 60 days between receipt of all documents and the CMD submission deadline. To facilitate the public review of documents, the CNSC should mandate that all reports and documents referred to in a party's CMD be appended and posted in full, on the CNSC's hearing portal.

RECOMMENDATION NO. 3: CELA submits that the planning basis for a potential offsite nuclear accident in New Brunswick must be increased (with public input) to account for a catastrophic offsite accident. At this time, and until such emergency plans are in place and proven to be effective for a catastrophic accident, CELA submits that the site should not be licensed for continued operation.

RECOMMENDATION NO. 4: CELA recommends to the CNSC that it deny Point Lepreau's operating licence renewal on the basis that a detailed, robust emergency planning basis for catastrophic accidents has not been provided to the public, and furthermore that, to the extent the provincial offsite nuclear emergency plan has been revised, the public has been denied opportunity to provide rigorous review and input.

RECOMMENDATION NO. 5: CELA requests that prior to considering licence renewal, the CNSC require evidence of public consultation and transparency in the changes which have been made to nuclear emergency planning since the Fukushima accident. The Offsite Plan should also be updated to include requirements for transparency, pro-active disclosure and regular public review.

RECOMMENDATION NO. 6: CELA submits that the 4 km PAZ be extended to 5 km, the UPZ extended to 30 km and an explanation as to why the current emergency zones do not follow expert judgment and best practice be provided.

RECOMMENDATION NO. 7: CELA recommends that in view of the experience at Chernobyl and Fukushima, the CNSC should request that the province immediately create a secondary emergency zone to a radial distance of 100 km. This should be done as part of detailed planning for severe accidents so that appropriate monitoring of food, agricultural products, milk, and water is

established and in place in the event of such an accident.

RECOMMENDATION NO. 8: To enhance transparency and accountability, the NB EMO must maintain a website dedicated to nuclear emergency response. It must include documents and data that enable the easy access of information and incorporate a user-centred design.

RECOMMENDATION NO. 9: Because of its responsibilities under the *NSCA*, the CNSC must review and report on the sufficiency of the planning basis, the response plan and the province's readiness for large-scale radiation releases in New Brunswick as part of every licence application.

RECOMMENDATION NO. 10: CELA submits that this licence should not be granted until the offsite emergency response plan is made public. Members of the surrounding communities must be able to understand what is in place, how effective it is, what has changed, and on what basis the regulator is judging the emergency plans to be in place.

RECOMMENDATION NO. 11: CELA recommends that the plan be redrafted using a thematic approach, listing different planning-areas rather than focusing on the tasks of individual agencies/government bodies.

RECOMMENDATION NO. 12: CELA recommends that the Offsite Plan integrate extreme weather events into its emergency response measures. The efficacy of all response actions listed in the Offsite Plan must be considered in light of extreme weather events, which could result in widespread power outages, and inhibit the ability of the public to travel and access essential services. Contingency plans for provincial emergency response and provincial staff responsibilities in carrying out the plan in case of accident at the Point Lepreau nuclear plant must be established to reflect the potential for very severe weather.

RECOMMENDATION NO. 13: CELA submits that this licence should not be granted until a marine-based offsite emergency plan is made public. The CNSC must ensure emergency response at sea allows for an effective response to accidents and demonstrates a high level of preparedness.

RECOMMENDATION NO. 14: As CELA has recommended in similar contexts in the past, the timeframes in the Offsite Plan should be compressed to alert the public in as short a time frame as possible, preferably less than 30 minutes from the onset of an accident. Methods to compress the existing 90 minutes time frame should be considered and tested, and their efficacy should be one of the points of evaluation by the CNSC in the licence.

RECOMMENDATION NO. 15: CELA recommends that NB EMO and the designated municipalities maintain a list of people who would not be reachable through all of the proposed notification

media, and for whom door-to-door notification should therefore be immediately undertaken. Other emergency personnel should be immediately dispatched to evacuate homeless people and others who are not covered by existing notification systems.

RECOMMENDATION NO. 16: CELA recommends that the CNSC refuse an extension of Point Lepreau's operating licence without ensuring, through thorough testing, that the alerting system in the emergency response zone is fully effective.

RECOMMENDATION NO. 17: CELA recommends that the CNSC require NB Power to ensure that stable KI is predistributed to all residents within the proposed secondary emergency zone as a condition of licensing.

RECOMMENDATION NO. 18: CELA recommends that the CNSC require that NB Power, in conjunction with the designated municipalities, conduct outreach and notification to members of the public in the designated municipalities, as to the availability of KI and advice on where KI may be obtained. Members of the public should be provided with basic information on the benefits and risks associated with using KI and the importance of having an at-home supply. They should be made aware that other organs (bone marrow, lungs and other organs) are not protected by KI, and that KI should only be taken at the direction of the Province.

RECOMMENDATION NO. 19: CELA recommends that the CNSC require the NB EMO, in conjunction with regional emergency response officials, include in its outreach material to the public, explanations about the capability of sheltering and its limitations as described in the IAEA Guide GS-G-2.1.

RECOMMENDATION NO. 20: CELA requests that the Provincial Health Nuclear Emergency Plan be made publicly available as it is incorporated by reference in the Offsite Plan. Without reviewing this document, CELA cannot fully comment on the medical treatment of injured and contaminated members of the public in the event of an emergency.

RECOMMENDATION NO. 21: CELA recommends that the Point Lepreau operating licence should not be renewed without the Provincial Health Nuclear Emergency Plan being made publicly available.

RECOMMENDATION NO. 22: CELA recommends that the CNSC require that the public clearly understand what plans are in place to assist them with evacuation from the PAZ if they do not have their own transportation. What those plans are should be clearly specified and widely communicated to the public through outreach and education.

RECOMMENDATION NO. 23: CELA recommends that the CNSC require the Province to update its emergency response plans to contemplate the needs of vulnerable members of the population, analogous to the requirements under Ontario's *Radiation Health Response Plan* evacuation scenarios.

RECOMMENDATION NO. 24: As CELA has recommended in the past, the CNSC should require the designated municipalities and NB Power to communicate to the public in annual outreach and education, the fact that the nuclear emergency response plans expect the public to make their own arrangements in the event of evacuation, and for those who cannot, what is expected to be provided by the municipalities. The appropriateness of this approach should further be discussed with the public in terms of future nuclear emergency planning.

RECOMMENDATION NO. 25: CELA submits that a similar recommendation to the one made by the US General Accounting Office to the US Nuclear Regulatory Commission is relevant in this case: that the CNSC require the applicant to conduct a study as to the awareness of Point Lepreau in people beyond the 20 km zone and their likely response in the event that a general emergency is declared and the EPZ is evacuated.

RECOMMENDATION NO. 26: The CNSC should require the applicant to evaluate the impact of increased evacuation zones at radial distances of 30 and 40 km, on existing numbers of emergency workers required for evacuation management, the capacity of traffic routes and size of evacuation centres, and locations and capacity of Decontamination and Monitoring Units. These findings should be reported to the CNSC.

RECOMMENDATION NO. 27: Because the Offsite Plan is not in the public domain or provided in an alternative format which may be user-friendly to the public, CELA urges the CNSC to require, as a renewal-condition, that NB Power conduct surveys in the community to gauge levels of public knowledge regarding decontamination and report back to the CNSC.

RECOMMENDATION NO. 28: CELA requests that the CNSC ensure that automatic gamma monitoring is in place at Point Lepreau and require the automatic exchange of such data with the regulator as suggested by the IAEA and Fukushima Task Force reports.

RECOMMENDATION NO. 29: CELA recommends that the CNSC require that the Offsite Plan's monitoring provisions and ingestion control zones extend from the existing 80 ingestion route, to encompass a distance of 100 km from the NGS. Also, the CNSC must require the undertaking of appropriate measures to ensure that monitoring can be done following an accident within that 100 km zone for agricultural produce, foodstuffs, milk and water.

RECOMMENDATION NO. 30: CELA recommends that the Offsite Plan explicitly outline the measures in respect of controlling ingestion food and water, including contingency planning for replacement of drinking water for all residents within 100 km of the Point Lepreau nuclear station that may be required in the case of a severe nuclear emergency of the type outlined by the *International Commission on Radiological Protection*.

RECOMMENDATION NO. 31: Risks of exceeding maximum radiation exposure limits must be discussed with workers in advance of any accident. Methods to review risks and obtain consent to exceed those limits should be explicitly clarified in both the Onsite and Offsite Plans.

RECOMMENDATION NO. 32: CELA recommends that the CNSC require annual conducting of exercises dealing with these types of full scale severe event or multi- unit accident scenarios with conclusive demonstration of their effectiveness as a licence condition for Point Lepreau in this application.

RECOMMENDATION NO. 33: CELA submits that the CNSC should not renew Point Lepreau's operating license beyond the current licence period without verifying "through tests and assessments" the adequacy of the emergency plans in place for the station, both onsite and offsite, to respond to severe nuclear emergencies. CNSC should furthermore require that the Offsite Plan be amended to reflect the capability requirements in the IAEA's GSR Part 7, rather than the out-dated requirements in GS-R-2.

RECOMMENDATION NO. 34: CELA calls on the CNSC to incorporate the provisions of REGDOC-2.10.1 into the Point Lepreau Licence Condition Handbook.

RECOMMENDATION NO. 35: CELA submits that the CNSC has jurisdiction to consider the adequacy of the emergency plans in place at Point Lepreau in deciding whether to renew the operating licence, and/or whether to impose additional requirements by way of licence conditions to better protect health, safety and the environment.

RECOMMENDATION NO. 36: CELA urges the CNSC to further enhance regulatory oversight of emergency planning adequacy at Point Lepreau with detailed public reviews, aimed at increasing the adequacy of emergency plans in response to catastrophic offsite beyond design basis accidents.

LIST OF REQUESTS

CELA requests that prior to considering Point Lepreau's licence renewal, the CNSC require evidence verifying the following:

- The NB Power CMD references the existence of "Severe Accident Management Guidelines". CELA requests that this document be made available for public scrutiny and review (see page 5).
- To ensure intelligibility, transparency and traceability, CELA submits that the Offsite Plan must be revised to explicitly state what level of accident current measures are designed to address (see page 5).
- The requirements included in REGDOC 2.10.1, are not binding on the licence holder unless they are included as a condition under an approved licence. CELA requests that if the Point Lepreau operating licence is renewed, the whole of REGDOC-2.10.1 be incorporated into the Point Lepreau Licence Condition Handbook (see page 8)
- Among the lessons of the past tragedies is the necessity of public inclusions, consultation and transparency in changes to nuclear emergency planning. CELA requests evidence of any such public consultation in New Brunswick since the Fukushima accident (see page 8).
- The province of New Brunswick states that the offsite plan is reviewed annually. However, there are a number of dates referenced in the document which are not current to 2017. CELA requests that all information in the emergency response plan be updated to reflect currency dates of 2017 (see page 8, 9).
- CELA asks the province to explain the process by which the offsite plan is revised and what schedule is used to guide updates (see page 9).
- CELA submits that it is incumbent of the CNSC to require that the emergency planning zones be expanded before proceeding with the licensing of the Point Lepreau (see page 10).
- CELA requests that the CNSC verify that the population in the vicinity of Point Lepreau, both within the Offsite Plan's current 20 km range and beyond are engaged, informed, and involved in all aspects of emergency planning in respect of accidents that could occur (see page 10).
- The NB EMO website has a publication titled *72 Hour Emergency Preparedness – Is Your Family Prepared?* Since this document does not deal with nuclear emergencies, CELA strongly recommends an equivalent emergency preparedness document be created and disseminated to the public about nuclear emergency response (see page 13).
- NB Power states in its CMD that comprehensive nuclear safety culture assessments were conducted in 2014 and 2015. CELA was not able to obtain these documents. CELA requests the findings of these assessments be made available for public review (see page 15).

- CELA urges the CNSC to exercise its stringent oversight role as to whether emergency base planning and response has been proven, prior to exercising its discretion to provide a renewed operating licence to Point Lepreau. CELA requests that this assessment be made public (see page 16).
- Given the globally recognized uniqueness and importance of the Bay of Fundy region, CELA requests that the CNSC consider the marine environment within its reading of "protection of the environment" and "safety of persons" per s 24(4) of the *NSCA* (see page 18 -19).
- CELA requests that the province comment on the level of nuclear emergency awareness among the fisher community (see page 19).
- CELA asks, will all commercial, in-shore and recreational fishers have the capacity (either through fuel or navigational skills) to access 'safe harbours' and the marine decontamination centres located in the Port of Saint John and Blacks Harbour? (see page 19).
- CELA asks, are fishers aware of how to test or dispose of their catch, if needed? (see page 19).
- CELA asks if there is any compensation fund available to the fishing community in the event of harm? (see page 19).
- Given the significant roles played by DAAF and the Coast Guard in the protection of human life at sea, CELA requests copies of the documents which outline their role and duties (see page 19).
- CELA submits that the CNSC must also ensure neighbouring jurisdictions' readiness in the event of an emergency at Point Lepreau. Particularly, the province of Nova Scotia and state of Maine must be sufficiently aware of contingency emergency plans arising from severe accidents at Point Lepreau (see page 20).
- CELA requests the licencee provide information on whether emergency response information has been communicated to Nova Scotia and Maine, and whether KI pills have been distributed (see page 20).
- The Offsite Plan notes that KI has been distributed to residences within 20 kilometres of the Point Lepreau and that there is a combined KI inventory of approximately 55,000. CELA requests information on who maintains the currency of this stock and by what process it is tracked (see page 26).
- The Offsite Plan states that the last KI distribution took place August – September of 2015. The next distribution is to occur before the expiration date on current tablets (August 2021). CELA requests information regarding what interim measures will be used during this six-year time span to ensure all residents have KI in their homes (see page 27).
- REGDOC 2.10.2 requires the licensee to "collaborate with the municipal or regional authorities to develop and maintain public evacuation time estimates based on current census data, and future population growth projections on a per-decade estimation until end

of life of the facility."CELA requests this provision form part of the Point Lepreau licencing conditions (see page 33).

- CELA notes that the Offsite Site plan in its "Ingestion Pathway Monitoring" section lists a chapter called Countermeasures. Unfortunately, this chapter only contains the words "To be completed later." CELA requests an update to this chapter be provided (see page 36).
- The Offsite Plan states that those engaged in decontamination operations should wear personal protective equipment and a "dose control program" be undertaken. CELA requests that the licensee or province confirm if a dose control program has been put in place. CELA further submits that if these programs are in existence, they be explicitly referenced and appended in the emergency response plans (see page 37).
- Drills must confirm that communication channels are working properly and emergency locations are fully operational and functional. The CNSC should require the inclusion of members of the surrounding community and public interest organizations in these drills to increase input and confidence in the results (see page 38).
- CELA recommends that the results of drills be made public, along with lessons learned, and improvements recommended as a result of the exercises. Furthermore, the CNSC should require reporting of implementation of those improvements on an annual basis (see page 38).

LIST OF ACRONYMS

BDBR	Beyond design basis release
CMD	Commission Member Document
DAAF	Department of Agriculture, Aquaculture and Fisheries
DBR	Design basis release
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
ITB	Iodine thyroid blocking
NB EMO	New Brunswick Emergency Measures Organization
PNERP	Provincial Nuclear Emergency Response Plan
RHRP	Radiation Health Response Plan

INTRODUCTION

The Canadian Environmental Law Association (CELA) welcomes this opportunity to review the proposed licence renewal of the Point Lepreau Nuclear Generating Station (herein, "Point Lepreau"). Located in rural New Brunswick on the Lepreau Peninsula in the Bay of Fundy, it is uniquely Canada's only nuclear reactor located on an ocean.

On February 17, 2012, the Canadian Nuclear Safety Commission (CNSC) issued the current Point Lepreau operating licence. With the licence set to expire on June 30, 2017, the New Brunswick Power Corporation (herein, NB Power) has applied for a five-year renewal of its nuclear power reactor operating licence. On December 16, 2016, CELA received participant funding by the CNSC to participate in the Point Lepreau relicensing hearing.

For nearly 50 years, CELA has used legal tools, undertaken ground breaking research and conducted public interest advocacy to increase environmental protection and the safeguarding of communities. CELA works towards protecting human health and the environment by actively engaging in policy planning and seeking justice for those harmed by pollution or poor environmental decision-making. In this context, CELA is focused on examining the sufficiency of nuclear emergency planning as a matter of significant public importance.

In this submission, CELA addresses the issues identified in our Participant Funding Program and responds to the materials provided by the CNSC, NB Power and the Province of New Brunswick. With this submission, CELA aims to:

- Examine the emergency planning provisions relevant to the Application for re-licensing;
- Provide input to the CNSC in respect of the adequacy of said provisions; and,
- Provide recommendations for improvement.

CELA's review of the proposal to extend the Point Lepreau operating licence for the next five years will focus on whether the CNSC should grant this licence in light of the adequacy of emergency planning at Point Lepreau. Ultimately, CELA submits that the test the CNSC must apply in deciding to renew the licence is whether the emergency response plan's planning basis is that of a catastrophic-level accident. If the CNSC concludes it is not, the licence should not be renewed.

1.O CNSC ADJUDICATION – PROCESS AND LIMITATIONS

1.1 Participant Funding Applicants

CELA again reiterates its disappointment[1] regarding the process the CNSC has chosen to undertake in its consideration of input from public participants, particularly Participant Funding Program (PFP) applicants.

On December 16, 2016, CELA was informed of its success at obtaining participant funding. As our review and analysis is directly tied to the Point Lepreau licence, we could not commence any in-depth research until receiving the CMDs from the CNSC Staff [2] and NB Power.[3] These were received later than anticipated on January 18, 2017, because of problems the CNSC was experiencing with their interventions server.[4]

Part 1 of Point Lepreau's relicensing hearing occurred January 26, 2017. During the hearing, a number of documents referenced in NB Power's Commission Member Document (CMD) were discussed with the panel members. Most crucially, was a document referred to in the NB Power and CNSC Staff CMDs, titled the *Province of New Brunswick's Point Lepreau Nuclear Off-Site Emergency Plan* (herein "Offsite Plan").[5] As this document and others referenced in the CMDs were not included as attachments or appendixes (nor available in the public domain), [6] CELA sought copies.[7]

In order to obtain the Offsite Plan, CELA was informed by the Province of New Brunswick on February 15, 2017, that it must submit a *Right to Information and Protection of Privacy Act* request. After repeatedly requesting the Province voluntary release the Offsite Plan, and formally filing an

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[1] *See* page 7 of CELA's submission on "*Canadian Nuclear Laboratories' Application to amend and extend the Chalk River Laboratories nuclear research and test establishment licence for a period of 17 months*" (6 March 2016) online: http://www.cela.ca/sites/cela.ca/files/1065-CELA%20Submission%20on%20CNL%27s%20application%20to%20amend%20and%20extend%20the%20CRL%20licence%20to%202018.pdf **[*Chalk River*].**

[2] CNSC, "*CMD 17-H2 New Brunswick Power Corporation – Point Lepreau Nuclear Generating Station*" (26 Jan 2017) at 69 **[*CNSC CMD*]**.

[3] New Brunswick Power, "*CMD 17-H2.1 In the Matter of New Brunswick Corporation – Point Lepreau Nuclear Generating Station*" (22 Dec 2016) **[*NB Power CMD*].**

[4] Email correspondence with CNSC dated January 18, 2017.

[5] *See* Appendices 1 and 2, *Point Lepreau Nuclear Off-Site Emergency Plan Volume I (Policy)* and *Point Lepreau Nuclear Off-Site Plan Volume II (Procedures)*. The two volumes, both dated 31 March 2016, were issued by the Department of Public Safety ***[Offsite Plan].***

[6] *CNSC CMD, supra* note 2 at 69; *NB Power CMD, supra* note 3 at 75.

[7] *See* Appendix 5, Document Requests.

information request, a paper copy of the Offsite Plan was received March 21, 2017.[8] It should be noted that prior to receiving the Offsite Plan on March 21, the Province had not been able to inform CELA when or if the Offsite Plan would be disclosed and therefore it was as a pre-emptive and precautionary measure that CELA sought an extension from Commission Secretary, Marc Leblanc. On March 15, 2017, we received a deadline extension to April 3, 2017. While we did eventually receive the plan, it left us a very short time for review.

CELA would not only like to emphasize the extreme delays and difficulty with which the disclosure process operates, but the fact that documents upon which the public hearing on January 26 and accompanying CMDs relied were withheld from the public's purview. Secondly, CELA spent an astounding amount of time seeking documents, following up on document requests and drafting information requests. This was not the best use of CELA's resources and ultimately, not covered in the funds received as a Participant. The process to date has taxed CELA's ability to provide in-depth analysis and draft a value-added intervention which could improve the regulatory review process and contribute to a better protection of the public in the event of a nuclear emergency.

RECOMMENDATION NO. 1: CELA submits that all CMDs for any CNSC hearings or meetings should be posted in their entirety on the Commission's website. Not only will this alleviate a burden on CNSC staff to respond to individual requests for documents, it will allow any interested party to access the documents immediately, without delay.

RECOMMENDATION NO. 2: The CNSC must revise its participant process to ensure the timely delivery of documents and require a minimum of 60 days between receipt of all documents and the CMD submission deadline. To facilitate the public review of documents, the CNSC should mandate that all reports and documents referred to in a party's CMD be appended and posted in full, on the CNSC's hearing portal.

1.2 Transparency

CELA submits that there are significant similarities between the regulatory and industry attitude in Japan pre-Fukushima and the attitude currently in "western" nuclear power operating states, including Canada. One of the significant findings arising from the Fukushima accident, echoed at a recent International Atomic Energy Agency (IAEA) conference on nuclear regulation post Fukushima (hosted in Ottawa by the CNSC), was that a lack of transparency and credible information can severely harm public confidence in the industry and the regulator.

[8] *See* Appendix 6, Information Request.

CELA is of the view that the lack of access to documents, which form the basis of emergency planning and response, is an issue of significant public importance. CELA will persist in seeking additional, historic materials to include in our emergency planning document collection. Given all nuclear power plants now operate in a post-Fukushima world, the CNSC and industry proponents must heed lessons and recommendations and opt for a high degree of transparency in both its document dissemination and decision-making.[9]

1.3 Disclaimer

This submission by CELA is not an endorsement of the CNSC's hearing process, its independence as a regulator, or its outcomes. To the contrary, CELA submits there is a need for legislative review of the CNSC in order to address weaknesses in the current legal framework.

2.0 OFFSITE EMERGENCY PLANNING AND PREPAREDNESS AT POINT LEPREAU

There is a necessity for sufficiently detailed emergency planning and preparedness. In the event of a catastrophic accident at the Point Lepreau generating station, widespread health, safety and environmental consequences would be inevitable unless immediate and effective steps were taken for public protection.

In 2012, the National Diet of Japan's Fukushima Nuclear Accident Independent Investigation Commission concluded that the Fukushima Daiichi nuclear power plant accident could not be "regarded as a natural disaster. It was profoundly a manmade-disaster - that could and should have been foreseen and prevented."[10] In March of 2017, the Maebashi District Court in Japan ruled for the first time that both the government and operator of the Fukushima nuclear plant were responsible for failing to take preventative measures.[11] The judges found that the major risks from the plant were foreseeable by the government but were ignored and not acted upon.[12]

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[9] *See* International Atomic Energy Agency, "*The Fukushima Daiichi Accident*" (2015 **[*Fukushima Daiichi Accident*]**; National Academy of Science, "*Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of US Nuclear Plants*" (2014) **[*National Academy of Science*].**

[10] The National Diet of Japan, "*The Official Report of he Fukushima Nuclear Accident Independent Investigation Commission*" (2012) online: https://www.nirs.org/wp-content/uploads/fukushima/naiic_report.pdf at 9 **[*National Diet of Japan*].**

[11] Daisuke Kikuchi, "*In first, government and Tepco found liable for Fukushima disaster*" (17 March 2017) The Japan Times online: http://www.japantimes.co.jp/news/2017/03/17/national/crime-legal/first-government-tepco-found-liable-fukushima-disaster/#.WN3YwogrLIU.

[12] Shaun Burnie, "*Japan court shocks nuclear industry with liability ruling*" (20 March 2017) Asia Times online: http://www.atimes.com/article/japan-court-shocks-nuclear-industry-liability-ruling/.

In response to these findings, CELA reaffirms its position that the CNSC must ensure the sufficiency of the Point Lepreau offsite emergency plan, including a detailed planning basis, to pre-prepare for larger radiation releases, over greater geographical distances than have historically occurred. CELA's use of the terms 'severe' and 'catastrophic' accident throughout this submission shall refer to an accident whose radiation release is on par or greater than that of the Fukushima nuclear station. Therefore, our discussion of the planning basis and the resulting emergency response plan shall be understood from this baseline.

CELA echoes the submission of Greenpeace,[13] in noting that until an open and public review of the offsite emergency plan has occurred, the CNSC does not have enough information before it to ensure the safety of the public in the event of a major radiation release.

2.1 Planning Basis

Fundamentally, the magnitude of an accident chosen as the design basis for emergency planning determines the consequences and risks which can be averted. For instance, a planning basis which relies on a less severe accident baseline will have wildly divergent planning outcomes than a response plan based on a 'worst case' or catastrophic scenario. The planning basis chosen directly affects the amount of resources and preparation necessary to respond. As found by the US-based, National Research Council of the National Academies, the emergency management plans in Japan at the time of the Fukushima Daiichi accident "were inadequate to deal with the magnitude of the accident."[14]

It has come to CELA's attention that the province of New Brunswick "does not have its own planning basis or definition of type of release." Instead, the operator itself, NB Power is responsible for classifying the radiation emergency and the provincial, New Brunswick Emergency Measures Organization (NB EMO) "follows the notification procedure in accordance with the classification."[15] To ensure intelligibility, transparency and traceability, CELA submits that the Offsite Plan must be revised to explicitly state what level of accident current measures are designed to address.

The New Brunswick offsite emergency plan is based on a Design Basis Release (DBR), which is not of a sufficient scale to ensure emergency response preparedness in the event of a severe accident.[16] While the NB Power CMD references the existence of "Severe Accident Management Guidelines,"

[13] *See* "*17-H2.74 - Presentation by Greenpeace Canada*," online: http://nuclearsafety.gc.ca.
[14] *National Academy of Science, supra* note 9 at 11.
[15] *See* Appendix 7, Planning Basis Email Correspondence.
[16] *Offsite Plan Vol II*, *supra* note 5 at 227.

NB Power would not provide a copy of it to CELA because it was "for internal use only."[17] CELA requests that this document be made available for public scrutiny and review.

Basing the capacity of emergency response on a DBR fails to ensure that New Brunswick is prepared to respond to the following during a severe accident:

1. Timely public alerting and direction
2. Prioritization of evacuations
3. Radiation monitoring and, if necessary decontamination
4. Medical assessment, treatment and planning

CELA submits that the acceptance of a less severe accident as an emergency planning basis for emergency planning is a fundamental error in energy policy and is a regulatory oversight. This flawed planning baseline results, in part, from early operating experience when nuclear plants were newer and had fewer "reactor years" of operation, and also based, in part, on questionable probability calculations.

As we have previously stated in our submissions on emergency planning at other Canadian nuclear power plants, the attitude in which lower levels of preparedness have until this point been accepted is reminiscent of a statement made at an IAEA Regulator's Conference hosted by the CNSC in Ottawa in April 2013. At this conference, Toshimitsu Homma of the Japan Atomic Energy Agency stated to the Panel on Emergency Management that the most important lesson of Fukushima was that, before the accident, "[t]here was an implicit assumption that such a severe accident could not happen and thus insufficient attention was paid to such an accident by authorities."[18]

[17] Email correspondence from NB Power, March 31, 2017.

[18] The Porter Royal Commission on the Electric Power Planning concluding report, titled "Mind-Set Syndrome," quoted the Presidential Commission on the Three Mile Island accident which occurred in 1979. The TMI Commission noted that "the belief that nuclear power plants are sufficiently safe grew into a conviction.... The Commission is convinced that this attitude must be changed to one that says nuclear power is by its very nature potentially dangerous, and therefore, one must continually question whether the safeguards already in place are sufficient to prevent major accidents." These statements by the TMI Commission and the Porter Commission were made in 1979 and 1980. The lessons that were supposed to be learned at that time, according to the comments of Mr. Homma of Japan had apparently been forgotten, if they were ever truly internalized. CELA has an ongoing concern that this type of "mind-set syndrome" continues in the Canadian context today, even while at the same time the Fukushima Task Force and its recommendations are proceeding. CELA recommends that the CNSC in its decision on this Application, should explicitly recognize the dangerous nature of the technology and demonstrate to the public by way of its decision that it is taking that danger very seriously, in particular by requiring evidence of detailed and effective planning for severe beyond design basis accidents.

A similar level of complacency is echoed in the Point Lepreau Offsite Plan which states its reactor,

> […] uses a different technology than either of [Three Mile Island or Chernobyl] and the likely nature of any accident at PLGS would be much different. Furthermore, in the case of Chernobyl, the social and political environment was very different. In order to prevent misunderstanding or confusion, at no time should health system communication mention any of these nuclear incidents unless to rebut firmly any connection in the public mind. [19]

This is a very worrisome attitude. Among the lessons from Chernobyl, Fukushima, Three Mile Island, and other accidents is that an unfortunate set of circumstances could still lead to an unanticipated severe or catastrophic accident. The opinion expressed in the Offsite Plan is therefore misleading and potentially dangerous in that it rests on a false sense of security and dismisses the lessons which can be learned from prior accidents. It is crucial that the province of New Brunswick and NB Power, in designing the planning basis, identify how large releases of radiation will be recognized in their emergency response planning basis.

Post-Fukushima, it has been recognized that "beyond design basis accidents were not sufficiently considered" and as a recommendation, plants now must be able to "withstand applicable beyond design basis accidents."[20] The US National Academy of Science also recommends that the nuclear industry "give specific attention to improving plant systems in order to enable effective responses to beyond design basis events."[21] New Brunswick has not demonstrated that it has changed its plans, emergency preparedness on the ground, or details of planning to meet a beyond design basis accident. We see no evidence that the planning basis has been revised to reflect both Chernobyl and Fukushima-scale accidents.

CELA seeks a response from the province of New Brunswick to explain why such a low source term was accepted as a planning basis for emergency response.[22]

RECOMMENDATION NO. 3: CELA submits that the planning basis for a potential offsite nuclear accident in New Brunswick must be increased (with public input) to account for a catastrophic offsite accident. At this time, and until such emergency plans are in place and proven to be effective for a catastrophic accident, CELA submits that the site should not be licensed for continued operation.

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[19] *Offsite Plan Vol II, supra* note 5 at 109.
[20] *Fukushima Daiichi Accident, supra* note 9 at 61, 6.
[21] *National Academy of Science, supra* note 9 at 155.
[22] *See* Appendix 3, NB Power "Technical Planning Basis – Radiation Emergency IR – 78600 – 02" (2004).

RECOMMENDATION NO. 4: CELA recommends to the CNSC that it deny Point Lepreau's operating licence renewal on the basis that a detailed, robust emergency planning basis for catastrophic accidents has not been provided to the public, and furthermore that, to the extent the provincial offsite nuclear emergency plan has been revised, the public has been denied opportunity to provide rigorous review and input.

2.2 Emergency Response Planning

i. Currency of Existing Plan

In February of 2016, REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*, version 2 was published by the CNSC in response to the CNSC's Fukushima Action Plan. [23] CELA notes that the requirements included in REGDOC 2.10.1, are not binding on the licence holder unless they are included as a condition under an approved licence. Therefore, CELA requests that if the Point Lepreau operating licence is renewed, the whole of REGDOC-2.10.1 be incorporated into the Point Lepreau Licence Condition Handbook.

New Brunswick has not yet publicly reviewed or upgraded its offsite emergency plan since the Fukushima disaster. A November 16, 2015, article from Global News quoted the CEO of NB Power stating that the nuclear disaster at the Fukushima Daiichi plant was a major teaching point for the industry and "we have done a lot of changes since [then]".[24] It is not evident how changes implemented by NB Power post-Fukushima have been incorporated into the nuclear emergency Offsite Plan. CELA requests that the province provide records noting the review that was undertaken and consequent changes. Furthermore, among the lessons of the past tragedies is the necessity of public inclusions, consultation and transparency in changes to nuclear emergency planning. CELA requests evidence of any such public consultation in New Brunswick since the Fukushima accident occurred.

The province of New Brunswick states that the offsite plan is reviewed annually,[25] however, there are a number of dates referenced in the document which are not current to 2017. For instance:

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[23] Canadian Nuclear Safety Commission, "*Reg. Doc 2.10.1-2 Nuclear Emergency Preparedness and Response, Version 2*" online: http://nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-documents/published/html/regdoc2-10-1v2/index.cfm **[*REGDOC 2.10.1*].**

[24] Alexandra Abdelwahab, "*Large-scale emergency exercise gets underway for people living near Point Lepreau nuclear plan*" (16 Nov 2015) Global News online: http://globalnews.ca/news/2342326/large-scale-emergency-exercise-gets-underway-for-people-living-near-point-lepreau-nuclear-plant/

[25] *Offsite Plan Vol I, supra* note 5 at 13.

- Point Lepreau Generating Station ELG Off-Site Response Plan – Emergency Management Plan is dated "June 21, 2013 (ongoing)"[26]
- Harbour Authority Contact Information is dated February 2015 [27]
- Schools existing in the immediate area of Point Lepreau is current to September 2014 [28]
- Point Lepreau Warden Map for emergency altering is current to March 2012 [29]

CELA requests that this information in the emergency response plan be updated to reflect currency dates of 2017. CELA also asks the province to explain the process by which the offsite plan is revised and what schedule is used to guide updates.

RECOMMENDATION NO. 5: CELA requests that prior to considering licence renewal, the CNSC require evidence of public consultation and transparency in the changes which have been made to nuclear emergency planning since the Fukushima accident. The Offsite Plan should also be updated to include requirements for transparency, pro-active disclosure and regular public review.

ii. Size of Emergency Planning Zones

The Point Lepreau Generating Station Emergency Response Plan produced by NB Power (herein, "NB Power Response Plan") and the provincial Offsite Plan list the emergency planning zones as follows:

- Precautionary action zone (PAZ): 4 km
- Urgent protection action zone (UPZ): 12 km
- Longer-term protective action zone (LPZ): greater than 12 km
- Emergency Planning Zone (EPZ): 20 km[30]

While the NB Power Response Plan is limited in scope to the PAZ and UPZ zones (0 – 12km),[31] NB Power states it does assist offsite authorities in dealing with the radiation protection aspects of the provinces Offsite Plan.[32] CELA requests NB Power and the province provide an explanation regarding these boundary delineations and clarify what preparedness measures each respectively

[26] *Ibid* at 56.
[27] *Ibid* at 47.
[28] *Ibid* at 192.
[29] *Ibid* at 188.
[30] *Ibid* at 188.
[31] New Brunswick Power, "*Point Lepreau Generating Station: Emergency Response Plan*," SI-01365-EP02 at 9 **[*NB Power Emergency Response Plan*],** *see* Appendix 4 – NB Power Emergency Response Plan.
[32] *Ibid* at 5.

assumes.

The emergency planning zones delineated for Point Lepreau do not meet the suggested emergency zone sizes set by the IAEA Safety Guide GS-G-2.1. The IAEA recommends:[33]

- Precautionary action zone: 3 – 5 km
- Urgent protective action planning zone: 5 – 30 km

The IAEA's suggested 3-5 km precautionary action zone is based on "expert judgement" and is considerate of the public's need to seek shelter, take protective actions and evacuate, in order to avert doses exceeding thresholds for early death.[34] Likewise, the IAEA's recommended 5 -30 km urgent protective action planning zone is based on a radial distance within which monitoring and protective actions can be accomplished within a few hours following a radiation release.[35]

The CNSC's *Fukushima Task Force Report*[36] noted that at Day 5 after the onset of the Fukushima accident, authorities extended the evacuation zone to 30 km around the plant. One month later, some residents at even greater distances were moved as a result of discovering higher levels of radiation in those areas.[37] Therefore, CELA submits that it is incumbent on the CNSC to require that the emergency planning zones be expanded before proceeding with the licensing of Point Lepreau. It is evident from the experience of Fukushima that evacuation well beyond 20 km would be required in large radiation release scenarios. CELA submits that if emergency planning were undertaken for severe accidents, as recommended by the CNSC Fukushima Task Force report,[38] it would be clear that emergency planning zones must extend significantly beyond their current limits.

CELA recommends the establishment of a secondary emergency zone which extends to 100 km.[39] Figure 1, below, plots the radial distances of 4, 12, 20, 30, 40, 80 and 100 km from Point Lepreau to illustrate the provinces, states, cities and communities which would benefit from an expanded emergency zone. CELA requests that the CNSC verify that the population in the vicinity of Point Lepreau, both within the Offsite Plan's current 20 km range and beyond are engaged, informed, and

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[33] International Atomic Energy Agency, "*Arrangements for Preparedness for a Nuclear or Radiological Emergency No. GS-G-2.1*" (2007) online: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1265web.pdf at p 76 **[*IAEA GS-G-2.1*].**

[34] *Ibid* at 77.

[35] *Ibid* at 78.

[36] Canadian Nuclear Safety Commission, "*CNSC Fukushima Task Force Report, INFO-0824*" (October 2011) online http://nuclearsafety.gc.ca/pubs_catalogue/uploads/October-2011-CNSC-Fukushima-Task-Force-Report_e.pdf. **[*Fukushima Task Force*].**

[37] *Ibid* at p 8.

[38] *Ibid* at p 39.

[39] *Ibid* at p 47.

involved in all aspects of emergency planning in respect of accidents that could occur at Point Lepreau.

RECOMMENDATION NO. 6: CELA submits that the 4 km PAZ be extended to 5 km, the UPZ extended to 30 km and an explanation as to why the current emergency zones do not follow expert judgment and best practice be provided.

RECOMMENDATION NO. 7: CELA recommends that in view of the experience at Chernobyl and Fukushima, the CNSC should request that the province immediately create a secondary emergency zone to a radial distance of 100 km. This should be done as part of detailed planning for severe accidents so that appropriate monitoring of food, agricultural products, milk, and water is established and in place in the event of such an accident.

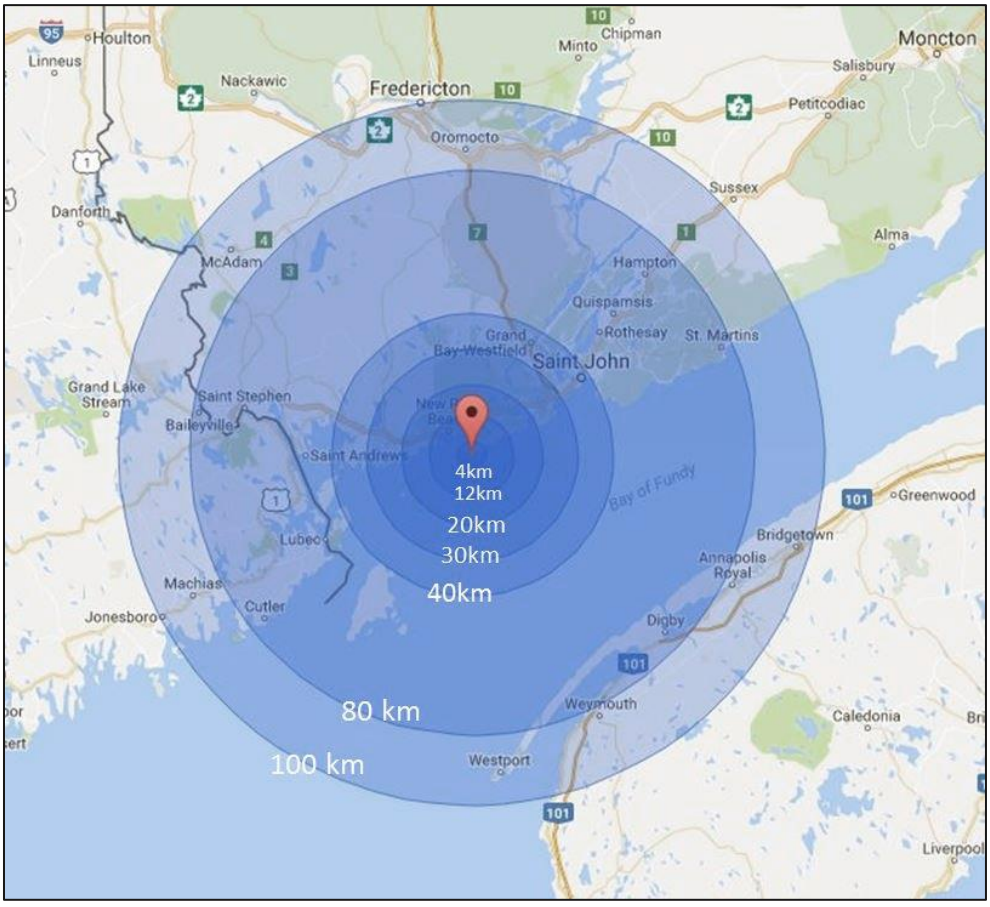

Figure 1: Emergency zones

iii. Public Availability of Emergency Response Information

The provincial authority in New Brunswick overseeing nuclear safety is the NB EMO. The NB EMO is responsible for actions to protect the public[40] and becomes involved when there are emergencies presenting a danger to the general public.[41]
It is a matter of significant concern that the NB EMO has not made the province's Offsite Plan[42] publicly available either in full or in part. Further still, there is a paucity of guidance and literature on the NB EMO website which could provide citizens with knowledge of the province's nuclear emergency response and plans.

CELA has reviewed all links and information posted on the NB EMO website[43] and findings, current to April 1, 2017, are presented below.[44] Our findings are organized by the section headings on the site: (1) Latest, (2) Quick Links and (3) Related Links.

1. Latest Category

This section of the website contains a document titled *New Brunswick Submission to the Canadian Nuclear Safety Commission* and it describes the province's Nuclear Emergency Program. While the document contains helpful information on emergency response, it is not dated so its currency is unknown. It appears to pre-date 2012 as it states at one point, for instance, "the next test is planned for January 2012."[45] Secondly, the document is not intended as a practical emergency guidebook for citizens and indicates as much, in its opening paragraph where it states "this submission is to the CNSC."[46]

A second document in this section of the website, titled *NB Presentation* is a PowerPoint delivered to the Department of Public Safety in December of 2011. While this presentation is publicly available, its aim is not that of emergency response information dissemination, but the description of the "current state […] capabilities and readiness for station restart" in 2012.

2. Quick Links and Related Links

[40] *NB Power Emergency Response Plan*, *supra* note 31 at 5.
[41] *Offsite Plan Vol I, supra* note 5 at 8.
[42] *Ibid*.
[43] *See* Appendix 8, NB EMO Website dated April 1, 2017.

[45] New Brunswick, "*Nuclear Emergency Program*" online: http://www2.gnb.ca/content/dam/gnb/Departments/ps-sp/pdf/emo/Nuclear/NuclearEmergencyProgram.pdf at 12.
[46] *Ibid* at 1.

All but one of the Quick Links and Related Links listed on the NB EMO's Nuclear Emergency Program website either redirects to external websites, such as Health Canada or the CNSC, or provincial websites which are not nuclear-response specific.

Upon opening a link titled *Public Warning System,* a document named *Point Lepreau Emergency Notification System: What you need to know* appears.[47] This one page document informs residents that if they are within a 20 km radius of Point Lepreau, they will receive messages on their telephone alerting them to an emergency test or actual event. This document does not provide information about a response following this notification, should one be received, or an indication of events which could follow, in the event of an emergency message being sent.

3. Other Emergency Preparedness Documents

A search elsewhere on the NB EMO website for public documents pertaining to emergency response returned a publication under the heading *Planning and Preparedness,* titled *72 Hour Emergency Preparedness – Is Your Family Prepared?* [48] This is a very helpful publication indicating how individuals and families can create their own emergency plan and 72-hour emergency kit. While the guide urges citizens to "know the risks" which may include natural disasters like flood and hurricanes, and sudden events such as train derailments and power outages, the term "nuclear" does not appear in the document. Following this guide's template, CELA strongly recommends an equivalent emergency preparedness document be created and disseminated to the public about nuclear emergency response.

Given the severe lack of nuclear emergency response documents geared to the public on the NB EMO website, it is highly likely that members of the public are ill-informed of:

- How to find accommodation with friends and family in case of evacuation
- What it means to "self-decontaminate"
- When is it most effective to take KI pills
- What transportation options are available if they do not have their own vehicles, and

[47] New Brunswick EMO, "*The Lepreau Emergency Notification System: What you need to know*" online: http://www2.gnb.ca/content/dam/gnb/Departments/ps-sp/pdf/emo/Nuclear/TheLepreauEmergencyNotificationSystem-WhatYouNeedToKnow.pdf.
[48] New Brunswick EMO, "*72 Hour Emergency Preparedness – Is Your Family Prepared*" (2016) online: http://www2.gnb.ca/content/dam/gnb/Departments/ps-sp/pdf/emo/2015-NB-EMObooklet-E.pdf.

- How a family reunification should occur, in the event of evacuation scenarios in which members of a family are evacuated separately (such as from schools and long term care institutions).

RECOMMENDATION NO. 8: To enhance transparency and accountability, the NB EMO must maintain a website dedicated to nuclear emergency response. It must include documents and data that enable the easy access of information and incorporate a user-centred design.

iv. Federal - Provincial Responsibility for Offsite Emergency Response

The *Memorandum of Understanding between the Canadian Nuclear Safety Commission and New Brunswick Emergency Measures Organization* outlines that the NB EMO is the provincial body vested with jurisdiction respecting nuclear safety regulation, public safety, and the protection of the environment in the Province of New Brunswick.[49]

By virtue of the province's *Emergency Measures Act,* the NB EMO is the off-site emergency response authority and administers Offsite Plan.[50] This authority, vested in the province, cannot be delegated to NB Power. As stated in the CNSC's *Nuclear Emergency Response Plan – Master Plan*:

> Provincial and territorial governments have the primary responsibility for protecting public health and safety, property, and the environment within their borders. They are also the primary authorities for informing the public about protective actions and offsite conditions.[51]

Therefore, despite a licencee's helpful guidance on emergency response and planning in the community – which is the case with NB Power - these guidance documents and public outreach activities are not a stand-in for the responsibilities held by the province.

The New Brunswick *Emergency Measures Act* states that "The Minister [of Justice and Public Safety] shall coordinate emergency measures plans within the Province and may delegate powers vested in him or her by or under this Act" (s2(2)).[52] The Act defines an emergency measures plan as:

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[49] CNSC, "*Memorandum of Understanding between The Canadian Nuclear Safety Commission and New Brunswick Emergency Measures Organization*" (2011) online: http://nuclearsafety.gc.ca/eng/pdfs/MoU-Agreements/Memorandum_of_Understanding_Between_the_CNSC_and_NB_Emergency_Measures_Organization_NBEMO.pdf.
[50] *Ibid.*
[51] CNSC, "*Canadian Nuclear Safety Commission Nuclear Emergency Response Plan – Master Plan EDOC 3845178 – v25*" (May 2013).
[52] *Emergency Measures Act,* 2011 c 147.

> [A] plan, program or procedure prepared by the Province or a municipality, as the case may be, that is intended to mitigate the effects of an emergency or disaster and to provide for the safety, health or welfare of the civil population and the protection of property and the environment in the event of such an occurrence

It is the province's jurisdiction to provide for the safety of its citizens. Safety, CELA submits, is protection from harm.[53] There is widespread acceptance in the international nuclear community that a "strong nuclear safety culture needs to be adopted universally."[54] The Government of Japan, prior to the Fukushima accident, had acknowledged the need for a strong safety culture, however, its nuclear regulators were deficient at establishing and maintaining such a culture.[55] CELA submits this complacency is evident in the province of New Brunswick's approach to planning and response.

In the case of Point Lepreau, NB Power states in its CMD that comprehensive nuclear safety culture assessments were conducted in 2014 and 2015.[56] CELA was not able to obtain these documents as they were marked as "for internal use only" by NB Power.[57] CELA requests the findings of these assessments be made available for public review.

With a crucial lack of engagement by the province in ensuring offsite emergency preparedness, CELA reminds the CNSC that it is its responsibility under the *Nuclear Safety Control Act (NSCA)* to assume responsibility for approving the sufficiency of the planning basis and emergency response in New Brunswick.[58] As important as the role of the province is in developing general emergency plans and specific nuclear emergency plans, they are not the approval authority for the licensing of nuclear power plants. It is untenable that the content and efficacy of those plans be determined entirely by agencies that are not regulated directly by the CNSC such as the NB EMO, despite their important role in the undertaking of the plans.

Furthermore, it is the CNSC and only the CNSC which has the authority to grant a licence under the *NSCA*. While the EMO has a role, they do not have the jurisdiction over plant licensing, and plant licensing considerations cannot stop at the plant boundary. Section 24(4)(b) of the NSCA requires the Commission in licensing assure itself that the licensee:

> will, in carrying on [the activity for which a license is sought], make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of

[53] *National Academy of Science*, *supra* note 9 at 232.
[54] *Ibid* at 235.
[55] *Ibid* at 238.
[56] *NB Power CMD*, *supra* note 3 at 13.
[57] Email correspondence from NB Power dated March 31, 2017.
[58] *Nuclear Safety and Control Act,* SC 1997 c 9 **[*NSCA*]**.

national security and measures required to implement international obligations to which Canada has agreed.

REGDOC-2.10.1 *Nuclear Emergency Preparedness and Response*, sets out the emergency preparedness requirements flowing from s.24(4) of the *NSCA* and therefore the CNSC must ensure that, if renewed, the Point Lepreau operating licence meets these guidelines.

If a nuclear power plant is to operate in the province, then all requirements of the national regulator must be met. Where these requirements include specific offsite protection of the public from effects of accidents at those plants, operators must comply and demonstrate a reasonable basis to rely on other actors such as EMO to ensure that the level of protection required by the CNSC is in place.

CELA urges the CNSC to exercise its stringent oversight role and determine whether emergency base planning and response has been proven - prior to exercising its discretion to provide a renewed operating licence to Point Lepreau. This assessment must be made public.

As the Diet of Japan's Commission concluded in its review of the Fukushima aftermath, the nuclear regulators in Japan had not monitored or supervised nuclear safety. Rather, they avoided direct responsibilities and as an organization, lacked transparency.[59] CELA submits that emergency planning and preparedness has not been sufficiently demonstrated with any adequate amount of detail, in respect of severe accidents that may occur at the Point Lepreau facility, and thus recommends that the CNSC "shed the insular attitude of ignoring national safety standards and transform themselves into a globally trusted entity."[60]

RECOMMENDATION NO. 9: Because of its responsibilities under the *NSCA*, the CNSC must review and report on the sufficiency of the planning basis, the response plan and the province's readiness for large-scale radiation releases in New Brunswick as part of every licence application.

RECOMMENDATION NO. 10: CELA submits that this licence should not be granted until the offsite emergency response plan is made public. Members of the surrounding communities must be able to understand what is in place, how effective it is, what has changed, and on what basis the regulator is judging the emergency plans to be in place.

[59] *National Diet of Japan, supra* note 10 at 20.
[60] *Ibid*.

v. Format of Offsite Plan

CELA finds that the TAB-based approach in the Offsite Plan is unfortunate in that it makes it harder for all involved parties to determine if there are inconsistencies or gaps in the proposed response.

RECOMMENDATION NO. 11: CELA recommends that the plan be redrafted using a thematic approach, listing different planning-areas rather than focusing on the tasks of individual agencies/government bodies.

vi. Confluence of Nuclear Emergency with Extreme Weather Events

Following the National Academy of Science's review of the lessons learned from the Fukushima accident and areas for improvement, they found that the:

> Implementation of existing nuclear emergency plans was overwhelmed by the extreme natural events that affected large regions, producing widespread disruption of communications, electrical power, and other critical infrastructure. [61]

The province's Offsite Plan is silent on how extreme weather events, such as snow or ice storms, will impact the emergency response procedures, their efficacy and operational ability. Ironically, during Part One of the hearing on this very matter, there were wide-spread blackouts and power outages throughout New Brunswick due to severe weather. CELA also reminds the CNSC that on another occasion, February 13, 2017, the province of New Brunswick had to close all government offices as a result of dangerous road and driving conditions caused by snow. This came to CELA's attention after contacting the NB EMO to request the Offsite Plan and being informed that government offices were closed.

The following tweets from the Government of New Brunswick indicate the dire effects the snow and ice had on the functioning of the province:

[61] *National Academy of Science, supra* note 9 at 215.

1. January 26, 2017

2. February 13, 2017

RECOMMENDATION NO. 12: CELA recommends that the Offsite Plan integrate extreme weather events into its emergency response measures. The efficacy of all response actions listed in the Offsite Plan must be considered in light of extreme weather events, which could result in widespread power outages, and inhibit the ability of the public to travel and access essential services. Contingency plans for provincial emergency response and provincial staff responsibilities in carrying out the plan in case of accident at the Point Lepreau nuclear plant must be established to reflect the potential for very severe weather.

3.0 OTHER EMERGENCY RESPONSE PLANS

3.1 Marine Response

Point Lepreau, located within 100 metres of the Bay of Fundy, is Canada's only nuclear generating station on an ocean. In recognition of the Bay of Fundy's unique geological formations and ecological significance, it was designated a UNESCO Biosphere Reserve in 2007. [62]

The marine environment immediately around the plant is described by the CNSC as having over 70 species of fish and many commercially significant species like cod, lobster, scallops and dulse.[63] In addition to the marine mammals like whales, porpoises, dolphins and seals that frequent the Bay of Fundy, colonial waterbirds also use the area during seasonal migrations. The Bay of Fundy is home to a number of federally protected species under the *Species at Risk Act,* including the north Atlantic right whale,[64]blue whale[65] and fin whale.[66]

Given the globally recognized uniqueness and importance of the Bay of Fundy region, CELA requests that the CNSC consider the marine environment within its reading of "protection of the environment" and "safety of persons" per s 24(4) of the *NSCA.*

The Emergency Response Plan by NB Power does not contain the words, "ocean", "marine",

[62] United Nations Educational, Scientific and Cultural Organization, "*Biosphere Reserves – Fundy*" (2015) online: http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/europe-north-america/canada/fundy/
[63] *CNSC CMD, supra* note 2 at 149.
[64] Species at Risk Public Registry, "*North Atlantic Right Whale*" (2017) online: http://www.registrelep-sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=780
[65] Species at Risk Public Registry, "*Blue Whale Pacific*" (2017) online: http://www.registrelep-sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=718
[66] Species at Risk Public Registry, "*Fin Whale Pacific*" (2017) online: http://www.registrelep-sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=875

"water" or "fish". Likewise, the provincial Offsite Plan lacks thorough consideration of marine life, the potential impact on fisheries and pollution dispersion by water in the event of a large radiation release. The only considerations of marine response in the Offsite Plan are the following:

- The provincial Department of Agriculture, Aquaculture and Fisheries (DAAF) will "arrange for sampling [of] locally produced ... marine products" (p 30)
- DAAF is to ensure the safety of fishermen at sea and the removal of craft from any threatened harbour (p 33)
- If fishermen or craft are at risk, messages will be sent to the Vessel Traffic Centre and the Canadian Coast Guard will, by radio communication, inform vessels to proceed to a "safe harbour" or "decontamination area" (p 33)
- DAAF will determine the number of ships requiring decontamination and advise the Nuclear Control Group (p 33)
- The Coast Guard will evacuate all vessels from any "endangered area" (p 34)

CELA does not believe these parameters are sufficient to safeguard the marine environment. There are significant oversights in the Offsite Plan as it relates to the protection of the environment and human health in the Bay of Fundy. First, it operates on the assumption that all boats will have radio capabilities (recreational vessels under 20m are not required to have a VHF radio[67]) and secondly, that the Coast Guard has the capacity to alert all fishers and recreational vessels on the water.

CELA requests that the province comment on the level of nuclear emergency awareness among the fisher community and additionally asks, will all commercial, in-shore and recreational fishers have the capacity (either through fuel or navigational skills) to access 'safe harbours' and the marine decontamination centres located in the Port of Saint John and Blacks Harbour?[68] Are fishers aware of how to test or dispose of their catch, if needed? Is there a compensation fund available to the fishing community in the event of harm? Given the significant roles played by DAAF and the Coast Guard in the protection of human life at sea, CELA requests the documents which outline their role and duties. Further, CELA submits the CNSC must review, what appears to be, an ad hoc marine response.

By way of example, the United Kingdom has a National Contingency Plan titled *A Strategic Overview for Responses to Marine Pollution from Shipping and Offshore Installations* that could serve as a template for the province of New Brunswick. While this Plan has been in existence for a number of years, it was amended in response to the recommendations and lessons learned from ocean-based

[67] Boat Safe, "*Marine Radio Information for Boaters*" online: http://www.boatsafe.com/nauticalknowhow/radio.htm#who
[68] *CNSC CMD, supra* note 2 at 40.

pollution accidents, like the Deep Water Horizon in the Gulf of Mexico.[69] The purpose of the Plan is to ensure the "timely, measured and effective response to incidents" at sea. It affirms the UK Government's recognition that "pollution of the coastal environment [is] a serious threat" (s 1.5) and recognizes that a "high level of response preparedness" is required by all parties (s 24.3).

RECOMMENDATION NO. 13: CELA submits that this licence should not be granted until a marine-based offsite emergency plan is made public. The CNSC must ensure emergency response at sea allows for an effective response to accidents and demonstrates a high level of preparedness.

3.2 Emergency Readiness of Adjacent Provinces and States

CELA submits that the CNSC must also ensure neighbouring jurisdictions' readiness in the event of an emergency at Point Lepreau. Particularly, the province of Nova Scotia and state of Maine must be sufficiently aware of contingency emergency plans arising from severe accidents at Point Lepreau.

CELA requests the licencee provide information on whether emergency response information has been communicated to Nova Scotia and Maine, and whether KI pills have been distributed. In Nova Scotia, the community of Digby is approximately 60 km from Point Lepreau and various communities in Maine are even closer. Many studies recommend active planning, including KI distribution up to at least 100 km and in line with CELA's Recommendation No. 7, we reiterate our call for the establishment of a secondary emergency zone extended to a radial distance of 100 km.

4.0 PATHWAYS OF EXPOSURE TO RADIATION AND EMERGENCY RESPONSE MEASURES

The appropriateness of emergency planning and preparedness must be judged on its ability to respond to a severe accident scenario. This includes avoiding health and safety consequences to members of the public, in addition to on-site workers and first responders resulting from a variety of exposure pathways. These pathways include general gamma radiation from the plume of radioactive materials airborne or deposited on ground and buildings, inhalation of radioactive substances with subsequent radiation from internally deposited materials, skin deposition from externally deposited radioactive material on skin, hair, and clothes, and ingestion of deposited

[69] UK Government, "*The National Contingency Plan – A Strategic Overview for Responses to Marine Pollution from Shipping and Offshore Installations*" (Sept 2014) online: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/478676/1501120_NCP.pdf at 3.

radioactive material as contaminated food and water enter the food chain.

In the event of a severe nuclear reactor accident, the doses and exposure pathways stated by the International Commission on Radiological Protection Publication (ICRP) are likely to consist of "an initial, relatively high dose rate, inhalation component from inhalation of short-lived beta/gamma emitters during dispersion of the plume."[70] The ICRP also states that:

> For a reactor accident, this is likely to be followed by a time period lasting days or weeks when I-131 [a form of radioactive iodine] dominates the exposures, through external irradiation from contamination deposited in the environment and from direct contamination on crops and in milk. In the longer term, external radiation from radioactive isotopes of caesium and ruthenium is likely to become dominant, together with longer term contamination of foodstuff with these radionuclides.[71]

Without protective measures taken, the ICRP states that the largest component of projected dose would likely be received from contaminated foods.[72]

The purpose of emergency planning and preparedness is to implement measures that allow the health and safety consequences of radiation exposure to to be avoided. Without any emergency response or protective actions, negative health consequences are likely to result.[73]
In the following sections, CELA has reviewed material relevant to specific emergency response measures and provides comments in respect of each. These sections are based on the IAEA Standard GS-G-2 which sets out "urgent protective measures and counter measures" to include:[74]

- Isolation of contaminated area
- Prevention of inadvertent ingestion
- Evacuation
- Sheltering
- Respiratory protection and protection of skin and eyes

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[70] *See* International Commission on Radiological Protection "*Publication 109 - Application of the Commission's Recommendations for the Protection of People in Emergency Exposure Situations*", 2008 at 62-63 ***[International Commission on Radiological Protection]***.
[71] *Ibid* at 61.
[72] *Ibid.*
[73] The potential negative health consequences from ionizing radiation were described in the 1984 Provincial Working Group #8 Report: "*Nuclear radiation is potentially hazardous because it has the ability to ionize, and thus to break-up molecules, some of which may be of biological importance. If very many are broken, there may be, within days or weeks, clinical symptoms which, in the worst cases, may result in death. Below these high doses which may result in early morbidity (illness) or mortality (death), nuclear radiation may so disrupt molecules that latent cancer is induced, with the possibility of overt cancer, and possible resulting death, some decades later.*"
[74] *IAEA GS-G-2.1, supra* note 33 at 118.

- Decontamination of individuals
- Prophylaxis with stable iodine
- Protection of the food supply and prevention of the consumption of significantly contaminated foodstuffs and water [75]

4.1 Public Alerting

One of the earliest steps to take in a nuclear or radiological emergency with a potential, or actual, release of radionuclides to the environment is alerting of the public. The provisions of the *IAEA International Safety Guide GS-G-2.1, Arrangements for Preparedness for a Nuclear or Radiological Emergency*, provide the following objectives relevant to alerting:[76]

- Classify/Declare the emergency and notify local authorities – within 15 minutes of the time at which conditions indicating that emergency conditions exist are detected;

- Recommend urgent protection action to the public on the basis of the emergency classification – within 30 minutes of the time at which the emergency is classified/declared;

- Initially warn and inform the public within the precautionary action zone (PAZ) and the urgent protective action planning zone (UPZ) of urgent protective actions required – within less than 1 hour from the time at which initial notification to local authorities was given by the facility

The New Brunswick Offsite Plan does not contain requirements which would ensure that the alerting times stipulated by the IAEA GS-G-2.1 are met. The provincial Offsite Plan states that in the event of a nuclear incident, NB EMO will notify residents within the 20 km Emergency Planning Zone by means of: [77]

1. **Mass notification system:** this notification system sends out safety messages to residents via phone, text, email or fax.

2. **Point Lepreau Warden Service:** a voluntary organization tasked with alerting the public via vehicle loud speakers to "turn on their radios or TV sets to receive further information or instructions" within the 20 km radial distance of Point Lepreau.[78]

[75] *Ibid* at para. 4.13.
[76] *Ibid.*
[77] *Offsite Plan Vol II, supra* note 5 at 128.
[78] *Ibid* at 183.

Despite the Offsite Plan stating that the Warden Service will have alerts complete within 45 minutes, in actuality the plan does not allow the IAEA public alerting guidelines to be met.[79] First, the Offsite Plan does not guarantee that the alerts will be complete within 45 minutes from "the point at which an emergency is classified" but rather "upon receipt of instructions from the Director of EMO."[80] Second, the Offsite Plan provides that the Station Shift Supervisor has 30 minutes to make a recommendation for emergency protective action.[81] NB EMO must make orders on implementation of protective measures within 15 minutes of recommendations from the Station. Therefore, there is the potential that alerting will not commence until 45 minutes after the emergency classification and, in actuality, not be completed until 90 minutes after the emergency is classified.[82]

Furthermore, it does not appear that these calculations have allotted time for warden briefing or contingencies for poor weather and road conditions. Consequently, shorter and clearer time limits should be set for alerting and the chain of communication should be explained in a single, comprehensive alerting chapter in the Offsite Plan.

In contrast to New Brunswick's Offsite Plan, Ontario's *Provincial Nuclear Emergency Response Plan, 2009* (PNERP, 2009) requires that the operator notify the offsite authorities within 15 minutes "of the requirement for notification being recognized".[83] Similarly, the Implementing Plan for Chalk River under *PNERP, 2009*, requires that the Towns of Laurentian Hills and Deep River make provisions in their Municipal Plan for a public alerting system which shall ensure that the PAZ population be alerted within 15 minutes of initiation.[84]

As CELA has routinely noted in its previous submissions on nuclear emergency planning, some people will be unable to use certain means of communication because of their location, status, or physical disability. For instance, people who are hearing impaired will not be alerted by the auditory warnings. While some people will not have cellphones, others will have cellphones but not landlines. Also, cellphone service can be lost or obstructed depending upon an individual's location. Further, like any communication device that requires individuals to be present and able to use them, they also need to be powered up. Any auditory communication will also need to account for

[79] *Ibid* at 185.
[80] *Ibid.*
[81] *Ibid* at 17.
[82] *Ibid.*
[83] Ontario, "Provincial Nuclear Emergency Response Plan, 2009" online: https://www.emergencymanagementontario.ca/english/emcommunity/response_resources/plans/provincial_nuclear_emergency_response_plan.html at 4.1 ***[PNERP, 2009].***
[84] Implementing Plan for Chalk River Laboratories at 3.5.1.

non-English speakers. Homeless people are particularly vulnerable as they do not have ready access to communication devices.

While the provincial Offsite Plan states that the Wardens will drive slowly enough while announcing an emergency over loud speakers to "ensure that any hearing impaired residents have been notified," it does not explain how this will be accomplished, or whether its efficiency has been thoroughly tested.

The need for robust public alerting requirements cannot be over-stressed. If, during the course of notification and public alerting an unanticipated early release occurs, a considerable amount of population exposure can occur before protective actions have been implemented. There are a number of outstanding questions which must be addressed before the adequacy of the alerting system can be determined:

1. NB EMO states it maintains the emergency public notification contact list and twice yearly updates contact information. How is this accomplished?

2. Are there reports tracking the testing and success of the mass communication 'Everbridge' Notification System?

3. At page 142 of the Offsite Plan, it states an "Ops Policy needs to be developed to assist the RCMP in carrying out duties." What is the status of this action?

4. The Offsite Plan states that the NB EMO is required to "conduct periodic tests of the alerting system." What is the scheduling frequency or process guiding these drills? [85]

RECOMMENDATION NO. 14: As CELA has recommended in similar contexts in the past, the timeframes in the Offsite Plan should be compressed to alert the public in as short a time frame as possible, preferably less than 30 minutes from the onset of an accident. Methods to compress the existing 90 minutes time frame should be considered and tested, and their efficacy should be one of the points of evaluation by the CNSC in the licence.

[85] *Offsite Plan Vol II, supra* note 5 at 7.

RECOMMENDATION NO. 15: CELA recommends that NB EMO and the designated municipalities maintain a list of people who would not be reachable through all of the proposed notification media, and for whom door-to-door notification should therefore be immediately undertaken. Other emergency personnel should be immediately dispatched to evacuate homeless people and others who are not covered by existing notification systems.

RECOMMENDATION NO. 16: CELA recommends that the CNSC refuse an extension of Point Lepreau's operating licence without ensuring, through thorough testing, that the alerting system in the emergency response zone is fully effective.

4.2 Potassium Iodide (KI) Distribution

Potassium Iodide (KI) is important because its ingestion helps to block uptake of radioactive iodine in case of a severe accident. Radioactive iodine isotopes are among the earliest radionuclides emitted from a nuclear power plant in case of breach of containment or in controlled venting following an accident. Iodine thyroid blocking (ITB) is the method by which the thyroid gland's ability to absorb radioiodine is prevented or reduced, through the ingestion of KI before or shortly after exposure to radioiodine.[86]

According to Ontario's Ministry of Health and Long Term Care *Potassium Iodide Guidelines* (KI Guidelines), numerous governments and agencies, including the World Health Organization, the U.S. Food and Drug Administration, and Health Canada, short-term administration of KI is considered a low-risk protective measure for populations with normal thyroid function. Most importantly, it can provide protective benefits for those who are vulnerable to thyroid disease such as pregnant and nursing women, newborns and children.[87]
When developing a KI distribution strategy, consideration should be given to the following scenarios for precautionary and protective measures: [88]

- **Delayed Emission:** if an evacuation can be completed before the emission is released, then ITB would not be required.

- **Imminent or Ongoing Emission:** in the event of a severe accident, where emission release is either imminent or ongoing, immediate implementation of protective measures would be

[86] *Radiation Health Response Plan, supra* note 22 at 62.
[87] Ontario, Emergency Management Branch, Ministry of Health and Long Term Care, "Potassium Iodide (KI) Guidelines," online: http://www.health.gov.on.ca/en/pro/programs/emb/rhrp/docs/ki_guidelines.pdf at 4 ***[KI Guidelines].***
[88] *Ibid* at 6.

required in the PZ including ingesting KI for ITB, in conjunction with evacuation and/or sheltering.

- **Persons Unable to Evacuate: i**n such a situation, direction would be given to shelter, and if appropriate, consume an appropriate KI dose every 24 hours for the duration of the exposure until evacuation is possible. The maximum time that sheltering would be implemented is two days.

CELA recommends that ITB should always be accompanied by sheltering or evacuation.[89] The New Brunswick Offsite Plan concurs with this recommendation, stating that KI should be administered in conjunction with the shelter in place order and if an evacuation is carried out because of a radioactive plume.[90]

The Offsite Plan also notes that KI has been predistributed to each residence within 20 kilometres of Point Lepreau and, there is a combined KI inventory of approximately 55,000. [91] CELA requests information on who maintains the currency of this stock and by what process it is tracked.

There are a number of areas regarding KI distribution which must be reviewed prior to considering a renewal of NB Power's licence. For instance:

1. The IAEA recommends that ITB should be implemented if the projected equivalent dose to the thyroid exceeds 50 millisieverts (mSv).[92] The Offsite Plan states its emergency protective actions are "consistent with international guidance," however, its KI protective action has an intervention level starting at a 100 mSv instead of the IAEA's 50 mSv.[93]

2. The Offsite Plan is silent on whether KI tablets have been pre-distributed to the following types of institutions within the PAZ in quantities sufficient to cover people who live or work in this zone for the indicated number of days (in parentheses):[94]

    - Schools (one day)
    - Daycares (one day)

[89] *Ibid* at 12.
[90] *Offsite Plan Vol II, supra* note 5 11.
[91] *Ibid* at 12.
[92] IAEA, "IAEA Safety Standards, Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency, Series No. GSG-2" (Vienna, 2011) online: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1467_web.pdf ***[IAEA GSG-2].***
[93] *Offsite Plan Vol II, supra* note 5 at 7.
[94] *Ibid.*

- Nursing homes and Long-Term Care Homes (three days)
- Hospitals (three days)
- Prisons and Detention Centres (three days)
- Police and Fire Departments, Emergency Medical Services (three days)

3. As the Offsite Plan only extends to the 20km range, it is silent on KI pre-distribution outside this boundary.

4. The Offsite Plan states that the last KI distribution took place August – September of 2015. The next distribution is to occur before the expiration date on current tablets (August 2021). CELA requests information regarding what interim measures will be used during this six-year time span to ensure all residents have KI in their homes.

RECOMMENDATION NO. 17: CELA recommends that the CNSC require NB Power to ensure that stable KI is predistributed to all residents within the proposed secondary emergency zone as a condition of licensing.

RECOMMENDATION NO. 18: CELA recommends that the CNSC require that NB Power, in conjunction with the designated municipalities, conduct outreach and notification to members of the public in the designated municipalities, as to the availability of KI and advice on where KI may be obtained. Members of the public should be provided with basic information on the benefits and risks associated with using KI and the importance of having an at-home supply. They should be made aware that other organs (bone marrow, lungs and other organs) are not protected by KI, and that KI should only be taken at the direction of the Province.

Lastly, CELA recommends that section 2.3.4 of the Public Preparedness requirements of REGDOC 2.10.1, which requires the following of all licencees, be incorporated into the Licence Condition Handbook:[95]

1. Ensure that a sufficient quantity of iodine thyroid-blocking (ITB) agents is pre-distributed, to all residences, businesses and institutions within the designated plume exposure planning zone, together with instructions on their proper administration,
2. Ensure that a sufficient quantity of ITB agent is pre-stocked and ready for prompt distribution within the designated ingestion control planning zone; this inventory of ITB agents shall be located so that it can be efficiently obtained by, or distributed to, members

[95] *REGDOC 2.10.1, supra* note 23 at 22.

of the public when required,

3. Ensure that ITB agents can be obtained by residents of the designated ingestion control planning zone at any time,
4. Ensure that particular consideration is given to sensitive populations such as children and pregnant women within the designated ingestion control planning zone
5. Ensure that the pre-distributed and pre-stocked ITB agents are maintained within expiry date,
6. Ensure that the pre-distribution plans are supported by a robust, ongoing, and cyclical public education program,
7. Ensure that all residences, businesses and institutions within the designated plume exposure planning zone are provided with public emergency preparedness information detailing how they should prepare for a nuclear emergency and what they should do or expect during a nuclear emergency; this information will reinforce the public education program designed to support the pre-distribution of ITB agents
8. Ensure that this public emergency preparedness information is readily available to the general public, including online.

4.3 Sheltering in Place

The IAEA Safety Guide GS-G-2.1 describes sheltering in place as an urgent protective measure to consider following a nuclear emergency. The Guide states that sheltering will provide "some protection against all of the major exposure pathways during the early phase of an emergency," but that the "effectiveness of sheltering varies greatly."[96]

Variables that impact the effectiveness of sheltering include, the type of release, the type of construction of the building, and the exposure pathway. After a few hours of shelering, the reductions in doses are no longer evident and after that time, doses may become greater indoors, than those outside. If some of the contaminants are "trapped in the shelter," once the emission plume passes, the Guide suggests that shelters may then need to be aired out.[97]

The Guide indicates that "typical European and North American homes and their basements … may not provide adequate protection" and that sheltering in this type of structure should be used if evacuation is impossible or while preparing to evacuate. "Substantial" shelter may be provided inside the halls of "large multi-storey buildings or large masonry structures away from walls or windows" which may provide a tenfold reduction in external and inhalation dose. The Guide states

[96] *IAEA GS-G-2.1, supra* note 33.
[97] *Ibid* at Appendix V, V.3.

this type of protection can be used for short periods, for up to a day, subject to monitoring. "Special shelters" are defined as those designed specifically to provide dose reduction "by a factor of more than 100".[98]

According to Ontario's *Radiation Health Response Plan* ("RHRP"), sheltering is most effective if a plume emission is of a short duration, specifically less than 24 hours. The effectiveness of sheltering decreases with time for most structures, and it is difficult to keep people sheltered in place for an extended period of time.[99]

The ICRP also states that buildings constructed of wood or metal (as opposed to solidly constructed buildings) "are not generally suitable for use as protective shelters against external radiation, and buildings that cannot be made substantially airtight are not effective in protecting against any exposures."[100] Accordingly, ICRP also implies that for these types of buildings the main utility is to advise people to "go inside and listen to their radios for further instructions."[101] Health Canada's Guidelines for Intervention During a Nuclear Emergency state that sheltering should only be used for one day and should not extend beyond two days.[102]

As observed in CELA's previous submissions on nuclear generation station relicensing hearings, given the significant limitations of sheltering, there must be significant planning, attention, and resources given to outreach and education, in order to ensure rapid, timely evacuation. In the time frames required for evacuation, there may nevertheless be significant exposures to the public. It is very important that emergency planning officials and the public understand that, for example, in large early release scenarios, it may not be possible to prevent all exposures to the public because sheltering will not be fully effective and evacuation takes time.

Despite the New Brunswick Offsite Plan recognizing "sheltering in place" as an emergency protective action and temporary measure,[103] the Offsite Plan does not acknowledge the limitations set out by the IAEA Guide or the ICRP Publications reviewed above. On the contrary, the description implies that sheltering will be effective without any discussion as to the type of building, the need to close doors, dampers and windows and to turn off furnaces and air conditioners. Nor, does it recommend going to a basement or ground floor room with no windows.

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[98] *Ibid* at Table 11, p 97.
[99] *Radiation Health Response Plan, supra* note 22 at 58.
[100] *International Commission on Radiological Protection, supra* note 70 at. 65-66.
[101] *Ibid.*
[102] Health Canada's Guidelines for Intervention During a Nuclear Emergency (H46-2/03-326E, 2003) at 18.
[103] *Offsite Plan, Vol II, supra* note 5 at 8.

RECOMMENDATION NO. 19: CELA recommends that the CNSC require the NB EMO, in conjunction with regional emergency response officials, include in its outreach material to the public, explanations about the capability of sheltering and its limitations as described in the IAEA Guide GS-G-2.1.

4.4 Medical Treatment and Availability

The IAEA Safety Guide GS-G-2.1 states that there should be a referral hospital outside of the Urgent Protective Zone that can provide "highly specialized treatment for a limited number of exposed and/or contaminated persons."[104]

It is not currently possible for CELA to evaluate or comment upon the level of treatment available to the public in the event of a radiation release. Nor is it possible for CELA to evaluate whether the treatment available in the event of an accident at Point Lepreau is in compliance with IAEA GS-G-2.1 as the provincial health emergency plans are not publicly available.

The Offsite Plan states the following:

> The Provincial and Regional all-hazards Health Emergency Management Plans, EOC's (Emergency Operations Centre) as well as the Provincial Health Nuclear Emergency Plan will all be activated upon notification from the NB Emergency Measures Organization of a site area radiation emergency alert or general radiation emergency alert by PLGS. [105]
>
> The Provincial Health Nuclear Emergency Plan supplements the all-hazards emergency management plans of its participating organizations by addressing issues specific to a health nuclear emergency at the Point Lepreau Generating Station (PLGS).[106]

An extensive search on New Brunswick provincial websites and a broader Google search revealed that, like the province's Offsite Plan, the Provincial Health Nuclear Emergency Plan is not publicly available. By contrast, Ontario's *Radiation Health Response Plan* is publicly available.[107]

The Offsite Plan designates the Saint John Regional Hospital (SJRH) as the designated health care facility for Point Lepreau and lists other facilities within the evacuation-affected area which can provide support and advice to SJRH.

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[104] *IAEA, GS-G-2.1, supra* note 33 at 4.46.
[105] *Offsite Plan Vol II, supra* note 5 at 89.
[106] *Ibid.*
[107] *Radiation Health Response Plan, supra* note 22.

CELA also has outstanding questions about the emergency plan and whether it provides for sufficient ambulance capacity to transport more than two or three workers; and whether it has contemplated the consequences of taking ambulances out of service after transport due to radioactive contamination. These issues should be explicitly addressed in the planning. These questions cannot be evaluated at present. The lack of public transparency of the Offsite Plan and now additionally, the public health emergency response plan, is a significant deficiency in the Emergency Planning presently in place in New Brunswick. This raises considerable doubts as to the ability of the province to respond adequately to a severe offsite nuclear accident at Point Lepreau.

RECOMMENDATION NO. 20: CELA requests that the Provincial Health Nuclear Emergency Plan be made publicly available as it is incorporated by reference in the Offsite Plan. Without reviewing this document, CELA cannot fully comment on the medical treatment of injured and contaminated members of the public in the event of an emergency.

RECOMMENDATION NO. 21: CELA recommends that the Point Lepreau operating licence should not be renewed without the Provincial Health Nuclear Emergency Plan being made publicly available.

4.5 Evacuation

Evacuation is one of the most immediate actions to be taken in the event of a general emergency at any nuclear generating station. The ICRP indicates that the purpose of evacuation is to provide "rapid, temporary removal of people from an area to avoid or reduce short-term radiation exposure in an emergency exposure situation."[108] ICRP states that it is "most effective if it can be taken as a precautionary measure before there is any significant release of radioactive material."[109]

Evacuation before emissions have started is the most effective protective measure in the event of a nuclear emergency because it protects the whole body from radionuclides through all exposure pathways.[110]

The Canadian Guidelines for Intervention during a Nuclear Emergency describe evacuation as having the "potential to avert most or all doses if carried out in the pre-release phase of an accident" and "is effective for reducing exposures in cases where the release is of uncertain size or

[108] *International Commission on Radiological Protection, supra* note 70.
[109] *Ibid* at 66.
[110] *Radiation Health Response Plan, supra* note 22 at 58; *KI Guidelines*, *supra* note 87 at 4.

duration."[111] Zones where "the lack of time available in which to make decisions and implement them successfully, may make it necessary to take prompt precautionary actions, even when there is only limited information about the accident. Consequently, evacuation may be initiated in conjunction with preventative sheltering and iodine prophylaxis, even when there is a mere threat of release."[112]

CELA is concerned with the ability of people without cars to evacuate. The U.S. Nuclear Regulatory Commission, in its Criteria for Development of Evacuation Time Estimate Studies, requires explicit calculation of numbers of people who would need to be evacuated. This includes population estimates of:[113]

1. **Permanent Residents and Transient Population** – Permanent residents include all people having a residence in the area. The transient population includes tourists, shoppers, employees, etc., who visit but do not reside in the area.

2. **Transit Dependent Permanent Residents** – Permanent residents who do not have access to a vehicle or are dependent upon help from outside the home to evacuate.

3. **Special Facility Residents** – Residents of nursing homes, assisted living centers, and those confined to hospitals, jails, prisons, etc.

4. **Schools** – All private and public educational facilities within the EPZ. Colleges and universities should be assessed on a case-by-case basis, recognizing that college students typically have access to a vehicle.

Transit Dependent Permanent Residents include households with:[114]

- No vehicles;
- Unsupervised latchkey children;
- One vehicle at work that would not return;
- Residents who have limitations on driving such as the elderly who do not drive at night;
- Specialized transportation needs such as wheelchair vans or ambulances.

[111] Health Canada, Canadian Guidelines for Intervention During a Nuclear Emergency (2003) online: http://www.hcsc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/radiation/guide-03/interventions-eng.pdf at 18.
[112] *Ibid*.
[113] U.S. Nuclear Regulatory Commission, Criteria for Development of Evacuation Time Estimate Studies, NUREG/CR-7002, 2011, at pg. 11. http://pbadupws.nrc.gov/docs/ML1130/ML113010515.pdf [***NUREG/CR-7002***].
[114] *Ibid* at 13-14.

The US Criteria also specifies that a summary of (1) the total number of vehicles available to support evacuation of transit dependent residents, as well as (2) people with disabilities and (3) those with access and functional needs not residing in special facilities, be provided.

The New Brunswick Offsite Plan states that Ambulance NB "may be required" to assist with evacuation transport and the Extra-Mural Program will also "assess the needs of their clients" in the evacuation zone and identify those requiring transportation.[115] These transportation options are not sufficient in light of the best practices identified above.

REGDOC 2.10.2 requires the licensee to "collaborate with the municipal or regional authorities to develop and maintain public evacuation time estimates based on current census data, and future population growth projections on a per-decade estimation until end of life of the facility" and therefore, CELA requests this provision form part of the Point Lepreau licencing conditions.[116]

RECOMMENDATION NO. 22: CELA recommends that the CNSC require that the public clearly understand what plans are in place to assist them with evacuation from the PAZ if they do not have their own transportation. What those plans are should be clearly specified and widely communicated to the public through outreach and education.

RECOMMENDATION NO. 23: CELA recommends that the CNSC require the Province to update its emergency response plans to contemplate the needs of vulnerable members of the population, analogous to the requirements under Ontario's *Radiation Health Response Plan* evacuation scenarios.

RECOMMENDATION NO. 24: As CELA has recommended in the past, the CNSC should require the designated municipalities and NB Power to communicate to the public in annual outreach and education, the fact that the nuclear emergency response plans expect the public to make their own arrangements in the event of evacuation, and for those who cannot, what is expected to be provided by the municipalities. The appropriateness of this approach should further be discussed with the public in terms of future nuclear emergency planning.

[115] *Offsite Plan Vol II, supra* note 5 at 91.
[116] *REGDOC 2.10.1*, *supra* note 23 at 11.

4.6 Shadow Evacuations

"Shadow evacuation" refers to the people who voluntarily leave an area following a nuclear incident or accident, beyond those who are asked by the authorities to do so. In the Fukushima accident, for example, there were considerable "shadow evacuation" populations, especially of women and children. In the US, the Nuclear Regulatory Commission requires licensees to include a shadow evacuation of twenty percent of the public to a distance of 15 miles from the Nuclear Power Plant in its traffic estimates and planning.[117]

Based on the provincial Offsite Plan, it is not apparent that the NB EMO has considered any shadow evacuation scenarios. As the city of Saint John is within 40 km of Point Lepreau, and within the boundary that CELA submits should be included within the emergency protection zone, considerable populations could be expected to 'shadow evacuate.'

RECOMMENDATION NO. 25: CELA submits that a similar recommendation to the one made by the US General Accounting Office to the US Nuclear Regulatory Commission is relevant in this case: that the CNSC require the applicant to conduct a study as to the awareness of Point Lepreau in people beyond the 20 km zone and their likely response in the event that a general emergency is declared and the EPZ is evacuated.

RECOMMENDATION NO. 26: The CNSC should require the applicant to evaluate the impact of increased evacuation zones at radial distances of 30 and 40 km, on existing numbers of emergency workers required for evacuation management, the capacity of traffic routes and size of evacuation centres, and locations and capacity of Decontamination and Monitoring Units. These findings should be reported to the CNSC.

4.7 Decontamination

IAEA Guide GS-G-2.1 outlines some approaches to radioactive decontamination. Apart from people who have been heavily contaminated, including individuals located on-site, it recommends that changing clothes, showering and washing exposed skin will reduce levels of contamination and prevent further spread of contamination in a nuclear emergency.[118]

[117] *NUREG/CR-7002, supra* note 113.
[118] IAEA GS-G-2.1, supra note 33 at 2.2.4; *See also International Commission on Radiological Protection, supra* note

The provincial Offsite Plan indicates that in the event of a precautionary evacuation, decontamination centres "may not" be employed. During an evacuation due to hazard, decontamination centres "would" be activated.[119]

RECOMMENDATION NO. 27: Because the Offsite Plan is not in the public domain or provided in an alternative format which may be user-friendly to the public, CELA urges the CNSC to require, as a renewal-condition, that NB Power conduct surveys in the community to gauge levels of public knowledge regarding decontamination and report back to the CNSC.

4.8 Monitoring

Automatic boundary monitoring was recommended by the CNSC's Fukushima Task Force.[120] The availability of this data is extremely important during emergencies as well as during routine operations. As stated by the National Academy of Science, "radiation and security monitoring systems need to be hardened so that they continue to function during severe accidents."[121]

The Offsite Plan notes that "Emergency radiation monitoring will occur within a matter of hours following an accidental release. It does not include follow-up monitoring which may be carried out jointly with external agencies."[122] (Emphasis added.)

RECOMMENDATION NO. 28: CELA requests that the CNSC ensure that automatic gamma monitoring is in place at Point Lepreau and require the automatic exchange of such data with the regulator as suggested by the IAEA and Fukushima Task Force reports.

4.9 Control of Agricultural Products

The IAEA Safety Guide GS-G-2.1 provides guidance to offsite officials, outlining how to ensure the public will not eat or drink potentially contaminated food, milk and water in the event of a major release. This Guide notes that radiation induced thyroid cancers following the Chernobyl accident occurred mainly at distances more than 50 km from the plant, and that "the most effective

70 at 66.
[119] *Offsite Plan Vol II, supra* note 5 at 104.
[120] *Fukushima Task Force, supra* note 36 at 38.
[121] *National Academy of Sciences*, *supra* note 9 at 165.
[122] *Offsite Plan Vol II, supra* note 5 at 175.

protective action to prevent or reduce these thyroid cancers would have been to restrict the consumption of potentially contaminated food and milk."[123]

Likewise, the *International Commission on Radiological Protection* outlines preventative agricultural actions that could reduce or prevent doses from ingestion. This includes:

- Banning consumption of locally grown food
- Covering open wells
- Sheltering animals and animal feed
- Controlling milk and avoiding drinking of milk from animals grazing on potentially contaminated pasture
- Not eating fresh vegetables, fruit or other food that may have been outside during the release
- Monitoring of drinking water particularly in case of run-off; and
- Continuing restrictions until sampling shows return to established limits.[124]

RECOMMENDATION NO. 29: CELA recommends that the CNSC require that the Offsite Plan's monitoring provisions and ingestion control zones extend from the existing 80 ingestion route, to encompass a distance of 100 km from the NGS. Also, the CNSC must require the undertaking of appropriate measures to ensure that monitoring can be done following an accident within that 100 km zone for agricultural produce, foodstuffs, milk and water.

RECOMMENDATION NO. 30: CELA recommends that the Offsite Plan explicitly outline the measures in respect of controlling ingestion food and water, including contingency planning for replacement of drinking water for all residents within 100 km of the Point Lepreau nuclear station that may be required in the case of a severe nuclear emergency of the type outlined by the *International Commission on Radiological Protection*.

CELA notes that the Offsite Site plan in its "Ingestion Pathway Monitoring" section lists a chapter called Countermeasures. Unfortunately, this chapter only contains the words "To be completed later." CELA requests an update to this chapter be provided.[125]

[123] *IAEA GS-G-2.1, supra* note 33 at V.24.
[124] *International Commission on Radiological Protection, supra* note 70 at 67.
[125] *Offsite Plan Vol II, supra* note 5 at 210.

4.10 Worker Safety

The Offsite Plan defines emergency workers as those who "may be exposed in excess of occupational dose limits while performing actions to mitigate the consequences of an emergency".[126] The Offsite Plan states that those engaged in decontamination operations should wear personal protective equipment and a "dose control program" must be undertaken for these workers. This dose control program is to include methods for tracking radiation dose to workers in real time, a dose control plan which keeps doses "as low as reasonably achievable,"and defined dose limits.[127]

CELA requests that the licensee or province confirm if a dose control program has been put in place. Apart from outlining the components of this program, the Offsite Plan is silent on whether one has been designed and implemented. The NB Emergency Response Plan also does not provide any details. Therefore, CELA submits that if these programs are in existence, they be explicitly referenced and appended to the emergency response plans.

The Offsite Plan states that the protection of emergency workers "is the responsibility of the jurisdiction providing resources within the context of the regional plan."[128] CELA understands this to be the NB EMO.

RECOMMENDATION NO. 31: Risks of exceeding maximum radiation exposure limits must be discussed with workers in advance of any accident. Methods to review risks and obtain consent to exceed those limits should be explicitly clarified in both the Onsite and Offsite Plans.

4.11 Frequency of Emergency Planning Drills

The Licence Condition Handbook states:

> The licensee is required to conduct Emergency Exercises and Drills at least annually in most areas. A "site evacuation" drill is required every three years and non-NBP facilities (such as hospitals and off-site centers) are scheduled by mutual agreement annually. Participation by municipal and provincial emergency response groups is also scheduled by mutual agreement[129]

[126] *Offsite Plan Vol II, supra* note 5 at 261.
[127] *Ibid* at 245.
[128] *Ibid* at 256.
[129] Point Lepreau - Licence Condition Handbook at 102.

The last full scale drill for Point Lepreau was conducted in 2015. NB Power's CMD titled *NB Power update on the 2015 Intrepid Exercise held at the Point Lepreau Nuclear Generation Station* noted after their review of the exercise that:

- There is an opportunity to align the emergency zones, reducing the possibility of miscommunication and inconsistent prioritization (Slide 10)
- Clarify the roles and responsibility of (1) reception centres and (2) the Technical Advisory Group (Slide 11)
- Plan joint exercises to validate improvements (Slide 12)
- Look for opportunities to "exercise areas not normally exercised" regarding recovery and ingestion pathway (Slide 12)

CELA requests updates on these opportunities for improvement and whether they have been incorporated into the Offiste Plan.

The IAEA's *Integrated Regulatory Review Service – Follow-up Mission to Canada* (November – December 2011) recommended that Canada "conduct full scale emergency exercises on a periodic basis"[130] and indicated that full scale nuclear emergency planning drills include federal, provincial, municipal and licensee authorities.[131]

Drills must confirm that communication channels are working properly and emergency locations are fully operational and functional. Furthermore, the CNSC should require inclusion of members of the surrounding community and public interest organizations in order to increase input into, and confidence in, the results. CELA also recommends that results from drills be made public, along with lessons learned, and improvements recommended as a result of the exercises. The CNSC should require reporting of implementation of those improvements on an annual basis as part of their oversight with respect to offsite emergency planning.

RECOMMENDATION NO. 32: CELA recommends that the CNSC require annual conducting of exercises dealing with these types of full scale severe event or multi- unit accident scenarios with conclusive demonstration of their effectiveness as a licence condition for Point Lepreau in this application.

[130] IAEA, "*Integrated Regulatory Review Service – Follow-up Mission to Canada"* (2011) online: http://nuclearsafety.gc.ca/eng/pdfs/irrs/2011-IRRS-Follow-up-Mission-to-Canada-Report-IAEA-NS-IRRS-2011-08-eng.pdf at 10, 70.
[131] *Ibid, Recommendation RF8.*

5.0 BEST PRACTICE AND REGULATORY OVERSIGHT

CELA urges the CNSC to exercise its role as regulator in respect of emergency planning in response to accident threats at the Point Lepreau station. CELA urges the CNSC to exercise a stringent oversight role as to whether emergency planning and preparedness have been proven, prior to exercising its discretion to renew the Point Lepreau operating licence.

5.1 IAEA Standards for Preparedness and Response

The IAEA Standard, *Preparedness and Response for a Nuclear or Radiological Emergency, Series No. GSR Part 7 (2015) Safety Standards,* sets out expectations and responsibilities of the regulator. It is the CNSC's responsibility as the regulator, to ensure the following:[132]

- The regulatory body shall require that arrangements for preparedness and response be in place for the on-site area for any practice or source that could necessitate an emergency intervention (s 4.13)
- The regulatory body shall ensure that such emergency arrangements are integrated with those of other response organizations (s 4.14)
- The regulatory body shall ensure that such emergency arrangements provide a reasonable assurance of an effective response, in compliance with these requirements, in the case of a nuclear or radiological emergency (Recommendation 26)
- Complete emergency arrangements shall be in place before the commencement of operation of the facility or commencement of the activity. The regulatory body shall verify compliance with the requirements for such arrangements (s 4.13)
- In fulfilling its statutory obligations, the regulatory body shall establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based. These regulations and guides shall include principles, requirements and associated criteria for emergency preparedness and response for the operating organization (s 4.12)
- The government through the regulatory body shall ensure that operating organizations review appropriately and, as necessary, revise the emergency arrangements (a) prior to any changes in the facility or activity that affect the existing hazard assessment and (b) when new information becomes available that provides insights into the adequacy of the existing arrangements (s 4.26)
- The government shall ensure the coordination of and consistency of national emergency

[132] IAEA, IAEA Safety Standards, "Preparedness and Response for a Nuclear or Radiological Emergency, Series No. GSR-7," (2015), online: http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

> arrangements with the relevant international emergency arrangements (s 4.4)

CELA notes that the Offsite Plan relies on the IAEA's GS-R-2, which establishes the requirements for preparedness and response for a nuclear or radiological emergency.[133] GS-R-2 was, however, replaced by GSR Part 7 in 2015.[134] In GSR Part 7 the following is said regarding the replacement of GS-R-2:

> In 2011, the IAEA Secretariat, relevant international organizations and Member States began the review of IAEA Safety Requirements publication No. GS-R-2 on the basis of lessons identified in exercises and from the response to emergencies since its publication in 2002 (including the response to the accident at the Fukushima Daiichi nuclear power plant in Japan in March 2011), and in due consideration of recommendations of the International Commission on Radiological Protection (ICRP).

As CELA has already submitted, there is little to no evidence of any amendments having been made to the Offsite Plan in light of the Fukushima disaster. The fact that the Offsite Plan has not been updated to reflect the amendments in GSR Part 7, further supports the view that insufficient efforts have been made, not only to update the Offsite Plan, but to incorporate lessons learned from Fukushima. CELA urges the CNSC to ensure that necessary amendments are made to Point Lepreau's emergency response capabilities, including its Offsite Plan, to confirm that the lessons learned are duly reflected.

RECOMMENDATION NO. 33: CELA submits that the CNSC should not renew Point Lepreau's operating license beyond the current licence period without verifying "through tests and assessments" the adequacy of the emergency plans in place for the station, both onsite and offsite, to respond to severe nuclear emergencies. CNSC should furthermore require that the Offsite Plan be amended to reflect the capability requirements in the IAEA's GSR Part 7, rather than the out-dated requirements in GS-R-2.

5.2 Fukushima Task Force 2011

In the Fukushima Task Force's review of Canada's nuclear regulatory framework, it was found that "federal and provincial nuclear emergency planning could be strengthened through establishing a formal, transparent, national-level oversight process for offsite nuclear emergency plans, programs

[133] *Offsite Plan Vol II, supra* note 5 at 256, provides that "[t]he capability requirements included in this Annex are based on IAEA GS-R-2".
[134] *See* GSR Part 7: http://www-pub.iaea.org/books/iaeabooks/10905/Preparedness-and-Response-for-a-Nuclear-or-Radiological-Emergency.

and performance, and through scheduling of regularly planned full-scale exercises."[135]

REGDOC-2.10.1 was implemented in response to the Task Force's findings to strengthen licensees' emergency preparedness programs.[136] Therefore, CELA reminds the CNSC that the sufficiency of nuclear emergency planning must be reviewed before granting a license at new nuclear facilities.[137] However, because the REGDOC excludes "existing facilities" in its scope of application, the entirety of REGDOC-2.10.1 must be incorporated by reference into the licence or licensing basis.[138]

RECOMMENDATION NO. 34: CELA calls on the CNSC to incorporate the provisions of REGDOC-2.10.1 into the Point Lepreau Licence Condition Handbook.

RECOMMENDATION NO. 35: CELA submits that the CNSC has jurisdiction to consider the adequacy of the emergency plans in place at Point Lepreau in deciding whether to renew the operating licence, and/or whether to impose additional requirements by way of licence conditions to better protect health, safety and the environment.

RECOMMENDATION NO. 36: CELA urges the CNSC to further enhance regulatory oversight of emergency planning adequacy at Point Lepreau with detailed public reviews, aimed at increasing the adequacy of emergency plans in response to catastrophic offsite beyond design basis accidents.

CONCLUSION AND DECISION REQUESTED

The adequacy of emergency planning preparedness and readiness is one of the most fundamental issues to be assessed by the CNSC in deciding the outcome of this application. Based on the issues reviewed herein, CELA submits that the application to renew Point Lepreau's operating licence should be denied until the recommendations in this submission are implemented to the standards required by REGDOC 2.10.1, current scientific studies, and international standards.

Catastrophic accidents must be considered possible in the event that (1) NB Power's probabilistic calculations err; (2) there is missing information; (3) defence in-depth and redundancies fail; or (4) a

[135] *Ibid* at iv, v.
[136] *REGDOC 2.10.1, supra* note 23.
[137] *Ibid,* the CNSC "lists and discusses the requirements and guidance that licence applicants and licensees shall implement and consider in the design of their emergency preparedness program."
[138] *Ibid* at 2.

combination of unanticipated events lead to large radiation releases.

CELA submits the ultimate test that the CNSC must apply in deciding whether to renew Point Lepreau's operating license is whether an offsite, large radiation release and catastrophic accident currently serves as the planning basis for the Point Lepreau emergency response plans. From CELA's review, this does not appear to be the case, given the emergency scenario outlined in the current Offsite Plan. Should the level of emergency response not match that required for a catastrophic accident, the licence renewal should be denied, or in the alternative, a one year operating licence granted on the condition that such amendments be carried out before any further license renewals.

All of which is respectfully submitted this 3rd day of April, 2017:

CANADIAN ENVIRONMENTAL LAW ASSOCIATION
Per

Theresa A. McClenaghan
Executive Director and Counsel

New Nouveau Brunswick
CANADA

Point Lepreau Nuclear Off-Site Emergency Plan Volume I (Policy)

Department of Public Safety
31 March 2016

Volume I - Policy

Foreword

The Point Lepreau Generating Station (PLGS) has operated safely and efficiently for over 30 years. Since its construction, the emergency program at PLGS has been governed by two principle plans:

a. the *On-Site Plan* – this document is specific to NB Power, and details procedures to be followed by plant staff involving an emergency confined to the facility, and not posing a danger to the general public; and

b. the *Off-Site Plan* – this is a Government of New Brunswick (GNB) document, held by the New Brunswick Emergency Measures Organization. This plan details procedures to be followed for an emergency incident at PLGS which would pose danger to the general public, and thus would require a coordinated multi-agency response. This plan would require response activities from a number of GNB departments, as well as external supporting agencies.

While the risk to life or the environment from an accidental major release of radionuclides, or other industrial accident, is remote, it is in the interest of the public to be prepared to respond, by having in place effective emergency plans to deal with such events.

Volume I of the *Off-Site* plan contains the basic information, detailed responsibilities, and immediate actions required to safeguard the public and the environment.

Volume II, issued on a "need to know" basis, contains the specific responses which will be carried out by various agencies to deal with the emergency.

The Point Lepreau Nuclear Off-Site Emergency Plan will be reviewed and revised on a yearly basis to reflect changes in technology and assigned emergency management responsibilities.

This plan will be implemented on the authority of the Director of the New Brunswick Emergency Measures Organization.

G.R. MacCallum
Director
New Brunswick Emergency Measures Organization

Authority

The plan is agreed to and approved by: (Insert Signatures)

Record of Amendments

Amendment No.	Amendment Date	Amended By	Date
001	16 August 2012	R. Shepard & M. Michaud	30 August 2012
002	7 December 2012	R. Shepard & M. Michaud	13 December 2012
003	21 February 2013	R. Shepard & M. Michaud	26 February 2013
004	30 May 2013	R. Shepard & M. Michaud	30 May 2013
005	24 June 2013	R. Shepard & M. Michaud	24 June 2013
006	26 June 2013	R. Shepard & M. Michaud	26 June 2013
007	3 July 2013	R. Shepard & M. Michaud	3 July 2013
008	20 January 2014	R. Shepard & M. Michaud	30 January 2014
009	13 February 2014	R. Shepard	13 February 2014
010	19 February 2014	R. Shepard	19 February 2014
011	26 February 2014	R. Shepard	26 February 2014
012	13 March 2014	R. Shepard	13 March 2014
013	3 June 2014	R. Shepard	3 June 2014
014	5 September 2014	R. Shepard	5 September 2014
015	24 September 2014	R. Shepard & C Hackett	24 September 2014
016	17 December 2014	R. Shepard	17 December 2014
017	29 January 2015	R. Shepard	29 January 2015
018	2 February 2015	R. Shepard & C Hackett	2 February 2015
019	9 February 2015	R. Shepard & C Hackett	9 February 2015
020	16 February 2015	R. Shepard & C Hackett	16 February 2015
021	24 February 2015	R. Shepard	24 February 2015
022	26 February 2015	R. Shepard	26 February 2015
023	2 March 2015	R. Shepard & C Hackett	2 March 2015
024	26 March 2015	R. Shepard & C Hackett	26 March 2015
025	27 March 2015	R. Shepard & C Hackett	27 March 2015

026	14 March 2016	R. Shepard	31 March 2016
027	21 March 2016	R. Shepard & C Hackett	31 March 2016
028	31 March 2016	R. Shepard & C Hackett	31 March 2016

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Concept of Operations

In emergency situations in New Brunswick, whether man-made or created by natural phenomena, response is provided for in the Provincial Emergency Measures Plan (Provincial All-Hazards Plan).

Emergency Management Authorities

Initially, operations are conducted by the relevant Regional Emergency Action Committee (REAC), supported by the Provincial Emergency Action Committee (PEAC) located at the headquarters of the New Brunswick Emergency Measures Organization.

Under the NB Emergency Measures Act, municipalities are responsible for establishing their own emergency response plan, but can call upon the REAC or PEAC for support when their own resources are not equal to the demands of the situation. In the specific case of the Point Lepreau Nuclear Generating Station, the adjacent communities are not municipalities but are unincorporated areas; the province must therefore take an active role in the management of the local emergency response.

Nuclear Control Group

Because of the nature of the hazards presented by radioactive material, this plan establishes a Nuclear Control Group, hereafter known as the Control Group. The Control Group comprises all the members of the PEAC and representatives of those other agencies with expertise or a role in a nuclear emergency response.

The Control Group will assume the control and direction of emergency operations in the event of a radiation emergency at the Point Lepreau Nuclear Generating Station, where there may be danger to the general public.

Nuclear Control Group Membership

Details of Control Group membership are provided in Volume II Procedures, Tab A – Control Group, Annex A – Nuclear Control Group Representation.

General

This plan delineates the responsibilities of, and immediate action to be taken by, various agencies in the event of an emergency at the Point Lepreau Nuclear Generating Station, in which Off-Site Emergency Response is necessary.

Two types of emergencies are foreseen:

> Type A - emergencies NOT presenting danger to the general public, and which can normally be handled by on-site resources, and
>
> Type B – emergencies presenting danger to the general public.

NB EMO will not normally become involved in a Type A emergency, resolution of which is a plant operator's responsibility.

In situations where a Type A emergency might escalate to a Type B emergency NB EMO accepts the responsibility for co-ordinating the off-site assistance as necessary.

On-site safety, security and emergency planning is the responsibility of NB Power and is NOT dealt with herein, except where co-ordination of outside assistance is requested in support of emergency operations. Arrangements have been made by NB Power with municipalities and other agencies for such support.

Alerting Procedures – Control Group

On the occurrence of an unusual incident or emergency, the Point Lepreau Generating Station (PLGS) Shift Supervisor is the first person in authority to know of it, and must decide what, or if any, emergency action is to be taken or outside assistance requested.

If outside assistance is needed, the Shift Supervisor will immediately call for it under the terms agreed to by the assisting agency, and will take other appropriate action in accordance with the On-Site Emergency Plan (e.g. fire fighting assistance from Saint John).

Conditions under which it is mandatory for NB EMO to be notified have been agreed, and are specified in Volume 2 of this plan.

If it is necessary for any members of the Control Group to be alerted, the Notification Chart shown on page 9 will be used.

Alerting Procedures - Public

If it becomes necessary for the public to be alerted, the Emergency Measures Organization will take the following actions:

- Alert Executive Council Office (ECO) to send staff to the Provincial Emergency Operations Centre (PEOC) and to be prepared to issue public safety bulletins to the public;

- Alert the Point Lepreau Warden Service to send staff to the Off-site Emergency Operations Centre (OEOC) and to be prepared to advise area residents to turn on their radio / television to receive detailed information;

- Activate the Everbridge Emergency Notification System and be prepared to initiate an appropriate message to all residents in the Emergency Planning Zone (EPZ);

- Prepare and disseminate appropriate advice to the public through ECO, the Point Lepreau Warden Service and the Everbridge Emergency Notification System.

- Wardens will be directed to contact residents in their assigned areas to ensure that they are informed of any action required.

- Should evacuation be deemed necessary, EMO will make arrangements for the movement of those individuals requiring assistance; arrangements are described in Volume II.

Notification Sequence

The Point Lepreau Generating Station (PLGS) Shift Supervisor is responsible to initiate notification of off-site authorities, whenever there is an actual or potential threat to public safety.

The sequence of notifications required is as follows:

Serial	Notifications
1	Shift Supervisor calls NB Power Systems Dispatch Office in Fredericton
2	NB Power Systems Dispatch Office calls RCMP J-Division OCC
3	RCMP J-Division OCC calls NB EMO / Duty Officer (after hours)
4	NB EMO calls Shift Supervisor to authenticate and obtain details; see Note 1.
5	NB EMO notifies Provincial Emergency Operations Centre (PEOC) staff Includes Regional Emergency Management Coordinators (REMCs) (EMO Menu F).
6	NB EMO notifies Medical Officer of Health (MOH) Dr. Scott Giffin
8	NB EMO notifies the Nuclear Control Group (NB EMO PEAC Menu G & Nuclear Control Group Menu N);
9	Nuclear Control Group members notify their parent organizations; see Note 2.
10	NB EMO notifies external agencies (IEMG Menu I & Senior Officials Menu A); FNEP Duty Officer (24/7 at 1-613-954-6651)
11	NB EMO notifies Shift Supervisor when the notification process is complete.

Notes

1. This call will be made from NB EMO PEOC and will be recorded.

2. NB EMO notifications of Menu lists will be through the Everbridge Notification System.

SECTION A
CONTROL GROUP

Responsibilities

The Control Group will assume control, direction and co-ordination of emergency off-site activities when circumstances require, on the direction of the Head of the Control Group. When this action is instituted, the Shift Supervisor will be informed.

Composition

Having regard for the many and complex activities required in an "emergency" response, it is necessary that the Control Group includes representatives of all agencies which may be needed. It is not envisaged that the entire group would be required to assemble except in the gravest emergency. Those needed to deal with a particular situation will be summoned to the Provincial Emergency Operations Centre (PEOC) while others would be placed on "Stand By" or "On Call" as the situation demands.

Member agencies of the Control Group are listed in Appendix 1 to this section. (In this plan, where an individual or position is named, the phrase "or alternate" is to be understood to follow).

The Head of the Control Group is the Director of NB EMO, who has sole decision making authority. Other members are advisors.

Actions

The Control Group will:

(a) assemble at the PEOC when alerted by NB EMO;

(b) obtain information on the reported emergency, and on what actions have already been taken;

(c) assume control, direction and co-ordination of emergency activities to whatever extent necessary;

(d) authorize the publication of information, warnings, and advice to the public and the Government of New Brunswick;

(e) advise the Minister of Public Safety on the formal declaration of an emergency in accordance with the NB Emergency Measures Act;

(f) direct NB EMO to inform Emergency Response Agencies in Nova Scotia, Prince Edward Island and the State of Maine; and

(g) take any other actions considered necessary.

Federal Agencies

Public Safety Canada (PS-C) will provide a federal liaison officer to the Control Group, to advise on federal resources and to obtain such resources as may be required. The PS-C representative will keep the Federal Government informed.

Health Canada (HC) can provide a liaison officer to the Nuclear Control Group to facilitate communication and coordination with the Federal Nuclear Emergency Plan Technical Assessment Group (FNEP TAG).

The Canadian Nuclear Safety Commission (CNSC) will provide a liaison officer to the Control Group to advise on aspects of the incident within CNSC jurisdiction and to assist the Control Group in any way possible.

The Canadian Meteorological Service of Environment Canada (EC) will provide a meteorologist to the Control Group to assist in providing weather information and to plot the trajectory of any plume containing radioactive material.

Participating federal agencies will provide the names and applicable contact information for their headquarters, designated representatives and their alternates. NB EMO will maintain the contact information in appropriate notification lists.

Provincial agencies will prepare plans, containing essential operational information, for inclusion in Volume 2 of this plan. These plans will contain alerting and assembly instructions, places of assembly, Standing Operating Procedures, and contact information of response personnel.

SECTION B

NEW BRUNSWICK EMERGENCY MEASURES ORGANIZATION (NB EMO)

NB EMO will:

(a) on receipt of emergency information from NB Power, alert members of the Control Group;

(b) provide a Provincial Emergency Operating Centre for the Control Group (this will be NB EMO Headquarters);

(c) prepare Operating Procedures as directed by the Control Group;

(d) through the Director of NB EMO, review and ensure the coordination of all agency plans and operating procedures and actions which may be required under this plan;

(e) in collaboration with NB Power, arrange seminars, and exercises to test operating procedures and agency plans;

(f) review this plan annually to ensure the required state of readiness of all agencies concerned with the execution of this plan; and

(g) notify all concerned of any changes, either of personnel or content of this plan; and

(h) In the event of a nuclear emergency at Point Lepreau, notify emergency response agencies in Nova Scotia, Prince Edward Island and the State of Maine, the Air Traffic Controller in Moncton, the Canadian Coast Guard in Saint John, the Medical Officer of Health (MOH) and Health Canada.

SECTION C

NEW BRUNSWICK POWER (NB Power)

NB Power responsibilities in the event of an emergency are threefold:

A. PLANT STAFF RESPONSIBILITIES

B. HEAD OFFICE MANAGEMENT RESPONSIBILITIES

C. PUBLIC AFFAIRS STAFF RESPONSIBILITIES

A. **Plant Staff** will:

(a) take immediate and urgent action to mitigate the effects of such an emergency using plant staff and equipment, by requesting such off-site assistance as the situation requires;

(b) promptly advise NB EMO of the facts of the emergency by initiating the notification procedure contained in this Plan;

(c) direct all emergency activities including the Off-Site Monitoring Program until direction is assumed by the Control Group;

(d) provide laboratory services for the analysis of samples;

(e) advise the Control Group of the results of the Monitoring Program and sampling, and in conjunction with the Department of Health, recommend appropriate countermeasures; and

(f) train personnel of the various agencies in the necessary skills to enable them to carry out duties required in the Monitoring Program.

B. **Head Office Staff** will:

(a) provide a representative on the Control Group;

(b) co-ordinate NB Power corporate resources to support provincial emergency response via a NB Power emergency resource group in Fredericton;

(c) establish a communication link between NB Power staff at Lepreau Off-Site Emergency Centre and the Control Group in Fredericton, for the interpretation and appraisal of technical information; and

(d) Provide personnel and equipment in support of emergency operations.

C. **Public Affairs Staff** will:

(a) be responsible for the issue of site-specific information; and

(b) in conjunction with Executive Council Office, be responsible for the issue of information from the Control Group to the public and the news media, as described in Section M of this plan.

SECTION D

DEPARTMENT OF AGRICULTURE, AQUACULTURE & FISHERIES

(DAAF)

The Department of Agriculture, Aquaculture and Fisheries will:

(a) in collaboration with NB Health, arrange for sampling locally produced foodstuff and marine product, and the delivery of samples to the specified laboratory for analysis (Health Canada (HC), Department of Fisheries and Oceans (DFO) and the Canadian Food Inspection Agency (CFIA) may also be involved);

(b) be prepared to provide personnel to take samples;

(c) in collaboration with the NB Health, ensure that locally produced foodstuff which is condemned does not reach the public (HC and the CFIA may also be involved);

(d) in collaboration with NB Health and NB Environment, arrange for the disposal of condemned or contaminated foodstuff (HC and CFIA may also be involved);

(e) when an evacuation is directed, help facilitate the movement and welfare of farm animals;

(f) in collaboration with the DFO, Canadian Coast Guard and others, develop arrangements for removal of fishing vessels from any danger area; and

(g) assist other agencies as required.

SECTION E

DEPARTMENT OF ENVIRONMENT AND LOCAL GOVERNMENT

(DELG)

The primary purpose of the Department of the Environment and Local Government's participation in the plan is sampling air, soil, surface waters and surface drinking water supplies. Sampling will confirm what areas, if any, have been contaminated, and to what extent.

The Department of Environment and Local Government will:

(a) obtain water, soil and air samples as requested; sampling to be limited to areas outside the Lepreau 20 km emergency planning radius;

(b) advise on disposal of contaminated substances;

(c) provide regulatory oversight for site clean up, when and if required; and

(d) provide departmental resources and assistance as required.

SECTION F

DEPARTMENT OF HEALTH

The Department of Health, in conjunction with Horizon Health Network and Ambulance NB, will ensure:

(a) timely and accurate advice to the Control Group on all health-related aspects of the emergency;

(b) triage, field health support, counseling and treatment, and transportation of contaminated persons requiring hospital care, as well as provision of essential medical services to reception and decontamination centres as required;

(c) provision of essential medical services to persons exposed to radiation, as well as continuity of medical treatments and care services to the community-at-large for the duration of the emergency;

(d) provision of public health services related to air quality, as well as the safety of food and water in the area affected by the emergency;

(e) provision of nuclear-related health and care information to residents of the province of New Brunswick who access the TeleCare 811 system;

(f) distribution and administration of potassium iodide (KI) pills to the community;

(f) provision to Executive Council Office (ECO) of accurate and relevant health information, appropriate media messages and, if necessary, public health orders for dissemination to the public;

(g) provision of mental health and addiction services to persons affected by the emergency, as well as Critical Incident Stress Management (CISM) to first responders and their families;

(h) consultation and cooperation with federal, provincial and municipal departments and agencies, as well as non-government response agencies;

(i) during the recovery phase, the establishment and maintenance of a registry of evacuees from the evacuation zone;

(j) continual emergency preparedness of the health sector through periodic review of emergency plans every three years, as well as conduct of ongoing education, training and exercises.

SECTION G

DEPARTMENT OF JUSTICE AND ATTORNEY GENERAL

The Department will:

(a) maintain continuity of the Court System;

(b) advise government on the legal implications of emergency decisions/direction; and

(c) be prepared to coordinate emergency legislation and regulations required by provincial departments and agencies.

SECTION H

DEPARTMENT OF PUBLIC SAFETY (FIRE MARSHAL)

The Provincial Fire Marshal will:

(a) ensure that fire protection measures are established, including assistance from municipal fire departments;

(b) provide the Control Group with advice on any incident involving fire; and

(c) provide HAZMAT team support for decontamination advice and operations, as required.

SECTION I

DEPARTMENT OF NATURAL RESOURCES

(DNR)

The Department of Natural Resources will:

(a) monitor forest conditions in the vicinity of the Point Lepreau Nuclear Generating Station with a view to priority action in the event of forest fire;

(b) provide Point Lepreau Nuclear Generating Station staff with available firefighting equipment, on request;

(c) assist in ensuring that access by road to the Plant is maintained at all times in conjunction with the RCMP and the Department of Transportation and Infrastructure (DTI);

(d) coordinate with the Warden Service the alerting of seasonal residents and visitors in areas not covered by the Warden Service;

(e) assist the RCMP in the evacuation of seasonal residents and visitors; and

(f) provide assistance and resources requested by the Control Group, as required.

SECTION J

DEPARTMENT OF SOCIAL DEVELOPMENT

The Department of Social Development will:

(a) provide for the prompt registration of evacuating residents and transients from the danger area;

(b) provide for lodging and feeding of evacuees;

(c) allow provincial and regional personnel engaged in emergency operations to partake in congregate feeding and lodging as required; and

(d) provide other emergency social services as required under the provincial emergency action plan. The Department of Social Development is responsible for provision of the five Emergency Social Services as follows:

Note: Reception and Information (Under Contract with Red Cross)

Emergency Lodging
Emergency Feeding
Emergency Clothing
Registration & Inquiry
Personal Services (which includes the care of domestic pets)

SECTION K

DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

(DTI)

The Department of Transportation & Infrastructure will:

(a) ensure road access to the plant at all times on a priority basis;

(b) ensure evacuation routes are clear on a priority basis, if evacuation becomes necessary;

(c) assist the Control Group and RCMP in evacuation of people and domestic pets;

(d) provide equipment and personnel as required by the Control Group; and

(e) establish and maintain emergency radio communication between operational centres and agencies as required.

SECTION L

EXECUTIVE COUNCIL OFFICE

Executive Council Office in conjunction with Public Affairs of NB Power, will be responsible for:

Preparedness Responsibilities

a) provincial policies for emergency public information and assist in the preparation, maintenance and periodic testing of the provincial *Emergency Public Information Plan*;

b) advance and continuing preparation, provision and dissemination of public information on response procedures, including information on emergency assistance, radiation, respiratory concerns, shelter, evacuation, prophylactic medication and response facilities, to the general public, government officials and the media;

c) establishing communications links among facilities;

Operational Responsibilities

a) alerting public information staff, the premier, and other elected officials, when directed by NB EMO;

b) allocating communications personnel to various functions and locations;

c) notifying the media through the GNB newswire and posting subsequent, public safety bulletins regarding the incident;

d) advising the Control Group on all matters relating to public information;

e) liaison with the media;

f) providing information on the event to the information agencies of other provinces, the Government of Canada and the United States; and

g) the continuation of emergency public information services through the termination of the emergency and follow-up activities.

SECTION M

DEPARTMENT OF EDUCATION AND EARLY CHILDHOOD DEVELOPMENT

(EECD)

The Department of Education & Early Childhood Development will be responsible to:

a) make available school buses for the mass evacuation of persons living within the area affected by any emergency;

b) make available a limited number of drivers for school buses once they reach the site;

c) arrange to have designated personnel to coordinate bus transportation activities in emergency area;

d) in conjunction with Department of Social Development ensure that designated schools are available to be set up as reception centres; and

e) assist the RCMP in formulating an orderly plan to evacuate persons living within the area affected by any emergency.

SECTION N

DEPARTMENT OF PUBLIC SAFETY

CRIME PREVENTION & POLICING STANDARDS BRANCH

The Department of Public Safety, through the Crime Prevention & Policing Standards Branch will:

a. immediately upon notification of an emergency or exercise at Point Lepreau, advise the Officer in Charge, RCMP J Division Operational Support Services (OIC RCMP J Div. OSS) of the Emergency,

b. ensure required Police service to the entire area affected by the emergency, (Delegated to the RCMP)

c. ensure Police assistance to NB Power to ensure safety of access to plant personnel, (Delegated to the RCMP)

d. participate in alerting procedures for the Control Group and residents of the area, to the extent of the responsibilities as enumerated in the off-site emergency plan,

e. assist the Control Group by advising and assisting in all Police matters and maintaining liaison with Municipal Police Forces, and

f. act as lead agency to expedite the safe and orderly evacuation of the affected area to the extent of the responsibilities as enumerated in the detailed Plan.

RCMP (SPECIFIC ASSIGNED TASKS)

RCMP will:

a) be the lead agency with the responsibility to conduct a safe orderly evacuation;

b) establish communications with all agencies involved in the evacuation;

c) establish traffic control points on Highways #780, 790 and Highway #1 as detailed at Annex A to Tab G of Volume 2 of this plan. Implement the necessary traffic control measures;

d) be prepared to receive and direct transportation dispatched to the areas being evacuated;

e) ensure the total area has been evacuated; and

f) provide security once the area has been evacuated.

SECTION O

POINT LEPREAU WARDEN SERVICE

The PLGS Warden Service is responsible to:

a) alert, when directed to do so, residents and non-residents to listen to radio or television stations for further instructions;

b) record and report where any resident has not been alerted, or requires special assistance;

c) assist the RCMP in controlling traffic if and when directed to do so;

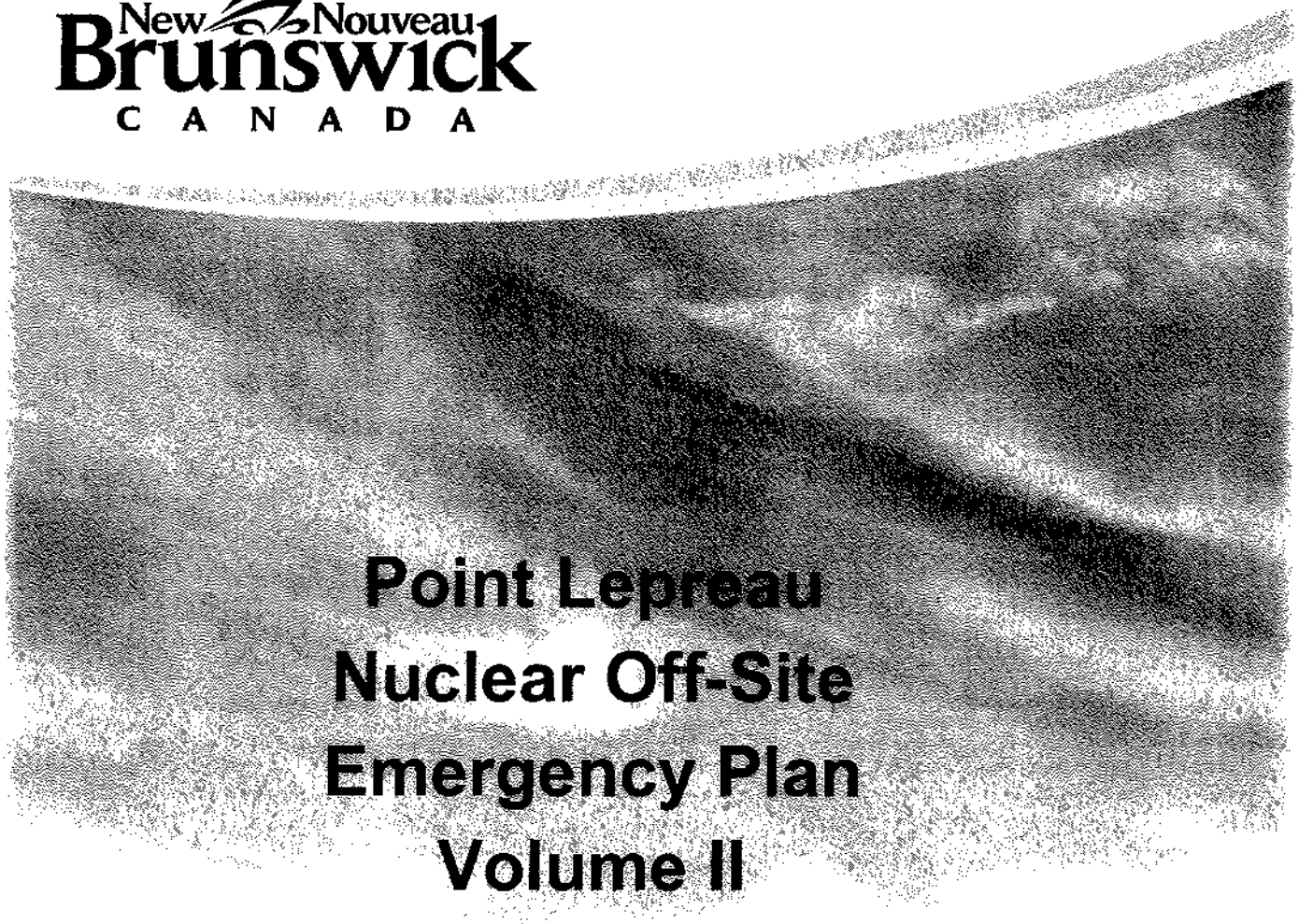
d) be prepared to provide radio communications links at reception centres, decontamination points, or any critical location not otherwise provided with radio communications;

e) act as guides and radio communicators for buses assigned to pick up and transport evacuees;

f) continue to pass information to residents as required; and

g) other duties as assigned in the Warden Service Procedures Manual.

New Nouveau Brunswick
CANADA



Point Lepreau Nuclear Off-Site Emergency Plan Volume II (Procedures)

Department of Public Safety

31 March 2016

Volume II Procedures

Introduction

This volume of the Point Lepreau Nuclear Off-Site Emergency plan contains essential operational information, prepared by various agencies and co-ordinated by NB EMO, describing the actions required to fulfill the responsibilities identified in Volume 1.

A standard format has been used for simplicity and to enable alternate members of the Nuclear Control Group to familiarize themselves quickly with the requirements of their department's role and function, and those of other member agencies.

While each agency is required to perform its emergency duties independently, the Nuclear Control Group coordinates, under the direction of the Director, NB EMO. It is therefore imperative that information regarding individual agency activities be reported to the Nuclear Control Group so that problem areas can be anticipated and remedial measures undertaken.

Agencies must inform NB EMO of any necessary amendments to the contents of this Volume.

Volume II
Table of Contents

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

NUCLEAR CONTROL GROUP

Responsibilities

The Control Group will assume control, direction and co-ordination of emergency off-site activities when circumstances require, as decided by the Director of NB EMO. When this action is instituted, the Shift Supervisor and OEOC Coordinator at Lepreau will be notified by NB EMO. Control Group members will inform their personnel.

Alerting and Assembly

Those members of the Control Group alerted by NB EMO will assemble at NB EMO Headquarters. This will be done through use of Menus "G and N" found in Tab B.

In non-radiation emergencies, only those members of the Control Group whose departments may be required to provide resources will be summoned to the PEOC. In radiation emergencies, all members would be required.

Concept of Operations

As stated in the Volume 1 (Policy) of the Point Lepreau Off-Site Emergency Plan, the Control Group is an expanded version of the Provincial Emergency Action Committee (PEAC), members of which are summoned to NB EMO Headquarters as and when their departments may be required to provide support in emergency response operations. The Departments and Agencies required to provide representation in the Control Group are found at Annex A.

On being alerted by NB EMO, and before going to the Provincial Emergency Operations Centre (PEOC), each member will notify those in his/her agency who may be required to respond. After being briefed, the member will then issue instructions to them. Operational instructions on the protective actions to be taken for the safety and welfare of residents of any affected area will be given by the Director on the advice of, and after consultation with, members of the Control Group. Action Guides, based on Emergency Reference Doses, are contained in Annex B. Members will be required to provide detailed reports periodically to the Director, and the Control Group as a whole, on the progress of operations.

Operational information will be collected, collated and disseminated by NB EMO staff. Situation reports will be circulated periodically to all members for their information. Verbal briefings will also occur as required. Significant events will be brought to the attention of the operations staff who will then display them for all to see.

In the unlikely case of a General Emergency where a release of radioactive material occurs without warning, which warrants a prompt evacuation, the NB EMO Duty Officer can direct an immediate evacuation of Zone 1 (Maces Bay) and Zone 2 (Dipper Harbour).

Communications

Communications between Control Group members and their field staff will be established under each agency's own arrangement. These will be supplemented by emergency communications set up by NB EMO, which is also responsible for message reception, internal distribution and dispatch.

The telephones with unlisted numbers in the Control and Operations room will enable members to make outgoing calls without being distracted by incoming calls, which will be handled by the Communications Centre. Members may inform their Deputy Ministers of their unlisted number, but care must be taken to ensure that the number is not widely known lest incoming calls divert attention from operations.

Annexes

Annex A – Nuclear Control Group Representation
Annex B – Emergency Protective Actions
Annex C – KI Pill Inventory
Annex D – Action Checklist
Annex E – Technical Advisory Group (TAG)

DEPARTMENTS AND AGENCIES WITH REPRESENTATION ON THE CONTROL GROUP

Nuclear Control Group Representation

The Nuclear Control Group comprises the departments and agencies listed below, in some cases, Departments have different representatives for different functions.

In recent years, some responsibilities have devolved or migrated from one organization to another. For clarity, the original membership and current membership are shown.

The Technical Advisory Group (TAG) is comprised of members of the Control Group whose responsibility is to advise the Director of NB EMO on when to take Emergency Protective Actions (Countermeasures).

Nuclear Control Group

Serial	Current Membership	Original Membership
Provincial Departments and Agencies		
1	Agriculture, Aquaculture and Fisheries	Agriculture; Fisheries and Aquaculture
2	Executive Council Office • Corporate Communications • Editorial Services • Multi-media Services	Executive Council Office formerly Communications New Brunswick • Editorial Services
3	Education & Early Childhood Development	Education & Early Childhood Development
4	NB Emergency Measures Organization	NB Emergency Measures Organization
5	Environment and Local Government	Environment and Local Government • Environment Sciences • Water Resources Municipalities, Culture and Housing • Fire Marshal • Administrative Services
6	Social Development • Emergency Social Services	Income Assistance • Emergency Social Services Health and Community Services • Community Services
7	Finance	n/a
8	Health • Public Health	Health and Community Services • Radiation Protection
9	Justice & Attorney General	n/a

10	Natural Resources	Natural Resources and Energy
11	New Brunswick Power • Management • Health Physics • Public Affairs	New Brunswick Power • Management • Health Physics • Public Affairs
12	Public Safety • Administrative Services • Fire Marshal • Policing Services • RCMP • Security Directorate	Solicitor General • Policing Services • RCMP Municipalities, Culture and Housing • Administrative Services • Fire Marshal
13	Supply and Services • Voice Services	Supply and Services • Communications (Telephone Services)
14	Tourism, Heritage and Culture	n/a
15	Post-Secondary Education, Training and Labour	Advanced Education and Labour
16	Transportation & Infrastructure	Transportation & Infrastructure
Federal Departments and Agencies		
17	Canadian Meteorological Service • Environment Canada	Atmospheric Environment Services
18	Canadian Nuclear Safety Commission	Atomic Energy Control Board
19	Public Safety Canada • Regional Director for New Brunswick	Emergency Preparedness Canada • Regional Director for New Brunswick
20	National Defence • Joint Task Force Atlantic Liaison Officer	National Defence • Provincial Warning Centre
21	Health Canada • FNEP Technical Advisory Group (TAG) Liaison Officer	n/a

Responsibilities for Contact Lists

Nuclear Control Group member organizations are required to:

- appoint one primary and two alternate representatives to the Control Group; and
- provide contact information to the Emergency Measures Organization quarterly.

The Emergency Measures Organization is required to:

- maintain an alerting system for the Nuclear Control Group; and
- conduct periodic tests of the alerting system.

Emergency Protective Actions

General

This annex details the specific emergency protective actions to be taken in the event of a nuclear emergency. Emergency protective actions are based on international and national guidance, in the form of Emergency Reference Doses.

Emergency Protective Actions

Emergency Protective Actions are actions (countermeasures) that must be taken promptly, within hours, in order to be effective. These include:

- sheltering in place,
- iodine prophylaxis (KI pills),
- evacuation, and
- temporary relocation.

Emergency protective actions are implemented to prevent deterministic effects and to minimize stochastic effects. Protective actions have an inherent "cost" in terms of social, psychosocial and economic disruption.

Emergency protective actions that limit the exposure to levels that are below the deterministic thresholds prevent deterministic effects. In this case, the benefit of implementing a protective action almost always outweighs the cost associated with the protective action.

Table 1 lists the intervention levels for emergency protective actions for use in this document. These levels are consistent with international guidance. The International Atomic Energy Agency (IAEA) has adopted the same intervention levels of 10 mSv and 50 mSv for sheltering and evacuation, respectively. For sheltering, although the IAEA suggests two days as a maximum, in practice, this measure should not be in effect for more than about one day.

Intervention levels are planning values. During an actual emergency, the criteria adopted will most likely need to take into account socio-economic and political factors, particularly in the case of longer-term protective actions, when there is considerably more time available to make decisions. Table 2 describes the operational intervention levels for an airborne release that are used in New Brunswick.

Table 1: Emergency Protective Actions

Serial	Protective Action	Emergency Reference Doses
1	Evacuation	50 mSv whole-body dose equivalents saved in one week.
2	Sheltering	10 mSv whole-body dose equivalent saved in one day
3	Temporary relocation	30 mSv in the first month
4	KI Prophylaxis:	100 mSv thyroid dose equivalents saved.

Operational Intervention Levels (OILs)

To assist prompt decisions in the initial phase of the emergency, Operational Intervention Levels (OILs) are introduced. OIL is the value of commonly measured parameters (e.g. ambient dose rate) that corresponds to the intervention level for a specific protective action. It is based on a number of assumptions regarding exposure pathway, release composition and exposure durations. However, what is lost in terms of accuracy is gained in terms of rapidity of decision-making, which is critical in the initial phase.

The recommended OILs for an airborne release are listed in Table 2.

Table 2: Recommended OILs

Measurement	OIL	Recommended Protective Action
Ambient dose rate in the plume	1 mSv/h	Evacuate or provide substantial sheltering
	0.1 mSv/h	Shelter and administer stable iodine, if available.
Ambient dose rate from deposition, after the plume has passed	1 mSv/h	Evacuate.
	0.2 mSv/h	Consider relocating people. Perform isotopic analysis.
	10 times normal local background	Immediately restrict consumption of potential contaminated food until more detailed analyses can be made.

The purpose of sheltering in place is to avoid radiation dose to the thyroid from a radioactive plume. KI should be administered in conjunction with the shelter in place order or if evacuation is to be carried out through a radioactive plume.

Emergency Planning Zones

For the purposes of emergency planning, three zones are defined. The Precautionary Action Zone (PAZ) is the area surrounding the plant out to 4 km that should be evacuated promptly in the event of an imminent release. The Urgent Protective Action Zone (UPZ) is the area surrounding the plant out to 12 km; protective actions in this area should be based on radiation survey results and plant conditions. The Longer-term Protective Action Zone (LPZ) is the remaining area outside the plant to 20 km; protective actions in this area should be based on radiation survey results and plant conditions.

Table 3: Emergency Planning Zones

PLGS Planning Zone	Equivalent NB EMO Warden Zone
4 km PAZ	Zones 1, 2, and At-Sea 1
12 km UPZ	PAZ plus Zones 3, 4, 5, 6, 9, 13, and At-Sea 2
LPZ	UPZ plus all remaining Zones

Emergency Response Strategy

When an accident occurs, it is very difficult to predict if there will be an airborne or liquid release, or how large the release will be. Hence, the initial protective action strategy must rely on very little information and should err on the safe side. The following initial protective action strategy is to be recommended for an airborne release:

- When an accident that could lead to core melt is detected, immediately evacuate or shelter the full PAZ around the station. The action is implemented over the full 360 degrees as a precaution against possible wind shifts.
- Immediately dispatch survey teams downwind to monitor ambient radiation levels and air contamination to detect a release.
- Once a release is imminent or has been detected, shelter people within the UPZ downwind from the station. If the wind direction changes, adjust the sectors in which the protective action is implemented.
- Conduct environmental radiation surveys within the UPZ to determine if further protective actions are required.
- If readings are high compared with OILs, expand the area surveyed and adjust protective actions where required.

The Nuclear Control Group / TAG may recommend exceeding the recommended protective actions for various reasons (social, administrative, or other concerns and conditions).

Sheltering in place is recommended when the radiation release is predicted to be of a short duration (e.g., less than 6 hours). Sheltering in place for as much as 24 hours may be recommended by the Nuclear Control Group / TAG to allow time to organize an evacuation. KI should be administered in conjunction with the shelter in place order or if evacuation is to be carried out through a radioactive plume.

Potassium Iodide (KI) Inventory

Location	Quantity	Contact Person	Expiry Date
Department of Health Regional Office, 5th Floor 55 Union Street Saint John, NB E2L 3X1	100 Packs / 2000 tablets		October 2021
Department of Health 41 King Street St. Stephen, NB E3L 2C1	100 Packs / 2000 tablets		October 2021
Campobello Health Centre Welshpool, Campobello, NB E0G 3H0	100 Packs / 2000 tablets		October 2021
Deer Island Health Centre 999, Route 772 Fairhaven, NB E5V 1P2	100 Packs / 2000 tablets		October 2021
Grand Manan Hospital PO Box 219, North Head Grand Manan, NB E0G 2M0	100 Packs / 2000 tablets		October 2021
RCMP District 1 St. George 77 Mount Pleasant Road PO Box 1005 St. George, NB E5C 3S9	100 Packs / 2000 tablets	[redacted]	October 2021
Off-Site Emergency Centre Lepreau, NB	100 Packs / 2000 tablets	[redacted]	October 2021
Pt. Lepreau Generating Station Box 10, Pt. Lepreau, NB E0G 2H0	200 Packs / 4000 tablets	[redacted]	October 2021
Charlotte County Hospital 4 Garden Street St. Stephen, NB E3L 2L9	100 Packs / 2000 tablets		October 2021
Fundy Health Centre 34 Hospital Street Blacks Harbour, NB E5H 1K2	100 Packs / 2000 tablets		October 2021
Saint John Regional Hospital 400 University Avenue Saint John, NB E2L 4L2	100 Packs / 2000 tablets		October 2021
Warden Service Home Delivery 1574 Homes	1574 Packs / 31,480 tablets	Roger Shepard [redacted]	October 2021

Note: KI has been distributed to each residence within 20 kms of the Point Lepreau Generating Station. The last distribution took place August - September 2015. The current supply will expire in October 2021. The next distribution is planned for August 2021.

TAB A

Action Checklist

First to Arrive Operations Centre

The Duty Officer may not be the first to arrive at the operations centre. The First-To-Arrive will assist the Duty Officer by undertaking the following tasks:

1. Start and maintain an operations log, detailing all communications, significant events and actions taken.

2. Using telephone 453-5575, contact the Point Lepreau Generating Station, Shift Supervisor at Speed Call *46 (506-659-2540). Use the attached tape recorder to record the following information:

    - time of the incident
    - nature of the incident
    - dose rate
    - assessed risk to the public
    - local weather conditions

3. Initiate start-up / set-up of the operations centre; refer to Operations SOP #1.

4. Request a complete weather briefing of the area from Environment Canada.

5. On arrival of the Director or Senior Operations Officer brief him on the situation; refer to SOP #2.

6. If the Director decides to alert EMO operations and administration staff to activate Menu "F", be prepared to receive the results of the activation, and make arrangements to contact those persons missed on the initial attempt.

7. If the Director decides to alert the Provincial Emergency Action Committee (PEAC), instruct EMO Ops Staff to activate Menu "G". Personally contact appropriate external agencies; refer to Menu "I" and the applicable tab to the Operations Manual.

8. Hand over duty to the Duty Officer or Operations Officer; refer to SOP #3.

9. Undertake tasks assigned by the Operations Officer.

Technical Advisory Group (TAG)

Guidance For Nuclear / Radiological Emergencies

TAG Mission

The primary mission of the TAG is to guide the overall analysis / technical assessment of the response, including the coordination of radiation monitoring and surveillance activities, analysis of the results of monitoring efforts, and providing recommendations on the adoption of emergency protective actions. Emergency Protective Actions are actions (countermeasures) that must be taken promptly, within hours, in order to be effective.

These include:

- sheltering in place
- iodine prophylaxis (KI pills),
- evacuation, and
- temporary Relocation

The secondary mission of the TAG is to assess the broader societal impacts, including risks to commerce, critical infrastructure, the continuity of essential services and public confidence.

TAG Management

The Director NB EMO will assign a senior officer as the Senior Advisory Officer to manage the Technical Advisory Group. For a radiation emergency, the Senior Advisory Officer should be a New Brunswick Power health physicist, or a comparably qualified public health official. Primary and alternate contacts for NB Power health physics staff are found in Menu G.

The Director NB EMO will assign sufficient staff (operations officers; admin support; geo techs) to support the TAG. Typically NB EMO will manage the business process while the experts assess radiological impacts and potential health consequences and make appropriate recommendations.

TAG Responsibilities

The Technical Advisory Group is responsible to assess the off-site impacts of the radiological emergency, evaluate the need for emergency protective actions, and recommend appropriate countermeasures to the Nuclear Control Group. This must be accomplished within the first two or three hours. Once public safety and public health issues have been addressed, the Advisory Group will also give

consideration to medium and longer term implications of the emergency, including effects on commerce, critical infrastructure and essential services.

Composition of the TAG

Members include: Department of Public Safety officials, NB Power Health Physics Laboratory staff, Environment Canada meteorologists and other subject matter experts, including representatives from Health Canada's Radiation Protection Bureau and the Canadian Nuclear Safety Commission. The group will expand or contract, depending on the circumstances. A minimum complement is the Senior Advisory Officer, a NB Power health physicist, a meteorologist, and a public health official.

TAG Methods of Assessment

Short Term (24-48 hours)

There are various methods available, but it must be emphasized to all concerned that the initial assessment (first hour) and follow on assessment (two to three hours) must be expedient in order to provide timely advice to the Control Group about emergency protective actions to protect the public. Emergency protective actions are: sheltering in place (as a temporary measure), KI prophylaxis, evacuation and temporary relocation.

NB Power's S3 FAST (Safety Support System – Field Assessment Survey Tool) can be used to collate and display field sensor readings and to model plumes, thus helping staff to assess the known and anticipated consequences and informing staff recommendations about sheltering, KI, evacuation and temporary relocation.

Longer Term (> 48 hours)

Detailed analysis, including air, soil and water sampling, can be undertaken once people are safe and the situation is more clearly understood. More detailed assessments supported by national and international agencies will inform things like food and water controls, actual deposition and dispersion of radionuclides, field decay rates and estimates of time required for safe re-entry.

Health Canada's ARGOS (Accident Reporting and Guidance Operational System) is a suite of tools for more detailed radiological analysis and consequence prediction. It can be used to assess longer term consequences and to assist recovery planning.

TAG Recommendations

The key deliverables within the first few hours are recommendations to the Nuclear Control Group on immediate and subsequent emergency protective actions for the public, covering the following:

- stability of the situation at the station (stable, improving; deteriorating);
- radiation risk, in perspective (dose rate for unprotected individuals, outdoors);
- associated immediate and long-term public health risks;
- recommended actions and dose to be averted by those actions;
- basis for the recommendations (information sources; decision criteria); and
- overall assessment of the public health impact of the event (not significant; significant; serious)

TAG Tasks

The Technical Assessment Group has the following four tasks which are to be completed within the first 12 hours: In each case, the Technical Advisory Group will assess the available information, make recommendations to the Nuclear Control Group and be prepared to explain the basis for the recommendations.

Task		Based On	Timeframe
1.	**Initial Radiological Assessment**	based on plant status	one hour
2.	**Detailed Radiological Assessment**	based on field survey data	one to two hours
3.	**Follow-on Radiological Assessment**	based on further field survey data and analysis	six to twelve hours
4.	**All-Hazards Risk Assessment**	based on advice from assessment Group (Threat Risk & Vulnerability Assessment / Contingency Plan Matrix)	Two to six hours

Task 1 - Initial Assessment (based on plant status)

- Initial recommendations for emergency protective actions will be made within 30 minutes of emergency classification.

- The initial recommendation will normally come from the Station Shift Supervisor (S/S), based on plant conditions and the following factors:
  - the dose rate at the boundary fence or anywhere else that can be defined
  - the exact LOCAL time of the accident
  - the nature of the accident (what happened) details on any radionuclide releases and exactly when were they released and from what location in the plant
  - the duration of the release(s)
  - the wind direction and speed at the time of the release and did it change? (Pasquill data may be useful)

- NB EMO should make decisions on and order the implementation of emergency protective actions within 15 minutes of the receipt of recommendations from the Station.

Task 2 - Detailed Assessment (based on field survey data)

- The magnitude of the off-site risk is correctly assessed on the basis of the available information. Initial ambient dose rate measurements within affected area(s) are made and assessed within two hours of the classification of the emergency.

- The hazard assessment takes into account:
  - the plant diagnostics and likelihood of fuel failure;
  - monitored releases;
  - unmonitored releases
  - field survey data
  - air sampling results
  - meteorology

- Affected areas or potentially affected areas are promptly determined.

- The Control Group and the CNSC are kept informed of the situation, including periodic updates of:
  - Emergency protective action recommendations;
  - projected plume trajectory;
  - off-site ambient gamma measurements above 0.01 mSv/h.

- Expertise and advice is provided to NB EMO/Nuclear Control Group when requested.

- The Control Group adjusts emergency protective measures, as information becomes available.

- The magnitude of the off-site risk is correctly assessed on the basis of available information and in accordance with Emergency Protective Action Guides.

- The Provincial Exposure Guidelines are followed.

Task 3 - Follow-on Assessment (based on further field survey data and analysis)

- Ambient dose rate measurements within affected area(s) are updated on a regular basis.

- The conditions, which downgrade or terminate the emergency, are properly assessed.

- The operational intervention levels below which protective action instructions can be lifted are clearly stipulated.

- When determining that an emergency is over, ensure that the Nuclear Control Group correctly assesses the following:
  - that conditions are under control and are stable;
  - that measurements are below operational intervention levels for lifting emergency protective action instructions;
  - that public concern is properly managed; and

- that downgrading the emergency will not have an adverse effect on the management of consequences.

- Emergency protective action(s) are rescinded at the appropriate time(s).

Task 4 – All-Hazards Risk Assessment

The Department of Public Safety leads this process, using an all-hazards risk assessment methodology. This process can proceed concurrently with the tasks above but cannot be allowed to distract the Technical Advisory Group from the primary mission of assessing the short term radiological consequences and making recommendations about emergency protective actions.

Radiological Assessment Guide

Staff may use the Point Lepreau Generating Station (PLGS) TAG Report F-1 as a guide.

Serial	Item	Details
1.	date / time of report	
2.	dose rate at the boundary fence	
3.	exact local time of accident	
4.	nature of the accident	
5.	details on any radionuclide releases and exactly when were they released and from what location in the plant	
6.	the duration of the release(s)	
7.	the wind direction and speed at the time of the release and did it change? (Pasquill data may be useful)	
8.	the surface areas of the region traversed by the plume	
9.	the general weather conditions in the area (rain, freezing, fog, humid, hot, etc) and the local forecast	
10.	people at risk, in relation to the plume direction	
11.	the dose rate in the plume and exactly where and when were these measurements taken (In plume, after plume, out of plume, ground dose)	
12.	the character of the release: steady leakage? puff? High dose up front, high dose at end? Decreasing? Increasing?	
13.	nuclides known to be present	
14.	nuclide activities (Bq/m3)?	
15.	advice on potassium iodine prophylaxis (KI pills, eat dulse, take a kelp pill, swig some cough medicine which may contain iodine, or eat some iodized salt)	
16.	precise location and time of all measurements	
17.	instrumentation used and WHO took the measurements	
18.	identify downwind communities (provinces, states) much further a field	

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

NEW BRUNSWICK EMERGENCY MEASURES ORGANIZATION

(NB EMO)

Responsibilities

The New Brunswick Emergency Measures Organization will:

a) On receipt of incident information from NB Power, alert the members of the Control Group.

b) Provide, equip and activate the Provincial Emergency Operations Centre (PEOC) for the Control Group.

c) Prepare Standing Operating Procedures for use within the PEOC.

d) Review and co-ordinate all agency plans, operating procedures and actions required under this plan.

e) Amend and keep the Off-Site Plan current.

f) In collaboration of NB Power, arrange seminars and exercises to test operating procedures and agency plans.

g) Review this plan annually to ensure the readiness of all agencies concerned with its execution.

h) In the event of a nuclear incident at Point Lepreau notify emergency response agencies in Nova Scotia, Prince Edward Island and the State of Maine.

i) In the event of a nuclear incident at Point Lepreau notify the Air Traffic Controller in Moncton, the Canadian Coast Guard in Saint John, Medical Officer of Health (MOH) and Health Canada.

Alerting and Assembly

In the event of a nuclear incident at Point Lepreau, the conditions listed in Tab L, make it mandatory for the Shift Supervisor to notify NB EMO. The Shift Supervisor will notify NB Power Systems Dispatch Centre by phone or by radio, if telephone communication is interrupted The Systems Dispatch Office will notify Headquarters "J" Division, RCMP by phone, and "J" Division will alert the NB EMO Duty Officer who will contact the Shift Supervisor and acknowledge receipt of the message. (See notification sequence at Annex A).

If the call is received during office hours, the Operations Officer will inform the Director and EMO Staff, then contact the Shift Supervisor again to obtain and record further details of the incident and local weather conditions.

In silent hours, the Duty Officer will alert the EMO Director and Staff (Menu F) through the Provincial Mobile Communications Centre (PMCC) and proceed to PEOC. The first EMO staff member to arrive at the PEOC will contact the Shift Supervisor and record the conversation. EMO Staff Check Lists are available in the PEOC.

A number of telephone lists called "Menus" have been compiled for notification. These lists include NB EMO Staff, Control Group Members, Administrative Staff and outside Emergency Response Agencies. The EMO Duty Officer or Operations Officer will alert Menu F, G or N. These menus are found at Annex B.

Concept of Operations

When the Director of NB EMO decides that the situation warrants, the Control Group will be alerted through Menu G and N. At the same time it would be normal to activate the REAC's at Saint John, St. Stephen (REAC "A") and/or Oak Bay (REAC "B") (Menu F).

As in other emergency response situations, the Senior Operations Officer will allocate operational duties to EMO Staff and will supervise the operations of the PEOC.

Action Check Lists of operational and administrative duties are to be prepared by the Operations Officer and are to be available in the PEOC at all times. All EMO Staff are to be familiar with, and practised in them.

An EMO Staff Officer will be dispatched immediately with the Monitoring and Decontamination Centre's (MDC) and NB EMO Command Post (CP). An NB EMO Off-site Emergency Operations Centre (OEOC) staff officer will be dispatched to the OEOC, where he will act as NB EMO Off-site Manager to oversee and co-ordinate operations in the area and provide information to the PEOC.

If operations are expected to continue for more than 24 hours, the Senior Operations Officer will ensure that a shift system is instituted.

In the unlikely event that the public is at immediate risk without warning, and on verification of a declaration of a General Emergency at PLGS, the EMO Operations Officer or the EMO Duty Officer has the authority to direct the immediate evacuation of Zones 1 and Zone 2. This will be done by contacting directly the RCMP District 1 (St. George) and the Point Lepreau Warden Service.

Communications

Operational communications are described in Tab F.

a) Public Enquiry Centre (as described in Tab F) will be established by Executive Council Office to answer queries from the general public.

b) Communication Centre to handle operational information will be established and supervised by Executive Council Office which is also responsible for staff training and message processing. Computer software, hardware and telecommunications equipment is available at the OEOC and EMO Headquarters for "hard copy" of survey results and any other operational information.

Administration

Administrative support for the Control Group and EMO Headquarters will be co-ordinated and supervised by the P1 – Administration Chief of the EMO staff.

Annexes

Annex A – Notification Procedure
Annex B – Contact Lists
Annex C – Operational Communications

TAB D

NOTIFICATION PROCEDURES

The use of standardized notification procedures are to be used in all communications, including Communications Check, Notification Test, Exercise and Real Event between the:

a. Shift Supervisor at the Point Lepreau (Nuclear) Generating Station (PLGS);

b. NB Power System Dispatch Office in Fredericton, NB;

c. RCMP"J" Division Operational Communications Centre ("J" Div. OCC);

d. NB Emergency Measures Organization (NB EMO) Duty Officer; and

e. NB EMO after-hours answering service, the Provincial Mobile Communication Centre (PMCC).

1. **Routine (Scheduled) Communications Check**

   a) From PLGS to the RCMP OCC each shift (twice daily); and
   b) From PLGS to NB EMO (once a week).

2. **Notification Test**

   a) The Shift Supervisor at **Point Lepreau Generating Station** (PLGS) notifies NB Power System Dispatch Office in Fredericton.

   b) **NB Power System Dispatch** notifies the RCMP at 452-4973, 1-888-506-7267 or 451-6051 stating:

   NOTIFICATION TEST:

   THIS IS NB POWER SYSTEM DISPATCH WITH A POINT LEPREAU NOTIFICATION TEST, **NOTIFY EMO.**

   Please Repeat my Message Back to Me.

   c) **RCMP OCC** to notify NB EMO at 453-2133 directly, or through their after-hours answering service, the Provincial Mobile Communications Centre (PMCC) at 453-7171 stating:

   NOTIFICATION TEST:

   THIS IS THE RCMP "J" DIVISION OCC WITH A POINT LEPREAU NOTIFICATION TEST.

   Please Repeat my Message Back to Me.

   d) **NB EMO** will contact the shift supervisor at PLGS (506-659-2540) to acknowledge receipt of the message.

Always ask the recipients to repeat your message back to you when completing a notification. Note the receipt and dispatch times for your message.

3. **EXERCISE**

a) The Shift Supervisor at the **Point Lepreau Generating Station** (PLGS) notifies NB Power System Dispatch Office in Fredericton, making reference to the exercise by name.

b) **NB Power System Dispatch** notifies RCMP at 452-4973, 1-888-506-7267 or 451-6051 stating:

EXERCISE-EXERCISE-EXERCISE

THIS IS NB POWER SYSTEM DISPATCH WITH POINT LEPREAU EXERCISE (Name the Exercise). **NOTIFY EMO.**

Please Repeat my Message Back to Me.

c) **RCMP OCC** to notify NB EMO at 453-2133 directly, or through their after-hours answering service, the Provincial Mobile Communications Centre (PMCC) at 453-7171 stating:

EXERCISE-EXERCISE-EXERCISE

THIS IS THE RCMP "J" DIVISION OCC WITH POINT LEPREAU EXERCISE (Name the Exercise).

Please Repeat my Message Back to Me.

d) **NB EMO** will contact shift supervisor at PLGS (506-659-2540) to acknowledge receipt of the message and activate notification fan-out.

Always ask the recipients to repeat your message back to you when completing a notification. Note the receipt and dispatch times for all message.

4. **REAL EVENT**

Real Events Include:

- Nuclear Incidents
- Hostile Actions
- Radioactive Transportation Accident

a) The Shift Supervisor at the **Point Lepreau Generating Station** (PLGS) will notify NB Power System Dispatch Office in Fredericton of what type of incident is occurring (define the event, including

level).

b) **NB Power Systems Dispatch** will notify the RCMP OCC at 452-4973,1-888-506-7267 or 451-6051 of the incident stating:

POINT LEPREAU HAS REPORTED A (define the event, including level).

NOTIFY EMO.

Please Repeat my Message Back to Me.

c) **RCMP OCC** will record the message and pass it on to NB EMO at 453-2133 directly, or through their after-hours answering service, the Provincial Mobile Communications Centre (PMCC) at 453-7171 **exactly as received.**

Pass the message on stating:

THIS IS THE RCMP "J" DIVISION OCC.

POINT LEPREAU HAS REPORTED A (define the event, including level).

Please Repeat my Message Back to Me.

d) **NB EMO** will contact shift supervisor at PLGS (506-659-2540) to acknowledge receipt of the message and activate EMO notification fan-out.

PLGS - Emergency Levels (See Tab L for more details)

PLGS Standard Operating Procedures define the following Emergency Levels;

(1) General Radiation Emergency;

(2) Site Area Radiation Emergency; and

(3) Radiation Alert.

Non Radiation Emergency, including:

(1) Medical Emergency;

(2) Fire Emergency;

(3) Chemical Emergency; and

(4) Security Alert.

TAB B

Contact Lists

MENU's

NB EMO maintains contact lists, termed "Menus", in a Microsoft Outlook Contacts database. As Menus change constantly, they are only inserted into hard copies of the off-site plan when needed.

Plan holders should insert Menus from Microsoft Outlook Contacts, as follows:

- Menu A Senior Officials
- Menu B NB EMO Augmentees
- Menu F Provincial Emergency Operations Centre (PEOC) Staff (Includes Regional Emergency Management Coordinators)
- Menu G Provincial Emergency Action Committee (PEAC)
- Menu I International Emergency Management Group (IEMG)
- Menu N Nuclear Control Group

TAB B

OPERATIONAL COMMUNICATIONS

Purpose

The purpose of this section is to describe the communications means and operational linkages that support the off-site plan.

Communications Means

General

The New Brunswick Emergency Measures Organization (NB EMO) provides connectivity with intervening organization by various means, including voice, fax and data systems, as described below.

Voice Systems

Terrestrial Telephone (wire-line)

The Provincial Emergency Operations Centre (PEOC) provides dedicated telephone lists, call taking services and voice mail services for members of the Control Group. All PEOC telephone lines are designated to receive priority access for dialling (dial tone).

The PEOC reserves two dedicated lines for fax communications, one for incoming and one for outgoing fax messages.

Wire-line telephone is the primary means for passing information by voice and fax.

Cellular Telephone (Wireless)

The PEOC provides cellular coverage, such that cellular telephones and other wireless devices will function throughout the facility.

Cellular systems are considered alternative means, as dedicated circuits and call priority are not available.

Satellite Telephone

The PEOC is also equipped with satellite telephones on the Globalstar and MSAT networks.

Satellite systems provide connectivity, but are impractical as an operational communications means. They are considered to be emergency systems.

Radio Networks

The PEOC provides connectivity with the following government-owned radio networks:

- Integrated Radio Communications Systems (IRCS)
- New Brunswick Power Emergency Radio Systems (ERS2)
- RCMP Radio Network; and
- International Repeater Group (IRG) Network.

The PEOC also provides amateur radio communications services in HF, VHF, UHF bands and over Internet Radio Networks.

Radio networks are primarily for departmental use, connecting Control Group members with their field staff.

Radio networks provide alternative voice means in the event that telephone services are congested.

Computer Systems

The PEOC provides the Control Group and staff with high speed computer connectivity on the Government of New Brunswick (GNB) wide area network.

GNB services include:

- Intranet (internal) and Internet (external) for GNB users;
- Virtual Private Network (VPN) connectivity, for GNB users;
- Secure Portal Services, including Secure Internet Conferencing.

The PEOC also provides commercial high-speed Internet connectivity for non GNB users.

Message Centre

The PEOC (Administration Group) provides a Message Centre to process incoming and outgoing messages using telephone, radio, fax, and e-mail services.

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

DEPARTMENT OF AGRICULTURE, AQUACULTURE AND FISHERIES

(DAAF)

RESPONSIBILITIES

The Department of Agriculture, Aquaculture and Fisheries (DAAF) will:

a. In collaboration with NB Health, arrange for sampling locally produced foodstuff and marine products, and the delivery of samples to the specified laboratory for analysis (Health Canada (HC), Department of Fisheries and Oceans (DFO), and the Canadian Food Inspection Agency (CFIA) may also be involved),

b. Be prepared to provide personnel to take samples,

c. In collaboration with NB Health, ensure that locally produced foodstuff which is condemned does not reach the public (HC, and CFIA may also be involved),

d. In collaboration with NB Health and NB Environment, arrange for the disposal of condemned or contaminated foodstuff (HC and CFIA may also be involved),

e. When an evacuation is directed, help facilitate the movement and welfare of farm animals. It will be the responsibility of the owners of said farm animals to provide the actual feeding and care of their animals,

f. In collaboration with Public Safety Canada (PSC), DFO, Canadian Coast Guard (CCG) and others, develop arrangements for removal of fishing vessels from any danger area and direct them to decontamination area or safe harbours. DAAF will contact the Nuclear Control Group or the appropriate Wharfingers to prepare them for the arrival of said vessels,

g. Assist other agencies as required.

ALERTING AND ASSEMBLY

Upon notification of an alert, NB EMO will contact the DAAF Representative on the Control Group (PEAC) or his/her alternate listed in Annex A. The DAAF Representative will then proceed directly to the Provincial Emergency Operations Centre (PEOC) in the Victoria Health Centre.

On receipt of notification from NB EMO that an emergency has occurred at the Lepreau Nuclear Generating Station, the DAAF representative will advise the Deputy Minister.

PROCEDURES

A. Departmental Control Group Representative (PEAC)

The Departmental Control Group Representative is to fulfill, as directed by the EMO Director, the duties and responsibilities of the DAAF under the Off-Site Plan. The following are specific duties to which he/she must attend.

(1) When notified by NB EMO, proceed immediately to the Provincial Emergency Operation Centre (PEOC).

(2) Ensure that the Deputy Minister and appropriate Departmental HQ staff are notified,

(3) Ensure that Regional Emergency Action Committee (REAC) representatives are notified,

(4) In conjunction with the senior NB EMO Operations Officer and other Provincial Emergency Action Committee (PEAC) members, coordinate the department's emergency responses during a provincial emergency,

(5) Recommend the provision of specific assistance, including non-government sources, where appropriate,

(6) Contact alternate Departmental Control Group Representatives to establish a schedule for relief such that the position is continuously manned until otherwise directed by the Director,

(7) Maintain a departmental operations / telephone log.

B. Regional Emergency Action Committee (REAC) representatives

(1) When notified by the Regional Emergency Management Coordinator (REMC), proceed immediately to the local REAC office,

(2) Fulfill the role of primary field office contacts for members of the Emergency Operations Committee and Branch Directors, in the event of the activation of the DAAF Emergency Plan,

(3) Fulfill the role of coordinator, at the local level, of the implementation of the DAAF Emergency Plan,

(4) Contact appropriate field staff if required,

(5) Contact alternate REAC members if required,

(6) Maintain a departmental operations / telephone log.

C. Departmental Field Personnel

Personnel will remain on standby or at assigned locations to receive further instruction from the Departmental Control Group Representative or the Saint John Regional Emergency Action Committee (REAC) or the St. Stephen / Oak Bay Regional Emergency Action Committee (REAC). These instructions may include the establishment of a shift schedule if personnel are required on a 24-hour basis and/or the assignment of crews to the specific types of samples at specific locations. Personnel are not to deploy to the field until so directed.

CONCEPT OF OPERATIONS

The DAAF will provide assistance in procuring samples of locally produced foodstuff and the delivery of samples to the New Brunswick Power Laboratory (York Street, Fredericton) for analysis (Sample submission form Annex D). The DAAF will work with officials of the Departments of Health and Environment for suitable disposal of any food found to be unfit for use. Input from HC and the CFIA may also be solicited.

For details on agricultural production in the Point Lepreau Area, see Annex B.

Livestock (and riding horses, ponies, etc.) if removed from the area will be accommodated in a safe area in Saint John, NB, or nearby, under arrangements to be made by DAAF staff.

EMO, NB Power and the Point Lepreau wardens will deliver the message to the households with livestock, that livestock owners may not be allowed back into the restricted areas once evacuated. Therefore they will be encouraged to make their own arrangements for their livestock i.e. leave livestock behind with shelter and plenty of food and water or bring animals to an alternate location or take them to the identified DAAF livestock shelter. NB Power/EMO could have the information available via news release or website information updates (GNB public safety bulletins are available online, NB Power call in number for public inquiries).

Before moving any livestock, it must first be tested for contamination and decontaminated if necessary.

In a "radiation" emergency, the DAAF is to ensure the safety of fishermen at sea, the removal of craft from any threatened harbour, to assist NB Health to arrange for obtaining samples of marine products for testing, and to assist the Control Group in any way possible.

The collection of marine products will be as coordinated with NB Health, DFO, HC, and the CFIA with whom arrangements have been made.

Arrangements have been made to inform the Director of the Research Station at St. Andrews so that he/she may put her Emergency Plan into effect, which may involve monitoring of the marine area by the Atmospheric Environment Radiation Unit which is based at Halifax.

If the briefing at NB EMO Headquarters indicates that fishermen or craft are at risk, messages will be sent to the Vessel Traffic Services Centre (MCTS/SCTM) at Saint John to be broadcast as emergency messages. The Canadian Coast Guard will by radio communication inform vessels in the area to proceed to a safe harbour or decontamination area. The Canadian Coast Guard Emergency Services must be contacted in order to set up patrols of the area with vessels and aircraft. The Canadian Coast Guard will ensure the perimeter of the affected area is patrolled preventing entry.

The DAAF will assist NB Health to see that landed marine products are withheld from processing until the samples have been found fit for consumption.

Samples may be required from processing plants in the path of a radioactive "plume" as well as from vessels which may have passed through a "plume".

Through the use of the Coast Guard information, the DAAF shall determine the number of ships that would require decontamination and advise the Nuclear Control Group.

EVACUATION

In preparation for planning for an evacuation, the DAAF will:

a. Develop a list of livestock for each of the 15 Warden Zones, based on the EMO Lepreau Demographic Survey Database,
b. Based on the lists developed above, be prepared to facilitate the evacuation of livestock,
c. Identify suitable shelters or farms to receive and care for evacuated animals and,

d. Identify locations for the decontamination of evacuated animals (see appropriate names and numbers for evacuation, decontamination and sheltering of livestock in Annex C).
e. Disposal of dead farm animals will be done in consultation with NB Health and NB Environment (Health Canada, and the Canadian Food Inspection Agency may also be involved).

The Coast Guard will evacuate all vessels from any endangered area and will signal any vessels in need of decontamination to proceed to decontamination points predetermined by the Nuclear Control Group. Once the decontamination is completed the decontamination group will instruct these vessels to proceed to an uncontaminated safe area outside the "plume" perimeter. The DAAF will contact the appropriate Wharfingers and harbour authorities to prepare them for the arrival of said vessels.

Notification of stakeholders will be by way of DAAF personnel or stakeholder groups or associations (see attached list in Annex C).
See appropriate names and numbers for notification of federal partners in Annex A.

COMMUNICATIONS

Telephone will be the primary means of communication. Radios will be provided as required by NB EMO.

The Provincial Emergency Operations Centre (PEOC), when activated, is to be contacted at 453-5566 (DAAF Control Group Representative / PEAC). Alternatively, contact NB EMO at 453-2133 or 453-5500.

The Saint John Regional Emergency Action Committee (REAC) will be established at the Provincial Lab Building, 8 Castle Street, Saint John, and phone (506) 643-6278.

The St. Stephen Regional Emergency Action Committee (REAC "A") will be established at the Provincial Building, 41 King Street, St. Stephen, and phone (506) 466-7512.

The Oak Bay Regional Emergency Action Committee (REAC "B") will be established at the Oak Bay Fire Department, 690 Route 170, Oak Bay, and phone (506) 466-1304.

The Regional Emergency Action Committees must be kept aware of where the field staff can be reached when they are away from assigned locations.

Contact between the EMO Control Group and the Departmental Field personnel, while they are in the field, will be in the form of cellular telephones and radios provided by EMO.

ANNEXES

Annex A – Agriculture, Aquaculture & Fisheries (DAAF) Contacts and Federal Government Contacts
Annex B – Operational Procedures
Annex C – Resources
Annex D – Sample Submission Form

TAB 6

AGRICULTURE, AQUACULTURE AND FISHERIES CONTACTS

CONTROL GROUP MEMBER (PEAC)		OFFICE	HOME	CELL
Manager	Carrie Roth	(506) 238-1721	[redacted]	[redacted]
ALTERNATES				
Programmer	Stewart Catt	(506) 453-6726	[redacted]	[redacted]
Vacant				
Vacant				
DEPUTY MINISTER				
Deputy Minister	Bill Levesque	(506) 453-6050	[redacted]	[redacted]
EMERGENCY OPERATIONS COORDINATOR				
Executive Director (Acting)	Giovanna McLeod	(506) 457-4897	[redacted]	[redacted]
ON-SITE AGRICULTURE COORDINATOR				
Primary	Jason Wells	(506) 432-2150	[redacted]	[redacted]
	Brian MacDonald	(506) 433-2150		
	Pat Toner	(506) 453-2435		
ON-SITE AQUACULTURE / FISHERIES COORDINATOR				
Primary	Marc Johnston	(506) 755-4000	[redacted]	[redacted]
	Bruce Thorpe	(506) 755-4000		
DEPARTMENT RESOURCE PERSONNEL AGRICULTURE				
Manager Veterinarian Field Services	Dr. Keith Murch	(506) 453-2219	[redacted]	[redacted]
Director Sector Specialist Services	Kevin McCully	(506) 453-3481	[redacted]	[redacted]
District Veterinarian Central/Southwest Region	Dr. Jason Cleghorn	(506) 453-2210	[redacted]	[redacted]
Executive Director Animal Health Services	Sandi McGeachy	(506) 453-8515	[redacted]	[redacted]
Regional Director Central/Southwest Region	Gerry Chevrier	(506) 453-3464	[redacted]	[redacted]
Executive Director Strategic Planning	Yvon Chiasson	(506) 453-8432	[redacted]	[redacted]
Regional Director Southwest Region	Kathy Brewer-Dalton	(506) 440-0179	[redacted]	[redacted]
REAC Regions 1 & 12 – Carleton, Victoria, Madawaska and Part of Restigouche County				
Primary	Bertrand Cyr	(506) 475-7867	[redacted]	
Alternate #1	Peter Brennan	(506) 392-5140		
REAC Regions 2, 3 & 4 – Gloucester and Part of Restigouche County				
Primary	Denis Prince	(506) 394-4128	[redacted]	
Alternate #1	David Fontaine	(506) 547-2379		
REAC Region 5 – Northumberland County				
Primary	Dr.Scott MacFarlane	(506) 778-6226	[redacted]	[redacted]
Alternate #1	Vacant			
REAC Regions 6 & 7 – Kent, Westmorland and Albert County				
Primary	Mark King	(506) 743-7332	[redacted]	
Alternate #1	Duncan Fraser	(506) 856-2678		
Alternate #2	Vacant			
REAC Regions 8 & 9 – King, Queens and Saint John County				
Primary	Tom Byers	(506) 432-2161	[redacted]	
Alternate #1	Brian MacDonald	(506) 433-2150		

REAC Regions 10 &11 – York, Sunbury and Charlotte County			
York & Sunbury County			
Primary	Pat Toner	(506) 453-2435	[redacted]
Alternate #1	Vacant		
Charlotte County			
Primary	Marc Johnston	(506) 755-4290	[redacted]
Alternate #1	Bruce Thorpe	(506) 755-4000	[redacted]
AQUACULTURE FISH HEALTH – ST. GEORGE			
Aquaculture Veterinarian	Dr. Michael Beattie	(506) 755-4000	[redacted]
Aquaculture Veterinarian	Dr Thomas Ogilvie	(506) 755-4000	[redacted]
Biologist	Bruce Thorpe	(506) 755-4000	[redacted]
Biologist	Kathy Cleghorn	(506) 755-4000	[redacted]
Biologist	Pat Mowatt	(506) 755-4000	[redacted]

FEDERAL RESOURCES

Canadian Coast Guard Marine Communication and Traffic Services (MCTS)
Saint John, NB Phone: 1-888-528-6444 Fax: (506) 636-5000
[redacted], Officer in Charge
Cell: [redacted]
Email: [redacted]

Canadian Coast Guard Casualty and Pollution Reporting
St John's, NF Phone: 1-800-565-1633 (24 hours)

Labrador Coast Guard Radio, Phone (709) 896-2252

Canadian Coast Guard Regional Operations Centre (CCG) – Rock Duty Officer
St John's, NF Phone: (709) 772-6220

[redacted], Director, Fisheries and Oceans Canada (DFO)
Biological Station
St. Andrews, NB Phone: (506) 529-5951
Email: [redacted]

Fisheries and Oceans Canada (DFO) Regional Office
St. George, NB Phone (506) 755-5001

[redacted], Area Director, Fisheries and Oceans Canada (DFO)
St. George, NB Phone (506) 755-5050 Fax (506) 755-5061
Email: [redacted]

[redacted], Small Craft and Harbours, Fisheries and Oceans Canada (DFO), St. George, NB Phone (506)755-5030

[redacted], Supervisor, Canadian Food Inspection Agency
St. George, NB Phone (506) 755-5150 (Office)
E-mail: [redacted]

Blacks Harbour Wharf Office	Phone (506) 456-3347 (Office)
[redacted], Wharfinger	Phone [redacted]
[redacted], Wharfinger	Phone [redacted]
Saint John Port Authority Office	Phone (506) 636-4884 (Office)
[redacted], Harbour Master	Phone [redacted]
[redacted] Wharfinger	Phone [redacted]
Port Security - 24/7	Phone (506) 636-5044 (Office)

Note: In events where Public Safety Canada is involved, representatives from Fisheries and Oceans Canada (DFO) and (Canadian Coast Guard) CCG would sit on various committees FCSC (Federal Coordination Steering Committee) and FCG (Federal Coordination Group) respectively and would be aware of any incident that could endanger the general public, or requires a coordinated Federal Response. The action of notifying potentially affected sites would be performed by:

a) those individuals on the FCSC and FCG, or

b) the Regional Emergency Services Advisor/Business Continuity Plan Coordinator within the Department.

If the briefing at NB EMO Headquarters indicates that fishermen or other persons at sea are at risk, the Canadian Coast Guard Radio Marine Communication and Traffic Services (MCTS) Centre at Saint John, NB will be asked to broadcast appropriate Notices to Shipping (NOTSHIPS) to all vessels at sea. As per the direction of DAAF to Public Safety Canada, the Canadian Coast Guard will by radio communication inform vessels in the area to proceed to a safer area or pre-established decontamination area. The Canadian Coast Guard will monitor the area within the plume via radar to help ensure vessels do not enter the plume.

Through the use of the Coast Guard information, DAAF will determine the number of ships that would require decontamination and provide direction to the CCG as per the decontamination plan in Annex B.

OPERATIONAL PROCEDURE

The only commercial agricultural production within the twenty-kilometre radius of the Point Lepreau Generating Station is a limited number of blueberry fields.

Food Production

Food production consists of vegetables grown for family use and eggs and poultry in small volumes for individual use by owners of small poultry flocks. Very small volumes of locally grown vegetables are stored for winter use. No milk is produced within the area.

Detailed demographic survey information is compiled by EMO, by individual households, which includes pets, livestock and vegetables grown locally and stored.

Residents of the area rely on food produced outside the immediate area. The only concern, regarding possible contamination of food, would be of that stored in the home or local shops at the time of an incident. In most cases, foods stored within a building would not be affected.

If a nuclear release occurred in the summer months, locally grown vegetables and blueberries would require testing to determine level of contamination.

Livestock

See the Livestock Warden Zone information on the GNB shared drive or contact Roger Shepard at EMO (506) 453-2133:

A. Dairy Cow - 0
B. Beef cattle - 2
C. Hogs/Pigs - 13
D. Horses - 4
E. Goats - 0
F. Sheep - 0
G. Bees - 13
H. Fowl - 834
I. Rabbits - 1

This list further substantiates the statement of no commercial agricultural production in this area. No milk is produced within the area, eggs for individual family use, with some sale to neighbours is possible.

Evacuation Plan

Livestock

The DAAF has the responsibility to facilitate the evacuation of livestock and care of this livestock during an emergency. It will be the responsibility of the owners of said livestock to provide the actual feeding and care of their animals.

If an evacuation of the area is necessary, owners of horses, cattle, goats, swine and poultry will be informed by EMO and NB Power via a news release, website information or by the Point Lepreau wardens to do the following:

a. leave livestock behind with shelter and plenty of food and water, or
b. bring animals to an alternate location, or
c. take them to the identified DAAF livestock shelter where one DAAF staff person will be stationed to deal with the reception/registration of animals.

Before moving any livestock past the checkpoints, it must first be tested for radioactivity and decontaminated if necessary.

Sheltering of animals should provide adequate protection against fallout contamination, so evacuation to another area may not be required.

If the decision is to evacuate immediately, livestock trucking firms will provide vehicles to move the animals, under supervision of the owner and the DAAF.

Annex C contains the list of livestock trucking companies, decontamination companies and shelters for large animals.

Disposal of dead farm animals will be done in consultation with NB Health and NB Environment & Local Government (HC, and CFIA may also be involved).

Decontamination of Large Animals

Prior to the removal of animals to safe areas, animals and vehicles must be washed down to remove any possible surface contamination.

Notification of Fishing Vessels and Other Stakeholders

The Coast Guard will evacuate all vessels from any endangered area and will signal any vessels in need of decontamination to proceed to decontamination areas predetermined by the Nuclear Control Group.

Two marine decontamination centres will be established as required, one at the Port of Saint John and the other at Blacks Harbour.

Port of Saint John

A radiation monitoring post will be located at the Port of Saint John under the direction of the Port Authorities with assistance from NB Power. They are to be prepared to handle fishing boats, small craft and large ships including their crew and passengers.

Port of Blacks Harbour

A radiation monitoring post will be located in Blacks Harbour under the direction of the Canadian Coast Guard with assistance from NB Power. They are to be prepared to handle fishing boats, small crew and large ships including their crew and passengers.

Once the decontamination is completed the decontamination group will instruct these vessels to proceed to an uncontaminated safe area outside the "plume" perimeter. The DAAF will contact the appropriate Wharfingers or harbour authorities to prepare them for the arrival of said vessels.

Notification of stakeholders will be by way of DAAF personnel or stakeholder groups or associations (see attached list).

See appropriate names and numbers for notification of federal partners in Annex A.

Food Sampling

When required, following an incident, the DAAF staff will assist with collecting samples of food items for testing. A list of personnel is found in Annex A. Testing will be performed by the NB Power Health Physics Laboratory, Chestnut Complex, and York Street, Fredericton.

Contaminated food will be decontaminated or destroyed under direction of officials of the NB Departments of Health and Environment.

DAAF can assist the lead agencies i.e. NB Health and NB Environment with the coordination of food, water and environmental sampling, food and water controls and implementation of restrictions on productions and/or distribution of food products (Health Canada, and the Canadian Food Inspection Agency may also be involved).

TAB C

ASSOCIATIONS	ADDRESS	STAFF
Agricultural Alliance of New Brunswick (AANB) [redacted] President Phone: [redacted] (home) **Email:** [redacted]	259 Brunswick Street Suite 303 Fredericton, NB E3B 1G8 Email: alliance@fermeNBfarm.ca Web: www.fermenbfarm.ca 452-8101 (Office) 452-1085 (fax)	[redacted] CEO [redacted] Office Manager;
National Farmers Union (NFU) [redacted] President Phone: [redacted] Email: [redacted]	1436 Chemin Pleasant Ridge Rogersville, NB E4Y 1E2 Web: www.nfu.ca 1-888-246-5583	[redacted] Secretary 6978 Route 107, Juniper, NB E7L 1E2 Email : nfuinnb@gmail.com [redacted]
Apple Growers of NB	PO Box 30034, Prospect Plaza, Fredericton, NB E3B 0H8 Email : nbapple@nbnet.nb.ca (506) 386-8100 (Office) (506) 386-1627 (Fax)	[redacted] Inteim General Manager [redacted]
NB Cattle Producers	Box 1567 Fredericton, NB E3B 5G2 Email: nbcattle@nb.aibn.com (506) 453-8534 (Office) (506) 453-1985 (Fax)	[redacted] Office Manager; [redacted] Chair, [redacted] (Home)
NB Egg Marketing Board (NB Egg Producers) [redacted] Chair	275 Main Street, Suite 101 Fredericton, NB E3A 1E1 Email: nbegg@nbnet.nb.ca Web: www.nbegg.ca 458-8885 (Office) 453-0645 (fax)	[redacted] General-Manager
Producteurs de poulet du NB / Chicken Farmers of NB	277 Main Street, Suite 103 Fredericton, NB E3A 1E1 Website: www.chicken.ca (506) 452-8085 (Office) (506) [redacted] (Cell) (506) 451-2121 (Fax)	[redacted] Secretary-Manager Email: [redacted]
NB Hog Marketing Board (Porc NB Pork)	259 Brunswick St., Suite 302 Fredericton, NB E3B 1G8 Web: www.porcnbpork.ca (506) 458-8051 (Office) (506) 453-1985 (Fax)	[redacted] Executive Director Email : [redacted]
NB Goat Breeders Association	182 Academy Street Hillsborough, NB E4H 2R9	[redacted] Secretary/Treasurer [redacted] (Home) Email: [redacted]

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ASSOCIATIONS	ADDRESS	STAFF
NB Turkey Marketing Board (Turkey Farmers of NB)	277 Main Street Fredericton, NB E3A 1E1 (506) 452-8103 (Office) (506) 451-2121 (Fax)	[redacted] Secretary-Manager Email: [redacted]
NB Soil and Crop Improvement Association	259 Brunswick Street, Suite 302 Fredericton, NB E3B 1G8 Email: gm@nbscia.a web: www.nbscia.ca (506) 454-1736 (Office) (506) 472-1985 (Fax)	[redacted] President [redacted]
Bleuets NB Blueberries	1350 Regent Street HJ Flemming Forestry Centre, Rm. 247, 1350 Regent Street, Fredericton, NB E3C 2G6 Email: bnbb@nb.aibn.com Web: www.nbwildblue.ca (506) 459-2583(office) 1-866-840-2583 (506) 459-8920 (Fax)	[redacted] Secretary-Manager
Canneberges NB Cranberries Gerard Richard, President	67 Point de Bute Road, Point de Bute, NB E4L 2T4 Web : www.nbcranberries.com (506) 379-1866 (office)	[redacted] Chair [redacted] Email: [redacted]
Atlantic Certified Organic Cooperative Ltd.	PO Box 40 Canning, NS B0P 1H0 Email : info@atlanticcertifiedorganic.ca (902) 582-3275 1-888-375-9190 (902) 582-3299 (Fax)	[redacted] Manager
Organic Crop Improvement Association	291 Scott Road Salisbury West., NB E4E 5E7 Email: ocianb@xplornet.com (506) 872-4984 (office)	
Landscape NB / NB Horticultural Trades Assoc.	P.O. Box 742 Saint John, NB E2L 4B3 Email: Inb@nbnet.nb.ca Web: www.nbhta.com 1-866-752-6862 (office) (506) 633-1621 (Fax)	[redacted] Executive Director
Really Local Harvest Coop	Dieppe Farmer's Market 232 Gauvin Road, Dieppe, NB E1A 1M1 Email: info@recoltedecheznous.com Web: www.recoltedecheznous.com (506) 854-8557 (office) (506) 854-5119 (Fax)	[redacted] Manager Email: [redacted]

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NB Sheep Breeders Association [redacted], President Email: [redacted]	932 Route 945, Cormier Village, NB E4P 5Y9 (506) 532-5689 (office) (506) 532-0060 (Fax)	[redacted] Secretary/Treasurer Email: [redacted]
NB Beekeepers Association [redacted], President	488 Cape Breton Road St. Philippe, NB E1H 1W2 Web: http://www.nbba.ca/	[redacted] Secretary/Treasurer Email: [redacted]
NB Christmas Tree Growers Co-op	850 Prospect Street, Suite 402 Fredericton, NB, E3B 9M5 Web: www.infor.ca (506) 450-8787(Office) (506) 454-0652 (Fax)	[redacted] Executive Director
NB Maple Producers Association [redacted] President [redacted]	850 Prospect Street, Suite 402 Fredericton, NB, E3B 9M5 Web: www.infor.ca (506) 458-8889 (office) (506) 454-0652 (Fax)	[redacted] General Manager Email: [redacted]
NB Seed Potato Growers Association [redacted], Chairman	PO Box 7878 Grand Falls, NB E3Z 3E8 (506) 473-3036 (Office) (506) 473-4647 (Fax)	[redacted] Executive Director
Horse Racing New Brunswick Inc.	Exhibition Grounds 365 Smythe Street Fredericton, NB E3B 3E3 Web: www.hrnb.ca (506) 459-3204 (Office)	[redacted] Executive Director Phone: [redacted]
Atlantic Canada Organic Regional Network (ACORN) [redacted] Executive Director	PO Box 6343 Sackville, NB E4L 1G6 admin@acornorganic.org (506) 536-2867 (office) 1-866-322-2676 (506) 536-0221 (Fax)	[redacted] Executive Director
Eastern Canadian Water and Soil Conservation Centre (ECSWCC) [redacted] Executive Director Email: [redacted]	160 Reservoir Street Grand Falls,NB E3Y 3W3 (506) 475-4040 (office) (506) 475-4030 (Fax)	
NB Fur Farmers Association [redacted] President	61 Salisbury Back Road, Colpitts Settlement, NB E4J 2Z2 (506) 372-9232 (office) (506) 372-4129 (Fax)	
NB Grape Growers Association [redacted] President Email: [redacted]	3506 Lower Cambridge Road, Cambridge-Narrows, NB E4C 1S6	[redacted] Secretary/Treasurer Email: [redacted]
NB Potato Shippers Association	P.O. Box 7878 777 boul. Everard H Daigle, Grand Falls, NB E3Z 3E8 Web: www.potatoesnb.com (506) 473-3036 (Office) (506) 473-4647 (Fax)	[redacted] President Phone: [redacted]

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New Brunswick Trout Farmers Association	PO Box 632 Centreville, NB E7K 3H5 Email : speckle@nb.sympatico.ca (506) 273-2310 (Office)	[redacted] President [redacted](Cell) [redacted](Home-DW)
COMMERCIAL AGRICULTURE SECTOR		
McCain Foods Ltd	8800 Main Street Florenceville, NB E7L 1B2 Web: www.mccain.com (506) 392-5541(Office) (506) 392-3152 (Fax)	[redacted] Chair
Dairytown Products	49 Milk Board Road Sussex, NB E4E 5L2 Web: www.dairytown.com Email: admin@dairytown.com (506) 432-1950 (Office) Toll Free: 1-800-561-5598 (506) 432-1940 (Fax)	[redacted] Vice President [redacted]
Atlantic Food and Beverage Processors Association [redacted], President	500 St. George Street Moncton, NB E1C 1Y3 info@atlanticfood..ca (506) 389-7892 (Office) (506) 854-5850 (Fax)	[redacted] Executive Director
COMMERICAL AQUACULTURE SECTOR		
Atlantic Canada Fish Farmers Association	226 Limekiln Road Letang, NB E5C 2A8 PHONE: (506) 755-3526 FAX: (506) 755-6237 To contact the staff or board by email – info@atlanticfishfarmers.com	[redacted] Executive Director
Cooke Aquaculture [redacted], **President** **Email:** [redacted] [redacted] **(Cell)**	874 Main Street Blacks Harbour, NB E5H 1E6 Web: www.cookeaqua.com (506) 456-6600 (Office) (506) 456-6652 (Fax)	[redacted] Vice President, Operations Email: [redacted]
Benson Aquaculture Ltd.	6 Old Factory Round Turn Grand Manan, NB E5G 2J4 (506) 662-3502 (office)	[redacted] President E-mail: [redacted]
Northern Harvest Sea Farms	204 Limekiln Road Letang, NB E5C 2A8 Web: www.northernharvestseafarm.com (506) 755-6192 (Office) (506) 755-2140 (Fax)	[redacted], President Email: [redacted] Phone: [redacted]

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COMMERCIAL FISHERIES SECTOR		
Association des crabiers acadiens Inc.	183 A, boul. J.D. Gauthier Shippagan, NB E8S 1M8 (506) 336-1240 (Office) (506) 336-1241 (Fax)	[redacted] President Email: [redacted]
Association des seineurs du Golfe	278 av. des Pêcheurs Shippagan, NB E8S 1J6 (506) 336-1411 (Office) (506) 336-1415 (Fax)	[redacted] (Cell) (506) 336-1411 (Office) Email : [redacted]
Association des crevettiers acadiens du Golfe Inc. [redacted] President	278, av. des Pêcheurs Shippagan, NB E8S 1J6 (506) 336-1414 (Office) (506) 336-1415 (Fax)	[redacted] (Cell) (506) 336-1411 (Office) Email : [redacted]
Fédération régionale acadienne des pêcheurs professionnels Inc. (FRAPP)	278 av. des Pêcheurs Shippagan, NB E8S 1J6 (506) 336-1414 (Office) (506) 336-1415 (Fax)	General Directorz Email : [redacted]
Les crabiers du Nord-Est du NB Inc. [redacted] President Email: [redacted]	207B, boul. J.D. Gauthier Shippagan, NB E8S 2K8 (506) 336-2526 (Office) (506) 336-2391 (Fax)	[redacted] Vice President [redacted] (Cell)
Association des pêcheurs de poisson de fond acadiens Inc. [redacted] Président	35B, rue Principale Lamèque, NB E8T 1M9 (506) 344-7330 (Office) (506) [redacted] (Cell) (506) 344-7399 (Fax)	[redacted] (Cell)
Fundy North Fishermen's Association [redacted] President Email: fundynorth@nb.aibn.com	3 Prince of Wales Street St. Andrews, NB E5B 3W9 (506) 529-4165 (Office) (506) 659-4160 (Fax)	[redacted] President Email: fundynorth@nb.aibn.com
Fundy Weir Fishermen Association Inc [redacted], President Email: [redacted]	35 L'Etete Road, Unit 1 St. George, NB E5C 3H3 Email: fndyweir@nbnet.nb.ca (506) 755-6644 (Office) (506) [redacted] (Home) (506) 755-6646 (Fax)	[redacted] Manager [redacted] (Home)
Grand Manan Fishermen`s Association [redacted] President	P.O. Box 907 Grand Manan, NB E5G 4M1 Web: www.gmfa.nb.ca (506) 662-8481 (Office) (506) 662-8336 (Fax)	[redacted] Email: gmfa@nb.aibn.com
UPM / MFU (Marintime Fishermans Association) [redacted] président Email: shediac@mfu-upm.com	408 Rue Main Street Shediac, NB E4P 2G1 (506) 532-2485 (Office) (506) 532-2487 (Fax)	[redacted] Executive Director

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Harbour Authority Contact Information
February, 2015

Harbour Authority	Harbour(s)	Representative	Phone	Cell Phone
Harbour Authority of Alma	Alma	[redacted]	[redacted]	
Harbour Authority of Back Bay	Back Bay	[redacted]	[redacted]	
Harbour Authority of Black River	Black River	[redacted]	[redacted]	
Harbour Authority of Blacks and Beaver Harbour	Blacks Harbour Beaver Harbour	[redacted]		[redacted]
Harbour Authority of Boynes Cove	Boynes Cove	[redacted]	[redacted]	
Harbour Authority of Campobello	Wilsons Beach Malloch Beach Head Harbour	[redacted]	[redacted]	
Harbour Authority of Chance Harbour	Chance Harbour	[redacted]	[redacted]	
Harbour Authority of Deer Island	Stuart Town Leonardville Fairhaven Lords Cove	[redacted]	[redacted]	
Harbour Authority of Dipper Harbour	Dipper Harbour	[redacted]	[redacted]	
Harbour Authority of Grand Manan Island	North Head Ingalls Head Seal Cove White Head Woodwards Cove Whale Cove Gull Cove	[redacted]	[redacted]	
Harbour Authority of Lorneville & Five Fathom Hole	Lorneville Five Fathom Hole	[redacted]	[redacted]	
Harbour Authority of Seeleys Cove	Seeleys Cove	[redacted]	[redacted]	
Harbour Authority of St. Martins	St. Martins	[redacted]	[redacted]	

TAB C

RESOURCES

LIVESTOCK SHELTERS - LARGE ANIMALS

Atlantic National Exhibition
McAllister Drive East
Saint John, NB
Tel: (506) 633-2020 (Office)
Tel: [redacted] Horse Racing New Brunswick)
Email: [redacted]

Sussex and Studholm Agricultural Society,
164 Park Street, Sussex, NB
Web:http://www.coopsonline.com
Tel: (506) 432-1841
Fax: (506) 432-1825

Princess Louise Park Show Center
10-B Leonard Drive, Sussex, NB
(Mid-April to end of October)
Tel: (506) 433-4700
Fax: (506) 433-3739
Email info@plpshowcentre.com

Once animals were located at central collection point- private facilities can be quickly identified

Several Light horse facilities – private
Several vacant dairy farms – private

LIVESTOCK TRANSPORTATION

[redacted]
Springfield, Sussex
Tel: [redacted]

[redacted]
Board Rd, St Stephen
Tel: [redacted]

[redacted]
Sussex
Tel: [redacted] (Cell)
[redacted] (Home)

[redacted]
Sussex
Tel: [redacted]

[redacted]
Sussex
Tel: [redacted]

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LIVESTOCK DISINFECTION

Mark's Steam Clean & Bulk Water Supplier — Tel: [redacted]

[redacted] "Wash-A-Way" Sussex — Tel: [redacted]

SHELTERS – PETS (Social Development is responsible for handling and care of pets and has a contract with the Canadian Red Cross to do so)

The Disaster Animal Response Team of Nova Scotia
www.dartns.org

Information@dartns.org

Phone (902) 233-4089

Use of the below SPCA is deemed not a viable option but contact info is available:

Saint John SPCA
295 Bayside Drive
Saint John, NB
E2J 1B1
Tel: (506) 642-0920 (Office)

Charlotte County Animal Shelter
(Charlotte County Animal Rescue)
112 Prince William Street
St. Stephen, NB
Tel: (506) 465-7657 (Office)

ANIMAL RESCUE – LARGE and SMALL

Oceanographic Environmental Research Society (OERS)
[redacted] (Director of Operations)
12 Burton Ave, Barrie, Ontario L4N 2R2
Tel: (416) 565-2277 (24 Hrs) (Disaster Response)

Also has facility at St. Mary's Bay,
Comeauville, NS.
Web: www.oers.ca

TAB C

Sample Submission Form

For submission of DAAF samples to the NB Power Health Physics Laboratory
Located at 420 York Street, Fredericton (ring bell at back door)

Lab use only

Samples Submitted By _____

Phone No. :

Sample No.	Site ID (Location - GPS coordinates in NAD83 if possible)	Sample Type	Specify Type	Date (YYYYMMDD)	Time (24 hr format) (HHMM)	Analysis Requested
						Gamma spec/ Tritium
						Gamma spec/ Tritium
						Gamma spec/ Tritium
						Gamma spec/ Tritium
						Gamma spec/ Tritium
						Gamma spec/ Tritium
						Gamma spec/ Tritium
						Gamma spec/ Tritium
						Gamma spec/ Tritium
						Gamma spec/ Tritium

Sample Type

AN	Animal (specify type)
FI	Fish (specify type)
VE	Vegetable (specify type)
CR	Crop (specify type)
DP	Dairy Product (specify type)
OT	Other (specify type

Delivered By (Print and Sign)	Received By (Print and Sign)	Date (YYYYMMDD) and Time (24 Hr Format)

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

DEPARTMENT OF ENVIRONMENT AND LOCAL GOVERNMENT

(ELG)

General

The primary purpose of the Department's participation in the plan is in sampling air, soil, surface waters and surface drinking water supplies. Sampling will confirm what areas, if any, have been contaminated, and to what extent.

Responsibilities

The Department of Environment and Local Government (ELG) will:

(a) obtain water, soil and air samples as requested; sampling to be limited to areas outside the Lepreau 20 km planning radius;

(b) advise on disposal of contaminated substances,

(c) provide regulatory oversight for site cleanup, when and if required; and

(d) provide departmental resources and assistance as required.

Alerting and Assembly

Upon notification of an alert, NB EMO will contact the departmental representative on the Control Group or his/her alternate. See Annex E. The department representative will then proceed directly to the Provincial Emergency Operations Centre (PEOC) in the Victoria Health Centre. Departmental field personnel are to be notified by the departmental representative from the Emergency Operations Centre immediately upon his/her arrival.

Concept of Operations

The Departmental Control Group representative will advise field personnel on possible contamination of water supplies and requests for disposal of contaminated material; field personnel will keep the EOC informed of their whereabouts and staff will carry out environmental sampling at the request of the Control Group.

Duties

Departmental Control Group Representative

The Departmental Control Group representative is to fulfill as directed by the Director EMO the duties and responsibilities of the Department of the Environment and Local Government under the Off-Site Plan. The following are specific duties to which he/she must attend.

a) When notified by NB EMO, proceed immediately to the Emergency operations Centre.

b) Notify departmental field personnel to stand by or to report to assigned locations.

c) Contact alternate Departmental Control Group representatives to establish a schedule for relief such that the position is continuously manned until otherwise directed by the Director.

d) Assign teams as required to provide assistance with soil and water sampling.

e) Maintain a departmental operations/telephone log.

Departmental Field Personnel

Personnel will remain on standby or at assigned locations to receive further instruction from the Departmental Control Group representative or, in the case of the Saint John personnel, the Saint John Regional Emergency Action Committee (REAC). These instructions may include the establishment of a shift schedule if personnel are required on a 24-hour basis and/or the assignment of crews to the specific types of samples at specific locations. Personnel are not to deploy to the field until so directed.

Communications

The Provincial Emergency Operations Centre (PEOC), when activated, is to be contacted at 453-5500. Alternatively, contact NB EMO at 453-2133.

The Saint John Regional Emergency Action Committee (REAC) will be established at the Provincial Lab Building, Castle Street, Saint John; contact at (506) 643-6048.

The St. Stephen Regional Emergency Action Committee (REAC "A") will be established at the Provincial Building, 41 King Street, St. Stephen, phone (506) 466-7512.

The Oak Bay Regional Emergency Action Committee (REAC "B") will be established at the Oak Bay Fire Department, 690 Route 170, Oak Bay, phone (506) 466-1304.

Radio equipped vehicles will be made available through arrangements with the Control Group.

The Regional Emergency Action Committee must be kept aware of where the field staff can be reached when they are away from assigned locations.

Contact between the EMO Control Group and the Departmental Field personnel, while they are in the field, will be in the form of portable radios and mobile radio-equipped vehicles, cellular telephones and pagers. Contacts are maintained by Regional Services Headquarters at 457-4850.

Sampling Equipment and Procedures

NB Power (Lepreau) maintains four Environmental Survey Kits for EMO at the Musquash Fire Department Station 1. Additional survey kit consumables and radiological survey teams may be provided by NB Power on request of the Control Group Environmental Survey Kit procedures are outlined in Annex A.

The survey procedures should be followed as closely as practical and any variation in sampling technique noted on the sample container itself, if possible, but definitely in sample log at the time of sample is taken.

These waters and methods of access to them for sampling will be identified by the Control Group.

Samples are to be identified by the sampler's name and sample number, (If it is Mr. Roy's first sample, it would be ROY #1). A "Collection Data" sheet is completed and enclosed with the sample. The same information must be included in the samplers log book, using the same identification procedure, as well as any remarks regarding the taking of the sample, weather conditions, etc.

RESOURCES

Requests for resources to support field operations will be staffed through the Environment and Local Government Departmental Control Group Representative.

Four Environmental Survey Kits are reserved for environmental survey purposes and maintained by NB Power at the Lepreau Off-site Emergency Operations Centre (OEOC).

ENVIRONMENTAL SURVEY KITS

The following is a list of items to be found in each of the Environmental Survey Kits, held at the Lepreau Off-site Emergency Operations Centre (OEOC):

1. Very low range gamma survey meter (PDR-1) reading in micrograys per hour.
2. Low range and high range gamma survey meter (yellow) reading in microgray and milligray per hour.
3. "Frisker" HP 260 (Beta, gamma) counts/second.
4. Air pump, battery driven (12V car battery not included).
5. Filters, charcoal cartridges, plastic bags, petrie dishes. (Make sure you have adequate supply).
6. Manufacturer's instructions for the meters/air sampler.
7. One metal suitcase to hold all of the above.
8. Spare batteries
9. One screwdriver
10. A copy of the Departmental Plan
11. Labels
12. Tape
13. Markers
14. Data sheets

ENVIRONMENTAL SURVEY PROCEDURES FOR DETERMINATION OF RADIOACTIVE CONTAMINATION

Field Personnel from the Department of the Environment and Local Government will proceed into the field to collect samples only upon instruction from the Departmental Control Group Representative.

The following items are required of these personnel:

1. Departmental identification card
2. Applicable procedures or checklists
3. Applicable maps
4. Communications equipment
5. Appropriate personal clothing and safety equipment

1. **EQUIPMENT**
   Equipment provided is to check for general radiation levels in the area or to frisk specific objects to get a rough field count of the radiation present. This is included in the Survey Kit (Annex A) which every team going into the field must take with them. As much as practical, this equipment should be readied by the Field Personnel when they report to their assigned locations. Operation of all meters in the Environmental Survey Kit and the contents of the kit should be checked (see below, Item 3) against Annex A for completeness.

2. **TRANSPORTATION**
   Radio equipped vehicles will be available and assigned through the Departmental Control Group Representative. Vehicles not radio equipped should not be used unless specific instruction to do so is issued from the Control Group.

3. **ARRIVAL AT SAMPLING SITE**
   Near the area where the required samples will be taken, take readings as per the PLGS ELG Off-Site Response Plan – Emergency Management Plan Appendix C2.

ANNEXES

Annex A – PLGS ELG Off-Site Response Plan – Emergency Management Plan Appendix C2
Annex B – Contact List

TAB 5

New Nouveau Brunswick

Point Lepreau Generating Station
ELG Off-Site Response Plan

Emergency Management Plan

Appendix C2

Environment and Local Government

June 21, 2013 (ongoing)

TAB D

ENV Emergency Management Plan: Appendix C2: Lepreau Off-site Response

Table of Contents – Draft

Part 1 – INTRODUCTION

1.1: General

The information contained in this appendix is specific to the Point Lepreau Nuclear Off-Site Emergency Plan. General information concerning emergency preparedness, prevention and mitigation, response, and recovery is contained in the main body of the Department's Emergency Management Plan (EMP). Together, the EMP and this appendix contain the information required to fulfil the Department's mandate in relation to a nuclear emergency associated with the Point Lepreau Generating Station.

The Point Lepreau Off-Site Emergency Response Plan is a government-wide plan, and a number of departments participate in its implementation. The Emergency Measures Organization is the lead agency for this plan. The Department of Environment and Local Government is mandated to participate in the development, maintenance and implementation of this plan, through the *Emergency Measures Act* and its associated regulations.

1.2: Roles and Responsibilities for Emergency Management

The Point Lepreau Off-Site Emergency Response Plan is a shared document used by a number of departments and agencies. Specific responsibilities may be divided into the four components of emergency management, including: Emergency Preparedness, Prevention and Mitigation, Emergency Response, and Recovery. Additional information on roles and responsibilities for each component is presented below.

1.2.1 Emergency Preparedness

Preparedness includes measures taken in advance of an emergency to ensure an effective response and recovery. For the Point Lepreau Nuclear Off-Site Emergency Plan, these measures include:

- Developing and maintaining the Emergency Management Plan Appendix B2 (this appendix)
- Ensuring that staff are aware of and trained in the implementation of the requirements of this appendix
- Maintaining equipment needed to implement requirements of this appendix
- Maintaining lists and databases associated with requirements of this appendix

Consistent with the ELG Emergency Management Plan, the Emergency Preparedness Working Group (EPWG) is responsible for developing and maintaining this appendix and ensuring that staffs are trained in its use.

Equipment owners are responsible for maintaining the equipment required by this appendix, and program owners are responsible for maintaining any lists or databases associated with their program. General or shared lists (including the Business Continuity Plan and Response Plan) will be maintained by the EPWG.

1.2.2 Prevention and Mitigation

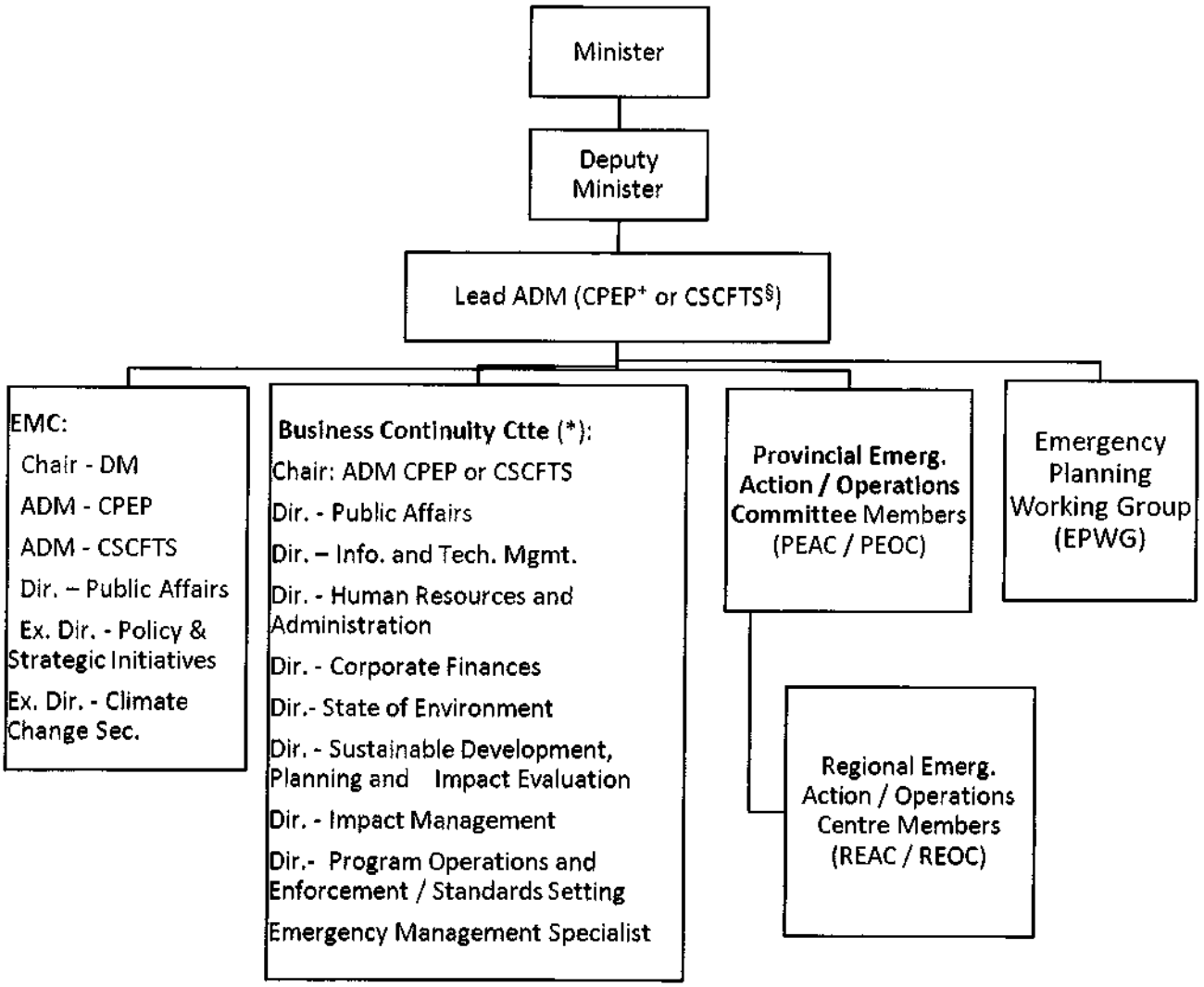
The primary responsibilities associated with prevention and mitigation is under the jurisdiction of the Canadian Nuclear Safety Commission (CNSC) and NB Power. The Department of Environment plays a minimal role in this aspect of Emergency Management for nuclear emergencies at the Point Lepreau Generating Station.

1.2.3 Emergency Response

The Department of Environment and Local Government has a variety of specific responsibilities for emergency response, as described in Part 2 of this appendix. These responsibilities are generally associated with sampling and providing information on waste management, drinking water supplies, and other areas of departmental expertise.

In the event of a response, the department (at the direction of the Deputy Minister) will implement the following organizational / management structure, to allow us to effectively carry out our assigned responsibilities (summarized from the Emergency Management Plan). Full details are available in the main body of the Emergency Management Plan.

Emergency Response Organization Chart



§ *Corporate Services, Community Finance, and Technical Services Division*
\+ *Community Planning and Environmental Protection Division*
* *Additional members may be added to the Business Continuity Committee depending on the nature of the emergency.*

Summary of roles in an emergency:

When implementing this structure, the Deputy Minister appoints a Lead ADM for the emergency response. The Lead ADM is selected as:

- For **environmental emergencies** - ADM of the Community Planning and Environmental Protection (CPEP) Division
- For **operational emergencies** - ADM of the Corporate Services, Community Funding, and Technical Services (CSCFTS) Division

The Lead ADM is responsible for the overall management of the emergency response effort. He she implements the appropriate **Response Plan** to address the emergency, and work with ENV's representative at the Provincial Emergency Operations Committee (PEOC) to ensure our responsibilities is met.

The ADM of CPEP or CSCFTS (whichever is **not** chosen as the Lead ADM) is responsible to ensure that essential departmental services are maintained. Serving as Chair of the Business Continuity Committee (Directors of Branches affected by the emergency, and others as appropriate), this ADM implements the appropriate **Business Continuity Plan** and maintains it through the duration of the response effort.

The Executive Management Committee retains their role providing overall direction for departmental activities (including the emergency response and the maintenance of essential operations). The Lead ADM and the Chair of the Business Continuity Committee are charged with updating EMC on the status of operations during a response.

The Emergency Measures Organization (EMO) will typically have overall control of the emergency response in situations where this process is implemented. Their system of a Provincial Emergency Operations Committee (PEOC), Regional Emergency Operations Centres (REOCs), and Emergency Operations Centres will be followed during the response effort, as per their direction.

The Deputy Minister has the authority to declare the end of the Response effort and the beginning of Recovery.

The departmental response will vary based on the nature of the emergency. Details of probable response efforts are presented in the appendices of this document. However, some elements are common to most / all emergencies. Activating the emergency response will trigger the implementation of required business continuity plans and the establishment of an Emergency Operations Centre (if required). Support will be available to help staff deal with critical incident stress.

Individuals have been appointed to lead communications, telecommunications, and records management efforts for the department. This work will be done in accordance with the Communications Plan in Appendix A and current processes.

1.2.4 Recovery

Responsibility for recovery is shared between a number of departments and agencies, with the Emergency Measures Organization taking the lead. For the Department of Environment, our responsibilities in this phase of emergency management centres on site clean-up and remediation. Details associated with this are presented in Part 2 of this appendix.

TAB D

PART 2 – PROCEDURES

A. Response and Business Continuity Assignments

Response and Business Continuity Plan – Point Lepreau Generating Station: Off-Site Response

In the event that a Response effort is activated, ENV personnel will be assigned as follows:

Response effort:

Role	Assigned	Contact info		
		Office	Cell	Home
Lead ADM	Perry Haines	444-5119	[redacted]	
PEOC	Mike Correy (primary) Mike Cormier (secondary)	453-8371 444-2509	[redacted]	[redacted]
REOC Saint John	Patrick Stull (primary) Cathy Dubee (secondary)	658-4646 658-5415	[redacted]	
REOC St. Stephen / Oak Bay	Patrick Stull (primary) Chris Paquet (secondary)	658-4646 643-6889	[redacted]	
Field responders (outside 20 km)	*Note: Individuals will be called on by the Control Group as required, with a goal to balance the load across regions.* Shawn Prosser - Inspector Mark Bader - RWPO Jeff Williams - Inspector Rhonda Morrow - RWPO Terry Richard – Inspector Mike Rae - Inspector Roger Maillet - Inspector Sara Smith – RWPO	 643-6888 643-7462 444-5997 444-5467 856-3003 856-3002 856-3385 869-7006	[redacted]	

	Ian Donald - Inspector Diana Jenkins - Inspector Marc-André Plourde – RWPO	778-6121 778-6184 778-6347	[redacted]	[redacted]
	Luc Sirois – Inspector Gilles Martin – Inspector Serge Sirois - Inspector	473-7808 473-7806 475-4090	[redacted]	[redacted]
	Anger Dumont - Inspector Nicole Lejeune – Inspector Gilles Theriault - RWPO	547-2463 547-2458 547-7463	[redacted]	[redacted]
	Nelda Craig - Sampling John O'Keefe	453-3633		
Central expertise:				
Waste Management	Sheryl Johnstone Mark Glynn	453-3824 453-4463		
Sampling protocols - air	Eric Blanchard Darrell Welles	453-3672 444-5790	[redacted]	[redacted]
Sampling protocols - other	Carol Ottens Peter McLaughlin	444-3169 462-5140	[redacted]	
Drinking water source	Paul Wilson	453-4409 453-2171		
Drinking water treatment systems	Tim LeBlanc	444-5194 453-7945		
Remediation	Ray Morin Mark Boldon	453-2859 453-3854		
WAWA	Catherine Lambert	444-2439	[redacted]	
IT (computer and cell phone problems)	NBISA – Begin by stating that you're working as part of the Lepreau Emergency Response	1-888-487-5050		
	After hours, for <u>urgent calls only</u> contact Mike Correy or Jennifer Welles:	[redacted]	[redacted]	[redacted]
Communications (media requests)	GNB Communications – Paul Bradley	444-2179		

TAB D

Business Continuity Assignments

Role	Primary
Chair of Business Continuity Committee	Alan Roy
Regional Service Delivery (focus on non-Lepreau emergency / spill response and time-sensitive permitting)	**Region 4 Inspection staff** (designated business continuity): David Peterson Erica Meating Student(s) **Region 3 Inspection staff:** Richard Breau (designated business continuity) **All Regions:** Regional Directors (Regions 1-3, and 5-6) Regional Engineers Regional Biologists Inspectors: One inspector (designated) per region, and other inspectors not assigned to response RWPO: Natalie Ryckman (designated) and other RWPOs not assigned to response
Other areas	As described in ENV Business Continuity Plan (See Emergency Management Plan)

TAB D

B.Communications:
Requests from Media / Public

COMMUNICATIONS PLAN:
Inquiries from the public or media

All external requests for information are to be addressed by EMO, through their Communications staff. A GNB spokesperson will be appointed on an event-specific basis.

Any calls received from external agencies (including the general public, the media, etc.) are to be forwarded to the GNB spokesperson for response. No information should be given to callers about the situation, except through the GNB spokesperson, to ensure that a consistent message is transmitted.

TAB D

C. Sampling Protocol (non-air parameters)

D. PLGS Incident Short Term Response

ELG Sampling Protocol for Radiochemical Analytes

Sampling Equipment

- Sampling Container
  - Water -> 1L plastic bottle*
  - Soil -> 250 ml plastic jar*
  - Vegetation/Snow/Ice -> large **heavy duty** Ziploc plastic bag

  *Glass bottles and jars could be used if plastic is not available.
- Collection tools: Disposable plastic scoop or trowel (for collection of soil, vegetation, snow or ice) will be sufficient for collecting a sample at most sites. If a more rugged sampling tool (e.g. Metal scrapper) is required to collect the sample due to the hardness of the ground/ice, ensure that it is rinsed with water and dried between each sample to avoid cross contamination. You must bring rinse water with you for this purpose as the surrounding water may be contaminated.
- permanent marker
- Large **heavy duty** Ziploc plastic bag (min of 2); extra-large size would be convenient for double bagging.
- disposable gloves – latex or other
- paper towels
- Personal protective equipment such as Tyvek suit, booties, and gloves (if required) will be determined by NB Power staff depending on sampling zone.

Sampling Instructions

1. If you are not collecting the sample at a pre-determined location, select the sampling location/area based on the guidelines below.

   Surface Water; Choose an area of the water that is not sheltered by trees or biased by land runoff. Take the sample midstream or at least 0.5 to 1.0m from the shoreline of the body of water (if possible). Avoid stirring up sediment. Wearing gloves, dip the 1L plastic bottle on the water surface. If it is a running stream or river, point the bottle upstream. Fill the bottle to the shoulder and cap tightly.

   Soil; Select a sampling location in an undisturbed area away from nearby buildings or trees (if possible). Choose a square of approximately 20 cm by 20 cm to take a representative sample. Wearing gloves use a plastic scoop to sample the top 25mm of soil and place in the 250ml plastic soil jar. Cap tightly.

   Vegetation; Select a sampling location in an undisturbed area away from nearby buildings or trees (if possible). Collect the outer leaves of bushes, the upper tips of

tall grasses (in other words any area of the plant which is not covered). Sample an area that provides enough material to fill the bag. Wearing gloves, collect the material using a scoop or with your gloved hand if necessary and place in the large Ziploc plastic bag. Zip the bag shut ensuring a good seal.

Snow/Ice; Select a sampling location in an undisturbed area away from nearby buildings or trees. Wearing gloves use a plastic scoop to collect surface snow (or scraped ice) to a depth of 25mm over an area sufficiently large enough to densely pack a large heavy duty Ziploc plastic bag. Zip the bag shut ensuring a good seal.

2. Wipe the sampling container (bottle/jar/bag) with a dry paper towel .Label the sampling container using a permanent marker with **sampling location (include GPS coordinates), date, time & sampler's initials.**

3. Place the sampling container in a Ziploc plastic bag along with your gloves and scoop. Change gloves between each sample. Use a new Ziploc plastic bag for each sample. Place the bagged sample in a new Ziploc plastic bag each time the sample changes hands.

4. Complete the Sample Submission Form and place it with the samples in a cooler. Freezer packs are not needed.

5. Deliver the samples **within 3 hours of collection** to the NB Power Lab in Fredericton. Time is crucial due to the half-life of some radionuclides.

6. Have the receiving lab representative sign the Sample Submission Form and provide you with a copy for your records.

NB Power Health Physics Lab
420 York St (Chestnut Complex – Building on left-hand side)
Fredericton
Ring bell at the back door

TAB D

Department of Environment and Local Government
PLGS Incident Response Sampling Kit

A PLGS Incident Response Sampling Kit will be available in each ELG Regional office. Extra Supplies will be available at the Saint John Regional Office and the Analytical Services Laboratory in Fredericton due to the close proximity to PLGS. The sampling kits are controlled by ELG and are separate and distinct from the Environmental Survey Kits held at the Lepreau Off-site Emergency Centre (OEC).

These kits contain equipment to obtain 5 each of water, soil and vegetation samples as follows:

5 - 1 L plastic bottles
5 - 250ml plastic jars
5 - Large heavy duty Ziploc plastic bags
30 - Large heavy duty Ziploc plastic bags (for double/triple bagging where necessary)
30 - Pairs each of small & large sized gloves
10 - Disposal plastic trowels
1 - Metal scraper
1 - Roll of paper towel
1 - Pair of scissors
3 - Sample Submission Forms (for NB Power Health Physics Fredericton Laboratory)*
1 - DELG Sampling Protocol for Radiological Analytes (for PLGS Incident Response)*

* The Regional Office staff are responsible for replacing the Sample Submission Forms or Sampling Protocol in the kits should new versions be issued by the Analytical Services Lab.

The Sampler will be responsible for providing the following (not contained in the kits):

- Permanent markers
- Bottle of tap water (for rinsing metal scraper if used for scraping ice)
- Personal protective equipment will be determined by NB Power / EMO staff depending on sampling zone.

Sample Submission Form / Formulaire de Soumission d'Échantillons Multiple

For submission of DELG samples to the NB Power Health Physics Laboratory
Located at 420 York Street, Fredericton (ring bell at back door)

For In Lab Use/ Réservé au laboratoire:

Sample Submitted By/ Échantillon présenté par: _____ (print /imprimé)
Phone No. / Téléphone: _____

						For air sampling only			
Lab No./ Numero du laboratiore	**Site ID (Location)/ Identification du site**	**Sample ID/ Identificateur de l'échantillons**	**Type*/ Type ***	**Date** YYYYMMDD/ **la date** AAAAMMJJ	**Time** HHMM/ **l'heure** HHMM	**Sample Period** YYYYMMDD		**Volume Air Sampled** m^3/ Volume d'air échantillonée m^3	**Analysis Requested/ Analyse Demandée**
						Start Date/Time YYYYMMDD : HHMM	**End Date/time** YYYYMMDD: HHMM		
									Gamma spec/ Tritium
									Gamma spec/ Tritium
									Gamma spec/ Tritium
									Gamma spec/ Tritium

Chain of Custody / chaîne de traçabilité

Received From/Reçue à partir	Received By/ Reçue par	Date	Time/l'heure

Sample Type/Types d'echantillon

SW	Surface Water / eau de surface
GW	Ground Water / eau souterraine
S	Soil / sol
V	Vegetation / végétation
A	Air / air
O	Other / autre

TAB D

E. Geographic Information: Including Drinking water supplies (surface and ground water) and potential sample locations for Non-air sampling

Drinking water supplies:

The Department maintains a database showing locations of public and private drinking water supplies in the area surrounding the Point Lepreau Generating Station (to 80 km). This information is maintained in ArcGIS format and a listing of sites can be generated as needed to assist with the response effort. During an event, sites can also be uploaded to the MASAS system by EMO for use by all response agencies.

Please contact Tim Leblanc and Paul Wilson for additional information about public / communal and private (individual) drinking water supplies, respectively.

Potential Sample Locations (Non-Air Sampling)

The location of appropriate sample sites is highly dependent on the nature of the emergency to which we are responding. We have identified a number of potential sample sites which could be used in the event of a response to assess ambient water quality conditions. It is important to note that additional sites may be added at the request of the Control Group, as the event unfolds. The sites discussed below are intended as a starting point in a flexible and dynamic response effort.
Sites have been included for:

- surface water [ambient surface water monitoring network (rivers) and enhanced baseline sampling program (designated drinking water watersheds)],
- other surface water locations (ambient watershed assessments in partnership with NGOs)

A geo-referenced listing of the surface water sites is maintained within the Environment Integrated System (Env Database) by the Environmental Evaluation and Reporting Branch. During an event, the geographic coordinate locations for sites may be uploaded to the MASAS system by EMO, for use by all response agencies.

Site listings are also accessible on our M drive at: M:\Emergency Preparedness Working Group\ENV Departmental Emergency Plan\Lepreau off-site plan\ESRI Part 6 - 7

Please contact Nelda Craig and Paul Wilson for additional information on potential sampling locations of surface waters.

F. Emergency Air Quality Radiological Monitoring Plan & Standard Operating Procedures

Emergency Air Quality Radiological Monitoring Plan & Standard Operating Procedures

1. Purpose

The purpose of this document is to provide an ambient air quality monitoring plan and associated standard operating procedures to be used in the event of an emergency or other incident involving a release of radioactive contaminants to the air of the province.

2. Scope

This document describes methodologies for obtaining, handling, storing, and transporting ambient air quality radiological samples. This plan focuses exclusively on the fixed network of ambient air quality monitoring stations and does not include mobile/handheld air sampling methodologies that may be deployed at the site of a radioactive incident or event. The intent is to provide information about offsite radioactive contamination at a provincial/regional scale.

This plan is intended to have general application with respect to events involving the release of radioactive contaminants.

3. Responsibilities

The Air Quality Section, Department of Environment and Local Government (ELG), is responsible for maintaining a state of readiness to implement this plan at all times.

The Air Quality Section, in cooperation with ELG regional offices, is responsible for implementing this plan once activated.

4. Activation, Alert and Assembly

Upon notification from the New Brunswick Emergency Measures Organization (NB EMO) via the Departmental Representative on the Control Group, the Manager of the Air Quality Section (or alternate per the Contacts section below) will contact and alert staff as required to activate this plan.

Once contacted, air quality personnel will remain on standby or at assigned locations to receive further instruction

Personnel will activate monitoring equipment, remotely if possible, at the direction of the Manager, Air Quality Section.

Air quality monitoring equipment will be activated on a priority basis, beginning with monitoring sites located closest to the event.

Personnel are not to deploy to the vicinity of the incident/event unless so directed by the Departmental Representative on the Control Group. Due care will be exercised to avoid unnecessary entry by air quality staff into contaminated areas.

5. Sampling Plan and Procedures

a) Filter-Based Sampling

Six ELG ambient air quality monitoring stations are to be outfitted at all times with filter-based particulate sampling equipment for the purposes of radiological monitoring. These six stations are:

- St. Andrews (Huntsman Marine Science Centre)
- Saint John (Forest Hills)
- Moncton (Highfield Street)
- Fredericton (Aberdeen Street)
- St. Leonard
- Bathurst (Rough Waters Drive)

Should a station listed above become unavailable the equipment will be relocated to the nearest operational station.

In addition, one complete set of filter-based sampling gear will be maintained at the ELG air quality laboratory in Fredericton for rapid deployment to any monitoring station or via the mobile monitoring trailer, should the need arise.

Necessary equipment and associated procedures are described below.

i. Particulates

Airborne particulates are collected on Gelman Type A glass fibre filters (or equivalent), through which air is drawn via a high-volume sampler. Target sample volume is 2400 m^3. This can be achieved via any combination of flow rate and sample period (i.e., 60 L/min for 28 days, up to 1700 L/m for 1 day), depending on the desired frequency of analysis. If higher than background levels of radiation are expected in the area, a smaller target sample volume may be considered. Sample

volume is measured using an inline integrating dry gas meter.

Each filter will remain in a sealed container prior to its use. Thus, activation of this plan will require a technician to visit each of the 6 stations to open and install filters.
When the particulate samplers are operational, filters are removed and replaced following each sample period, sealed (with tape) in a clean petri dish, sealed in a plastic bag, and transported immediately to the NB Power laboratory in Fredericton. An unused filter will also be sealed, labelled and shipped for analysis as a reference "blank".

Care will be taken to prevent cross-contamination of samples. Latex gloves will be worn at all times, and changed between handling filters (no glove will contact more than one filter).

Each used filter is labelled with the technician's name and a sample number (e.g., if it is Mr. Howe's first sample, the dish would be labelled "HOWE #1). A sample submission form (see appendix 1) is also completed and enclosed with the sample, which records the total volume of air sampled and the period over which the sample was drawn. The same information must be included in the technician's log book, using the same identification procedure, as well as any notable conditions regarding the taking of the sample, weather conditions, etc.

Note: NB Power analyses air particulate filters by gamma spectroscopy. This must occur as soon as possible after collection to minimize loss of information through radioactive decay (to ensure detection of any short lived gamma emitters that may be present, and to minimize any decay corrections). Samples are counted for 5000 seconds on the Ge detector. Approximately three days after the end of the sample collection interval, each filter is counted for 100 minutes for the simultaneous determination of gross alpha and gross beta activities. Counting is delayed to allow for the decay of the short-lived radon progeny that would otherwise complicate the analysis. If significant alpha/beta levels are detected (twice the normal level), further investigation is initiated (longer gamma counts or radiostrontium determinations).

ii. Radioiodine

Radioiodine samples are collected via triethylene di-amine (TEDA) impregnated activated charcoal cartridges. Cartridges are placed downstream of a particulate filter (as described above) in a metal holder. As with particulate sampling Target

sample volume is 2400 m^3. This can be achieved via any combination of flow rate and sample period (i.e., 60 L/min for 28 days, up to 1700 L/m for 1 day), depending on the desired frequency of analysis. If higher than background levels of radiation are expected in the area, a smaller target sample volume may be considered. Sample volume is measured using an inline integrating dry gas meter.

Each cartridge will remain in a sealed container prior to its use. Thus, activation of this plan will require a technician to visit each of the 6 stations to open and install cartridges.

Cartridges are changed monthly and handled (packaged, labelled, and shipped) using the methodology described above for particulates. An unused cartridge will also be sealed, labelled and shipped for analysis as a reference "blank".

Care will be taken to prevent cross-contamination of samples. Latex gloves will be worn at all times, and changed between handling cartridges (no glove will contact more than one cartridge). Cross contamination between cartridges and particulate filters must also be avoided through changing of gloves between handling of either.

Note: Iodine-131 is the major nuclide of interest that could be collected on the charcoal cartridges. NB Power analyses the cartridges in groups of four for 50,000 seconds on a gamma spectrometer. Counts are performed as soon as possible after collection because of the relatively short-half-life of I-131 (8 days). If radioiodine is detected, then the cartridges are re-analyzed individually for 5000s each. Other fission product radioiodine's, with much shorter half-lives (minutes to hours), decay before they reach the sample location or during the time the sample is being collected.

b) Precipitation Sampling

Precipitation samples collected at New Brunswick's 12 acid precipitation monitoring stations are sent to the Department of Environment and Local Government laboratory for analysis every 2 weeks. Daily samples are combined into weekly samples for sulphate analysis. Upon activation of this plan a portion of these weekly samples will be provided to the NB Power laboratory for analysis. Samples will be handled and transported to NB Power in accordance with the water sampling procedures and protocols outlined in the DELG emergency offsite monitoring plan for Pt. Lepreau.

6.

Background Level Assessment and Readiness

The Air Quality Section, in cooperation with NB Power, will periodically activate filter-based sampling stations for the purposes of establishing background readings at all sites and to ensure that the system is maintained in a state of readiness. A background sample will be taken at each site every 3 years, at minimum.

As acid precipitation samples are taken and submitted continuously to the Department of Environment and Local Government laboratory, the sample collection system is in a constant state of readiness. No further exercises are required. Samples will be periodically provided to NB Power (on a schedule that is yet to be decided) for analysis of background levels.

7.

Contacts

Name	Role	Office Telephone	Home/Cell Telephone
Darrell Welles	Manager, Air Quality Section	444-5790	[redacted]
Eric Blanchard	Air Quality Technician (Alternate)	453-3672	[redacted]
Mathieu Doucet	Air Quality Technician	444-2815	[redacted]
Shannon Murray	Air Quality Analyst	453-8943	[redacted]

TAB D

G. Emergency Radioactive Waste Management Procedures

Emergency Radioactive Waste Management Procedures

8. Purpose

The purpose of this document is to provide general guidelines for the management of radioactive waste that may be generated off-site from the Lepreau Generating Station in the event of an emergency or other incident involving a release of radioactive contaminants in the province.

9. Scope

This document describes the general protocol for handling, storing, and transporting radioactive waste that has been generated off-site from the Lepreau Generating Station. This plan focuses on radioactive wastes that may be generated from emergency response activities, including clothing, equipment, wash water etc. that may have been contaminated by radioactivity.

Any wastes contaminated with radioactivity that are generated on-site at the Lepreau Facility during emergency response activities, such as wash water, spills, leaks, fire suppressant foams, etc., are expected to be contained on-site with waste handling and storage to be managed through the Lepreau Generating Station Disposal of Waste Procedures.

This plan is intended to have general application with respect to events involving the release of radioactive contaminants.

10. Responsibilities

The Industrial Processes Section, Department of Environment and Local Government (DELG), is responsible for administering the Hazardous Waste Management Program within New Brunswick, which involves ensuring proper management and disposal of hazardous wastes.

The management of radioactive materials within Canada is mainly the jurisdiction of the Canadian Nuclear Safety Commission (CNSC). The DELG relies on the expertise of the CNSC but will work cooperatively with this organization during an emergency response situation.

NB Power staff will be responsible for the management of radioactive wastes generated off-site, either at the Lepreau Generating Station itself, or at

emergency response sites set up for de-contamination.

11. Regulations and General Information

The regulations for the loading, handling, and transportation of radioactive materials are through the *Packaging and Transport of Nuclear Substances Regulations* and the *Transport of Dangerous Goods Regulations.* For exportation or importation of radioactive materials, the *International Atomic Energy Agency Regulation for the Safe Transport of Radioactive Material* is followed.

Radioactive wastes are categorized by contact gamma measurements:

Type 1	Less than 2 mSv/h
Type 2	2 mSv/h to 125 mSv/h
Type 3	Greater than 125 mSv/h

Type 1 wastes are currently exempt from the hazardous waste classification, although this material still requires special handling.**

The Industrial Processes Section, Department of Environment and Local Government (DELG) issues Approvals to Operate to Hazardous Waste Carriers that pick up or drop off hazardous waste in the province of New Brunswick under the *Water Quality Regulation.* Any service provider planning to transport radioactive waste materials (Type 2 and 3) must be approved.

DELG manages hazardous waste generators by issuing a Hazardous Waste Generator Number to any industrial, institutional or public site generating hazardous waste. This does not include household hazardous waste. Only approved carriers may collect the waste off the site and they can only collect the waste if the location has a valid Generator Number. A completed Generator Registration form must be submitted to the DELG to receive a Generator Number.

Lepreau Generating Station Hazardous Waste Generator Number - **NB005001**

Emergency de-contamination sites would require the issuance of individual Hazardous Waste Generator Numbers by the Industrial Processes Section.

During normal operations, radioactive wastes are managed through the Lepreau Generating Station Disposal of Waste Procedures. All radioactive wastes are categorized, packaged and stored according to the Procedures. All wastes remain in long -term storage on-site with the exception of some low level (Type 1) wastes (gloves, coveralls, and cleaning materials). These

wastes are transported to Oak Ridge, Tennessee for incineration. The ash, which is still radioactive, is returned to the Lepreau Generating Station for long-term storage.

12. Waste Management

Wastes generated from emergency response activities, including clothing, equipment, wash water etc. may be contaminated by radioactivity. These wastes must be collected and taken for proper disposal.

Step 1 Waste Handling Locations

As a first option, all radioactive wastes should be taken to the Lepreau Generating Station to be managed through their normal Waste Management Program.

NB Power will identify locations for the drop-off and temporary storage of radioactive wastes, which will likely be linked to emergency response / de-contamination sites.

Step 2 & 3 Radioactive Waste Monitoring, Packaging & Storage

In order to determine what to do with the waste, it must be tested for radioactivity for categorization. All wastes that are collected should be tested using radioactivity measurement equipment by a qualified technician.

Based on normal process operations at the Lepreau Generating Station, it is expected that the majority of the wastes generated from the emergency response activities will be Type 1 radioactive wastes or non-radioactive wastes.

Liquid waste must be stored in leak-proof, closed containers and the storage trailer must have a curb to reduce spillage or leaking outside the containment.

Waste	Radioactivity	Short term	Long term
Non-radioactive	Less than *****	General garbage	Regional Landfill
Type 1	Less than 2 mSv/h	Bag, box and store in trailer Liquid – leak proof, closed container.	Send for incineration
Type 2	2 mSv/h to 125 mSv/h	***	***
Type 3	Greater than 125 mSv/h	***	***

Type 2 and 3 wastes will only be handled by NB Power staff. Final disposal will be considered depending on volumes and available storage options.

13.

Notification and Reporting Procedures

NB Power will identify waste handling locations based on their information on contamination levels in the region and submit completed Hazardous Waste Generator Registration forms for each location to the Industrial Processes Section of the DELG. The Industrial Processes Section will process the forms as quickly as possible and a Generator Number will be issued for each location. A registration form and Hazardous Waste Generator Guidelines are included.

NB Power will ensure emergency response personnel are made aware of the waste handling locations and that all radioactive wastes related to emergency response activities are handled accordingly.

Lepreau Generating Station will report to the Industrial Processes Section on a weekly basis the volumes and types of wastes, including packaging and storage details, that are generated at each location. The weekly report will include the total volume of stored waste at each location. The report will also include any transportation of waste off that location, the name of the carrier, and where the waste was sent.

Upon final closure of any temporary waste management facility, a final summary of all waste collected and removed from the site will be submitted as well as site monitoring details to demonstrate the site is not contaminated.

14.

Contacts

Name	Role	Office Telephone	Home/Cell Telephone
Mark Glynn	Manager, Industrial Approvals	453-4463	
Sheryl Johnstone	Approvals Engineer (Alternate)	453-3824	[redacted]

TAB D

H. Remediation

REMEDIATION

1) Purpose:

The purpose of this document is to provide a standard operating procedure to be used in the event of an emergency or other incident involving a release of radioactive contaminants that may require remediation.

2) Scope:

This document outlines the "Guideline for the Management of Contaminated Sites. This process should be engaged as part of the offsite response. Generally speaking, there are six steps involved in this management process. It is understood that such a release is an unconventional contaminant; however, our role in managing this release should be similar to conventional releases.

Step 1: Initial Notification
Step 2: Site Evaluation - Tier 1.
Step 3: Remedial Action Plan or an Expanded Site Evaluation - Tiers 2 and 3
Step 4: Review of the Remedial Action Plan.
Step 5: Remedial Action Plan Implementation
Step 6: Compliance Monitoring and Site Maintenance

3) Responsibilities

The Remediation and Materials Management Section, Department of Environment and Local Government (ELG), is responsible for maintaining a state of readiness in order to provide **regulatory oversight** during the implementation of this management process.

4) Guideline for the Management of Contaminated Sites, *the six step process*

It is understood that if such a release occurs and a state of emergency is declared, a number of resources will become available to both the responsible party as well as involved Provincial Departments.

In an emergency that generates off-site consequences, the Canadian Nuclear Safety Commission (CNSC) emergency organization would be activated both at Ottawa and in Fredericton at the provincial Emergency Operations Centre, so CNSC experts would be available to NB-DELG (if the FNEP is activated then further assistance would also be available through other Federal players). CNSC would provide access to experts on risk management of clean up/remediation activities.

The involvement from other agencies is important to note as we engage the management process. Information flow and decision processes may be coming from a number of agencies; however, the consistent factor in this approach is our 6 step management process. It must be noted that the RBCA (Risk Based Corrective Action) process as outlined is based on a conventional contaminant such as petroleum. Since we are dealing with an unconventional release (radiation), there may be some modifications in the noted process.

The six steps are as follows:

Step 1: Initial Notification

When contamination is discovered, a Department inspector investigates as part of the notification process. The investigation identifies who is responsible for the property, identifies contaminants and includes a preliminary assessment of risk. The Inspector can order immediate, limited clean up action, or the Inspector can advise the property owner to hire a professional to do a more thorough site evaluation.

Step 2: Site Evaluation - Tier 1

A professional trained to use the Atlantic RBCA process evaluates the site for the property owner. Atlantic RBCA includes three tiers of site evaluation. At Tier 1, the sources of contamination transport pathways and exposure pathways are identified.

Using documents or the Atlantic RBCA software, measures of the levels of contaminants on the site are compared to risk-based screening levels (RBSLs) provided in an Atlantic RBCA generic look-up table. If the screening levels are not exceeded and the conditions on the site are not exceptional, no further action may be required.

Step 3: Remedial Action Plan or an Expanded Site Evaluation - Tiers 2 and 3

Where contaminant concentrations on a site are above the screening levels, the site professional prepares a remediation action plan to correct the situation and submits it to the Department of Environment and Local Government.

An appropriate remedial action plan sometimes requires a Tier 2 evaluation, specific to conditions of the site, to correctly identify the best ways to manage and reduce the risks. This is often true at petroleum release sites. In a Tier 2 evaluation, the site professional collects detailed site data. The site-specific information is entered into the Atlantic RBCA software, which calculates Site-specific Target Levels (SSTLs).

Some sites with complex conditions or contaminants benefit from a more

extensive evaluation. This is a Tier 3 approach which goes beyond the Atlantic RBCA software to include detailed site characterization, development of site-specific numerical models and evaluations, and complex fate and transport models.

After the Tier 1, 2 or 3 site evaluation is completed, the site professional develops an appropriate remedial action plan to meet the risk management targets that have been identified and submits it to the Provincial Department of Environment and Local Government.

Step 4: Review of the Remedial Action Plan

The Provincial Department of Environment reviews each remedial action plan to evaluate if it properly manages identified risks. Remedial action plans may require revisions, including returning to Step 3 to perform a more extensive site evaluation using the next higher Tier. Once the Department accepts the remedial action plan, clean-up work can begin.

Step 5: Remedial Action Plan Implementation

The property owner and site professional implement the remedial action plan to remove contamination, limit exposure pathways and institute controls on how the land is used. Testing after clean-up work is completed will confirm that target levels have been achieved.

Step 6: Compliance Monitoring and Site Maintenance

Once the property owner and site professional are satisfied that the objectives of the remedial action plan are achieved, they submit a Closure Report to the Department of Environment. The report details the final condition of the site, any land-use restrictions and any ongoing monitoring requirements. The Department of Environment and Local Government acknowledges receipt of the Closure Report and confirms if further actions are required.

TAB D

CONTACT LIST

(All contact numbers are area code 506 unless otherwise noted)

CONTROL GROUP MEMBER	OFFICE	HOME	CELL
Mike Correy **(Primary)** Coordinator Environmental Emergencies	453-8371	[redacted]	[redacted]
Mike Cormier **(Secondary)** Director	444-2509	[redacted]	[redacted]
Jennifer Welles Manager	453-3338	[redacted]	[redacted]

RESPONSE STAFF-FIELD-Saint John			
Patrick Stull (REAC Primary) Regional Director	658-4646	[redacted]	[redacted]
David Peterson (REAC Secondary) Regional Inspector	658-2506	[redacted]	[redacted]
Cathy Dubee (REAC Alternate) Regional Inspector	658-5415	[redacted]	[redacted]
Christopher Paquet Regional Inspector	643-6889	[redacted]	[redacted]
Tammy Savoie McIntosh Regional Inspector	658-2167	[redacted]	[redacted]
Mark Bader Regional Water Planning Officer	643-7462	[redacted]	[redacted]

RESPONSE STAFF-FIELD-Moncton			
Laurie Collette (REAC Primary) Regional Director	856-3161	[redacted]	[redacted]
Terry Richard (REAC Alternate) Regional Inspector	856-3003	[redacted]	[redacted]
Richard Breau Regional Inspector	856-3228	[redacted]	[redacted]
Roger Maillet Regional Inspector	856-3385	[redacted]	[redacted]
Mike Rae Regional Inspector	856-3002	[redacted]	[redacted]
Sara Smith Regional Water Planning Officer	869-7006	[redacted]	[redacted]

RESPONSE STAFF-FIELD-Fredericton			
Serge Gagnon (REAC Primary) Regional Director	444-5641	[redacted]	[redacted]
Eric Wade (REAC Alternate) Regional Inspector	457-7531	[redacted]	[redacted]
Rhonda Morrow Regional Inspector	444-5467	[redacted]	[redacted]

TAB D

Jeff Williams Regional Inspector	444-5997	[redacted]	[redacted]
Patricia Holland Regional Water Planning Officer	453-8925	[redacted]	[redacted]

RESPONSE STAFF-FIELD-Grand Falls			
Richard Keeley (REAC Primary) Regional Director	475-4348	[redacted]	[redacted]
Gilles Martin (REAC Alternate) Regional Inspector	473-7806	[redacted]	[redacted]
Luc Sirois Regional Inspector	473-7808	[redacted]	[redacted]
Serge Sirois Regional Inspector	475-4090	[redacted]	[redacted]
Nathalie Ryckman Regional Water Planning Officer	475-4349	[redacted]	[redacted]

RESPONSE STAFF-FIELD-Miramichi			
Denis Daigle (REAC Primary) Regional Director	778-6188	[redacted]	[redacted]
Al Mullin (REAC Alternate) Regional Inspector	778-6346	[redacted]	[redacted]
Carl Savoie (REAC Alternate) Regional Inspector	778-6345	[redacted]	[redacted]
Ian Donald Regional Inspector	778-6121	[redacted]	[redacted]
Diana Jenkins Regional Inspector	778-6184	[redacted]	[redacted]
Marc-Andre Plourde Regional Water Planning Officer	778-6347	[redacted]	[redacted]

RESPONSE STAFF-FIELD-Bathurst			
Paul Fournier (REAC Primary) Regional Director	547-2451	[redacted]	[redacted]
Marcel Comeau (REAC Alternate) Regional Inspector	547-2092	[redacted]	[redacted]
Anger Dumont Regional Inspector	547-2463	[redacted]	[redacted]
Nicole Lejeune Regional Inspector	547-2458	[redacted]	[redacted]
Gilles Theriault Regional Water Planning Officer	547-7463	[redacted]	[redacted]

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

DEPARTMENT OF HEALTH

Responsibilities

The Department of Health, in conjunction with Horizon Health Network and Ambulance NB, will ensure:

a) Timely and accurate advice to the Control Group on all health-related aspects of the emergency;

b) Provision of triage, field health support, counselling, treatment and transportation of contaminated persons requiring hospital care, as well as provision of essential medical services to reception and decontamination centres are required;

c) Provision of essential medical services to persons exposed to radiation, as well as continuity of medical treatments and care services to the community-at-large for the duration of the emergency;

d) Provision of public health services related to air quality, as well as the safety of food and water in the area affected by the emergency;

e) Provision of nuclear-related health and care information to residents of the Province of New Brunswick who access the Tele-Care 811 system;

f) Distribution and administration of potassium iodide (KI) pills to the community;

g) Provision to Executive Council Office (Communications) of accurate and relevant health information, appropriate media messages and, if necessary, public health orders for dissemination to the public;

h) Provision of mental health and addiction services to persons affected by the emergency, as well as Critical Incident Stress Management (CISM) to first responders and their families;

i) Consultation and cooperation with federal, provincial and municipal departments and agencies, as well as non-government response agencies;

j) Provision of appropriate post-emergency health services to affected persons;

k) Continual emergency preparedness of the health sector through periodic review of emergency plans every three years, as well as conduct of ongoing education, training and exercises.

ALERTING AND ASSEMBLY

Upon notification by NB EMO, the following Control Group representatives will proceed directly to EMO headquarters, Provincial Emergency Operations Centre, for a briefing on the situation:

a) Chief Medical Officer of Health and/or Medical Officer of Health designate(s);

b) Radiation Medical Advisor or alternate;

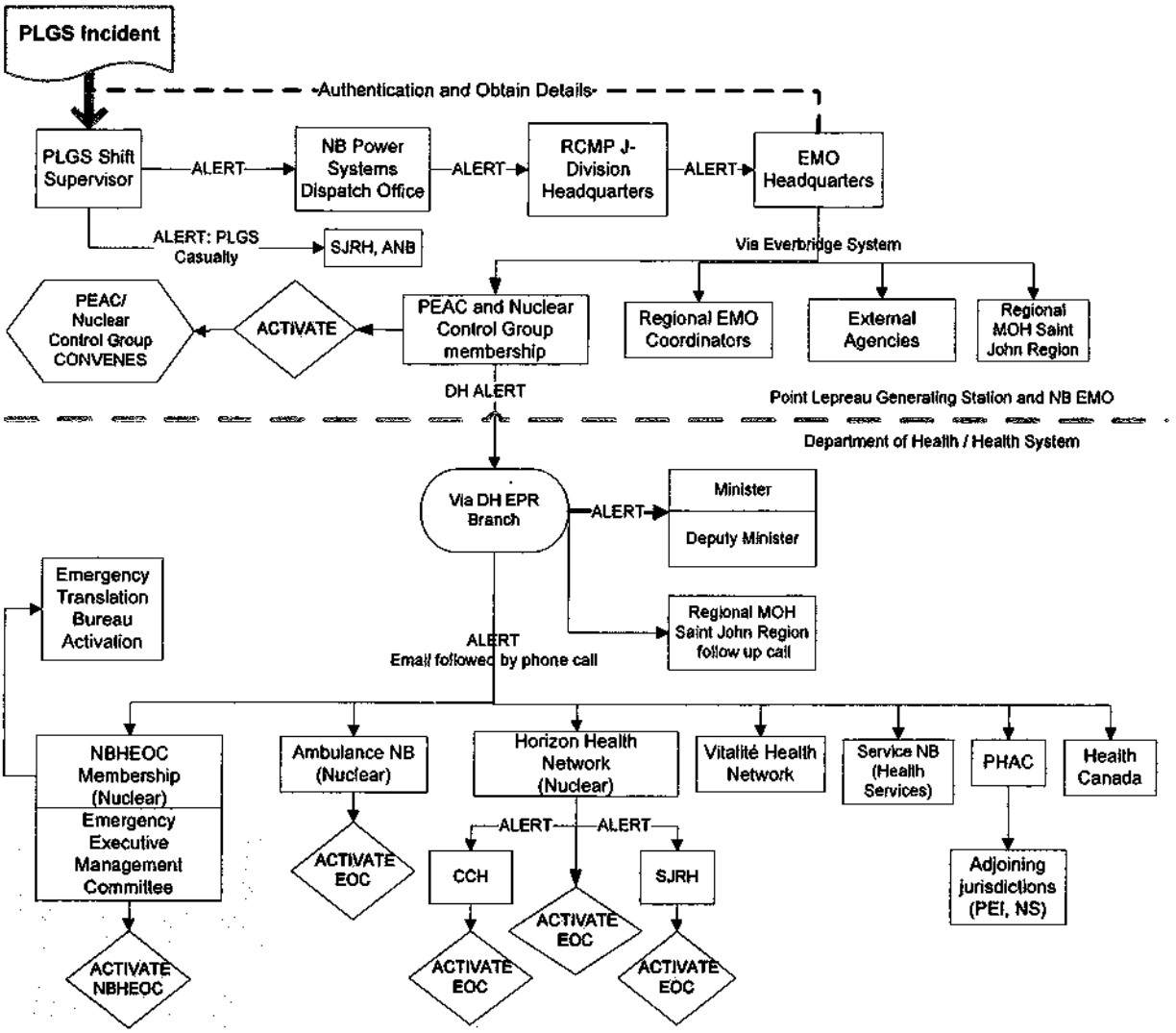
c) Director, Emergency Preparedness and Response Branch or alternate;

d) Communications Officer and others, as necessary.

When it is determined that the incident may require the implementing of departmental responsibilities, the Department's Director, Emergency Preparedness and Response Branch or alternate will immediately inform the Deputy Minister and appropriate officials in the Department, Horizon Health Network, Vitalité Health Network, ServiceNB (Health Services division), Ambulance NB, Health Canada - Radiation Protection Bureau and the Public Health Agency of Canada Health Portfolio Operations Centre of the emergency.

The Department of Health/Health System emergency notification and fan-out procedure will be implemented, in accordance with the Provincial and Regional Health Nuclear Emergency Management Plans. An emergency contact listing is outlined in Annex A. Where the Director, Emergency Preparedness and Response Branch, Chief Medical Officer of Health designate or other Control Group members or their alternates are unavailable, the Department's Emergency Preparedness and Response Branch Duty Officer will be contacted for the names and phone numbers of other departmental staff.

The following schematic depicts the modifications made to the all-hazards notification alert protocol, specific to a nuclear emergency at PLGS with off-site implications.



ACRONYMS

CCH	Charlotte County Hospital	NBHEOC	NB Health Emergency Operations Centre
DH EPR	Department of Health, Emergency Preparedness and Response Branch	PEAC	Provincial Emergency Action Committee (all provincial government departments)
EOC	Emergency Operations Centre	PHAC	Public Health Agency of Canada
EMO	Emergency Measures Organization	PLGS	Point Lepreau Generating Station
MOH	Medical Officer of Health	SJRH	Saint John Regional Hospital

Figure. Notification alert protocol in a nuclear emergency at the PLGS with off-site implications

CONCEPT OF OPERATIONS

Activation, Implementation and Termination

The Provincial and Regional all-hazards Health Emergency Management Plans, EOC's as well as the *provincial Health Nuclear Emergency Plan* will all be activated upon notification from the NB Emergency Measures Organization of a site area radiation emergency alert or general radiation emergency alert by PLGS.

The *Provincial Health Nuclear Emergency Plan* supplements the all-hazards emergency management plans of its participating organizations by addressing issues specific to a health nuclear emergency at the Point Lepreau Generating Station (PLGS). Activation, implementation and termination of this plan are therefore concurrent with, and subordinate to, procedures defined by the respective all-hazards emergency management plans.

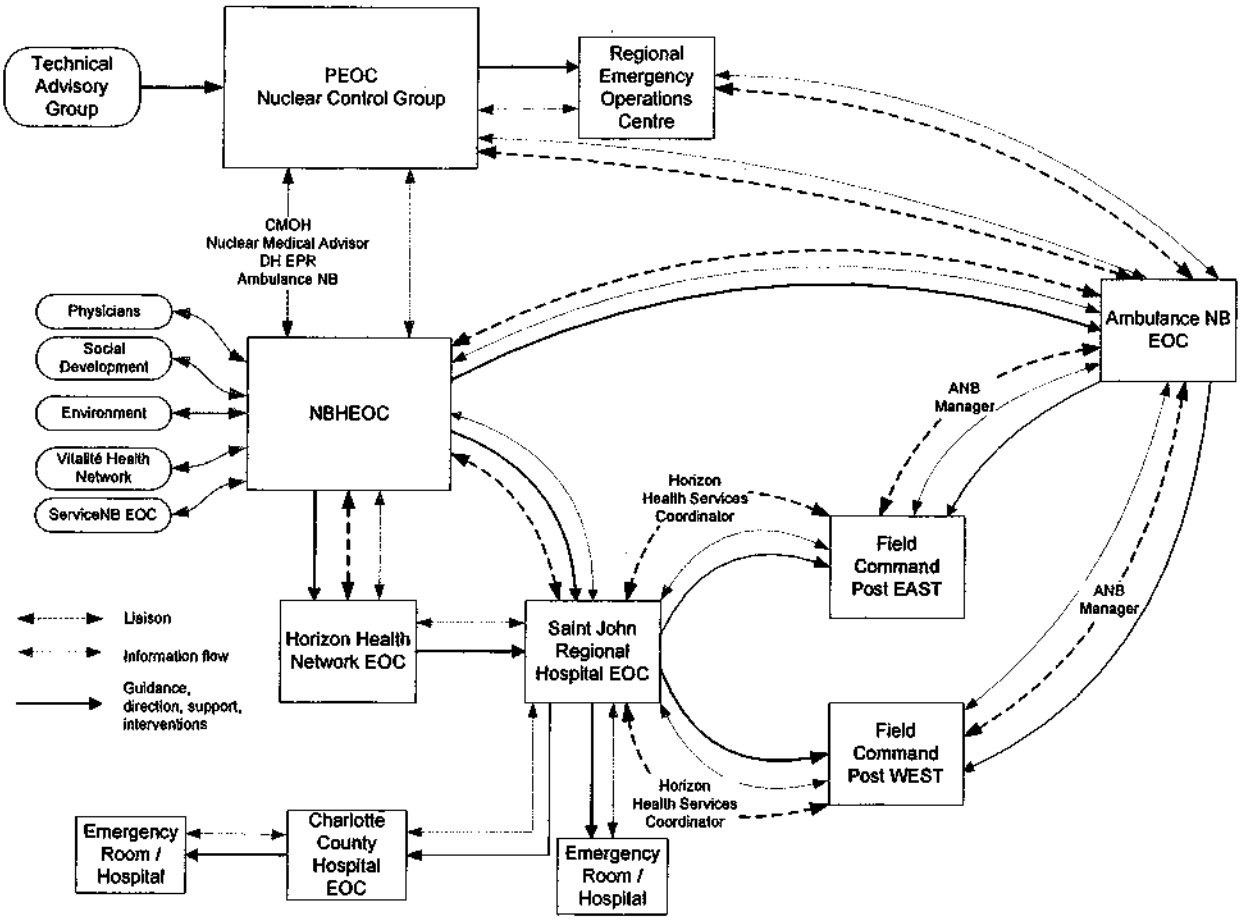


Figure. Off-Site Emergency Response Structure

Health System Command and Control

Strategic Command, Control and Coordination

Strategic command, control and coordination of the provincial response will be directed through the PEOC Nuclear Control Group. Strategic command, control and coordination of the provincial health system response will be directed through the Department of Health's NB Health EOC (NBHEOC) in close collaboration with the PEOC Nuclear Control Group, Horizon Health Network (Horizon Health) and Ambulance NB (ANB) EOC's. Regional health operational response command, control and coordination will be directed by Horizon Health and ANB through the Saint John Regional Hospital (SJRH) EOC and ANB EOC, respectively.

Field Command, Control and Coordination

Horizon Health services operations at the Mass Decontamination and Monitoring Centres will be coordinated through a Health Services Coordinator located at each of the two Field Command Posts established outside the Plume Exposure Exposure Planning Zone by NB EMO. The Coordinator's role is to represent the various health services roles in the field to coordinate operational activities, relay tactical issues, as well as access and communicate information and expertise from the SJRH EOC such as changes in clinical guidelines and advice required by field health workers. The SJRH EOC will remotely provide tactical support, guidance, direction and coordination for each health service in the field through the Health Services Coordinators in the two Field Command Posts. Similarly, ANB field operations will be coordinated through the ANB member of each of the Field Command Posts who will also communicate with the ANB EOC in Moncton.

Health System Functions in an On-Site Emergency

If injuries from a PLGS on-site emergency do not involve radiation exposure or contamination, normal ANB procedures will apply. If patients have been exposed or are contaminated and require hospital services, they will be transferred to SJRH in accordance with ANB procedures and the current *Cooperation Agreement between Horizon Health Network and Point Lepreau Nuclear Generating Station*. The SJRH will receive a call directly from the PLGS shift supervisor to the SJRH Emergency Department Nursing Team Leader providing an alert notification of an incoming patient with potential contamination. ANB will also alert the SJRH Emergency Department per established procedures.

Responsibilities for health nuclear emergency management in an off-site incident are assigned to the Department of Health, Horizon and ANB as outlined in Section F of the provincial *Point Lepreau Nuclear Off-Site Emergency Plan*, Volume I and as further described below.

Health Services Responsibilities

Shelter-in-Place

Shelter-in-place will be the most appropriate option if the health and safety risk is low, the plume is dissipating quickly enough to make the disruption of an evacuation unnecessary, or the risk of exposure during evacuation outweighs the utility of attempting to evacuate. Three challenges must then be addressed by the health system. First, there may be a requirement to respond to medical emergencies in the sheltering area and special needs may still have to be addressed. Second, there may be issues of decontamination and post-event public advice, counseling and medical follow-up to address. Third, timely and accurate health information must be provided continuously by all appropriate means.

Evacuation

Ambulance NB. An ambulance unit may be required to enter the Evacuation Zone for emergency treatment and transport. Once an ambulance has been contaminated, it will be used only for transportation within contaminated areas. ANB will continue to respond to normal patient requests in and around the Point Lepreau area.

Extra-Mural Program. The Extra-Mural Program will assess the needs of their clients' in the evacuation zone and identify those clients requiring transportation assistance. For those requiring assistance, transportation will be coordinated with NB EMO through the PEOC.

Radiation Monitoring and Mass Decontamination

Emergency Medical Services. In the event of a release of radiation, ANB will withdraw its position to just outside of the Mass Decontamination Centre Sites and perform the following functions:

1. Post-decontamination 'health check' of evacuees
2. Provide treatment and emergency transport, as required
3. Provide a NB EMS Manager at the Command Post

An ambulance unit may be required to enter the Mass Decontamination Centre for emergency treatment and transport. Once an ambulance has been contaminated, it will be used only for transportation within contaminated areas.

Pre-decontamination Triage. Horizon Health will provide staff in the pre-decontamination area to prioritize evacuees for decontamination based on existing medical conditions or other limitations. Personal protective equipment will be required in this setting.

Health Information. Some waiting time can be anticipated in the pre-decontamination area, as evacuees who have completed the radiation screening process and are awaiting decontamination. Horizon Health Public Health Staff trained in the health effects of radiation and equipped with print material and resource lists will be available to answer questions related to health and radiation and to evacuees' existing medical conditions. Waiting time can also be anticipated as evacuees board the buses and while in transit to the Reception Centres. Public Health staff will also be available in this location to provide information, answer questions, and make referrals to appropriate services. This service will be a mitigation measure to ease some of the potential burden on emergency departments of unnecessary visits from the "worried well". Personal protective equipment will only be required by those working in the pre-decontamination area.

Mobile Mental Health Services. Horizon Health will provide psychosocial support in the field setting. They will be available alongside Horizon Health public health staff, in the area where evacuees board buses and while enroute to Reception Centres. Staff will have Communities in Crisis training as well as an understanding of the health effects of radiation. Critical Incident Stress Management teams will be available for deployment upon request for emergency workers. They will work only in the 'cold zone' with decontaminated and non-contaminated evacuees and emergency workers so that Personal Protective Equipment is not required.

Pre-decontamination Triage. Horizon Health will provide staff in the pre-decontamination area to prioritize evacuees for decontamination and respond to health issues related to radiation or the decontamination process.

Decontamination Assistance to the Medically Vulnerable. Horizon Health staff (Extra-mural Program) will assist the medically vulnerable population as required, with personal care throughout the process of decontamination.

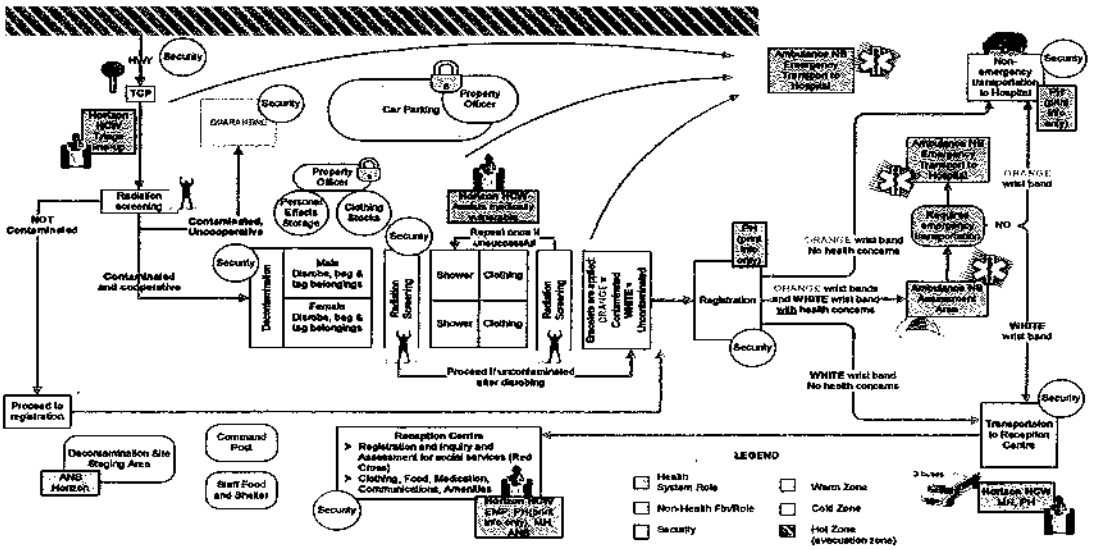


Figure: Off-site Emergency Response Field Decontamination Concept of Operations
Legend: TCP = Traffic Control Point; HWY = Highway (Highway1); PH = Public Health; HCW = health care worker; EMP = Extra-Mural Program; MH = Mental Health; ANB = Ambulance NB; Hot Zone/Warm Zone/Cold Zone = see Part IV, Section 13 - Glossary for definitions

Reception Centres and Emergency Shelters

Emergency Medical Services. ANB will provide an ambulance unit for the first 24 to 48 hours to provide reassurance to evacuees as they arrive, and assist those who require treatment. After the initial 48 hours, coverage will be provided through the NB-911 system.

First Aid. Provided by trained Red Cross employees/volunteers.

Mobile Mental Health Services. Communities in Crisis services will be available upon request.

Extra-Mural Program. If Extra-Mural is providing service to one of their displaced patients in the Emergency Shelter, they will provide service to others if requested and if such service is within the scope of their practice

Health Information. A clear and consistent flow of health-related information is required by both evacuees and responders (see Section 10 – *Communications*). Red Cross will provide print information from Public Health and provide a list of referral resources.

TeleCare 811. TeleCare 811 may be accessed by the public at any time.

HEALTH FUNCTIONS AND ROLES

The Department of Health will ensure roles and responsibilities as detailed under the PLGS Off-Site Emergency Plan are fulfilled, as per the following:

a) Via the NBHEOC, liaise with Horizon to ensure that adequate care facilities, medical, extra-mural and mental health services are available and in a functional state of readiness.

b) Via the NBHEOC, ensure TeleCare 811 services are provided in the form of health and care information to NB residents. The service through all announcements and information that are provided to the public.

c) Via the NBHEOC, liaise with Horizon to ensure extra-mural services, , crisis intervention and counselling, public health education, and referral services are provided to individuals, families, caregivers and emergency responders.

d) Via the NBHEOC, liaise with ANB to ensure emergency medical services are provided to individuals and co-ordination of ambulance services (land and air) to optimise their use in transporting injured or infirmed individuals to local hospitals.

e) Advise members of the PEOC Control Group on medical, psychosocial and public health implications of the emergency including health problems that have already arisen or are to be expected, and appropriate protective counter-measures to be taken. This may include advising the public on what to do, dietary information, medication, evacuation, etc.

Further details on the organization, roles, responsibilities and actions necessary for an effective health system response to a nuclear emergency at the Point Lepreau Generation Station are outlined below and in the *Provincial Health Nuclear Emergency Plan (version 2.5)*.

HEALTH EMERGENCY MANAGEMENT

Role

The role of health emergency management at provincial, regional and facility levels in a Point Lepreau off-site nuclear emergency is to ensure coordination and control of health services to effectively respond to and recover from a Point Lepreau off-site nuclear emergency. At each respective level, health emergency management is responsible for ensuring its functional areas within its scope and mandate are able to undertake necessary actions and that its actions are coordinated and integrated with other emergency management partners.

Concept

Although the focus of a health response to a Point Lepreau off-site nuclear emergency would be Horizon, a provincial health system response will be required to support the local response for the first 48 hours and the wider public health messaging and response throughout. The health system response must be integrated with the wider provincial response led by PEOC Nuclear Control Group.

MEDICAL SERVICES IN HOSPITAL AND FIELD SETTING

Role

In a nuclear emergency it will be Horizon Health's role to provide essential medical services to persons exposed to or contaminated with radiation, in hospital and in field settings including Decontamination Centres, as required. Continuity of treatments and care services to the community-at-

Concept

SJRH is the designated health care facility for the Point Lepreau Generating Station (PLGS) for an on-site event. In an off-site event, the SJRH will serve as the designated facility for receiving contaminated casualties with urgent medical needs from the radiation plume, from the easterly traffic control point and radiation monitoring/decontamination posts, or evacuees who fail decontamination at the easterly Decontamination Centre. Charlotte County Hospital (CCH) will be the designated facility for receiving contaminated casualties from the westerly traffic control point and radiation monitoring/decontamination post for those with urgent medical needs or who fail decontamination. However, in compliance with the NB Trauma Program, evacuees with a trauma level 1, 2, or 3 will be transported to the SJRH regardless of where they originate within the evacuation area or at egress points, even if it means transportation through the plume.

Other facilities, sites and programs also have specific nuclear-related responsibilities. Because of its unique and specific nuclear response role, independent Appendices are provided for the SJRH Hospital Services Health Nuclear Emergency Plan.

Command, Control and Coordination

Horizon Health is the Regional Health Authority responsible, under the New Brunswick Regional Health Authorities Act, to provide for the delivery and administration of health services within the boundaries of Horizon Health Network, including the 20km Plume Exposure EPZ. All hospital services required by on-site or off-site emergencies at PLGS are the responsibility of Horizon Health, if necessary drawing across its full range of community health centres and clinics, Addiction Services, Mental Health services, Public Health and Extra Mural Program. At the corporate level, Horizon Health has its own Emergency Operations Centre (EOC), will be activated in an off-site emergency. The Horizon Health / SJRH EOC will liaise with the NB Health Emergency Operations Centre (NBHEOC) in the exchange of information and the operational implications of policy decisions, direction and interventions of the Department of Health. It will support the SJRH EOC and ensure a free flow of real time information.

Pre-Hospital Emergency Response Coordination

The SJRH EOC will provide tactical support, guidance, direction and coordination to field staff through the Regional Health Services Coordinators in the two Field Command Posts. The health services coordinator will represent all Horizon Health functions in the field site, one for each of the two sites (East and West). This command post representative will coordinate operational activities in the field, relay tactical issues to the SJRH EOC, access and communicate

information and expertise to and from the SJRH EOC, communicate with the NBHEOC as needed (via SJRH EOC) and coordinate with other command post team members.

Saint John Regional Hospital and Charlotte County Hospital

Every effort will be made to decontaminate casualties before transportation to hospital emergency departments, however as the treatment of life-threatening health conditions takes precedence over decontamination, the CCH and the SJRH will be prepared to receive contaminated casualties where required. In addition to those with life-threatening medical conditions, these emergency departments will also receive evacuees who have failed decontamination after two attempts, for further assessment for internal contamination and treatment. Response activities and decontamination of the treatment areas post-response will be conducted under the advice of a PLGS green-trained radiation safety officer.

Emergency Department Setting

The emergency departments at the SJRH and CCH will be prepared with as much advanced notice as possible to receive contaminated casualties. This will include preparing the area by setting boundaries for contaminated and non-contaminated areas, adding signage, setting up decontamination equipment and radiation detectors, waste management procedures, and preparing staff including personal protective equipment.

The emergency departments at the SJRH and CCH are responsible for screening, triaging, assessing and treating evacuees from the Plume Exposure Zone. The radiation assessment tool used in the METER training course by Health Canada will be adapted at the facility level to guide procedures from screening and triage through to treatment.

In-patient Care

If diagnostic imaging or surgery is required, the supervisor or unit manager will provide advanced notice to these departments to allow time to prepare the area and staff. Personnel from the PLGS will be on-site to monitor staff and patient contamination levels and assist with the decontamination of the treatment area.

Laboratory

As part the assessment of casualties suspected to have been exposed to radiation, potentially contaminated samples will be sent to the laboratory for analysis. This may include blood samples, nasal swabs, mouth swabs, urine samples, stool samples or emesis samples. The laboratory will have a plan for receiving and processing potentially contaminated samples and for measuring

and reporting their levels of radioactivity.

Other Facilities and Sites within the Evacuation-Affected Area

Horizon Health facilities, sites and programs in the area surrounding PLGS between St. Stephen and Sussex may be called upon to provide the following services. Note that Horizon Health facilities on the Fundy Isles hold stockpiles of KI pills however with the exception of the designated hospitals, those on the mainland do not.

- **St. Joseph's Hospital, Saint John.** Preparedness to support SJRH if the impact is exceeding SJRH capacity (e.g., provision of staff or administrative support, overflow facilities, etc.). Preparedness to advise or counsel drop-in queries from concerned people.
- **Fundy Health Centre, Blacks Harbour.** Preparedness to advise or counsel drop-in queries from concerned people. Otherwise the facility should only be affected if the 80 kilometre ingestion exposure EPZ is activated.
- **Campobello Health Centre, Welshpool.** Preparedness to advise or counsel drop-in queries from concerned people. Issue pills from KI stockpile if instructed. It is possible that contaminated vessels may enter the harbour. Otherwise the facility should only be affected if the 80 kilometre ingestion exposure EPZ is activated.
- **Deer Island Health Centre, Fairhaven.** Preparedness to advise or counsel drop-in queries from concerned people. Issue pills from KI stockpile if instructed. It is possible that contaminated vessels may enter the harbour. Otherwise the facility should only be affected if the 80 kilometre ingestion exposure EPZ is activated.
- **Grand Manan Hospital.** Preparedness to advise or counsel drop-in queries from concerned people. Issue pills from KI stockpile if instructed. It is possible that contaminated vessels may enter the harbour. Otherwise the facility should only be affected if the 80 kilometre ingestion exposure EPZ is activated.
- **Other Facilities within the area surrounding PLGS.** CCH will be supported by other Horizon Health staff and/or facilities if the impact is exceeding CCH capacity.

Other Facilities and Sites beyond the Evacuation Zone

Horizon Health facilities and sites beyond the zone affected by evacuation operations have no designated health nuclear emergency responsibilities, but may be called upon by the Horizon Health / SJRH EOC to support affected Horizon Health facilities and sites (e.g., augmentation of staff, supplies, etc.). These are:

- **Sussex Health Centre**; and
- **Extra-Mural Units** (Sussex and Kennebecasis Valley Unit, Quispamsis).

Extra-Mural Program

Extra-Mural Program (EMP) Staff in Reception Centres and Community Settings The EMP will provide service to all of its displaced clients at Reception Centres or Emergency Shelters. If EMP is providing service to one of their existing patients in a reception centre, they will provide service to others if requested and within the scope of EMP practice. Roles of the closest Extra-Mural Units are as follows:

- **Eastern Charlotte Office, St. George**. Support to displaced patients at Reception Centres and Emergency Shelters (as defined in Section 4.5). Ensuring continuity of care and preparedness to advise or counsel drop-in queries from concerned people.
- **St. Stephen Unit**. Ensuring continuity of care. Preparedness to advise or counsel drop-in queries from concerned people.
- **Saint John Unit**. Ensuring continuity of care. Preparedness to advise or counsel drop-in queries from concerned people.

Regional Extra-Mural Program Staff in the Decontamination Centres

EMP staff will provide assistance to those evacuees who are medically vulnerable, as they proceed through the decontamination area. This may include evacuees with medical devices, the frail elderly, or young children who need assistance with mobility, disrobing/dressing, showering and/or understanding instructions.

Care of the Deceased

Horizon Health's plan for managing fatalities in a nuclear emergency includes those who die in hospital after having been brought live to the emergency department as well as those who require an autopsy, as ordered by the Coroner. Fatalities occurring outside of the SJRH or CCH involving a contaminated person that does not require an autopsy by the Office of the Coroner, will not be transferred to a hospital morgue.

Supplies and Equipment

A dedicated supply cabinet reserved for use in a nuclear emergency is maintained at the SJRH by the PLGS and contains supplies such as PPE, dosimeters, waste management supplies, self-decontamination kits, potassium iodide pills, and wrist bands for identifying contaminated versus decontaminated or non-contaminated patients. A similar supply reserve has also been established for the CCH.

For the field setting, most supplies and equipment such as PPE and dosimeters will be provided by NB Emergency Measures Organization and PLGS. Other supplies required include information brochures published by the Office of the

Chief Medical Officer of Health, any tools required to triage and provide personal care assistance, and requirements specific to EMS. The National Emergency Stockpile System and Provincial Emergency Stockpile may be accessed if required through the DH EPR Branch.

Organizational Development

Horizon Health's Organizational Development will support the services within Horizon Health that provide direct patient care during a nuclear emergency. Its focus will remain on Human Resources Advisory Services, Library Services, Occupational Health and Safety Services and Learning Services.

During a nuclear emergency, Organizational Development will communicate with unions and professional groups regarding the event, managed and directed by the Director of Labour and Employee Relations and/or delegated to the Horizon Health (Saint John Area) Senior Human Resources Advisor. Organizational Development's nuclear preparedness activities include the following responsibilities.

- Develop learning strategies in support of, and based on, direction from content owners and subject matter experts so that employees are appropriately trained to treat victims of a nuclear accident.
- Provide occupational health and safety leadership to Horizon Health including direction on personal protective equipment and decontamination.
- Develop an occupational health response plan outlining the role of Horizon Health's Safety Officer.

MENTAL HEALTH

Role

The role of Mental Health in a nuclear emergency is to assist individuals, families, caregivers and responders who may experience emotional and psychological stress related to the event, as well as provide essential psycho-social resources and support at Monitoring and Decontamination Centres as well as Reception Centres, as required.

Concept

Mental health (psychosocial) issues can be a critically important factor in nuclear emergency response. The actual risk from radiation is usually much less than the probability of worry-induced stress. Even if exposure or contamination do occur, the number of "worried well" is likely to far exceed the number actually affected physically. Because much of the fear results from a lack of understanding about radiation, Mental Health will cooperate with Public Health, Communications, Tele-Care and other response agencies to disseminate consistent messages. The

concept of Mental Health operations during a nuclear emergency is based on the following three core functions.

- Maintenance of Essential/Critical Services including screening, intake and assessment, urgent treatment for new clients, and ongoing treatment and intervention for active clients with complex needs. Some non-critical activities such as skill groups may be suspended during the emergency if necessary.
- Community in Crisis Response including on-site counselling and de-briefing, telephone consultation; crisis intervention; crisis reduction counselling; defusing and debriefing; advocacy and mediation; education, and referral services. Disaster victims typically do not request services from the mental health system.
- CISM for First Responders. The regional CISM team is responsible for providing CISM services to first responders, front line health care workers, other CISM members and emergency coordinators before, during and after a significant traumatic incident. If services of the provincial CISM team are required, they will be requested through the PEOC.

Command, Control and Coordination

Within the Horizon Health (Saint John Area), all Mental Health response to a nuclear emergency will be coordinated and managed from the Horizon Health / SJRH EOC located in the SJRH. The Mental Health lead in the Horizon Health / SJRH EOC will establish and coordinate communication with all Mental Health facilities and sites within and surrounding the affected region. Deployment of staff to Reception Centres, Shelters and field sites require coordination with the provincial EOC.

Community Mental Health Centres

Roles

None of Horizon's Mental Health Centres or satellite clinics are within the 20 km Plume Exposure EPZ around the Point Lepreau Generating Station, although all are within the Ingestion Exposure EPZ. In the event of a health nuclear emergency, the Centres within Horizon Health (Saint John Area) may therefore be called upon to assist individuals, families, caregivers and first responders who have experienced emotional and psychological stress related to the event. Centre staff may also be required to assist other Horizon Health programs based on abilities and needs, dependent on the phase and extent of the emergency.

Responsibilities

Emergency coordinators are designated for each Centre to perform core Mental

Health emergency functions as follows.

- Essential Services Leader, who establishes a plan for maintenance of essential services, determines activities to be suspended, arranges staff employment, identifies high needs clients and coordinates logistics requirements.
- Community In Crisis Response Leader, who develops and implements an outreach plan for connecting with individuals impacted or requiring information, and coordinates provision of mental health services and delivery of information on-site.
- CISM Team Leader who coordinates the Centre's contribution to the regional CISM team which is coordinated through the Horizon Health / SJRH EOC.
- Logistics Leader (Administrative Support) who coordinates logistics requirements through the Horizon Health / SJRH EOC.

Field Operations

General

After evacuees have been through the assessment, registration and where required, decontamination and triage processes, those who are free of contamination and not in need of any immediate health care services will require transportation to the Reception Centre and in some cases to an Emergency Shelter. As it will take some time to put individuals though the field process and fill buses, there is an opportunity to provide education, information and support. Evacuees will have a lot of questions, fears and anxieties. They will need to understand how to access services, retrieve their belongings, and follow up with medical care, and they may require some intervention to reduce the initial stress of this potentially traumatic event.

Psychological First Aid

Psychological First Aid is designed to reduce the initial distress caused by traumatic events, and to foster short- and long-term adaptive functioning. Mental Health's Community in Crisis program will provide this service to decontaminated evacuees at the Reception Centres, with a focus on those who are waiting to be transported and while on route to an Emergency Shelter. Principles and techniques of Psychological First Aid meet four basic standards. They are:

(1) consistent with research evidence on risk and resilience following trauma;
(2) applicable and practical in field settings;
(3) appropriate to developmental level across the lifespan; and
(4) culturally informed and adaptable.

PUBLIC HEALTH

Role

The role of Public Health specific to a nuclear emergency is to provide:

- recommendations and guidance for areas of air, water and food quality with respect to human health hazards;
- public health messaging to the population;
- public health guidance regarding nuclear emergency response; and
- order quarantine if required.

Concept

The provincial Chief Medical Officer of Health is responsible to the Minister for direction and development of Public Health policy and for the administration of the Public Health Act and its Regulations. In a nuclear emergency which would pose a danger to the general public, the CMOH or delegate will ensure appropriate Public Health response including linkages with the Provincial Nuclear Control Group at the PEOC as necessary. At the regional level, the Regional Medical Officer of Health (RMOH) for the affected region will direct Public Health response in cooperation with Horizon Health or Vitalité Health and other relevant responding agencies.

Public Health Programs

Office of the Chief Medical Officer of Health

The role of the Office of the Chief Medical Officer of Health (OCMOH) in response to a nuclear emergency is to provide recommendations and guidance in four main areas: air quality; water quality; food quality; public health guidance. The following is a description of specific items.

Air quality

- Assist with health risk assessments related to human health as required.
- Provide Public Health Advisories regarding air quality through the emergency communications organization (see Section 10), as well as through the Public Health Advisories page on the Department of Health (OCMOH) website.

Food Quality

- Assist with health risk assessments related to human health as required.
- Provide public health advice with regard to the contamination of foods, their condemnation, embargo and disposal if required.
- Provide public health advice regarding food related matters in the event of a power outage.
- Inspect community centers used for temporary accommodations to ensure adequate food safety, water quality, washroom requirements and general sanitation.

Water and Soil Quality

- Assist with health risk assessments related to human health as required
- In conjunction with the Department of Environment, provide consultation and advice to local municipalities where a municipal water supply may be or has been affected.
- Provide public health advice on what to do if water or soil contamination exceeds health guidelines.

Public Health Guidance

- Provide public health advice to the population and relevant stakeholders.
- Provide advice to government departments on public health impacts.
- Provide public health guidance to the representatives of response organizations as requested.
- Provide advice to the Provincial Nuclear Control Group on all public health matters.
- As per process outlined in the Public Health Plan – Nuclear Off-Site Emergency, the RMOH will review requests from the provincial NB EMO regarding the distribution of Potassium Iodide (KI) pills, and provide recommendations on the appropriate dosages.
- Provide a printed information brochure published by the Office of the Chief Medical Officer of Health as a resource to support Horizon Mental Health Services and Regional Public Health field roles, for distribution at Reception Centres and Emergency Shelters.
- Provide public health messaging to PEOC Communications and Health Communications such that they may:
  - ensure that the web site is updated daily with public health and safe zone information;
  - ensure that Tele-Care 811 receives public health information in advance of being reported to the public;
  - ensure the public receives pertinent public health information in a timely manner to prevent adverse health effects related to the event; and
  - respond to all media calls transferred from Tele-Care 811 within 24 hours.

EMERGENCY MEDICAL SERVICES (EMS)

Role

ANB is the single ambulance service provider for the Province. The role of ANB in a nuclear emergency is to provide land ambulance services to the Point Lepreau Generating Station (PLGS), evacuation Traffic Control Points, Monitoring and Decontamination Centres, Reception Centres and Emergency Shelters, in addition to responding to normal patient requests in and around the Point Lepreau area.

Concept

During an on-site emergency at the PLGS site, all patients in need of further care for radiological contamination or exposure emergencies will be transported to the SJRH. ANB response to PLGS is governed by Operations Policy 4221; Response to Point Lepreau Generating Station and by Operations Policy 4213; Hazardous Materials Response.

During an off-site incident, a number of actions are established to ensure the safety of the communities surrounding the station. An off-site emergency occurs when the safety systems at the station may be compromised and nuclear contaminant release may be required or has occurred to further stabilize the incident. During an off-site incident, the following actions will be undertaken by ANB to respond to the potential or real crisis through collaboration with other Public Safety actions being undertaken.

- Precautionary Evacuation - During an off-site emergency, a precautionary evacuation may be established to ensure the safety of those residing within proximity of PLGS before radiation contamination is reported outside the station perimeter. This operation will activate Traffic Control Points entering and leaving the evacuation zone, but may not employ Monitoring and Decontamination Centres. During a precautionary evacuation, ANB will support efforts of moving patients that may require non-traditional transportation modes. Initial assigned resources will include the ANB staffed unit from the Lepreau Station, one additional staffed unit from an adjacent district and one NBEMS Manager from the South Region. The NBEMS Manager will report to the Command Post and through this point of consultation extra resources may be assigned to support the precautionary evacuation.
- Evacuation due to hazard - During an off-site emergency, a mandatory evacuation may be declared due to imminent or actual release of radiological materials from PLGS. This operation would include activation of Traffic Control Points, Monitoring and Decontamination Centres. In preparation for the increased volume of evacuees passing through the decontamination corridor, ANB will position four staffed units and one NBEMS manager at the Decontamination Centre during the initial 24 to 48 hours of the incident. The personnel assigned to this event will follow actions contained in ANB Nuclear Response JAS1 and JAS2. At this location, two ambulance crews will perform evacuee 'health checks' and two ambulance crews will standby to provide treatment and emergency transport, as per Section 4.4.5. The 'health check' will be performed on evacuees who self-identify as having health concerns or for those identified by Red Cross registration as wearing an orange bracelet (contaminated) or as having health concerns. All patients in need of further care for radiological emergencies will be transported to the SJRH. For those that fail decontamination (orange bracelet) they will be directed to a

dedicated shuttle and for those who have not yet been screened for contamination but require urgent care they will be transported by ambulance with appropriate precautions (PPE).

- Ambulance service to the community affected by an off-site emergency is governed by all-hazard standard operating procedures for emergencies; paramedics will take all precautions mandated by the hazard to ensure safety of themselves during response activities. ANB will continue to participate in emergency medical care activities inside the evacuation zone during the evacuation of the community while safe to do so. When radiological contamination is above safe levels as determined by the Nuclear Control Group, ANB's activities will withdraw to the outside of the evacuation zone and standby for further requests. Entry back into the evacuation zone after safe levels are exceeded will be for emergencies and while wearing NB Emergency Measures Organization issued Level C PPE.
- All ANB paramedics will be issued Level C PPE (not be immediately required to put on as they will be stationed in the 'cold' zone) by the Decontamination Centre stores and equipment trailer upon arrival at Command Post staging area. PPE is provided as precaution for emergency response requests within the Decontamination Centre and within the evacuation zone. If an ambulance or crew is required to enter the Decontamination Centre or the evacuation zone, that ambulance or crew will not be permitted to immediately leave that zone. This requires the patient to proceed through the decontamination process when medical stability allows or handed-off across the zone perimeter to a non-contaminated ambulance to continue transport to SJRH in cases of medical emergency. The contaminated ambulance will be set aside for future responses within the evacuation zone as required or decontaminated if deemed possible by radiation protection specialists. The paramedics will be required to proceed through the decontamination process before leaving the evacuation zone and returning to duty.
- ANB will support reception centre operations with a single unit during the initial 24 to 48 hours when most evacuees will arrive. This service is to further reassure and assist those that may sustain adverse health effects from the evacuation process. After the initial 48 hours, coverage will still be provided, but through the established NB-911 system.

Command, Control and Coordination

ANB's Emergency Medical Dispatchers are located at its Medical Communications Management Center (MCMC) in Moncton. They are responsible for dispatching and coordinating ambulance response to all requests within the province; including those triggered by an on-site or off-site nuclear emergency. Upon arrival of an NBEMS Manager at the Command Post, ANB Command will be delegated to this individual over those resources assigned to the incident. The NBEMS Manager will be the onsite point of contact on ANB activities such as

decontamination, patient transports, and Occupational Health and Safety concerns. ANB Command will join with other command / coordinators and provide an account of ANB activities during planning cycle meetings using the Health Emergency Preparedness: Nuclear Decision Support – Ambulance Services form. ANB Command will provide a full site report on agency activities back to the ANB EOC and MCMC environments for strategic resource planning purposes.

TELECARE

Role

The role of Tele-Care in a nuclear emergency is to provide nuclear-related health and care information to residents of the province of New Brunswick who accesses the Tele-Care 811 system.

Concept

For a copy of the Tele-Care Plan see Appendix 8 of this document. Public messaging during a nuclear emergency will include advice to use Tele-Care 811 for information and advice on:

- Food, air and water safety;
- Potassium iodide information;
- Care and advice information from registered nurses;
- Media inquiries;
- Referral for information on:
  - Reception centres and shelters,
  - Road closures,
  - NB EMO helpline

Command and Control

Tele-Care is a program of the provincial Department of Health. Tele-Care will work closely with the Office of the Chief Medical Officer of Health (OCMOH), Health Communications, Horizon Health and ANB in developing key messages, and in making changes to triage protocols and case identification criteria. Tele-Care's automated system will enable an increased and scalable capacity for handling surges in call volumes. All health system partners need to be aware that re-programming Tele-Care's automated system takes time; therefore close coordination between health system partners is essential to make effective use of the system as part of the overall communications response strategy. The public must not be referred to Tele-Care for nuclear-related information until Tele-Care confirms that it has the necessary information and approvals, and is ready to respond.

Operations

Immediate Requirements

Tele-Care must be prepared quickly to respond to individual queries on instructions on food, air and water safety, sources and advice on KI pill administration, and advice and information on care. Coordination between OCMOH and Tele-Care is therefore required to ensure Public Health approval of information and protocols before they are provided by Tele-Care to the public. This will be done as part of wider coordination requirement with other partners.

Tele-Care 811 Information Requirements

In order for Tele-Care 811 to be in a state of readiness to fulfill all roles outlined in the provincial Tele-Care Nuclear Emergency Plan, all information requirements from contributing partners must be met on a real time basis. Procedures for obtaining validated consistent information from all partners are outlined in the Tele-Care Nuclear Emergency Plan:

- up-to-date public messaging;
- a list of frequently asked questions and answers on the health effects of radiation;
- up-to-date information on services changes within the Health Networks;
- clinical support to ensure Tele-Care symptom triage protocols are aligned with current clinical information; and
- contact information from outside partners providing referral services.

Tele-Care 811 will be activated immediately after NBHEOC activation with pre-scripted and pre-approved information.

COMMUNICATIONS

Role

The role of health system communications in a nuclear emergency is to disseminate timely, accurate and consistent health messages and to prevent or mitigate the negative effects of public misunderstanding of nuclear issues, in coordination with the Emergency Information Services organization.

Concept

The most significant health risk of an incident at the PLGS is unlikely to be radiation, but rather fear-induced stress arising from misunderstanding or conflicting information. Furthermore, "effectively communicated health messages

can influence individual citizens, health care providers and other professionals, and policy makers at all levels as they make health protection decisions; therefore these messages can have a direct and highly significant effect on the health and safety of large segments of the population. For any levels or amounts of exposure, even miniscule, people will want to know what health effects they may have in the future." Disciplined communication management, with consistent, clear and accurate messages, are vital elements in effective health system response. Tele-Care will be an important element of reassurance for those who have specific queries. Example key messages appropriate to a nuclear emergency, are suggested in Box 4 on the following page. Communication during a nuclear emergency will be in accordance with the all-hazards crisis communication plans at both the provincial and regional levels.

Command, Control and Coordination

Emergency Information Services organization is the provincial lead agency for government communications. Emergency Information Services organization comprises Executive Council Office (formerly Communications NB), departmental communications staff, and NB Power public affairs staff. For the duration of a nuclear emergency, the Emergency Information Services acts as coordinator and a clearing house for all government strategic communications, operational communications and emergency public information. At the provincial health system, regional and local level, the communication process will require close teamwork between the Department of Health (DH), Horizon Health Network, the provincial Nuclear Control Group (see Section 1.6.2) and NB Power to develop and disseminate timely, accurate and consistent messages. In practice this will be a four-way coordination between the Communications and Community Relations representative in the Horizon Health / SJRH EOC located in the SJRH, NB Power's Point Lepreau Off-site Emergency Centre (see Section 1.6.4), and the NBHEOC, provincial EOC's Emergency Information Services in Fredericton. If the City of Saint John EOC is activated, it should also be kept informed.

Key Messages

Communication in a nuclear emergency involves more than good media management. It is equally essential that all health system workers are able to communicate clear, simple, consistent, scientifically accurate messages to the clients who they serve. Consequently, reinforcing the key messages in Box 4 should be an integral part of health system education, training and exercises for nuclear emergencies.

Preparedness, Prevention and Mitigation

Public and Media Education

If the population in the Point Lepreau area and local media both have at least an

elementary understanding of the CANDU reactor and the health effects of radiation, then the difficulties of communication during an emergency will be much reduced. An ongoing program of public education and awareness is, therefore, an important aspect of emergency preparedness, preventing unnecessary stress-induced health problems and mitigating the effects of ignorance.

Countering Misunderstanding and Misinformation

In the public mind, the technology upon which the PLGS reactor is based is inappropriately equated to that which produced the atomic bomb. In addition, an uninformed or misinformed public may draw comparisons between any incident at PLGS and the earlier accidents at Three Mile Island in 1979 or, even more inappropriately, the Chernobyl disaster of 1986. The CANDU reactor at PLGS uses a different technology than either of those cases and the likely nature of any accident at PLGS would be much different. Furthermore, in the case of Chernobyl, the social and political environment was very different. In order to prevent misunderstanding or confusion, at no time should health system communication mention any of these nuclear incidents unless to rebut firmly any connection in the public mind.

Key Messages for all Health System Partners

Detailed key messages should be developed between DH, Horizon Health, NB Power/PLGS and Executive Council Office representatives. The following are examples of messaging considerations that should be presented consistently, not just by spokespersons but also by all front line health workers who interact with the public.

For the Public:

Nuclear emergency information can be complicated and worrying, so it must be translated into everyday jargon-free language. Use of easily understood analogies may be helpful (e.g. equating estimated dose to number of x-rays or amount of background radiation received while flying in an airliner at 30,000 feet - as below.

Millisieverts (mSv):
50.0 International Atomic Energy Agency's annual limit for emergency workers in any single year
2.0 Average annual dose from natural radiation
0.04 Amount of cosmic radiation dose during a commercial airline flight across Canada
0.02 Typical chest x-ray

For Health Workers

Patients who have been exposed but not contaminated do not pose any radiation hazard; staff protection when treating people who are contaminated can be achieved by managing the four factors of time, distance, shielding and quantity.

General

There is little comparison between the CANDU reactor at PLGS and either Chernobyl or Three Mile Island.

PERSONAL PROTECTION

A protocol and procedure guideline for health care workers (first responders and first receivers) for the use of personal protective equipment (PPE) in a nuclear emergency is attached as Annex C. PPE is used to protect the individual providing care and adherence to proper donning and removal procedures is used to prevent the spread of contamination. Physical boundaries will be in place in the field and hospital settings to demarcate the areas where PPE is required and at what level. Areas are defined as requiring Level C PPE, Level D PPE, and Neutral (no PPE required). Any movement between areas requires a protocol for removing and donning PPE.

Level C PPE is used where there is a high risk of contamination and requires Tyvek coveralls, Tyvek booties, face shield, an inner and outer layer of gloves, and a half-face piece air purifying respirator with a P-100 filter. Level D PPE is a lower level PPE requiring a scrub suit covered by a fluid resistant gown, Tyvek booties, safety glasses, an inner and outer layer of gloves, and an N95 respirator.

The protocol has been adapted from the US Dept. of Health and Human Services, Radiation Emergency Medical Management and in accordance with CNSC guidelines and PLGS protocols.

EMERGENCY WORKER RADIATION DOSE LIMIT PROTOCOL

Radiation exposure of emergency workers will be monitored using personal dosimeters. Assignment of duties will ensure that no emergency worker received a radiation exposure greater than that specified in *International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources* (IAEA, 1996). The occupational exposure of any worker shall not exceed an effective dose of 20mSv per year averaged over five consecutive years, and shall not exceed 50mSv in any single year. A worker may voluntarily exceed the maximum single year dose limit of 50mSv if undertaking life-saving actions; every effort shall be made to keep doses below ten times the maximum single year dose limit (500mSv) and only when the benefits to others clearly

outweigh their own risk. Pregnant staff will not be requested to serve on a decontamination team.

HEALTH SYSTEM RECOVERY

The post-emergency recovery phase is the transition period in which the emergency response organization is deactivated, routine procedures are resumed and normal capability restored. Because this document supplements the all-hazards emergency management plans of its participating organizations, health nuclear emergency aspects of post-event activities are to be incorporated into the respective organizational all-hazard recovery processes. This includes, but is not limited to, deactivation processes, debriefing and post-incident reporting, record management and long-term recovery actions.

Population Served

Medical follow-up will be provided by the family physician with support from Health Canada and the Office of the Chief Medical Officer of Health. It is incumbent on health services to ensure post-emergency health actions, including advice, counselling, and medical follow-up.

Registry of Evacuees

In the recovery phase of the emergency, the Department of Health will establish a registry through the acquisition of demographic data collected by NB Emergency Measures Organization in the process of registering evacuees as they exit the Plume Exposure Zone. This registry will contain sufficient information to enable the identification of individuals who were in the evacuation zone. It will be stored by the Department of Health through the NB Cancer Network, the parameters of which will fully comply with the *Personal Health Information Privacy and Access Act*. The collection of additional data elements for epidemiological purposes is a responsibility of the Office of the Chief Medical Officer of Health.

CONTROL GROUP MEMBERS

CONTROL GROUP MEMBER	OFFICE	CELL/Home	E-MAIL
OCMOH designate via EPR Branch Contact (see below) Health Protection, Public Health On-call Pager (after hours only)		[redacted]	
[redacted], Radiation Medical Advisor	457-7259	[redacted]	[redacted]
Emergency Preparedness and Response (EPR) Branch Department/EPR On-call 24 hour pager / duty officer		[redacted]	nbeprun@gnb.ca

[redacted] EPR Branch Director	N/A	[redacted]	[redacted]

OTHER/ALTERNATES			
[redacted] EPR Branch	N/A	[redacted]	[redacted]

AMBULANCE NB / NB EMS			
MCMC Dispatcher (24/7 on-call)		[redacted]	[redacted]

HORIZON HEALTH NETWORK			
Zone 2 On-call Pager		[redacted]	[redacted]
Saint John Regional Hospital	648-6000		
SJRH Pager		[redacted]	
Blacks Harbour (Fundy)	456-3325		
Grand Manan Hospital	662-4060		
Saint John-St. Joseph's Hospital	632-5555		
Charlotte County Hospital (St. Stephen)	465-4444		
Fundy Health Centre (Blacks Harbour)	456-4200		

Detailed Health Contact Listing to be maintained by the Department of Health.

RESOURCES

Saint John Regional Hospital and Charlotte County Hospital Equipment and Supplies

ITEM	# PRESENT	COMMENT
Hospital Storage Cabinet Supplies maintain by Point Lepreau Generating Station		
1 Box of Disposable Gloves		
Minimum of 20 Large Zip-Lock Bags		
Minimum of 50 Medium Zip-Lock Bags		
Minimum of 50 Small Zip-Lock Bags		
4 Black Striped Waste Bags		
1 Box of Stick on Labels		
1 Roll of Radioactive Label Tape		
8 Adhesive Radioactive Waste Labels		
1 Roll of Duct Tape		
2 Portable Contamination Meters		
1 Copy of EP-78600-M053, Senior Health Physicist Actions at the Hospital		
1 Copy of the Hospital Storage Cabinet Inventory (Appendix A of EP-78600-EQ95)		
1 Record Book		
10 TLD/PAD Assignment Sheets		
1 Standard Clipboard		
6 Pens		
10 Personal Alarming Dosimeters (PADs)		
25 Thermoluminescent Dosimeters (TLDs) and 5 Controls		
Minimum of 3 D Cell Batteries		
2 Permanent Markers		
3 Pieces of Chalk		
Minimum of 200 Potassium Iodide Tablets (KI) and Check Expiration Date		
40 Masslinn Cloths		
Minimum of 4 Pairs of Surgical Greens		
Minimum of 4 Disposable Caps		
Minimum of 4 Plastic Aprons		
Minimum of 50 Disposable Towels		
1,000 Arm Bands (Grey and Orange)		
Minimum of 15 Pairs of Disposable Waterproof Booties Size Medium		
Minimum of 8 Pairs of Disposable Waterproof Booties Size Medium		
Minimum of 10 Pairs of Disposable Coveralls with Shoes Covers Included Size Extra Large		

Minimum of 10 Pairs of Disposable Coveralls with Shoe Covers Included Large		
Minimum of 10 Pairs of Disposable Coveralls with Shoe Covers Included Size Medium		
1 Roll of Barrier Tape		
2 Carboys and a Funnel and Hose for Decontamination		
1 Plastic Pail with Lid		
1 Masslinn Mop		
2 Caution Signs Complete with Strands		
Additional Horizon Health Supplies for SJRH and CCH*		
Patient Self Decontamination Kits		To be acquired via PLGS/EMO
N 100 Respirators		To be acquired via PLGS/EMO
Tyvek Suits		To be acquired via PLGS/EMO
Tyvek Booties		To be acquired via PLGS/EMO
Identification Vests		To be acquired
Goggles, Gloves		To be acquired
Disposable Gloves		To be acquired
Decontamination Tent for CCH		To be acquired
SJRH Ambulance Bay Decontamination Tent		To be acquired
Accessible External Resources		
SJ Fire Hazmat Decontamination Tent		

PROVINCIAL EMERGENCY STOCKPILE

The Department of Health maintains a provincial emergency stockpile of supplies, including personal protective equipment, infection control and other health supplies for use by RHAs in emergencies. In a nuclear event, the *provincial emergency supply chain plan* may be activated to meet a surge in demand by Horizon Health Network.

Activation will be a multifactorial, real time decision based on factors such as a surge in demand, evidence of supply chain disruption, and/or manufacturers imposing ordering restrictions. Activation will be triggered through a decision by the Department of Health Emergency Operations Centre in consultation with Horizon (via FacilicorpNB). The EOC Director will initiate deployment through communications with FacilicorpNB.

Ambulance New Brunswick maintains its own stockpile of similar supplies.

NATIONAL EMERGENCY STOCKPILE SYSTEM (NESS)

As part of the Public Health Agency of Canada National Emergency Stockpile System (NESS), the federal Health Portfolio maintains a limited supply of medical countermeasures for internal radiological contamination. These supplies can be made available to provinces and territories upon request for use in response to a nuclear emergency. For NB during a nuclear emergency event, a request for these supplies must be made through the NB Health EOC Director (or designate) as the provincial authority for NESS access. The NESS maintains a supply of the following countermeasures: Prussian Blue, Ca-DTPA, Zn-DTPA and potassium iodide (KI).

DECISION SUPPORT SYSTEM

A key function of the NBHEOC is to provide decision-support to decision makers at both the operational and policy levels. A significant challenge will be carrying out this responsibility in the context of the significant uncertainty that will likely accompany a nuclear emergency event.

The Decision Support function includes:

- collecting and analyzing data about the event, estimating its impact on the health system and assessing the capacity of the health system to respond,
- working with Departmental staff to use the gathered information to inform decision making;

The Decision Support function includes:

- collecting and analyzing data about the event, estimating its impact on the health system and assessing the capacity of the health system to respond,
- working with Departmental staff to use the gathered information to inform decision making;

The information collected and the analysis undertaken will also assist in providing situational awareness to key stakeholders.

Carrying out the Decision Support function may require the utilization of a variety of resources, tools, and processes:

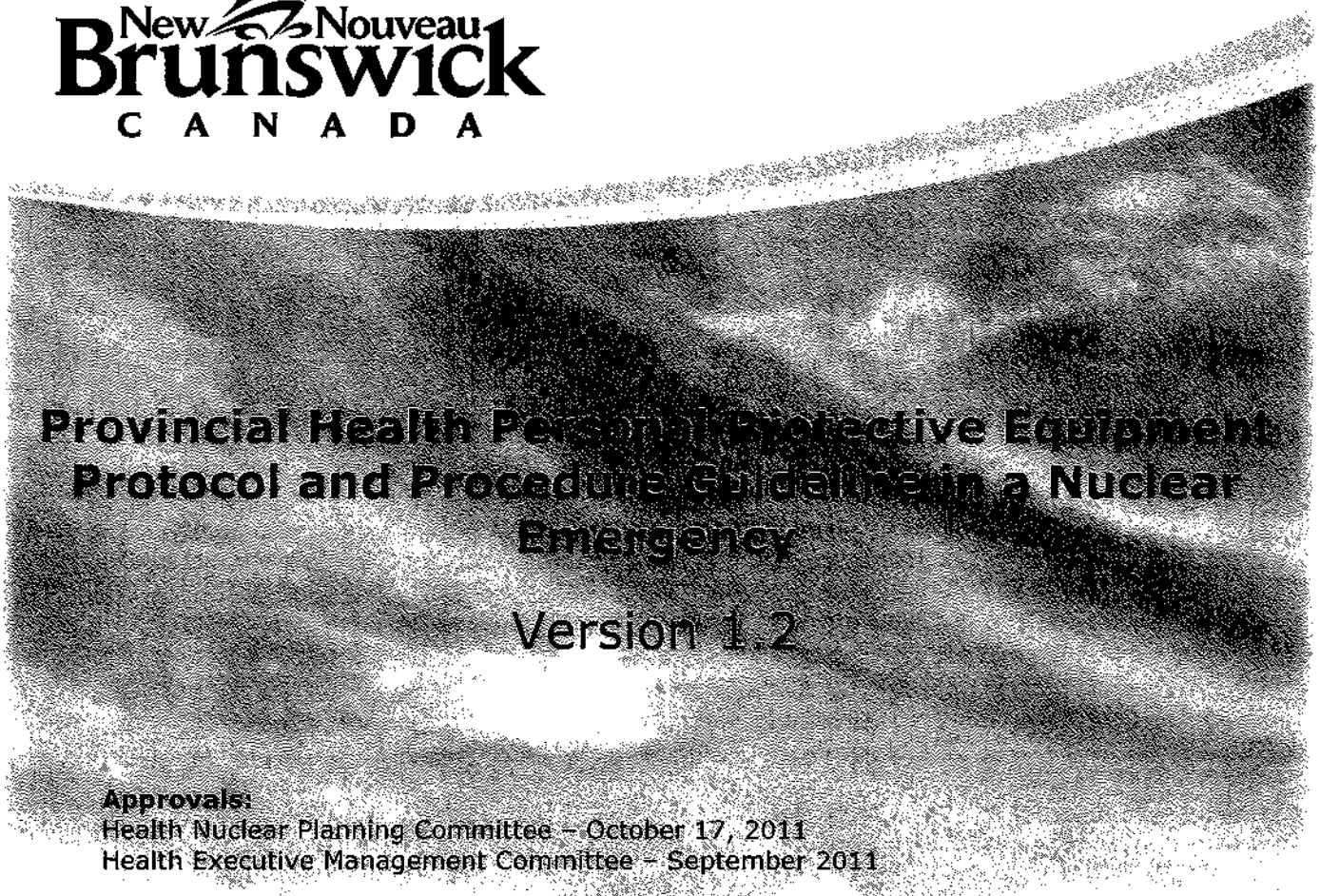
- information about the event and its impact, and the capacity of the health system to respond; information will be shared with the Department of Health by its partner organizations;
- the decision support system is a password protected, web-based electronic system that has been developed to facilitate the collection and housing of data during health emergencies; the decision support system has the potential to be modified and utilized in any emergency event to support primary data collection; given the nature of a nuclear event, however, (e.g. the type of data needing to be collected and reported, the anticipated frequency of reporting, the number of health facilities involved in the response), the decision support system will be used primarily as a tool to house and display information, and not as a primary data collection tool; the decision support system may also be used to support trending and strategic planning as well as historical data comparisons of some data elements (e.g. # emergency room visits, # admissions).

ANNEXES

Annex A – Provincial Health Personal Protective Equipment Protocol and Procedure Guidelines in a Nuclear Emergency

TAB E

New Nouveau Brunswick CANADA



Provincial Health Personnel Protective Equipment Protocol and Procedure Guidelines in a Nuclear Emergency

Version 1.2

Approvals:
Health Nuclear Planning Committee – October 17, 2011
Health Executive Management Committee – September 2011

Consultations:
Point Lepreau Generating Station – October 3, 2011
WorkSafeNB – October 5, 2011

Department of Health
Updated March 2013

TAB E

1. PERSONAL PROTECTIVE EQUIPMENT FOR HEALTH WORKERS

This document provides guidance for health sector emergency workers in the use of personal protective equipment (PPE) for protection from internal and external contamination. PPE does not provide protection against high energy, highly penetrating forms of ionizing radiation.

1.1. Levels of PPE[1]

There are two levels of PPE described below that apply to health sector emergency workers in the context of the *Provincial Health Nuclear Emergency Plan*. The level of PPE required depends on the risk of exposure inherent in the types of tasks the emergency health worker will be expected to perform and on the setting in which these tasks are carried out. The main difference between Level C and Level D PPE is in the level of respiratory protection.

1.1.1. Level C PPE

Level C PPE is generally used by first receivers and first responders in contact with contaminated casualties. For further details on the appropriate use of Level C PPE, refer to Sections 12.2 and 12.3.

Respiratory Protection*	Half-face piece air purifying respirator with a P-100 filter
Clothing	Hooded chemical resistant clothing – overalls or two piece chemical splash suit, an inner chemical resistant suit - such as Tyvek coveralls **Do not tuck the Anti-Contamination Over-suits into the booties.** Goggles
Gloves	Inner and outer chemical-resistant gloves (surgical)
Boots	Disposable chemical-resistant outer boot covers (Tyvek booties)

1.1.2. Level D PPE

Level D PPE is generally used by first receivers and first responders working in post-decontamination areas and those working with casualties less likely to be contaminated. For further details on the appropriate use of Level D PPE, refer to Sections 12.2 and 12.3.

Respiratory Protection*	N95 Respirator
Clothing	Water-repellent surgical gowns or coveralls Scrub suit inner layer

[1] Adapted from US Dept of Health and Human Services, Radiation Emergency Medical Management

	Safety glasses, face shields or goggles (for personnel who may get wet with potentially contaminated liquids)
Gloves	Surgical gloves (as for Level C): - Double gloving with frequent changes of outer pair to reduce spread of contamination to other providers, other parts of the patient - Tape inner pair of gloves to surgical gown arm cuff; outer pair is then more easily replaced while minimizing risk of self-contamination - Frequent glove changes help minimize the risk of inadvertent, iatrogenic spread of contamination to uncontaminated areas of a patient, to other patients, to staff members, or to other uncontaminated areas.
Boots/ Footwear	Disposable, chemical-resistant outer boot covers (Tyvek booties)
Operational impact and requirements	Provides sufficient level of protection when work operations preclude splashes, immersion, or potential for unexpected inhalation or contact with hazardous levels of radiation Equivalent to everyday uniforms worn by first receivers • Providers caring for patients admitted to hospital wards and floor beds should tailor PPE to anticipated level of patient interaction • Offers the minimum protection against infectious agents or contaminants • Requires: - Regular surveillance for radiation contamination - Staff members to conduct frequent self-surveys or to be surveyed by co-workers to identify possible contamination - Surveys to be conducted at completion of tour of duty or before exiting radiation controlled areas for clean areas - Consultation with hospital health physicist (in hospital setting) or on-site Point Lepreau Generating Station (PLGS) radiation physicist (in field setting) for guidance

*Level C PPE requires a P-100 respirator and Level D PPE requires an N95 respirator. Both respirators

require up-to-date fit-testing to be effective. An on-going fit-testing program is required by each implicated organization to ensure the personnel expected to be part of a response to an off-site nuclear event have current fit-testing.

1.2. Personal Protective Equipment protocols and practice guidelines for first responders[2]

First responders are generally the first emergency workers at the site and their activities mostly occur at the site of the incident. In the context of this plan, most first receivers in the health sector will be working outside of the 20km Plume Exposure Planning Zone but many will be working directly with contaminated evacuees.

Emergency Type	Recommended PPE
Radiation event with high risk of contamination	Level C PPE **PPE does not provide protection** against high energy, highly penetrating forms of ionizing radiation Factors that help decrease radiation dose from exposure
Radiation event with high risk of exposure	• Minimizing time spent near a radiation source • Maximizing distance from a radiation source • Increasing the physical shielding between a person and a radiation source

* In all cases where radiation is suspected, first responders should be monitored for radiation dose limit by monitoring the dose rate in the responder's work setting and tracking hours working in that setting.

1.3. PPE protocols and practice guidelines for first receivers[3]

A first receiver is defined as a healthcare worker in a hospital or other facility where victims arrive for treatment or first receivers who provide medical care at locations remote from the incident and not at the nuclear site or within 20 km of the nuclear plume release area.

Since victims may arrive for treatment contaminated with radioactive materials, first receivers need to protect themselves against secondary contamination by putting on appropriate PPE before delivering medical care. Secondary contamination is external or internal contamination of the emergency worker as a result of handling contaminated patients. Secondary contamination has rarely produced significant medical problems in past radiation events.

[2] Adapted from US Dept of Health and Human Services, Radiation Emergency Medical Management
[3] Adapted from US Dept of Health and Human Services, Radiation Emergency Medical Management

Emergency Type	Response Role	Recommended PPE*	Notes, Caveats, & Concerns
Radiation event with high risk of contamination	First receivers delivering care to victims more likely to be externally contaminated, i.e. healthcare providers working in **pre-decontamination and decontamination areas**	Level C PPE	Respiratory PPE includes a half-face piece air purifying respirator with a P-100 filter
	First receivers delivering care to victims less likely **to be externally contaminated**: i.e., healthcare providers working in **post-decontamination areas of the field or hospital**	Level D PPE provides sufficient respiratory and skin protection for first receivers working in post-decontamination areas of the hospital or field; this includes those delivering care to persons who may not yet be decontaminated (e.g., patients who self-refer or who arrive by transport with life- and limb-threatening injuries) Level D PPE also protects skin and personal clothing against possible splashes of contaminated blood and body fluids (urine, feces, wound drainage, etc.) Level D PPE is equivalent to Standard Precautions PPE worn in medical facilities as protection against transmission of biohazards from patients to providers	Do not delay stabilization of any patient to first perform decontamination Perform life- and limb-saving tasks before managing radiation problems
	First receivers delivering care to victims with suspected or confirmed internal contamination, i.e. healthcare providers working in **post-decontamination areas of the hospital or field**	Level D PPE also protects skin and personal clothing against possible contamination from blood and body fluids (urine, feces, wound drainage, etc.) Level D PPE is equivalent to Standard Precautions PPE worn in medical facilities as protection against transmission of biohazards from patients to providers	Hospital health physicist will routinely monitor work areas and patient blood and body fluids for radioactive contamination or elevated radiation levels

Emergency Type	Response Role	Recommended PPE*	Notes, Caveats, & Concerns
Radiation event with high risk of exposure	First receivers delivering care to victims in all areas of the hospital or field	Level D (Standard Precautions) PPE should be used by healthcare workers when caring for victims of radiation exposure	Patients exposed to radiation but not contaminated with radioactive material pose no threat of exposure to healthcare providers

* In all cases where radiation is suspected, first receivers should be monitored for radiation dose limit by monitoring the dose rate in the responder's work setting and tracking hours working in that setting.

1.4. Procedure for Donning and Removing PPE[4]

Function
Entry to and exit from a Decontamination Area must be carried out in a manner that prevents the spread of contamination. This is facilitated by setting up clear boundary lines delineating Pre-decontamination Area, Decontamination Area, Neutral Area, and Post-Decontamination Area.

Procedure
Step Operation

1. Before entering area pre- or post-decontamination in the hospital or field, don appropriate PPE as described above.
2. Enter the Pre-decontamination Area, Decontamination Area or Post-decontamination Area.
3. When leaving the area, remove the top over-suit, one pair of gloves, and booties in the Pre-Decontamination, Decontamination or Post-Decontamination area.
4. Place re-usable PPE into a "radioactive materials" laundry bag. Place **disposable material into an active waste container, e.g. latex gloves, disposable coveralls**.
5. Active waste containers should be monitored periodically with a gamma meter. **The waste should be removed if the contact gamma reading exceeds 2 mSv/h.**
6. When exiting to the Post-decontamination area keep your back to the exit and remove the other Anti-Contamination Over-suit and carefully place it in a "radioactive materials" laundry bag or active waste (disposable coveralls), located inside the Decontamination Area.

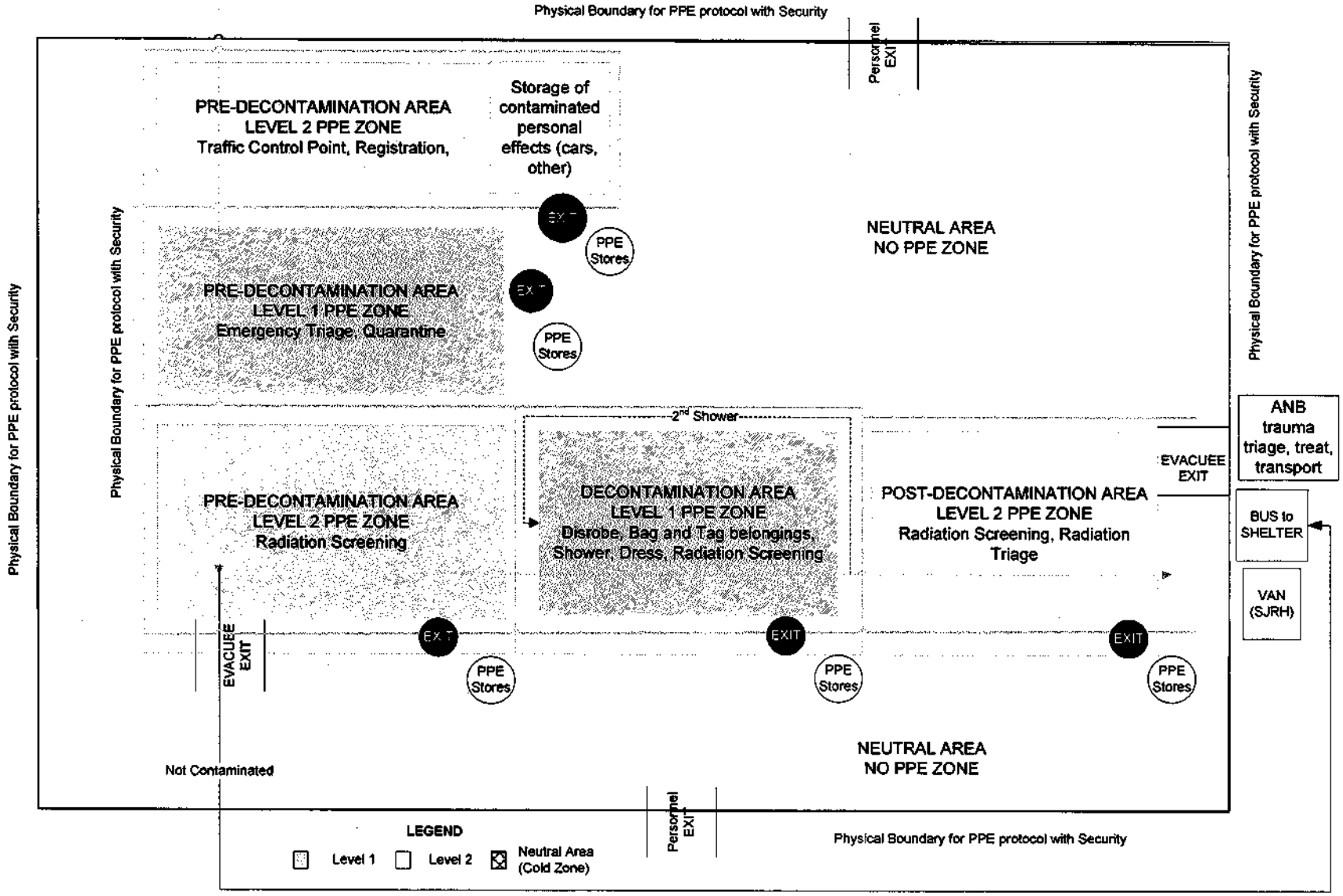
[4] Steele R, Bowmaster R, Munn T, 2005.

7. Remove one blue bootie in Decontamination Area and place it in the white "radioactive materials" laundry bag. Put your exposed shoe or boot outside the area into the Neutral Area.
8. **Repeat** Step 7 for the other foot.
9. Remove your second pair of gloves.
10. Check hands, boots and clothing for contamination.

NOTE: The above procedure assumes a Radiation Physicist from PLGS will be on site in the field to monitor safety and compliance.

ANX A TO
TAB E

Figure 1: Field Decontamination Centre Site



1.5. Defined Areas

All areas noted below need to be clearly demarcated.

1.5.1. Field

i. Pre-Decontamination Area

a. Level C PPE Zone – defined as emergency triage area, quarantine area

b. Level D PPE Zone – defined as traffic control, registration, radiation screening areas

c. PPE is doffed before leaving this area.

ii. Decontamination Area

a. Level C PPE – defined as decontamination process and functions area

b. PPE is doffed before leaving this area.

iii. Neutral Area

a. No PPE required - designated neutral area is defined as all areas outside of Pre-decontamination Area, Decontamination Area, and Post-decontamination Area. PPE is donned in neutral areas.

iv. Post-Decontamination Zone

a. Level D PPE – designated as radiation screening and triage

b. PPE is doffed before leaving this area.

1.5.2. Hospital

i. Pre-contamination Area

a. Level C PPE – defined as Emergency Department area where contaminated patients will be received, screened and emergency medical treatment provided (life- and limb-saving tasks).

b. PPE is doffed before leaving this area.

ii. **Decontamination Area**

a. Level C PPE – defined as decontamination process and functions area

b. PPE is doffed before leaving this area.

iii. **Neutral Area**

a. No PPE required - Designated neutral areas are defined as all areas outside of the Pre-decontamination Area, Decontamination Area, and Post-decontamination Area. PPE is donned in neutral areas.

iv. **Post-decontamination area**

a. Level D PPE – defined as Emergency Department area where patients will be received, screened and emergency medical treatment provided where risk of contamination is low.

b. PPE is doffed before leaving this area.

References

Burham J.U. (2001). Radiation protection. New Brunswick: Point Lepreau Generating Station, NB Power Corporation.

Steele R, Bowmaster R, Munn T. (2005). How to enter and leave a rubber area. NB: Point Lepreau Generating Station, NB Power.

Steele R, Sommer D, Nason, C. (2005). How to set up a rubber area and/or rubber change area. NB: Point Lepreau Generating Station, NB Power.

US Department of Health and Human Services, Radiation Emergency Medical Management. Personal Protective Equipment in Radiation Emergencies. 2011. Retrieved on September 26, 2011 from http://www.remm.nlm.gov/index.html

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

EMERGENCY PUBLIC INFORMATION SERVICES

General

New Brunswick has provincial policy, plans, procedures and robust infrastructure to support government communications and the provision of public information during emergencies.

The Emergency Public Information Plan provides for the establishment of an emergency organization; known as *Emergency Public Information Services,* to co-ordinate emergency public information. When activated, Emergency Public Information Services co-ordinates the communications activities of government and the utility, to ensure that timely and accurate advice is provided to the public.

Normal Operations

Executive Council Office (ECO) is the provincial lead agency for government communications and marketing. Day to day, ECO is responsible for editorial services, corporate and departmental media relations, marketing and dissemination of government communications.

Note: Design services, monitoring of electronic and print media, translation services, the recording of news announcements and certain web services shall be provided by the Department of Government Services.

Emergency Operations

When required to meet the demands of a crisis or emergency, NB-EMO activates the Emergency Information Services organization, in whole or in part, to support government emergency operations. Concurrently, ECO continues to support routine government communications.

The Emergency Information Services organization comprises ECO staff, NB Power public affairs staff, and representatives from partner organizations as required.

For the duration of the emergency, ECO in conjunction with NB Power acts as a clearing-house for all government strategic communications, operational communications and emergency public information.

Emergency Public Information

Emergency Public Information is disseminated primarily by means of the government news wire:

Newswire Site: http://www2.gnb.ca/content/gnb/en/news.html
Public Alerts Site: http://www.gnb.ca/alert
Twitter: @NBEMO_OMUNB
Facebook: https://www.facebook.com/NBEMO.OMUNB

In the event of a nuclear incident, NB EMO will notify residents of the Emergency Planning Zone by means of a mass notification system and through the Point Lepreau Warden Service. The notification system sends out safety messages to residents via phone, text, email or fax. NB EMO maintains the contact list and tests the system twice a year to ensure that residents are familiar with the system and that their contact information is up to date.

Responsibilities

The Corporate Communications Division of Executive Council Office (ECO) ,assisted by communications staff assigned to departments, is responsible for the following:

Preparedness Responsibilities

a) Developing provincial policies for emergency public information and assisting in the preparation, maintenance and periodic testing of the provincial Emergency Public Information Plan;

b) Doing advance and ongoing preparation, and providing and disseminating public information on response procedures to the general public, government officials and the media, including information provided by subject matter experts at NB Power or other government departments related to emergency assistance, radiation, respiratory concerns, shelter, evacuation, prophylactic medication and response facilities;

c) Preparing news conferences and scrums at NB EMO headquarters and field locations as required;

Operational Responsibilities

a) Alerting public information staff, the Premier and other elected officials, when directed by NB EMO'

b) Allocating public information personnel to various functions and locations;

c) Doing ongoing liaison work with the media, and disseminating subsequent public safety bulletins regarding the incident;

d) Advising the Control Group on all matters relating to public information;

e) Liaising with the media;

f) Providing information on the event to the information agencies of other provinces, the Government of Canada and the United States; and

g) Providing continued emergency public information services throughout the response and recovery process.

Alerting and Assembly

NB EMO is responsible to alert designated ECO staff and NB Power staff at the onset of operations. Contacts are as follows:

- **Senior Government Officials.** See NB EMO Menu A.
- **Provincial Emergency Action Committee.** See NB EMO Menu G.
- **ECO Staff.** See NB EMO Annex A to Tab G.
- **NB Power Staff.** See NB EMO Menu N.

The Director NB EMO and the Director Emergency Public Information Services will determine jointly the level of activation necessary and will ensure sufficient staff and facilities are available to meet the requirements of the situation.

Emergency Public Information Services Organization

Nuclear Control Group

Senior communications staff will fill the following key positions in the Nuclear Control Group:

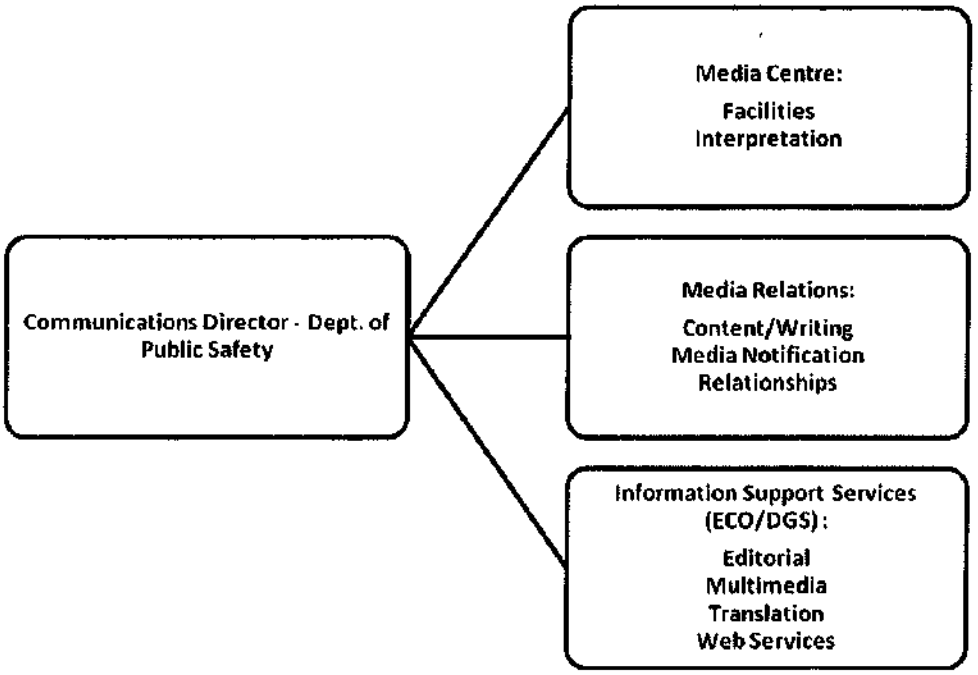
- Director of Communications at the Dept. Of Public Safety
- Emergency Public Information Coordinator (ECO)
- Point Lepreau Communications Manager (NBP)
- Public Affairs Officer (NBP)

Information Coordinators

The Director of Communications at the Departmen Of Public Safety will appoint managers and assign staff for each of the following functions:

- Media Centre
- Media Relations
- ECO Support Services

The specific duties are outlined as follows:



Communications Objectives

The principal communications requirement during an emergency is a steady flow of accurate, reliable information and public advice, both internally and externally. This is essentially the EPI Services mission.

Communications objectives include the following:

- Ensuring that all information concerning the event and all advice to the public is coordinated across mandates and levels of government;
- Explaining what has happened and what it means;
- Explaining the actions taken and actions planned to protect the public;
- Explaining the actions required to be taken by the public;
- Advising when, where and how people will receive additional information;
- Maintaining public confidence.

Concept of Operations

The Provincial Incident Management System is based on the (US) National Incident Management System (NIMS) and Canada's National Emergency Response System (NERS).

For nuclear events, federal and provincial plans emphasize four functional areas: executive co-ordination, operations co-ordination, technical assessment co-ordination and emergency public information co-ordination.

On activation of the Nuclear Off-site Emergency Plan, the Nuclear Control Group convenes at the Provincial Emergency Operations Centre (PEOC) and assumes control of emergency operations.

Key appointments are:

- The Minister of Public Safety is the lead minister and briefs Executive Council (Cabinet);
- The Deputy Minister of Public Safety chairs the Executive Group;
- The Director NB EMO chairs the Nuclear Control Group; and
- The Director EPI Services chairs the Communications Group and co-ordinates EPI Services.

Emergency Public Information Coordination

At the onset of operations, the Director EPI Services will activate the EPI Services Organization and assume control of all EPI activities.

Designated staff will assemble at the Joint Information Centre, co-located at the Provincial Emergency Operations Centre (PEOC) in Fredericton. Additional staff will deploy to other facilities as directed.

Federal public affairs specialists and spokespersons will gather at the Provincial Joint Information Centre. They will provide the link between the province, federal regional departments/agencies and the Government Operations Centre in Ottawa. The role of these representatives will be to work as a team with provincial counterparts to facilitate a free exchange of information to ensure consistent public information at all levels, and to liaise with the Public Affairs Group of the Government Operations Centre. A representative from Public Safety Canada will act as the Federal Public Affairs Liaison Officer.

As a general guideline, the Provincial Joint Information Centre will be the main source of information for emergencies originating in New Brunswick, and the Public Affairs Group of the Government Operations Centre will be the main source for emergencies occurring outside Canada.

Federal departments and agencies may send public affairs specialists, spokespersons (as required) and administrative support staff (subject to availability) to the Provincial Joint Information Centre. Their role will be to:

- Provide specialized public affairs support to the province's public information team;
- Keep the Federal Public Affairs Liaison Officer informed of public affairs issues, rumours and inquiries; and
- Provide regular reports to their respective federal regional offices.

Media Facilities

On Site

NB Power operates a Public Information Centre on the Point Lepreau site. Site communications are governed by the following:

- For incidents without a public safety implication, NB Power will be the official source of public information.
- For incidents with public safety implications, the Provincial Emergency Operations Centre in Fredericton will be the official source of public information.

Off Site

A near-site emergency information office shall be established at the Regional Emergency Operations Centre in Saint John, N.B. This facility will provide public information on the incident in accordance with direction received from the Director of Emergency Public Information Services.

Provincial Media Centre

Unless otherwise directed, the Provincial Media Centre will be located at Room 112, Centennial Building, 670 King Street, Fredericton N.B.

This facility will be used for small-scale incidents,or while a larger facility is being prepared, and shall function as the initial Provincial Media Centre.

Alternate Provincial Media Centre

If circumstances warrant, the Provincial Media Centre will move to a larger facility to accommodate media information services.

The Delta Hotel or Fredericton Convention Centre in Fredericton are preferred locations, as each has the necessary infrastructure to support a large-scale media event.

Media Notification

Stage I calls (Broadcast Media)

When deemed necessary to alert the public, the Director NB EMO will:

- Direct the Point Lepreau Warden Service to alert community residents to turn on radios and televisions;
- Direct NB EMO Operations Staff to send a corresponding message to residents using the Everbridge Notification System; and
- Direct Emergency Public Information Services to alert Stage I Media.

ECO will notify Stage I Media. Messages will be broadcast immediately and will be repeated at short intervals.

Stage I Media are listed at Annex C.

Stage II Media (All Media)

Periodic public safety bulletins describing the nature of the incident, weather conditions, protective measures and the emergency facilities will be prepared and promptly released to Stage I and II media for follow up.

This information will also be posted to an emergency public information website. News conferences will be held as appropriate at the Provincial Media Centre or other locations as necessary.

Stage II Media are listed at Annex D.

Provincial Media Centre

Staff at the Joint Information Centre, Provincial Media Centre, NB Power and ECO formerly CNB shall record all media calls and disseminate information contained in the news releases.

Near Site Media Centre

The Near-Site Media Centre will monitor the Public Alerts website at http://www2.gnb.ca/content/gnb/en/news/public_alerts.html and assist in disseminating the information to local media. Staff also monitor traditional and social media for rumor control, and correct any inaccurate information that may be sent out by others.

Special Audiences

A nuclear contingency has a well-developed constituency of interest. There will be a number of specific clients with unique information requirements.

These clients will include, but not be restricted to those listed as:

> **Category A:** Governmental representatives (MPs, federal agencies, international and U.S. agencies), community leaders, government employees; and
>
> **Category B:** Regulatory agencies (CNSC, Radiation Protection Bureau of Health Canada), nuclear industry (CNA, AECL, AIF, Central Maine Power, Ontario Hydro and Hydro Québec) and the electrical industry.

Executive Council Office in collaboration with the Department of Human Resources staff will contact Category A agencies.

NB Power Nuclear Staff will contact Category B agencies.

Communication Linkages

The Executive Council Office's Corporate Communications team will establish and maintain communications linkages among the following:

- The Provincial Emergency Operations Centre
- The Joint Information Centre
- The Provincial Media Centre
- The Near Site Media Centre
- New Brunswick Power Head Office (515 King Street)
- Saint John Regional Emergency Operations Centre (REOC), Public Information Desk
- Oak Bay / St. Stephen Regional Emergency Operations Centre (REOC), Public Information Desk

Telecommunications

All locations must have wired and wireless internet capability, phone lines, and the appropriate computer hardware and software.

Telephone

Provincial facilities employ commercial Centrex lines. Line numbers are recorded in the Priority Access for Dialing System

Emergency Information Services Staff

Communications Staff

See Annex A – Information Coordinators and Staff.

Support Staff

See Annex B – JIC Support Staff.

Requirements for administrative support, beyond that normally available to Executive Council Office formerly Communications New Brunswick and NB Power Nuclear, will be staffed through NB EMO.

ANNEXES

Annex A – Directory of Emergency Public Information Services Co-ordinators and Staff
Annex B – Stage 1 and 2 Media Staff

Annex C – Stage 1 Media (Broadcast Media)

Annex D – Stage 2 Media (All Media)

TAB F

Directory of Emergency Public Information Services

Co-ordinators and Staff

List maintained by Executive Council Office

Primary Contact

Paul Bradley
506-453-2994

Alternate Contacts

Elaine Bell
453-2012/
453-8607

Vicky Deschenes
453-4066

TAB F

Directory of Emergency Information Services

Co-ordinators and Support Staff

List maintained by NB Power Marketing and Communications
515 King Street, Fredericton, N.B.
Tel: 458-4050 / 458-4448 / 458/3174
Fax: 458-4249

Head Office

TAB F

Stage I Media List

Nuclear Notification

List maintained by Executive Council Office

Tim Porter
506-470-7530

TAB F

Stage II Media Notification

Media Notification

Executive Council Office will notify media outlets, as soon as practicable, to advise them of communications concerning impending or actual events.

Media Contacts

Executive Council Office maintains a comprehensive media list on the provincial government public website.

The CNB Newswire Home Page is at:
http://www2.gnb.ca/content/gnb/en/news.html

The CNB Media List is at:
http://www2.gnb.ca/content/gnb/en/news/media_list.html

POINT LEPREAU OFF-SITE EMERGENCY PLAN

ESSENTIAL OPERATIONAL INFORMATION

DEPARTMENT OF PUBLIC SAFETY

CRIME PREVENTION & POLICING STANDARDS BRANCH

Responsibilities

The Department of Public Safety, through the Crime Prevention & Policing Standards Branch will:

a. Immediately upon notification of an emergency or exercise at Point Lepreau, advise the Officer in Charge, RCMP J Division Operational Support Services (OIC RCMP J Div. OSS) of the Emergency,

b. Ensure required Police service to the entire area affected by the emergency, (Delegated to the RCMP)

c. Ensure Police assistance to NB Power to ensure safety of access to plant personnel, (Delegated to the RCMP)

d. Participate in alerting procedures for the Control Group and residents of the area, to the extent of the responsibilities as enumerated in the off-site emergency plan,

e. Assist the Control Group by advising and assisting in all Police matters and maintaining liaison with Municipal Police Forces, and

f. Be the lead agency to expedite the safe and orderly evacuation of the affected area to the extent of the responsibilities as enumerated in the detailed Plan.

Alerting and Assembly

NB Power's System Dispatch Office located in Fredericton, upon receipt of a reported emergency at Point Lepreau, through either a dedicated land link or radio link from the Point Lepreau Nuclear Generating Site, will alert the RCMP Operational Communications Centre (OCC) located at the "J" Division Headquarters, who will alert:

a. The New Brunswick Emergency Measures Organization,

b. The appropriate designated RCMP personnel, and

c. The Director Crime Prevention & Policing Standards Branch.

The Director of Crime Prevention & Policing Standards Branch and the J Div OIC OSS, following a briefing by NB EMO, will instruct the following organizations as to what is required of them:

a. The RCMP,

b. The Department of Public Safety, Inspections and Enforcement,

c. The Department of Public Safety, Coroners Services, and,

d. Other police departments as required.

Communications

The RCMP will utilize their existing police radio network, including Base radios located at EMO Headquarters, Fredericton and at the PLGS Off-Site Emergency Operations Centre (Off-Site EOC). Communications will also be maintained through the Regional Emergency Operations Centers (REOCs) at Saint John, Oak Bay and St. Stephen.

Sheriffs vehicles equipped with both radio and telephone communications, are linked to the provincial mobile communications network and also their phone numbers will be dedicated as arranged with Bell/Aliant.

The RCMP communications equipment at the PLGS Off-Site EOC, EMO Headquarters and the REOCs at Saint John and St. Stephen are to be manned by designated RCMP personnel as soon as an emergency is declared.

Concept of Operations

In the event of a Declaration of an Emergency by the Minister of Public Safety under authority of the Emergency Measures Act, Section 15 (b);

> "the officer commanding "J" Division of the Royal Canadian Mounted Police is the coordinator of all efforts in relation to law enforcement, and every police officer and auxiliary police officer in the area in which the state of emergency exists is subject to his or her direction and control."

It should be noted that this includes all regional and municipal police forces within the Province.

The Director of Crime Prevention & Policing Standards Branch will, acting on behalf of the Minister of Public Safety, and in accordance with Policing Standards address emergency preparedness in "Chapter 34.1.1 and 34.1.2 stating police forces will designate a position for planning response to disasters and also to have a written policy for responding to disasters, prepared in consultation with NB EMO officials".

Ops Policy needs to be developed to assist the RCMP in carrying out duties delegated to the Commanding Officer of RCMP "J" Division pursuant to Section 15 (b) of The Emergency Measures Act, including:

a. Advising all police forces in the Province that an emergency exists, the nature of the emergency, and that the Commanding Officer, of RCMP "J" Division is the coordinator of all efforts in relation to law enforcement and every police officer and auxiliary police officer in the area in which the state of emergency exists is subject to his direction and control,

b. Providing police assistance as required to ensure NB Power personnel have free flowing access to the PLGS. This will be supported through the establishment of the NB Power Staging Area & Triage procedures, (Delegated to the RCMP)

c. Participating in alerting procedures for the Control Group and others,

d. Providing advice and assistance to the Control Group on all law enforcement matters, where not in conflict with Section 15 (b) of the Emergency Measures Act, and

e. Assisting the Control Group in the acquisition of any specialized law enforcement equipment or support, when the consent of the Solicitor General is required.

NOTIFICATION PROCEDURES

Notification procedures are included in many Point Lepreau Generating Station (PLGS) related Plans and/or Standard Operating Procedures (SOPs), and can belong to several partner agencies and/or locations.

As any given event (simulated or real) may span or evolve across several plans, it is absolutely critical that standardized communication procedures be established and followed to ensure consistency in all messaging.

The use of standardized notification procedures must be applied to all communications, including Routine Communications Checks, Notification Tests, Exercises and in Real Events between the:

1. Shift Supervisor at the Point Lepreau (Nuclear) Generating Station (PLGS).
2. NB Power System Dispatch Office in Marysville (Fredericton), NB.
3. RCMP "J" Division Operational Communications Centre ("J" Div. OCC).
4. NB Emergency Measures Organization (NB EMO) Duty Officer,

   (or, through NB EMO's after-hours answering service, the Provincial Mobile Communications Centre (PMCC))

Routine *(Scheduled)* Communications Checks

The following regularly-scheduled communication checks are initiated by the PLGS staff:

1. From PLGS to the RCMP OCC each shift (twice daily)
2. From PLGS to NB EMO (once a week)

1. NOTIFICATION TEST - Calling Sequence

The Shift Supervisor at Point Lepreau Generating Station (PLGS) will notify the NB Power System Dispatch Office in Fredericton.

1. NB Power System Dispatch will notify the RCMP at 1-888-506-7267, 452-4973 or 451-6051 stating:

   NOTIFICATION TEST:

   THIS IS NB POWER SYSTEM DISPATCH WITH A POINT LEPREAU NOTIFICATION TEST. NOTIFY EMO.

   Please Repeat my Message Back to Me.

2. RCMP OCC will notify NB EMO at 453-2133 directly, or through their after-hours answering service, the Provincial Mobile Communications Centre (PMCC) at 453-7171, stating:

   NOTIFICATION TEST:

   THIS IS THE RCMP "J" DIVISION OCC WITH A POINT LEPREAU NOTIFICATION TEST.

   Please Repeat my Message Back to Me.

   RCMP OCC to generate a CIIDS Occurrence and assign to CBU.

   NOTE: For Notification Tests, no further notification action(s) are required by the RCMP OCC and/or other RCMP Units unless previously notified in writing.

3. NB EMO will contact the shift supervisor (506) 659-2540 or (506) 659-6548 at PLGS to acknowledge receipt of the message.

Always ask the recipients to repeat your message back to you when completing a Notification. Note the receipt and dispatch times for all messages.

2. EXERCISE - Calling Sequence

The Shift Supervisor at the Point Lepreau Generating Station (PLGS) will notify the NB Power System Dispatch Office in Fredericton, making reference to the exercise by name.

1. NB Power System Dispatch will notify the RCMP at 1-888-506-7267, 452-4973 or 451-6051 stating:

   EXERCISE – EXERCISE – EXERCISE

   THIS IS NB POWER SYSTEM DISPATCH WITH POINT LEPREAU EXERCISE (Name the Exercise). NOTIFY EMO.

   Please Repeat my Message Back to Me.

2. RCMP OCC will notify NB EMO at 453-2133 directly, or through their after-hours answering service, the Provincial Mobile Communications Centre (PMCC) at 453-7171, stating:

   EXERCISE – EXERCISE – EXERCISE

   THIS IS THE RCMP "J" DIVISION OCC WITH POINT LEPREAU

EXERCISE (Name the Exercise).

Please Repeat my Message Back to Me.

RCMP OCC to generate a CIIDS Occurrence and assign to CBU.

NOTE: For Exercises, no further notification action(s) are required by the RCMP OCC and/or other RCMP Units unless previously notified in writing.

3. NB EMO will contact the shift supervisor (506) 659-2540 or (506) 659-6548 at PLGS to acknowledge receipt of the message and activate the EMO Notification fan-out.

Always ask the recipients to repeat your message back to you when completing a Notification. Note the receipt and dispatch times for all messages.

C. REAL EVENTS - Calling Sequence

Real Events Include:

- Nuclear Incidents,
- Hostile Actions, or
- Radioactive Transportation Accidents.

The Shift Supervisor at the Point Lepreau Generating Station (PLGS) will notify NB Power System Dispatch Office in Fredericton of the type of event which has occurred (define the event, including level).

1. NB Power Systems Dispatch will notify the RCMP OCC at 1-888-506-7267, 452-4973 or 451-6051 of the Emergency stating:

   POINT LEPREAU HAS REPORTED A (define the event, including level, exactly as received). NOTIFY EMO.

   Please repeat my Message Back to Me.

2. RCMP OCC will record the message and pass it on to NB EMO at 453-2133, directly, or through their after-hours answering service, the Provincial Mobile Communications Centre (PMCC) at 453-7171, exactly as received, stating:

   THIS IS THE RCMP "J" DIVISION OCC. POINT LEPREAU HAS REPORTED A (define the event, including level, exactly as received).

   Please repeat my Message Back to Me.

In Real Events the OCC will also advise the following RCMP units:

1) OIC J Div Operational Support Services (OSS)
2) OIC J Div Criminal Operations (Cr. Ops.)
3) District Commanders for:
    I. West District
    II. Southeast District

and the,

4) Saint John Police Department

RCMP OCC to generate a CIIDS Occurrence and assign to CBU.

3. NB EMO will contact the shift supervisor (506) 659-2540 or (506) 659-6548 to acknowledge receipt of the message and activate EMO notification fan-out.

Always ask the recipients to repeat your message back to you when completing a Notification. Note the receipt and dispatch times for all messages.

PLGS - Emergency Levels

PLGS Standard Operating Procedures define the following Emergency Levels:

1) General Radiation Emergency
2) Site Area Radiation Emergency
3) Radiation Alert
4) Non-Radiation Emergency, including:
   (1) Medical Emergency
   (2) Fire Emergency
   (3) Chemical Emergency
   (4) Security Alert [5], with four levels:
      Level 1 - Security Emergency
      Level 2 - Security Alert
      Level 3 - Enhanced Security
      Level 4 - Normal Operations

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[2] *See the Off-Site Emergency Plan - Tab "R" for complete details on Security Alert Levels.*

RCMP RESPONSIBILITIES

Roadblocks

It will be the direct responsibility of the District Commander for the Southeast District to ensure that roadblocks are set up to secure the affected areas.

In support of a general response, these pre-identified roadblocks will be established at:

a) the intersection of Hwy 790 and Hwy 795, Lepreau

b) the intersection of Hwy 790 and the Malcolm Meehan Road, South Musquash

These locations will be adjusted if a health hazard exists, or as conditions dictate.

RCMP Members dedicated to roadblocks will fall under the authority and direction of the RCMP Ops NCO at the PLGS Off-Site EOC, through the Traffic Control Coordinator.

Traffic Control Points (TCPs)

If an evacuation of the Point Lepreau area is ordered, Traffic Control Points will be established to control the flow of evacuees (the Evacuation Plan is found in Tab "P" of this Plan).

In support of an Evacuation Order, these pre-selected Traffic Control Points will be established at:

a) Hwy 1, Exit 60, at the Intersection with Hwy 780 & 785 (Pennfield Corner)

b) Hwy 1, east of the Exit 97 overpass, Musquash

c) Hwy 780 and at the Alex Jack Detour Road.

Prepositioning (staging) of equipment and human resources at TCPs may also be ordered in advance of an actual evacuation order.

These TCP locations may be adjusted as conditions change and/or dictate.

RCMP Members dedicated to TCPs will fall under the authority and direction of the RCMP Ops NCO at the PLGS Off-Site EOC, through the Traffic Control Coordinator.

A guide outlining the specific duties of RCMP Members employed at Roadblocks, Traffic Control Points and Evacuation Control Points is found in Annex D of this Tab G.

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1. Evacuation Team & Control Zone Security

The Evacuation Team leader will communicate with the Chief Warden, located at the Off-Site EOC, to:

1) Ensure that required evacuation notifications have been given and to identify any specific problems or needs relating to the evacuation,

2) Supervise and co-ordinate patrols of the affected area,

3) Canvas all dwellings and ensure a complete evacuation of all, but essential, emergency personnel, and,

4) Provide for continuing security/patrols of the evacuated area, subject to the nature of the hazard.

RCMP CONCEPT OF OPERATIONS

The RCMP *Concept of Operations* for any response in support of the NB Department of Public Safety Point Lepreau Off-Site Emergency Plan is modeled after policies and procedures outlined in the RCMP *J Division Mobilization Plan*.

This *Concept of Operations* recognizes that any response in support of the Point Lepreau Off-Site Emergency Plan will evolve in four (4) Stages which are defined as:

Rapid Response	(Stage 1)	0-8 hours
Deliberate Response	(Stage 2)	9-24 hrs (may extend to between 2-7 days)
Sustained Response	(Stage 3)	8-30 days
Long-Term Response	(Stage 4)	Beyond 30 days

This RCMP *Concept of Operations* will only address the first three (3) Stages.

Should an event occur that will require a Long-Term (Stage 4) Response on the part of the RCMP, specific plans or agreements will be required to support the ongoing demands on/for Division resources.

The early identification of, and planning for, a Long-Term Response will be critical in supporting the RCMP's ability to maintain the continued delivery of critical Policing Services throughout "J" Division.

REAL EVENT RESPONSE PROCEDURES

The RCMP will immediately, upon notification of a **REAL EVENT**, dispatch the following Members in support of a Stage 1, Rapid Response:

Rapid-Response Teams

RCMP Command & Control Team members to the following locations:

1. RCMP Ops Desk at the Point Lepreau Off-Site EOC (Ops.NCO)
2. RSC 10 REOC (St Stephen / Oak Bay) (S/Sgt.)
3. RCMP - RSC 10 Office - for RSC 10 Business Continuity Tasking
4. Saint John REOC (including overseeing collateral traffic control)
5. RCMP - RSC 9 Office - for RSC 9 Business Continuity Tasking
6. Emergency Planning Zone (EPZ) Traffic Control Coordinator (Cpl.)
7. Evacuation Team Leader (Cpl.)
8. RCMP Site Liaison Officer (RCMP LO) for the off-site EOC (S/Sgt.)

General Duty - First Responder Team members to establish:

Roadblocks at,

1. Intersection of Hwy 790 and Hwy 795, Lepreau
   (2 Members, 1 marked PC)
2. Intersection of Hwy 790 at Meehan Road, South Musquash
   (2 Members, 1 marked PC)

General Duty - First Responder Team members to be pre-positioned (staged) and prepared to establish:

Traffic Control Points at,

3. Intersection of Hwy 1 @ Exit 60 - Hwy 780/785 (Pennfield Corner):
   (3 or 4) Members & 2 marked PCs)
4. Hwy 1- south bound lanes, east of the Exit 97 overpass, Musquash
   (4 Members & 2 marked PCs)
5. Hwy 780 and Alex Jack Detour Road
   (1 Member & 1 marked PC - supplemented by 1 Point Lepreau Warden)

Evacuation Control Points at,

6. Intersection of Hwy 1 at exit 60 - Hwy 780/785 (Pennfield Corner)
   (2 Members & 1 marked PC – supplemented by 2 Point Lepreau Wardens)
7. Hwy 1- northbound lanes, at the Exit 97 overpass, Musquash:
   (3 Members & 2 marked PCs - supplemented by 2 Point Lepreau Wardens)

Evacuation/Security Team at,

8. The Off-Site EOC
   (4 Members & 3 marked PCs – supplemented by 4 Point Lepreau Wardens)

Deliberate Response - Stage 2 (9-24 hrs)

This stage may be extended to between 2-7 days, if required.

In the Deliberate Response Stage:

- The established Command & Control structure will remain in place.
- J Division Tactical Troop will backfill the General Duty - First Responder Rapid Response Team members. The Rapid Response Team members will, then, be released to return to their home units.

Sustained Response - Stage 3 (8-30 days)

In the Sustained Response Stage:

- The established Command & Control structure will remain in place.
- The J Division Tactical Troop will be supplemented by J Division resources, and/or resources from outside the Division (per the J Division Mobilization Plan).

A guide outlining the specific duties of RCMP Members employed in the Command & Control Structure, as well as the First Responders assigned to Roadblocks, Traffic Control Points, and Evacuation Control Points, is found at ***Annex D***.

1. Duties of RCMP Members at Roadblocks & Traffic Control Points (TCPs) / Evacuation Control Points

a. Prior to establishing roadblocks or Traffic Control Points (TCPs),obtain specific directions and information relating to the nature of the emergency and existing health hazards. This information should be obtained from the RCMP Ops. NCO or the member representing him/her at the Off-Site EOC.

b. Refuse access to the EPZ[6] to all but identifiable emergency response personnel / vehicles[7], NB EMO Staff/Vehicles, or NB Power employees/contractors who are in possession of valid pass issued by NB Power Security through the established Staging Area.

c. Direct anyone who is not in possession of a valid pass to the NB Power Staging Area. If the Staging Area has not been established, seek advice from NB Power through the Off-Site EOC.

d. Ensure that a written record is made of all persons and vehicle license plates entering and exiting the EPZ; do not delay emergency vehicles. Wardens could be delegated this task.

e. Police vehicles should be equipped with spike belts to prevent running of the Traffic Control Point barricades.

f. Members at roadblocks are to remain at their posts until relieved, or until authorized to move by the Traffic Control Coordinator or the RCMP Ops. NCO located at the Off-Site EOC.

g. With the assistance of the Off-Road Vehicle Enforcement Officers (ORVE) on site, establish a secure parking area for contaminated or unserviceable evacuee and service vehicles.

h. Re-direct all in-bound traffic to the NB Power Staging Area and away from the EPZ in a manner as to avoid congestion of the outbound routes. No inbound vehicles are to be parked on the road shoulder.

i. Use Personal Protective Equipment (PPE), as directed, including personal dosimeters (available at the PLGS Off-Site EOC or at the Decontamination Site). See **Annex I**

[6] EPZ – Emergency Planning Zone
[7] Police / Fire / Ambulance

TAB G

2. Duties of Point Lepreau Wardens Assisting at Roadblocks & Traffic Control Points (TCPs)/ Evacuation Control Points

a. Will maintain a log of all activities and communications.

b. **Confirm?** the identity of all residents departing the evacuation area and annotate the demographic survey report accordingly; include the time of departure and destination.

c. When so directed, dispense KI pills and Instruction cards to departing residents.

d. Assist and advise RCMP members regarding local knowledge of residents and the geographical area.

RCMP "J" Division Response Procedures for Tab S – Interim Decontamination Plan

The *Concept of Operations* outlined in the Point Lepreau Off-Site Emergency Plan, ***Tab G - Policing Services,*** is established with the following exceptions and assumptions:

Exceptions

The decontamination procedures used will be those defined in ***Tab S - Interim Decontamination Plan*** of the Point Lepreau Off-Site Emergency Plan.

The decontamination procedures defined in ***Tab P - Evacuation Plan*** of the Point Lepreau Off-Site Emergency Plan will be temporarily suspended pending the completion of the ongoing review.

Assumptions

1. **Control Zones**

   a) The Evacuation Control Zone will consist of three zone Classifications:

   Hot Zone - The wearing of FULL PPE is required
   Warm Zone - The wearing of FULL PPE is required
   Cold Zone - No PPE Required

   b) An RCMP response will result in:

   Fifteen (15) Members assigned duties within the Hot Zone.
   No Members being assigned duties within the Warm Zone.
   Nine (9) Members assigned duties within the Cold Zone.

2. **NB Power/PLGS Security Staging Area**

   a) NB Power/PLGS Security will establish a *Staging Area* at the limits of the Evacuation Control Zone where *ALL Personnel and Equipment* destined for the Nuclear Generating Station will be triaged.

> ***Note:*** *Triage protocol for the movement of personnel, vehicles, equipment and goods to/from the Nuclear Generating Station is to be established in joint co-operation with NB Power, NB EMO, and RCMP "J" Division, and included as part of the Point Lepreau Off-Site Emergency Plan.*

b) NB Power/PLGS Security will establish Mass Transportation strategies. For instance, the utilization of school buses is to be employed for the movement of personnel between the Staging Area and the PLGS to reduce congestion at the Traffic Control Points and Decontamination Site.

3. **Traffic Control Point - Hwy 1 @ Exit 112** (Lorneville Industrial Park)

a) RCMP and Saint John PD Members will establish a Traffic Control Point on Highway 1 at Exit 112 (Lorneville Industrial Park) and screen all vehicles and personnel arriving.

And, will permit:

- all First Responder Teams and Vehicles (Police / Fire / Ambulance) to proceed to the next Traffic Control Point without delay.
- direct all personnel, vehicles and/or equipment en route to the Nuclear Generating Station to the NB Power/PLGS *Staging Area* for triage.

And, will **not** permit:

- unauthorized persons or vehicles beyond this point.

b) Only after *valid passes* have been obtained *for each person and each vehicle* from NB Power/PLGS Security through the *Staging Area* will the personnel and vehicles be allowed to proceed to the Decontamination Site Traffic Control Point on the east side of Hwy 1 @ Exit 96.

4. **Decontamination Site Traffic Control Point @ Exit 96** (cold zone)

a) Only personnel and vehicles with *valid passes* will be permitted to pass the Decontamination Site Traffic Control Point and enter the Warm/Hot Zones.

5. **Exiting the Hot Zone**

a) ALL personnel exiting the Hot Zone must pass through the Decontamination Site.

> ***Note:*** *This includes all those who may have been previously checked prior to arriving at the decontamination site.*

b) Vehicles will **not** be permitted to exit the Hot Zone.

Once a vehicle has entered the Hot Zone the vehicle and its equipment/cargo are considered contaminated and must remain within the Hot Zone.

6. Standard Operating Procedures

a) The RCMP will establish Standard Operating Procedures (SOPs) for each Roadblock and Traffic Control Point defined in Tab G of the Point Lepreau Off-Site Emergency Plan.

7. Collateral Traffic Control Measures

a) That RCMP, in conjunction with partner agencies, will be required to establish additional traffic control measures to redirect all traffic flow from Hwy 1 between the intersections of Hwy 7 at Saint John, and Hwy 3 at St. Stephen.

b) Collateral traffic control measures are not defined in the Point Lepreau Off-Site Emergency Plan.

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

DEPARTMENT OF PUBLIC SAFETY – FIRE MARSHAL

Responsibilities

The Department of Public Safety will:

a) Ensure that fire protection measures are established, including assistance from Municipal Fire Departments,
b) Provide the Control Group with advice on any incident involving fire, and
c) Assist in the decontamination of ships and vehicles leaving the radiation zone.

Alerting and Assembly

On being notified of an incident at the Point Lepreau Nuclear Generating Station, the Fire Marshal or his alternate will proceed to NB EMO Headquarters, Emergency Operations Centre, for a briefing. When it is determined that the incident may require their resources, departmental personnel in support areas (Saint John and St. George) will be alerted by the Deputy Fire Marshal or his alternate and placed on stand-by.

Concept of Operations

The role of the Department is to coordinate back up fire fighting services in case of fire at the Nuclear Generating Station or in its vicinity and to assist in decontamination. The Department will assume direct control of all fire departments in the Province, when an emergency is declared by the Minister of Public Safety under the authority of the Emergency Measures Act. All fire departments vehicles and resources will be available to support Control Group operations.

Operations

Fire fighting or other support will be provided as requested by the Director of the Control Group.

Communications

Telephone land line will be used to communicate with departmental and municipal personnel. Radio and other forms of communication will be provided by NB EMO.

CONTROL GROUP	OFFICE	HOME	CELL
Doug Browne **Primary** Fire Marshal	453-8206		

RESOURCE PERSONNEL			
Dallas Boudreau Fredericton	444-5329	[redacted]	[redacted]
Leon Ross Miramichi	778-6067	[redacted]	[redacted]
Jeff Cross Saint John	643-7819	[redacted]	[redacted]
Herbert Morin Grand Falls	475-4364	[redacted]	[redacted]

FIRE CHIEFS			
[redacted] Saint John	658-2910		
Saint John Dispatch	658-6200		
[redacted] St. George	755-4324	[redacted]	[redacted]
[redacted] St. Stephen	466-7779	[redacted]	
[redacted] St. Andrews	529-5150	[redacted]	[redacted]
[redacted] Blacks Harbour	456-4877	[redacted]	[redacted]
[redacted] Musquash	672-2702	[redacted]	[redacted]

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATING INFORMATION

DEPARTMENT OF NATURAL RESOURCES

(DNR)

Responsibilites

The Department of Natural Resources will:

a) Monitor forest conditions in the vicinity of the Point Lepreau Nuclear Generarting Station with a view to priority action in the event of a forest fire;

b) Provide Point Lepreau Nuclear Generating Station staff with fire fighting equipment, on request;

c) Assist in ensuring that access by road to the Plant is maintained at all times in conjunction with the RCMP and the Department of Transportation and Infrastructure (DTI);

d) Coordinate with the Warden Service the alerting of seasonal residents and visitors in areas not covered by the Warden Service;

e) Assist the RCMP in the evacuation of seasonal residents and visitors, and

f) Provide assistance and resources requested by the Control Group, as required.

Alerting and Assembling

On receipt of notification from NB EMO that an incident has occurred at the Point Lepreau Nuclear Generating Station, the Coordinator will immediately inform the Assistant Coordinator of the emergency. The Coordinator will then proceed directly to the NB EMO Provincial Emergency Operations Centre (PEOC) for briefing on the situation. After the briefing, the Coordinator will immediately inform the Deputy Minister of the incident and the information obtained at the briefing.

With the Departmental response activated by the Coordinator, the Regional Coordinator will proceed directly to the Off-Site Emergency Centre while the Assistant Coordinator and all other alerted departmental personnel will stand by at the places of employment to receive further information from the Coordinator.

Concept of Operations

In non-radiation incidents, the Department's role is to fight forest fires in the vicinity of the plant and to supply Fire Departments with equipment and if possible, help extinguish structure fires at the plant.

When called to action during a radiation incident and/or if evacuation of any part of the area is required, the Department will provide personnel and vehicles from Resource Region 3 to notify and, if necessary, to assist in the evacuation of seasonal residents and visitors in camps, cottages, etc.

In the case of either incident, the Department will provide resources to assist the RCMP and other Departments on request through the Control Group.

Communications

Communications between the Control Group and the Field Staff will be by telephone or Departmental radio network via the Provincial Mobile Communication Centre (PMCC). See attached Annexes for current telephone numbers.

DEPARTMENT OF NATURAL RESOURCES

OFFICE TELEPHONE NUMBERS AND RADIO CALL SIGNS

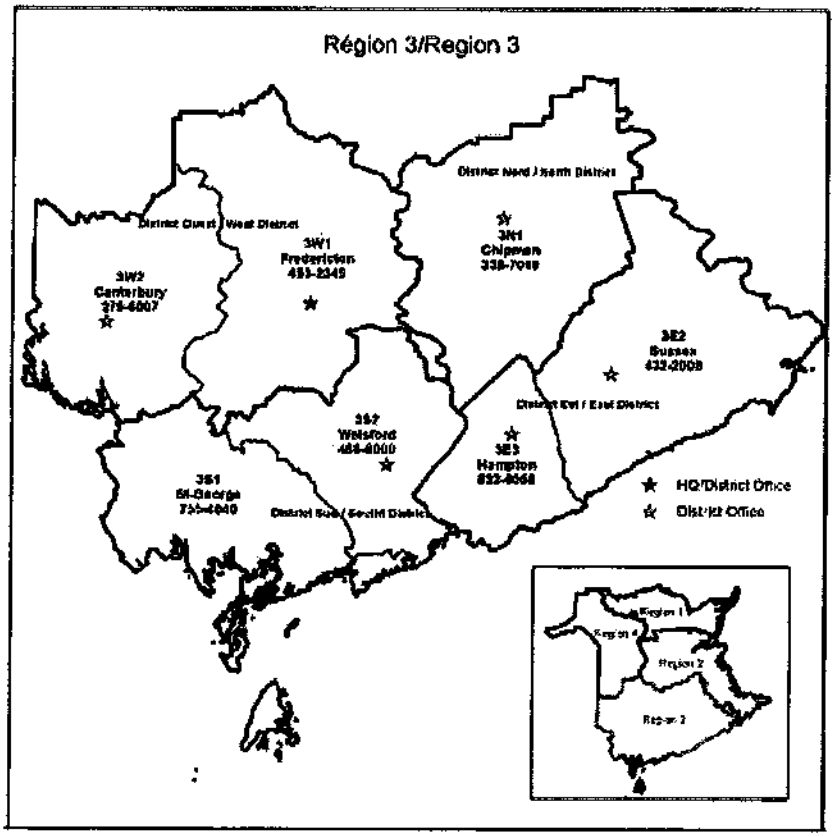
Provincial Forest Fire Centre			
Reception			**453-2530**
Duty Officer (Apr-October)	**Fire Centre**	**Office** **Cellular**	**453-3335** [redacted]
Len Mosher **Manager Fire Management**	**Fire Centre**	**Office** **Cellular**	**444-4166** [redacted]
Sandy McKinnon (EMO Primary) **Supervisor Fire Centre Operations**	**Fire Centre**	**Office** **Cellular**	**453-6901** [redacted]
Jeff Betts (EMO Secondary) **PFFC Equipment**	**Fire Centre**	**Office** **Cellular**	**453-2804**
Steve Conn (EMO Tertiary) **Technical Services**	**Fire Centre**	**Office** **Cellular**	**444-4404** [redacted]
Gilles Chaisson **Air Operation Manager**	**Fire Centre**	**Office** **Cellular**	**778-6667** [redacted]
Miramichi ATB	**Miramichi ATB**	**Daytime** **After hours**	**778-6672** [redacted]
Provincial Mobile Comm Centre **After Hours or Evening/Weekend Off Season**	**PMCC**	**24 hr**	**453-7171**

Regional Headquarters – Fredericton R3		
Neil Jacobson – Director (Acting)	Fredericton	444-4888
Pam Seymour – Regional Biologist	Fredericton	444-4888
John Kennedy - Regional Resource Manager (Acting)	Fredericton	444-4888
Gary Moore – Regional Management Forester	Fredericton	444-4888

Welsford/St. George District Operations

WELSFORD DISTRICT OFFICE 486-6000
ST. GEORGE DISTRICT OFFICE 755-4040

STAFF LISTING	CALL SIGN	CELL
TIM GREER	350	[redacted]
LANCE CRAIN	351	[redacted]
PAUL HOGAN	352	[redacted]
PAUL TURMEL	353	[redacted]
JACK MacNEIL	354	[redacted]
TERRY MacMILLAN	355	[redacted]
EVERETTE SAUNDERS	356	[redacted]
Vacant	357	
TROY ADAMS	358	[redacted]
JUSTIN GALLOWAY – CO(Grand Manan)	365	[redacted]
HELENE PYE ASL	DNR Welsford	
BETH STEWART ASL	DNR St. George	



POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

DEPARTMENT OF SOCIAL DEVELOPMENT

Responsibilities

The Department of Social Development will:

a. provide for the prompt registration of evacuating residents and transients from the danger area;

b. provide for lodging and feeding of evacuees;

c. allow provincial and regional personnel engaged in emergency operations to partake in congregate feeding and lodging as required; and

d. provide other emergency social services as required under the provincial emergency action plan. The Department of Social Development is responsible for provision of the five Emergency Social Services as follows:

Note: Reception and Information (Under Contract with Red Cross)

Emergency Lodging
Emergency Feeding
Emergency Clothing
Registration & Inquiry
Personal Services (which includes the care of domestic pets)

Alerting and Assembly

When notified of an incident, the Control Group representatives will proceed directly to EMO headquarters, Provincial Emergency Operations Centre (PEOC), for a briefing on the situation. When it is determined that the incident may require the implementing of departmental responsibilities, the Department's representatives on the Control Group will immediately inform their Respective Deputy Ministers and the Department of the emergency.

When the Regional Emergeny Action Committees (REACs) are to be activated, the District representatives will be informed by the EMO District fan-out system. Saint John will in turn notify office personnel in Sussex, St. Stephen and will then proceed to NB EMO (REAC) Saint John and St Stephen for briefing. Once representatives have assembled at various operations centres, they should make contact with each other as soon as possible.

Concept of Operations

The department will be responsible for provision of the services of Registration and Inquiry, clothing, feeding, lodging and personal social services. Social Development staff will be deployed to represent Social Development at a REAC or in a support role where required.

The Evacuation Coordinator will provide information to direct evacuees to the designated reception centres.

The Red Cross hold a Reception Centre list which has all approved possible locations; even though the District representatives may be on the ground, the location selected will be the decision of Social Development in consultation with the Red Cross. The RCMP, Municipal Police, Public Health Officials and the PEAC representatives will be notified immediately of the location of the Reception Centres being opened.

The PEAC representative will inform the Media, through the Control Goup, of the location of the selected Reception Centres.

The New Brunswick Division of the Canadian Red Cross Society will provide, through their volunteers, workers to assist with Registration and Inquiry upon the request of Social Development through the Director of Emergency Social Services.

Alerting and assembly of regional centre personnel will be carried out by the regional office (Saint John) of the Department of Social Development and the Department of Health.

Communications

Telephone land line will be used. Radio communications between Fredericton and field staff will be provided by NB EMO when required. Additional communications requirements will be brought to the attention of the EMO representative at the DEAC or the representative at the PEAC.

ANNEXES

Annex A – Emergency Social Services Contact List
Annex B – Reception Centres

TAB J

EMERGENCY SOCIAL SERVICES CONTACT LIST

(TBI by Dept of SD)

TAB J

RECEPTION CENTRES

EMERGENCY SOCIAL SERVICES CENTRES

In case of disaster, Recepion Centres will be selected from the following list.

SAINT JOHN	
U.N.B.S.J Athletic Centre Tucker Park Saint John, NB Contact: [redacted]	ST. MARKS UNITED CHURCH Dexter Drive Saint John, NB Contact: [redacted]
FOREST HILLS BAPTIST CHURCH SCHOOL 36 Mount Road Saint John, NB [redacted]	MILLIDGEVILLE NORTH HIGH 500 Woodward Avenue Saint John, NB Contact: [redacted]
BARNHILL MEMORIAL SCHOOL 750 Manawagonish Road Saint John, NB Contact: [redacted]	SIMONDS HIGH SCHOOL 1490 Hickey Road Saint John, NB E2J 4E7 Contact: [redacted]
PRINCESS ELIZABETH SCHOOL 20 Sixth Street Saint John, NB Contact: [redacted]	KENNEBECASIS VALLEY HIGH SCHOOL 398 Hampton Road Rothesay, NB Contact: [redacted]
SAINT JOHN COMMUNITY COLLEGE Grandview Avenue Saint John, NB [redacted]	HARRY MILLER MIDDLE SCHOOL 63 Hampton Road Rothesay, NB Contact: [redacted]
CENTRE SAMUEL DE CHAMPLAIN Board Head Road Saint John, NB Contact: [redacted]	

TAB J

SUSSEX	
NORTON ELEMENTARY SCHOOL 274 Route 124 Norton, NB E5T 1J7 Contact: [redacted]	SUSSEX REGIONAL HIGH SCHOOL 55 Leonard Drive Sussex, NB E4E 2P8 Contact: [redacted]
HAMPTON ELEMENTARY SCHOOL 82 School Street Hampton, NB E5N 8H1 Contact : [redacted]	ST. PAUL UNITED CHURCH HALL Sussex

ST. STEPHEN	
ST. STEPHEN HIGH SCHOOL 282 King Street St. Stephen, NB E2L 4X7 Contact: [redacted]	BORDER ARENA St. Stephen, NB Contact: [redacted]
ST. STEPHEN MIDDLE SCHOOL 11 School Street St. Stephen, NB E2L 2N4 Contact: [redacted]	SIR JAMES DUNN ACADEMY 180 King Street St. Andrews, NB E5B 1Y7 Contact [redacted]
W C O'NEILL COMPLEX St. Andrews, NB 529-5126 Manager: [redacted]	ALGONQUIN HOTEL St. Andrews, NB [redacted]

ST. STEPHEN EDUCATION CENTRE	
Senior Education Officer [redacted]	

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE

(DTI)

Responsibilities

The Department of Transportation & Infrastructure will:

a) Ensure road access to the Nuclear Generating Station at all times on a priority basis;
b) Ensure that evaciation routes are cleared on a priority basis, if evacuation becomes necessary;
c) Assist the Control Group and the RCMP in the evacuation of people;
d) Provide equipment and personnel, as required, by the Control Group, and
e) Provide radio-equipped vehicles as required to maintain emergency radio communications between field staff and operational centres.

Alerting and Assembly

On receiving notification of an incident, the Departmental representative will immediately notify the District Engineers and the affected Highway Contractors in the area and proceed to NB EMO Headquarters for briefing.

District Engineers and the affected Highway Contractors will place their personnel on alert for action.

On being briefed, the representative will advise the Deputy Minister of the situation.

Concept of Operations

The Department's role is to work closely with the RCMP and the Control Group to assist in traffic movement and the evacuation of threatened areas, and to provide road barriers, lights, etc.

Communications

Telephone land-line will be used for routine matters, but the departments own radio nets will be available for contact with District Engineers and field staff.

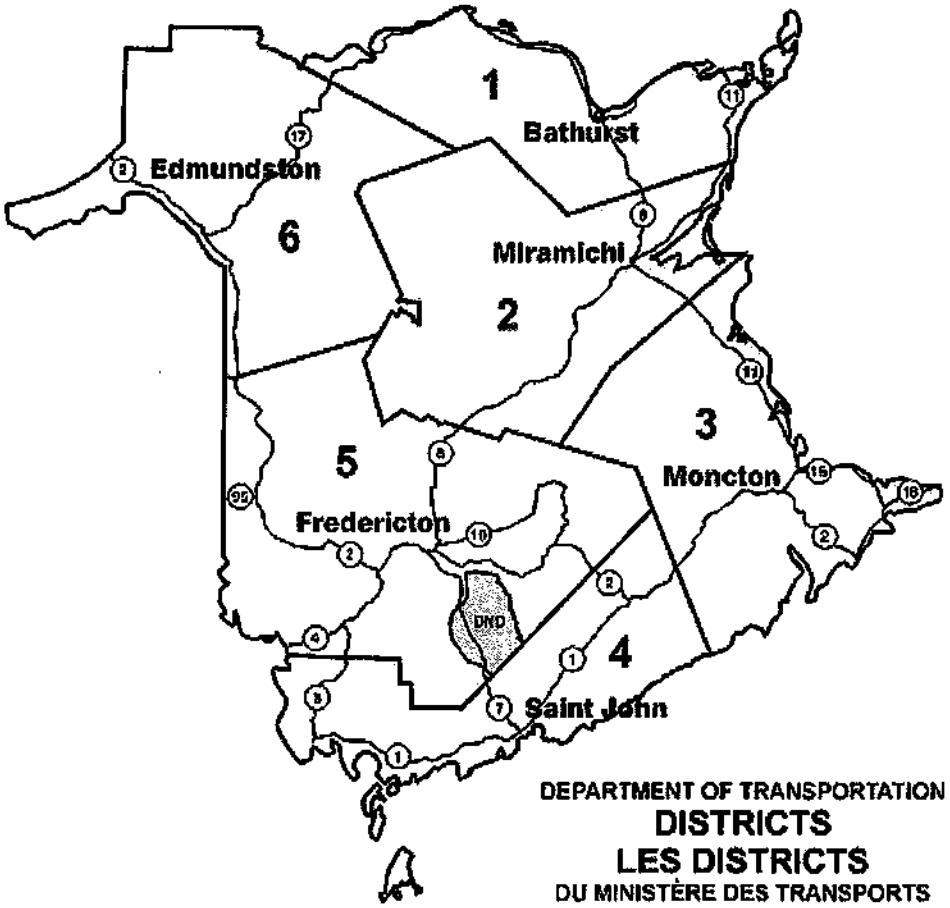
Resources

The department has many types of specialist vehicles and equipment as well as radio equipped vehicles and drivers/operators available for use in emergency operations.

New Brunswick Department of Transportation & Infrastructure
Contact Information

District 1 – Bathurst	**Toll Free # 1-888-679-6638**
District Engineer: Daniel LeBlanc, P. Eng.	
Local Offices	**Phone #**
Bathurst	506-547-2144
Campbellton	506-789-2060
District 2 – Miramichi	**Toll Free # 1-888-679-6638**
District Engineer: Andre Legere, P. Eng.	
Local Offices	**Phone #**
Miramichi	506-778-6046
District 3 – Moncton	**Toll Free # 1-888-679-6638**
District Engineer: Charles Boudreau P.Eng.	
Local Offices	**Phone #**
Moncton	506-856-2000
Rexton	506-523-7622
District 4 – Saint John	**Toll Free # 1-888-915-1011**
District Engineer: Alan Kerr, P. Eng.	
Local Offices	**Phone #**
Saint John	506-643-7463
Sussex	506-432-2014
St. Stephen	506-466-7340
District 5 – Fredericton	**Toll Free # 1-888-679-6638**
District Engineer: Norman Clouston, P. Eng.	
Local Offices	**Phone #**
Fredericton	506-453-2611
Woodstock	506-325-4450
Chipman	506-339-7171
District 6 – Edmundston	**Toll Free # 1-888-679-6638**
District Engineer: Jules Michaud, P. Eng.	
Local Offices	**Phone #**
Edmundston	506-735-2050
Perth-Andover	506-273-4768

New Brunswick Department of Transportation & Infrastructure
District Boundary Map



DOT Provincial Emergency Action Committee Representatives (PEAC)

DOT Provincial Emergency Action Committee Representatives (PEAC)

		Main Office	Direct	Home	Cell	Fax
Primary	Jay Cunningham	453-3939	453-2317	[redacted]	[redacted]	457-7278
Alternate 1	Richard Leger	856-2000	856-2081	[redacted]	[redacted]	856-2019
Alternate 2	Glen MacDonald	453-3939	453-5690	[redacted]	[redacted]	457-6714
Alternate 3	Jeff McDonnell	453-3939	471-4560	[redacted]	[redacted]	457-7278
Alternate 4	Robert Simpson	453-3939	444-5106		[redacted]	457-6714

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

NB POWER – POINT LEPREAU STAFF

Responsibilities

The Duty Shift Supervisor will in the event of an emergency at Point Lepreau Generating Station:

a) Take immediate action to mitigate the effects of such an emergency using plant staff and equipment, and requesting off-site assistance as required,

b) Promptly advise NB EMO by initiating the alerting procedure, and

c) Provide NB EMO with an initial assessment of the emergency so that appropriate government action can be started.

Alerting and Assembly

The Duty Shift Supervisor will alert Station Staff and organize the response to control the situation in the Station. He will also direct radiation survey teams to assess hazards outside the station.

Immediate notification of NB EMO will proceed simultaneously. The Duty Shift Supervisor will send a message to NB EMO via the Systems Dispatch Office in Fredericton and HQ J Division, RCMP. The contents of this message will be:

a) Identity of Caller
b) Type of Incident

After receiving this message, the NB EMO Duty Officer will call the Duty Shift Supervisor within 15 minutes to verify receipt of the message. After commencing the alerting procedure, the NB EMO Duty Officer or Operations Officer will call the Shift Supervisor for further details of the incident, including weather conditions. This call will be tape recorded so that it can be played back as the Control Group assembles.

The type of incident and the potential public hazards will dictate the extent of NB EMO actions and the requirements to assemble the Control Group.

Radiation Incidents

The radiation conditions outside the station for which notification of NB EMO is mandatory have been set at very low levels which do not represent a serious risk to the general public.

This ensures that NB EMO will be ready and alerted should the situation deteriorate.

NB EMO will be notified when any of the following radiation conditions arise:

1) General Radiation Emergency will be declared because:
    a) Severe Accident conditions are met, or
    b) Releases from fuel have occurred and containment integrity is not confirmed, or
    c) The radiation level 1 Km from the Station is greater than 10 uSv/h, or
    d) A release of airborne radioactive material in excess of 500% of the weekly DEL (Derived Emission Limit) has occurred or is imminent.
2) Site Area Radiation Emergency will be declared because:
    a) The radiation level at any PLGS Emergency Station is 1mSv/h, or
    b) The radiation level at PLGS Administration buildings or Construction Stores building is 25 uSv/h.
3) Radiation Alert will be declared because:
    a) A release of airborne radioactive material in excess of 50% of the weekly DEL has occurred or is imminent.

Staffing of the OEOC will be initiated in conjunction with declaration of either a Site Area Radiation Emergency, General Radiation Emergency or Radiation Alert or at the request of NB EMO.

If the Control Group is convened, NB Power Health Physics will be alerted by NB EMO.

Non Radiation Emergencies

The following are conditions under which NB EMO notification is mandatory:

(1) Medical Emergency

a) When several people have suffered injuries from an incident which threatens to injure other people.
b) When the scale of personnel injuries is sufficient to require extensive help in rescue, treatment or hospitalization actions.

(2) Fire Emergency

When a fire poses a general threat to personnel or the plant.

(3) Chemical Emergency

When a spill of chemicals poses a general threat to personnel on or off the site.

(4) Security Alert

When there is a general threat to the safety of personnel on site or to the continued safe operation of the plant as a result of a security breach, or a threatened security breach.

An assessment of the specific incident, its potential off-site impact and the nature of the specific requests by the Shift Supervisor will dictate the NB EMO response.

Concept of Operations

Introduction

In the event of an incident at Point Lepreau Generating Station resulting in significant releases of radioactive materials to the environment, the immediate concerns of Station Staff are to bring the emergency under control, to monitor the off-site radiation levels, and to initiate or recommend counter-measures.

These activities are Station-directed during the early phase of an emergency because time is an important factor and the Station personnel are the only ones immediately available who are competent in radiation safety.

Initial indication of a radiation release may come from the Radiation Boundary Monitoring System (RBMS). The RBMS consists of 16 fixed gamma detectors located within 1 km of PLGS. They transmitt real time data 24/7 to a web page and alarm in the PLGS Control Room on a dose rate reading greater than 10uSv/hr or system trouble / failure.

Emergency radiation monitoring will occur within a matter of hours following an accidental release. It does not include follow-up monitoring which may be carried out jointly with external agencies. It is separate from the routine environmental monitoring program carried out by NB Power. Emergency radiation monitoring will be confined to areas within a radius of about 10 Kms from the Station.

NB Power maintains an Off-site Emergency Operations Centre (OEOC) located on highway #790 near the junction of Highways #1 and #790, at Exit 86. This facility will be staffed by NB Power following a radiation contingency involving possible off-site releases. It will be used as a communications centre from which radiation surveys will be directed. Communication links with NB EMO are set up from this location and contact can be maintained between the OEOC Coordinator and the NB EMO Control Group, through the NB EMO OEOC Manager. In addition, the OEOC Coordinator will initially update the Duty Shift Supervisor/Incident Commander and NB EMO of radiation conditions outside the station, then with the Incident Command staff once the PLGS Command Staff is declared functional.

The OEOC will be the focal point for representatives from PLGS OEOC Coordinator, NB EMO Manager, RCMP, Natural Resources, and the Warden Service.

The organization of the NB Power emergency response will evolve as people become available. Initially, the Duty Shift Supervisor is responsible for notifying NB EMO and for initiating radiation surveys in the vicinity of the Station. When the OEOC is occupied, he will turn over responsibility for NB Power actions outside the Station to the OEOC Coordinator. The OEOC Coordinator will control NB Power actions at the OEOC. The OEOC Coordinator will act in close cooperation with NB EMO Manager. Annex A outlines the lines of communications after the NB EMO Control Group has assembled.

Emergency Radiation Monitoring Program

The primary objective of the monitoring program is to rapidly assess the extent of radiation hazards in the environment following a release of radioactivity. A summary of the measurements which may be taken is shown below.

EMERGENCY OFF-SITE MONITORING PROGRAM

MEASUREMENT OF SAMPLE	PURPOSE	LOCATION
Ground Gamma Dose Rate	1. Define area of contamination. 2. Estimate projected external dose from ground deposits.	In downwind direction

Grab Samples (Air)	Indication of degree of airborne hazard if plume present.	In downwind direction.
Emergency TLD	Estimate total external gamma dose from plume and ground deposits	Throughout Lepreau Peninsula.
Continuous Samples (Air)	Direct estimates of total inhalation dose	At routine air monitoring sites.
Marine Survey (gamma dose rate along the shoreline)	Assess dose from liquid releases.	Local shoreline

The preliminary assessment of gamma dose rates and airborne contamination levels will be carried out by survey teams from the Station. If significant radiation fields are found, extensive radiation surveys will be performed by the OEOC Survey Teams.

The first measurements available will be gamma dose rates. Air samples may be taken at locations having the highest gamma dose rates. Later, when the extent of the contaminated area has been defined, soil and food samples may be taken and analyzed.

Facilities at the NB Power Health Physics Lab in Fredericton will be available for a detailed analysis of food and soil samples as well as for reading TLD badges. These services will be provided for the different government agencies taking part in the emergency response as well as for Point Lepreau Generating Station. This lab will also report its results to the NB EMO Control Group.

Several hours after the commencement of a radiation contingency, upon request of the NB EMO Control Group, an accurate estimate of the exposure received by members of the public may be obtained from:

a) **Emergency TLDs**

External gamma doses from the passing radiation plume are measured by thermoluminescent dosimeters (TLD's) positioned around populated areas. Four TLD 's are placed at each location. Note that one TLD should be left at each location to permit a final dose assessment after the emergency is over.

b) **Continous Air Monitors**

Grab samples cannot reliably give the radioiodine exposure from the plume in releases of short duration, since an unknown fraction of the total plume is sampled.

The continuous samplers are located at routine environmental monitoring sites

near the Station and in local communities. Information from these monitors can be used to determine mean airborne particulate, radioiodine and tritium concentrations so that dose estimates can be made.

The TLDs and the Continuous Air Monitor filters will be collected by NB Power personnel working from the OEOC and sent to the Fredericton lab for analysis. The location of static TLDs are found in PLGS procedure EP-78600-R034. The results of this analysis will be reported to NB EMO Control Group.

NB Power will provide dosimetry for public officials entering contaminated areas during a contingency. TLD badges will be issued and collected at RCMP roadblocks and to Point Lepreau Wardens by NB Power personnel. These TLD badges will then be sent to the Fredericton Health Physics lab for analysis. The officials' parent organization will later be infomed of the radiation dose, if any, that they received.

Resources

NB Power possesses considerable resources, both in terms of personnel and equipment, which can be deployed if necessary. A complete list of these resources is available in the Point Lepreau Generating Station On-Site Contingency Plan and the NB Power Head Office Emergency Plan, which are available to the Control Group upon request.

ANNEXES

Annex A – Communication Facility

TAB L

COMMUNICATION FACILITY

COMMUNICATING PARTIES	PRIMARY LINKS	BACK UPS
Control Group and OEOC	OEOC NB Power Coordinator 659-3933	NB Power radio to head office
	OEOC NB EMO Manager 659-3934	EMO Net on IRCS
		EMO Point Lepreau net
		Ham radio
	OEOC Fax/Telecopier 659-6926	Sat phone at OEOC
		Mobile phone in EMO Command Post (MAX)
Control Group and Fredericton HP Lab	Telephone 453-5580(HP Control Group) 458-4410 (HP Lab)	Courier
Point Lepreau GS and OEOC	Dedicated telephone line FAX 659-6564 (PLGS Control Room)	Radio (2 systems)
	FAX 659-3942 (OEOC)	
Radiation Survey Teams and OEOC	Radio	
Incident Command - Safety Officer	NBP Health Physicists in the TAG	E-mail, phone, S3-FAST

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

NB POWER – HEADQUARTERS STAFF

Responsibilities

The **NB Power Group – President's Team** will coordinate NB Power corporate resources to support the provincial emergency response.

The **EMO Control Group NB Power Corporate Representative** will function as a link between NB Power Staff at Point Lepreau, the President's Team and the EMO Control Group in Fredericton. The corporate representative will recommend actions to the Control Group based on plant status.

The **EMO Control Group NB Power Health Physics Representative** provides the link between NB EMO, NB Power staff at the OEOC, and the Fredericton Health Physics Laboratory on radiation information. The HP Representative will advise the Control Group of the survey results and, in conjunction with the Department of Health, recommend appropriate countermeasures (thyroid blocking, evacuation, sheltering in place, etc…).

The **EMO Control Group and NB Power Marketing and Communications Group** will coordinate the preparation of press releases with NB Power Management, NB EMO, and Executive Council Office NB.

Alerting and Assembly

a) The **EMO Control Group NB Power Representative** is alerted by NB EMO as per the off-site emergency plan procedure.

b) The NB Power Corporate Representative will notify the **NB Power President's Team** and will them proceed to the PEOC.

c) Once the **President's Team** has been notified, the NB Power Corporate Representative will establish contact with the Incident Commander (Station Director or his delegate) at Point Lepreau.

Concept of Operations

a) The **EMO Control Group NB Power representative** will proceed immediately to the NB EMO Provincial Emergency Operations Centre (PEOC) in Fredericton.

b) The **Public Affairs Liaison** will designate / appoint a Public Affairs Technical Briefer and a Technical Translator, when and if required.

c) The **NB Power Corporate Representative** activates the NB Power Executive Emergency Response Plan, including calling in the **NB Power President's Team.** This group will respond to requests for support both from the Lepreau NB Power staff and from the NB EMO Control Group. They will also appraise the situation in conjunction with other NB Power staff and make arrangement to expand or contract the group representation to suit the situation.

The resource group will remain in existence throughout the full duration of the emergency on a 24 hours per day basis.

Communications

NB Power will continue to use Bell Aliant and AVAYA lines and cell phones where available and convenient. In addition, a dedicated UHF radio net links the Control Room at the PLGS, the OEOC, and NB EMO PEOC.

There are also communication links with its distribution branch offices and mobile distribution services throughout the province via UHF and VHF links, and a power line carrier and microwave system interconnecting major terminals throughout the power system.

A FAX machine is installed at the OEOC and at the Head Office to provide "hard copy" of survey results and other information.

The S3 FAST system will be employed to provide survey information to the Control Group.

Web EOC software will be utilized to provide common situational awareness between NB Power staff. This will include the OEOC and the PEOC.

Departmental Resources

NB Power has on staff specialists in communications, transportation, construction, environmental and meterological services, insurance, health physics, etc. These services will be made available by the **NB Power Corporate Representative and/or President's Team,** to NB Power Lepreau staff and the EMO Control Group upon request.

New Brunswick Power Staff at PEOC

NB Power Corporate Representatives for Nuclear Events

	Cell #	Home #	Work #
Jim Samms jsamms@nbpower.com	[redacted]	[redacted]	[redacted]
Charles Hickman cnhickman@nbpower.com	[redacted]	[redacted]	[redacted]
Alternates Rod Eagles eeagles@nbpower.com	[redacted]	[redacted]	[redacted]

NB Power Health Physics Representatives

	Cell #	Home #	Work #
Joe McCulley jmcculley@nbpower.com	[redacted]	[redacted]	[redacted]
Jennifer Allen jallen@nbpower.com	[redacted]	[redacted]	[redacted]
Chris Nicolau cnicolau@nbpower.com	[redacted]	[redacted]	[redacted]
Ron McWilliams ronmcwilliams@nbpower.com	[redacted]	[redacted]	[redacted]

New Brunswick Power Marketing and Communications Staff

	Cell #	Home #	Work #
Brent Staeban bstaeben@nbpower.com	[redacted]		[redacted]
Paul Doucet paudoucet@nbpower.com	[redacted]		[redacted]
Deborah Nobes dnobes@nbpower.com		[redacted]	[redacted]
Meghan Gerrish mgerrish@nbpower.com		[redacted]	[redacted]
Marie-Andree Bolduc 3212 mbolduc@nbpower.com	[redacted]	[redacted]	[redacted]

NB Power Head Office Support

The NB Power Head Office Support is defined in NB Power's Corporate Emergency Response Plan. This plan (maintained by NB Power) identifies

- Members of the President's Team and Alternates including contact information
- NB Power Representatives for both nuclear and non-nuclear events
- Public Affairs/Communications Contacts
- Resource Contacts

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

WARDEN SERVICE

General

The Point Lepreau Warden Service is under the direct control of the Director of the New Brunswick Emergency Measures Organization (EMO). The Director will appoint an OEOC Manager from the EMO staff to oversee the Warden Service.

The Warden Service is a community based, volunteer organization designed to alert the public within an area approximately 20 km in radius from the Point Lepreau Nuclear Generating Station in the event of an off-site emergency. The Wardens use their private vehicles, equipped with portable radios. They provide coverage of the area 24 hours a day, 365 days a year.

The Warden Service is sanctioned by the New Brunswick Emergency Measures Organization.

Role

The role of the Warden Service is to be prepared to alert the public of an emergency at the generating station. Essentially, wardens prompt residents to turn on their radios or TV sets to receive further information or instructions.

Warden Service Organization

The Warden Service is composed of a Chief Warden, a Deputy Chief Warden and up to 20 Wardens. On a daily basis, the Chief or Deputy Chief and 12 Wardens are on call.

Employment and training are the responsibility of the Director of EMO. Day-to-day duty assignment and system checks are the responsibility of the Chief Warden.

Area of Operations

Warden Zones

Twelve Warden Zones have been established within the 20 km radius. (see Annex A). These zones are based on total road distance and population density parameters that permit coverage within 45 minutes, driving at low speed,

DNR Zones

There are within the 20 km radius three additional zones, called Zones #13, #14 and #15, consisting mainly of camps and other temporary residences. The Department of Natural Resources is responsible for alerting these three zones.

Concept of Operations

Warning Phase

The initial warning of an emergency which will involve the Warden System will come from the EMO Operations Officer or the EMO Duty Officer. This warning will be sent through the Everbridge Notification System.

The Chief Warden will alert the Deputy Chief Warden and take any other action he deems appropriate in the circumstances to ensure an effective response by the Warden System.

Wardens can also be alerted by the use of pagers. On being alerted Wardens will establish radio communications with the Chief Warden. They will prepare themselves and their vehicles to assume their responsibilities and await further instructions.

The Chief Warden, once he has completed the alerting procedure, will make contact with the Provincial Emergency Operations Centre (PEOC) in Fredericton to be briefed on the situation. With minimum delay the Chief Warden and the Deputy Chief Warden will move to the Point Lepreau Off-Site Emergency Operations Centre (OEOC).

Once located in the OEOC the Chief Warden will establish communications with the PEOC and the Wardens. He will also liaise with the RCMP, Department of Natural Resources and the NB Power representatives at the OEOC.

The Chief Warden will keep the OEOC informed of the state of readiness of the Wardens.

Readiness Phase

The length of the Readiness Phase can vary widely; however, throughout this period Wardens must be prepared to be deployed immediately and must maintain radio watch.

Those Wardens not assigned to a zone, but available, can be directed by the Chief Warden to assemble at the OEOC to assist him or be assigned to other tasks.

Direction will be provided to the Chief Warden from the Director of EMO, through the PEOC, by either phone or radio. Once the EMO OEOC Manager arrives at the OEOC, then direction will be provided to the Chief Warden, through the OEOC Manager.

Once it becomes apparent that the public will be warned, then the Wardens responsible for alerting a zone will be dispatched to the start point of their assigned routes to await final direction.

Public Alert Phase

Upon receipt of instructions from the Director of EMO, through either the PEOC or OEOC Manager, to notify the residents of an incident at the Point Lepreau Nuclear Generating Station, the Chief Warden will give appropriate direction to the Wardens, assigning them to each of the 12 warden zones.

The provision of public information during an off-site emergency is the responsibility of the Point Lepreau Off-Site Emergency Control Group assembled in the PEOC. This task is carried out through the Emergency Public Information Service. The Warden Service's public information task is to assist in the vital step of alerting the public. The task of the Wardens is to ensure all residents, permanent and temporary, in the twelve warden zones are warned to listen immediately to local radio or television stations, and to acknowledge Everbridge Notifications.

The Wardens will drive slowly along the routes in their allotted zone announcing over their vehicle loud speakers that an incident has occurred at the Point Lepreau Nuclear Generating Station and to tune to a radio or television station for further information and direction. The Wardens will take time to ensure that any hearing impaired residents have been notified. They will be expected to alert their complete zone within 45 minutes.

The Wardens are to record and report to the Chief Warden where any resident has not been alerted or required special assistance.

Upon completing notification of the residents of his zone, the Warden will report immediately by radio to the Chief Warden for further instructions.

No Evacuation Ordered

If the situation is such that no evacuation is ordered, the Chief Warden will prepare to have Wardens carry out any of the following tasks as required:

- Assist the RCMP in manning road blocks and controlling traffic;
- Provide information and advice to the OEOC Manager concerning residents in their respective zones;
- Announce periodic developments, as required, and the "ALL CLEAR", when appropriate, to residents in their respective zones.
- Deliver messages to specific families who cannot be otherwise informed concerning children at school; and
- Provide radio communications links at various locations as directed by the OEOC Manager.

Evacuation Ordered

When an evacuation is ordered, the OEOC Manager will place the Chief Warden and the Wardens of the zones to the evacuated under control of the RCMP NCO-in-charge of coordinating the evacuation.

Under RCMP direction, assisted by the Chief Warden, the Wardens will assist in notifying residents of the requirement to evacuate. They will ensure that each family knows what routes to follow, where to report for registration and where to be checked for radioactive contamination. They will ensure that departing residents place the fluorescent evacuatoin stickers in windows where they can be easily seen from the road.

They will assist in determining what residents need transportation, including ambulances and specially equipped vehicles. They will help residents requiring transportation assemble for pickup and they will help guide drivers to the pickup points.

They will check that the designated zones are in fact evacuated, while keeping their Chief Warden informed of progress. On completion Wardens will report immediately to the Chief Warden for further assignment.

The Deputy Chief Warden and the other Wardens which remained under control of the OEOC Manager could be assigned to others tasks or placed under control of the Chief Warden to work for the RCMP.

Wardens will NOT be directed into an area that is dangerously radioactive.

All Clear

When the emergency no longer exists and no evacuation has been ordered, the OEOC Manager will instruct the Chief Warden to have Wardens announce the "ALL CLEAR" in their designated zones.

After ensuring that residents in their areas have received the verbal instructions Wardens will report to the Chief Warden. The Wardens may be required later to deliver written public health instructions to each household.

Re-entry Operations

When the emergency no longer exists and an evacuated zone is safe for re-entry, Wardens may be used to assist the Police in controlling traffic.

Procedures Manual

For more detailed instructions, see Point Lepreau Warden Service procedures Manual.

ANNEXES

Annex A – Point Lepreau Warden Zones
Annex B – EMO Point Lepreau Warden Service

TAB N

Point Lepreau Warden Zones

Introduction

New Brunswick employs a twenty-kilometer Emergency Planning Zone (EPZ), centered on Point Lepreau, New Brunswick.

For emergency response purposes, the area is sub-divided as follows:

- Twelve zones, serviced by the Lepreau Warden Service; and
- Three zones services by the Department of Natural Resources and Energy.

Maces Bay – Dipper Harbour Area

1. Zone One – Maces Bay
2. Zone Two – Dipper Harbour
3. Zone Three – Chance Harbour
4. Zone Four – Little Lepreau

New River Beach – Pennfield Area

5. Zone Five – New River Beach
6. Zone Six – Pocologan
7. Zone Seven – Pennfield; Seeleys Cove
8. Zone Eight – Utopia

Lepreau – Musquash Area

9. Zone Nine – Lepreau
10. Zone Ten – Musquash (South)
11. Zone Eleven – Musquash
12. Zone Twelve – Prince of Wales

Natural Resources and Energy (DNRE) Areas

13. Zone Thirteen – Central (St. George District)
14. Zone Fourteen – Western (St. George District)
15. Zone Fifteen – Eastern (Wellsford District)

Point Lepreau Zone Maps

Current maps are as follows:

Point Lepreau Warden Zone Map, March 2012
Point Lepreau Field Map

The map has a simple letter/number reference system, UTM grid lines.

TAB N

NB EMO - POINT LEPREAU WARDEN SERVICE

ALL CALL 1-506-558-1118

Pager	Name	Phone
558-5000	[redacted] (Chief)	[redacted]
558-0250	[redacted] (Deputy Chief)	

Group #1	Pager	Name	Phone	Zone
558-9138	558-2106	[redacted]	[redacted]	7B
	558-2326			Runner
	558-2822			12
	558-2083			Runner
	558-2715			11

Group #2	Pager	Name	Phone	Zone
558-9317	558-4009	[redacted]	[redacted]	10
	558-4236			1
	558-4917			7A
	558-4232			3

Group #3	Pager	Name	Phone	Zone
558-9402	558-6020	[redacted]	[redacted]	9
	558-6105			7B
	558-6410			7C
				Runner

Group #4	Pager	Name	Phone	Zone
558-9729	558-7319	[redacted]	[redacted]	2
	558-7529			8
	558-7410			5
	558-9423			6
	558-0852			4

When calling a pager, dial the pager number: when prompted enter the number you wish to be called back.

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONS INFORMATION

DEPARTMENT OF EDUCATION AND EARLY CHILDHOOD DEVELOPMENT

(EECD)

Responsibilities

The Department of Education & Early Childhood Development (EECD) will:

a) Make available school buses for the mass evacuation of persons living within the area affected by an emergency;

b) Make available a limited number of drivers for school buses once they reach the site;

c) Arrange to have designated personnel to coordinate activities in emergency area;

d) In conjunction with Department of Social Development ensure that designated schools are available to be set up as reception centres; and

e) Assist the RCMP in formulating an orderly plan to evacuate persons living within the area affected by an emergency.

Alerting and Assembly

On receiving notification of an incident, the department representative will immediately notify the School District Transportation Officer in the affected area and proceed to NB EMO Headquarters for briefing.

District Transportation Officers will then determine the number of vehicles and drivers available and their locations.

After being briefed by EMO the departmental representative will advise the Assistant Deputy Minister (EECD Corporate Services) who will in turn advise the Deputy Ministers and Minister. Communication will then be re-established with District Transportation Officer to assess and react to any developing situations.

Concept of Operations

The role of the department is to provide facilities for reception centres, buses for evacuation of the general public and personnel to work with and operate said facilities.

The Transportation Officer will play the key role in the school district.

Only one school exists in the immediate area of Point Lepreau with 63 students as of September 2014. Complete evacuation of this school could be accomplished within 20 minutes.

Immediate areas of concern would involve having the school district contact drivers and coordinate bus movements in conjunction with RCMP and Department of Transportation & Infrastructure, as well as ensuring that schools designated as reception areas are open and accessible.

Drivers will **NOT** be directed into an area which is dangerously radioactive.

Communications

Communications between Control Group and School District Personnel (field staff) will be by telephone. Should there be a requirement for radio communication between the school buses and the local coordinator, Department of Transportation & Infrastructure vehicles (radio equipped) will accompany buses.

Resources

The Department of Education & Early Childhood Development can make available school buses, based on the nature and gravity of the incident, at any given time in the immediate area (St. Stephen, St. George, Saint John, Kennebecasis Valley) and has a working relationship with Saint John City Transit to utilize their vehicles. Certain schools have been designated as reception centres (list available through Department of Social Development).

ANNEXES

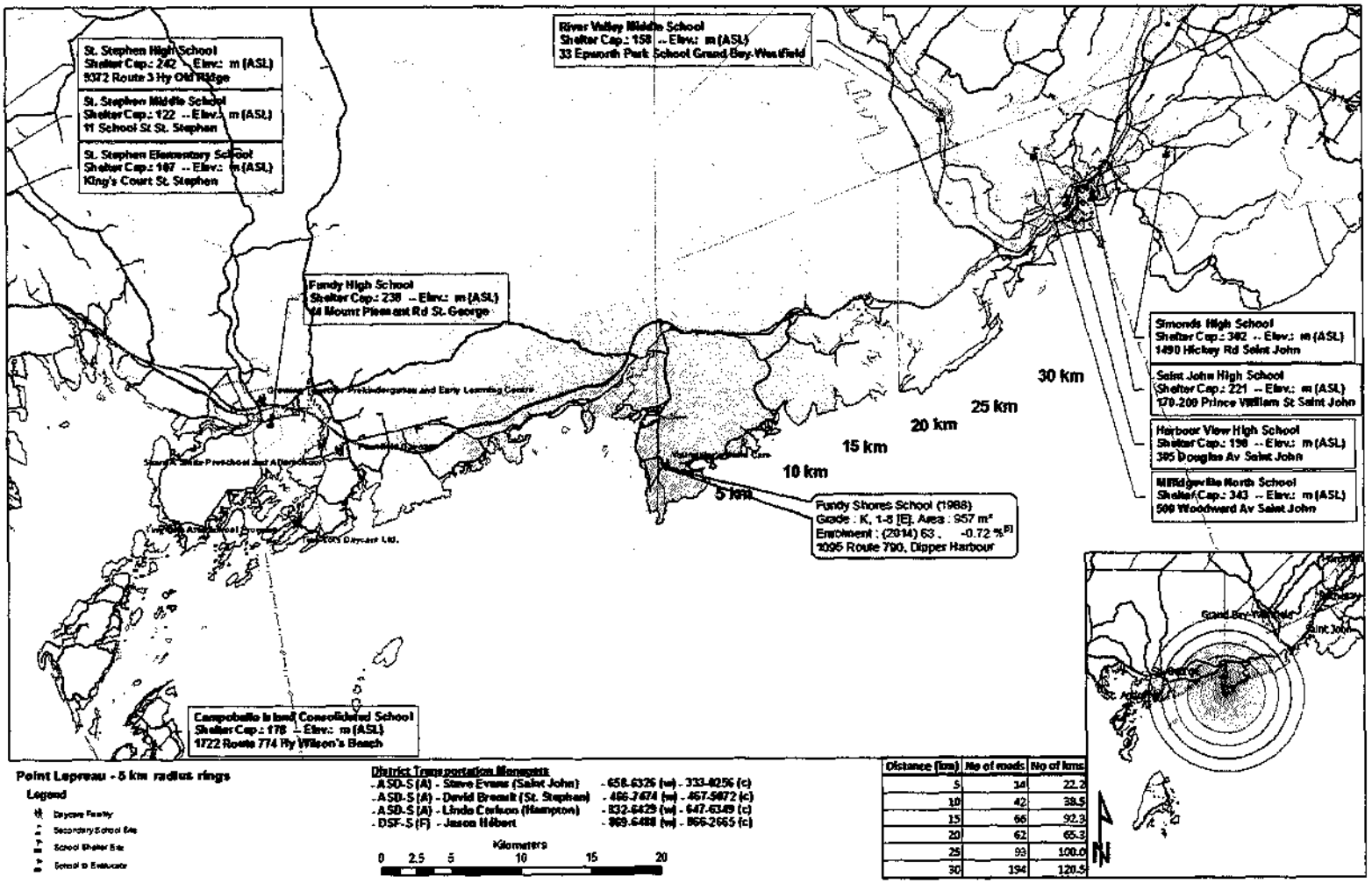
Annex A – Personnel on Call
Annex B – Critical Infrastructure

TAB O

PERSONNEL ON CALL

Control Group Member	Office	Home	Cell
Pascal Landry Educational Facilities and Pupil Transportation	453-4373	[redacted]	[redacted]
Alternate # 1			
Tim McCluskey Educational Facilities and Pupil Transportation	444-3798	[redacted]	[redacted]
Alternate # 2			
George Bachand Educational Facilities and Pupil Transportation	453-8112	[redacted]	[redacted]
ASD-S Primary Contact			
John MacDonald	643-7313	[redacted]	[redacted]
District Transportation Officers (Assistant Transportation Managers by Ed. Ctr.)			
Steve Evans, Saint John	658-6326	[redacted]	[redacted]
Linda Carlson, Hampton	832-6429	[redacted]	[redacted]
David Breault, St. Stephen	466-7474	[redacted]	[redacted]
Jason Hebert, Dieppe	658-6326	[redacted]	[redacted]
DSF-S Primary Contact			
Luc Lajoie	856-3198	[redacted]	
St. Stephen REOC:	466-7985		

CRITICAL INFRASTRUCTURE



POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

OUTLINE EVACUATION PLAN

General

An evacuation is a difficult operation to conduct during an emergecy because stress is always heavy and time pressing. Some of the complex factors to consider are the large numbers of agencies involved and limited time available to coordinate their actions. This Tab is designed to provide a framework to start evacuation planning, so that there is sufficient lead time to prepare for an orderly evacuation.

This evacuation plan has enough flexibility to handle varying circumstances; from an incident involving partial evacuation of the 20 Km area to a complete evacuation, to one with no public evacuation or one with major scale evacuation, and one with adequate preparation time to one with none.

Under ideal circumstances an evacuation in the Point Lepreau area will occur under the guidance of the Control Group, and direct supervision of the RCMP, prior to any public radiation contamination.

In planning for an evacuation the following factors must be considered:

1. Time required to organize an evacuation
2. Coordination
3. Public Information
4. Maintenance of public confidence
5. Evacuation of residents East and West of the Pt. Lepreau Area, in most circumstances
6. Minimize the spread of radiation contamination
7. Control of contaminated material and waste

In the worst scenario, a complete evacuation of the 20 Km zone could involve up to 4000 people, 1400 vehicles and 50 fishing boats.

Initiation of an Evacuation

The Action Guide found in Tab A – Annex B provides radiation dose levels, which would necessitate an evacuation of the public from the Point Lepreau area.

Evacuation Scenarios

The following three scenarios outline the circumstances under which an evacuation would be ordered:

Planned Evacuation. The Control Group is assembled at the PEOC and as the situation at the Point Lepreau Generating Station develops, a group decision is taken to evacuate.

Immediate Evacuation. The EMO staff is manning the PEOC, prior to assembly of the Control Group, and the situation at the Point Lepreau Generating Station deteriorates rapidly. The Director NB EMO, or designate, orders an evacuation.

No Notice. An incident occurs without warning and the Shift Supervisor at the Generating Station informs the NB EMO duty officer that an evacuation is advisable. In this case there would be no time to implement this evacuation plan and the procedure outline in the *Concept of Operations Section* of Tab B would be followed.

Functions

The Department of Public Safety is the lead agency, responsible for conducting a safe orderly evacuation of the affected area. In an evacuation a number of functions and agencies are involved, which necessitates close and effective coordination. This is difficult to achieve without prior consultation and planning.

The evacuation plan must provide for the following:

1. **Traffic Control Points**
   RCMP will ensure that access to the affected area is controlled and that all evacuees pass through the evacuation control system. This responsibility includes those evacuated from hunting camps in Zones 13 and 14. The Point Lepreau Warden Service and DNR can assist with this task.

   All evacuees are to be directed to Radiation Monitoring Posts, if established, and the designated Reception Centres. The Police will be informed of the location of the Reception Centres by the Social Development representatives at the Saint John and St Stephen/Oak Bay REOC's.

   Radiation Monitoring Posts
   If there has been a release of radioactive material, everyone leaving the evacuated area should be monitored. These radiation monitoring posts should be placed in a suitable location to ensure that all persons are checked. They should be prepared to monitor people, pets and fishing

boats. A radiation monitoring capability must be part of all Monitoring and Decontamination Centres.

The responsibility for monitoring rests with NB Power.

2. **Monitoring and Decontamination Centres**

The Office of the Fire Marshal will arrange support from fire departments and Provincial Hazmat resources, as necessary to assist with decontamination, if requested.

Where radiation contamination is detected in excess of Public Health guidelines, the decontamination process should commence.

Decontamination of individuals will be carried out following Public Health guidelines. People and personal effects are the priority. Vehicles and boats will only be decontaminated when time and resources permit. Items which cannot be decontaminated must be secured until they can be safely disposed.

3. **Reception Centres**

The Department of Social Development is responsible for establishing and maintaining reception centres. Here registration and identification will be performed. The needs of the evacuees for clothing, feeding, lodging, transportation and medical assistance will be determined and assistance provided. Reception centre staff will also provide information and advice concerning the emergency and its consequences to evacuees.

Reception centres will arrange to feed, clothe, and shelter evacuees. Proposed reception centre locations are identified in Tab J – Annex B.

Closing of reception centres is to be a decision made at the PEOC by the Director of Emergency Social Services, in consultation with REAC members and communicated to the REOC by the Director of Emergency Social Services.

4. **Disposal Sites**

Disposal sites must be selected in relation to the decontamination centres, with the aim of limiting the spread of contamination and preventing long range environmental problems. These sites must be capable of handling

clothing, unwanted personal effects, foodstuffs and marine catches. With the exception of fresh food and marine catches, disposal of contaminated material can wait until the situation is stablized. Maximum use will be made of the designated sites at the Point Lepreau Generating Station.

Communications

As part of its overall responsibility for evacuation, the Department of Public Safety will establish an evacuation radio network. An effective and coordinated evacuation will require good communications. The evacuation control radio net should include RCMP members at road blocks, traffic control points (if established), operations centres in Saint John, Lepreau and Fredericton and reception centres. The EMO Lepreau radio network and RCMP radio network can be linked for this purpose through the Provincial Mobile Communications Centre (PMCC) at 453-7171.

The Department of Transportation and Infrastructure (DTI) may be tasked to provide radio-equipped vehicles to maintain emergency radio communications between the field and the operational centres. These DTI vehicles, the warden network and amateur radio operators can be used to supplement the exisiting police resources.

Outline Evacuation Plan

This outline evacuation plan is a guide for planning an evacuation. A diagram is found at Annex A to Tab P. Annex B is designed to identify what has to be done and to determine how long it will take. Annex C is to assist in determining the transportation requirement. If time permits its figures should be compared to the last demographic survey. Annexes D and E will assist in providing comprehensive directions.

Radiation monitoring will be done at the road blocks on highway 790. In addition, two radiation monitoring posts may be established at the 20 km radius at Highway 1, one at Prince of Wales and one at Pennfield. The intent is to check vehicles for contamination. If vehicles are contaminated, vehicles will be parked and passengers will be transferred onto busses. Two marine decontamination centres will be established as required, one at the Port of Saint John and the other at Blacks Harbour.

Prince of Wales Evacuation Control Point

A traffic control point for Prince of Wales will be established; there vehicles and evacuees will be surveyed and decontaminated as necessary.

Reception centres in the Saint John area have already been identified for those evacuees heading East. The University of New Brunswick Saint John Campus is designated as the primary reception/decontamination centre for evacuees.

Pennfield Evacuation Control Point

A traffic control point for Pennfield Ridge will be established at the junction of Highway One and Route 175. A supplementary traffic control point will be established at the junction of Highway 780 and 778 to control evacuees using the old Saint John road. Reception Centres have been selected at St. Stephen for evacuees heading West and the Fundy High High School in St George, has been designated the primary reception centre to handle evacuees to the West.

Port of Saint John

A radiation monitoring post will be located at the Port of Saint John under the direction of the Port Authorities with assistance from NB Power. They are to be prepared to handle fishing boats, small craft and large ships including their crew and passengers.

The Department of Agriculture, Fisheries and Aquaculture will arrange for the testing of marine products for contamination and will arrange for disposal, if necessary.

Port of Blacks Harbour

A radiation monitoring post will be located in Blacks Harbour under the direction of the Canadian Coast Guard with assistance from NB Power. They are to be prepared to handle fishing boats, small crew and large ships including their crew and passengers.

The Department of Agriculture, Fisheries, and Aquaculture will arrange for the testing of marine products for contamination and will arrange for disposal, if necessary.

ANNEXES

Annex A – Evacuation Plan Diagram
Annex B – Evacuation Time Estimate
Annex C – Transportation Requirements by Warden Zone
Annex D – PEAC Evacuation Planning Instruction
Annex E – PEAC Evacuation Operation Order

TAB P

Evacuation Plan Diagram

To be inserted.

TAB P

Evacuation Time Estimate

Serial	Activity	Time Required	
		Hours	Minutes
1	All Residents Clear of Evacuation Control Areas		
2	Reception Centres Ready		
3	Start Evacuation of Residents		
4	Public Safety Bulletin on Evacuation Released		
5	Ambulances and busses in Rendezvous		
6	Evacuation Control Areas Established		
7	Release Public Notice of Evacuation to Media		
8	Move Ambulances and buses to Rendezvous		
9	Issue of REAC Instructions		
10	PEAC Evacuation Order Issued		
11	Road Blocks Established		
12	Preparation and Planning for Evacuation		
13	Direction to Plan for Evacuation		
14	Time Appreciation		
15	Director Requests Evacuation Planning to Begin		

TAB P

TRANSPORTATION REQUIREMENTS BY WARDEN ZONES

ZONE	TITLE	NUMBER OF RESIDENTS	TRANSPORTATION MINIMUM	MAXIMUM	SPECIAL NEEDS
1	Prince of Wales	368	21	46	0
2	Musquash	148	19	120	1
3	South Musquash – Harvey Hill	279	29	41	1
4	Chance Harbour – Little Dipper	123	14	121	0
5	Dipper Harbour	308	13	58	0
6	Maces Bay	196	8	55	0
7 ABC	Lepreau	719	80	129	1
8	Little Lepreau	125	4	32	0
9	New River	222	28	4	0
10	New River Beach	271	4	70	0
11	Pocologan	246	25	33	0
12	Pennfield Station	111	20	71	2

Note: New River Beach Provincial Park Peak Occupancy Times

Transportation requirements could change drastically during peak summer tourism season at the New River Beach Provincial Park. On the annual Sand Sculpture Competition - date changes every year – upwards of 10,000 people can be at the park.

Aside from the sculptures, there are ~100 campsites and we normally estimate 3 people per camping party so 300 people at full capacity (Most likely Thursday through Sunday, July and August).

The Parks usual operating season is mid-May to the end of September.

TAB P

PEAC EVACUATION PLANNING INSTRUCTION

Situation

Status of the plant:

Summary of Public Safety Bulletins:

Locations of Evacuation Control Areas: (accept or adjust the areas suggested in Tab P)

List of traffic control measures in place;

Condition of evacuees: possibility of being contaminated, the number who have already left, advice to be given on direction to evacuate, etc.

Forecast of weather:

Task

Prepare to evacuation Warden Zones ____ at Point Lepreau in ____ hours.

Responsibilities

RCMP

The lead agency with the responsibility to conduct a safe orderly evacuation.

Establish communications with all agencies involved in the evacuation.

Establish two evacuation control areas on Highway 790, one at each of the Lepreau and Musquash access to Highway 1.

Implement the necessary traffic control measures on Highway 1.

Be prepared to receive and direct transportation dispatched to the areas being evacuated.

Ensure the total area has been evacuated.

Provide security once the area has been evacuated.

TAB P

REAC Saint John (8 Castle Street, Saint John)

a) Prepare to receive approximately ____evacuees in ____ hours.

b) Prepare to transport ____ people and ____ people with special transportation needs. (Refer to Annex B.)

c) Assist in establishing evacuation controls east of Point Lepreau and at the Port of Saint John.

REAC Oak Bay (690 Route 170) / REAC St. Stephen (41 King Street)

Prepare to receive approximately ____ evacuees in ____ hours.

Prepare to transport ____ people and ____ people with special transportation needs. (Refer to Annex B).

Assist in establishing evacuation controls west of Point Lepreau and at Blacks Harbour.

Point Lepreau Off-Site Emergency Centre

Maintain liaison with the plant.

Establish a control centre for the evacuation.

PEAC Fredericton

a) All aspects of information services, including public safety bulletins.

b) Arrange for the disposal of contaminated material.

c) Monitor and assist with evacuation planning.

Coordinating Instructions

Evacuation will start not before: ____ hours.

Evacuation Control Areas to be in place by: ____ hours.

Reception Centres to be ready by: ____ hours.

Authority to start evacuation on order of the Director NB EMO in Fredericton.

TAB P

PROVINCIAL EMERGENCY OPERATION CENTRE

EVACUATION OPERATION ORDER

(POINT LEPREAU PENNINSULA)

Situation

Status of plant:

Plume Content:

Locations of Evacuation Control Areas:

Traffic Control Measures:

Evacuees: How and when advice to be given on evacuation, etc.

Forecast of weather:

Task

To evacuate Warden Zones ____ at Point Lepreau in ____hours.

General

This evacuation will be conducted under the direction of the Non Commissioned Officer In Command (NCO I/C) of the RCMP operating from the Point Lepreau Off-Site Emergency Centre.

Residents will be evacuated east to Saint John and west to St. Stephen passing through two evacuation control centres at ____ and directed to reception centres at ____ and ____.

Boats in the Bay of Fundy will be directed to ____ and ____,

Monitoring and Decontamination Centres will/will not be established.

Responsibilities

RCMP

a) The lead agency with the responsibility to conduct a safe and orderly evacuation.

b) Outline communications plan.

c) Detail the location and organization of the evacuation control areas and traffic control measures.

d) Detail how and who will announce that the zones are cleared and the evacuation control areas can be disbanded.

REOC Saint John

a) Provide location of reception centres and when they are to be open, in coordination with the Department of Social Development.

b) Explain transport plan.

c) Explain how the Port of Saint John will be organized as a marine evacuation centre.

REOC Oak Bay / REAC St. Stephen

a) Provide location of reception centres and when they are to be open, in coordination with Department of Social Development.

b) Explain transport plan.

c) Explain how Blacks Harbour will be organized as a marine evacuation centre.

Point Lepreau Off-Site Emergency Centre

a) Detail organization of control centre for the evacuation.

PEOC Fredericton

a) Outline information services plan, including public safety bulletin concerning evacuation.

b) Outline how contaminated material will be decontaminated or disposed.

Timings

Evacuation Control Areas to be in place by: ____ hours

Reception Centres to be ready by: ____ hours

Buses and ambulances to be at rendezvous' by ____

Public Safety bulletin advising people to evacuate will be aired at ____

TAB P

Administration and Logistics

Recovery

Outline how vehicles and passengers stranded during evacuation will be handled.

Medical/Ambulances

Outline how people developing medical problems during the evacuation will be handled.

Registration

Outline how evacuees register, including those not going to the reception centres and those from camps in Zone 13, 14 and 15.

Accommodations

Explain accommodation plan for evacuees.

Feeding

Explain feeding arrangements for evacuees and those involved in arranging evacuation.

Control

a) REOC's are to monitor all aspects of the evacuation into their area through the RCMP and keep the PEOC informed.

b) Reception centres to report to their REOC's and REOC's report to the PEOC, when they are set up and ready to operate.

c) The dispatch of mobile amateur radio operators will be coordinated through the PEOC radio room in order to ensure frequency coordination and the smooth operation of the radio networks.

d) REOC's should advise the PEOC of any support requirements as soon as possible.

TAB P

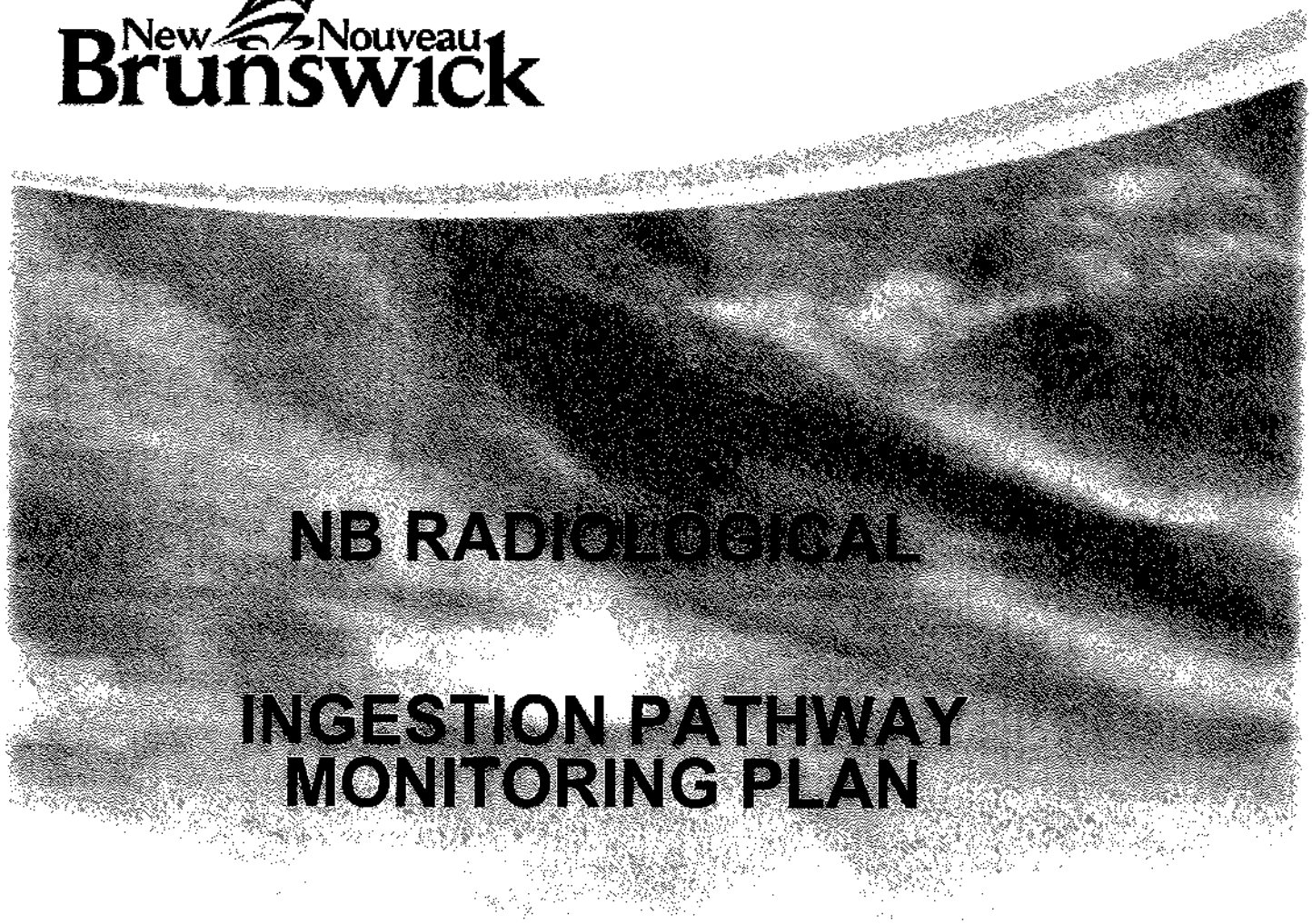
Terminology

REOC – Regional Emergency Operations Centre
PEOC - Provincial Emergency Operations Centre
NCO I/C – Non-Commissioned Officer in Charge
RCMP – Royal Canadian Mounted Police

DIRECTOR
NB EMO

COMMANDING OFFICER
RCMP J DIVISION

New Nouveau Brunswick



NB RADIOLOGICAL

INGESTION PATHWAY MONITORING PLAN

NB RADIOLOGICAL

INGESTION PATHWAY MONITORING PLAN

Contents

To be completed later

NB RADIOLOGICAL INGESTION PATHWAY MONITORING PLAN

Chapter 1 – Overview

1. Introduction

New Brunswick requires an Ingestion Pathway Monitoring Plan to minimize radiological ingestion hazards in the event of a major release of radioactive materials.

The Ingestion Pathway Monitoring or IPM Plan will be directed by an Ingestion Pathway Control Group comprising representatives from the Department of Agriculture, Fisheries, Environment and Local Government, Health and Natural Resources. The Point Lepreau Offsite Emergency Plan will provide the framework for the collection and analysis of samples. Wherever possible, existing monitoring sites and sampling locations will be used.

If a significant radioactive release endangers New Brunswick, the IPM Plan will be placed on standby, or will be activated by the Director of NB Emergency Measures Organization (NB EMO).

The plan is not specific to accidents at the Pt Lepreau Nuclear Generating Station. It may be invoked for any nuclear incident in North America or indeed throughout the world.

2. Elements of the Ingestion Pathway Monitoring Plan

The IPM Plan incorporates the plans and procedures of all participatory agencies. It is designed to ensure that actions are initiated promptly so that effective remedial action can be implemented. To accomplish this, the IPM Plan outlines:

1. Roles and responsibilities of agencies involved.
2. How the plan will be implemented.
3. Sample types, locations and sampling frequency.
4. Sample collection and delivery procedures.
5. Sample analytical facilities, and
6. Follow-up procedures.

Upon notification of a nuclear release, the Ingestion Pathway Control Group will implement and manage the IPM Plan along with assistance from member departments, NB EMO, NB Power and Health Canada. The chairman of the Ingestion Pathway Monitoring Plan will be the Health Physist from NB Power who sits as a member of the Technical Assessment Team (TAG).

The NB Power Environmental Radiation Monitoring Laboratory at 420 York St, Fredericton is designated as the principal radio-aalytical laboratory. This laboratory will analyse samples of air, water, milk, vegetation and other produce collected and delivered to it.

Results will be transmitted to the IP Control Group for review and follow-up action as appropriate.

3. Activation Procedure

If the Point Lepreau Offsite Emergency Plan is activated or placed on standby, or if a release of radioactivity from another source may contaminate parts of New Brunswick, the IPM Plan will be placed on standby by the IP Control Group. The IPM Plan will be activated on the direction of the Director NB EMO if a significant amount of radioactivity may be deposited in New Brunswick. If possible, the IPM Plan will be activated in time to collect baseline data.

4. Staff Notification

Upon activation, the Ingestion Pathway (IP) Control Group will notify all Ingestion Pathway Coordinators (members of Provincial Emergency Action Committee) PEAC, who will in turn notify all other individuals involved in the Plan. Ingestion Pathway Coordinators will be selected by the departments identified in the Plan and a current list maintained by NB EMO.

On activating the IPM Plan, the IP Control Group will notify Health Canada and requests those actions agreed under the Plan.

All departments involved with the IPM Plan will maintain and update internal notification lists, with office and home telephone numbers.

5. Exercises

The IPM Plan will be exercised every three years in line with scheduled INTREPID exercises to ensure that all procedures and equipment are operational. During exercises, the plan should be implemented simultaneously in all areas (geographic & departmental) to ensure proper co-ordination. Exercises will be used to improve the Plan and determine background radiation levels at sample locations.

Chapter 2 – Responsibilities

1.General

Each agency involved in the IPM Plan is responsible for appointing staff and for preparing and updating procedures appropriate to their part of the Plan.

2.Ingestion Pathway Control Group

The Ingestion Pathway Control Group will:

- Direct operations
- Select sampling sites and frequencies (in conjunction with Departments)
- Select sites and monitoring periods for thermoluminescent dosimeter (TLD) and airborne radioactivity measurements
- Review sampling results and decide if additional sampling is required, if

- frequencies should be changed, or if sampling should be terminated.

- Apply Canadian derived dose intervention levels and dose projections and recommend protective measures to the Director of the Emergency Measures Organization.

The Ingestion Pathway Control Group may specify sampling sites or procedures other than those previously identified. [1]

3. Department of Health

The Department of Health will:

- Collect drinking water samples as required (residential)
- List and evaluate back-up radio-analytical laboratories in NB
- Analyse samples delivered to the Radiation Protection Laboratory
- Transmit laboratory results to Control Group (TAG)
- Arrange for the return or destruction of samples (NB Power responsibility)

4. Department of Agriculture, Aquaculture and Fisheries

The Department of Agriculture, Aquaculture and Fisheries will:

- Maintain a farm database, including addresses and production data
- Identify sampling locations
- Collect and deliver meat, milk, produce, soil and grass samples to the NB Power Environmental Radiation Monitoring Laboratory or as otherwise directed
- Maintain inventories of fishing fleets and ports, commercial fisheries, fish processing plants and fish farms (Federal responsibility)
- Arrange for the collection of marine produce and delivery to the NB Power Environmental Radiation Monitoring Laboratory or as otherwise directed [1]

5. Department of Environment and Local Government

The Department of Environment and Local Government will:

- Set up and operate radio-iodine samplers (using existing air monitoring stations where possible)
- Place environmental TLDs
- Maintain a database of public surface water and groundwater supplies, including location, type, treatment and contacts
- Maintain a list of accessible stream sampling sites for representative sampling of watersheds
- Collect and deliver air, drinking water, rainwater and plant samples to the NB Power Environmental Radiation Monitoring Laboratory or as otherwise directed.

6. Department of Natural Resources

The Fish and Wildlife Branch of the Department of Natural Resources will:

- Maintain statistics on the distribution and harvesting of wild birds, fish and animals,
- Collect samples of wild game and deliver them to the NB Power Environmental Radiation Monitoring Laboratory or as otherwise directed [1]

7. New Brunswick Power

NB Power will:

- Provide training, on request, to all government staff responsible for sample collection
- If required, provide sampling teams with protective clothing and personal dosimeters
- Provide DOE with radio-iodine samplers (3) and environmental TLDs
- Provide Departments with sample containers and carrier solution
- Analyse samples delivered to the NB Power Environmental Radiation Monitoring Laboratory
- Transmit results to IP Control Group (TAG)
- Inform EMO of their capacity to analyse samples
- Destroy samples

8. Emergency Measures Organization

The NB Emergency Measures Organization will:

- Ensure this plan is regularly updated
- Arrange exercises
- Activate the plan
- Maintain a list of departmental Ingestion Pathway Coordinators
- Co-ordinate Federal/Provincial activities
- Arrange through NB Power for backup radio-analysis as required
- Act on the recommendations of the IP Control Group

9. Health Canada

Health Canada will transmit (fax) analysis results from their monitoring program to the IP Control Group as soon as possible.

Note 1. *The RCMP may assist to transport samples. All arrangements must be made through the Ingestion Pathway Control Group at the Emergency Operations Centre.*

Chapter 3 – Operations

1. Sample Locations

Sample locations providing province-wide food and produce monitoring should, where possible:

a) Be accessible all year or capable of set up 24 hours notice, and

b) Include as many types of samples as possible.

Air, rain, drinking water and plant sample locations will be selected by the Ingestion Control Group in consultation with NB Power and the Department of Environment and Local Government; milk, dairy products, eggs, meat, fruit and vegetable sample locations and marine product sample locations, in consultation with the Department of Agriculture, Aquaculture and Fisheries.

2. Samples to be selected

a) Air – particulates and radio-iodines (NB Power)

b) Drinking Water – Lakes and surface waters, rain waters (DELG)

c) Milk – Bulk samples from major processors

d) Samples from grazing herds

e) Processed dairy products – as indicated by milk results

f) Produce and Meat – as indicated by other measurements

g) Marine produce – as indicated by other measurements

h) Plants – mainly grass and leafy vegetables (Agriculture)
   - Other than Agriculture (DELG)

i) Ambient radiation – from TLDs (DELG and NB Power)

3. Existing Sampling Programs

Where appropriate, sample locations from existing sampling programs will be used, i.e.

a) Department of Health well water radiological monitoring program.

b) Department of Environment and Local Government programs for:

   - Air particulate monitoring (Saint John)

- Drinking water surveillance (before and after treatment)
- Surface water quality monitoring

c) Department of Agriculture, Aquaculture and Fisheries milk and produce testing programs and marine produce testing programs,

d) Department of Natural Resources road kill program, and

e) Health Canada radiological monitoring program.

4. Sampling Frequence

Sampling frequencies while the IPM Plan is activated will be:

a) Daily – Department of Environment and Local Government
   - Air filter and iodine samplers
   - Water samples (rainfall after a rain)
   - Water samples from water treatment plants

b) Daily – Department of Agriculture, Aquaculture and Fisheries
   - Milk samples (from different sites)
   - Vegetation samples

c) Other Samples

The Department of Agriculture, Aquaculture and Fisheries will sample dairy products, produce and meat samples periodically, depending on preliminary results of the primary daily samples. Sampling frequency will be determined by the IP Control Group in consultation with the Department of Agriculture, Aquaculture and Fisheries.

TLDs will be placed by the Department of Environment and Local Government on activation of the IPM Plan. Collection frequency will depend on activity levels, in consultation with NB Power Health Physist (TAG).

Health Canada radiological monitoring program data will include Canada-wide data from air, water, TLD and milk sampling. These data are normally collected monthly, but results can be made available with a frequence to be agreed upon during the emergency.

5. Sampling Procedures

In most cases, detailed sampling procedures will be as described in the appropriate agencies sampling plan or as requested by the IP Control Group.

Some general points to be borne in mind are as follows:

- All samples should be clearly labelled as to type, location, date and time of collection, and name of sampler. (Done using GPS)

- Milk and water samples should be collected in bottles or containers provided by NB Power. These bottles may contain non-radioactive carrier solution and should not be rinsed before use. DELG bottles for water may be used.

- If NB Power bottles are unavailable, any clean bottle of the appropriate size may be used.

- Where possible, water samples should be taken before treatment (raw water) unless otherwise specified.

- Water samples from beaches and streams should be collected at or near the surface to avoid contamination with disturbed sediment.

- Milk held in farm bulk storage tanks or bulk transporters at the time of the incident will normally be free of radioactive contamination. All reasonable precautions should therefore be taken to prevent adulteration with contaminated milk, and it should be collected as soon as possible for processing.

- As dilution is not an acceptable method for controlling the level of radioactivity in food, it will be necessary to sample and test all raw milk supplies at the farm gate before collection. Ideally this should be done with a portable MCS but, if unavailable, it will be necessary that testing be done at NB Power or DOH labs.

- If so requested by the IP Control Group, the water supply used for livestock should also be tested,

- To obtain a representative sample for measuring radioactivity in vegetables, fruits and other produces at least 10 sampling sites (in the field) should be composited at each location.

- With meat, the organs to be sampled will depend on the type of radioactive contamination that has been identified in the release. The IP Control Group will determine which tissues are to be collected, and at which abattoirs.

6. Sample Size

Although smaller samples can be successfully and accurately analysed with longer counting times, preferred sample size is as follows

All liquids (water, milk, juices) – 4 litres
All solid foods (fish, meat, fresh produce) – 1kg
Soil and animal feeds – 1kg

7. Radiological Safety

The TAG at the Emergency Operations Centre will be responsible for the radiological safety of all field staff, based upon radiation dose levels, both predicted and measured, and by personnel dosimetry. To avoid placing sampling teams at risk, the following safety procedures will be observed.

No sampling will be undertaken when the situation at the accident site remains unstable, or while uncontrolled release of radio-active material is taking place.

No sampling by government officials will be undertaken without the knowledge and approval of Health Physist on the TAG.

No sampling will be undertaken in any area declared unsafe by Health physics.

When necessary, all samplers will be issued protective clothing, personal dosimeters and radiation monitoring equipment under NB Power Green trained supervisors.

Unless otherwise directed, all samplers will be subject to the annual public radiation dose limit of 1 milisievert.

All vehicles, personnel and equipment returning from sampling will be checked for contamination and decontaminated if necessary at the location of the Monitoring and Decontamination Center (MDC).

8. Sample Analysis

The NB Power Environmental Radiation Monitoring Laboratory located at the Chestnut Building, 420 York Street, Fredericton will be used as the primary radio-analytical laboratory. Samples should be either delivered directly to this laboratory or to local field headquarters where appropriate shipping arrangements will be made.

If the NB Power Radiation Laboratory cannot analyse all emergency samples, other laboratories will be used. An inventory of New Brunswick facilities capable of radio-analysis will be maintained by the Department of Health.

Ambient radioactivity levels will be determined by the NB Power Radiation Laboratory from samples received during IPM Plan exercises, and used as a baseline for any subsequent emergency.

9. Reporting of Results

Results from the NB Power Radiation Laboratory and any back-up laboratories will be reported to IP Control Group as soon as possible. Results will also be sent to the IP Control Group, TAG and to Health Canada.

Radioanalysis results from federal monitoring programs will be sent by Health Canada to the IP Control Group (TAG).

10. Analysis of Results and Protective Measures

The IP Control Group will review all sampling results in conjunction with the Health Physics Group at the Emergency Operations Centre and/or Health Canada, apply derived dose intervention levels and dose projections, and recommend protective measures to the Director of the Emergency Measures Organization.

POINT LEPREAU OFF-SITE PLAN

ESSENTIAL OPERATIONAL INFORMATION

SECURITY ALERT PROCEDURE

Notes

Align with RCMP Security Alert levels, to the extent possible, with a view to harmonization as a provincial security alerting protocol.

Introduction

The Point Lepreau Generating Station is classified as critical infrastructure of international importance. Consequently, the plant has a comprehensive security contingency plan.

In the event of a security incident, the RCMP is responsible for incident management, while the province remains responsible for consequence management.

This procedure provides guidance for the off-site response to a security incident at the station.

Security Plans and Procedures

Detailed procedures for a security contingency at the station are classified and beyond the scope of the off-site plan.

In the event of a security incident, the following emergency plans may apply:
National Counter-Terrorism Plan
Point Lepreau Generating Station, Security Contingency Plan

Concept of Operations

On advice from the station or RCMP, EMO will notify selected provincial officials and act to ensure that off-site emergency organizations are prepared to assist the security response and to manage any off-site consequences.

Security Alert Levels

The CNSC employs three security alert levels that closely correspond to accident classification levels and provincial activation levels:

Security Alert Level	Description	EMO Activation Level
Security Alert Level I	Security Emergency	Full Activation
Security Alert Level II	Security Alert	Partial Activation
Security Alert Level III	Enhanced Security	Monitoring

Security Action Guide

This action guide describes the off-site actions appropriate to each security alert level.

Level 1 – Security Emergency

NBP notifies Director EMO of imminent or actual threat
EMO notifies Menu A; DM communicates with CO J-Division
EMO implements Full Activation (Activation Level III), recalling appropriate PEAC members
EMO establishes continuous secure communications link with CROPS
Liaison Officers are exchanged, by mutual agreement, to support operational interfaces among NBP, DPS and RCMP

Level II – Security Alert

NBP notifies Director EMO of credible threat requiring enhanced security measures
EMO notified DM; ADM SSD; DM communicates with CO J-Division
EMO implements Partial Activation (Activation Level II), activating only those members of the PEAC and SAG with a need to know
EMO established secure communications link with CROPS, 506-453-3400

Level III – Enhanced Security

NBP notifies Director EMO of credible threat requiring enhanced security measures
EMO notifies DM; ADM SSD' DM communicates with CO J-Division
EMO implements Enhanced Monitoring (Activation Level I), without notifying SAG or PEAC
EMO established secure communications link with RCMP CROPS, 506-452-3400.

Level IV – Normal Operations

- No implications

NB EMO / NB POWER
MASS DECONTAMINATION CONCEPT OF OPERATIONS AND REQUIREMENTS DEFINITIONS

40001-01-02
Version 5.0
30 July 2013

Prepared by:

Prepared for:
NB EMO
NB Power

Authorization

Title	Mass Decontamination Concept of Operations		
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1.0	Release to Client	[redacted]	03 Dec 12
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4.0	Release to Client	[redacted]	3 June 13
5.0	Release to Client	[redacted]	30 July 2013

about the release of radiation and regardless of their whereabouts at the time, demand to be checked for contamination).

The Concept of Operations is based upon the Mass Decontamination Planning Basis for an emergency at PLGS [1] and is interoperable with the Point Lepreau Nuclear Off-Site Emergency Plan [2]. The ConOps is also structured on the IAEA GS-R-2 guidance for the Preparedness and Response for a Nuclear or Radiological Emergency [3].

1.4 Aim

The aim of this document is to provide:

- A Concept of Operations for Mass decontamination for evacuated members of the public, PLGS or those self-reporting to medical facilities; and
- An assessment of the response requirements for this ConOps.

1.5 Scope

This document provides a methodology for conducting mass decontamination operations in response to a release event at PLGS. This document also describes in general terms the equipment necessary to perform the operations described. This document does not consider other emergency response activities except to the extent that they may impact mass decontamination operations.

1.6 Levels of planning requirements

New Brunswick must be able to respond to a Design Basis Release (DBR) from PLGS, as described in the Planning Basis. The Mass Decontamination Concept of Operation focuses on this requirement.

This document also provides contingency planning concepts for increasing the response capability in the event of a beyond design basis or severe accident.

1.7 Structure of this document

This document is composed of the following sections:

- Section 1 – Introduction;
- Section 2 – Concept of Operations;
- Section 3 – Requirements Definition;
- Section 4 – Summary;
- Annex A – RN Emergency Response Capabilities Requirements;
- Annex B – Roles and Responsibilities of Decon Centre Staff;
- Annex C – Glossary; and
- Annex D – List of Abbreviations.

2. CONCEPT OF OPERATIONS

2.1 General

This ConOps will generally follow the functional response requirements laid out in IAEA GS-R-2 [3]. The strategic level response will be described. Procedures should be developed and maintained to support these response requirements.

This ConOps will be based on the following GS-R-2 applicable response requirements:

- Establishing emergency management and operations;
- Identifying, notifying and activating;
- Taking mitigating actions;
- Taking urgent protective actions;
- Providing information and issuing instructions and warnings to the public;
- Protecting emergency workers;
- Assessing the initial phase;
- Managing medical response;
- Keeping the public informed;
- Mitigating the non-radiological consequences of the emergency; and
- Conducting recovery operations.

This ConOps only details the response actions required for Mass Decontamination. It must be understood that both PLGS and NB EMO have many other response responsibilities under each of these functional requirements, not specific to an effective evacuation of the public and Mass Decontamination. These other response responsibilities are detailed in applicable emergency response plans and procedures.

2.2 Establishing emergency management operations

On site emergency management will be established and maintained by PLGS.

Off-site emergency management will be established and maintained by PLGS; however, command of the Off-Site Emergency Operations Center is the responsibility of NB EMO. Communications between PLGS and NB EMO are maintained via direct links from the NB Power EOC Coordinator and the NB EMO Control Group, in accordance with the Point Lepreau Nuclear Off-Site Emergency Plan Volume II [2] and the PLGS Emergency Response Plan Station Instruction [4].

2.3 Identifying, notifying and activating

Identification and classification of an incident will be completed by PLGS operations staff. An example of the triggers that result in a classification can be seen in Table 1 [5].

NB EMO will be notified of any emergency by PLGS Shift Supervisor or Station manager.

PLGS will activate onsite and off-site emergency operation centers prescribed in their response plans and detailed in the procedures provided for each response position

identified in NB Power planning documents.

NB EMO will activate their provincial emergency operations center based on a notification of alert or emergency from PLGS, collect detailed information and track the classification level closely.

PLGS Off-site Operations center will be activated at the declaration of Site Emergency. NB EMO manages the PLGS Off-site emergency operations center.

PLGS and NB EMO will ensure all notification and activation plans and procedures are current, trained and exercised.

Table 1: Action Levels for Releases of Radiation

Event Classification	Action Level Effective Dose Rate Gamma or Airborne	Actions
General Radiation Emergency	If Severe Accident Conditions are met or; Releases from fuel and containment integrity is not confirmed or; 1mSv/h-measured anywhere outside the exclusion zone (1km)	Recommend to NBEMO to evacuate or shelter the Precautionary Action Zone (PAZ) Open Off-site EOC. Initiate Notifications
	If, 1 mSv/h - measured in any sector outside the PAZ (4 km) or,	Recommend to NBEMO to promptly evacuate or shelter the entire sector.
	If 10 µSv/h - measured 1 km or beyond the station or, GEM readings of - 500% Weekly Derived Emission Limits (DEL) (3500% Daily DEL).	Open Offsite EOC. Initiate Notifications.
Site Area Radiation Emergency	If 1 mSv/h - measured at any Emergency Station or, 25 µS-v/h – me asured in the Administration, Buildings or Construction Stores.	Evacuate the station or part thereof, Open Offsite EOC Initiate Notifications.
Radiation Alert	If 1 µSv/h (Gamma only) - measured 1 km from the station or, GEM readings of - 50% Weekly DEL (350% Daily DEL) or, Liquid release resulting in: 1 µSv/h (Gamma only) - measured at the Bay of Fundy Shoreline.	Consider the need for partial evacuation of the station or restrict personnel access, Initiate Notifications. Consider opening Off site EOC.

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1. INTRODUCTION

1.1 Preamble

A nuclear emergency involving the Point Lepreau Generating Station (PLGS) could affect a large area in the vicinity of the plant. Such an emergency could require the local residents to evacuate the area necessitating monitoring and decontamination.

It is important to note that there are two competing goals that were considered during the development of this Concept of Operations (ConOps).

The first goal is to minimize the effective dose received by the residents of the area, while understanding that the potential for health effects following an accident are minimal if proportional actions are taken in a timely manner. There are several ways to minimize this dose including:

- Evacuation prior to a risk of release, which may prevent the unnecessary contamination of any member of the public;
- Shelter residents who can't be evacuated in the event of a sudden release;
- Evacuation during a release to remove residents from high dose rate areas; and
- In the event that residents are contaminated, provide decontamination services to remove the contamination thus minimizing dose.

The second goal is to minimize the costs associated with the response efforts. This can be accomplished by:

- Scaling resource requirements in proportion to the risk to residents; and
- Limiting the spread of contamination in order to minimize the costs associated with post-accident remediation efforts (i.e., effective evacuation control, monitoring and decontamination).

In this document Mass Decontamination refers to the requisite monitoring and decontamination.

1.2 Nuclear emergency response plans

Both NB Power and the province of New Brunswick have nuclear emergency response plans to guide the response for a nuclear emergency at PLGS. The NB Power plans detail their responsibility to detect and mitigate a nuclear emergency situation and to provide support to the province during response phase activities. The province of New Brunswick's plans address the need to protect the public in the event of a release of radioactive materials from PLGS. The plans necessarily overlap where PLGS has the capability to aid NB in the protection of the public.

One component of public protection is the provision of monitoring and decontamination to those who have been evacuated from the vicinity of PLGS, or the station itself.

1.3 Concept of Operations

The Concept of Operations (ConOps) provides a conceptual strategy to address the needs for mass decontamination following an evacuation in the vicinity of PLGS as well as the requirement to reassure self-reporting members of the public (i.e., those who hear

2.4 Taking mitigating action

PLGS will take all possible mitigating actions to prevent a release of radioactive material to the environment. These actions are detailed in internal documents that are not required for this ConOps.

NB Power and NB EMO will ensure that personnel, resources, equipment, and training are established and maintained to support this ConOps.

2.5 Taking urgent protective actions

The roles and responsibilities associated with response to a nuclear incident at PLGS are identified with the Point Lepreau Nuclear Off-Site Emergency Plan Volume II (Procedures) [2], which states 'The Nuclear Control Group will assume control, direction and coordination of emergency off-site activities when circumstances require, as decided by the Director of NB EMO'. Members of the nuclear control group are identified in Point Lepreau Nuclear Off-Site Emergency Plan Volume II (Procedures) [2] in Tabs A through O. Their responsibilities within the Plan are detailed in a Tab specific to that organization. Specifics regarding the roles and responsibilities for each organization can be found in the associated Tab and will not be repeated here. Capability requirements based on IAEA GS-R-2 "Preparedness and Response for a Nuclear or Radiological Emergency" [3] are shown in Annex A.

It is the responsibility of NB EMO to provide effective protection of the general public and emergency workers supporting or performing these mitigatory actions. This ConOps will concentrate on the effective evacuation of the affected general public and the process of Mass Decontamination, support and transfer for secondary processing/support as required.

On notification of a Site Area Radiation Emergency, NB EMO will evaluate the requirement for the evacuation of the General Public, giving priority to Zones 1, 2, 3, 4 and 13 (see Figure 1). It can be expected that if an evacuation close to the plant is started, most of the people in the remaining Warden Zones will spontaneously self-evacuate. NB EMO will evacuate personnel in all Warden Zones once a General Radiation Emergency is declared.

At a Site Area Radiation Emergency classification evacuation of the immediate sea area surrounding the plant should also be evaluated. At-Sea Area 1 (Figure 2) corresponds closely to the outer extents of Zones 1 and 2 and would ensure local fishing vessels in the vicinity are evacuated from the potential threat area early. A change of classification to General Radiation Emergency will require the evacuated sea area be expanded. Figure 3 illustrates the At-Sea Area 2, which uses the extremities of the warden zones to determine the extent of the area.

Response actions should be conducted automatically based on the classification of the ongoing accident by the Shift Supervisor. The above information associates emergency classification with automatic actions in Table 2.

NB EMO is responsible to maintain effective evacuation plans and procedures for these areas. These plans and procedures must be trained and exercised to maintain

effectiveness and currency.

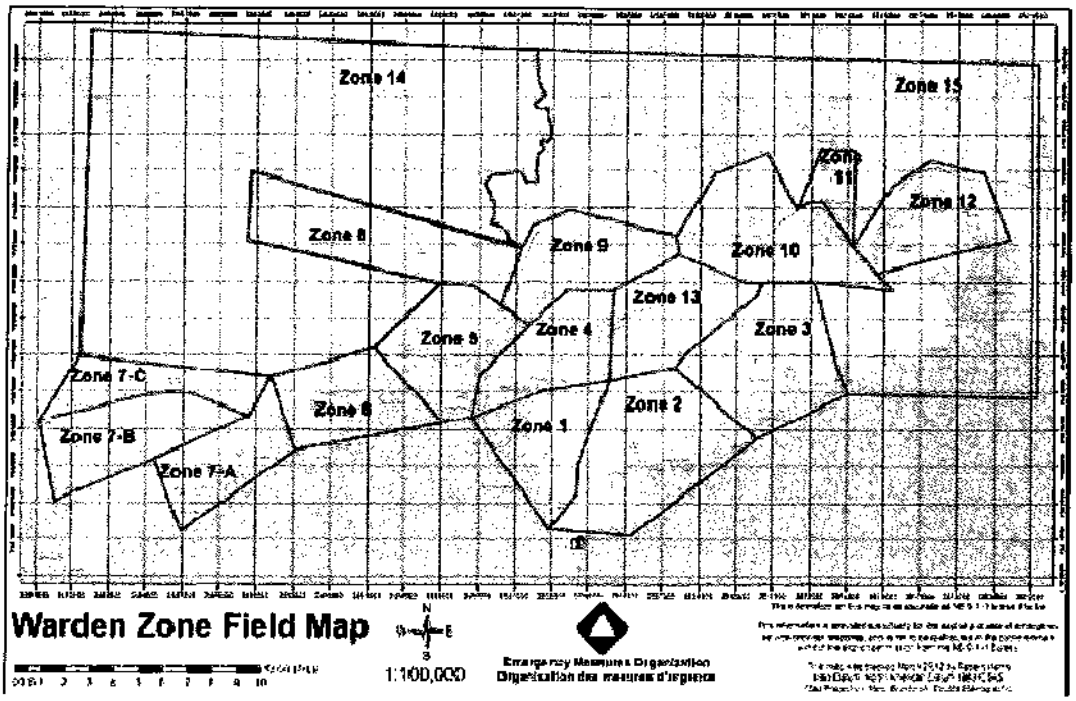


Figure 1: Warden Zones

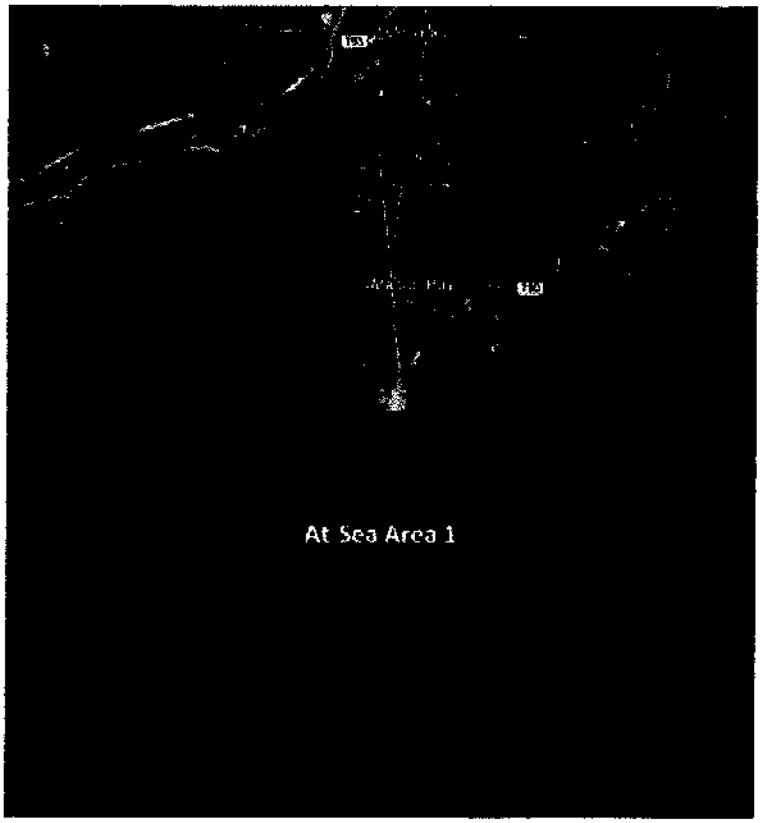


Figure 2: At-Sea Evacuation (Site Area Radiation Emergency Classification)

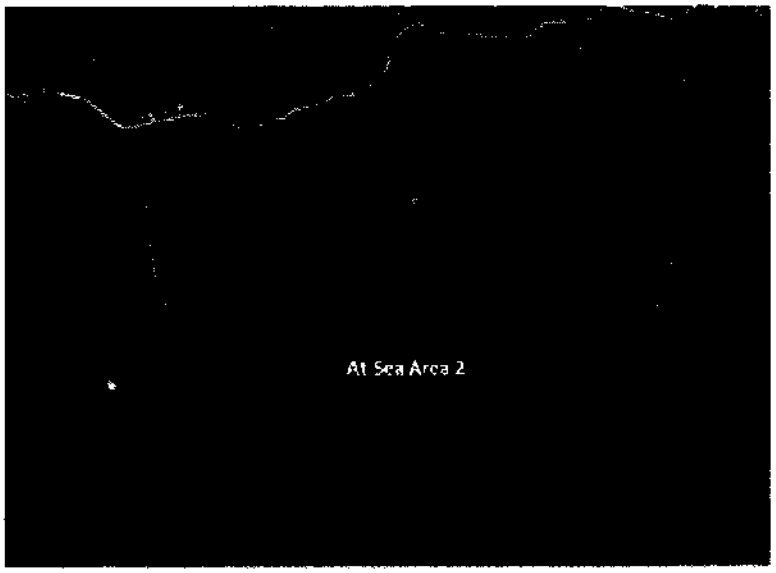


Figure 3: At-Sea Evacuation (General Radiation Emergency)

Table 2: NB EMO Automatic Actions related to Evacuation

Classification	Automatic Action	Automatic follow on actions
Radiation Alert	Put PEOC staff on alert	• Prepare to make PEOC operational • Recall key personnel based on current situation
Site Area Radiation Emergency	Consider evacuation of Warden Zones, giving priority to Zones 1, 2, 3, 4, 13 and At-Sea Area 1	• Stand-up Off-site EOC and PEOC and verify equipment operational • Decon sites established in standby • Reception centre at the University of New Brunswick Saint John (UNBSJ) established • Establish road blocks to limit access (See Figure 1) • Hospitals and Saint John FD notified of possible worried well • OEOC Supervisor maintain PLGS Survey assets in the vicinity of the plant to provide assurance that no release has occurred
General Radiation Emergency	Immediately evacuate all Warden Zones and At-Sea Area 2	• Expand evacuation zone to include all Zones • Relocate road blocks • Determine further evacuation requirements based on field readings (see Serials 2-9 of the NB EMO Action Guide) • Monitor weather conditions and survey accordingly • Establish primary monitoring and decontamination site at boundary of Warden Zones, based on wind direction

2.5.1 Assurance monitoring

In the event that an evacuation is ordered prior to a release occurring, assurance monitoring will be required. Assurance monitoring provides peace-of-mind for the evacuees and acts as further confirmation that no release has occurred (including for worried well). Assurance monitoring can be conducted at the currently identified reception centre (UNBSJ) with a limited number of resources and personnel. Assurance monitoring with a portal monitor is a fast and effective way of reassuring concerned evacuees that they are not contaminated and that there will be no personal health consequences as a result of the situation at PLGS.

Should a release occur, assurance monitoring at the reception centre can also be provided to members of the public who might otherwise report to the hospital to be scanned for contamination. Providing the location of the reception centre to the public during an emergency may alleviate the burden placed on the hospital to manage a large number of worried well.

2.5.2 Decontamination system and site(s)

The location chosen for the monitoring and decontamination site set-up will be based upon the classification level at PLGS and the real-time weather conditions. As recommended in Section 2.4, evacuation of several zones on the Lepreau Peninsula would take place at a Site Area Radiation Emergency, before any contamination has been released to the environment. In this instance the assurance monitoring facilities at the Reception Center (UNBSJ) would be capable of meeting the needs of the evacuees. This leaves only the need to consider the monitoring and mass decontamination site requirements for a General Radiation Emergency.

2.5.3 Evacuation routes

There are two main evacuation paths from the regional area around Point Lepreau (see Figure 4). They are Highway 790W (towards Little Lepreau) and 790E through Chance Harbour. Once traffic approaches the vicinity of Highway 1 there are multiple alternate routes to evacuate the area, either to the east or to the west, depending on the wind direction at the time.

At Site Area Radiation Emergency, if PLGS and off-site surveys and ring monitoring equipment indicate no release has occurred, all evacuees should proceed through the checkpoints at either end of Hwy 790, be stopped, be identified and logged as evacuated, and be provided information regarding the reception centre at UNBSJ should they require more information or want to be monitored. Simultaneously, the primary decontamination site at the Prince of Wales exit should be set up but not made operational. This includes:

- all required equipment delivered to the site including:
    - Decontamination tents;
    - Portal monitoring equipment;
    - Contamination meters;
    - Temporary shelters;
    - Traffic control and security equipment;
    - Personal protective equipment; and
    - Administrative equipment;

- traffic directed around the decontamination site by diverting east bound traffic to a single lane of the west bound highway;
- decontamination structures erected/put in place secured;
- establishing all systems so they can be made fully operational within one hour;
- establishing security at the decontamination site during a Site Area Radiation Emergency; and
- readying security for the site in the event that a General Radiation Emergency classification is made.

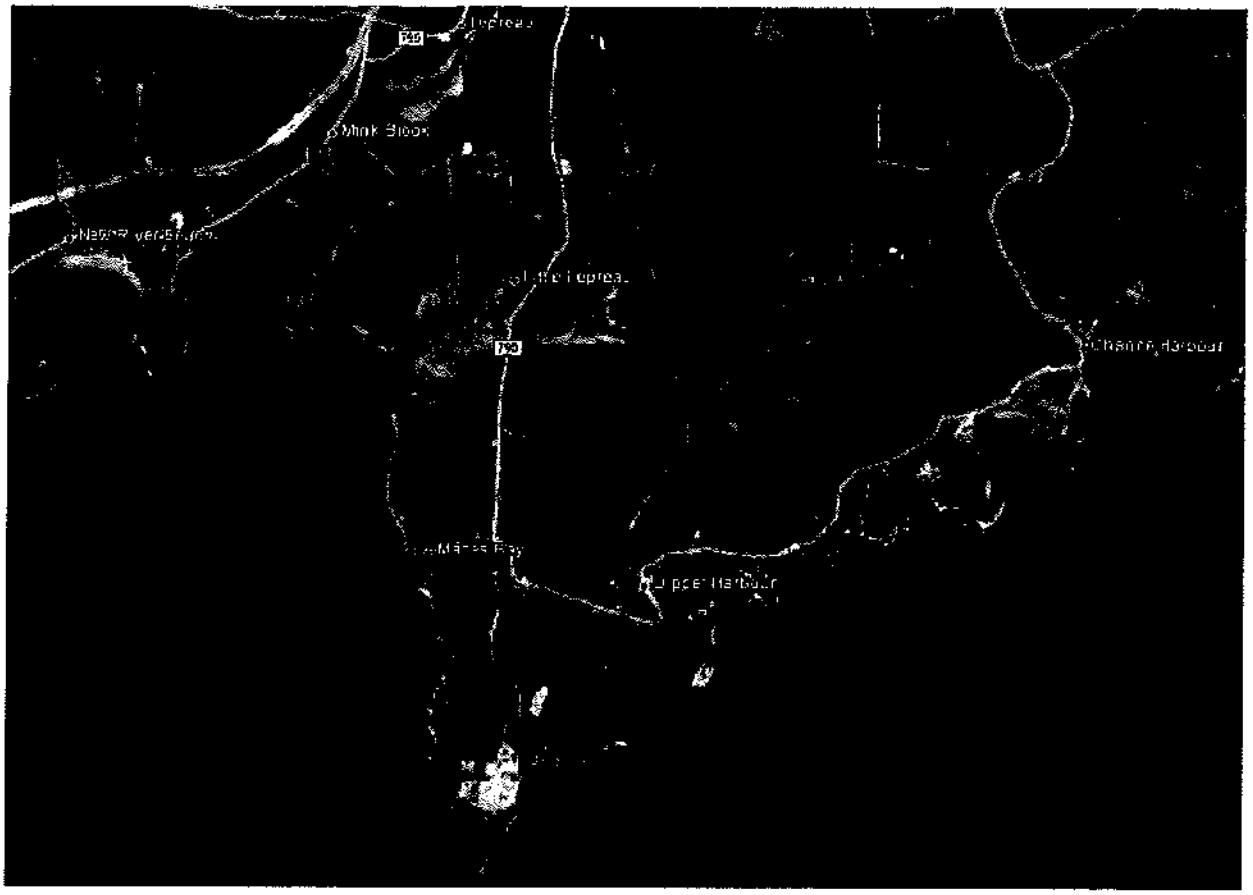


Figure 4: Lepreau Peninsula

In addition, the secondary site at the intersection of Hwy 1 and Hwys 785/778/776/795 (herein referred to as the Pennfield Interchange) should set-up to the same level of readiness (except that all required decon equipment may not be prepositioned at this site depending on forecasted wind direction).

Having both sites nearly operational provides the ability to establish either site, or both, as the decontamination site used in the event of a release.

Continual surveying and plant data analysis should be used to verify a nil release throughout the evacuation process. If there is radioactivity identified in the atmosphere

during the evacuation process, or after General Radiation Emergency is declared, monitoring and decontamination equipment must be made operational.

In the event of a General Radiation Emergency classification, the Monitoring and Mass Decontamination Site should be located outside of the Warden Zones as shown in Figure 1. Site selection will be based on several factors including:

- Ease of access;
- Proximity to anticipated evacuation routes;
- Adequate space for set-up, equipment, parking, etc.; and
- Access to critical infrastructure (i.e., power, clean fresh water, shelter, etc.).

In the event that all Warden Zones are evacuated following a General Radiation Emergency classification, the intent should be to establish the monitoring and decontamination site as close to the outer boundary of those zones as possible. This is done to limit the spread of contamination to as small an area as possible, given the post-accident requirement to remediate all contaminated locations

A General Radiation Emergency classification would extend the evacuated areas past Pennfield in the west. The location outside of the evacuated area that could act as a monitoring and decontamination site would be the cloverleaf at the Pennfield Interchange. Figure 5 illustrates a potential decontamination site layout for that location. The reception centre would be located at Fundy High School and transportation for registered evacuees would be provided by bus. Table 3 details the decontamination site locations.

Table 3: Decontamination Center Locations

Classification	Evacuated Zones	Decontamination type	Location	Distance from PLGS
Site Area Radiation Emergency	Zones 1, 2, 3, 4 and 13	Fixed (limited capacity) Mobile sites on stand-by	UNBSJ reception centre **Prince of Wales area:** Establish decontamination site on Highway 1 at the local exit. Set up but not operational **Pennfield area:** Establish decontamination site at the Pennfield Interchange. Set up but not operational.	~38km 21.3km
General Radiation Emergency	All Warden Zones	Mobile Mobile	**Prince of Wales area:** Operationalize decontamination site on Highway 1 at the local exit. **Pennfield area:** Operationalize decontamination site at the Pennfield Interchange.	21.3km 21.3km

The selected location to the east of PLGS along Hwy 1 is at the Prince of Wales exit as

illustrated in Figure 6. This site will require a plan for sheltering evacuees during inclement weather. In addition, heated monitoring shelters or busses would ensure the fastest processing of a large number of uncontaminated individuals.

Figure 5: Decon Site at Pennfield Interchange

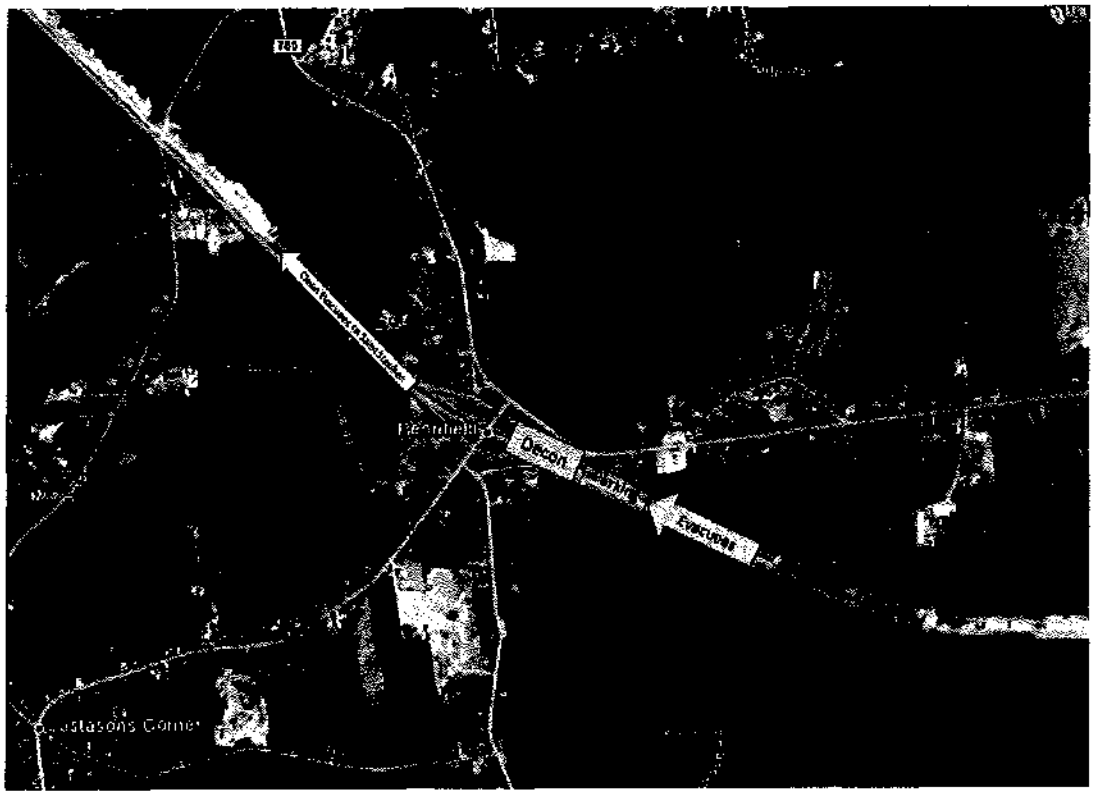
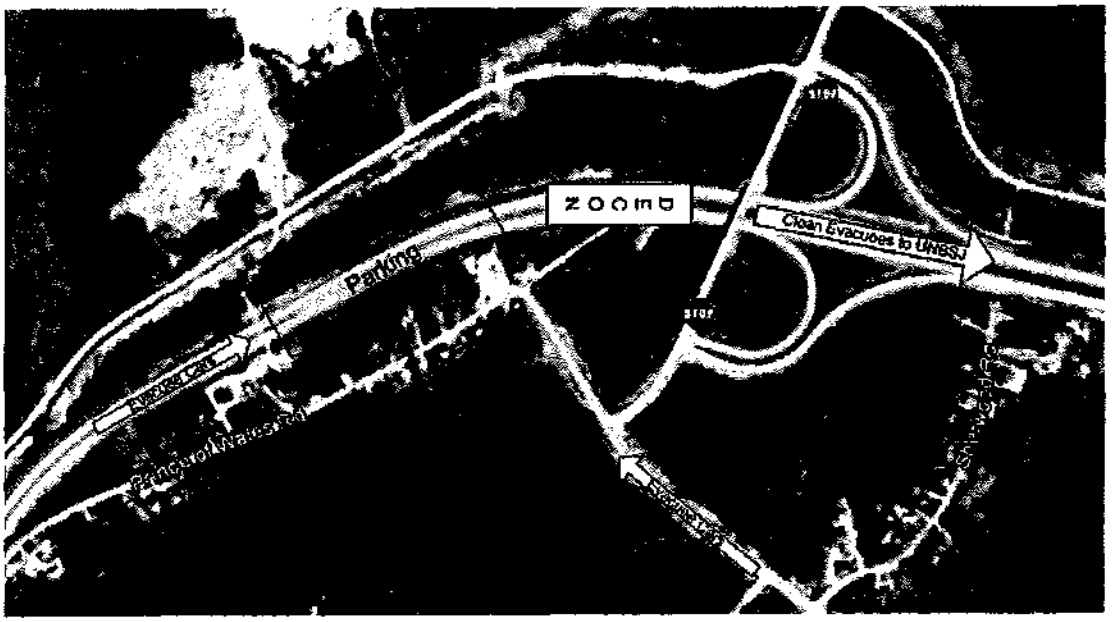


Figure 6: Hwy 1 Decon Site at Prince of Wales



2.5.4 Site selection based on wind direction

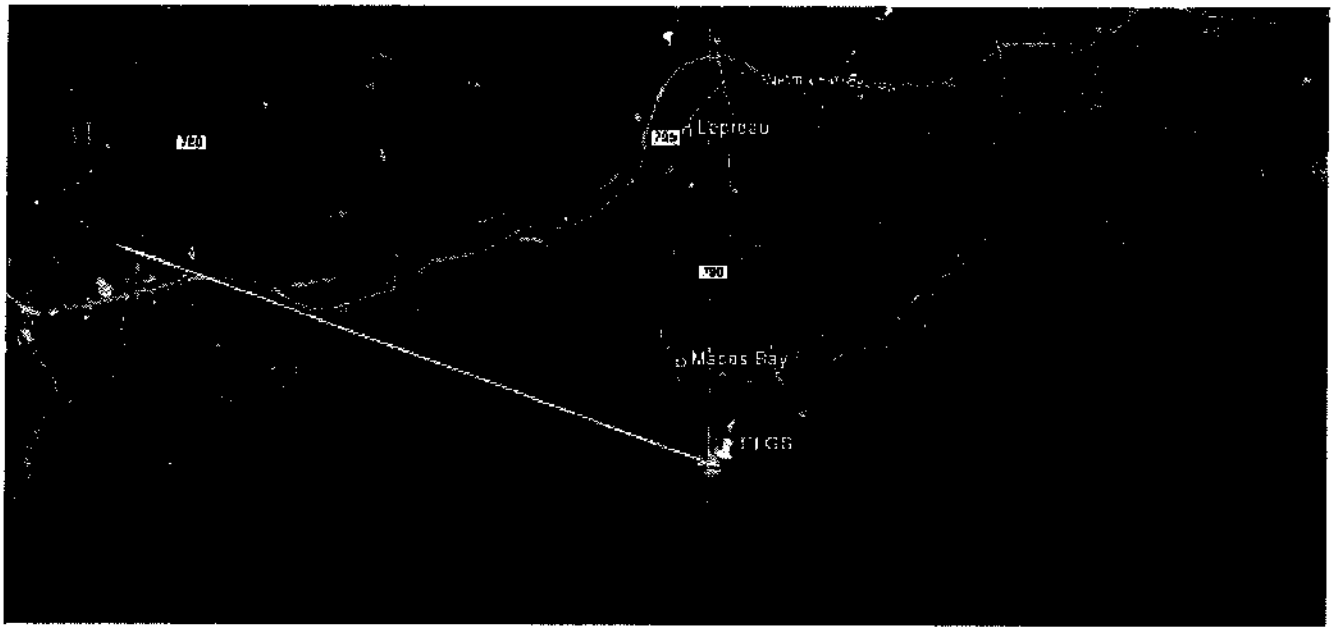


Figure 7: Plume Bearing Analysis

2.5.4.1 Plume travelling North

For a plume originating at PLGS, with the wind blowing from the South (i.e., between the yellow and green lines in Figure 7), decontamination sites located at the Pennfield Interchange in the west and the Prince of Wales Exit in the east would provide decontamination services for individuals evacuating in those directions. If resources limit operations to one site, the Prince of Wales site is preferred.

2.5.4.2 Plume travelling East

For a plume originating at PLGS, with the wind blowing from the Southwest (i.e., between the green and blue lines), the decontamination site should be located in the west at the Pennfield Interchange. All evacuees from the area would have to be directed to travel west to that location. Anyone travelling east would remain in the plume as it moved toward Saint John and decontamination efforts would be futile.

2.5.4.3 Plume travelling South

For a plume originating at PLGS, with the wind blowing from the North, Northwest or Northeast (i.e., between the blue and red lines to the south), decontamination should be established at the Pennfield Interchange and at the Prince of Wales sites. If resources limit operations to one site, the Prince of Wales site is preferred. Monitoring and decontaminating personnel that were on vessels at sea and have proceeded to shore in this sector will need to be transported to the nearest decontamination site for processing. Depending on where the Captain is directed to secure the vessel, either site should be able to accommodate their arrival. Although the Coast Guard has been identified to decontaminate the water borne evacuees, having them processed at one of the primary decontamination sites will ensure the same processes for evacuee monitoring, decontamination and tracking are maintained for all evacuees, regardless of point of origin.

2.5.4.4 Plume travelling West

For a plume originating at PLGS, with the wind blowing from the East (i.e., to the west between the red and yellow lines), evacuees should be directed to the Prince of Wales location, as evacuation to the west will not be an option for evacuees, as the plume would potentially continue on to contaminate St. George, St. Andrews, St. Stephen, etc.

2.5.5 Decontamination center

A dedicated site must be established with the primary goals to monitor the evacuees, to decontaminate those in need, to provide assurance and advice and to register the evacuees for follow-up care.

Decontamination of radiological contaminants is relatively simple; removal of outer clothing and wipe down using dry or slightly damp cloth/towel effectively removes 90% of the contamination. Where the contaminant is more persistent (for example, embedded in hair) showering and scrubbing with a soft brush may be required. All efforts should be made to avoid heavy scrubbing or use of more aggressive detergents as these may have the effect of absorbing the contaminant deeper into the tissue. Follow-up monitoring is used to ensure the effectiveness of decontamination.

A method of checking the contamination level of small valuables (e.g., wallets, watches, handbags, etc.) should be considered. This can be accomplished using hand-held survey meters. In the event that contamination is found, removal of the contaminant should be attempted by the owner using the dry wipe method and supplied gloves during the decontamination of their person.

If cold-weather wet decontamination is required (ambient air temperature below 65°F /18 °C), it should be done incrementally versus having the person immediately drenched [7]. Special attention must be paid to cardiac patients and the elderly if there is absolutely no alternative to outdoor wet decontamination as these groups would be particularly susceptible to the effects of hypothermia.

The decontamination site must continually provide separation between the non-contaminated side (where support staff are working, evacuees are registered, transport is provided, etc.) and the contaminated side (where there is the potential for radiological contamination to be found on people, equipment, and the terrain). This is typically done using physical barriers (e.g., police tape, temporary fencing, etc.) that clearly delineates a line that must not be breached. The layout of a decontamination site may vary based on the available resources and the location; however there are some basic features that are common to all decontamination sites. Figure 8 illustrates a generic decontamination site.

Positive control of contamination within the pre-determined decontamination site is mandatory. If areas of the facility designated as “non-contaminated” become contaminated, the facility will become ineffective in accomplishing its mission, and may have to be closed to permit physical decontamination, or relocated, before continuing operations. Boundary control between contaminated and un-contaminated areas must be observed by everyone, including facility staff, and under no circumstances are boundaries to be crossed without proper monitoring and decontamination of the individuals.

Furthermore, strict adherence to PPE requirements is to be observed when crossing between contaminated/non-contaminated zone boundaries. The use of appropriate PPE by Emergency Workers in the contaminated area after evidence of a release or contaminated individuals or equipment is a requirement.

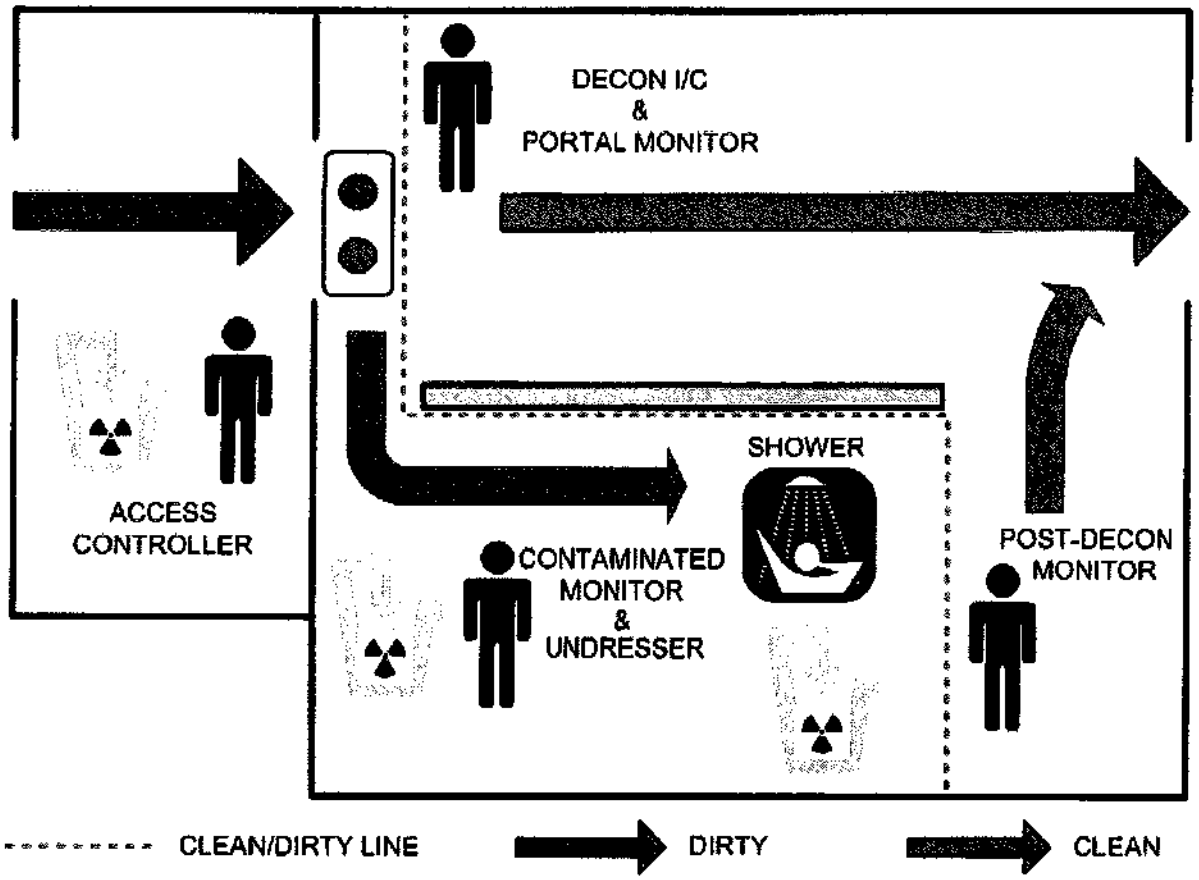


Figure 8: Generic decontamination site

There are several key principles specific to mass decontamination operations that should be followed:

- There may be a mix of contaminated and non-contaminated persons that must be processed; the faster they can be screened for contamination, the faster the non-contaminated can be released and the remaining decontaminated - this will greatly reduce congestion and stress of evacuees;
- Decontamination procedures are straightforward and should be communicated to the evacuees;
- Removing clothing and washing the body thoroughly with soap and water will eliminate the majority of external contamination;
- Maintaining positive control over decontamination efforts simplifies the operation and reassures staff and members of the public that they are receiving good care;
- Protection of decontamination staff must remain a priority; and

- Fear of radiation is high, perhaps higher than with other contaminants. Because people are unfamiliar with radiation, including some medical and public health professionals, they often fear radiation more than they fear most chemical and biological agents. Information and clear communication prior to and during an incident will help to lessen public anxiety.

The mass decontamination process is relatively straight forward and a general description includes:

- **Arrival:** The ways in which people are most likely to arrive at the decontamination site;
- **Vehicle Screening:** If at General Radiation Emergency vehicles will not be screened immediately. They will be quarantined until resources can be spared to clear the vehicles;
- **Segregation of Occupants:** After parking their vehicles, the occupants will collect in the pre-screen holding areas (segregated by the initial vehicle screening into contaminated and non-contaminated areas to reduce cross-contamination) to await screening for contamination;
- **Monitoring:** Each individual is pre-screened and then directed to either the contaminated or non-contaminated side of the facility;
- **Non-Contaminated Management:** Those screened as non-contaminated are registered, provided medical and counseling support, and then released;
- **Contaminated Management:** Those screened as contaminated are registered, go through the decontamination process (i.e., remove clothing, shower/wash, re-screen and further decontamination (if necessary), redress (new clothing), then release to the non-contaminated side of the facility for medical and counseling support and release; and
- **Release and Transportation:** Once individuals are released they are provided transportation to a reception centre via bus. Vehicles assessed as non-contaminated may be released to their identified owners; however, those screened as contaminated are quarantined pending decontamination.

2.5.6 Communications

Wherever possible, communications should be done through the use of radios. Satellite phones may also be used for field communications. In this instance an up-to-date list of contact numbers must be maintained, and the Emergency Operations Centre (EOC) must have dedicated phone lines available for interacting with field personnel. Cellular devices are less desirable for first responder teams due to unreliability concerns, but may be used for other communications (e.g., interagency communications, etc.).

Call signs should be predetermined for each location. Reference cards should be prepared for each radio operator to prevent confusion with unfamiliar call signs.

2.5.7 Security arrangements

Provision of security around the decontamination location is a role best suited to the police. It is critical that a security presence is established and maintained throughout the operational period of the Decontamination Facility to maintain the integrity of the operation and prevent cross-contamination of the facility staff, individuals that have screened as non-contaminated, and others that have been decontaminated. Control of the population requiring decontamination is an important aspect of the internal operation of the Decontamination Facility. The use of a public address system and appropriate signage are effective means of communicating with people entering the facility. This helps to keep people calm and enables them to follow directions.

Security personnel on the non-contaminated side of the facility's contaminated/non-contaminated line may not require PPE but should have it close at hand; those positioned on the contaminated side of the contaminated/non-contaminated line should wear the same PPE as decontamination staff.

Some of the evacuees arriving at the decontamination location may be carrying firearms (i.e., RCMP members, PLGS NRF personnel, etc.). These weapons must be safely and appropriately handled and stored in accordance with accepted local procedures. Weapons should be checked for contamination at the earliest opportunity and returned to the responsible individual.

2.5.8 Casualty management

There may be a requirement for the decontamination of casualties. Care must be taken not to allow contamination to enter any wounds or breaks in the skin which have not already been contaminated; this will avoid the requirement to irrigate and decontaminate the wound at a later date/time, minimize the internal contamination of the casualty and reduce the load on medical services. Procedures for the transfer of contaminated casualties to Emergency Medical Services are required. Procedures for the transfer and treatment of contaminated casualties at area hospitals are required.

Individuals identified as being in critical condition should be transported immediately to a hospital for treatment, regardless of their level of contamination. In order to achieve this without compromising the contaminated/non-contaminated line, a designated location should be identified where an ambulance can back-up to the contaminated/non-contaminated line and decontamination site staff members can aid in loading the casualty directly into the ambulance. Wrapping the patient in a blanket or other similar efforts when possible may greatly reduce cross contamination of the ambulance and responders. The interior of the ambulance is now considered contaminated, as are the responders until they can be screened and decontaminated if required.

Non-ambulatory casualties will require the aid of decon workers and/or family members to assist in or perform decontamination. This includes tasks such as disrobing and washing, which non-ambulatory casualties may not be able to perform on their own. A method supporting non-ambulatory casualties during this process is required. While the number of non-ambulatory casualties should not be large their presence at mass decontamination should not be allowed to interfere significantly with the ongoing decontamination efforts for the remainder of the evacuees.

Ambulatory casualties may require assistance in performing decontamination of their person. These casualties may or may not be responsive to direction and should be monitored and assisted as required throughout the decontamination process to ensure effective decontamination efforts are undertaken.

A small number of evacuees will be non-ambulatory and may have special needs. It should be anticipated that some may have medical equipment that they will be required to bring with them through decontamination or, if that's not possible (e.g., sensitive electronics) then their decontamination may have to wait until replacement equipment is made available for post decontamination usage.

2.5.9 Decedent management

It is possible that decedents will be located within the evacuation zone and will require processing through the decontamination site. As a general rule, anyone who becomes severely ill while undergoing decontamination should be transported immediately to hospital. As a contingency however, plans should be in place for the temporary storage of contaminated decedents. This temporary morgue should be under the control of the local coroner and will hold any decedents evacuated from within the controlled zone, regardless of whether they are PLGS employees or residents of the local area.

Following a death, a basic death investigation involving an examination of the body and the scene is required. When decedent is known to be or may be contaminated (externally or internally), steps must be taken to protect the investigators (such as the coroner, medical examiner, pathologist, toxicologist, body removal team, morgue attendants and others) from cross contamination. Appropriate guidelines and procedures are required to guide the investigative work and assist them with determining the facts surrounding the death of a person who has died during a nuclear incident.

Decedents should be processed after all other contaminated evacuees have been processed and released. The requirements associated with the processing of decedents, from positive identification, temporary storage, processing through the decontamination site, and eventual transportation to the appropriate coroner service facility are not covered in detail within this document.

2.5.10 Vehicles

For the most part evacuees will arrive at the mass decontamination location in personal vehicles. If there is evidence of nil release, vehicles should proceed through the decon site when administrative requirements are complete.

If vehicles are known to be contaminated or a release has commenced, they are to be screened for contamination prior to release. As the complete monitoring of a vehicle is not practical during an emergency, the following should be monitored for contamination as part of the screening process:

- The driver-side fender; and
- The hands and feet of all occupants.

If the occupants and vehicle are determined to be un-contaminated, they may be registered and released. Otherwise, the vehicle must be segregated for decontamination at a later time, and the occupants sent through a full monitoring and decontamination process [8].

Contaminated vehicle monitoring, decontamination and release (or disposal) will be conducted when the resources for that activity are available.

Mass transport will be required for the evacuees.

2.5.11 Pets and livestock

Evacuees will be very reluctant to leave some pets behind in the evacuated area. If they have left pets or livestock behind this should be recorded during processing. Animals that are brought to the decontamination centre should be monitored where possible (i.e., owners carry their pets through portal monitors) and released if they are free from contamination. Contaminated animals should be sheltered and cared for appropriately until they can be safely decontaminated.

If time and resources permit during recovery operations, decontamination of animals is accomplished in a separate, dedicated area by spraying with soap and water. It should be completed by personnel wearing PPE who have experience handling animals, and this would optimally be completed along with, or in the presence of the pet's owner. It is desirable that animals be decontaminated and dried then returned to their owners at the earliest possible opportunity or held in an adequate location until they can be transported offsite. Implementing a mass decontamination program for managing animal evacuation/decontamination must begin with an information and training initiative, pre-event. Information on handling contaminated animals should be included in the generic information package that is provided to residents in the area. As well, an inventory of numbers, types and locations of animals should be created.

2.6 Providing information and issuing instructions and warnings to the public

Communication with the public is the responsibility of the province. Prior to any nuclear emergency, public information can (and should) be provided through methods such as town hall meetings, information provided on websites, or mail-outs that provide specific instructions to local residents detailing their expected actions in the event that they are evacuated.

2.7 Protecting emergency workers

Personnel engaged in the management of potentially contaminated people, or in decontamination operations, should wear personal protective equipment including respiratory protection. In addition, frequent changes of vinyl examination gloves is also recommended for staff who physically assist people in removing potentially contaminated clothing or that aid in decontamination (e.g., elderly person with limited mobility).

Subsequent activities (counselling, registration, etc.) should take place at locations that are not contaminated and where no known airborne or respiratory hazards exist.

A dose control program for all workers involved in decontamination activities must be undertaken. This program should include:

- Methods for tracking the radiation dose to workers in real time;
- A dose control plan that keeps the effective dose to workers As Low As Reasonably Achievable (ALARA);
- Defined dose limits for activities performed (e.g., life-saving activities); and
- Procedures for replacing workers who are approaching dose limits.

2.8 Assessing the initial phase

Assessment of the initial phase of an accident is carried out on-site by the Shift Supervisor and off-site by the OEOC Supervisor. Any information that relates to the assessment of the plant, radiation survey results off-site including environmental sampling, must be communicated to all relevant response agencies. PLGS shall supply assets to properly assess the off-site radiological conditions and maintain an awareness of any potential or actual exposure to the public.

2.9 Managing medical response

In the event of a PLGS emergency involving the release of contamination it is anticipated that a significant number of persons will self-evacuate to hospitals. At present, best practices do not permit contaminated persons to enter into hospitals as this poses significant risk to the operations of the hospital.

In addition to self-evacuees, there will also be a large number of "worried well"; that is, persons who present at the hospital who were not directly exposed to the release from PLGS. As detailed in the planning basis, it can be expected that a large number (~12,000) of persons could require monitoring with a much lower expected number of victims actually contaminated (~15).

In the event of a General Radiation Emergency classification, hospitals in the vicinity of Point Lepreau should be locked-down and a temporary monitoring and decontamination facility erected at the hospital to ensure the entry of only non-contaminated individuals that actually require medical attention. These hospitals should include Saint John Regional Hospital and Charlotte County Hospital. The equipment for these temporary monitoring/decontamination facilities should be located at or near the hospitals so that they may be made operational on short notice. The Saint John Regional Hospital maintains the capability to handle potentially contaminated casualties, so these temporary monitoring facilities would serve to augment resident capacity.

Other hospitals in the province need to have a small number of contamination probes on hand in the event that they have to perform surveys to reassure the population that they have not been contaminated. Hospitals with a nuclear medicine program will likely have these readily available.

During screening, anyone who becomes severely ill while undergoing decontamination

should be transported immediately to hospital. As a contingency however, the decontamination location must have the ability to temporarily store the bodies of the deceased until they can be decontaminated and transferred to a morgue (see Section 2.5.9).

2.10 Discharge

After registration, individuals will be allowed to exit the decontamination location. Transportation to a central location where family and friends can meet them is recommended. If their vehicle was deemed to be non-contaminated they may be allowed to retrieve their vehicle or they may require public transportation.

For those that cannot return to their homes, transportation to a Community Reception Center will be required. The Community Reception Center will provide information, shelter and housing for those individuals that have no other place to go; however, the provision and make-up of such centers is beyond the scope of this work.

2.11 Mitigating the non-radiological consequences of the emergency

Psychosocial issues will present significant challenges to public health and medical practitioners both during and after a radiological emergency incident. Public health and medical systems could be totally overwhelmed by people seeking assessment and care. Preparing to deal with psychosocial issues is critically important for efficiently managing and monitoring the affected population and engaging in other response efforts. Planning should include strategies for assisting both affected individuals and their families, and the decontamination site workers. Adequate rotation of staff members to reduce physical and emotional fatigue, and training them prior to the incident on the effects of radiation incidents and how to cope with them, will reduce the emotional effects.

Counselling should address:

- Post-traumatic stress;
- Concern about exposure to radiation;
- Anxiety about known exposure (especial if internal exposure is indicated);
- Depression and despair; and
- Follow-up treatment.

As part of the counseling process, individuals should be made aware that they have been decontaminated and that there should be no residual effects from the exposure. They should be advised that if they have concerns, or they experience any affects (i.e., nausea, vomiting, etc.), that they should seek medical assistance from their family physician. Finally, contact information should be provided where they can get more information.

2.12 Conducting recovery operations

2.12.1 Decontamination considerations

Decontamination of the decontamination site after the event is a concern as, even if the contamination of the individuals is light, there is a significant chance that the facility will become contaminated. Plans for remediation of the facility used should be prepared in advance and the resources required identified.

Management of contaminated water, equipment, etc. as well as contaminated personal belongings from those decontaminated is required in advance. There will likely be a significant amount of contaminated material to deal with after the event, and the control of waste water from the facility during the event will also have to be managed.

Potentially contaminated vehicles in storage will have to be monitored for interior and exterior contamination prior to being decontaminated (if possible) and returned to their owners or disposed of.

It may be sufficient to wash the vehicles and return them to their owners, depending on the timescale in question. Some leaching of contaminants into vehicle paint and seals may make exterior decontamination impossible in some cases. Likewise, soft surfaces inside a vehicle may make interior decontamination extremely difficult/cost-ineffective.

2.12.2 Severe accident response

In the event of an accident beyond the ability of the province of New Brunswick to respond to, it is the NB EMO's responsibility to obtain additional resources. Contingency plans for expanding the capabilities of the mass decontamination facility beyond the capability identified here is required. For example, NB EMO should identify all possible decontamination equipment within driving distance of PLGS and make arrangements for the provision of this equipment in the event of an emergency (e.g., Letters of Agreement).

3. REQUIREMENTS DEFINITIONS

3.1 General

The successful operation of a mass decontamination site requires adequate resources. The key is having a sufficient number of well trained personnel and the equipment to do the job effectively.

3.2 Human and physical resources

The strategy outlined in this section makes the conservative assumption that the entirety of the local population will have to be processed through a single site. While the intent is to use multiple sites wherever possible, the concepts below remain valid in either instance.

The evacuation of the Point Lepreau Peninsula in a Site Area Radiation Emergency (Warden Zones 1, 2, 3, 4, and 13) as discussed in Section 2.5, results in the removal of approximately 1326 residents and PLGS non-essential workers[1] [9] from the immediate vicinity of the plant. Based on the Site Area Radiation Emergency classification these individuals should not be contaminated and a limited number will require assurance monitoring at UNBSJ.

Evacuation of the remaining Warden Zones (5 – 12, 14, and 15) immediately upon a General Radiation Emergency classification being announced should ensure that most of the evacuated residents are not contaminated and only a limited number will require decontamination. Monitoring these evacuated residents, approximately 2400 in number, and identifying who requires decontamination and who can be passed to the downstream reception centres will be required in this instance.

Ideally, the entire process of monitoring and decontaminating evacuees should be completed in less than 12 hrs. In order to quickly accomplish the monitoring of 2400 evacuees the pre-decontamination segregation of the contaminated from the non-contaminated must be the priority. Identifying the non-contaminated individuals, registering them and transporting them from the decontamination site allow efforts to be concentrated on the individuals requiring decontamination. The number 2400 is conservative given the likely self-evacuation of residents within the remaining Warden Zones after Zones 1-4 and 13 are ordered evacuated. However; this number also assumes that there is sufficient time to evacuate all 1326 residence before the declaration of a General Radiation Emergency and the further evacuation of the remaining Warden Zones.

With a strong Decontamination Operations Supervisor and adequate equipment the monitoring of 2400 individuals can be accomplished quickly. The fastest way to do so would be to form a row of five or six portal monitors with the same number of entry points, so that multiple individuals can be monitored simultaneously. For example, with five lanes into five portal monitors, at one minute to determine the presence of contamination, it would take 8 hours to clear 2400 people. Add delays and shift changes and it should still be possible to monitor 2400 in approximately 12hrs. Clearing the non-contaminated quickly from the decontamination site is the fastest way to minimize the other resources

required (e.g., shelter, feeding, etc.). Radiation screening personnel would not be required at each portal as any threshold alarm will sound in the presence of contamination. Therefore, even with five portal monitors, staff levels could be maintained as low as two radiation screeners under the direction of the decontamination supervisor.

Of the residents remaining, those in Warden Zones 6, 7A, 7B, and 7C, (numbering 915 residents) are in the 'worst case' downwind sector. Given the average wind speed in the area is between 7 and 15 km per hour, if a General Radiation Emergency was announced when the plume was released, it would take 40 minutes to 1.5 hours to reach the closest point of Zone 6. As most of the population would be aware of the precautionary evacuation measures for the Zones on the Lepreau Peninsula, residents in that area could be notified and commence with evacuation well within the 40 minute to 1.5 hour timeframe. Given the lead time available and the current NB EMO posture of evacuating early, a conservative number of contaminated individuals would be less than 20% of those in the most populated Zones. Therefore, 20% of the 915 residents who are potentially situated in the 'worst case' downwind sector would be approximately 200 individuals.

The time required for decontaminating 200 individuals is not based on the time to decontaminate an individual (approximately 15 minutes), but rather on the time it takes to start the process for a new person. With an efficient decontamination operation a new individual should start the process every five minutes. The process would consist of someone entering the disrobe area, another person entering the shower, and someone getting dressed every five minutes. At this rate it would take approximately 1000 minutes to process 200 individuals though a single decon line. With two lines (one male, one female), and if the population is roughly a 50% split, 500 minutes are required to process the contaminated residents. Even with delays for crew change-over, processing people in vulnerable populations, etc. the process should still take less than 12 hours (720 minutes).

Processing 2400 evacuees through Registration is a potential roadblock to the flow of evacuees through the decontamination site. It is recommended that evacuees complete their own registration form and that the form have the capacity to register all family members. If the Registration personnel provide the form on a clip board and check for completeness once done this would significantly increase the speed at which people are processed. The number of persons registering as non-contaminated should be a minimum of four times greater than the number of persons registering as having been processed through decontamination.

In terms of the physical decontamination structure, there should be sufficient capacity to simultaneously decontaminate males, females and non-ambulatory individuals (e.g., the elderly, casualties, etc.).

3.3 Command and Control

On-site command and control is the responsibility of the Incident Commander, who is responsible to NB EMO for the operation of the decontamination site. In order to accomplish this objective a cadre of support staff is required.

As a minimum, essential decontamination positions and duties include:

- Incident Commander;
- Decon Supervisor;
- Recorder;
- Decon Guide;
- Portal Monitor Operator;
- Disrobe Monitor;
- Shower Monitor; and
- Clean Monitor.

The duties of the above roles are described in Annex B.

3.4 Responders' resources

3.4.1 Training requirements

Decontamination operations should be conducted by trained individuals, especially those roles that require the use of PPE. Traditionally, fire/hazmat trained individuals perform response roles where protective equipment is required, supported by appropriately trained fire and emergency medical service individuals. In the case of staffing for a mass decontamination operation, other appropriately trained individuals (e.g., medical staff, radiological safety workers, health physicists, etc.) may be required to perform tasks; however, PPE training for these individuals must remain current as the risk of being contaminated is high if appropriate procedures are not observed.

Training for Decontamination Center staff should include these activities:

- The anticipated magnitude of the radiation incident and how it will affect the population;
- Establishing crowd management operations, including the development of process flow, and the distribution of patient information sheets during decontamination operations;
- Using equipment to monitor external contamination;
- Identifying and handling special population needs;
- Managing individuals experiencing psychological trauma;
- Contamination control;
- Minimizing individual exposure including the use of PPE; and
- Principles of registry management.

Personnel who are expected to fill roles during a mass decontamination operation must undergo regular exercises and refresher training to ensure that they are able to perform under pressure.

It is recommended that a training matrix be adopted and that target training dates and effective trained strength numbers be established to ensure a minimum of trained staff at all times (e.g., during holidays).

Training records must be maintained to adequately understand the number of trained personnel available and to adequately schedule new training opportunities as individuals change jobs, move from the area, etc. Multiple training opportunities for each skill set must be made available annually as member availabilities for training is never 100%.

Ensuring that the minimum number of adequately trained individuals is maintained, and that refresher training is conducted on a periodic basis, is a significant task and may require the identification of an individual whose primary duty is that of the Mass Decontamination Training Officer.

3.4.2 Personal Protective Equipment

The use of Personal Protective Equipment (PPE) at the decontamination site should be supported by a radiation protection (RP) program. This program should include continuous contamination monitoring of the decon site, PLGS staff all wearing TLDs as well as the establishment of strict dose control protocols for all emergency workers.

There are two levels of PPE required at the decontamination site. PPE requirements are based on the U.S. Department of Health's Radiation Event Medical Management database [10], and are compliant with the CSA standard "Protection of first responders from chemical, biological, radiological and nuclear (CBRN) events" [11]. If continuous radiological monitoring downwind confirms that a release has not taken place, and that the intent of decon operations is to provide assurance monitoring, then PPE only needs to be at hand and ready for immediate donning as soon as there is indication of radioactive contamination.

Where there is a confirmed or imminent release and contaminated individuals are or are expected to be arriving at the decon site, staff working on the contaminated side of the decon site (e.g., decontamination and security) will be wearing Level C PPE. This includes a full or half-face piece air purifying respirator with a NIOSH approved P-100 filter, and outer wear includes an appropriate, hooded, protective garment (e.g., Spunbonded Olefin - a well know type is Dupont's Tyvek), with rubber boots and gloves. Users may also choose to wear a light disposable inner suit, where practicable.

Decontamination site staff delivering care to evacuees who are not externally contaminated (i.e., registration or medical staff working in post-decontamination areas of the decontamination site) require Level D PPE, which provides sufficient respiratory and skin protection for those working in post-decontamination areas. Level D PPE includes a surgical mask and protective (often disposable) clothing such as scrubs or coveralls, with surgical gloves and chemical resistant safety shoes with boot covers. Level D PPE also protects skin and personal clothing against possible splashes of contaminated blood and body fluids (urine, feces, wound drainage, etc.).

In addition to PPE, worker dose control should be a priority. Area monitoring including TLDs (Thermoluminescent Dosimeter) and area alarming dosimeters should be established in both the contaminated and non-contaminated zones to provide a basis for dose calculations. Dose calculations must follow a procedure approved by a Health Physicist.

3.4.3 Consumable Resources

Tab E, Annex B of the PLGS off-site plan [2] provides a template for the consumables on-hand at Saint John Regional Hospital and Charlotte County Hospital. A similar template is required for the decontamination site, with the requirements of each position being identified and separated into specific storage containers for easy disbursement once the decontamination site is required. For example, traffic control would require a specific equipment checklist similar to Table 4.

3.5 Critical Equipment

Table 5 estimates the amount of critical equipment required by this Concept of Operations. Once plans are finalized these numbers will require re-examination and/or confirmation.

It is expected that contaminated water from decontamination operations will be stored for disposal at a later date. Final disposal will be performed during recovery operations.

Figure 9 illustrates an example of the way the equipment would be deployed when the monitoring and decontamination site is fully operational.

Table 4: Example resource checklist

Traffic Control Equipment in Storage	Number	Comments
Traffic Cones	50	
Flashlights	2	
Barricades	10	
Reflective ID Vests	4	
Barrier Tape	5 rolls	
Nylon Gloves	5 boxes	
Two Portable Spotlights with Generator	1 unit	May not be required depending on location of mass decontamination site
Etc.		
Equipment to be picked up	Number	Comments
Personal Alarming Dosimeter (PAD)	4	Tell issuing staff if you are unfamiliar with the operation of the PAD
Thermoluminescent Dosimeter (TLD)	4	Ensure your TLD number is registered to you and that it remains on your person at all times. Inside or clipped to a breast pocket is an ideal location.
Etc.		
Equipment you should have with you	Number	Comments
PPE	1	Should include a field fit tested mask
Etc.		

Table 5: Estimated critical equipment numbers

Equipment	Number
Temporary Shelters	Four large (4), portable tents capable of housing evacuees in inclement weather. Two (2) required at the Prince of Wales site. Two (2) at the Hwy 780 site.
Decontamination structures	TBD based on option analysis and required throughput.
Portal monitors (12)	Twelve (12) for screening (6 at Prince of Wales decon, 4 at 780 site, 2 at UNBSJ)
Beta/Gamma Contamination meter	One (1) at the exit of each decontamination structure and 2 spares.
Beta/Gamma dose rate meter	Two (2) as back-up for contamination meters. Requires training to use for detection of contamination.
Sets of PPE Level C	Sufficient for those employed in the (potentially) contaminated area.
Sets of PPE Level D	One for every individual at the decon site.
PADs	One (1) for monitoring (potentially) contaminated decon area. .
TLDs	Sufficient for monitoring both contaminated and non-contaminated decon areas.

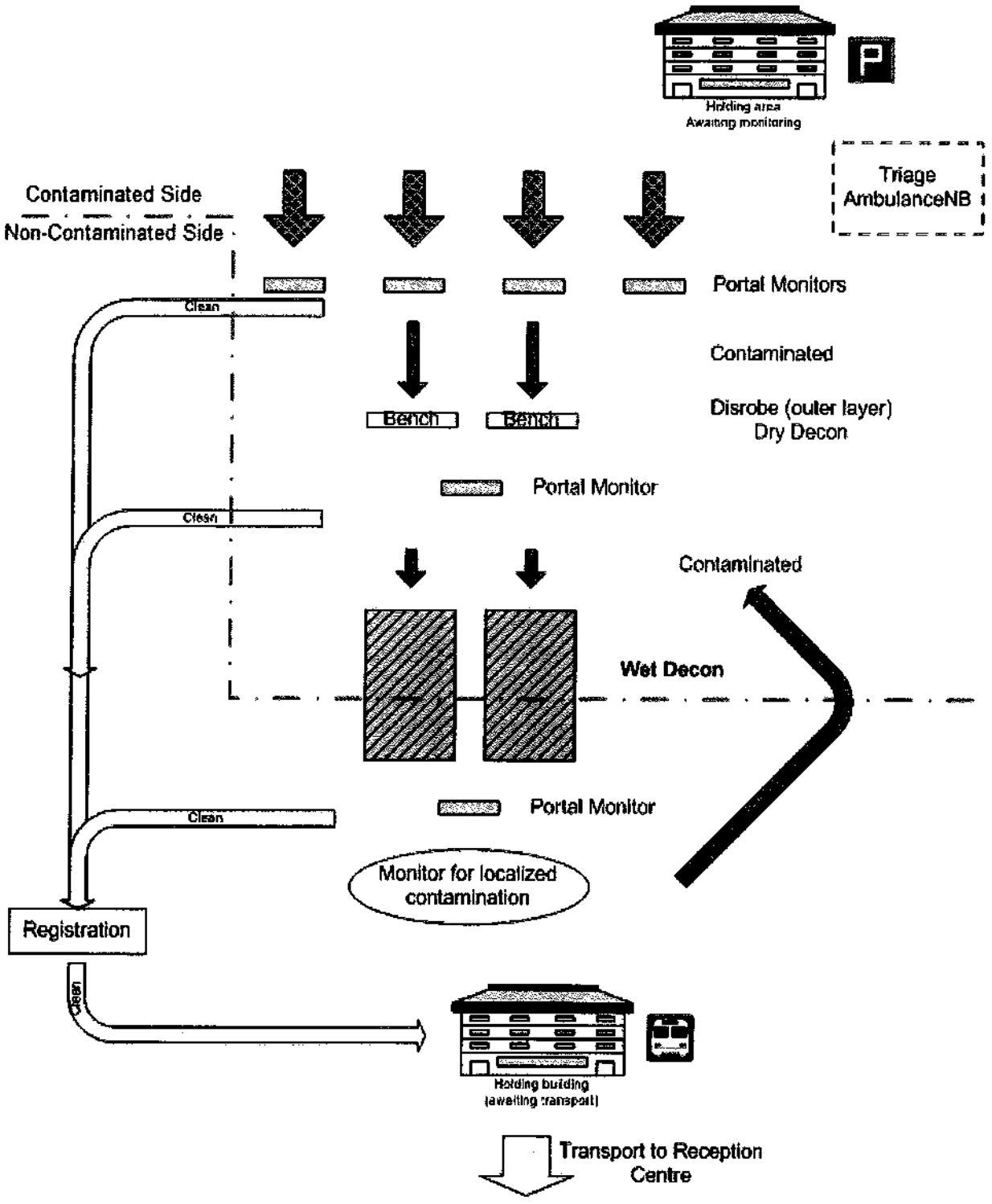


Figure 9: Basic decontamination site layout

4. SUMMARY

The Concept of Operations presented in this document provides a methodology for conducting mass decontamination operations in the event of a Site Area Radiation Emergency or a General Radiation Emergency classification. The concepts presented were the result of discussions with NB EMO regarding the intention to evacuate the local population before they have the potential of becoming contaminated following a release to the environment. To this end, evacuation of a limited number of Warden Zones should be considered at Site Area Radiation Emergency and all Zones should be evacuated at General Radiation Emergency.

This document also discussed, in strategic terms, the personnel and equipment requirements resultant from this ConOps. The proposed requirements will require re-examination in the event that the ConOps is significantly altered.

ANNEX A. RN EMERGENCY RESPONSE CAPABILITIES REQUIREMENTS

The capability requirements included in this Annex are based on IAEA GS-R-2, taking into consideration the types of emergencies and the scope for which the regional plan needs to be developed.

Table A-1 shows the capabilities required based on the functional requirements of GS-R-2 adapted for the needs of the regional plan.

Table A-1: Capabilities requirements

GS-R-2 functional area	Requirements for the mass decontamination plan
Manage and coordinate emergency operations	The NB EMO is responsible for directing actions after an emergency at PLGS.
Identify, notify and activate	NB Power must be able to detect and identify events that take place at PLGS and notify NB EMO. NB EMO must ensure that notification of all affected neighbouring regions, the federal government and the IAEA takes place. This also includes an effective regional RN early warning and detection system.
Mitigation	Individual provinces and states are responsible for providing mitigation for emergencies within their own territory.
Urgent protective actions	Individual provinces and states are responsible for urgent protective actions for emergencies within their own territory.
Instructions to the public	Instructions to the public are the responsibility of the individual provinces and states. The NB EMO must be prepared to provide necessary information to neighboring regions to facilitate these instructions.
Protect emergency workers	Protecting emergency workers is the responsibility of the jurisdiction providing resources within the context of the regional plan. The NB EMO must be prepared to provide necessary information to neighbouring regions to allow workers to be properly protected.
Assess and evaluate	The NB EMO must be able to coordinate the assessment of the real and potential impacts of an emergency and to provide a consolidated assessment and recommendations to all affected provinces and/or states. This includes: • The receipt and assessment of technical information from PLGS; • The coordination of survey teams and survey strategies; • The consolidation of survey data from various monitoring networks, including the possible use of a regional network; • The assessment of real-time survey data; • Harmonized intervention levels and operational intervention levels; • Plume tracking and projections; and • Dose projections.
Manage the medical response	Dealing with medical casualties is primarily the responsibility of the first responders and/or health services. NB EMO must be able to coordinate assistance where it is needed. In cases involving mass casualties with potential contamination, the province and/or state affected must be able to coordinate the dispatch of those casualties to appropriate medical facilities. In cases involving complications arising from radiation overexposure, requiring

	specialized assistance, the region must be able to coordinate the provision of such assistance from regional resources, out-of-region resources, or through the IAEA.
Keep the public informed	Keeping the public informed is the responsibility of the affected province and/or territory. The NB EMO must be able to provide information required to accomplish this.

TAB 3

ANNEX B. ROLES AND RESPONSIBILITIES OF DECON CENTRE STAFF

- Incident Commander:
    - Oversees and controls all operations at the decontamination site, including:
        - Decontamination operations;
        - Medical operations;
        - Transportation;
        - Logistics; and
        - Security;

- Decontamination (Decon) Supervisor:
    - Ensure that Decon is properly established and manned accordingly;
    - Ensure that Decon operations are conducted effectively;
    - Oversee operation of the decontamination site from the non-contaminated side of the contaminated/non-contaminated line. If it becomes necessary to transit to the contaminated side the Supervisor must be monitored prior to returning to the non-contaminated side;
    - Ensure that personnel evacuated are logged appropriately;
    - Ensure that all members of Decon are polled every 15 minutes for EPD readings; and
    - Ensure that any dose rate or accumulated dose measurements which are considered to be high are passed to NB EMO EOC.

- Recorder: The Recorder performs the following tasks:
    - Poll personnel working within Decon for EPD dose readings and record them in an appropriate log every 15 minutes;
    - Has evacuees complete the Registration Form; and
    - Reports any discrepancies or instances that the maximum permissible dose (50 mSv) may be exceeded to the Decontamination Supervisor.

- Guide: The Guide shall:
    - Guide personnel towards Decon;
    - Place equipment on reception table for separate monitoring; and
    - Pass person on to portal monitor operator.

- Portal Monitor Operator: The Portal Monitor Operator shall:

- Ask person to step into the portal monitor after two consecutive background counts. If clear, pass person to Recorder where particulars will be taken. If an alarm occurs, perform the following procedure:
    - Ask person to step back and permit portal monitor to perform two consecutive background counts;
    - Ask person to step back into the monitor. If clear, ask the person to step back and repeat process one more time to give person confidence that they are not contaminated; if clear again, pass person to the Recorder; and
- If the portal monitor alarms twice, the person may be contaminated. Ask the person to proceed to the location of the Disrobe Monitor for further monitoring.

- Disrobe Monitor: Equipped with a survey meter and beta probe, inspect person to determine location of contamination. If contamination is found perform the following:
    - Provide evacuee with a Decontamination kit;
    - Direct person to remove suspected contaminated clothing item(s), dispose of these articles in designated disposal bag and recheck the area (bag is to be labelled with particulars of the individual);
    - Successive layers of clothing shall be removed until contamination is removed;
    - If contamination is found to be on the skin, the person is passed to the Shower Monitor; and
    - Once contaminated clothing is removed and the individual is assessed as not contaminated, person is directed to the Clean Monitor and then on to the DCP Recorder.

- Shower Monitor: Equipped with a survey meter, this person will:
    - Have person enter the shower, and give directions on proper method of removing contamination;
    - On completion of showering, monitor the person again to ensure that all contamination has been removed. If contamination above background is still found, showering will have to be repeated, paying particular attention to hotspots; and
    - Once the Shower Monitor feels the person has been successfully decontaminated, he/she is passed to the Clean Monitor for a confirmation check.

TAB 3

- Clean Monitor: This person shall be equipped with a survey meter with beta probe and has the following tasks:
    - Perform final verification of all personnel that have been required to shower;
    - Any personnel that have undergone showering shall be provided with a "shower pack"; and Pass personnel on to the Recorder

TAB 3

ANNEX C. GLOSSARY

ALARA	All reasonable measures are taken to minimize radiation exposure to levels As Low As Reasonably Achievable (ALARA), social and economic factors taken into consideration.
Background Radiation	Radiation associated with natural sources or any other sources in the environment that are not amenable to control.
Decontamination	The complete or partial removal of contamination by a deliberate physical, chemical or biological process.
Decontamination Unit	A set of equipment and processes that allows decontamination operations to take place.
Decontamination Operations Supervisor	The individual responsible for directing operations at the decontamination site.
Decontamination Site	The location where decontamination operations are performed following an emergency at PLGS. This could be fixed, mobile or portable decontamination units.
Dosimetry	Assessment (by measurement or calculation) of radiation dose.
Emergency Worker	A worker who may be exposed in excess of occupational dose limits while performing actions to mitigate the consequences of an emergency for human health and safety, quality of life, property and the environment.
Fission Products	The radioactive elements created by the fission process.
Fixed Decontamination Unit	A decontamination unit that is in a permanent location.
Level C PPE	Respiratory PPE includes a full or half-face piece air purifying respirator with a NIOSH approved, P-100 filter, and outer wear includes an appropriate, hooded, protective garment (e.g., Spunbonded Olefin - a well know type is Dupont's Tyvek), with rubber boots and gloves.
Level D PPE	Protective/disposable clothing such as scrubs and possibly water-repellent surgical gown or coveralls, with surgical gloves and chemical resistant safety shoes with boot covers. Paired with a hospital mask.
Mass Decontamination	The physical decontamination of a large number of people and equipment within a relatively short period of time.
Mobile Decontamination Unit	A decontamination unit that does not require assembly once deployed.
Monitoring	In a radiological context, the process of checking a person or object for radioactive contamination.
Off-Site Emergency	A nuclear emergency involving the reactor which has led, or may lead, to a significant release of radioactive material from the facility.
On-Scene Response	This is the portion of the response that takes place within the immediate area of the emergency. There is no fixed or firm definition of what is meant by "immediate". In general, this includes the area that is controlled by the emergency first responders and from which non-essential personnel and persons are evacuated.
Portable Decontamination Unit	A decontamination unit that requires set-up upon arrival at a location.
Site	The area immediately surrounding PLGS.
On-Site Emergency	Events resulting in a major decrease in the level of protection for those on or near the site. Emergency response level adopted when there is a confined nuclear emergency with no radiological threat to the public.
Survey Specialist	A person who through their training and practical experience is qualified to conduct surveys of radioactive contamination.

TAB 3

ANNEX D. LIST OF ABBREVIATIONS

ALARA ..... As Low As Reasonably Achievable
EOC ..... Emergency Operations Centre
IAEA ..... International Atomic Energy Agency
mSv ..... milli-sievert
PLGS ..... Point Lepreau Generating Station
PPE ..... Personal Protective Equipment
RN .....Radiological/Nuclear
TLD .....Thermoluminescent Dosimeter
UNBSJ ..... University of New Brunswick Saint John

TAB T

POINT LEPREAU OFF-SITE EMERGENCY PLAN

ESSENTIAL OPERATIONAL INFORMATION

POINT LEPREAU GENERATING STATION (PLGS)

OFF-SITE EMERGENCY OPERATIONS CENTRE (OEOC)

Location

The Point Lepreau Generating Station Off-site Emergency Operations Centre is located 11.5 kilometers north of PLGS off highway 790.

Alerting and Assembly

The PLGS Shift Supervisor (SS) / Incident Commander (IC) are responsible to notify offsite authorities promptly during three categories of radiation contingencies: Radiation Alert, Site Area Radiation Emergency, and General Radiation Emergency.

When the SS/IC is made aware of an event involving radiation, he/she declares an Alert or Emergency based on criteria and conditions for Radiation Event Classification. In the event that Emergency conditions exist, the event is further categorized as a Site Area or General Radiation Emergency.

The International Atomic Energy Agency (IAEA) distinguishes between the two emergency categories as follows:

General Emergency—an event involving an actual, or substantial risk of, release of radioactive material or radiation exposure that warrants taking urgent protective action off site.

Site Area Emergency—an event involving a major decrease in the level of protection for those people on site and near the facility. Preparations shall be made to take protective actions off site, should they be required.

In a **Radiation Emergency** (Site Area or General), the Offsite Emergency Operations Center (OEOC) will be activated, as outlined in *EP-78600-EOC1*.

TAB T

In a **Radiation Alert**, the OEOC will be activated, as outlined in *EP-78600-EOC1,* unless the alert is for a Radioactive Materials Transport Accident or a Request for Assistance.

OEOC Staff Requirements

OEOC Coordinator with:

- OEOC Assistant
- Radio Operator
- Survey Teams (4)
- Liaison
- Decontamination Teams
- Administrative Support Representatives (ASRs)
- MDC Support Teams
- Port Monitoring Teams
- Hospital Monitoring Teams
- Contamination Control Team
- Reception Centre Monitoring Teams (2)

NB EMO OEOC Manager with:

- RCMP
- Ham Radio Operator
- Warden Service (Chief Warden) with DNR representative

Responsibilities

OEOC Coordinator is responsible:

a. to contact and establish the OEOC Team and to direct the OEOC Team in the evaluation of the magnitude and extent of the radiation fields following a release of radioactivity from PLGS,
b. to direct the radiation survey teams and keep NB EMO and Incident Command Staff informed of radiation conditions outside the station, during the initial phase of the event, the

coordinator's point of contact will be the PLGS Duty Shift Supervisor (SS) / Incident Commander (IC),
c. once the Incident Command Post (STOIC Classroom 1) has been activated, the point of contact becomes the PLGS Safety Officer, and
d. once the OEOC has been staffed, assign personnel to specific duties, such as: OEOC Assistant, Liaison, Radio, ASR, Contamination Control, Survey Teams 1-4, Assistants at Roadblocks, Monitoring Teams at Reception Centre, Ports, Hospitals and MDC locations.

OEOC Assistant is responsible:

a. is the second-in-command at the OEOC and is under the general guidance of the OEOC Coordinator,
b. for directing the survey teams and compiling results,
c. for the rotation, rest, and feeding of the survey crews, and
d. to assist the OEOC Coordinator in other tasks, as required.

Radio Operator is responsible:

a. to provide communications during a radiation emergency, and
b. to provide local communications during normal operations.

Survey Teams are responsible:

a. to determine radiation levels following a release of airborne activity from the Point Lepreau Generating Station (PLGS) to the environment.

Liaison is responsible:

a. for directing activities outside the OEOC Coordinator's area at the OEOC,
b. for controlling the issue of emergency equipment from the OEOC storeroom,
c. for monitoring the activities of other agencies at the OEOC, and
d. for controlling access to the OEOC Coordinator's area.

Decontamination Teams are responsible:

a. to set up the portable portal monitor on site, and
b. to check personnel for contamination on entry to the OEOC
c. Decontaminate personnel, as required, and

d. for controlling the issue of emergency equipment from the OEOC storeroom.

Contamination Control Team is responsible:

a. support each MDC Support Team, Port Monitoring Team, Hospital Monitoring Team and Reception Centre Monitoring Teams
b. to provide a GREEN Radiation Protection Qualified staff along with the 6 portable portal monitors to each Monitoring and Decontamination Center,
c. to provide a GREEN Radiation Protection Qualified member with a portable portal monitor to Blacks Harbour and to the City Port of Saint John,
d. to provide a GREEN Radiation Protection Qualified member with a portable portal monitor to the Saint John Regional Hospital and the Charlotte County Hospital,
e. to provide a GREEN Radiation Protection Qualified member with a portable portal monitor to each Reception Centre identified by the Red Cross, and
f. to follow radiation protection guidelines as detailed in their pre-deployment briefing from the OEOC Liaison Officer.

NB EMO OEOC Manager is responsible;

a. for the coordination of all off-site emergency operations in the 20 km Emergency Planning Zone to include access control measures, alerting the public, and when necessary, the orderly evacuation of residents,
b. to assist and advise the supported organization (PLGS) on matters concerning joint support,
c. to establish and maintain a communications link with NB EMO, MDC, Warden Service, RCMP, and
d. to the Director of the Nuclear Control Group. (Director NB EMO)

RCMP is responsible:

a) to coordinate with the District Commander / OPS NCO West District to ensure that roadblocks are set up to secure the affected area,

b) if an evacuation of the Point Lepreau area is ordered, to coordinate the traffic control points to be established to control the flow of evacuees, and
c) to provide direction to the evacuating public and if necessary to the incoming traffic as to conditions and any restrictions that may exist.

Ham Radio Operator is responsible;

a) to establish and maintain communications with NB EMO, and the Monitoring and Decontamination Centre, when activated.

Warden Service Chief Warden is responsible:

a) to alert, when directed to do so, residents and non-residents to listen to radio or television stations for further instructions,
b) to record and report where any resident has not been alerted, or requires special assistance,
c) to assist the RCMP in controlling traffic if and when directed to do so,
d) to be prepared to provide radio communications links at reception centres, decontamination points, or any critical location not otherwise provided with radio communications,
e) to act as guides and radio communicators for buses assigned to pick up and transport evacuees, and
f) to continue to pass information to residents as required.

Contact Information

Members of the OEOC Team	**Phone**
NB EMO OEOC Manager	(506) 659-3934
Direct Line PEOC Fredericton	(506) 659-3958
PNB Public Safety (mobile w/earpiece)	(506) 659-3930
RCMP	(506) 659-3955
Warden Service [redacted]	(506) 659-1905
Pager (Chief Warden)	(506) 558-5000
NB EMO FAX	(506) 659-6926

NB Power / PLGS Positions at the OEOC

Co-ordinator	(506) 659-3933
Assistant	(506) 659-3953
Liaison	(506) 659-6925
Radio Operator	(506) 659-3936

TAB T

ASR	(506) 659-3937
Monitoring / Equipment Trailer	(506) 659-3931
Rest/Conference Trailer	(506) 659-3935
Kitchen/Conference Room	(506) 659-3932
HAM Radio Room	(506) 659-2255
OEOC FAX (Receive)	(506) 659-3942
OEOC FAX (Send)	(506) 659-3938

TAB U

RESPONSIBILITIES

CANADIAN NUCLEAR SAFETY COMMISSION

(CNSC)

Preparedness

The CNSC maintains a Nuclear Emergency Response Plan (NERP), along with supporting procedures and guidelines, to address its response to a nuclear emergency.

Role and Responsibilities

The role of the CNSC is to provide assurance that appropriate actions are taken by the licensee and response organizations to limit the risk to health, safety, security of the public and the environment.

The CNSC:

- has the same regulatory role before, during and after an emergency.
- can amend licence conditions and issues emergency orders as required.
- assesses the safety significance of the event, diagnosis and prognosis, such as source term estimation and plume or dose modeling.
- ensures appropriate actions are being taken (on-site and off-site).
- is a credible source of information on station condition?
- will disseminate objective scientific, technical and regulatory information.

Provision of Personnel

- Based on the type of nuclear emergency, the CNSC will send a Liaison Officer to the PEAC in the PEOC.
- Inspectors will be present at our licensee.
- Liaison Officer will go to the GOC in Ottawa.

Training and Exercises

- The CNSC may participate in training and exercises held by the Province of New Brunswick.

Memorandum of Understanding (MoU)

- The CNSC will cooperate in carrying out its mandate with respect to nuclear safety regulation, public safety and for the protection of the environment in

the Province of New Brunswick as stated in the "*Memorandum of Understanding Between the Canadian Nuclear Safety Commission and New Brunswick Emergency Measures Organization*".

Emergency Contact Information

- To contact the CNSC Duty Officer (24/7 service), call: **613-995-0479.**

TAB V

HEALTH CANADA

(HC)

Preparedness:

- Maintenance of the Federal Nuclear Emergency Plan (FNEP), which describes the Government of Canada's arrangements for managing a major nuclear emergency.
- Develop and maintain appropriate departmental or agency plans and procedures to carry out their roles and responsibilities as described in the FNEP Annex, and identify and maintain the infrastructures and capabilities needed to implement them;
- Participate in intra- and interdepartmental nuclear emergency preparedness committees as needed;
- Maintain human resources adequately trained and equipped to carry out their plans and procedures;
- Lead and participate in training, drills and exercises to verify that response resources (plans, equipment, procedures) are operational, relevant (for example, fit-for-purpose), inter-operable and up to date;
- Keep abreast of improvements in approaches, technologies and capabilities relevant to emergency management and participate in projects, studies or research aimed at developing or improving any necessary standards, guidelines, capabilities and interoperability;
- Participate in post-emergency and post-exercise after action reviews and address relevant lessons-learned in order to keep plans up-to-date and to incorporate current knowledge.

Roles and Responsibilities:

- Health Canada is the lead department responsible for coordinating the nuclear emergency response of more than eighteen federal organizations in support of impacted provinces and territories. A structured framework is required to facilitate coordination as these organizations have distinct roles and responsibilities.

TAB V

- Nuclear Emergency Functions of the FNEP Technical Assessment Group:

1 Notification and monitoring

1.1 Maintain a 24/7 notification and monitoring capability for FNEP arrangements.

1.2 Host and/or set-up facilities to support the FNEP TAG and/or Task Teams.

1.3 Maintain a capability to rapidly assess all notifications and determine changes to the FNEP response level.

1.4 Maintain a capability for rapid notification and technical liaison with the International Atomic Energy Agency (IAEA), the World Health Organization (WHO) and other international organizations.

2 Liaison and coordination

2.1 Maintain technical liaison and coordinate with the provincial technical teams.

2.2 Establish and maintain technical liaison with relevant response partners.

2.3 Facilitate the deployment of technical and scientific resources for operations in affected areas, including federal radiological task teams for field monitoring, radiological characterization and impact assessment.

2.4 Assist in the management of international requests/offers for radiological/nuclear technical/scientific advice or assistance.

3 Technical assessment of radiological hazards and impacts

3.1 Provide a capability for the assessment of actual or potential radiological hazards within Canada or the affected country, as applicable, and for the technical evaluation of countermeasures.

3.2 Gather and consolidate technical information on the emergency.

3.3 Characterize the source term (reactor, explosives, radiological device, radiation source, etc.), its potential evolution and the actual and potential releases of radioactive materials.

3.4 Evaluate environmental transfer of the radioactive materials within Canada, the affected country or towards Canada as applicable (for example, atmospheric/marine transport models, ground contamination, etc.).

3.5 Evaluate actual and potential radiological impacts on health and safety, property and/or the environment and perform dose assessments where appropriate.

3.6 Identify national and international technical/scientific resources and laboratories potentially required in support of response.

3.7 Perform laboratory analysis of food, soil, air filters, etc.

3.8 Propose emergency classification level (International Nuclear Event Scale) and report to the IAEA.

3.9 Prepare specialized products to support radiological assessment and decision-making on countermeasures.

4 Field operations

4.1 Conduct and coordinate radiological monitoring and surveying.

4.2 Support the collection and shipment of environmental, food, and/or investigative samples for laboratory analysis.

4.3 Support radiological contamination screening activities (for example for public, passengers or conveyances).

4.4 Assess monitoring data to verify radiological release/presence of contamination.

4.5 Conduct planning for decontamination activities.

4.6 Provide just-in-time training to field operators and/or first responders (police, fire, medical and others).

4.7 Support FNEP TAG field operations with emergency telecommunications equipment and services.

4.8 Assist in the control of food and goods imported from affected areas.

5 Protective action recommendations

5.1 Provide recommendations for protective actions in areas of federal jurisdiction or as requested by Province (for example: access control, medical treatment, sheltering, evacuation, food and water control, occupational health and safety, conveyances, imports, etc.).

5.2 Implement protective actions under federal jurisdiction.

5.3 Contribute to assessments of the actual or potential impacts of protective actions.

6 Protection of emergency workers

6.1 Provide radiation protection advice, assistance and equipment for first responders and federal emergency workers, including provision of emergency dosimetry services.

6.2 Coordinate the implementation of occupational radiation protection programs for federal emergency workers, or in support of provinces.

7 Medical responses

7.1 Provide training for the treatment of contaminated and/or overexposed casualties.

7.2 Provide or arrange for the provision of medical radiation expertise and capabilities for the treatment of contaminated and/or overexposed casualties.

8 Informing the public

8.1 Develop technical communication products, including technical information and assessment of impacts, for the Federal-Provincial/Territorial emergency communication functions.

8.2 Assist in dissemination and customization of information products on protective actions to target specialized audiences.

8.3 Provide SME support and spokespersons for operation of a media centre and other communication functions.

9 Transition to recovery

9.1 Contribute to developing a recovery action plan.

10 De-escalation

10.1 Assist in de-escalation of the FNEP.

- HC is responsible for all relevant actions consistent with the Federal Emergency Response Plan (FERP) Emergency Support Function #5 - Public Health and Essential Human Services.

- Health Canada is the national competent authority to liaise with the International Atomic Energy Agency (IAEA) for information exchange and requests for assistance.

Provision of Personnel:

- FNEP TAG Liaison Officer to the Nuclear Control Group
- R/N Field Response Experts, upon request
- Dosimetry Specialists, upon request

Emergency Contact Information:

FNEP Duty Officer (24/7): **613-954-6651**

Acronyms & Abbreviations

ALARA	As Low As Reasonably Achievable
ANB	Ambulance New Brunswick
ARGOS	Accident Reporting and Guidance Operational System
ASR	Administrative Support Representative
BCP	Business Continuity Plan
BDBR	Beyond Design Base Release
CCG	Canadian Coast Guard
CCH	Charlotte County Hospital
CISM	Critical Incident Stress Management
CMOH	Chief Medical Officer of Health
CNSC	Canadian Nuclear Safety Commission
ConOps	Concept of Operations
CP	Command Post
CPEP	Community Planning & Environmental Protection
CROPs	Criminal Operations
CSCFTS	Corporate Services, Community Funding and Technical Service
DAAF	Department of Agriculture Aquaculture & Fisheries
DBR	Design Base Release
DEL	Derived Emission Limits
DELG	Department of Environment and Local Government
DFO	Department Fisheries and Oceans
DH	Department of Health
DHW	Department of Health and Wellness
DND	Department of National Defence

DNR	Department of Natural Resources
DPS	Department of Public Safety
DTI	Department of Transportation and Infrastructure
EC	Environment Canada
ECO	Executive Council Office
ECFV	Emergency Containment Filtered Vent
ED	Emergency Department
EECD	Education & Early Childhood Development
EG	Executive Group
ELG	Environment and Local Government
EMC	Executive Management Committee
EME	Emergency Mitigating Equipment
EMO	Emergency Measures Organization
EMP	Emergency Management Plan
EOC	Emergency Operations Center
EPI	Emergency Public Information
EPWG	Emergency Preparedness Working Group
EPZ	Emergency Planning Zone
ERS1	NB Power Emergency Radio System #1
ERS2	NB Power Emergency Radio System #2
ERT	Emergency Response Team
FCG	Federal Coordination Group
FCSC	Federal Coordination Steering Committee
FNEP	Federal Nuclear Emergency Plan

GNB	Government of New Brunswick
HC	Health Canada
HEM	Health Emergency Management
HPOC	Health Portfolio Operations Center
IAEA	International Atomic Energy Agency
IC	Incident Commander
IP	Ingestion Pathway
IPMP	Ingestion Pathway Monitoring Plan
IRCS	Integrated Radio Communications System
IRG	International Repeater Group (Network)
ISR	International Safety Research
JIC	Joint Information Center
KI	Iodine Prophylaxis
LPZ	Longer-term Protective Action Zone
MASAS	Multi-Agency Situational Awareness System
MCTS	Marine Communication and Traffic Services
MDC	Monitoring and Decontamination Center
MOH	Medical Officer of Health
MSC	Meteorological Service of Canada
mSv	Milli-Sievert
NAADS	National Alert Aggregation & Dissemination System
NBEMO	New Brunswick Emergency Measures Organization
NCG	Nuclear Control Group
NERS	National Emergency Response System

NIMS	National Incident Management System
NOTAM	Notice to Airman
NOTSHIPS	Notice to Ships
NPP	Nuclear Power Plant
NRF	Nuclear Response Force
OCMOH	Office of Chief Medical Officer of Health
OEOC	Off-site Emergency Operations Center
OILs	Operational Intervention Levels
OSS	Operational Support Services
PADs	Personal Alarming Dosimeters
PARs	Passive Autocatalytic Recombines
PAZ	Precautionary Action Zone
PEAC	Provincial Emergency Action Committee
PEOC	Provincial Emergency Operations Center
PIRs	Primary Information Requirements
PLGS	Point Lepreau Generating Station
PMCC	Provincial Mobile Communication Center
PPE	Personal Protective Equipment
PSC	Public Safety Canada
RBCA	Risk Based Corrective Action
RBSLs	Risk Based Screening Levels
REAC	Regional Emergency Action Committee
REMC	Regional Emergency Management Coordinator
REOC	Regional Emergency Operations Center

RMOH	Regional Medical Officer of Health
RN	Radiological / Nuclear
S3 FAST	Safety Support System – Field Assessment Survey Tool
SAIC	Science Application International Corporation
SAMG	Severe Accident Management Guidelines
SAR	Severe Accident Release
SASMS	Severe Accident Sampling & Monitoring System
SD	Social Development
SJRH	Saint John Regional Hospital
SOAP	Supplementary Office and Auxiliary Personnel
SOG	Security Operations Group
SS	Shift Supervisor
SSTLs	Site-Specific Target Levels
STOIC	Simulator Training and Office Interface Complex
Sv	Sievert
TAG	Technical Advisory Group
TLD	Thermoluminescent Dosimeter
UNBSJ	University of New Brunswick Saint John
UPZ	Urgent Protective Action Zone
VPN	Virtual Private Network
WHO	World Health Organization

This is for planning purpose only.

[redacted]

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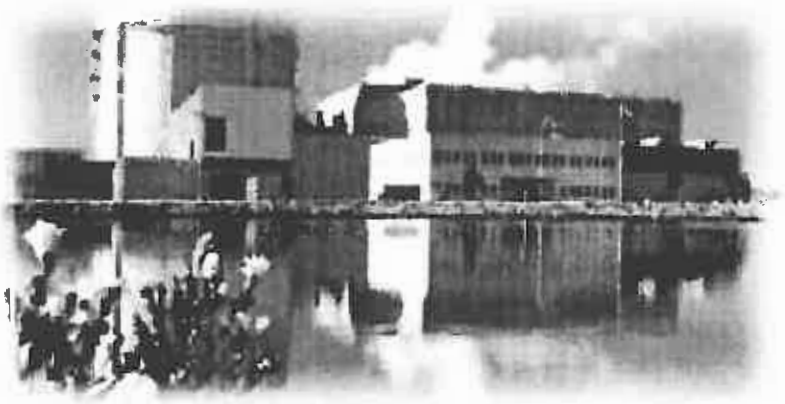
SU-6

POINT LEPREAU GENERATING STATION

Information Report

TECHNICAL PLANNING BASIS – RADIATION EMERGENCY
IR-78600-02
Rev. 0



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1. Introduction

1.1 Background

Accidents that could lead to a significant radiological impact are very unlikely. Nevertheless, emergency response plans are part of a sound safety management program. To be effective, practical and realistic, emergency plans must be based on a sound *technical planning basis*. The technical planning basis document provides a practical description of potential accidents, including the range of potential events, their likelihood, their consequence, their timing and the effectiveness of protective actions. The technical planning basis also leads to the definition of emergency planning zones and planning strategies that take into account the risk of accidents and of health effects and provide a basis for the efficient and reasonable investment of resources at the planning stage.

The technical planning basis is for *planning purposes* only. It is not intended as a document to be used during the response to a nuclear incident or accident.

1.2 Aim

This document contains the technical planning basis for Point Lepreau Nuclear Power Station (PLGS). Its aim is to provide the practical information necessary to develop sound, effective and reasonable emergency response plans and capabilities.

This document focuses on protecting the health of persons during postulated accidents in accordance with internationally accepted principles for emergency intervention.

1.3 Scope

This report covers nuclear accidents involving the PLGS reactor. It focuses on the short-term countermeasures; longer-term protective actions such as relocation, resettlement, large-scale food control, remediation and recovery are not specifically addressed. These issues are the object of on-going work at the International Atomic Energy Agency (IAEA) and involve socio-political decisions that are beyond the scope of the present work. Some guidance on the definition of zones where detailed food sampling plans can be established is contained in [IAE953].

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1.5 Definitions and Acronyms

Beyond Design Basis Event	Postulated failure of equipment and safety systems that is deemed to be too improbable to take into account in the design of the plant.
Beyond Design Basis Release (BDBR)	Release of radioactive material of a magnitude and composition that is representative of Beyond Design Basis Events with a partially impaired containment
Cloud shine	External radiation from the radioactive contamination in the air
Contingency zone	Zone within which urgent protective actions can be implemented based on available resources and capabilities; safety extension of the UPZ to take into account the very unlikely combination of beyond design basis events.
COSYMA	Radiological risk calculation program used to estimate the doses and health risks from nuclear accidents
Design Basis Event (DBE)	Postulated failure of equipment and safety systems that is taken into account in the design of the plant
Design Basis Release (DBR)	Release of radioactive material of a magnitude and composition that is representative of Design Basis Events
Deterministic effects	Acute health effects that may occur as a direct result of the exposure to radiation
Effective dose	Weighted average of the dose received by all organs in the body from both internal and external exposure; the effective dose is related to the increased risk of latent cancer
Emergency planning zone	Zone within which plans are developed to take protective actions in case of a nuclear accident
Equivalent dose	Dose received by an organ
Ground shine	External radiation from the radioactive contamination deposited on the ground
Intervention level	Avertable dose above which the benefit of taking a protective action outweighs its cost or detriment
Longer-term protective action zone (LPZ)	Zone within which plans are developed to control agricultural products
Morbidity	Illness that does not result in death
Mortality	Death
Operational intervention level (OIL)	Level that is measurable using common instruments (e.g. hand-held dose rate meter) that corresponds to the intervention level
Pasquill	Measure of the atmospheric stability; "A" corresponds to the most unstable (most dispersive) conditions; "F" corresponds to the most stable (least dispersive) condition
Precautionary action zone (PAZ)	Zone that should be automatically evacuated or sheltered in the event of an imminent release to prevent deterministic effects in the population
Reduction factor	Factor by which a given protective action reduces the dose that would be received by an individual

Severe Accidental Release (SAR)	Release of radioactive material of a magnitude and composition that is representative of severe accidents with impaired containment
Severe accident	Accident leading to significant fuel damage and release of fission products to the containment
Sievert (Sv)	Unit of effective or equivalent dose
Stable iodine	Iodine prophylaxis, usually in the form of pills, ingested to protect the thyroid gland against the harmful effects of radioactive iodine
Stochastic effects	Latent health effects (cancer) associated with exposure to radiation; the incidence of stochastic effects can only be determined through epidemiological studies that measure the increase of cancers in a large population
Urgent protective action	Protective action that is taken within the first few days after an accident and includes sheltering, stable iodine, evacuation and immediate ban on locally grown food
Urgent protective action zone (UPZ)	Zone within which plans are developed to take protective actions if the environmental surveys and plant parameters indicate the need to do so.

2. Concepts and Principles

2.1 Emergency Planning Principles

Emergency preparedness can be defined as the measures that enable individuals and organizations to stage a rapid and effective emergency response. In the context of nuclear emergencies, protective actions include measures to limit the exposure of the public to radioactive contamination through external exposure, inhalation and ingestion. The objectives of these actions are to minimize the risk of stochastic effects (cancer) and to prevent deterministic effects (radiation illness or death).

The decision to plan for or to implement protective actions should follow three general principles [SS109]:

- all possible efforts should be made to prevent deterministic effects;
- the intervention should be justified in the sense that introduction of the protective action should achieve more good than harm; and
- the level at which the protective action is introduced should be optimized so that the action will produce a maximum net benefit.

ICRP 40 [ICR40] establishes the basic principle on which emergency preparedness for any type of accident should be based:

> *"The preparation of emergency plans should be based on consideration of a wide range of potential accidents, including those having low probabilities of occurrence ... [but]... the degree of details in plans should decrease as the probability of the accident decreases."*

ICRP 60 [ICR60] elaborates on this principle and states that organizations should plan in detail for probable events in order to minimize stochastic effects, and make provisions (less detailed plans) for less probable events in order to prevent deterministic effects, or death. This does not mean that accidents with lower probabilities should be ignored, but rather that the emergency preparedness efforts and resources should be invested wisely. On the other hand, from a practical point of view, low probability events with large consequences would require more extensive protective actions over a larger area. The planning challenge therefore consists of determining the appropriate level of preparedness effort required to protect the public against possible serious consequences.

In Canada, the Ontario Provincial Working Group #8 [OWG88] attempted to quantify the existing international guidance on the need for detailed emergency preparedness as follows:

> For events with an occurrence frequency of 10^{-5} per year or greater, *"planning [should] assure public exposure to radioactive doses be kept less than the protective action levels"*, where the protective action levels are well below levels which could lead to early health effects. For events with an occurrence frequency lower than 10^{-5} per year, or which cannot be quantified, *"planning [should] protect against the onset of early morbidity and the onset of early mortality in a member of the public"*.

In practice, this means that the emergency plans should aim at:

- minimizing stochastic effects for the credible accident scenarios;
- preventing deterministic effects for severe accidents[1]; and
- enabling the expansion of emergency measures outside the detailed planning zones should it be required at the time of the accident.

This is the basic premise of this document.

2.2 Protective Actions

Nuclear emergency protective actions include:

- urgent protective actions, which must be taken within hours of an accident to be effective. These include evacuation, administration of stable iodine and sheltering; and
- longer-term protective actions, which may need to be adopted in a matter of days following an accident. These include control of foodstuff, relocation and resettlement.

Longer-term protective actions are defined later. However, this technical planning basis focuses on the urgent and short-term protective actions.

2.2.1 Sheltering

Sheltering involves keeping members of the population indoors, closing all ventilation and blocking all air paths into the dwellings to reduce radiation exposure from cloud shine, ground shine and inhalation. In addition to protecting the population, sheltering allows better and more effective communication with the affected population. Sheltering is not recommended for a period exceeding 48 hours [SS109]. In practice, it is difficult to maintain for more than 24 hours. Beyond that period, evacuation or relocation needs to be considered.

Report [ISR01] contains a detailed analysis of reduction factors for sheltering. Table 1 presents the dose reduction factors for the average Canadian house. The dose reduction factors for inhalation vary with the duration of the release due to slow air ingress into the house.

[1] Severe accidents are defined as the class of accidents where significant fuel damage occurs.

Table 1: Dose reduction factors for sheltering

Exposure pathway	Release duration (hours)	Reduction factor (RF)*
Cloud shine	Not applicable	0.8
Ground shine	Not applicable	0.4
Inhalation	0.5	0.2
	1	0.3
	4	0.6
	24	0.7

* Note: Dose with protection = dose without protection x RF

In this work, an average dose reduction factor of 0.5 is used. This means that the avertable dose from sheltering is one half the projected one-day dose for an unprotected individual. Conservative results can also be obtained by assuming that sheltering is 100% effective; in this case, the avertable dose is maximized resulting in the largest planning zone sizes. This would be the case, for example, for very modern homes, designed for extremely low air leakage, and where individuals can shelter in a well-built concrete basement. In this case, the dose that can be averted by sheltering is equal to the projected dose that would be received by an individual standing outside, under the plume, for one day.

2.2.2 Evacuation

Evacuation is the prompt removal of the population from the affected area. It is generally the most effective protective action against major airborne releases of radioactivity. Mass care facilities must be available for a substantial fraction of the evacuated population. In North America, it is generally assumed that up to 20% of the evacuated population would use designated mass care facilities. Evacuation is not recommended for a period exceeding seven days [SS109].

The dose that can be averted by evacuation is the projected dose that would be received by an individual staying outside, under the plume, for the duration of the evacuation, i.e. for a maximum of seven days.

2.2.3 Administration of Stable Iodine

Radioactive iodine tends to concentrate in the thyroid gland and can cause early or latent effects such as thyroid cancer. Ingesting stable, non-radioactive iodine, before or immediately after exposure to radioactive iodine saturates the thyroid gland and prevents the absorption of radioactive iodine.

The dose that can be averted by taking stable iodine just before exposure to the release is equal to the projected dose to the thyroid from inhalation without the administration of stable iodine.

2.2.4 *Temporary Relocation and Resettlement*

Temporary relocation is used when there is a need to keep the population out of the affected area for a period exceeding approximately seven days but not more than a few months. This measure requires that mass care facilities be provided to the affected population. It is expected that the temporarily relocated population will be able to return to their homes.

By definition, resettlement is permanent. It is adopted when the dose to the affected population over a lifetime would exceed a certain criterion. However, decisions in that later stage rely on a detailed analysis of the consequences, land use and exposure pathways. They are also strongly influenced by social and political factors. Considerably more time is available for making those decisions than the time allowed for urgent protective action recommendations.

2.2.5 *Food Ban and Food Control*

Protective actions related to food include:

- an immediate ban on the consumption of locally grown food in the affected area;
- the protection of local food and water supplies by, for example, covering open wells and sheltering animals and animal feed;
- long term sampling and control of locally grown food and feed.

Control of milk is generally considered particularly important because it is a significant part of children's diets.

2.3 Deterministic vs. Stochastic Effects

The consequences of a nuclear accident would most likely be limited to stochastic effects, which are not directly observable in individuals but can be detected statistically in a large population. They include cancer and generally involve a period of latency of several years. The measure of the risk of stochastic effects is the effective dose, expressed in Sieverts (Sv).

In extreme cases, which are extremely unlikely, a few individuals could hypothetically be exposed to very high dose rates, leading to some deterministic effects. Deterministic effects include early illness or death. The exposure thresholds above which these effects are possible are very high. For gamma and beta radiation, these thresholds can be expressed in terms of absorbed dose, measured in Grays (Gy) or equivalent dose to major organs, measured in Sieverts (Sv)[2]. The thresholds for deterministic effects depend on the dose rate, i.e. on the level of exposure and on the duration of exposure.

The ISR technical note entitled *Program to Calculate the Influence of Protective Actions on Deterministic Effects* [ISR03] presents the mathematical model used to calculate the

[2] The equivalent dose is not always the appropriate quantity for use in relation to deterministic effects because the values of the radiation weighting factors have been chosen to reflect the relative biological effectiveness (RBE) of the different types of radiation in producing stochastic effects. However, for beta and gamma radiation, which is low-energy-transfer radiation, the use of the equivalent dose is appropriate. For this type of radiation, with a radiation-weighting factor of 1, the absorbed dose (in Gy) and the equivalent dose (in Sv) are the same.

probability of deterministic effects as a function of equivalent dose and duration of exposure. The calculated dose thresholds represent the levels at which the effect would occur in 1% of the cases. Values obtained are consistent with internationally recommended thresholds [SS115].

2.4 Intervention Levels

Protective actions are implemented to prevent deterministic effects and to minimize stochastic effects. Protective actions have an inherent "cost" in terms of social, psycho-social and economic disruption.

Protective actions that limit the exposure to levels that are below the deterministic thresholds prevent deterministic effects. In this case, the benefit of implementing a protective action almost always outweighs the cost associated with the protective action.

Protective actions also reduce the risk of stochastic effects by an amount proportional to the effective dose ***averted***. In this case, the benefit of the protective action, which is expressed in terms of dose averted, does not always outweigh the cost associated with the protective action. For this reason, intervention levels are defined as the level of averted dose at which a protective measure, if introduced, is likely to produce more benefit than harm.

Table 2 lists the intervention levels for urgent protective actions for use in this document. These levels are consistent with international guidance [ICR63]. The International Atomic Energy Agency (IAEA) has adopted the same intervention levels of 10 mSv and 50 mSv for sheltering and evacuation, respectively [SS109]. The value corresponds to the dose averted for the time during which the protective measure is in effect. For evacuation, this should not be greater than seven days. For sheltering, although the IAEA [SS109] suggests two days as a maximum, in practice, this measure should not be in effect for more than about one day.

Intervention levels are planning values. During an actual emergency, the criteria adopted will most likely need to take into account socio-economic and political factors, particularly in the case of longer-term protective actions, when there is considerably more time available to make decisions. Table 2 describes the intervention levels used in New Brunswick.

Table 2: Intervention levels for use in this document

Protective action	Effective dose (mSv)	Equivalent dose to thyroid (mSv)
Sheltering	10 / 1 day	N/A
Evacuation	50 / 7 days	N/A
Temporary relocation	30 / first month	N/A
Stable Iodine administration	N/A	100 (inhalation component)

2.5 Emergency Planning Zones

Emergency planning zones represent the areas in which planning for given protective actions should take place based on health risk. The zones are based on the assessment that the health risk in those areas justifies the investment of resources and efforts required for detailed planning. It *does not* mean that, when an accident occurs, response will extend to the entire zone, or that it will be limited to these zones. Indeed, plans must have provisions to extend protective measures outside the planning zone.

International guidance [IAE953] suggests three planning zones as defined below. These definitions will be used throughout this document.

2.5.1 Precautionary Action Zone (PAZ)

The PAZ is the area where there is a risk of ***serious*** deterministic effects for the worst possible accident. Given that such severe accidents are extremely unlikely, the risk is very small indeed. Nevertheless, due diligence and the emergency planning principles stated in section 2.1 call for the need to take extraordinary precautions in the area where deterministic effects could occur, even for the most unlikely scenarios.

When an accident occurs, experience has shown that it is not always possible to determine with certainty the severity of the accident. There may also be little time to implement effective countermeasures close to the plant. Therefore, as a precaution, and for the purpose of preventing deterministic effects, it is prudent to evacuate the PAZ as soon as there are strong indications that a significant reactor core failure may be in progress. Hence, evacuation of the PAZ should be initiated automatically as soon as plant parameters indicate the possibility of core failure. As an alternative, automatic sheltering may be considered if the situation precludes an ordered and well-coordinated evacuation of that zone. The protective action would be implemented over a full 360 degrees as a precaution against a change in wind direction.

For planning purposes, postulated accidents that should be considered in the definition of the PAZ are those that lead to a core melt. Such accidents are extremely unlikely and are only to be considered in terms of the potential serious deterministic health effects that they may cause, in accordance with the planning principles of section 2.1.

2.5.2 Urgent Protective Action Zone (UPZ)

The UPZ is the area where the risk of exceeding intervention levels for stochastic effects is high but where the risk of deterministic effects is negligible. In this area, plans are developed to promptly implement sheltering, evacuation, stable iodine administration and immediate food bans. The decision to implement such countermeasures will depend on the situation and is not necessarily automatic. Plant parameters, accident trends and environmental measurements must be considered in deciding whether or not to implement the protective actions.

Due to the potential risk of contamination within that zone, emergency facilities such as evacuee centres and off-site Emergency Operations Centres (EOC) should be located outside the UPZ.

For planning purposes, postulated accidents that should be considered to define the

UPZ are those where fuel damage is limited and where the release, if one occurs, is mitigated by the containment system. These generally correspond to design-basis-accidents (DBA), which are considered in the design of the plant's safety systems and are analyzed as part of the licensing basis for the station.

However, to adequately understand the potential impact of the extent of fuel damage and the effectiveness of the containment system on the UPZ size, this technical planning basis also considers postulated accidents where partial fuel melt may occur and where the containment system may be partially ineffective due, for example, to containment isolation failure or containment bypass. The analysis of such postulated accidents provides a *safety* margin in the determination of a cautious UPZ size that is contingent on the assumptions made in the analysis. For this reason, we refer to the larger UPZ obtained from this analysis as the contingency zone in which plans should be developed to extend, if required, the planned capabilities for sheltering, evacuation and stable iodine administration.

2.5.3 Longer-Term Protective Action Zone (LPZ)

The LPZ is defined as the zone where, if there is an accident with a major release, protective actions such as relocation, resettlement and long-term agriculture countermeasures may be required. The precise definition of the LPZ depends greatly on the population distribution, land use and socio-economic factors around the station. [IAE953] recommends an LPZ of at least 50 km around a nuclear power plant. This is the immediate priority area for food sampling and the control of agricultural products and, indeed, food sampling arrangements should extend well beyond this radius.

3. Postulated accidents Used in the Technical Planning Basis

Postulated accidents considered in this technical planning basis are based on the postulated accidents contained in [TTR221]. These cover a wide range of possible scenarios that could lead to significant environmental releases.

Three types of release scenarios are considered in this technical basis:

- Design-basis releases (DBR), where the fuel damage is limited and most of the fission products are retained within the containment envelope;
- Beyond-design-basis releases (BDBR), where fuel damage may be more extensive and containment bypass may occur, thereby releasing a larger quantity of fission products to the environment; and
- Severe accidental releases (SAR), where fuel damage is extensive and the containment system fails.

For each release type, one representative accident drawn from [TTR-221] was selected. The representative accidents are described in the following sections.

3.1 Design-Basis Release (DBR)

Design-basis accidents are events that are taken into account in the design of the safety systems. They include, for example:

- 100% reactor outlet header break with failure of ventilation outlet dampers to close automatically;
- 100% reactor outlet header break with partial failure of dousing; and
- 60% reactor outlet header break with coincident loss of emergency core cooling.

DBRs are *unlikely*; safety systems are designed to mitigate the consequences of such events and to prevent further degradation of the situation. The fission product mix, release fractions to the environment and release timing vary depending of the accident.

However, this family of accidents is bounded by one of the events covered in TTR-221, i.e. a LOCA combined with loss of normal heat sink with both loops affected. In this case, the moderator acts as the ultimate heat sink. After about one hour, fuel damage occurs in both loops but the fuel does not relocate and does not melt. It is assumed that containment remains intact and that leakage to the environment occurs at 5% of the containment volume per day and lasts for approximately 8 hours.

This event is representative of the most conservative design-basis releases and has been selected as the reference DBR.

3.2 Beyond-Design-Basis Release (BDBR)

This family of accidental releases corresponds to events where additional failures occur, leading to greater release fractions to the environment. BDBRs are *very unlikely* due to the number of failures that must occur in order to get significant releases of radioactive products into the environment.

A representative case starts like a design basis accident but is compounded by a coincident with an impairment of the emergency cooling system that leads to a containment bypass. The release of radioactive fission products from the primary heat transport system bypasses the containment through the emergency core cooling system and would result in significant quantities of fission products in the environment.

This event is representative of significant releases that could occur following a serious accident with impairment of the containment system. It has been selected as the reference BDBR.

3.3 Severe Accidents Releases (SAR)

Severe accidents occur when the safety systems are impaired and are unable to prevent significant core damage, with the greatest release fractions. Such events are *extremely unlikely* because a large number of coincident failures of process and safety systems would need to occur. Furthermore, in some scenarios, the accident may threaten the integrity of the containment envelope. These are the worst case scenarios.

One such extremely rare postulated event is a power excursion with impairment and/or failure of the cooling systems leading to early core failure and disassembly. In this postulated event, the shutdown system fails to prevent a significant and prompt power increase. The resulting pressure pulse damages the pressure tubes and the calandria, thereby incapacitating long-term cooling through the moderator. This results in extremely high fuel temperatures, generation of hydrogen through the zirconium-steam reaction and subsequent hydrogen deflagration. The containment fails and the subsequent release of fission products to the environment is large and prompt. It is assumed that most of the release would occur in 30 minutes.

This event represents one of the worst case scenarios for CANDUs and has been selected as the reference SAR.

Table 3 summarizes the main characteristics of the reference events selected to represent the DBR, BDBR and SAR, respectively.

Table 3: Release categories [from TTR-221]

Release category	SAR	BDBR	DBR
Corresponding release category in TTR-221	CANDU-1b	MHS&CBTE	CANDU-4
Release fractions			
Xe-Kr	0.42	0.11	8×10^{-3}
Iodine aerosol	4×10^{-2}	1×10^{-3}	1×10^{-5}
Iode organic-elemental	(4×10^{-4})	(1×10^{-5})	(1×10^{-7})
Cs-Rb	4×10^{-2}	0	0
Te-Sb	4×10^{-2}	0	0
Sr	4×10^{-2}	0	0
Ru-Mo-Pd-Rh-Tc	4×10^{-2}	0	0
La-Y-Zr-Nb	4×10^{-2}	0	0
Ce-Nd-Eu-Pr-Pu-Sm-Np	4×10^{-2}	0	0
Ba	4×10^{-2}	0	0
Release parameters			
Frequency (per reactor-year)	2.5×10^{-8}	4.9×10^{-7}	2.2×10^{-6}
Likelihood	Extremely unlikely	Very unlikely	Unlikely
Release duration (h)	0.5	3	8
Release height (m)	30	10	20
Heat content (MW)	50	0	0

4. Accident Consequences

4.1 Modelling and Assumptions

The CANDU core inventory used in the calculations is described in ANNEX A: CANDU Core Inventory. Projected consequences for all postulated accident scenarios were calculated using an internationally-accepted code called COSYMA. A detailed description of the code, modelling assumptions and individual calculations carried out are contained in ANNEX B: Modelling and Assumptions. A list of all runs performed is contained in ANNEX C: Table of Calculations Performed.

4.2 Weather

Weather statistics for the Point Lepreau site were obtained from Environment Canada for a period of two years. They are summarized in Table 4. As can be noted, Pasquill D is the average weather condition. Pasquill F, which is the least dispersive weather (and the worst for near-ground releases) occurs less than 10% of the time.

Table 4: Weather statistics for the Point Lepreau site

Pasquill stability	Frequency	Average wind speed (m/s)
A	4.1	1.4
B	8.4	2.6
C	19.0	3.7
D	45.1	4.2
E	15.2	2.4
F	8.2	1.4

4.3 Consequences of DBRs

Effective doses (committed over 50 years for the average individual) resulting from the reference DBR were calculated for periods of exposure of one and seven days for average and worst weather conditions (Pasquill D and F, respectively)[3]. The results are shown in Figure 1 and Figure2.

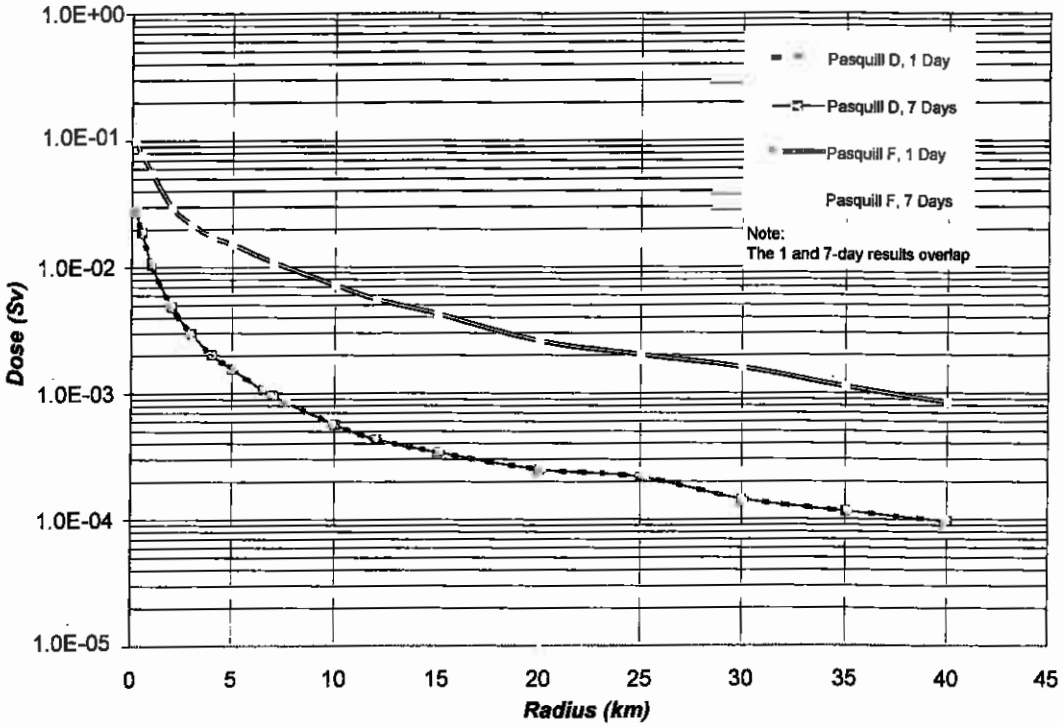

Figure 1: Effective dose for the DBR

[3] The DBR is a near-ground release with no heat content. The worst weather for such a case, in terms of the distance at which high doses are reached, is always Pasquill F. It is important to note that, for Pasquill F, the area potentially affected is much narrower than for more dispersive weather conditions.

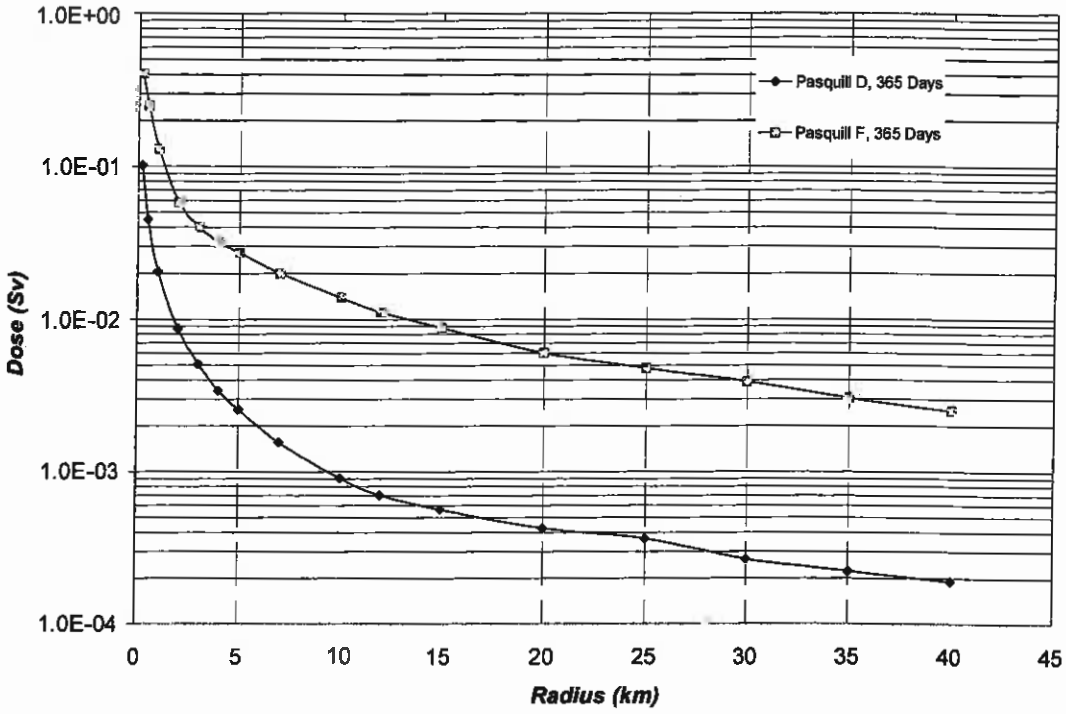

Figure 2: Thyroid dose for the DBR

As can be seen, doses vary significantly with weather category but the seven-day and one-day doses are almost identical. This is explained by the fact that the source term contained very little quantities of material that deposit on the ground. The resulting ground shine is extremely small.

Most of the thyroid dose comes from the inhalation pathway.

The distances at which the intervention levels for sheltering (10 mSv for one-day exposure), evacuation (50 mSv for seven-day exposure) and stable iodine administration (100 mSv thyroid) are reached are summarized in Table 5.

Table 5: Distances for intervention levels for the DBR

Case	Sheltering intervention level (10 mSv in one day) reached at:	Evacuation intervention level (50 mSv in seven day) reached at:	Intervention level for stable iodine(100 mSv thyroid) reached at:
DBR, Pasquill D	1 km	< 1 km	< 1 km
DBR, Pasquil F	7.5 km	1 km	1.3 km

4.4 Consequences of BDBRs

Effective doses (committed over 50 years for the average individual) resulting from the reference BDBR were calculated for periods of exposure of one and seven days for average and worst weather conditions (Pasquill D and F, respectively)[4]. The results are shown in Figure 3 and Figure 4.

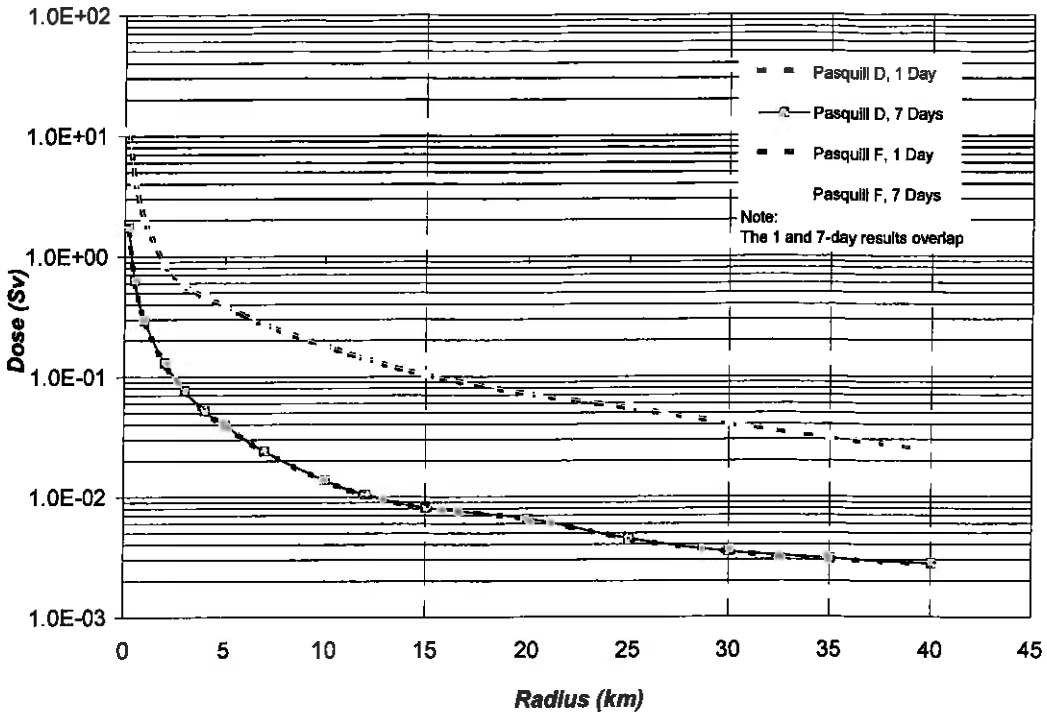

Figure 3: Effective dose for the BDBR

[4] The BDBR is also a near-ground release with no heat content.

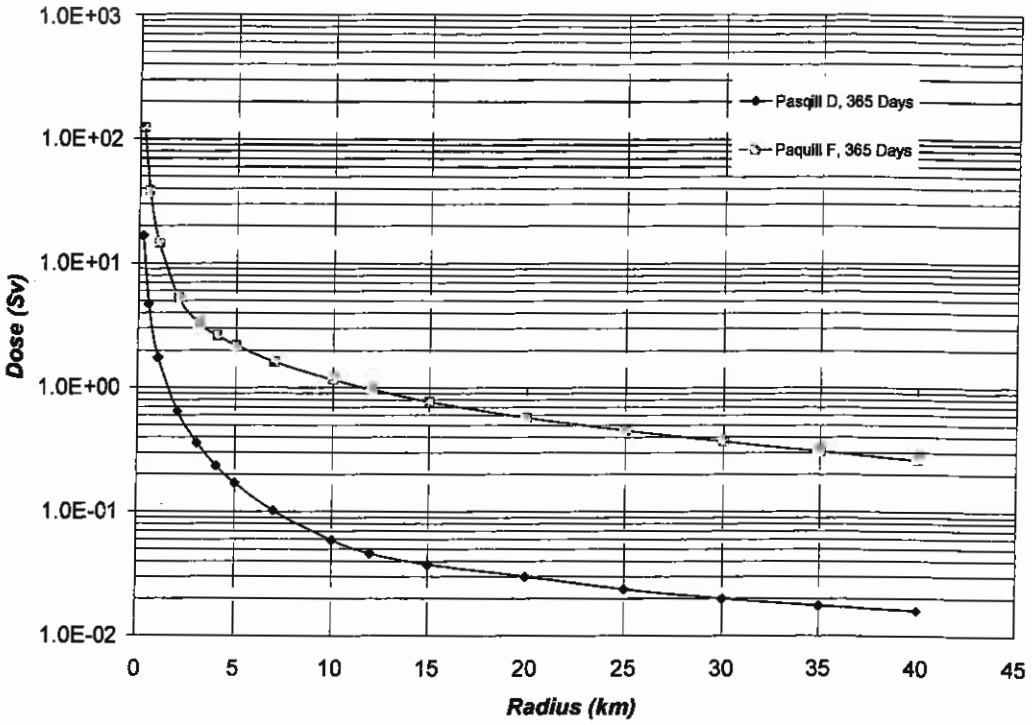

Figure 4: Thyroid dose for the BDBR

As for the DBRs, the deposition on the ground is minimal. As a result, the one and seven-day doses are practically identical.

The distances at which the intervention levels for sheltering (one-day exposure), evacuation (seven-day exposure) and stable iodine administration are reached are summarized in Table 5.

Table 6: Distances for Intervention levels for the BDBR

Case	Sheltering intervention level (10 mSv in one day) reached at:	Evacuation intervention level (50 mSv in seven day) reached at:	Intervention level for stable iodine(100 mSv thyroid) reached at:
BDBR, Pasquill D	12 km	4 km	7 km
BDBR, Pasquill F	>40 km	26 km	>40 km

4.5 Consequences of SARs

The SARs are used to determine the distance at which deterministic affects could potentially result. Therefore, for SARs, only the deterministic doses to critical organs were calculated.

Figure 5 shows the result of calculations of the probable risk of morbidity vs distance for the reference SAR with an elevated release[5]. This probabilistic risk takes into account historical weather conditions at the site as measured by Environment Canada. It also takes into account the variability in wind direction. In other words, the fractile is the confidence interval that the risk of deterministic effect will not exceed the value given by the curve at a given distance. For example, the results show that:

- beyond 3 km there is a 99.4% probability that the risk of deterministic effects (morbidity or mortality) will be zero;
- beyond approximately 1 km, there is a 99% probability that the risk of deterministic effects will be zero.

The risk of mortality for the same confidence intervals has also been calculated but it is zero beyond 0.5 km.

To estimate the sensitivity of the results to the heat content and release elevation, the same calculations has been performed for a release with no heat content. The results, shown in Figure 6 for the risk of morbidity, show that there is no risk of deterministic effects beyond 4 km for a 99% confidence interval). Within a 99.4% confidence level, the risk is significantly reduced (by a fact 10) at 5 km and disappears beyond 7 km.

The calculations performed for the risk of mortality show that the risk disappears beyond 3 km for a 99.4% interval.

The risk of deterministic effects can be significantly reduced through sheltering of the populations. Table 7 shows the distances at which deterministic thresholds for specific organs may be exceeded for the SAR with Pasquill D and no heat release. As can be noted, sheltering is very effective in reducing the risk of deterministic effects.

[5] The release is elevated because the heat content required to have the postulated severe failure of the containment would loft the plume.

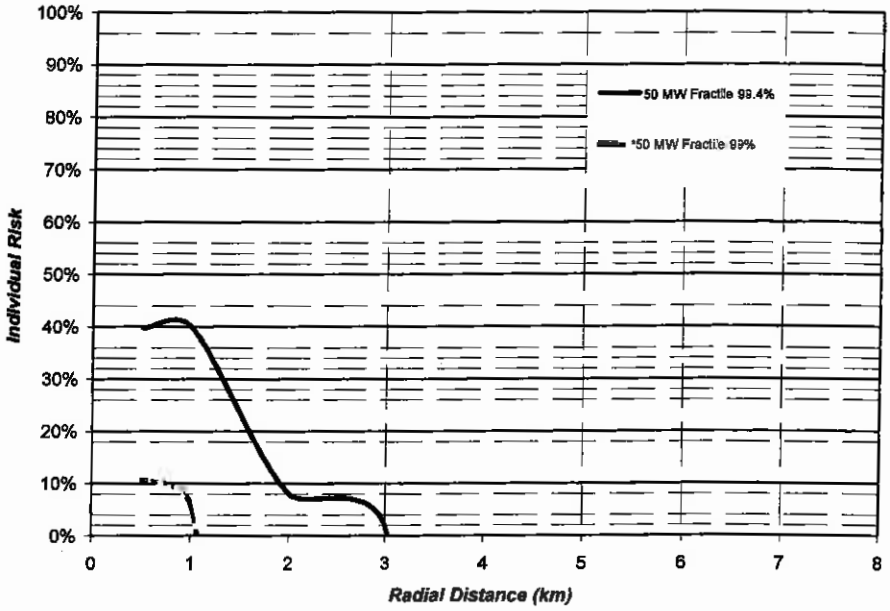

Figure 5: Individual morbidity risk for SAR with elevated release (50 MW)

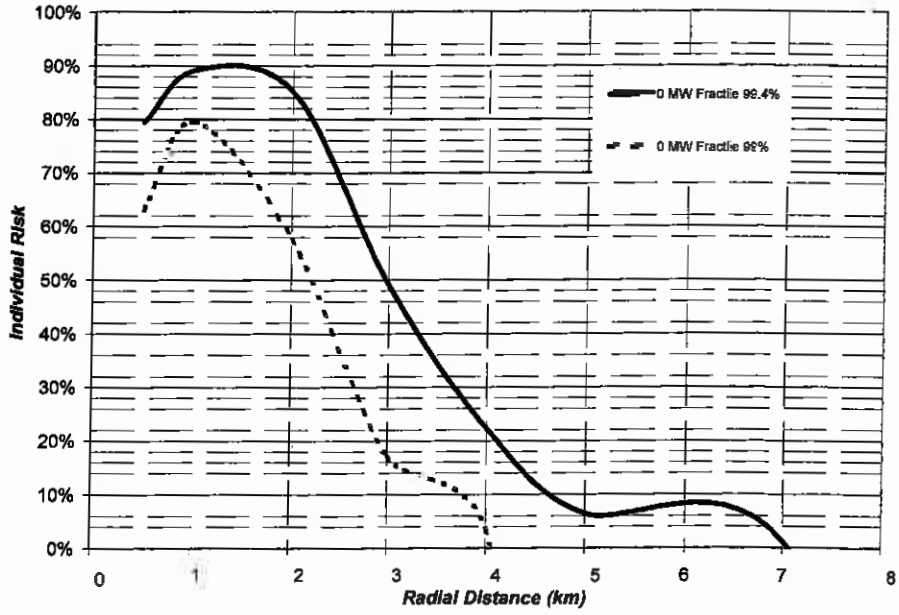

Figure 6: Individual morbidity risk for SAR with ground release (0 MW)

Table 7: Effect of protective actions on deterministic distances for SARs, Pasquill D, no heat content

Effect	Protective action	
	None	Sheltering
Mortality	Distance (km)	
Lungs	1.16	0.24
Bone marrow	2.54	0.00
GI track	2.40	0.00
Morbidity		
Lungs	1.53	0.47
Thyroid	3.02	0.00

4.6 Ratio of Measured Dose Rate to Effective Dose

When responding to an emergency, the most readily available data on the magnitude of the hazard is the measured dose rate, or ambient dose rate. This is a measure of the external hazard and it does not account for the internal dose that may be received by an individual. Nevertheless, it is an important quantity that will be used in section 5.3 for the calculation of operational intervention levels.

The following ratios were calculated:

- ambient dose rate to effective dose rate in the plume;
- one-day ambient dose to seven-day effective dose from ground exposure, including the internal dose from resuspension; and
- one-day ambient dose to 30-day effective dose from ground exposure, including the internal dose from resuspension.

The results are shown in Figure 7, Figure 8 and Figure 9.

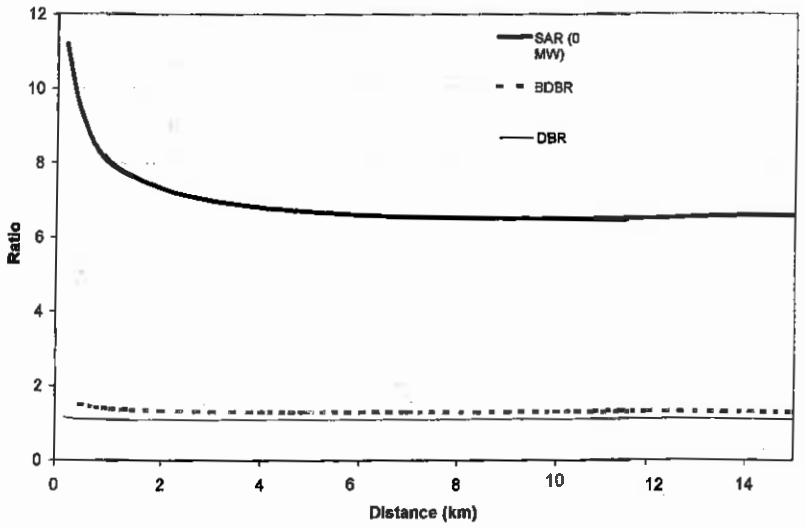

Figure 7: Ratio of effective over ambient doserate in the plume

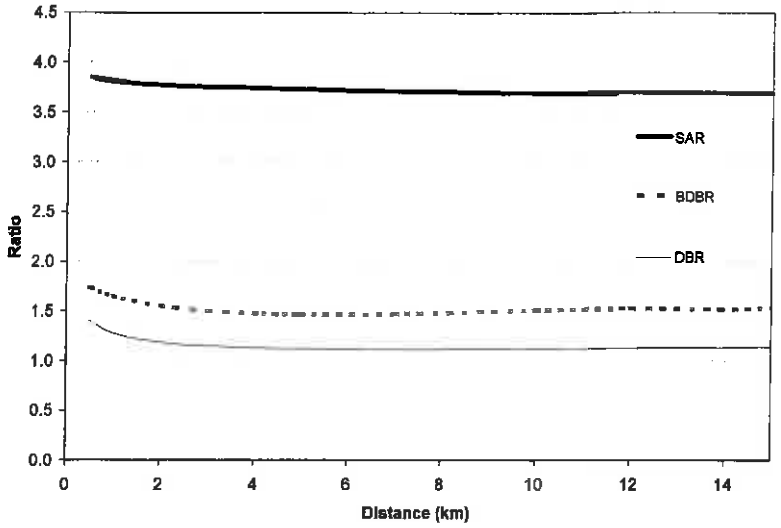

Figure 8: Ratio of seven-day effective dose from ground shine over one-day ground shine ambient dose

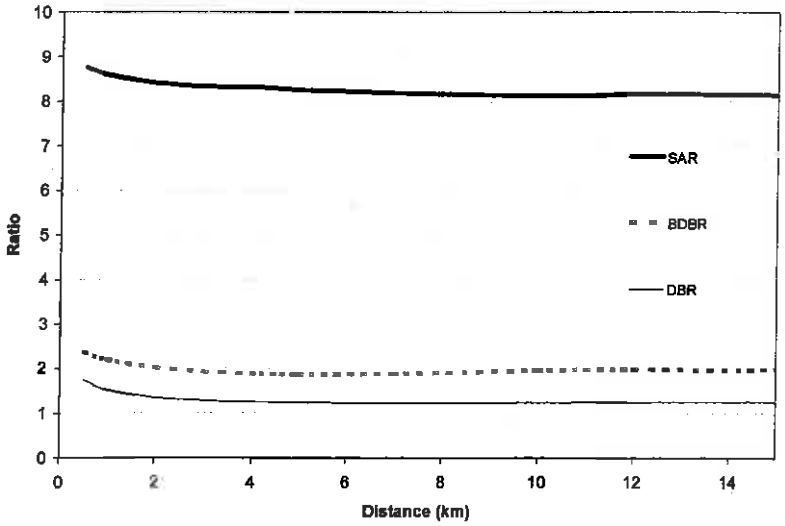

Figure 9: Ratio of 30-day effective dose from ground shine over one-day ground shine ambient dose

4.7 Exposure by Pathway

The importance of each exposure pathway (cloud shine, inhalation and ground shine) depends on the accident type, i.e. the release composition. Table 8 shows the typical contribution of each exposure pathway for the reference accidents examined. It shows that, in the case of smaller releases (DBR and BDBR), cloud shine is the main contributor to dose. The inhalation component is much more important for BDBR. For the severe release (SAR), the pathway contribution depends on the deterministic effect being considered. Not surprisingly, for effects associated with the lungs or the thyroid, the inhalation component dominates. For others, the external exposure from the cloud and the ground are most important.

Another interesting result is that the ground shine component only becomes significant for severe accidents. The significance of this result is that evacuation or relocation ***after*** the release would only be effective for severe accidents. In all other cases, prompt protective actions before or during the release will be the only effective means of reducing the dose to the public.

Table 8: Exposure by pathway for seven-day exposure duration

Release type	Exposure pathway contribution to dose (%)		
	Cloud shine	Inhalation	Ground shine
DBR (effective dose)	92	7	1
BDBR (effective dose)	75	23	2
SAR (organ doses)			
Lung	17	69	14
Thyroid	14	75	11
Cataracts	55		45
Hematopoietic syndrome	51	7	42
Neonatal impacts	49	7	44

5. Implications for Emergency Planning

Emergency planning decisions are based on a practical interpretation of the results presented in the last section. This interpretation must take into account the consequences of accidents and their likelihood while considering the cost of planning vs. its benefit.

The following discussion stems from the emergency planning principles stated in section 2, which involve a prioritization of the needs based on considerations of likelihood. A systematic evaluation of the analysis discussed in the previous section is made in terms of emergency planning. However, more weight is given to consequences that have a higher likelihood of occurrence. That is the only way to reach a proper balance between the benefits, the practicality and the cost of planning.

The following discussions are based on intervention levels listed in section 2.4. Distances at which certain measures are justified will refer to the distance beyond which the dose that can be averted is lower than the intervention level. The definitions of the UPZ and PAZ were given in section 2.5.

5.1 PAZ

Section 4.5 shows that there is no risk of deterministic effects beyond 3 km with a 99.4% confidence and beyond 4 km, even for the worst case scenario with no heat content, with a 99% confidence interval. Therefore, a PAZ size of 4 km around the station is recommended.

The results also show that sheltering, if properly implemented, can eliminate or significantly reduce the probability of deterministic effects within the PAZ.

5.2 UPZ

Section 4.3 shows that intervention levels for urgent protective actions (sheltering, evacuation and stable iodine administration) would not be exceeded beyond 7.5 km for DBR, even for the worst weather scenario. Section 4.4 shows that sheltering may be required up to 12 km for the BDBR combined with an average weather scenario. Therefore, based on considerations of likelihood, there is a strong justification for the establishment of urgent protective action plans up to 7.5 km around the station and for contingency arrangements up to 12 km to cover the very unlikely case of BDBRs.

As shown by the results for the even more unlikely case of a BDBR combined with the worst weather condition, it is possible that protective actions be required outside the UPZ of 12 km. However, given the very low likelihood of such a combination of events, extending the size of the contingency zone beyond 12 km may not be justified.

Therefore, a UPZ size of 12 km around the station is recommended.

Should an accident occur and environmental surveys, plant conditions and weather data indicate that the intervention levels may be exceeded beyond 12 km, protective actions would need to be implemented beyond that distance.

5.3 Operational Intervention Levels (OILs)

During an emergency, the decision to implement protective actions must be based on avertable dose. This quantity is difficult to estimate. It involves making field measurements, relating them to dose rate, estimating the time required to implement the protective action, guessing the duration for which people would be exposed without the protective action and finally calculating the dose that can potentially be averted. This process takes time and gives rise to discussions amongst specialists that can delay the introduction of the protective action and adversely affecting the effectiveness of emergency response in the immediate phase.

To assist prompt decisions in the initial phase of the emergency, Operational Intervention Levels (OILs) are introduced. An OIL is the value of commonly measured parameters (e.g. ambient dose rate) that corresponds to the intervention level for a specific protective action. It is based on a number of assumptions regarding exposure pathway, release composition and exposure durations. However, what is lost in terms of accuracy is gained in terms of rapidity of decision-making, which is critical in the initial phase.

OILs are well defined in IAEA's TECDOC 955 [IAE955]. There are several OILs, including OILs for sheltering, for evacuation based on ambient measurements in the plume, for evacuation based on ground shine measurements and for relocation based on ground shine measurements.

OILs are used when prompt decisions are required. They can also be used as a guide when more time is available to make decisions. For example, OILs for relocation based on ground shine should only be used to indicate if relocation needs to be considered. Before a drastic decision such as relocation is made, detailed isotopic analyses of the ground contamination and of the potential exposure pathways would have to be carried out.

All these OILs are based on assumed ratios of effective to ambient dose rates for the exposure pathways considered and for given exposure times.

5.3.1 OILs for Sheltering and Evacuation in the Plume

IAEA TECDOC 955 describes in detail the methodology for calculating and revising the OILs. The equation used is as follows:

$$OIL = \frac{GIL}{c \times T \times R} \quad (1)$$

where:

OIL = operational intervention level for a given protective action
GIL = generic intervention level for that protective action
T = the assumed exposure time if no action is taken, which is assumed to be four hours based on wind persistence statistics for the North American continent
c = the ratio of effective to ambient dose rate
R = reduction factor for protective actions already taken

There are several possible OILs, depending on the type of protective action considered. As shown in Figure 7, the ratio "c" of effective to ambient dose rate is highest for the SAR and varies between 7 and 10 in the first five kilometres. Adopting a default value of 10 would be conservative since it would lead to lower OILs for the protective actions considered. This value is the same as that proposed by the IAEA in TECDOC 955. Therefore, it is proposed to use the same OILs as those recommended by the IAEA in TECDOC 955: 0.1 mSv/h for sheltering and stable iodine administration[6] and 1 mSv/h for evacuation. Details of the calculation are given in [IAE955]

5.3.2 OILs for Evacuation Based on Ground Shine

The OIL for evacuation based on ground shine is calculated from the following assumptions:

- The exposure time without evacuating would be seven days, which is the practical limit recommended for an evacuation.
- Credit is taken for the fact that people would spend most of their time indoors, with a reduction factor given earlier of 0.5.

In this case, except for exposure through the re-suspension of contaminants, there is no internal dose from the ground shine, and the ratio of effective to ambient dose rate is 1. Hence, equation (1) can be replaced by the following:

$$(OIL \times 24) = \frac{GIL}{c' \times R} \quad (2)$$

where:

[6] A similar equation can be used to calculate an OIL for stable iodine administration. In that case, c is the ratio of thyroid to effective dose. In its calculations [IAE955], the IAEA does not take into account the reduction factor for sheltering. This yields an OIL of 0.125 mSv/h. The OIL for sheltering calculated using equation 1 would be 0.25 mSv/h. For practical reason, the IAEA suggested that sheltering and stable iodine should be combined and the lower value of 0.1 mSv/h was retained.

c' = ratio of seven-day dose to one-day dose from ground shine, which is not equal to 7 due to the decay of deposited fission products

Figure 8 shows that c' is approximately 4 for the worst case (SAR) in the first five kilometres, which yields an OIL of 1.3 mSv/h. This is very close to the value of 1 mSv/h suggested by the IAEA. Hence, the latter is recommended as an OIL for evacuation based on ambient ground shine measurements.

5.3.3 OILs for Relocation Based on Ground Shine

The method for calculating this OIL is the same as the previous one, except that this time the factor c' is the ratio of the 30-day dose to the one-day dose. The GIL for relocation is 30 mSv in the first month. Figure 9 shows that the values of c' for the worst case is approximately 8, which yields an OIL of 0.4 mSv/h. This is of the same order of magnitude as the IAEA OIL of 0.2 mSv/h for this protective action. Since the IAEA value is slightly more conservative, it is the one being recommended.

5.3.4 OIL for Food Bans Based on Ground Shine

The only way to determine if food contamination exceeds standards for consumption is to sample and analyze the food. Hence, an OIL for a food ban based on ground shine is only suggested as a screening tool for the very early stage of an emergency. The IAEA suggested a value of 0.001 mSv/h. This is not based on a careful technical analysis. This value is meant to be approximately 10 times normal local background and is only used as a positive indication that there are high levels of ground contamination. Follow-on recommendations for food bans must be based on isotopic analysis of the ground contamination and of the potential exposure pathways.

5.3.5 Summary of OILs

The recommended OILs are listed in Table 9.

Table 9: Recommended OILs

Measurement	OIL	Protective action
Ambient dose rate in the plume	1 mSv/h	Evacuate or provide substantial sheltering.
	0.1 mSv/h	Shelter and administer stable iodine, if available.
Ambient dose rate from deposition, after the plume has passed	1 mSv/h	Evacuate.
	0.2 mSv/h	Consider relocating people. Perform isotopic analysis.
	10 times normal local background	Immediately restrict consumption of potential contaminated food until more detailed analyses can be made.

5.4 Emergency Response Strategy

When an accident occurs, it is practically impossible to assess if the situation will evolve

into a DBR or an SAR. It is also very difficult to predict if there will be a release, or how large the release will be. The accident at Three Mile Island highlighted the complexity of predicting the outcome of an accident at the time it occurs. For example, operators did not know until several weeks later how much of the core had melted, nor were they aware at the time of the accident that a release would take place. Hence, the initial protective action strategy must rely on very little information and should err on the safe side.

Based on the discussion above on the PAZ and the UPZ, the following initial protective action strategy is recommended:

- When an accident that could lead to core melt is detected, immediately evacuate or shelter the full PAZ around the station (PAZ). The action is implemented over the full 360 degrees as a precaution against possible wind shifts.
- Immediately dispatch survey teams downwind to monitor ambient radiation levels and air contamination to detect a release.
- Once a release is imminent or has been detected, shelter people within the UPZ downwind from the station. If the wind direction changes, adjust the sectors in which the protective action is implemented.
- Conduct environmental radiation surveys within the UPZ to determine if further protective actions are required.
- If readings are high compared with OILs, expand the area surveyed and adjust protective actions where required.

6. Conclusion

This technical planning basis is based on the evaluation of hypothetical accidents that have been selected according to emergency planning principles, which take into account the severity of accident scenarios and their likelihood. However, determining an acceptable level of preparedness does not solely depend on an appreciation of the theoretical risk, but it also takes into account:

- the acceptance of that risk compared with other risks;
- the cost of emergency preparedness;
- practical considerations such as the current availability of resources and the geography; and
- the ability to promptly expand the implementation beyond the planning zone based on existing capabilities (i.e. the ability to improvide).

The measures proposed in this technical planning basis represent our best estimate of a degree of preparedness that is justified and that would lead to an effective response. It is based on technical and practical considerations. However, other considerations such as risk acceptance, political, socio-economic and demographic factors could affect the final planning requirements.

ANNEX A: CANDU Core Inventory

References: [REID-97], [REID-98]

Table 10: Steady state core inventory for CANDU-600

Isotope	Inventory (Bq)	Isotope	Inventory (Bq)	Isotope	Inventory (Bq)
KR-85	4.62E+15	SB-131	1.88E+18	ZR-95	3.24E+18
KR-85M	6.50E+17	SB-132	1.14E+18	ZR-97	3.98E+18
KR-87	1.30E+18	SB-132M	1.04E+18	NB-95	2.58E+18
KR-88	1.81E+18	SB-133	1.49E+18	NB-97	3.90E+18
KR-89	2.28E+18	TE-127	1.88E+17	MO-99	4.48E+18
KR-90	2.42E+18	TE-127M	1.91E+16	MO-101	4.04E+18
XE-131M	2.68E+16	TE-129	7.24E+17	MO-102	3.74E+18
XE-133	4.78E+18	TE-129M	1.30E+17	MO-104	2.68E+18
XE-133M	1.50E+17	TE-131	2.04E+18	TC-99M	4.00E+18
XE-135	4.26E+17	TE-131M	4.48E+17	TC-101	4.04E+18
XE-135M	1.03E+18	TE-132	3.44E+18	TC-102	7.50E+16
XE-137	4.48E+18	TE-133	2.68E+18	TC-104	2.84E+18
XE-138	4.24E+18	TE-133M	2.24E+18	TC-105	2.30E+18
XE-139	3.12E+18	TE-134	4.34E+18	RU-103	3.04E+18
AS-77	5.42E+15	I-130	1.24E+18	RU-105	2.28E+18
AS-79	3.22E+16	I-131	2.40E+18	RU-106	3.70E+17
SE-83	1.46E+17	I-132	3.54E+18	RH-105	1.91E+18
BR-82	1.89E+15	I-133	4.96E+18	PD-109	6.70E+17
BR-83	3.08E+17	I-134	5.52E+18	AG-110M	6.62E+14
BR-84	5.68E+17	I-135	4.70E+18	AG-111	1.10E+17
BR-87	1.02E+18	I-136	2.08E+18	AG-112	5.44E+16
RB-86	5.74E+14	I-136M	1.06E+18	AG-113	3.02E+16
RB-88	1.87E+18	CS-134	2.06E+16	BA-139	4.44E+18
RB-89	2.40E+18	CS-136	3.04E+16	BA-140	4.34E+18
RB-90	2.20E+18	CS-137	5.12E+16	BA-141	4.00E+18
RB-90M	7.14E+17	CS-138	4.60E+18	BA-142	3.78E+18
RB-91	2.94E+18	CS-139	4.28E+18	LA-140	4.42E+18
CD-113M	1.08E+13	CS-140	3.82E+18	LA-141	4.06E+18
CD-115	1.69E+16	SR-89	2.14E+18	LA-142	3.92E+18
CD-115M	5.96E+14	SR-90	3.68E+16	CE-141	3.68E+18
SB-122	2.76E+14	SR-91	3.14E+18	CE-143	3.80E+18
SB-124	1.40E+14	SR-92	3.30E+18	CE-144	1.15E+18
SB-125	4.56E+15	Y-90	3.96E+16	ND-147	1.52E+18
SB-126	6.30E+14	Y-91	2.60E+18	PM-147	1.38E+17
SB-127	2.02E+17	Y-91M	1.82E+18	SM-153	3.88E+17
SB-128	3.64E+16	Y-92	3.32E+18	EU-154	9.66E+14
SB-128M	3.70E+17	Y-93	2.48E+18	EU-155	1.18E+15
SB-129	7.76E+17	Y-94	3.96E+18	EU-156	1.36E+17
SB-130	2.76E+17	Y-95	4.18E+18	EU-157	4.02E+16
SB-130M	1.05E+18	Y-96	3.72E+18	CM-242	2.08E+15

ANNEX B: Modelling and Assumptions

1. Dispersion and dose calculations

1.1 Methodology

Dispersion calculations and dose projections were performed based on the source term provided in ANNEX A: CANDU Core Inventory, for each reference release considered. A well-established computer code, COSYMA [HAS91], was used to carry out this analysis.

COSYMA calculates the acute doses and the corresponding deterministic risk of early effects in the **Near-Early module** (NE). The equivalent doses by organ and the effective dose (50 years committed) are calculated in the **Near-Late module** (NL).

The organs considered for the calculation of deterministic effects are the key radiosensitive ones for nuclear reactor accidents, namely:

- the lungs;
- the thyroid;
- the red bone marrow; and
- the gastro-intestinal tract.

The analysis also examines the impacts of residence time and of protective actions on dose and on distances up to which deterministic effects are possible.

1.2 Codes

1.2.1 COSYMA Software

The COSYMA computer code [HAS95] is a flexible software package developed by the Kernforschungszentrum Karlsruhe (KfK, FRG) and the National Radiological Protection Board (NRPB) for the European Union. This program was developed to carry out probabilistic risk assessment of postulated accidents at nuclear power plants. The mainframe version of the code was selected over the more commonly used PC-COSYMA release, due to its additional flexibility and more powerful output options.

The data entered into COSYMA is processed by an atmospheric dispersion module, based on the MUSEMET model. The resulting nuclide-specific activity concentrations are then fed into the dose and risk consequence module (see COSYMA User Guide [HAS95]).

Prior to its use in the context of this study, COSYMA was extensively verified and validated using the methodology for computer program QA outlined in Appendix A of "*Corporate Policies -- Nuclear Analysis*" [ISR04]. The results of this validation are described in "*Cosyma 95/1: Program Implementation Guide*" [ISR05].

1.2.2 Post-Processing Code

This program, *CosymaRunParserV4.VBP* [ISR02], developed by ISR, allows the COSYMA output to be parsed, processed and displayed in a user-friendly format. The program does not modify but rather copies the numbers produced by COSYMA, making it simple to validate.

1.2.3 Spreadsheet Program

The results for the deterministic doses are processed by a spreadsheet program called *LDLM2000.XLS*, which was developed by ISR. It calculates the distance beyond which the risk of deterministic effects is negligible. This program is described in detail in the report "*Program to Calculate the Influence of Protective Actions on Deterministic Effects*" [ISR03].

1.3 Models and assumptions

1.3.1 Inventory

The COSYMA isotope library contains the 200 most radiologically significant radionuclides. The core inventory calculated with ORIGEN, contains about one thousand nuclides. Those that are not included in COSYMA are assumed to play a minor role in the calculation of dose.

The remaining nuclides were then filtered using the "SOURCE" program included in the COSYMA code, in order to obtain a list of the 60 most important nuclides in the early timeframe (less than a year), along with the 60 most relevant nuclides in the late timeframe (50 years). Both lists were generated using a tolerance of about 2%, and are identical, except for the presence of Y-93 and Cm-242 in the early timeframe vs. Sb-131 and Te-131 in the late timeframe. The resulting lists of isotopes are presented in Annex A of this document.

Deposition parameters for the nuclides were based on the default COSYMA values for five different groups of nuclides: noble gases, aerosols, elemental iodine, organically bound iodine, and aerosol iodine.

1.3.2 Release Duration

COSYMA's dispersion parameters are appropriate for a release duration of one hour. When the duration is different, adjustments to the horizontal dispersion parameters are required [CO85].

The effect of release duration on the atmospheric dispersion parameters was modelled using the correction suggested by equation 5.8 of CAN/CSA 288.2 [CSA91].

$$\sigma_y(x,t_d) = \sigma_y(x,t_r) \cdot \left(\frac{t_d}{t_r}\right)^{0.2}$$

where

σ_y is the horizontal dispersion (sigma) parameter (m)
x is the downwind distance (m)
t_r is the reference duration of the release (one hour for COSYMA)
t_d is the release duration (h)

COSYMA sigmas are expressed as:

$$\sigma_y(x,t_r) = p \cdot x^q$$

The parameters *p* and *q* are empirical factors that depend on the atmospheric stability. The release duration correction only affects p. Default values used in COSYMA are for a one-hour release duration. Others are shown in Table 11.

Table 11: Correction of horizontal sigmas (p) for release duration

1 hour							
	Height	A	B	C	D	E	F
Rural	50 m	0.946	0.826	0.586	0.418	0.297	0.235
	100 m	0.946	0.826	0.586	0.418	0.297	0.235
	180 m	0.946	0.826	0.586	0.418	0.297	0.235
Urban	50 m	1.503	0.876	0.659	0.640	0.801	1.294
	100 m	0.170	0.324	0.466	0.504	0.411	0.253
	180 m	0.671	0.415	0.232	0.208	0.345	0.671
0.5 hour							
	Height	A	B	C	D	E	F
Rural	50 m	0.824	0.719	0.510	0.364	0.259	0.205
	100 m	0.824	0.719	0.510	0.364	0.259	0.205
	180 m	0.824	0.719	0.510	0.364	0.259	0.205
Urban	50 m	1.308	0.763	0.574	0.557	0.697	1.126
	100 m	0.148	0.282	0.406	0.439	0.358	0.220
	180 m	0.584	0.361	0.202	0.181	0.300	0.584
3 hours							
	Height	A	B	C	D	E	F
Rural	50 m	1.178	1.029	0.730	0.521	0.370	0.293
	100 m	1.178	1.029	0.730	0.521	0.370	0.293
	180 m	1.178	1.029	0.730	0.521	0.370	0.293
Urban	50 m	1.872	1.091	0.821	0.797	0.998	1.612
	100 m	0.212	0.404	0.581	0.628	0.512	0.315
	180 m	0.836	0.517	0.289	0.259	0.430	0.836
8 hours							
	Height	A	B	C	D	E	F
Rural	50 m	1.434	1.252	0.888	0.634	0.450	0.356
	100 m	1.434	1.252	0.888	0.634	0.450	0.356
	180 m	1.434	1.252	0.888	0.634	0.450	0.356
Urban	50 m	2.278	1.328	0.999	0.970	1.214	1.961
	100 m	0.258	0.491	0.706	0.764	0.623	0.383
	180 m	1.017	0.629	0.352	0.315	0.523	1.017

1.3.3 Weather

There are two ways to define the weather in COSYMA:

- as fixed weather in terms of stability class, wind speed and direction, and precipitation; or
- as a weather data file that contains hourly meteorological data for a minimum of one year.

The second method allows multi-phase releases to be modelled. It also allows risk calculations over the entire geography and population distribution.

Based on historical data provided by Environment Canada for the Point Lepreau site, the reference weather scenario used is Pasquill D, wind speed 4.2 m/s and mixing height of 500 m. For releases with heat content, the sensitivity of the results was evaluated for all stability categories and as a function of wind speed and mixing height. For releases with no heat content, Pasquill F with a wind speed of 1.4 m/s were used. Table 12 shows the parameters used for each stability category.

Table 12: Weather scenarios used in the calculations

Stability category	Wind speed (m/s)	Mixing height (m)
A	1.4	1000
B	2.6	1000
C	3.7	500
D	4.2	500
E	2.4	200
F	1.4	100

COSYMA also allows statistical calculations to be performed on the basis of the weather frequency. Weather scenarios were obtained from a two-year record provided by Environment Canada for the Point Lepreau site. To perform statistical calculations, COSYMA randomly samples the weather file, which contains hourly data for stability, wind and wind direction over the two-year duration. The results of a large number of runs are ranked in terms of the probability of exceeding given dose levels. The output is provided in terms of confidence interval, i.e. the probability that a dose or health effect will be less than a given threshold 90%, 99% or 99.9% (for example) of the time, based on the possible weather scenarios.

1.3.4 Receptor

The dose is calculated for an average adult in accordance with ICRP-60 [ICR60].

The dose to risk relationship for deterministic effects is based on models published by NRPB [NRP88] and the USNRC [NRC90].

A breathing rate of 3.333×10^{-4} m^3/s was selected for all runs, in both the near-early and near-late subsystems. This is slightly higher than the rate suggested by the Canadian standard (2.70×10^{-4} m^3/s). Table 13 and Table 14 list the breathing rates recommended by various organizations. The rate used inCOSYMA is consistent with the value

suggested by ICRP-75.

Table 13: Breathing rates recommended by various organizations

Age group	EPA, ICRP-23 & ICRP-75		CAN/CSA		US-NRC & ICRP-2	
	(m^3/a)	(m^3/s)	(m^3/a)	(m^3/s)	(m^3/a)	(m^3/s)
Infant	-	-	-	-	1.9E3	6.02E-5
Child	-	-	1.4E3	4.4E-5	2.7E3	8.56E-5
Adolescent	-	-	-	-	5.1E3	1.62E-4
Adult	1.05E4	3.33E-4	8.4E3	2.7E-4	7.3E3	2.31E-4

Table 14: Breathing rate as a function of age [UNSCEAR 2000], [ICRP-71]

Age group	(m^3/a)	(m^3/s)
0-12 months	1.04E+03	3.31E-05
1-2 years	1.88E+03	5.97E-05
3-7 years	3.18E+03	1.01E-04
8-12 years	5.59E+03	1.77E-04
13-17 years	7.34E+03	2.33E-04
Adults (>17 years)	8.11E+03	2.57E-04

1.3.5 Spatial grid

Dose calculations for fixed weather scenarios were calculated over a 16-point distance grid. Doses are provided under the plume centreline and therefore represent the maximum dose that could be received by the target individuals.

Dose calculations for the probabilistic weather scenarios were performed over a 16-sector, 16-point distance grid. Wind direction was allowed to change from run to run.

2. Doses

2.1 Deterministic Effects

2.1.1 Assumptions

Calculations calculate the distance beyond which the risk of deterministic effects is negligible. The method used for this calculation is described in report [ISR03]. The method takes into account the fact that the deterministic dose threshold varies with dose rate, and that dose rate varies with distance and time following the release.

The times after the accident at which COSYMA calculated the deterministic doses were 1, 7, 30 and 365 days. A constant dose rate was assumed for each period (dose received in time period divided by the period duration).

Table 15: Dose integration for deterministic calculations

Run #	Dose integration	Parameter IDTIME
1	1 day	1
2	7 days	7
3	30 days	30
4	365 days	365

The risk of deterministic effects was considered negligible if it was lower than 1%.

To calculate the impact of protective actions on the distance for deterministic effects, the contribution of the dose by pathway (which is provided as a COSYMA output) is multiplied by the appropriate reduction factor for the applicable protective action [ISR08]. For example, assuming that 60% of a 100 mSv dose (or 60 mSv) is from inhalation, and that the sheltering reduction factor is 0.5, the inhalation dose if sheltering is implemented is 30 mSv. This calculation is repeated for all exposure pathways.

2.1.2 Health effects model

Deterministic health effects were calculated using the following model:

$$P(D,t) = 1 - e^{-H}$$

where

$$H = \ln 2 \cdot \left(\sum_i \frac{D_i}{D_{50}^i} \right)^S$$

D_i is the dose integrated over time i

t_i is the integration time i (1 j, 7 j, 30 j or 365 j)

S is a form factor

D_{50}^i is the dose level at which 50% of the exposed population will suffer from a specific effect

and D_{50}^{i} is defined as:

$$D_{50}^{i} = D_{\infty} + \frac{D_0}{D_i / t_i}$$

These parameters are summarized in Table 16.

Table 16: Deterministic health effects parameters in Cosyma [COS95]

Organ/tissue dose		Effect	Parameters					
internal	external	mortality	Form factor S	D_∞ [Gy]	D_0 [Gy^2/h]	RBE[7]	Integration time (days)	Dose thresholds[8] [Gy]
Lungs	Lungs	Pulmonary syndrome	7.0	10.0	30.0	7.0	1, 7, 30, 365	5
Bone marrow	Bone marrow	Hematopoietic syndrome	6.0	4.5	0.1	2.0	1, 30	2.3
Other organs		Gastro-intestinal syndrome	10.0	15.0	0.0	-	1, 7,30	10
Ovaries	Uterus	Pre-natal and neo-natal death	3.0	1.5	0.0	20.0	1,30	0.1
		morbidity						
Lungs	Lungs	Pulmonary deficiency	7.0	5.0	15.0	7.0	1, 7, 30, 365	2.3
Thyroid	Thyroid	Hypo-thyroid	1.3	60.0	30.0	0.0	1, 30	2.0
Skin		Skin erythema	5.0	20.0	5.0	0.0	1, 7, 30	23.
Cornea		Cataracts	5.0	3.0	0.01	0.0	1, 7, 30	1.0
Ovaries	Uterus	Mental retardation (new born)	1.0	1.5	0.0	20.0	1, 30	0.1

[7] For alpha emitters (plutonium), the RBE factor is used to multiply the absorbed dose (Gy) in each organ to take into account the biological efficiency in each organ relative to LET.
[8] Dose thresholds are from *Cosyma User Guide*, EUR 13045, 1995.

2.2 Effective Doses

2.2.1 Assumptions

By default, COSYMA calculates the effective doses over 50 years, unless protective actions are implemented. For our purposes, it was important to know how the effective doses vary with time. Hence, a protective action model was used.

COSYMA incorporates protective action models in the form of reduction factors that can be applied or withdrawn at times that are set by the user. For cases with no protective actions, all reduction factors are set to one.

In COSYMA, "evacuation" is not permanent, since people are allowed to return after seven days. A permanent evacuation is called a "resettlement" (or permanent relocation in COSYMA terminology). Resettlement was thus used to terminate the exposure after given times. Four cases were considered:

- no protection (no evacuation or resettlement);
- resettlement after one day;
- resettlement after seven days; and
- resettlement after 30 days.

It is important to note that changing the residence time does not change the dose integration time for the calculation of effective dose due to inhalation, which is always the committed dose over 50 years. Calculations were performed for 1, 7, 30 days and 50 years. Hence, by varying the exposure time, it is possible to estimate the effectiveness of protective actions.

For example, evacuation is normally for seven days. Therefore, it is possible to estimate the avertable dose for evacuation by calculating the dose for an exposure duration of seven days. The distance within which the intervention level for evacuation is exceeded is the distance for which evacuation plans are justified. Table 17 shows the parameters used for the various exposure durations.

Table 17: Exposure duration for effective dose calculations

Run #	Exposure duration	Parameters			
		NOEXPO	DILREL	DILRES	ITUMS
1	1 day	1,1,1,0,0	3*0	0	1
2	7 days	1,1,1,0,0	3*0	0	7
3	30 days	1,1,1,0,0	3*0	0	30
4	50 years	0,0,0,0,0	$3*10^{30}$	10^{30}	0
Run #	**Exposure duration**	**NOODOS**	**NOOPOP**		**NOOSIT**
5	No protection measure	0	0		0

For runs with fixed weather scenario, parameters contained in Table 18 were used. For probabilistic runs, parameters listed in Table 19 were used.

Table 18: Parameters for fixed weather scenario

Stability category	Parameter IDIKAT	Wind speed (m/s)	Parameter IWNDG	Mixing height	Parameter MIXLH
A	1	1.4	140	1000 m	1000
B	2	2.6	260	1000 m	1000
C	3	3.7	370	500 m	500
D	4	4.2	420	500 m	500
E	5	2.4	240	200 m	200
F	6	1.4	140	100 m	100

Table 19: Parameters for probabilistic weather runs

Parameter	Fixed weather	Probabilistic weather
JMAX	72 (default)	16
IDFOUT	1	0
IAROUT	1	0
NOOTMT	1	2
NOODOS	1	0
NOORSK	1	2
NOOPOP	1	0
LKZ	1,7,50,75,90,115, 14*0 (default)	1,5*0
IACT	7*1	2*0,1,22*0
ICCFD	0	1
METIN	1	0
MIXIN	1	0
NOSHFT	0	2
NJAHRE	1	4

ANNEX C: Table of Calculations Performed

The following Tables contain a number of runs performed to analyze CANDU events. Not all runs were used in this technical basis. However, the results are available for comparison purposes and are all presented here for sake of completeness. The correspondence between release categories (RC) nomenclature used in these Tables and the release types described in this document is as follows:

Release category	Corresponding release type
RC-3	Severe Accident Release (SAR)
RC-6	Beyond Design Basis Release (BDBR)
RC-8	Design Basis Release (DBR)

Table 20: Reference runs

REFERENCE CASES									
Run #	Weather scenario			Release category	Integration time NE (days)	Integration time NL (years)	Permanent evacuation (relocation) after	Heat content	Release duration (hours)
	Stability category	Wind speed	Mixing height						
RC-6: Beyond Design Basis Release (BDBR)									
201	D	4.2 m/s	500 m	RC-6	1	50	1 days	0 MW	3
202	D	4.2 m/s	500 m	RC-6	7	50	7 days	0 MW	3
203	D	4.2 m/s	500 m	RC-6	30	50	30 days	0 MW	3
204	D	4.2 m/s	500 m	RC-6	365	50	None	0 MW	3
205	F	1.4 m/s	100 m	RC-6	1	50	1 days	0 MW	3
206	F	1.4 m/s	100 m	RC-6	7	50	7 days	0 MW	3
207	F	1.4 m/s	100 m	RC-6	30	50	30 days	0 MW	3
208	F	1.4 m/s	100 m	RC-6	365	50	None	0 MW	3
RC-8: Design Basis Release (DBR)									
209	D	4.2 m/s	500 m	RC-8	1	50	1 days	0 MW	8
210	D	4.2 m/s	500 m	RC-8	7	50	7 days	0 MW	8
211	D	4.2 m/s	500 m	RC-8	30	50	30 days	0 MW	8
212	D	4.2 m/s	500 m	RC-8	365	50	None	0 MW	8
213	F	1.4 m/s	100 m	RC-8	1	50	1 days	0 MW	8
214	F	1.4 m/s	100 m	RC-8	7	50	7 days	0 MW	8
215	F	1.4 m/s	100 m	RC-8	30	50	30 days	0 MW	8
216	F	1.4 m/s	100 m	RC-8	365	50	None	0 MW	8

Table 21: Weather probabilistic runs

Probability of effects based on weather frequency distribution						
Run #	Release category	Integration time NE (days)	Integration time NL (years)	Permanent evacuation (relocation) after	Heat content	Release duration (hours)
RC-3: Severe Accident Release (SAR)						
217	RC-3	1	50	1 days	50 MW	0.5
218	RC-3	7	50	7 days	50 MW	0.5
219	RC-3	30	50	30 days	50 MW	0.5
220	RC-3	365	50	None	50 MW	0.5
221	RC-3	1	50	1 days	0 MW	0 5
222	RC-3	7	50	7 days	0 MW	0 5
223	RC-3	30	50	30 days	0 MW	0 5
224	RC-3	365	50	None	0 MW	0 5

Énergie NB Power

SU-5

POINT LEPREAU GENERATING STATION

Station Instruction

EMERGENCY RESPONSE PLAN
SI-01365-EP02
Rev. 2

Document Approval

The following signatures are required prior to issue of this document.

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Drawings and Document Browser

To ensure you have the most recent revision of this document, use the on-line Drawings and Document Browser.

Table of Contents

Introduction

This section includes:

- purpose and scope of the document
- governing, specific, and supplementary references for this document
- definitions of terms and acronyms used in this document
- responsibilities of personnel who perform the procedures described in this document.

1.0 Purpose and Scope

Purpose

The purpose of this document is to describe the process and arrangements in place for responding to a contingency at the Point Lepreau Generating Station (PLGS) in a timely, effective and coordinated manner.

Scope

This document applies to the provision of emergency preparedness services for radiological and conventional contingencies. Emergency response capabilities for the following types of contingencies are a result of this process:

- Upset alerts
- Medical incidents
- HAZMAT incidents
- Fire incidents
- Radiation incidents
- Radioactive materials transportation incidents
- Security incidents
- Severe accidents involving significant core damage
- Natural disasters, such as, storms, floods, and earthquakes.

NOTE

The New Brunswick Emergency Measures Organization (NB EMO) is responsible for actions to protect the public as identified in the "*Point Lepreau Nuclear Offsite Emergency Plan (Vol I (Policy) And II (Procedure)) IR-78600-61*". PLGS assists off-site authorities in dealing with radiation protection aspects of the NB EMO Plan.

Other provincial emergency plans, such as those for forest fires or oil spills, may be implemented near or at PLGS, and may require PLGS assistance, as well.

2.0 References

2.1 Governing References

The following references contain mandatory requirements for this process:

Number	Title
PRR-00660-SU-4	Provide Personnel Safety Services
PRR-00660-SU-5	Provide Emergency Preparedness Services

2.2 Specific References

The following references describe activities directly linked to this process:

Number	Title
IR-78600-61	Point Lepreau Nuclear Offsite Emergency Plan (Vol I (Policy) And II (Procedure
IR-78600-62	Response Arrangements with External Agencies
SI-01365-EP01	Preparing and Maintaining the Emergency Response Plan
IR-78600-31	Incident Command System
EP-78600-I001	ICS – Incident Commander
EP-78600-I005	ICS – Operations Section Chief
EP-78600-0ETT-002	ICS – Planning Section Chief
EP-78600-I007	ICS – Logistics Section Chief
EP-78600-I008	ICS – Finance/Administration Chief
EP-78600-I003	ICS – Safety Officer
EP-78600-I004	ICS – Liaison Officer
EP-78600-I002	ICS – Information Officer
EP-78600 Series	Contingency Procedures
EOP-01381-01	MCR Generic EOP-01

2.3 Supplementary References

The following references provide additional information related to this process:

Number	Title
CNSC Regulatory Guide G-225 (E)	Emergency Planning at Class I Nuclear Facilities and Uranium Mines and Mills
CNSC Regulatory Guide G-306	Severe Accident Management for Nuclear Reactors
CSA N293 (as per the PROL)	Fire Protection for CANDU Nuclear Power Plants

2.4 Forms References

The following forms are referred to in this process:

Number	Title
N/A	

3.0 Definitions

Action Level

An action level is the level of a measurable quantity above which some intervention should be undertaken. For radiation events, this would typically be a dose rate or radioactivity concentration above which remedial actions or protective actions should be carried out.

Alert

An alert is the threat or occurrence of an abnormal, undesired event that:

- involves a localized hazard that can be confined and controlled by station staff
- involves a known or unknown situation potentially leading to a decrease in the level of protection for the public or onsite persons
- may require an increase in the state of readiness of the Emergency Response Organization and may require off-site response.

Contingency

A contingency is the threat or occurrence of an abnormal, undesired event at PLGS, requiring prompt action. It includes alerts emergencies, and severe accidents.

Deterministic Effect

A deterministic effect is a radiation effect in which the severity depends on the amount of exposure such that the more the exposure, the worse the effect will be.

Emergency

An emergency is threat or occurrence of an abnormal event that necessitates prompt actions in order to mitigate adverse consequences. Emergencies include situations for which prompt action is warranted to respond to a *perceived* hazard or threat and:

- involves a general hazard that may not be confined and controlled by station staff
- involves a known or unknown situation potentially leading to a significant decrease in the level of protection for the public or onsite persons
- requires an increase in the state of readiness of the Emergency Response Organization and will likely require off-site response.

In dealing with emergency-level incidents the entire Incident Command System is assembled automatically upon announcement of the emergency.

3.0 Definitions, Continued

Emergency Classification

Emergency classification is a system that describes the severity scale of a contingency. Each emergency class is directly related to risk for the workers and the public. It is used for communicating the required level of response to response organizations and the public.

Emergencies are classified as:

- Site Area Emergencies
- General Emergencies
- Severe Accidents.

Emergency Planning Zones

The planning basis describes the following emergency planning zones for off-site protective actions during radiation events. The zone radii are derived in *IR-78600-02, Technical Planning Basis – Radiation Emergency*.

For this zone…	Planning and preparations have been made…
Precautionary action zone (PAZ) (4 km zone)	to implement urgent protective actions to reduce the risk of serious deterministic health effects (*example:* death or severe injury).
Urgent protective action zone (UPZ) (12 km zone)	to promptly implement urgent protective actions. Recommendations to evacuate, shelter or administer stable iodine to the population are based on a combination of plant parameter assessment and environmental surveys.
Longer-term protective action zone (LPZ) (>12 km zone)	for taking effective protective actions to reduce the exposure due to long term exposure from deposition and ingestion. Sampling and surveys are conducted to determine the need for food control measures.

The PLGS Emergency Response Plan is limited to response within the PAZ and UPZ.

3.0 Definitions, Continued

Emergency Response Organization

The Emergency Response Organization (ERO) refers to the resources that implement the proposed or actual program to cope with contingencies and effectively protect the people, environment and property. They include on-site and off-site responders. For more details, refer to *Appendix A*.

Emergency Response Plan

Emergency Response Plan refers to the series of documents that describe the proposed or actual program to cope with contingencies and effectively protect the people, environment and property, including:

- emergency preparedness and emergency response measures
- the development of emergency response capabilities
- measures to ensure the availability of emergency response capabilities.

The Emergency Response Plan is based on the types and magnitude of incidents described in the planning basis documentation for emergency planning. (Refer to *SI-01365-EP01, Preparing and Maintaining the Emergency Response Plan* and *SDP-01368-EP01, Preparing the Basis for Emergency Planning*.)

The radiological response strategy is based on the following principles, which are described in detail in the planning basis:

- At the time of an incident, it is difficult to accurately determine its severity, especially if there is a real or potential risk of fuel or core damage.
- The response strategy must aim at preventing serious deterministic effects.
- The response must aim at minimizing the occurrence of stochastic effects in the population.

Emergency/Fire Response Strategy

The Emergency/Fire Response Strategy ensures that the plant is capable of:

- achieving and maintaining the reactor in subcritical condition
- achieving and maintaining decay heat removal
- maintaining the integrity of fission product boundaries
- limiting the release of radioactive material outside the reactor
- protecting people from the effects of fire/radiation/HAZMAT contingencies.

3.0 Definitions, Continued

Emergency Response Team (ERT)

The Emergency Response Team (ERT) consists of the Emergency Response Team Leader (ERTL) and ERT members, all of whom are appropriately qualified to respond to various contingencies but mainly medical, fire, and HAZMAT events.

Emergency Station

An Emergency Station is a designated location on-site for the assembly and sheltering of staff during an emergency or severe accident. Personnel accounting is carried out at Emergency Stations.

Emergency Station Leader (ESL)

An Emergency Station Leader (ESL) is a designated person who is responsible for personnel accounting and directing actions at an emergency station.

General Emergency

A general emergency refers to an event affects territory outside the PLGS property boundaries.

Incident Commander (IC)

The Incident Commander (IC) is the person responsible to provide overall leadership for an incident response; typically, this is the on-duty Shift Supervisor or a qualified person appointed by the Station Director/Alternate.

Incident Command System (ICS)

The Incident Command System (ICS) is a standardized all hazard incident management concept. It is used at PLGS to set up a command and control structure for response to contingencies, including events that are beyond the plant's design basis (Severe accidents). More details of the ICS and its implementation at PLGS are given in *IR-78600-31, Incident Command System*.

Off-site

Off-site refers to the area outside the PLGS property perimeter.

On-site

On-site refers to the area within the PLGS property perimeter.

3.0 Definitions, Continued

Operational Intervention Level (OIL)

Operational Intervention Level (OIL) refers to the level of instrument measurement that corresponds to a specific intervention or action level. OILs are typically expressed in terms of dose rates or activity concentrations (surface, volume or mass).

PLGS Off-site Emergency Operations Centre (OEOC)

The PLGS Off-site Emergency Operations Centre (OEOC) is located approximately 10 km from the plant and is directed by an NB EMO representative with support from PLGS key tactical personnel. Off-site response actions are managed from the PLGS OEOC.

Protected Area

The protected area is the area within a site that requires the security prescribed in the Nuclear Safety and Control Act, Nuclear Security Regulations. At Point Lepreau there are two protected areas, the Powerhouse Protected Area and the Solid Radioactive Waste Management Facility Phase II (Dry Fuel Storage site).

Protective Action

Protective action is an intervention intended to avoid or reduce doses to members of the public in chronic exposure or emergency exposure situations.

Responders

Responders are people identified in the emergency plan as being responsible for actions that are intended to minimize the risk, loss and damage resulting from an emergency. Responders can be PLGS personnel or personnel from external organizations, for example, ambulance attendants, firefighters and police.

Severe Accident

A severe accident is a beyond design basis event that causes severe damage to the nuclear core. It is the highest classification of Emergency and is an extension of a General Emergency.

3.0 Definitions, Continued

Severe Accident Management Guidelines (SAMG)

Severe Accident Management Guidelines (SAMG) are emergency guidelines, used to assist in the response to beyond design basis accidents or events with regards to containment, cooling and controlling the nuclear core.

Shelter

Shelter refers to the requirement to remain indoors with the doors and windows closed and air circulation systems turned off. It should be considered only for 24 hours.

Site Area Emergency

Site area emergency refers to an event that affects territory within the PLGS property perimeter only.

Stochastic Effect

A stochastic effect is a radiation effect that has a probability of occurring that is proportional to the radiation dose received (*examples:* cancers). The severity of the effect is independent of the dose received, and generally the effect can occur without a threshold level of dose.

4.0 Responsibilities

This section describes the roles and responsibilities of the PLGS emergency response organization members shown in *Appendix A*.

Contingency Desk Operator (CDO)

The Contingency Desk Operator (CDO) is responsible for assisting the Shift Supervisor/Incident Commander, specifically:

- notifying on-site and off-site authorities as directed by the Duty SS/Incident Commander
- operating a communications node for the MCR between on-site and off-site agencies, survey teams, responders and personnel
- monitoring the progress of personnel accounting and informing the Shift Supervisor/Incident Commander of the results
- monitoring the radiation levels at the emergency stations through the Emergency Station Leaders and informing the Shift Supervisor/Incident Commander of the results
- communicating directly with the ERTL during any contingency (fire, medical, HAZMAT).

Emergency Preparedness Supervisor

The Emergency Preparedness (EP) Supervisor is responsible for assessing performance of incident response through:

- holding or assessing after action reviews
- identifying areas for improvement
- initiating actions to improve performance.

Emergency Response Team (ERT)

The Emergency Response Team (ERT) consists of the Emergency Response Team Leader (ERTL) and ERT members, all of whom are appropriately qualified and experienced. The ERT is responsible for:

- mustering and performing response operations per procedures
- assisting with personnel protection and evacuation
- fighting fires
- confining and isolating hazardous material (HAZMAT) spills
- providing medical first aid
- coordinating with off-site emergency response services when required (firefighting, medical, environmental, HAZMAT)
- performing search and rescue operations within the incident area
- providing updates on hazards, response, and mitigation actions taken.

4.0 Responsibilities, Continued

Emergency Response Team Leader (ERTL)

The Emergency Response Team Leader (ERTL) is responsible for overseeing all ERT activities including tactical lead during response to any contingency (fire, medical, HAZMAT).

Emergency Station Leader (ESL)

There is one Emergency Station Leader (ESL) for each emergency station. The Emergency Station Leader is responsible for:

- monitoring hazards at the emergency station and reporting them to the Shift Supervisor/Incident Commander via the Contingency Desk Operator
- ensuring that instructions from the Shift Supervisor/Incident Commander or Incident Command Staff are followed
- performing or assisting with personnel accounting
- ensuring staff are prepared for evacuation.

Emergency Preparedness Manager

The Emergency Preparedness (EP) Manager is responsible for assessing performance of incident response through:

- analyzing performance issues
- identifying or concurring with areas for improvement
- initiating actions to improve performance of the program.

Incident Command Staff (IC Staff)

The Incident Command Staff (IC Staff) is responsible for assisting the Shift Supervisor/Incident Commander, specifically:

- mustering and performing response operations per procedures
- providing the Shift Supervisor/Incident Commander with strategic support and services, such as safety, logistical, administrative, and financial support, information dissemination, and liaison with off-site agencies
- providing updates on response and mitigation actions taken
- developing recovery plans and provisions for emergency events.

4.0 Responsibilities, Continued

On-site Personnel

On-site personnel are responsible for:

- promptly reporting potentially hazardous situations to the control room
- following the Shift Supervisor/Incident Commander instructions
- cooperating with the Emergency Station Leaders at emergency stations.

Operations Staff

The Operations Staff is responsible for assisting the Shift Supervisor/Incident Commander, specifically:

- promptly reporting abnormal events and plant upsets to the MCR staff
- mustering and performing response operations per procedures
- assisting with personnel protection and evacuation
- assisting with personnel accounting
- providing updates on hazards, response, and mitigation actions taken
- performing in-plant hazard and radiation surveys and emergency vehicle radiation surveys.

Planning Section

The Planning Section is responsible for assisting the Shift Supervisor/Incident Commander, specifically:

- mustering and performing response operations per procedures
- monitoring plant conditions for entry into severe accident conditions
- providing technical support and recommending response actions
- providing updates on the response, mitigation actions recommended, and the plant state
- under severe accident conditions, providing direction for response based on the Severe Accident Management Guidelines and procedures.

4.0 Responsibilities, Continued

Responders

Responders are responsible for assisting the Shift Supervisor/Incident Commander, specifically:

- mustering and performing response operations per procedures
- assisting with personnel protection and evacuation
- coordinating with other emergency response services
- providing updates on hazards, response, and mitigation actions taken.

Security

The Security Staff is responsible for assisting the Shift Supervisor/Incident Commander, specifically:

- mustering and performing response operations per procedures
- assisting with personnel protection and evacuation
- supporting response for contingency events by controlling site access and securing incident areas
- providing updates on hazards, response, and mitigation actions taken.

Shift Supervisor/Incident Commander

The Shift Supervisor/Incident Commander is responsible for:

- classifying the incident
- initiating the Emergency Response Plan and activating the Emergency Response Organization
- initiating notifications to external agencies and providing updates
- implementing the Incident Command System and assuming the role of Incident Commander at the onset of any contingency
- stabilizing the plant and the incident
- initiating hazard and radiation surveys
- managing all contingency actions within the protected area
- ensuring the safety of the on-site personnel, including personnel accounting, and evacuation
- providing recommendations to NB EMO regarding protection of off-site persons affected by the event, including sheltering, evacuation and the use of potassium iodide tablets
- determining whether the event should be upgraded or may be terminated
- providing event status updates.

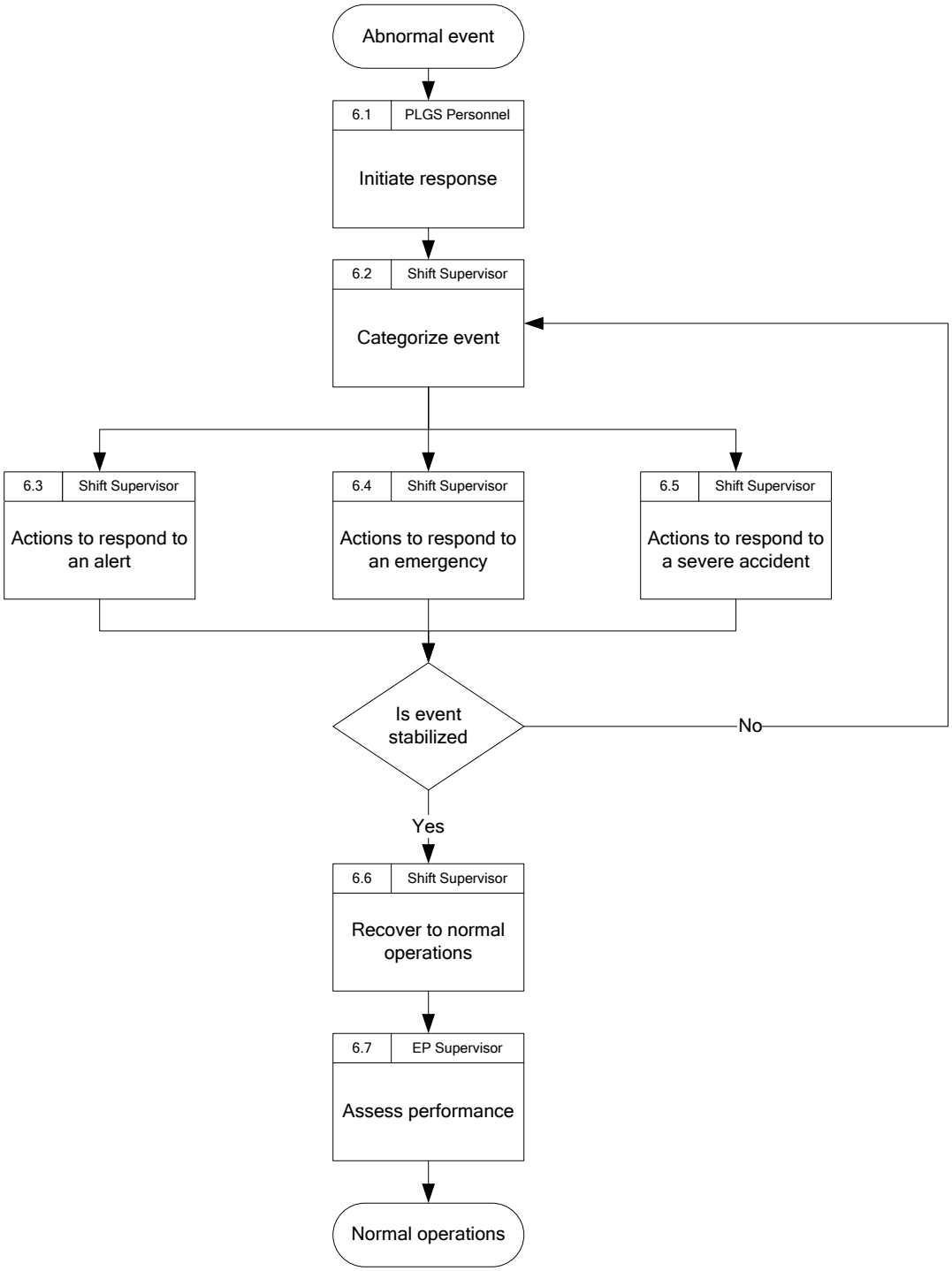
Process Instructions

The purpose of emergency response is to protect the public, station personnel, the plant, and the environment in the event of a contingency. This section describes the process for implementing each key incident response step. Specific procedures to support this process have been developed (see *EP-78600, Contingency Procedures* series).

The Emergency Response Plan interfaces with the *OP-1, Control and Monitor Station Equipment* process. In particular, there is a link between the Emergency Operating Procedures (EOPs) and Abnormal Plant Operating Procedures (APOPs) and the Emergency Response Plan for the initiation of contingency actions (*example: APOP-0 SS*).

5.0 Process Flowchart

The following is the process flowchart for responding to contingencies.



6.0 Process Activities

The process activities create the framework in which Point Lepreau Generating Station will respond to mitigate impact on plant staff, visitors on site, people off site, the environment, and plant equipment during a contingency.

6.1 Initiate Response

The purpose of this activity is to provide the general directives for initiating a contingency response when a situation occurs that presents an immediate or potential hazard to the station staff, the public, or the environment. EOPs and APOPs identify the requirement for the Emergency Response Plan.

WARNING

If there is an immediate hazard to life or health, notify those in the immediate vicinity and evacuate the area immediately.

Step	Action
PLGS Personnel	
1	If confronted with an abnormal event such as a fire, medical issue, chemical spill, radioactive material spill or radiation event, contact the station emergency line (222 on plant phones, or 659-2222 via cell or external phone).
2	Provide the incident details, including any steps you may have taken, to the operator answering the call.
Operations Staff	
3	If confronted with an abnormal process event, contact the Duty Shift Supervisor/Main Control Room (MCR).
4	Provide the incident details, including any steps you may have taken, to the MCR.

6.2 Categorize Event

Step	Action
Shift Supervisor/Incident Commander	
1	Classify the abnormal event as: • An Alert • A Site Area Emergency • A General Emergency • A Severe Accident. The classification is used to communicate the severity of the situation and to trigger automatic emergency actions on-site and off-site. For PA announcements, Site Area Emergency, General Emergency and Severe accident are announced as "Emergencies". The classification level must be re-evaluated when significant changes in station and radiological or other conditions occur.
2	Select and make the appropriate PA announcements to ensure that the on-site personnel are notified of the situation. Use the distinctive alarm patterns (based on the contingency) over the PA system followed by an announcement indicating: • type of contingency (*examples:* fire, radiation, security threat) • the contingency class – Alert or Emergency • the area(s) affected • basic instructions for the protection of on-site personnel • any instructions to responders such as Operations, the Emergency Response Team, Security, or other ERO groups. Plant staff is trained to recognize the distinctive alarm patterns and know the basic actions that should be taken.
3	Initiate notifications to outside agencies and internal parties by performing the following: • mark up the call charts, *ECCH-78600-01, Emergency Call Charts*, as required to ensure all necessary parties are notified • give the marked up call charts to the Contingency Desk Operator with instructions to make the mandatory notifications with priority.

6.2 Categorize Event, Continued

Step	Action
Contingency Desk Operator	
4	Notify off-site and on-site authorities as instructed by the Duty SS per *ECCH-78600-01, Emergency Call Charts*. Mandatory calls must be made with priority.
5	If the contingency is at an Emergency level, provide meteorological data such as wind direction and Pasquill stability from the on-site weather station with the emergency notification.
Shift Supervisor/Incident Commander	
6	If the event is classified as an Alert, proceed to *Section 6.3, Actions to Respond to an Alert*.
7	If the event is classified as a Site Area Emergency or General Emergency, proceed to *Section 6.4, Actions to Respond to an Emergency*.
8	If the event is classified as a Severe Accident, proceed to *Section 6.5, Actions to Respond to a Severe Accident*.

6.3 Actions to Respond to an Alert

The purpose of this activity is to provide the process for responding to an alert.

6.3.1 Respond to the Alert

Step	Action
On-site Personnel	
1	Listen to the PA announcement and follow the instructions.
2	Evacuate the incident area as required.
3	Avoid the incident area.
Emergency Response Team	
4	Muster and respond as per standard procedures.
5	Perform response operations as required per standard procedures. Secure the area as required.
Operations Staff	
6	Muster and respond as per standard procedures.
7	Perform response operations as required per standard procedures.
Incident Command Staff and Planning Section	
8	Listen to the PA announcement and follow the instructions.
9	Assemble in STOIC Classrooms 1 or 6 as appropriate and if requested.
10	Support the incident response as requested.
Shift Supervisor/Incident Commander	
11	Implement the Incident Command System, and assume the position of Incident Commander.
12	Initiate and manage actions to respond to the incident.
Security	
13	Muster and respond as per standard procedures.
14	Perform response operations as required per standard procedures.
15	Secure the area as required or as requested by other responders.
16	Assist with providing access to the incident area for off-site responders such as fire and ambulance units.

6.3.2 Protect Persons During the Alert

Step	Action
On-site Personnel	
1	Listen to the PA announcement and follow any instructions.
2	Evacuate the incident area as required.
3	Avoid the incident area.
Emergency Response Team/Responders/Security	
4	Establish a Command Post as required.
5	Secure the incident area as required.
6	Evacuate non-responders from the incident area.
7	Restrict the access of non-responders to the area.
8	Perform search and rescue operations for missing people as required.
9	Provide updates of hazards to other responders and to Incident Command.
Operations Staff	
10	Secure the incident area as required.
11	Evacuate non-responders from the incident area.
12	Restrict the access of non-responders to the area.
Shift Supervisor/Incident Commander	
13	Initiate any protective actions required to protect responders, on-site personnel, and the environment.
14	Account for personnel as required.
15	Provide updates of hazards to responders and to on-site personnel as required.

6.3.3 Mitigate Effects of the Alert

Step	Action
Shift Supervisor/Incident Commander	
1	Initiate any steps as needed to control, contain and reduce the effects of the event and the effects caused by the response to the event.
2	Assess the results to ensure the steps taken were effective.
On-site Personnel	
3	Listen to the PA announcement and follow any instructions.
Emergency Response Team/Responders/Operations Staff/ Security	
4	Perform response and mitigation operations as required per standard procedures and per instructions from Incident Command.
5	Provide updates of the effectiveness of actions to other responders and to Incident Command.
Shift Supervisor/Incident Commander	
6	Assess the results to ensure the steps taken were effective.
7	As the response progresses, consider if the event needs to be upgraded to an emergency. If so, return to *Section 6.2, Categorize Event*.
8	As the event progresses determine if the incident has been stabilized.
9	If stable, proceed to *Section 6.6, Recovering to Normal Operations*. If not stable, return to *Section 6.2, Categorize Event*.

6.3.4 Communicate the Alert Status

Step	Action
Shift Supervisor/Incident Commander	
1	Keep responders updated on the event status, including hazards.
2	Keep on-site personnel updated as needed.
3	Keep on-site authorities and Public Affairs updated.
4	Keep off-site authorities updated.
Emergency Response Team/Responders/Operations Staff/ Security	
5	Provide updates of the effectiveness of actions and any hazards to other responders and to Incident Command.

6.3.5 Upgrade or Terminate the Alert

Step	Action
Shift Supervisor/Incident Commander	
1	As the response progresses, consider if the event needs to be upgraded to an emergency. If so, return to *Section 6.2, Categorize Event*.
2	As the event progresses determine if the incident has been stabilized and can be terminated. An event can be terminated when: • the situation is stable or improving • the source of the hazard is under control • releases to the environment have been isolated • actions no longer require the Emergency Response Organization and Incident Command System structure.
3	If stable, proceed to *Section 6.6, Recovering to Normal Operations*. If not stable, return to *Section 6.2, Categorize Event*.

6.4 Actions to Respond to an Emergency

The purpose of this activity is to provide the process for responding to an emergency.

6.4.1 Respond to the Emergency

Step	Action
On-site Personnel	
1	Listen to the PA announcement and follow the instructions.
2	Assemble at an Emergency Station for Personnel Accounting.
3	Follow the instructions of the Emergency Station Leader (ESL).
4	Assist the ESL as requested.
5	Make preparations for possible evacuation to an off-site location.
Emergency Station Leaders	
6	Assemble at an Emergency Station for Personnel Accounting.
7	Perform or assist in Personnel Accounting, as appropriate.
8	Assess the area for conventional and radiological hazards.
9	Report the results of accounting, any hazards, and any casualties to the Contingency Desk, or elsewhere as directed.
10	Make preparations for possible evacuation to an off-site location.
Emergency Response Team	
11	Muster and respond as per standard procedures.
12	Perform response operations as required per standard procedures. Secure the area as required.
Operations Staff	
13	Muster and respond as per standard procedures.
14	Perform response operations as required per standard procedures.
15	Perform in-plant radiation and hazard surveys as directed by the Shift Supervisor/Incident Commander.
16	Perform Emergency Vehicle radiation surveys and operations as directed by the Shift Supervisor/Incident Commander.
Incident Commander / Incident Command Staff	
17	Assemble in STOIC Classroom 1 and set up the room to perform response operations.
18	Assess the event situation and the response to date.
19	Advise the Shift Supervisor/Incident Commander of the status and capabilities of the assembled staff.
20	Perform response operations as required per standard procedures.
21	Support the Shift Supervisor/Incident Commander in the incident response as requested.

6.4.1 Respond to the Emergency, Continued

Step	Action
Planning Section	
22	Assemble in STOIC Classroom 6 and set up the room to perform response operations.
23	Assess the event situation and the response to date.
24	Advise the Shift Supervisor/Incident Commander of the status and capabilities of the assembled staff.
25	Perform response operations as required per standard procedures.
26	Monitor the plant state for entry into severe accident conditions; if entry conditions are met, inform the Shift Supervisor/Incident Commander immediately.
27	Support the Shift Supervisor/Incident Commander in the incident response as requested.
Security	
28	Muster and respond as per standard procedures.
29	Perform response operations as required per standard procedures.
30	Secure the area as required or as requested by other responders.
31	Assist with providing access to the incident area for off-site responders such as fire and ambulance units.
32	Assist with opening the OEOC.

6.4.2 Protect Persons During the Emergency

Step	Action
On-site Personnel	
1	Listen to the PA announcement and follow the instructions.
2	Assemble at an Emergency Station for Personnel Accounting.
3	Follow the instructions of the Emergency Station Leader (ESL).
4	Assist the ESL as requested.
5	Make preparations for possible evacuation to an off-site location.
Emergency Station Leaders	
6	Listen to the PA announcement and follow the instructions.
7	Assemble at an Emergency Station for Personnel Accounting.
8	Perform or assist in Personnel Accounting, as appropriate.
9	Assess the area for conventional and radiological hazards.
10	Report the results of accounting, any hazards, and any casualties to the Contingency Desk, or elsewhere as directed.
11	Make preparations for possible evacuation to an off-site location.

6.4.2 Protect Persons During the Emergency, Continued

Step	Action
Emergency Response Team/Responders/Security	
12	Secure the incident area as required.
13	Evacuate non-responders from the incident area.
14	Restrict the access of non-responders to the area.
15	Perform search and rescue operations for missing people as required.
16	Provide updates of hazards to other responders and to Incident Command.
Operations Staff	
17	Secure the incident area as required.
18	Evacuate non-responders from the incident area.
19	Restrict the access of non-responders to the area.
Shift Supervisor/Incident Commander - On-site Personnel Protection	
20	Initiate on-site personnel assembly at emergency Stations and personnel accounting.
21	Initiate search and rescue operations as necessary.
22	Initiate in-plant radiation and hazard surveys.
23	Initiate Emergency Vehicle radiation surveys and operations.
24	Assess on-site evacuation requirements (from emergency stations to other locations) based on local conditions and initiate if necessary.
25	Assess general evacuation requirements (from emergency stations to off-site locations) and initiate if necessary.
26	Assess ventilation conditions at operations centres and emergency stations, and initiate protective actions to resolve any issues.
27	Provide updates of hazards to responders and to on-site personnel as required.
28	Initiate any protective actions required to protect responders, on-site personnel, and the environment.
Shift Supervisor/Incident Commander – Off-site Population Protection	
29	Initiate Emergency Vehicle radiation surveys and operations.
30	Initiate activation the Off-site Emergency Operations Center and off-site surveys.
31	Initiate any protective actions required to protect off-site persons in the PAZ and UPZ via NB EMO, based on plant conditions, radiation survey results, and OILs.
32	Recommend NB EMO implement access restrictions for the PAZ and UPZ based on plant conditions, radiation survey results, and OILs.

6.4.3 Mitigate Effects of the Emergency

Step	Action
Shift Supervisor/Incident Commander	
1	Initiate any steps as needed to control, contain and reduce the effects of the event and the effects caused by the response to the event.
On-site Personnel	
2	Listen to the PA announcement and follow any instructions.
Emergency Response Team/Responders/Operations Staff/ Security	
3	Perform response and mitigation operations as required per standard procedures and per instructions from Incident Command.
4	Provide updates of the effectiveness of actions to other responders and to Incident Command.
Shift Supervisor/Incident Commander	
5	Assess the results the response to ensure the steps taken were effective.
6	As the response progresses, consider if the event needs to be upgraded to an emergency. If so, return to *Section 6.2, Categorize Event*.
7	As the event progresses determine if the incident has been stabilized.
8	If stable, proceed to *Section 6.6, Recovering to Normal Operations*. If not stable, return to *Section 6.2, Categorize Event*.

6.4.4 Communicate the Emergency Status

Step	Action
Shift Supervisor/Incident Commander	
1	Keep responders updated on the event status, including hazards.
2	Keep on-site personnel updated as needed.
3	Keep on-site authorities and Public Affairs updated.
4	Keep off-site authorities updated.
Emergency Response Team/Responders/Operations Staff/ Security	
5	Provide updates of the effectiveness of actions and any hazards to other responders and to Incident Command.

6.4.5 Upgrade or Terminate the Emergency

Step	Action
Shift Supervisor/Incident Commander	
1	As the response progresses, consider if the event needs to be upgraded to a severe accident. If so, return to *Section 6.2, Categorize Event*.
2	As the event progresses determine if the incident has been stabilized and can be terminated. An event can be terminated when: • the situation is stable or improving (*example*: fire is out or under control) • the source of the hazard is under control (*example*: hazardous material spills have been mitigated and contained) • releases to the environment have been isolated • actions no longer require the Emergency Response Organization and Incident Command System structure.
3	If stable, proceed to *Section 6.6, Recovering to Normal Operations*. If not stable, return to *Section 6.2, Categorize Event*.

6.5 Actions to Respond to a Severe Accident

The purpose of this activity is to provide the process for responding to a severe accident.

NOTE

If a severe accident has been declared, then, as per clause 0.04 of *RD-01364-L003, Operating Policies and Principles (OP&P),* operations as referenced in OP&P shall be deemed to have ceased and the specific limits, conditions and requirements of subsequent sections of OP&P shall no longer apply.

6.5.1 Respond to the Severe Accident

Step	Action
On-site Personnel	
1	Listen to the PA announcement and follow the instructions.
2	Assemble at an Emergency Station for Personnel Accounting.
3	Follow the instructions of the Emergency Station Leader (ESL).
4	Assist the ESL as requested.
5	Make preparations for possible evacuation to an off-site location (Off-Site Emergency Operations Centre (OEOC) or other specified locations).
Emergency Station Leaders	
6	Assemble at an Emergency Station for Personnel Accounting.
7	Perform or assist in Personnel Accounting, as appropriate.
8	Assess the area for conventional and radiological hazards.
9	Report the results of accounting, any hazards, and any casualties to the Contingency Desk, or elsewhere as directed.
10	Make preparations for possible evacuation to an off-site location (OEOC or other specified locations).
Emergency Response Team	
11	Muster and respond as per standard procedures.
12	Perform response operations as required per standard procedures. Secure the area as required.
Operations Staff	
13	Muster and respond as per standard procedures.
14	Perform response operations as required per standard procedures.
15	Perform in-plant radiation and hazard surveys as directed by the Shift Supervisor/Incident Commander.
16	Perform Emergency Vehicle radiation surveys and operations as directed by the Shift Supervisor/Incident Commander.

6.5.1 Respond to a Severe Accident, Continued

Step	Action
Incident Command Staff	
17	Assemble in STOIC Classroom 1 and set up the room to perform response operations.
18	Assess the event situation and the response to date.
19	Advise the Shift Supervisor/Incident Commander of the status and capabilities of the assembled staff.
20	Perform response operations as required per standard procedures.
21	Support the Shift Supervisor/Incident Commander in the incident response as requested.
Planning Section	
22	Assemble in STOIC Classroom 6 and set up the room to perform response operations.
23	Assess the event situation and the response to date.
24	Advise the Shift Supervisor/Incident Commander of the status and capabilities of the assembled staff.
25	Perform response operations as required per standard procedures.
26	Monitor the plant state for entry into severe accident conditions; if entry conditions are met, inform the Shift Supervisor/Incident Commander immediately.
27	Direct the Shift Supervisor/Incident Commander in the incident response as appropriate per the Severe Accident Management Guidelines and procedures.
Security	
28	Muster and respond as per standard procedures.
29	Perform response operations as required per standard procedures.
30	Secure the area as required or as requested by other responders.
31	Assist with providing access to the incident area for off-site responders such as fire and ambulance units.
32	Assist with opening the OEOC.

6.5.2 Protect Persons During the Severe Accident

Step	Action
On-site Personnel	
1	Listen to the PA announcement and follow the instructions.
2	Assemble at an Emergency Station for Personnel Accounting.
3	Follow the instructions of the Emergency Station Leader (ESL).
4	Assist the ESL as requested.
5	Make preparations for possible evacuation to an off-site location (OEOC or other specified locations).
Emergency Station Leaders	
6	Listen to the PA announcement and follow the instructions.
7	Assemble at an Emergency Station for Personnel Accounting.
8	Perform or assist in Personnel Accounting, as appropriate.
9	Assess the area for conventional and radiological hazards.
10	Report the results of accounting, any hazards, and any casualties to the Contingency Desk, or elsewhere as directed.
11	Make preparations for possible evacuation to an off-site location (OEOC or other specified locations).
Emergency Response Team/Responders/Security	
12	Secure the incident area as required.
13	Evacuate non-responders from the incident area.
14	Restrict the access of non-responders to the area.
15	Perform search and rescue operations for missing people as required.
16	Provide updates of hazards to other responders and to Incident Command.
Operations Staff	
17	Secure the incident area as required.
18	Evacuate non-responders from the incident area.
19	Restrict the access of non-responders to the area.

6.5.2 Protect Persons During the Severe Accident, Continued

Step	Action
Shift Supervisor/Incident Commander - On-site Personnel Protection	
20	Initiate on-site personnel assembly at emergency Stations and personnel accounting.
21	Initiate search and rescue operations as necessary.
22	Initiate in-plant radiation and hazard surveys.
23	Initiate Emergency Vehicle radiation surveys and operations.
24	Assess on-site evacuation requirements (from emergency stations to other locations) based on local conditions and initiate if necessary.
25	Assess general evacuation requirements (from emergency stations to off-site locations) and initiate if necessary.
26	Assess ventilation conditions at operations centres and emergency stations, and initiate protective actions to resolve any issues.
27	Provide updates of hazards to responders and to on-site personnel as required.
28	Initiate any protective actions required to protect responders, on-site personnel, and the environment.
Shift Supervisor/Incident Commander – Off-site Population Protection	
29	Initiate Emergency Vehicle radiation surveys and operations.
30	Initiate activation the Off-site Emergency Operations Center and off-site surveys.
31	Initiate any protective actions required to protect off-site persons in the PAZ and UPZ via NB EMO, based on plant conditions, radiation survey results, and OILs.
32	Recommend NB EMO implement access restrictions for the PAZ and UPZ based on plant conditions, radiation survey results, and OILs.

6.5.3 Mitigate Effects of the Severe Accident

Step	Action
Shift Supervisor/Incident Commander	
1	Initiate any steps as needed to control, contain and reduce the effects of the event and the effects caused by the response to the event.
On-site Personnel	
2	Listen to the PA announcement and follow any instructions.
Emergency Response Team/Responders/Operations Staff/Security	
3	Perform response and mitigation operations as required per standard procedures and per instructions from Incident Command.
4	Provide updates of the effectiveness of actions to other responders and to Incident Command.
Shift Supervisor/Incident Commander	
5	Assess the results the response to ensure the steps taken were effective.
6	As the response progresses, consider if the event needs to be upgraded to an emergency. If so, return to *Section 6.2, Categorize Event*.
7	As the event progresses determine if the incident has been stabilized.
8	If stable, proceed to *Section 6.6, Recovering to Normal Operations*. If not stable, return to *Section 6.2, Categorize Event*.

6.5.4 Communicate the Severe Accident Status

Step	Action
Shift Supervisor/Incident Commander	
1	Keep responders updated on the event status, including hazards.
2	Keep on-site personnel updated as needed.
3	Keep on-site authorities and Public Affairs updated.
4	Keep off-site authorities updated.
Emergency Response Team/Responders/Operations Staff/Security	
5	Provide updates of the effectiveness of actions and any hazards to other responders and to Incident Command.

6.5.5 Terminate the Severe Accident

Step	Action
Shift Supervisor/Incident Commander	
1	As the event progresses determine if the incident has been stabilized and can be terminated. An event can be terminated when: • the situation is stable or improving • the source of the hazard is under control • releases to the environment have been isolated • actions no longer require the Emergency Response Organization and Incident Command System structure.
2	If stable, proceed to *Section 6.6, Recovering to Normal Operations*. If not stable, return to *Section 6.2, Categorize Event*.

6.6 Recovering to Normal Operations

The Incident Commander decides when the on-site event can be terminated and return to normal operation can be resumed. NB EMO decides when to terminate the off-site emergency.

NOTE

Recovery from an alert will likely be a simplified sub-set of the actions that follow. For some alert level events, performing Steps 1 to 3 may be sufficient to return to normal operations.

Step	Action
Shift Supervisor/Incident Commander	
1	Confirm that the contingency event can be terminated and return to normal operation can be resumed. An event can be terminated when: • the situation is stable or improving • the source of the hazard is under control • releases to the environment have been isolated • actions no longer require the Emergency Response Organization and Incident Command System structure.
2	Assess the plant state to determine: • habitability of the facility • structural integrity of the facility • appropriate plant configuration • restart options, if applicable • restart strategy, if applicable • site and equipment contamination, if applicable • emergency equipment restoring and restocking • ERT and shift crew status – consider replacing the teams, if applicable • critical incident stress debriefing for responders and staff involved • priorities • financial requirements.
3	Notify plant staff and all interfacing external agencies when the event is terminated. If personnel had to be evacuated, make arrangements to communicate to them the status of the plant and the planned actions for recovery.

6.6 Recovering to Normal Operations, Continued

Step	Action
Incident Command Staff	
4	Develop a recovery plan. The purpose and scope of the recovery plan will depend on the nature and extent of the consequences of the event. The plan should include or consider: • a recovery organization as required by the scope of the recovery work • tracking and managing the dose to recovery workers • modifying or enhancing the station access control and contamination control arrangements as required by the distribution of contamination • screening, post-traumatic counseling, and medical follow-up of PLGS personnel who may have been affected by the emergency • providing assistance to NB EMO in off-site survey and ground sampling • helping NB EMO develop a detailed survey and ground sampling plan, if required • making special arrangements to dispose of contaminated equipment, tools, building material, supplies, soil, vehicles, OEOC materials, etc. • decontamination of the station and PLGS Emergency Operations Centre • external assistance as required for performing these activities • any other issues raised from the event and the response.
5	Forward the proposed recovery plan to the Incident Commander for approval.
Shift Supervisor/Incident Commander	
6	Review and approve the proposed recovery plan and assign specific recovery responsibilities.
Incident Command Staff	
7	Implement the approved recovery plan.

6.7 Assessing Performance

The purpose of this activity is to identify cause, evaluate effectiveness of the response, and improve performance.

Step	Action
EP Supervisor	
1	To the degree necessary, hold a post-job briefing with personnel involved in responding to the incident to discuss the process, method of response, and lessons learned.
2	Assess the effectiveness of the response to identify areas for improvement.
3	Communicate new Operating Experience (OE), as required, in accordance with *SI-01365-T32, Operating Experience*.
4	Ensure any follow-up actions are documented (*examples:* create a Notification, PICA or RDS, as required).
5	If further investigation is required, action the Health and Safety Manager.
6	Obtain copies of any records created during the event for future reference and official record.
EP Manager	
7	Analyze the issues where performance was not as expected.
8	Gather and review relevant information: • review OE to identify similar previous incidents, actions taken and success or failure of actions taken • interview personnel who were directly involved in the response or possess technical expertise.
9	Identify any weakness in the program.
10	Initiate actions to improve performance of the program.

Records

Permanent

There are no permanent records associated with this document.

Non-permanent

There are no non-permanent records associated with this document.

Appendix A: Emergency Response Organization

The Emergency Response Organization refers to the resources that implement the proposed or actual program to cope with contingencies and effectively protect the people, environment and property. This includes on-site and off-site responders.

This Appendix discusses the positions required to support a contingency response for a large event, such as a radiation emergency.

Incident Command

Incident command and the incident command system, as implemented at PLGS, is detailed in *IR-78600-31, Incident Command System*. In brief, the system consists of a number of positions that are staffed to provide logistical, safety, liaison, and financial support, and public information services to the Incident Commander. The IC is the person charged with leading and managing the response and mitigation efforts.

IC Staff

The IC Staff will assemble as required in Classroom 1 and consists of the following positions:

- Station Director / IC – oversee classroom 1, assume IC
- Information Officer – provides oversight and advice on internal and external communications for the incident
- Safety Officer – oversees incident safety for the event
- Liaison Officer – provide liaison with external support agencies (not responders)
- Logistics Section Chief – provides logistics support for the event
- Finance and Administration Section Chief – provides administrative and financial support for the event
- Security – security response, site access control
- ASR support – may be activated to support operations in Classroom 1.

Appendix A: Emergency Response Organization, Continued

Operations Section

The Operations Section is the section containing the various teams assembled to respond to the contingency event. It includes:

- ERT – fire, medical, HAZMAT, and search and rescue
- Operations – plant operations response, in-plant surveys, EV surveys
- Security – security response, site access control
- Contingency Desk Operator – responder communications, plume plotting
- WCCA Operator – personnel accounting
- Emergency Station Leaders – personnel accounting, evacuation.

Planning Section

The Planning Section is responsible for monitoring plant conditions for entry into severe accident and providing technical advice and solutions to resolve the incident. It assembles in Classroom 6 and consists of the following positions:

- Planning Section Chief – oversee Classroom 6 and Planning Section activities
- Containment Member – tracks containment status
- Fuel Cooling Member – tracks fuel cooling status
- Senior Technical Advisor – provides nuclear safety oversight for Classroom 6 activities
- Computational Aids Assistants – perform calculations to support severe accident monitoring
- ASR support – may be activated to support operations in Classroom 6
- SME support – may be activated to support the section.

Appendix A: Emergency Response Organization, Continued

OEOC

The OEOC provides off-site radiation surveys, sampling, and access control during the event. The OEOC team consists of the following positions:

- OEOC Coordinator – leadership
- OEOC Assistant – plume plotting, survey recommendations
- OEOC Liaison – interface with other agencies at the OEOC, provide dose control
- Radio Operator – communications with survey teams
- Survey Teams – surveys and sampling
- Roadblock teams – support to RCMP roadblocks and checkpoints
- Reception Center teams – contamination control support to reception centers
- Decontamination team – decon support at the OEOC.

President's Team

The president's team is assembled to provide strategic support from head office to both PLGS and NB EMO. It consists of a number of Vice Presidents and support staff.

NB EMO Support

This consists of several individuals who provide support to the PEOC. They consist of:

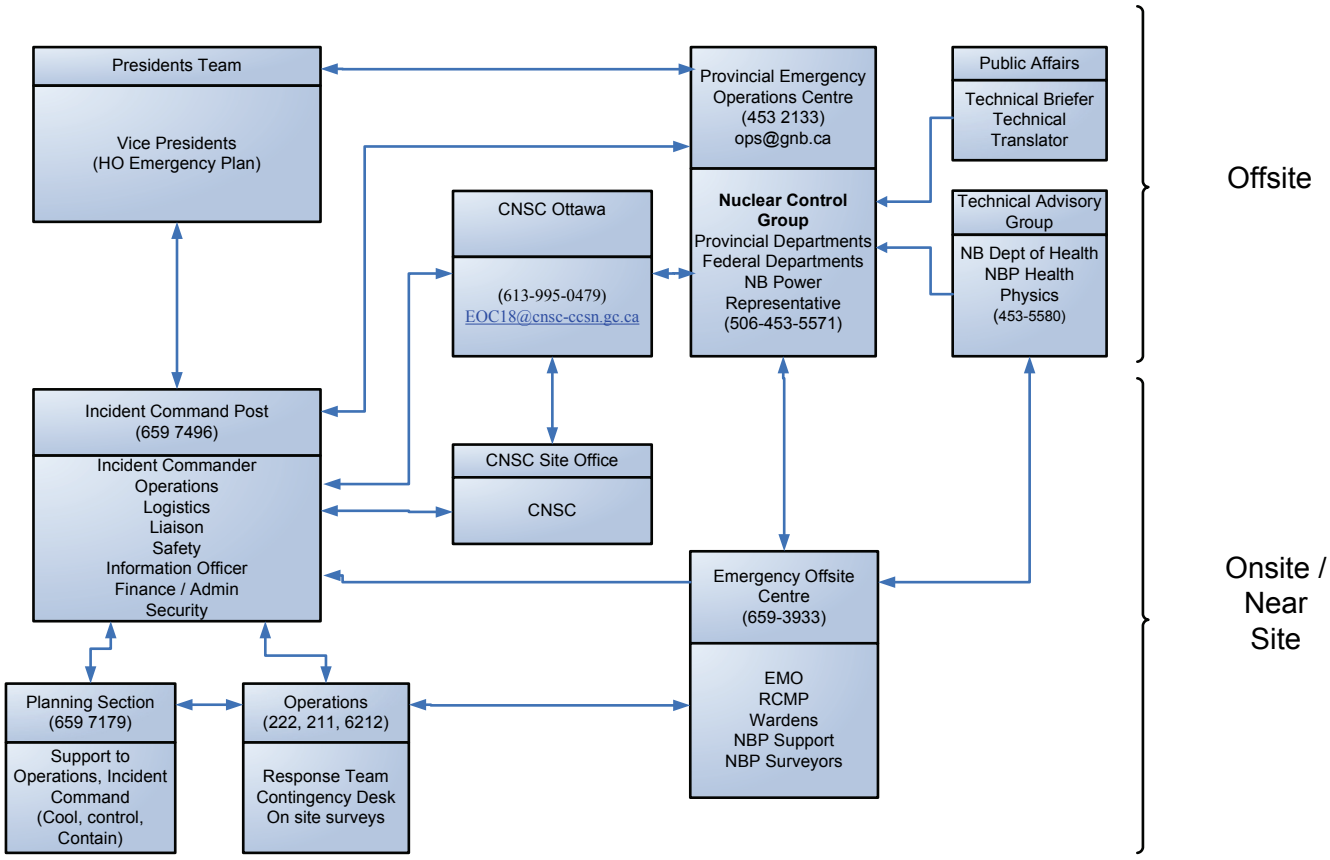
- Technical Briefer – interprets plant and event data for the PEOC
- Health Physicist – provides technical support to the Technical Advisory Group
- NBP representative – provides NBP VP level support to the PEOC
- Public Affairs – assists Communications NB with public messaging.

External Agencies

External agencies provide varying levels of assistance on-site and off-site during events. These include:

- Ambulance NB – EMS and transportation services for medical events
- Musquash Fire – fire and other response
- Saint John Fire – fire and other response
- NB EMO – provincial support, off-site command and control of resources
- RCMP – security and other response, provincial response via NB EMO
- CNSC – federal support.

Appendix A: Emergency Response Organization, Continued



PLEASE REFER TO **0087-78600-PH01-001-EP-A** FOR A FULL LIST OF PHONE NUMBERS

Figure 1 - Emergency Response Organization Diagram

Appendix A: Emergency Response Organization, Continued

Staffing

The staffing requirements are defined as the number of people, level of authority and competence that would be mobilized to respond to a major event to must be present before an emergency team can be declared operational. The mobilization time is the maximum time allowed for an emergency team to become operational.

Team	Members	Duties	Mobilization Time
Operations Section	Shift Supervisor / Incident Commander	Incident Command and Control	Immediate
	Operations Section Chief	Operations Command and Control	Immediate
	Contingency Desk Operator	Communications	Immediate
	Work Clearance Centre Alternate	Personnel Accounting	Immediate
	Operations Shift Crew	Response Operations	Immediate
	Emergency Response Team	Response Operations	Immediate
	On-Site Survey Team	On-site radiation and hazard surveys	Immediate
	Emergency Vehicle Team	On-site radiation surveys EV operations	Immediate
	Emergency Station Leaders	Emergency Station contact Personnel accounting	Immediate
	Security teams	Security Response operations Incident Support	Immediate

Appendix A: Emergency Response Organization, Continued

Team	Members	Duties	Mobilization Time
Incident Command Staff	Deputy Incident Commander	Command and control – Classroom 1 Prepare to assume IC role	2 hours
	Safety Officer	Safety oversight EOC point of contact	2 hours
	Public Information Officer	Internal information service External information services	2 hours
	Liaison Officer	Liaison with external agencies (non-response)	2 hours
	Logistics Section Chief	Logistics support	2 hours
	Finance/Administration Section Chief	Financial support, including timekeeping	2 hours
	ASR Support	Logging, correspondence management, other support	As requested*
Planning Section	Planning Section Chief	Command and control – Planning Section	2 hours
	Containment Member	Containment monitoring and support	2 hours
	Fuel Cooling Member	Fuel Cooling Monitoring and support	2 hours
	Senior Technical Advisor	Nuclear safety support	2 hours
	Computational Aids Assistants	SAMG calculation support	As requested*
	ASR Support	Logging, correspondence management, other support	As requested*
	SME support	SME support for systems and processes	As requested*

Appendix A: Emergency Response Organization, Continued

Team	Members	Duties	Mobilization Time
OEOC Team	OEOC Coordinator	Command and Control of EOC, survey coordination	2 hours*
	Assistant	Plume and sample plotting	2 hours*
	Liaison	Dose management contamination control liaison with external agencies	2 hours*
	Radio operator	Survey team communications	2 hours*
	OEOC Survey Teams	Four survey teams of two persons qualified to perform radiation surveys and sampling and to perform radio communications	2 hours*
	Reception Centre teams	Two teams of two persons qualified to perform radiation contamination control at reception centres	2 hours*
	Contamination Control Teams	Two radiation protection qualified persons per checkpoint	2 hours*
	Decontamination Team	Three radiation protection qualified persons to perform contamination control activities at the OEOC	2 hours*
	ASR Support	Logging, correspondence management, other support	As requested*

Appendix A: Emergency Response Organization, Continued

Team	Members	Duties	Mobilization Time
PEOC Support	NB Power Representative	Vice President Nuclear or Alternate – PEOC support	As requested
	Technical Briefer	Provides PEOC members with an interpretation of data coming from site	As requested
	Health Physicist	Radiation protection support to Technical Advisory Group	As requested*
	Public Affairs	Communications NB support	As requested*
President's Team	President and VPs	Strategic Support from within the NBP group of companies	As requested

NOTE

* Not on call. For OEOC members, the requested mobilization would be that they be at the OEOC within 2 hours of being contacted.

For other support (*examples:* ASR, SME, etc.), no mobilization time is expected; they are not on call and are requested to mobilize with the best speed possible.

Appendix B: Arrangements with External Agencies

PLGS has entered into a number of agreements with external agencies to support emergency response activities. The agreements are with local fire departments, health care providers, other nuclear utilities and companies, and others, and discuss issues such as mutual aid, fire response support, training, and other support.

These arrangements are documented in *IR-78600-62, Response Arrangements with External Agencies*.

Appendix C: Facility Requirements

The following table lists the PLGS facilities established to support the Emergency Response Plan. This is not a complete list and will be updated as facility requirements are identified.

Facility	Services
PLGS Emergency Operations Centre	• provides back-up communications equipment • equipped with facilities to display important plant and environmental data.
Incident Command Post Main Control Room initially, then STOIC Class Room 1	• equipped with communications equipment and facilities to display important plant and environmental data.
Muster Area for the Emergency Response Team	• provides an area where emergency Response Team members can meet and receive information regarding the contingency • equipped with personnel protective equipment for fire fighting.
Contingency Desk	• provides support to the Shift Supervisor/Incident Commander during real or simulated contingencies.
Fire Training Grounds	• provides location and equipment to train Emergency Workers in fire fighting techniques for various kinds of fire.
Garage for Emergency Vehicle	• provides a storage area for the emergency vehicle to protect it from adverse environmental conditions.
Fredericton Health Physics Lab	• provides analysis of radiological samples.
Planning Centre Classroom 6 STOIC	• provide storage of equipment, files, data reviewing and logistical support.

APPENDIX 5 – Document Requests

CMD 17-H2 - Submission from CNSC Staff - **RECEIVED**
CMD 17-H2.1 - NB Power Submission - Commission Hearing – **RECEIVED**
PowerPoint - Jan 26 – CNSC
PowerPoint - Jan 26 - NB Power
NB Power - Point Lepreau Emergency Response Plan - **RECEIVED**
Point Lepreau Nuclear Offsite Emergency Plan Volumes I & II – **RECEIVED (INFORMATION REQUEST REQUIRED)**
E-Doc 4922698 Letter from B. Poulet to B. Plummer, Closure of Fukushima Action (footnote 75 of CNSC Submissions) - **RECEIVED**
CMD 16-M31 Submission from NB Power on "Intrepid Exercise" - **RECEIVED**
Letter from S. Granville to B. Poulet, Fukushima Action Item (F AI) 2.1 .1 and 2.1.2 – Seismic Hazards for Point Lepreau, May 11, 2015, e-Doc 4766791 (footnote 73 in CNSC Submissions) - **RECEIVED**
Letter from S. Granville to B. Poulet, External Hazard Assessments for Point Lepreau, Impact Evaluation and Request for Closure of Fukushima Action Items (FAI) 2.1.1 and 2.1.2, June 30, 2015, e-Doc 4800481 (footnote 74 in CNSC Submissions) - **RECEIVED**
Surveys and results from neighbouring local towns, presented by NB Power during hearing – **RECEIVED (IN PART)**
“Navigating for Excellence” report circulated by NB Power (passed around to the members during hearing and confirmed it would be made publicly available) - **RECEIVED**
Response Arrangements with External Agencies (IR-78600-62) - **RECEIVED**
ICS - Safety Officer (EP - 78600-I003) - **RECEIVED**
Preparing the Basis for Emergency Planning (SDP01368-EP01) - **RECEIVED**
Preparing and Maintaining the Emergency Response (SI-01365-EP01) - **RECEIVED**
ICS - Information Officer (EP - 78600 - I002) - **RECEIVED**
Technical Planning Basis – Radiation Emergency (IR-78600-02) - **RECEIVED**
Documents or explanations based on the statements in NB Power’s CMD:
"Nuclear Oversight has conducted more than 80 internal independent oversight evaluations since 2012" (p 8) Are results or reports available? **– DENIED (Internal Use Only)**
"External nuclear oversight is provided through the Nuclear Safety Review Board and Corporate Nuclear Oversight Team" (p 9) Are there any reports related to (1) "the effectiveness of the nuclear oversight function including the effectiveness of nuclear oversight

audits by identifying risks to station performance improvement" or (2) risk identification and management? – **DENIED (Internal Use Only)**
"Nuclear Safety Culture Assessment … is performed every three years" (p 13) Is this Assessment available? – **DENIED (Internal Use Only)**
"NB Power conducted a comprehensive nuclear safety culture assessment in 2014 and 2015" (p 13) Document(s) available? – **DENIED (Internal Use Only)**
"Severe Accident Management Guidelines" (p 34) – **DENIED (Internal Use Only)**
"Annual Compliance Report" (p 57) - **RECEIVED**
"NMM-00660, Nuclear Management Manual" (p 62) - **RECEIVED**
"Point Lepreau Nuclear Generating Station has established and maintains an Emergency Management Program" (p 71) - **RECEIVED**
"RD - 353, Testing the Implementation of Emergency Measures" (p 71/72) - **ONLINE**
"An emergency response plan has been registered and approved by Transport Canada" (p 90) - **RECEIVED**

APPENDIX 6 – Information Request

Tuesday, February 28, 2017

Justice and Public Safety
c/o Faye Morehouse
Argyle Place P.O. Box 6000
Fredericton, NB E3B 5H1

Sent via email

ATTN: RIGHT TO INFORMATION AND PROTECTION OF PRIVACY ACT

Dear Ms. Morehouse:

I am counsel with the Canadian Environmental Law Association (CELA). We are one of the six recipients awarded participant funding by the Canadian Nuclear Safety Commission (the "Commission"). We will be submitting a written intervention and providing an oral address at the Point Lepreau Nuclear Generating Station (NGS) licence renewal hearing on May 10 and 11, 2017.

On February 14, 2017, CELA requested a copy of the province's current Offsite-Emergency Plan for the Point Lepreau NGS. On February 15, 2017, we were informed by Roger Shepard of the New Brunswick Emergency Management Organization (NB EMO) that the document would not be released and we must submit a request for information. On February 16, 2017, we again compelled the NB EMO to provide the off-site emergency plan for the sole purpose of informing our oral and written submissions to the CNSC. No response was received.

As set out in our Participant Funding Program Application, CELA's role before the Commission is to examine the emergency planning provisions relevant to the re-licensing application of the Point Lepreau NGS and secondly, to provide input in respect of their adequacy and opportunities for improvement relevant to the decision on re-licensing the facility. These approved objectives cannot be fulfilled without access to the provincial off-site emergency plan.

Our submission, or Commission Member Document, must be filed with the Commission by March 27, 2017, and it is therefore with urgency that we respectfully request your assistance. CELA requests and seeks access to all volumes of the *Point Lepreau Nuclear Off-Site Emergency Plan* and its planning basis.

We respectfully request that all volumes of the off-site emergency plan and its planning basis be made available to us for the following reasons:

1. The Province of New Brunswick, in its submission to the Commission recognized that "there is a need for more rigor and transparency in off-site emergency arrangements." CELA has notable expertise in providing guidance to the Commission regarding emergency planning and therefore, the provision of the off-site emergency plan would align with the province's view on transparency and rigor.

2. In accordance with *Guide – 379: Guide for Applicants and Intervenors Writing CNSC Commission Member Documents*, it is incumbent upon us to present information that allows the Commission to "understand the matter at hand as fully as possible." We cannot adequately fulfill this onus or the objectives approved in our participant funding application without access to the province's off-site emergency plan.

3. Offsite emergency response plans are publicity available in Ontario and easily downloadable from the Ministry of Community Safety and Correctional Services website. In light of New Brunswick's commitment to transparency, we compel you to provide all volumes of the *Point Lepreau Nuclear Off-Site Emergency Plan* for our review.

Our written intervention is due to the Commission on March 27, 2017, and therefore I respectfully request your cooperation and the provision of the off-site plan on or before March 13, 2017. Any questions or response can be directed to kerrie@cela.ca.

Sincerely,

Kerrie Blaise
Counsel
CANADIAN ENVIRONMENTAL LAW ASSOCIATION

Request for Information Form

Instructions

Personal information on this form is collected in accordance with New Brunswick's *Right to Information and Protection of Privacy Act* (RTIPPA). You can access many public body records without making a request under the *Right to Information and Protection of Privacy Act*. Public bodies make a lot of their information available through websites, and printed documents. If you cannot find what you are looking for, contact the public body's Coordinator to inquire if the information you are seeking is readily available.

ABOUT YOU

In this section of the form, please include:

- your last name, first name and preferred title, if any; the name of the company or organization you are representing, if applicable;
- your complete mailing address and daytime and evening telephone numbers so that the public body can contact you about the request; and
- a fax number or e-mail address, if any, where correspondence may be sent.

ABOUT YOUR REQUEST/INFORMATION YOU WANT TO ACCESS

- Please check **what kind of information** you want to access.
- Indicate the **name of the public body** to which you are making the request
- Indicate whether you would like to **receive a copy** of the record **or examine** the record in person.
- Be as specific as possible in describing the records i.e. time, place and event in order to identify the requested record(s). Feel free to add any additional information that you think may help with processing your request. If you need more space than provided, continue your description on a separate sheet of paper and attach it to the request form.

FEES

- Please note: There are no longer any fees for requests made under the *Right to Information and Protection of Privacy Act.*

ABOUT YOUR PERSONAL INFORMATION

- There is no fee for accessing your own personal information.
- Please be sure to give your full name and any other names that you previously used and any identifying number that relates to the records in question.
- If you are requesting information on behalf of another person, please attach proof that you can legally act for that person. This authorization can be in the form of a signed letter, a Power of Attorney, or other legislated authorization. Please see section 79 for more details.

WHERE TO SEND YOUR REQUEST

- Be sure to sign, date and send your request to the appropriate head of the public body, as defined in Part 1 of RTIPPA. The heads of the public bodies are listed in the Directory of Public Bodies on the RTIPPA website.

New Nouveau Brunswick

Request for Information Form

ABOUT YOU:

Title	Last name	First name
Ms	Blaise	Kerrie
Name of company or organization *(where applicable)*		
Canadian Environmental Law Association		
Mailing Address		
55 University Ave, 15th Floor		
City or Town	Province	Postal Code
Toronto	Ontario	M5J 2H7
Home Telephone #	Work Telephone #	
905-506-1512	1-844-755-1420	
Facsimile #	E-mail	
416-960-9392	kerrie@cela.ca	

ABOUT YOUR REQUEST:

1. **What kind of information do you want to access?** Please check one.

   ☑ General Information

   ☐ My own personal information

   ☐ Information about another individual *(Please attach proof that you can legally act for that person. This authorization can be in the form of a signed letter, a Power of Attorney, or other legislated authorization. Please see section 79 for more details.)*

2. To which public body are you making your request? *(Please fill in the name of the public body; you may consult the Directory of Public Bodies on the RTIPPA website for contact information.)*

Justice and Public Safety - New Brunswick Emergency Management Organization
c/o Faye Morehouse

3. **Do you want to:** ☐ receive a hard copy of the record? ☑ receive an electronic copy of the record?
   (Please check one) **OR** ☐ examine the record?

ABOUT THE INFORMATION YOU WANT TO ACCESS:

1. **What record do you want to access?** *(Please provide as much detail as possible – see instructions)*

The Canadian Environmental Law Association seeks access to:

1. All volumes of the document titled "Point Lepreau Nuclear Off-Site Emergency Plan" (current version);
2. Any documents discussing or outlining the off-site emergency planning basis; and
3. Any documents outlining the process or discussing how updates to the off-site emergency plan shall occur.

New Nouveau Brunswick

Request for Information Form

2. **What is the time period of the records?** *(Please give specific dates. See instructions for details.)*

The Canadian Environmental Law Association is not privy to the date upon which the above noted documents were published and therefore seeks the most recent and in force versions.

YOUR SIGNATURE:

Signature	Date
	**February 28, 2017**

WHERE TO SEND YOUR REQUEST:

Send your request to the head of the public body that you believe has the information you want.

For contact information, consult the Directory of Public Bodies on the RTIPPA website.

FOR PUBLIC BODY USE ONLY:	
Date Received	Comments
Request Identification Number	

Option to Print

APPENDIX 7 – Planning Basis Email Correspondence

Gmail by Google

Kerrie Blaise <kerrie@cela.ca>

Nuclear Offsite Planning Basis - Document Request

Shepard, Roger (JPS/JSP) <Roger.Shepard@gnb.ca> Mon, Mar 27, 2017 at 10:39 AM
To: Kerrie Blaise <kerrie@cela.ca>

Kerrie,

Point Lepreau classify the radiation Emergency, we follow the notification procedure in accordance with the classification. The province does not have its own planing basis or definition of type of release.

Located in our provincial emergency operations centre is a NB Power representative who speaks to NB EMO and outlines what is happening on site, including type of release.

Cheers

Roger

From: Kerrie Blaise [kerrie@cela.ca]
Sent: Monday, March 27, 2017 11:31 AM
To: Shepard, Roger (JPS/JSP)
Subject: Re: Nuclear Offsite Planning Basis - Document Request

Hi Roger,

Thank you for the clarification and contact, I will reach out to NB Power.

Perhaps you could clarify one more item for me - does the province have its own planning basis or definition of what type of release serves as the basis for the offsite response plan?

Thanks again, appreciated.

Kerrie

On Mon, Mar 27, 2017 at 10:25 AM, Shepard, Roger (JPS/JSP) <Roger.Shepard@gnb.ca<mailto:Roger.Shepard@gnb.ca>> wrote:
Kerrie,

The documentation you are requesting reference "Mass Decontamination" belongs to NB Power.

NB EMO references these documents in our planning with the approval of NB Power.

The mass decontamination documentation is listed below:

Mass Decontamination Planning Basis, version 2, dated 18 September 2012;

Mass Decontamination Concept of Operations, version 5, dated 30 July 2013; and

Mass Decontamination Option Analysis, version 2, dated 30 January 2014.

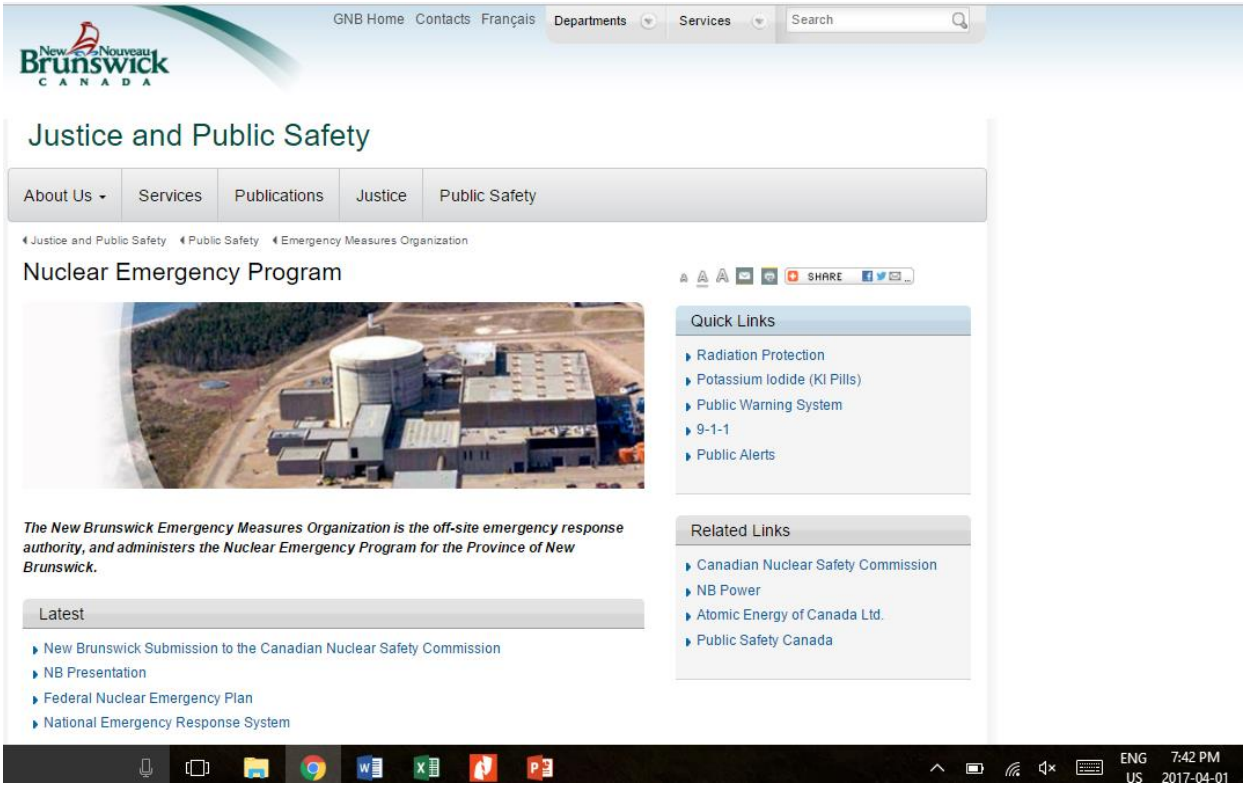
I CC'd Charles Hickman from NB Power after discussing your request with him.

I hope this helps.

Sincerely

Roger

APPENDIX 8 - NB EMO Website dated April 1, 2017



Review Comments

Point Lepreau License Renewal – External Hazards

March 2017

R.J. Daigle Enviro

Table of Contents

1 Introduction

1.1 General

The proposed external hazard assessments for Probalistic Maximum Storm, Probalistic Tsunami, High Wind and Extreme Rainfall affecting the Point Lepreau Generating Station (PLGS) have been reviewed and no specific concerns have been discovered with regards to the adequacy of the elements of these assessments. More specific comments for each parameter are addressed in Section 2.

1.2 Climate Change

There is now widespread scientific agreement by the Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC AR5, 2013) that accelerated climate change is happening and that human activities are the principal cause. However, measures to reduce greenhouse gas emissions are only part of the climate change challenge. Even if significant reductions in emissions were put in place tomorrow, the lag in the climate system means that past emissions will continue to affect the climate for several decades to come. Climate change will have impacts on places where citizens live. Proactively adapting to climate change is therefore an essential part of ensuring our communities remain safe, resilient and sustainable.

It is noted that no allowances have been made in the PLGS plans with regards to the potential impacts of climate change. In the opinion of this reviewer, sea-level rise is the most significant climate change parameter that will impact coastal locations. The most recent sea-level change estimates would result in a rise of slightly more than one metre near PLGS by year 2100 (Daigle, 2014), hence an accelaration from the regional rate of increase of near 30 cm in the past century.

While it is understood that climate change will not significantly impact PLGS during the upcoming 5-year licensing period, specific issues related particularly to sea-level rise should be considered in the longer time frames.

2 External Hazards

2.1 Probable Maximum Storm (PMS) Assessment

It is noted that CNSC staff have recommended that the existing Potential Maximum Storm (PMS) estimate needs to be updated for the next external hazard assessment. This reviewer believes that the PMS associated scenario of a tropical systen (hurricane or tropical storm) tracking just west of PLGS continues to be the type of meteorological set-up that would generate the most critical impacts. It is noted however, that even with an extreme climate change induced sea-level rise scenario of say, 2 metres, flooding of PLGS would not occur with the afore-mentioned PMS.

2.2 High Wind Assessment

No specific concerns have been noted.

2.3 Extreme Rainfall

No specific concerns have been noted.

2.4 Site Specific Probalistic Hazard Assessment

Reviewer agrees with the results of the exhaustive assessment submitted by Amec Foster Wheeler. The only caveat is that Climate Change induced sea-level rise in the longer term (beyond year 2050) could potentially enhance flooding risks for the CCW pump house for the worst-case tsunami scenarios.

3 Conclusion

This review has not discovered any concerns related to the submitted impacts related to the external hazards of Probalistic Maximum Storm, Probalistic Tsunami Assessment, High Wind Assessment and Extreme Rainfall Assessment affecting PLGS.

It is recommended however, that the lens of Climate Change be applied to future reviews.

4 References

IPCC, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

Daigle, R., 2014, Updated Sea-Level Rise and Flooding Estimates for New Brunswick Coastal Sections.

https://atlanticadaptation.ca/en/islandora/object/acasa%3A731